U.S. NATIONAL COMMISSION ON LIBRARIES AND INFORMATION SCIENCE

A COMPREHENSIVE ASSESSMENT OF PUBLIC INFORMATION DISSEMINATION

FINAL REPORT, VOLUME 1

JANUARY 26, 2001

NCLIS

U.S. National Commission on Libraries and Information Science
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The National Commission on Libraries and Information Science is a permanent, independent agency of the federal government, established in 1970 with the enactment of Public Law 91-345. The Commission is charged with:

- advising the President and the Congress on the implementation of policy;
- conducting studies, surveys, and analyses of the library and informational needs of the nation;
- appraising the adequacies and deficiencies of current library and information resources and services; and
- developing overall plans for meeting national library and informational needs.

The Commission also advises federal, state, and local governments, and other public and private organizations, regarding library and information sciences, including consultations on relevant treaties, international agreements and implementing legislation, and it promotes research and development activities which will extend and improve the nation's library and information handling capability as essential links in the national and international networks.

Commissioners and Staff include:

U.S. NATIONAL COMMISSION ON LIBRARIES AND INFORMATION SCIENCE

A COMPREHENSIVE ASSESSMENT OF PUBLIC INFORMATION DISSEMINATION

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The Commission recommends that the United States Government formally recognize and affirm the concept that public information is a strategic national resource

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Note: Volume 1 is available in electronic form at http://www.nclis.gov/govt/assess/assess.vol1.pdf and in print; it contains the executive summary, the report and Appendices 1 through 10. Volume 2 is available in electronic form at http://www.nclis.gov/govt/assess/assess.vol2.pdf and in print; it contains Appendices 11 and 12, the legislative and regulatory proposals. Volume 3 is available *only* in electronic form at http://www.nclis.gov/govt/assess/assess.vol3.pdf; it contains Appendices 13 through 34, supplementary reference materials. Volume 4 is available *only* in electronic form at http://www.nclis.gov/govt/assess/assess.vol4.pdf; it contains Appendix 35, a compilation of recent statutes relating to public information dissemination.

United States National Commission on Libraries and Information Science

January 26, 2001

The President
The White House
Washington, DC 20500

The Vice President
President of the Senate
United States Senate
Washington, DC 20510

The Speaker of the House
United States House of Representatives
Washington, DC 20515

Dear Mr. President, Mr. Vice President, and Mr. Speaker:

I am pleased to forward to you *A Comprehensive Assessment of Public Information Dissemination*. This report was requested by Senator John McCain, Chair, Senate Committee on Commerce, Science, and Transportation, and Senator Joseph Lieberman, Ranking Democrat, Senate Committee on Governmental Affairs.

This report was prepared by the United States National Commission on Libraries and Information Science (NCLIS). The Commission is an independent agency, established in 1970 by Public Law 91-345 to take a leadership position on matters pertaining to the library and information needs of the American people. Specifically, the law calls for the Commission to "advise the President and the Congress on the implementation of national policy by such statements, presentations and reports as it deems necessary."

How the federal government manages its information resources is a complex matter and the emergence of new electronic technologies only makes the matter more complex. The results of earlier efforts to shape policy in this area have been mixed. Certainly, laws enacted in the past three decades, such as the Privacy Act, the Freedom of Information Act, and the Paperwork Reduction Act, have established an overall framework that acknowledges the importance of information held by the federal government. On the other hand, efforts to modify laws affecting government printing have not met with success, and policies addressing permanent public availability of the burgeoning amounts of government information made available primarily (or exclusively) by way of agency websites have not kept pace with technological developments.

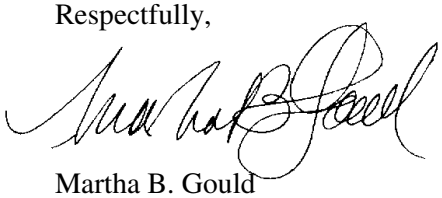
In this report the Commission calls for a strong statement that recognizes government information as a strategic national resource with an importance similar to that accorded to land, labor and capital. It proposes an organizational structure that consolidates some existing government information activities. It calls for explicit funding for information activities, including creation, dissemination and permanent preservation.

The findings, conclusions, and recommendations in this report provide a roadmap for reform. Reform is never easy; proponents of the *status quo* will always portray the outcome of change in the direst of terms. Nevertheless, the Commission has devoted a great deal of energy to examining these issues and it believes that the recommendations in this report are the right steps to take to bring needed reform.

Of course, in many ways, the Commission is a champion of the *status quo*. We believe in the uniquely American approach that says that government of, by and for the people creates information that belongs to *all* the people. This approach is a jewel of our liberty. We believe, however, that there are also problems regarding government information and that technological developments exacerbate these problems. This report sets forth the ways in which these problems can be resolved. We know that there will not be universal support for every idea put forward. We are confident, however, that the ideas we present herein will form the basis for meaningful discussion that will culminate in reform to benefit all Americans.

As always, the Commission stands ready to assist in any way we can be helpful.

Respectfully,



Martha B. Gould
Chairperson

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The Commission is indebted to many individuals and groups for the extraordinary contributions made in helping plan and executive this very ambitious and complex study. We apologize to anyone whom we may have inadvertently overlooked or credited improperly for their efforts on our behalf.

First and foremost, the Commission owes a large debt of gratitude to the four panel chairs, and their respective panel members, who took on a very big task at a time with a very short deadline at a time when all of them had many other priorities to deal with. The four panel chairs are:

- **Peter Urbach,** who chaired Panel One effort dealing with recommended reforms of the NTIS business model. Now retired, his many-faceted contributions to the library and information profession, in both the public and private sectors, gave him authoritative insights based on sound experience which both his panel members and the Commission valued highly.
- **Kurt Molholm**, who chaired Panel Two addressing steps to strengthen agency sharing of information to both help achieve their own missions more effectively as well as to help their agencies serve their own constituencies and clienteles more effectively. He took time out from an extremely busy schedule in managing the Defense Technical Information Center and serving as chairman of CENDI, the consortium of scientific and technical information intensive agencies.
- **Miriam Drake**, who chaired Panel Three reviewing actions to improve how the government disseminates its information to external groups, including private citizens, corporations, depository libraries, lower levels of government, academia, research institutions, and others. She brought to bear her experience as dean of libraries for Georgia Institute of Technology as well as a lifetime of leadership in the library and information communities, including the presidency of the Special Libraries Association, service on the Depository Library Council, and many key private sector assignments.
- **Wayne Kelley**, who chaired Panel Four, reviewing how the public and private sectors could continue and improve their respective roles in the efficient and effective dissemination of government information. Although now retired, he has held key positions in both the public and private sectors, including a tour as the Superintendent of Documents in the Government Printing Office.

The Panel Members who participated actively in their respective forums included the following:

- **Panel One Members:** Ken Allen, Steve Arnold, Ernest (Gill) Baldwin, Mel Day, Mike Majcher. Steve Needle, Kent Smith, Tim Sprehe, Kendall Wiggin, and Jay Young.
- **Panel Two Members:** Jay Alden, Owen Ambur, Jonda Byrd, Bonnie Carroll, Bruce Cox, Blane Dessy, T. C. Evans, Walter Finch, Patrice McDermott, Ray Mosley, Al Pesachowitz, George J. Roncaglia, John A. Shuler, Kent Smith, J. Timothy Sprehe, Susan Tarr, and Walter Warnick.
- **Panel Three Members:** Prudence Adler, Reva Basch, Lewis Bellardo, Kevin Donovan, Sharon Hogan, Brewster Kahle, Barbie Keiser, Diane Kresh, Bernie Margolis, Jim McGinty, Barbara Peterson, Barbara Quint, Dale Stanley, Rick Weingarten, Freida Weise, and Gladys Ann Wells.

- **Panel Four Members:** Mary Alice Baish, Francis Buckley, Anne Caputo, Blane Dessy, Dan Duncan, Wally Finch, Neal Gregory, Donald Hagen, Richard Kaser, Nancy Kranich, David LeDuc, Edwin Levine, Eric Massant, Peyton Neal, James Nelson, Molly Raphael, Franklin Reeder, and Roxanne Williams.

Next, the Commission wishes to give a special thanks to our fourteen experts: Christopher Burns, Edward A. Fox, Robert M. Hayes, Donald Langenberg, Stuart Lynn, Deanna Marcum, Raymond T. Nimmer, Henry Perritt, Ron Plesser, William H. Price, Carol Risher, Thomas Susman, Paul Uhlir, and Paul Zurkowski. These individuals are among the Nation's most distinguished leaders in their respective fields, including information law, information economics, public policy, publishing, information science and technology, librarianship, the pure sciences, the applied sciences, the humanities, and other fields. They reviewed the Panel reports and the Commission's final report to ensure that "technical" aspects of the Commission's findings, conclusions, and recommendations were sound, feasible, and practical. We are grateful that these individuals took time out from their very busy schedules to share their expertise with the Commission.

We also acknowledge the many individuals who called the Commission's attention to prior studies, relevant articles in the literature, websites containing important information, and other resources, the existence of which might not otherwise have been known to study participants. There were almost too many volunteers who assisted the Commission in various aspects of its deliberations. Among those who made special contributions were Maggie Hansen and Blane Dessey at the Department of Justice Library.

A number of individuals and organizations, including Christopher Burns and Lexis-Nexis, kindly granted the Commission copyright permission, and/or waived fees, in order for us to utilize their materials, including published articles and database materials, for purposes of the study. We appreciate these kindnesses.

To the many stakeholder groups that participated in the study, we must also express a debt of gratitude since their participation helped to ensure that the Commission heard from all of the voices that needed to be heard. We are grateful for the thoughtful comments and participation of the library and information associations and societies, associations whose members comprised disabled, disadvantaged and special-needs populations, the public interest groups, the trade and industry groups, labor unions, universities and research institutions, federal interagency committees, practicing library and information professionals, and last but not least the federal agencies themselves, which participated in many ways, including responding to a Commission survey. While most study participants were in the United States, a few foreign individuals tracked the study's developments and made contributions as well.

Finally, a special acknowledgement must be made of the contributions of NCLIS consultants F. Woody Horton and Sarah T. Kadec who were the co-coordinators of the assessment, and NCLIS Deputy Director, Judith C. Russell. Their expertise and hard work contributed beyond measure to the success of this endeavor.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

A variety of acronyms and abbreviations are used is this report and its appendices as a short form for long or commonly used names and phrases. The first time a name or phrase is mentioned in the text, the acronym is provided in parentheses following the full name, e.g., the National Commission on Libraries and Information Science (NCLIS). Subsequent references may use only the acronym. This table is provided to facilitate identification of acronyms and abbreviations since it may be difficult to locate the first use where the full name or phrase is provided.

AALL	American Association of Law Libraries
AAMR	American Association on Mental Retardation
AAP	American Association of Publishers
AARP	Association for the Advancement of Retired Persons
ACE	Americans Communicating Electronically
ACRL	Association of College Research Libraries
ADA	Americans with Disabilities Act
ADD	Automatic Document Distribution
AFFIRM	Association for Federal Information Resources Management
AIIP	Association of Independent Information Professionals
ALA	American Library Association
ALISE	Association of Library and Information Science Education
AMTD	Automatic Magnetic Tape Distribution
ANSI	American National Standards Institute
AO or AOUSC	Administrative Office of the U.S. Courts
APDU	Association of Public Data Users
ARC	Archival Research Catalog
ARL	Association of Research Libraries
ARMA	Association of Records Managers and Administrators
ARPA	Advanced Research Projects Agency, Department of Defense
ASCII	American Standard Code for Information Interchange
ASCLA	Association of Specialized and Cooperative Library Agencies
ASIS	American Society for Information Science, now American Society for Information Science and Technology
ASIST	American Society for Information Science and Technology
ATPA	American Technology Preeminence Act
CAB	Current Awareness Bibliography
CBD	Commerce Business Daily
CBO	Congressional Budget Office
CCSDS	Consultative Committee on Space Data System
CCIA	Computer and Communications Industry Association
CD-ROM	Compact Disk-Read Only Memory
CENDI	A consortium of scientific and technical information intensive federal agencies, including Defense, Energy, EPA, NASA, NLM, NTIS, and others
CFO	Chief Financial Officer

CFR	Code of Federal Regulations
CIC	Consumer Information Center
CIO	Chief Information Officer
CIRO	Congressional Information Resources Office (proposed)
CLB	Columbia Lighthouse for the Blind
CLIR	Council on Library and Information Resources
COPPA	The Children's Online Privacy Protection Act
COSATI	Committee on Scientific and Technical Information
COSLA	Chief Officers of State Library Agencies
CPIR	Council on Public Information Resources (proposed)
CRS	Congressional Research Service, Library of Congress
CSTB	Computer Science and Telecommunications Board, National Academy of Sciences
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DOL	Department of Labor
DOT	Department of Transportation
DTIC	Defense Technical Information Center
DVD	Digital Video Disk
E-FOIA	Electronic Freedom of Information Act
ECFS	Electronic Comment Filing System
EFT	Electronic Funds Transfer
EOP	Executive Office of the President
EPA	Environmental Protection Agency
ERA	Electronic Records Archive
ERIC	Educational Resources Information Center
ES	Expert Systems
ESA	Employment Security Administration
ETDC	Energy Technology Data Center
EU	European Union
FAR	Federal Acquisition Regulations
FCC	Federal Communications Commission
FDLP	Federal Depository Library Program
FGDC	Federal Geographic Data Committee
FILIS	Federal Institute of Library and Information Science (proposed)
FIPS	Federal Information Processing Standards
FLICC	Federal Library and Information Center Committee
FMS	Financial Management Service, Department of the Treasury
FOIA	Freedom of Information Act
FPC	Federal Publishers Committee
FTS	Federal Telecommunications Standards
FWF	Federal WebMasters Forum
FY	Fiscal Year
GAO	General Accounting Office
GILS	Government Information Locator Service

GODORT	Government Documents Roundtable of the American Library Association
GPEA	Government Paperwork Elimination Act
GPRA	Government Performance and Results Act
GPO	Government Printing Office
GSA	General Services Administration
GXML	Government eXtensible Markup Language
HHS	Department of Health and Human Services
HTML	HyperText Markup Language
HUD	Department of Housing and Urban Development
ICB	Information Collection Budget
ICPPS	Interagency Council on Printing and Publications Services
ICSP	Interagency Committee on Statistical Policy
ICSU	International Council of Scientific Unions
IDB	Information Dissemination Budget
IEA	International Energy Agency
IFLA	International Federation of Library Associations and Institutions
IIA	Information Industry Association, now merged into the Software and Information Industry Association
ILCM	Information Life Cycle Manager software program (proposed)
IMLS	Institute of Museum and Library Services
INIS	International Nuclear Information System
IRM	Information Resources Management
IRS	Internal Revenue Service
ISI	Institute for Scientific Information
ISO	Information Standards Organization
IT	Information Technology
ITU	International Telecommunications Union
JIRO	Judicial Information Resources Office (proposed)
LC	Library of Congress
LSCA	Library Services and Construction Act
LSTA	Library Services and Technology Act
MIS	Management Information Systems
MIT	Massachusetts Institute of Technology
MLA	Medical Library Association
NAE	National Academy of Engineering
NAICS	North American Industry Classification System, formerly the Standard Industrial Classification (SIC)
NAILS	National Archives Information Locator
NAL	National Agriculture Library
NARA	National Archives and Records Administration
NAS	National Academy of Sciences
NASA	National Aeronautics and Space Administration
NASIRE	National Association of State Information Resource Executives
NBA	National Braille Association
NBII	National Biological Information Infrastructure

NCLIS	National Commission on Libraries and Information Science
NDLTD	Networked Digital Library of Theses and Dissertations
NFFE	National Federation of Federal Employees
NFIL	National Forum on Information Literacy
NIIAC	National Information Infrastructure Advisory Council
NISO	National Information Standards Organization
NIST	National Information Standards
NLE	National Library of Education
NLM	National Library of Medicine
NLS	National Library Service for the Blind and Physically Handicapped, Library of Congress
NOD	National Organization on Disabilities
NOAA	National Oceanic and Atmospheric Administration
NPR	National Performance Review
NPRG	National Partnership for Reinventing Government
NRC	National Research Council
NSA	National Security Agency
NSDI	National Spatial Data Infrastructure
NSDL	National Science, Mathematics, Engineering and Technology Education Digital Library, also called the National Science Digital Library
NSF	National Science Foundation
NTIA	National Telecommunications and Information Administration
NTIS	National Technical Information Service
NWS	National Weather Service, National Oceanic and Atmospheric Administration
OCLC	OCLC Online Computer Library Center, Inc.
OCR	Optical Character Recognition
OFPP	Office of Federal Procurement Policy, Office of Management and Budget
OIA	Office of Intergovernmental Affairs, Executive Office of the President
OIRA	Office of Information and Regulatory Affairs, Office of Management and Budget
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration
OSTI	Office of Scientific and Technical Information, Department of Energy
OSTP	Office of Science and Technology Policy, Executive Office of the President
OTA	Office of Technology Assessment, U.S. Congress
PDF	Adobe Systems Acrobat Portable Document Format
PEC	Procurement Executives Council
PIRA	Public Information Resources Administration (proposed)
PIRUC	Public Information Resources Users Council (proposed)
PITAC	President's Information Technology Advisory Committee
PKI	Public Key Infrastructure
PLA	Public Library Association
PPA	Permanent Public Availability
PRA	Paperwork Reduction Act
PS/PS	Public Sector/Private Sector
PTO	Patent and Trademark Office
PUMS	Public Microdata User Samples
PURL	Persistent Uniform Resource Locator

R&D	Research and Development
RDF	Resource Description Framework
ROI	Return on Investment
SDI	Selective Dissemination of Information
SDTS	Spatial Data Transfer Standard
SEC	Securities and Exchange Commission
SGML	Standard Generalized Markup Language
SHHHP	Self-Help for Hard of Hearing People, National Center on Assistive Technologies
SIC	Standard Industrial Classification, not North American Industry Classification System
SIIA	Software and Information Industry Association
SLA	Special Libraries Association
SRIM	Selected Research in Microfiche
SSA	Social Security Administration
STI	Scientific and Technical Information
STIE	Scientific, Technical and Engineering Information
STINET	Scientific and Technical Information Network
SuDocs	Superintendent of Documents, Government Printing Office
SuPICT	Superintendent of Public Information and Communications Technologies (proposed)
SuPIR	Superintendent of Public Information Resources (proposed)
TDI	Telecommunications for the Deaf, Inc. (former name)
TIFF	Tagged Image File Format
TRAIL	Technical Report Awareness Internet Links
ULC	Urban Libraries Council
ULS	Universal Licensing System
UNESCO	United Nations Educational, Scientific, and Cultural Organization
URL	Uniform Resource Locator
URN	Uniform Resource Name
USC (or U.S.C.)	United States Code
USGS	Geological Survey, Department of the Interior
USDA	Department of Agriculture
XML	eXtensible Markup Language
Y2K	Year 2000
WWW	World Wide Web

EXECUTIVE SUMMARY

It was a simple announcement on a summer day. It appeared to be a straightforward proposal to solve a serious problem. Constrained by a statutory requirement for self-funding and facing a new paradigm in information dissemination, the National Technical Information Service (NTIS) was failing. As federal agencies distributed reports at no cost on the World Wide Web—reports that formerly NTIS had distributed—NTIS was unable to collect revenue sufficient to cover its costs of cataloging and maintaining its collection. The proposal put forth in August 1999 by the Department of Commerce (where NTIS is organizationally located) was to close NTIS and move its collections and functions to the Library of Congress.[1]

The National Commission on Libraries and Information Science (NCLIS) immediately recognized this proposal to be far more significant than it first appeared. Fundamental issues regarding how the government used, disseminated and valued its information resources were at stake. The Commission stepped forward and prepared a preliminary assessment of the proposed closure of NTIS, which it delivered to the President and Congress.[2] This report recommended a number of steps to keep NTIS operational, but it also stated that a much broader assessment of the underlying issues involved in public information dissemination throughout government was needed.

A number of Congressional leaders in both the House of Representatives and the Senate urged NCLIS to prepare such a report; Senator John McCain, Chair of the Senate Committee on Commerce, Science, and Transportation, and Senator Joseph Lieberman, Ranking Democrat on the Senate Committee on Governmental Affairs, both sent letters to the Commission formally requesting a review of reforms needed for the federal government's public information dissemination practices. This report is the response to those requests.

A. THE ROLE OF NCLIS

The National Commission on Libraries and Information Science is an independent agency in the Executive Branch, created by law (Public Law 91-345, 20 *U.S.C.* 1501 et seq.) in 1970. Its statute calls for it to "advise the President and the Congress on the implementation of national policy" pertaining to the library and information needs of the people of the United States.

Throughout its history, NCLIS has addressed government information issues. In 1998, at the request of the Government Printing Office (GPO), the Commission surveyed federal agencies to understand

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[1] U.S. Department of Commerce, "Commerce Secretary William M. Daly Announces Intention to Close National Technical Information Service," Press Release, Washington, D.C.: Department of Commerce, August 12, 1999; http://204.193.246.62/public.nsf/docs/FFF05791D63331D1852567CB00693643; and U.S. Department of Commerce, "Providing the American People Information for the 21st Century: The Commerce Department Proposes to Close NTIS and Ensure That People Can Receive Technical Information for Free Over the Internet," Fact Sheet, Washington, D.C.: Department of Commerce, no date; http://204.193.246.62/public.nsf/docs/EA7BD28117EEF74D852567CB006B7D20.

[2] U.S. National Commission on Libraries and Information Science, *Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS): A Report to the President and the Congress*, Washington, DC: U.S. Government Printing Office, March 16, 2000; http://www.nclis.gov/govt/ntis/presiden.pdf.

how the formats, mediums and standards these agencies employed were significantly changing as they moved from an era in which most government information took the form of ink-on-paper to a time when electronic information technology is increasingly used.[3]

When NCLIS received the requests from Senators McCain and Lieberman to perform a comprehensive assessment of public information dissemination, it started a number of actions. A study plan outline was produced and published. Individuals were recruited to form four study panels addressing focused aspects of the issue (the NTIS business model; federal agency needs for central information services; public needs for government information, and; partnerships between the public and private sectors for public information dissemination); each panel submitted a report on its topic. A group of experts was assembled; many of these individuals prepared White Papers in their subject specialty and each reviewed various documents as the project progressed. A number of past reports dealing with government information were reviewed and many were made available to the panel members, experts and interested members of the public. A web site devoted to the project was created as part of the NCLIS web site and numerous drafts and documents were made available electronically through that means.[4] The Commission met to review the findings, conclusions and recommendations that would comprise the assessment report. A public meeting, announced beforehand in the *Federal Register*, provided a members of the public and interest groups the opportunity to ask questions and state concerns regarding the NCLIS effort. The Commission provided a draft copy of the report to the Office of Management and Budget (OMB) and OMB further distributed the draft to other agencies. Throughout this process, NCLIS received statements in support of some findings, conclusions and recommendations and others in opposition. The Commission benefited greatly from the many comments received throughout the project and incorporated many, but not all, of the suggestions received. Nevertheless, this report represents the opinions and recommendations of the Commission, not of the current or former Administration or any of the stakeholders who participated in its development.

B. FINDINGS AND CONCLUSIONS

Based on both its historical efforts and the extensive recent activities, the Commission confidently set forth a large number of findings and conclusions that describe the current state of government information. These observations are explained in detail in the full body of the report[5] and are summarized below.

Public ownership of information created by the federal government is an essential right. It not only allows individuals to fulfill their civic responsibilities, but also contributes to an overall improvement in their quality of life. Current information technology not only brings with it expanded opportunities for using government information but also a number of difficulties, including adequacy of finding tools, technological incompatibilities, and sometimes just the overwhelming amount of information.

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[3] Westat, Inc., *Report on the Assessment of Electronic Government Information Products*, prepared under a contract issued by the National Commission on Libraries and Information Science and commissioned by the Government Printing Office, March 1999; http://www.access.gpo.gov/su_docs/nclisassessment/report.html.

[4] The Assessment web page is http://www.nclis.gov/govt/assess/assess.html.

[5] The report is published in 4 volumes. Volume 1: A Comprehensive Assessment of Public Information Dissemination; Volume 2: Legislative and Regulatory Proposals; Volume 3: Supplementary Reference Materials; and Volume 4: Compilation of Recent Statues Relating to Public Information Dissemination. These volumes are available at http://www.nclis.gov/govt/assess/assess.vol1.pdf, http://www.nclis.gov/govt/assess/assess.vol2.pdf, http://www.nclis.gov/govt/assess/assess.vol3.pdf, and http://www.nclis.gov/govt/assess/assess.vol4.pdf, respectively.

Government agencies are trying to use the World Wide Web to ensure availability of information, and emerging efforts in development of indexing tools and web portals offer some hope. However, not all needed information is available on the Internet nor do users of public information necessarily have the professional skills to use what is available in any format. Also, government information made available electronically can disappear as quickly as it has appeared. No policy is in place for long term or permanent public access to web-based public information.

Special populations, especially individuals with disabilities, but also those who, for whatever reason, find it difficult to use computers and computer networks, exist throughout the nation. Such populations clearly can benefit from information technology but special efforts need to be taken to guarantee the availability to them of appropriate information technology and government information content.

The federal government has a critical role in formulating and overseeing public information dissemination policy. Hundreds of laws establish the requirement and authority of agencies to disseminate public information, but there is little distinction made between "passive dissemination" and "proactive dissemination." Moreover, the authority of agencies differs widely in terms of how broadly they are permitted to disseminate information to the public. It is evident that there are costs involved in managing and disseminating public information resources, but the manner of paying these costs is inconsistent and, at times, invisible across government. There are existing central service agencies, such as GPO, NTIS and the National Archives and Records Administration (NARA), who, in partnership with individual agencies, play a crucial role in information dissemination. However, there is no effective enforcement mechanism to use when these partnerships fail.

There will always remain a strong need for central information service agencies, but these agencies need new business models that reflect the realities of the Internet and the World Wide Web. Overlap and competition among these agencies is unnecessary and wasteful. There are efforts to improve coordination—for example, through interagency committees—and these efforts should be continued and strengthened.

Everything that has been learned about problems and opportunities affecting *federal* government information is likely to apply to public information at the state and local government levels. Such information is just as important to the people as is federal government information. However, the inconsistencies and incompatibilities among programs at the different levels of government need to be eliminated.

The private sector plays a key role in further distributing public information and enhancing its value. This group consists of commercial firms as well as a host of libraries and not-for-profit organizations. Both the for-profit and the not-for-profit sectors need to strengthen their partnership arrangements with government.

The approach the United States takes with regard to public information is a source of great strength and the approach should be widely promoted to all nations around the world.

C. RECOMMENDATIONS

Based on the findings and conclusions, the Commission is setting forth thirty-six recommendations. These recommendations are stated more fully and discussed in the main body of the report. The list that follows is intentionally designed to be a shorthand reference and certainly does not capture the subtlety or complexity that the full recommendation contains.

Strategic Recommendations

1. Adopt the national goal that public information is a strategic resource.
2. Establish the Public Information Resources Administration (PIRA).
3. Include broad, explicit public information dissemination authority in all agencies' missions.
4. Implement an Information Dissemination Budget.
5. Enact "The Public Information Resources Reform Act of 2001."
6. Establish the Congressional Information Resources Office (CIRO).
7. Establish the Judicial Information Resources Office (JIRO).
8. Extend key provisions of the Paperwork Reduction Act to the Legislative and Judicial Branches.
9. Encourage state, local, and tribal governments to adopt comparable policies and programs for their public information resources.
10. Retain, temporarily, the National Technical Information Service (NTIS) in the Commerce Department.
11. Provide funding for the public good functions of NTIS and other comparable information service agencies.
12. Update the NTIS business model.
13. Partner with the private sector, both for–profit and not for-profit, to perform public information disseminations functions.
14. Remove barriers to public information for individuals with disabilities and for other special populations.
15. Coordinate the information dissemination activities among the Legislative, Judicial and Executive Branches.
16. Improve training of librarians and other information professionals to better assist users of public information.

Other Recommendations

17. Implement recommendations regarding NTIS in the Commerce Department.
18. Improve Congressional oversight of public information dissemination laws.
19. Review and harmonize all laws that deal with public information resources.
20. Strengthen cooperative efforts to promote public information sharing.
21. Improve "Government Information Life-Cycle Planning and Management."
22. Modernize current awareness systems for public information.
23. Make consistent federal identifiers for information across all agencies.
24. Harmonize information identifiers at all levels of government—federal, state, local and tribal.
25. Evaluate pre-electronic government information for digital conversion.
26. Develop guidelines regarding the availability of public information by branch and level of government.

27. Develop a comprehensive inventory and database of public information resources.
28. Specify the metadata by which agencies classify records prior to archival retention or disposal.
29. Partner broadly, in and outside government, to ensure permanent public availability of public information resources.
30. Identify the public's most critical unmet requirements for public information resources.
31. Identify the federal government's most critical requirement for technologies to manage public information resources.
32. Involve the Office of Science and Technology Policy in the effective management of scientific and technical information.
33. Monitor cooperation between PIRA and the National Archives and Records Administration.
34. Require that data elements set forth in the Government Paperwork Elimination Act be reported in XML, and review the impact of this requirement regularly.
35. Ensure the availability of a trained federal workforce with skills in Internet Age technologies.
36. Advance the recommendations of this Assessment report to other nations worldwide.

It should be emphasized that the foregoing recommendations are just that, recommendations. The Commission believes that implementation of these recommendations will vastly improve the condition of government information dissemination in the United States, but it also recognizes that others have different views. It is up to the President and Congress, as the recipients of this report, to determine whether and to what extent these recommendations should be implemented. The Commission stands ready to fulfill its statutory obligation to provide advice to the President and Congress in whatever way may be helpful.

VOLUME 1. A COMPREHENSIVE ASSESSMENT OF PUBLIC INFORMATION DISSEMINATION

A. THE ROLE OF NCLIS

The United States National Commission on Libraries and Information Science (NCLIS) is an independent agency charged by its enabling legislation (Public Law 91-345) to take a leadership position on matters pertaining to the library and information needs of the nation. Specifically, 20 *U.S.C.* 1504(a)(1) says that the Commission shall "advise the President and the Congress on the implementation of national policy by such statements, presentations, and reports as it deems appropriate."

In fulfillment of that statutory mandate, the Commission throughout its 30-year history has had an abiding interest and concern for studying ways the government can improve its public information dissemination practices. However, in the last three years, largely because of the intensified interest in the federal government's use of the World Wide Web and the Internet as the preferred medium for distributing public information to citizens and other elements of society, the Commission has focused squarely in three closely related studies, conducted sequentially, on policy, management, standards, accessibility, and other major issues and concerns that have arisen as a result of this shift in access and delivery channels from pre-Internet modes such as ink-on-paper, microfiche, and CD-ROM or DVD, to World Wide Web and Internet modes.

Four years ago, in 1996, the Government Printing Office was asked by the Congress to investigate the increasing proliferation of formats, mediums, platforms, and protocols being utilized by federal agencies to disseminate public information products. The GPO turned to NCLIS to assist in undertaking the task. NCLIS engaged Westat, Inc., a survey research firm, to survey a sample of over 300 products in a cross section of 24 different agencies in all three branches. A final report was published on this first of the three studies on March 30, 1999.[6]

Then in August 1999, after consulting with Department of Commerce officials and members of both the Senate and House Committees holding jurisdiction over science and technology issues, and very soon after the announcement by Commerce of it intention to close the National Technical Information Service (NTIS) and shift its paper, microfiche, digital archives, and bibliographic database to the Library of Congress, the Commission launched a second major study, this time focused primarily on NTIS. A final report on this second of the three studies was published in March 2000.[7]

In both the 1996 GPO-requested study, and the follow-on 1999 NTIS study, the Commission observed that both the issues and concerns surrounding the proliferation of electronic formats for disseminating

[6] Westat, Inc., *Report on the Assessment of Electronic Government Information Products*, prepared under a contract issued by the National Commission on Libraries and Information Science and commissioned by the Government Printing Office, March 1999; http://www.access.gpo.gov/su_docs/nclisassessment/report.html.

[7] U.S. National Commission on Libraries and Information Science, *Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS): A Report to the President and the Congress*, Washington, DC: U.S. Government Printing Office, March 16, 2000; http://www.nclis.gov/govt/ntis/presiden.pdf.

government information to the public, and the issues and concerns surrounding the proposed transfer of the functions, programs, and resources of NTIS to the Library of Congress, should not be viewed as isolated events. Rather, the Commission concluded that those issues were both a part of the broader fabric of an even larger question—how the government should reform its laws, policies, programs, and practices for disseminating information to the public in the Internet Age.

The Commission therefore enthusiastically welcomed the requests by both Senator John McCain and Senator Joseph Lieberman to undertake this broader study. Readers should keep this larger context in mind in reviewing the findings and recommendations contained herein, as well as the admonition of the Congressional committees requesting the study that the final report *should represent an NCLIS position*, developed as a result of its statutory mandates, findings from earlier studies, and independently gathered facts and opinions. NCLIS was specifically directed in its discussions with Congressional staff *neither to attempt to necessarily seek a consensus on every recommendation, nor to "pull punches" simply because a recommendation might appear to be politically difficult.* Therefore, this report represents the opinions and recommendations of the Commission in its statutory role as an advisor to the Congress.

This report, including its legislative recommendations, reflects only the views of the Commission. The report does not necessarily reflect the views of the current, or former, Administration or any other agency. Because the report's legislative recommendations address the activities and authority of agencies throughout the Executive Branch and it proposes the establishment by Congress of a new agency with government-wide authority, the Commission provided a draft of the report to the Office of Management and Budget (OMB) for its review and comment in December 2000. With the concurrence of the Commission, OMB, in turn, circulated the draft to other agencies for their review and comment. OMB informed NCLIS in January 2001 that a number of agencies raised significant concerns about the draft report and, in particular, disagreed with its legislative recommendations. Due to the requests the Commission received from Congress asking that the report be submitted for its consideration, the Commission has not had an opportunity to discuss these concerns with the other agencies and, therefore, this report does not seek to respond to those concerns. The Commission will continue to work with other agencies on these issues in the coming months.

Similarly, although a wide variety of stakeholders were encouraged to participate in the development of this report and their comments were extremely useful to the Commission, these recommendations do not necessarily represent a consensus of stakeholders.

In its 1975 publication entitled *Toward a National Program for Library and Information Services: Goals for Action*, the Commission offered a long-range program for the development of an integrated nationwide network of library and information services. The following statement appears in that landmark document:

> The Commission's current goal is to develop a plan for a flexible network of information services to meet the immediate and foreseeable information requirements of the greatest possible number of people. The Commission will therefore continue to concentrate its efforts in the years ahead on this ideal:
>
> *To eventually provide every individual in the United States with equal opportunity of access to that part of the total information resource which will satisfy the individual's educational, working, cultural and leisure-time needs and interests, regardless of the*

> *individual's location, social or physical condition or level of intellectual achievement*.[8] [emphasis added]

In working toward the attainment of this goal, the Commission recommends in this report programs and enabling federal legislation that are based on existing programs for the dissemination of public information resources, as well as new programs as appropriate and necessary. One such recommendation is that the United States Government formally recognize and affirm the concept that public information is a strategic national resource.[9] The success of such a goal, and of these recommendations, is dependent on the acceptance and full support of the Congress, the Administration, the library profession, the information community—both public and private—and, most importantly, the people of the United States.

[8] U.S. National Commission on Libraries and Information Science, *Toward a National Program for Library and Information Services: Goals for Action*, Washington, DC: U.S. Government Printing Office, 1975, page xi.

[9] Recognition of public information as a strategic national asset does not imply exploitation of that asset to generate revenue for the government, like the sale of lumber or mineral rights on federal land. On the contrary, it must result in optimizing timely and permanent public access to the information for its owners, the people of the United States.

B. BACKGROUND

THE CENTRAL ISSUE

Public sector information, or simply public information, has very rapidly become in the span of just the last few years one of the most critical strategic assets possessed by every nation state, on a par with national wealth, land, and capital. The Internet and the World Wide Web are the main technological reason, but there have been a number of other factors at play as well. Public sector information has always played a very important role in the political, economic, and social affairs of every country. Yet the advent of the Internet and the World Wide Web have dramatically escalated the importance of public information because of the power of the Internet to tremendously increase its availability and accessibility in a great variety of different electronic formats and mediums. It has been argued, "information content is to wealth generation in the Internet Age as raw materials were to wealth generation in the Industrial Age."[10]

> The central challenge of this report is to recommend to the President and the Congress a series of steps to maximize the **diffusion** of the government's data, information, and knowledge resources (sometimes referred to as "intellectual capital") to all sectors of society, including individual citizens, and to empower all of those sectors and individuals to **utilize** that knowledge effectively and efficiently in the pursuit of their respective personal, family, career, business, institutional, or other goals and objectives. In short, to recommend steps to treat public information resources as a strategic national asset.

A very high percentage of this nation's knowledge resources, or intellectual capital, is invested in its government data, document, and literature assets, but those assets are a very long ways, as yet, from being conveniently, cost-effectively, and equitably available and accessible to all sectors of American society despite impressive initiatives that have been taken in recent years. The government's knowledge assets are currently strewn across broad physical and electronic landscapes of tens of thousands of websites and millions of web pages, hundreds of thousands of electronic databases, untold numbers of paper and microform document collections, and in countless files, records depositories, clearinghouses, and archives across the country and even abroad.

From a purely economic and efficiency standpoint, the government is certainly correct in making the case that posting an increasing percentage of its public information on agency websites has shifted the cost of access to the information more directly to the individual users who benefit from the information, as opposed to the taxpayers as a whole (although the operation and administration of the websites are funded with tax dollars). This is, in principle, a good thing. However, offsetting this positive is a negative. There is now so much electronic information to wade through that is difficult to find what is relevant and useful. As a result, there is an even greater need for a single, central comprehensive and authoritative inventory and database of public information resources and for more proactive agency dissemination of public information.

[10] Paul G. Zurkowski, "Creating the Magic of Information," available as Appendix 21 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen21.pdf.

Certainly the digital library initiatives offer one of the most promising avenues because the digital library concept does entail collection of electronic information resources that are enhanced with organization, quality control, help for searching and browsing, support of particular targeted user communities, mechanisms for handling electronic publishing, and other capabilities.

The central challenge of this report is to recommend to the President and the Congress, as well as the Judiciary, a series of steps to maximize the diffusion of the government's data, information, and knowledge resources (sometimes referred to as "intellectual capital") to all sectors of society, including individual citizens, and to empower all of those sectors and individuals to utilize that knowledge effectively and efficiently in the pursuit of their respective personal, family, career, business, institutional, or other goals and objectives. In short, to recommend steps to treat public information resources as a strategic national asset. This is a far more daunting challenge than just strengthening the dissemination of public information.

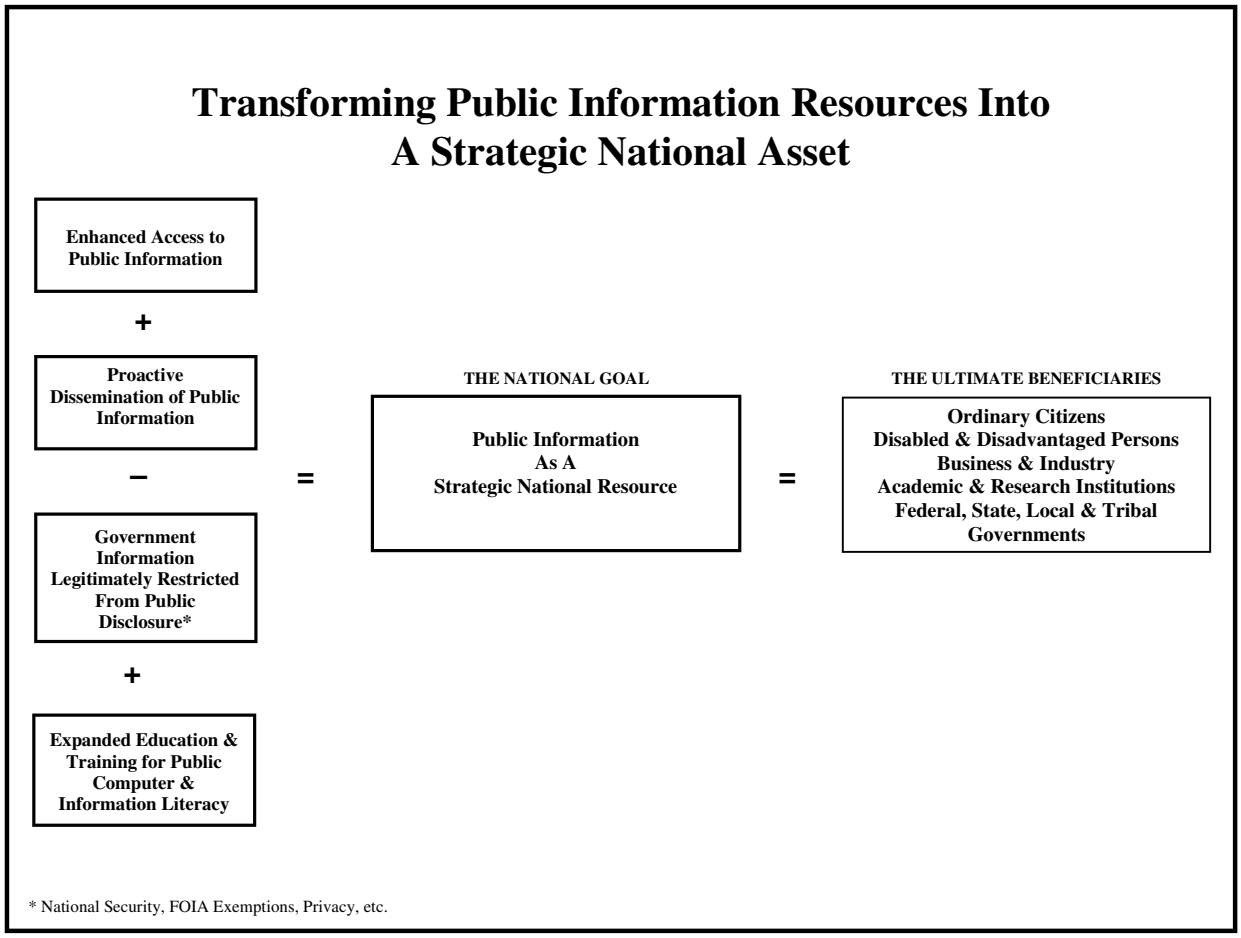

Figure 1. Transforming Public Information Resources into a Strategic National Asset

Figure 1 graphically depicts as a schematic "equation" the elements necessary to transform public information resources into a strategic national asset, managed for the benefit of the people. Achieving the goal of treating public information as a strategic national asset can be viewed as a combination of a number of equations elements, all of which have a role to play: first accessing information, to which is added proactive dissemination of information, while subtracting certain information that is statutorily protected so that it is safeguarded, and finally ensuring that users are adequately trained to search,

retrieve and evaluate the information, both from the point of view of physical access (computer literacy) and intellectual access (information literacy).

Thirty eight years ago in his preface to a Report of the President's Science Advisory Committee chaired by Jerome Wiesner, "Science, government, and Information," President John Kennedy said "One of the major opportunities for enhancing the effectiveness of our national scientific and technical effort and the efficiency of government management of research and development lies in the improvement of our ability to communicate information about current research efforts and the results of past efforts." The very first paragraph of this same report begins "Transfer of information is an inseparable part of research and development. All those concerned with research and development – individual scientists and engineers, industrial and academic research establishments, technical societies, government agencies – must accept responsibility for the transfer of information in the same degree and spirit that they accept responsibility for research and development itself."[11]

Twelve years ago the landmark Office of Technology Assessment report *Informing the Nation* raised six broad policy questions in connection with reform initiatives. The answers to these questions are as relevant to a careful consideration of the reform initiatives contemplated in this report today as they were by the reform initiatives being addressed by the Technology Assessment Board of the 100th Congress, then chaired by Morris K. Udall and Ted Stevens:

- Congressional commitment to public access to federal information.
- The need for revision of government-wide information dissemination policy—particularly regarding cost-effectiveness.
- The role of the private sector.
- Electronic vs. paper formats.
- The need for clarification of institutional roles and responsibilities.
- Improvements in information dissemination management.[12]

In 1992, the participants in the interagency conferences on public access to government information, known as the Solomons conferences, created a policy framework for public access to electronic government information. The guiding principle of that policy framework is:

> Agencies of the federal government collect, produce, manipulate, evaluate, maintain, distribute, publish, and archive vast amounts of data, which represents a valuable national resource that belongs to the people. Some of this is subject to limitations on dissemination, ranging from national security classification through FOIA exemptions. However, it is in the best interest of the country and the responsibility of these federal agencies to ensure the availability of the remaining government information to the public in a useful and cost-effective manner.

[11] U.S. President's Science Advisory Committee, *Science, Government, and Information: The Responsibilities of the Technical Community and the Government in the Transfer of Information*, A Report of the President's Science Advisory Committee, Washington, DC: The White House (January 10, 1963), Washington, DC: GPO, 1963, page 1.

[12] U.S. Congress, Office of Technology Assessment, *Informing the Nation: Federal Information Dissemination in an Electronic Age,* Washington, DC: U.S. Government Printing Office (1988), Chapter 11, "Federal Information Dissemination Policy in an Electronic Age."

Guidelines:

- The agency's mission should be framed as broadly as possible. It should enable rather than discourage dissemination.
- Agencies should follow the principle that federal data cannot be copyrighted.
- When defining an approach, FOIA should be interpreted to include all information regardless of form or media.[13]

The government itself acknowledges through OMB Circular A-130, "While millions of information users in the public may be affected by the agency's action, only a handful may have direct contact with the agency's own information dissemination products."[14]

The fundamental basis for public access to government information is found in Title 17 of the U.S. Code, which specifically prohibits copyright of federal information.[15] This is augmented by other laws, including the Freedom of Information Act (FOIA), the Electronic Freedom of Information Act (E-FOIA), the Administrative Procedure Act, and the Government in the Sunshine Act. Hundreds of other federal laws that have some provision or another for disseminating government information to the public or providing public access for one or more of the following purposes:

- Publicize a citizen entitlement and spell out the procedures that need to be following to apply for a tangible government public benefit or service.
- Publicize opportunities for the private sector to do business with, or for, the federal government, either domestically in the U.S. or abroad, or both.
- Publicize and disseminate the results of government's performance and operations through audits, inspections, studies, opinions, decisions taken, and so forth.
- Provide for intergovernmental or interagency information interchange.
- Provide a broad legal basis for requesting public access to government information, identifying specific exceptions and exemptions, such as occurs in the Freedom of Information Act and the Privacy Act, or specifically exempting from disclosure large bodies of government information holdings such as information classified for reasons of national security.

However, none of these existing laws provides a rationale and statutory basis for the positive, broad diffusion, and the wide-spread utilization, of the government's knowledge assets by individual Americans, both advantaged and disadvantaged, to help them cope with their daily problems, to enlighten and educate them so that they are better informed citizens and more empowered individuals, and to point the way to how the government's vast knowledge treasures can enhance the quality of their lives and the wisdom of their decisions.[16]

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[13] J. Timothy Sprehe, "Issues in Public Access: The Solomons Conferences," *Government Publications Review*, Vol. 20 (1993), page 269.

[14] U.S. Office of Management and Budget, "Management of Federal Information Resources, Appendix IV: Analysis of Key Sections," OMB Circular A-130, Washington, DC: Office of Management and Budget, November 30, 2000; http://www.whitehouse.gov/omb/circulars/a130/a130appendix_iv.html.

[15] The prohibition of copyright for federal government information is contained in Title 17 U.S. C. 105: "Copyright protection under this title is not available for any work of the United States Government, but the United States Government is not precluded from receiving and holding copyrights transferred to it by assignment, bequest, or otherwise."

[16] The one possible exception is 44 *U.S.C.* Chapter 19, the statute authorizing the Federal Depository Library Program (FDLP); however, the lack of agency compliance and the absence of substantial consequences for failure to comply have limited the effectiveness of this statute.

WHAT OTHER COUNTRIES ARE DOING

In 1998 the European Commission issued its report entitled *Public Sector Information: A Key Resource For Europe; Green Paper on Public Sector Information in the Information Society*.[17] In its report the European Union said:

> Public sector information plays a fundamental role in the proper functioning of the internal market and the free circulation of goods, services and people. Without user-friendly and readily available administrative, legislative, financial or other public information, economic actors cannot make fully informed decisions.
>
> Public information in Europe is often fragmented and dispersed and so in many instances it is less clear and intended. This situation is mainly due to differing national legislation on the ways information can be accessed and exploited, and to various practices which hamper the availability of the data. The issue at stake is not that Member States should produce more information, but that the information, which is already available to the public, should be clearer and more accessible to potential users.[18]

In 1999 UNESCO said virtually the same thing about the role of public authorities in access to information:

> While industry and business are principally responsible for providing the infrastructure for access to information resources, governments and the civil society have a responsibility to make information considered as a "global public good" universally available for educational, cultural and social needs. The challenge is to define the concepts of public domain and universal access in a global context to promote the common public welfare while encouraging private initiative and protecting rightful economic interests.[19]

On November 30, 1999, the new UNESCO Director-General, Koichiro Matsuura, at the Opening Session of the World Summit of Regulators conference (with the theme "Internet and the New Services") stressed that the international community must make all efforts in order to ensure that information in the public domain is an essential element of the global common good, and must be promoted and protected.

In the United Kingdom, the Central IT Unit of the Minister of State has recently issued a report entitled *E-Government: A Strategic Framework for Public Services in the Information Age*. This report states as a fundamental premise: "The government's knowledge and information are valuable resources."[20] The report goes on to say:

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[17] European Commission, *Public Sector Information: A Key Resource For Europe*, Green Paper on Public Sector Information in the Information Society (COM(98)585final, adopted on 20 January 1999). Excerpts are available as Appendix 30 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen30.pdf. The complete Green Paper is available at http://europa.eu.int/ISPO/docs/policy/docs/COM(98)585/gp-intro.html.

[18] Ibid.

[19] "INFOethics 2000: Right to Universal Access to Information in the Twenty-first Century," *UNISIST Newsletter*, Vol. 27, No. 2, 1999 (Paris: UNESCO Information and Informatics Division), pages 4-5.

[20] United Kingdom, Minister of State, *E-Government: A Strategic Framework for Public Services in the Information Age,* Modernizing Government, London: Central IT Unit, 2000, page 2; http://www.iagchampions.gov.uk/Strategy.htm.

> The public sector needs to move towards managing the information it holds as a corporate resource to benefit citizens and business and to improve the effectiveness and efficiency of government itself. This will require
>
> - Definition and adoption by public sector bodies of corporate standards for data entities that are common across the public sector; for example, citizen name and address. CITU will publish these in the interoperability framework and will monitor their adoption
> - Definition and adoption by public sector bodies of common meanings for common data descriptions, so that information accessed by public servants or the public can be understood and used effectively
> - A framework for departments and agencies to implement electronic records management systems
> - A common policy of the use of metadata.[21]

Finally, Canadian international trade and investment lawyer and legal specialist, writing recently in an international journal to an audience of librarians and information professionals on the subject of the relationship between information and world trade, had this to say:

> It seems to me that there is a particular role for librarians to play as well, and not just as the defenders of public libraries, although without your determined intervention I fear the era of such public institutions, which as you know began only a little over a century ago, will not survive very much longer. But there is another and equally important service you can provide which would be to provide effective public access to the complex, obscure, and often secretive reports, submissions, studies, and negotiating texts which comprise the record of contemporary trade negotiations and dispute resolutions. There is a great need to find ways to expose information that too often has been shrouded from public view.[22]

THE CURRENT SITUATION IN THE UNITED STATES

In the United States, there is a somewhat parallel situation with federal government information in other countries, but with important differences. That is, government information is fragmented, dispersed, compartmentalized, and unfocused among hundreds of federal agencies. It has been created, and it is being handled and stored in hundreds of different formats and mediums, including ink-on-paper, microfiche, CD-ROM or DVD, and online electronic modes. It is organized, classified, and cataloged in many different forms, including statistical or numeric data, textual data, graphical data, geospatial data, audio and visual data, and so on. Many different bibliographic and metadata systems, sometimes inconsistent and incompatible, are being used to identify data elements such as author, subject, title, location, and so on. In addition, dozens of different hardware, software, systems, and network platforms and protocols are being utilized to handle and communicate the information between networks and systems, sometimes subject to proprietary restrictions, but without the discipline of utilizing standards and guidelines.

Moreover, in the United States, unlike much of the rest of the world, there is a strong dichotomy between the public information resources objectives and perspectives of the federal mission agencies,

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[21] Ibid., page 21.

[22] Steven Shrybman, "Information, Commodification, and the World Trade Organization," *IFLA Journal*, Vol. 26, no. 5/6 (2000), page 361.

on the one hand, and the federal agencies with government-wide information services, support and management roles on the other. In Europe, Asia, Latin America and Africa there is a much greater cohesion between elements of the government, especially in the economic sphere, but in the United States, the mission agencies are primarily enjoined by statute to respond to their respective sector or mission interests (e.g., environment, energy, space, defense, etc.). As a result, they are beholden primarily to the constituencies comprising those sectors. The President and the Congress have made it crystal clear that if federal agencies stray very far from their mandated missions, they do so at their own peril. Only the central information service agencies, the major statistical agencies, and the national libraries serve the interests of the public at large, as well as the interests of individual mission agencies.

There is also the dimension of *institutional obsolescence*. In the words of one of the Commission's advisory experts, Chancellor Donald Langenberg of the University of Maryland:

> The designs, configurations, and functions of the *Library* of Congress, the Government *Printing* Office, and the Superintendent of *Documents*, were based on the dominant information technology of the second half of the previous millennium, not that of the current millennium. Therein lies a huge challenge for our federal government (not to mention our state and local governments). One of the fundamental differences between the old and the new information technologies is that the former lends itself to centralization of information-related functions, while the latter is intrinsically decentralized. Compare big central libraries, printing plants, and bookstores and warehouses with ubiquitous desktop and laptop computers linked to servers in closets all over the globe. In the old technology, it's the nodes that matter most; in the new, it's the network linking the nodes. *One should expect to see this fundamental difference reflected in the organizational and functional structure of an evolving federal public information dissemination system.* [emphasis added]

"*Conceptual obsolescence*" is a closely related dimension. Certain key ideas that are relevant to this report need to be reexamined and redefined for the Internet Age, such as access, dissemination, authentication, preservation, depository, publication, document, and library.

As Julia Wallace asks in her recent article entitled "Why Government Information?" in *DttP*:

> What, after all, is a "collection" when we are talking about material on the web? What is the difference between the electronic collection and just everything that is out there on the web, from government bodies? And, maybe most important for us, what is the role of depository libraries in providing access to the "collection", when in the ideal online world all of this information is freely and easily available to everyone, everywhere?[23]

In its report *Transforming Access to Government Through Information Technology*, the first finding of the Panel on Transforming Government was that:

> Major technological barriers prevent citizens from easily accessing government information resources that are vital to their well-being. Today government information is often unavailable, inadequate, out of date, and needlessly complicated. ... The government stores large amounts of important information. However, finding that information in the government's many databases is difficult, and correlating the

[23] Julia F. Wallace, "Why Government Information?" *DttP: Documents to the People*, Vol. 28, no. 1 (Spring 2000), page 18.

> meaning of findings from a number of inconsistently defined databases requires deep knowledge of the existence, contents, and management schemes of those databases. [24]

The Commission agrees with the Panel, and contends that a number of Executive, Legislative, and Judicial actions must be taken to enable what Chancellor Langenberg called the "federal public information system," or perhaps more technically the "*Federal Information Infrastructure*" concept to take its place in a meaningful way as a cornerstone in the emerging *National Information Infrastructure*, including:

1. Statutory reforms to strengthen the several existing laws that govern the way the federal government is organized for public information resources management, and a major new legislative initiative, the *Public Information Resources Reform Act of 2001*, providing for the creation of a *Public Information Resources Administration* with overall focal policy leadership and oversight responsibility for the availability of and accessibility to public sector information, electronic publishing of public information, and public information resources management; public information resources planning, management, and dissemination is elevated to the status of a major new government-wide mission.
2. Important reforms in the way key federal laws are written, especially the *Paperwork Reduction Act of 1995,* and corresponding Executive Branch guidance, notably *OMB Circular A-130*, to take into account the shift from ink-on-paper and other pre-electronic formats and mediums such as microforms and CD-ROM or DVD, to Internet formats and mediums, and to give "co-equal" priority to both controlling the paperwork burden on the American public through the *Information Collection Budget* mechanism, but also recommending an *Information Dissemination Budget* (IDB) concept as a way to emphasize the need for agencies to budget for more pro-actively disseminating their information resources to the public, not just passively providing access to those resources.
3. Major realignments in the roles and organizational location, and the consolidation and harmonization of the dispersed, fragmented, compartmentalized, unfocused missions and functions of key agencies with government-wide public information services and information management missions and functions, including the Government Printing Office (GPO), the National Technical Information Service (NTIS), as well as relocation of responsibility for specific programs such as the Government Information Locator Service (GILS).
4. Providing a statutory basis for, and institutionalizing three key public information management concepts: permanent public availability, preservation and authentication of government information; and harmonizing the former two concepts with a fourth concept already statutorily defined—permanent records retention.
5. "Fine tuning" adjustments in the rules, regulations, standards, guidelines, procedures, and systems relating to individual agency, interagency, and intergovernmental information interchange, sharing, and standards development, including technical standards such as the use of XML (eXtensible Markup Language) and PURLs (Persistent Uniform Resource Locator Standard).

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[24] U.S. Executive Office of the President, National Coordination Office for Information Technology Research and Development, *Transforming Access to Government Information Through Information Technology*, report of the President's Information Technology Advisory Committee, Panel on Transforming Government, Washington, DC: National Coordination Office for Information Technology Research and Development, August 31, 2000, page 4; available at http://www.itrd.gov/ac/transform13x.pdf.

THE PROBLEMS THAT NEED TO BE FIXED

Having highlighted the central issue in the preceding section, and discussed the approaches being taken being taken in both foreign countries and the U.S., the next question is: What are the problems that need to be fixed in order to realize the vision of transforming public sector information into a strategic national asset? Here is a succinct list. The Findings and Conclusions sections below explain *why* these are problems, and why they are relevant based on the Commission's research and investigations. The Recommendations section details *who* should solve the problems, *how* they should solve them, and in some cases even *where* and *when* they could be solved (meaning in what arenas such as executive or legislative or judicial, or some permutation thereof, using what kind of enabling instrumentality such as a law or executive order policy statement, and whether in the short, mid, or long range).

Problems that can be fixed by the federal government

1. Despite the fact that the United States Government is the world's biggest producer of information, the government does not treat its data, information, and knowledge holdings as a strategic national asset on a par with its human resources, its financial resources, its physical resources, and its natural resources.[25]
2. Access tools and resources in place for finding and obtaining public information are still a very long ways from enabling citizens to search for and retrieve public information in a simple, cost-effective, reliable, and convenient manner.
3. Some Federal agencies tend to equate "passive access" with "proactive dissemination," in the sense that once they post an electronic document to their websites, they tend to believe that they are under no, or very little further obligation to help people know about what information government is producing, and how to obtain the information they need; but passive access is essentially a one-way, producer-to-user approach, whereas the knowledge diffusion, proactive dissemination model that is needed substitutes an interactive, two-way approach to communicating. "[Each] agency's mission should be framed as broadly as possible. It should enable rather than discourage dissemination."[26]
4. Public information is not permanently publicly available, and there is no statutory provision making its permanent availability mandatory. Some public information that is posted to agency websites disappears within days or weeks.
5. Public information cannot be easily and reliably authenticated. Oftentimes viewers of electronic documents do not know whether they are looking at an official version of a document or not.
6. Public information is not always being preserved to safeguard against the obsolescence of the formats and/or mediums in which the products are created and stored.
7. Disabled, disadvantaged, and other special populations, notwithstanding recent commendable statutes such as Section 508 of the Rehabilitation Act, still do not have all the special tools they need to search for and retrieve public information in a way that compensates for their disabilities and special requirements.
8. The low level of computer and information literacy remains a formidable barrier that is exacerbating the Digital Divide. Substantial government investments and other initiatives are

[25] Recognition of public information as a strategic national asset does not imply exploitation of that asset to generate revenue for the government, like the sale of lumber or mineral rights on federal land. On the contrary, it must result in optimizing timely and permanent public access to the information for its owners, the people of the United States.

[26] J. Timothy Sprehe, op. cit., page 269.

needed to close that gap and supplement private sector training investments, so that citizens can exploit public information to the fullest extent.

9. The government does not recognize that certain expenses incurred by the central information service agencies such as GPO, NTIS, and NARA associated with preparing, verifying, and validating mission agency originated information products are inherently governmental functions and responsibilities, the financing of which should be through appropriated funds, not through the sale of public information, overhead or similar approaches.
10. The government does not recognize that the costs of disseminating government information to the public are a necessary and integral cost of the agency's doing business, and the expenses of such dissemination programs should be financed through the normal agency budget process, not through overhead accounts or the sale of public information.
11. The government has no budgetary technique for more clearly identifying and making visible individual agency and aggregate costs for their public information dissemination programs.
12. Federal agencies are confused and burdened by conflicting and inconsistent statutory provisions and definitions that attempt to distinguish between permanent official record materials and non-record materials such as library reference materials; the government information life cycle concept offers a promising avenue for alleviating this burden.
13. As important as they are, statutes such as the Freedom of Information Act and the Privacy Act are essentially adversarial laws that pit the rights of citizens to obtain government information against the rights of government not to disclose it. There is a missing statutory building block that would authorize and direct agencies to affirmatively disseminate their public information so as to help remove from the public the daunting burden of first needing to know whether the information they need even exists or not, if so, where it is located, how to obtain it, and so forth, and treating public information as a strategic national asset. Treating public information as a strategic national asset does not imply exploitation of that asset to generate revenue for the government, like the sale of lumber or mineral rights on federal land. On the contrary, it must result in optimizing timely and permanent public availability of the information for its owners, the people of the United States.
14. Policy leadership focus, oversight, and coordination of public information resources programs and functions are fragmented, dispersed, compartmentalized, and unfocused across agency lines, and needs to be focused in a single lead agency in the Executive branch, and in comparable single focal points within both the Legislative and Judicial branches.
15. The business model that existed in the 19th and 20th centuries whereby the Government Printing Office made available extra copies of its print runs of government documents directly, easily, and efficiently to federal depository libraries across the nation is no longer appropriate to the Internet Age and needs to be reformed. Although its mission is to provide timely dissemination and permanent public availability to virtually all public information resources, an outdated statute that lacks enforcement provisions and limited funding keep the FDLP from fulfilling its potential.
16. The business model that has been utilized by the National Technical Information Service (NTIS) for financing and making available government-financed R&D scientific and technical report literature is no longer appropriate to the Internet Age and needs to be reformed.
17. The public information sales programs of GPO and other agencies are based on pre-Internet Age technologies and economics and need to be reformed to take into account the capabilities (both limits and opportunities) of the Internet.
18. There is no standard language in agency level and program level enabling legislation which contains the agency's basic mission, and program goals and objectives statements, respectively, that authorizes and directs agencies to proactively disseminate their information to the public as an integral part of their mission.

19. Except for the major statistical agencies, the national libraries, and some central information service agencies, such as GPO and NTIS, there are few effective budgetary incentives that motivate mission agencies to affirmatively disseminate their information to the general public. Beyond a limited number of very explicit statutory authorizations for board public dissemination such as that for the Department of Agriculture,[27] most mission agency dissemination is focused on primary constituents of the agency's programs.
20. The hundreds of federal laws containing some provision or another for establishing a public information resource that are currently in effect are a virtual patchwork quilt of laws that overlap and duplicate one another, are inconsistent and contradictory, and are often not appropriate to the Internet Age.[28]
21. The provisions of the Paperwork Reduction Act, the Government Paperwork Elimination Act, the Federal Records Act, and other laws,[29] contain provisions related to public information dissemination that are not synchronized in terms of their purposes, the definitions of key terms such as "government information," agency public information dissemination responsibilities, and both executive and legislative oversight responsibilities. This is also true for government-wide policies such as OMB Circular A-130.
22. It has been assumed, incorrectly, that public needs for government information are entirely met by the fortuitous enactment of individual laws that contain quite specific public information resource provisions. However, many public needs for government information are not adequately met by *any* law, and no systematic effort has been made to identify these needs and determine how best to meet them.[30]
23. The traditional ways government classifies positions and duties in the various federal manpower and personnel systems it employs are not adequately reflecting the new skills and occupations required by the Internet Age. This makes it difficult to attract and retain a skilled federal workforce.
24. Opportunities for training, re-training, and professional development are not adequate to ensure the computer and information literacy needs of the federal workforce and to continually upgrade its skills.

Problems that can be fixed by the commercial (for-profit) private sector

1. The private sector has not sufficiently re-examined its role in the dissemination of the public information resources in the Internet Age. It needs to reform and update that role by establishing

[27] The Department of Agriculture is directed to "...diffuse among the people of the United States, useful information on subjects connected with Agriculture..." (7 *U.S.C.* 2201).

[28] Jane Bortnick Griffith, Harold C. Relyea, and Frances A. Buffalo, *Compilation of Statutes Authorizing Dissemination of Government Information to the Public*, Washington, DC: Library of Congress, Congressional Research Service (March 29, 1996) includes an index of statutes relating to the dissemination of public information. More recent laws on dissemination of public information are identified in Appendix 33 in Volume 3 of this report: Index to a Compilation of Recent Federal Statutes Pertaining to Public Information Dissemination, and in Appendix 35 in Volume 4: A Compilation of Recent Federal Statutes Pertaining to Public Information Dissemination, which includes excerpts of relevant provisions. Appendices 33 and 35 are also available at http://www.nclis.gov/govt/assess/assess.appen33.pdf and http://www.nclis.gov/govt/assess/assess.appen35.pdf, respectively.

[29] In its "Analysis of Key Sections" of OMB Circular A-130 [op cit.], OMB states: "...agencies' information dissemination products are to be, in the words of 44 *U.S.C.* 1108, 'necessary in the transaction of the public business required by law of the agency.' ... The point is that agencies should determine systematically the need for each information dissemination product." This is stretching the printing and binding laws to establish a basis for agency public information dissemination authority.

[30] This issue is addressed in Finding 3.B, Conclusion 4, and Recommendation 19.

new and strengthened collaborative partnerships with government, new kinds of value-added services, and new opportunities for helping government more fully exploit its strategic information resources for the benefit of all citizens.

Problems that can be fixed by lower levels of government

1. State, local, and tribal levels of governments, like the federal government, do not regard their data, information and knowledge holdings as strategic national assets. Many of the findings, conclusions, and recommendations contained within this report also apply to these other levels of government and may be adapted and customized by those governments to reform their own information dissemination laws, policies and practices.
2. State, local, and tribal levels of government do not work as closely and effectively as they might with the federal level for the purpose of eliminating or at least minimizing the barriers to more effective information interchange between government levels, including the development of multi-level, multi-purpose public information products to replace disparate and diverse single-level, single-purpose products that make it difficult for the public to learn and utilize because of differences in terminology, access procedures, and so on; and
3. State, local and tribal levels of government are not working as effectively as they could with the federal level for the purpose of developing uniform and common information interchange standards, such as ANSI/NISO Standard Z-39.50, and guidelines so as to minimize the detrimental and costly consequences of employing incompatible standards, dealing with interconnectivity and interoperability barriers, and confronting unnecessary search and retrieval differences.

Problems that can be fixed by the not-for-profit sector, including professional associations, and academic, research, and related institutions

1. Academic and research institutions have not yet fully and effectively addressed the mammoth computer and information literacy education and training challenges that face the nation; library and information science schools and programs, and computer science and MIS schools and programs, have key roles in this regard.
2. Academic and research institutions have not mounted fully effective research programs to identify the information needs of all sectors of the society, especially the needs of the disabled, the disadvantaged and other special populations.
3. Both public and private academic and research institutions are not fully and effectively collaborating to bring the digital library, electronic publishing, and related concepts into full fruition; and
4. Library and information professional associations, as well as computer and information management societies, are not sufficiently aggressive in mounting education and training, career development, and professional development programs for their memberships to help close the wide gap between the needs for Internet Age skills and existing capabilities.
5. Professional associations and societies with academic memberships are not sufficiently aggressive in their efforts to redesign and reform curricula so that the nation's schools begin to turn out the modern information professional with the appropriate competencies and skills.

A WORKING DEFINITION OF PUBLIC INFORMATION

Public Information

This study begins with a definition of "Public Sector Information." Because there is no agreed-upon uniform statutory definition of the term "public sector information" or simply "public information," for the purposes of this study the Commission chooses to utilize the definition set forth in the preamble to the *NCLIS Principles of Public Information*[31] to establish its working definition. The preamble reads:

> We define public information as information created, compiled and/or maintained by the federal government. We assert that public information is information owned by the people, held in trust by their government, and should be available to the people except where restricted by law.

In short, the Commission strongly believes the public has a fundamental right to the information produced by the government, conditioned only by the legal exemptions stipulated in various statutes such as the Freedom of Information Act, the Privacy Act, and national security legislation.[32]

> [P]ublic information [is] information created, compiled and/or maintained by the federal government. [P]ublic information is information owned by the people, held in trust by their government, and should be available to the people except where restricted by law.
>
> *Principles of Public Information*
> *U.S. National Commission on Libraries and Information Science*

Nevertheless, several other existing, and important, statutory definitions of public information need to be recognized because the absence of a standard definition in the United States Code has caused considerable consternation among stakeholders who have tried to reform the government's public information dissemination machinery in the past.

For example, Chapter 19 of Title 44 *U.S.C.*, dealing with the Federal Depository Library Program, states that "[g]overnment publication as used in this chapter, means informational matter which is published as an individual document at government expense, or as required by law," and that "[g]overnment publications, except those determined by their issuing components to be required for official use only or for strictly administrative or operational purposes which have no public interest or educational value and publications classified for reasons of national security shall be made available … for public information."

Chapter 34 of Title 44 *U.S.C.*—the Paperwork Reduction Act—also supplies a very broad definition, stating that "the term 'public information' means any information, regardless of form or format, that an agency discloses, disseminates, or makes available to the public."

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[31] The complete statement of the NCLIS Principles of Public Information is available as Appendix 10 and also at http://www.nclis.gov/info/pripubin.html and http://www.nclis.gov/govt/assess/assess.appen10.pdf.

[32] Jane Bortnick Griffith, op. cit. More recent laws restricting access are identified in Appendix 33 in Volume 3 of this report: Index to a Compilation of Recent Federal Statutes Pertaining to Public Information Dissemination and in Appendix 35 in Volume 4: A Compilation of Recent Federal Statutes Pertaining to Public Information Dissemination. Appendices 33 and 35 are also available at http://www.nclis.gov/govt/assess/assess.appen33.pdf and http://www.nclis.gov/govt/assess/assess.appen35.pdf, respectively.

In terms of existing federal government regulations, OMB Circular A-130, which governs Executive Branch information resources management practices in general, and public information dissemination practices in particular, provides the following definition of government information:

a. The term "government information" means information created, collected, processed, disseminated, or disposed of by or for the Federal Government.

b. The term "government publication" means information which is published as an individual document at government expense, or as required by law. (44 *U.S.C.* 1901)

c. The term "information" means any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms.

d. The term "information dissemination product" means any book, paper, map, machine-readable material, audiovisual production, or other documentary material, regardless of physical form or characteristic, disseminated by an agency to the public.[33]

It is apparent that there is substantial difference between "information dissemination product" as defined in the A-130 definition and the concept that all government information not otherwise exempted by statute should be available to, and accessible by, the public, as enunciated in this Commission's *Principles of Public Information*[34] and by other sections of Title 44 of the U.S. Code that pertain to public information.

Finally, records of government accessible under the FOIA, E-FOIA, the Administrative Procedure Act and Government in the Sunshine Act also affect further dissemination and access, since this information can be re-disseminated without restriction once it is made available. Federal government executive branch information subject to disclosure under FOIA is defined as follows:

> Each agency, in accordance with published rules, shall make available for public inspection and copying:
> (A) final opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of cases;
> (B) those statements of policy and interpretations which have been adopted by the agency and are not published in the Federal Register;
> (C) administrative staff manuals and instructions to staff that affect a member of the public;
> (D) copies of all records, regardless of form or format, which have been released to any person under paragraph (3) and which, because of the nature of their subject matter, the agency determines have become or are likely to become the subject of subsequent requests for substantially the same records; and
> (E) a general index of the records referred to under subparagraph (D).

Nevertheless, FOIA recognizes that agencies can withhold certain types of information in their possession. As explained in the House Report accompanying the Electronic Freedom of Information Amendments of 1996:

> The nine exemption categories are:

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[33] U.S. Office of Management and Budget, "Management of Federal Information Resources," OMB Circular A-130, Washington, DC: Office of Management and Budget, November 30, 2000; http://www.whitehouse.gov/omb/circulars/a130/a130trans4.html.

[34] The complete statement of the NCLIS Principles of Public Information is available as Appendix 10 and also at http://www.nclis.gov/info/pripubin.html and http://www.nclis.gov/govt/assess/assess.appen10.pdf.

- Information that is classified for national defense or foreign policy purposes;
- Information that relates solely to an agency's internal personnel rules and practices;
- Information that has been clearly exempted under other laws;
- Confidential business information, such as trade secrets;
- Internal government deliberative communications about a decision before an announcement;
- Information about an individual that, if disclosed, would cause a clearly unwarranted invasion of personal privacy;
- Law enforcement records, particularly of ongoing investigations;
- Information concerning bank supervision; and
- Geological and geophysical information, such as maps.[35]

The Administrative Procedure Act (5 *U.S.C.* 552) is the general statute that describes agency responsibilities for "making available to the public information." Section 552 is entitled "Public information, agency rules, opinions, orders, records, and proceedings." Unfortunately, the provisions of this very general statute are primarily oriented to the generic disclosure in the *Federal Register* of various kinds of agency records and documents, such as organizational charts, formal opinions, rules and regulations, statements of policy, and procedural manuals that affect the public in some respect. There is a provision requiring agencies to provide the public with indexes to their information but, as in the case of the Paperwork Reduction Act, which requires agencies to provide indexes of their "information dissemination products," this requirement is rarely enforced. [36]

In short, there are inconsistencies in these various definitions of public information that need to be corrected, and this study makes specific recommendations as to how those inconsistencies may be eliminated.

Permanent Public Availability

As public information has migrated from paper publications to electronic information, the concern that such information will no longer be permanently publicly available has become a critical consideration. As a result, the term "permanent public availability" has become a very important concept that also must be defined in statute. In practice the terms availability and accessibility have been used interchangeably, although there is a technical distinction between the two. Availability refers to the basic entitlement of the public to government information not otherwise restricted from disclosure by statute. Accessibility refers to how the public searches for, locates and retrieves the information. There is a substantial amount of agency-initiated information to which the public is entitled under the above definition of public information resources, which is not disseminated to the public. However, for the sake of simplicity, and to avoid confusion, the term "permanent public availability" as defined and used in this report means both availability and accessibility.

[35] U.S. Congress, House of Representatives, Committee on Government Reform and Oversight, *Electronic Freedom of Information Amendments of 1996*, House Report 104-795, Washington, DC: U.S. Government Printing Office, September 17, 1996, page 6.

[36] 5 *U.S.C.* 552(a)(1), (a)(2), and (a)(3).

The Commission defines permanent public availability as "the making available to, and accessible by, the public the maximum amount of public information resources on an indefinite, continuing basis, free of charge."[37] This is further qualified by the statement that "this public availability is distinct from the deposit of an official copy for "Permanent Records Retention" by the National Archives and includes information resources that may not come under the Federal Records Act definitions of a federal record because they are acquired, organized and preserved solely for convenience of public reference; furthermore, public availability is meant to convey immediate access through the World Wide Web (or its successor technology) or availability through collections, both digital and non-digital, held by a widely distributed national network of libraries such as the federal depository libraries."

It should also be noted that there is some government information that is ephemeral and simply should not be permanent, but should have a scheduled deletion time. Therefore "permanent" means for the specified useful life of the information, not necessarily in perpetuity. For example, the Commission has posted several drafts of this report for public review and comment; each has been withdrawn as a later draft has been issued, and this final report supersedes and replaces the latest draft. There is no reason to maintain in perpetuity every iteration of report as it evolves, but there is every reason to maintain the official position of the Commission as it is issued in the final report. In contrast, a new edition of a book or a report may supersede the old edition, but the old edition may still have value for research or other purposes.[38] Obviously, there must be clear guidance and regulations to assist agencies in making those distinctions, as there are for identifying permanent records, and the current and future needs of the public must be paramount in making the determinations.

THE GOVERNMENT INFORMATION LIFE CYCLE MANAGEMENT PROCESS

OMB Circular A-130 provides the following definitions that are relevant to this discussion:

1. The term "information life cycle" means the stages through which information passes, typically characterized as creation or collection, processing, dissemination, use, storage, and disposition.
2. The term "information management" means the planning, budgeting, manipulating, and controlling of information throughout its life cycle.
3. The term "information resources" includes both government information and information technology.[39]

The functions of identifying, acquiring, organizing, announcing, accessing, disseminating, preserving, and archiving information are basic government information life cycle management functions. Concomitant with the issue of access to information are the issues of optimizing its usefulness, ensuring its authenticity and integrity, and guaranteeing its retention and archiving.[40] At present there

[37] This definition is from Appendix 11 in Volume 2 of this report: The Public Information Resources Reform Act of 2001. Appendix 11 is also available at http://www.nclis.gov/govt/assess/assess.appen11.pdf.

[38] Finding 1.L includes an example of a series of Social Security Administration publications that were still in active use when they were removed from its web page. This title was not distributed in any tangible form through the FDLP since it was available electronically. As a result the versions that were removed from the SSA website are no longer available for public access in any form.

[39] U.S. Office of Management and Budget, "Management of Federal Information Resources," OMB Circular A-130, Washington, DC: Office of Management and Budget, November 30, 2000; http://www.whitehouse.gov/omb/circulars/a130/a130trans4.html.

[40] The term archiving as it is used here refers to preserving the information for research or reference use, not preservation of official records as it is defined the Federal Records Act. The descriptions of many of these information management

are no automated tools that perform these functions in a completely uniform, fully reliable, consistent manner. While the Internet, and its tools like the World Wide Web, search engines and categorization aides like those found in Yahoo, have brought new opportunities—and challenges—the basic information management functions still require at least some human physical and intellectual efforts.

Identifying. In the context of information life cycle management process, everything begins with identification, that is, knowing that some specific information exists that needs to be subjected to the rigorous disciplines of the information life cycle management process. Yet this step is often taken for granted (i.e., information creators assume someone else has or will take care of the problem) and therefore overlooked; but responsibility for complete and correct identification with appropriate metadata tools[41] is essential to the entire information management process and, in the first instance, is the responsibility of the information creator or originator. If the information life cycle is viewed holistically, then when individuals create electronic documents in an agency, or as agents funded by an agency, they can immediately place those information products in an e-print/preprint/Open Archives Initiative repository.

Acquiring. Once information is identified, that is, it is known to exist, it must be acquired in order for the other steps to take place. This acquisition may take the form of a "push" mode, as in the instance of students in an academic environment submitting a thesis or dissertation to an established digital library, or a "pull" mode, as in reading information on a website and noting its name, or it may mean actually obtaining a copy in some tangible form, such as paper or microfiche, or downloading an electronic file. Without acquiring the information, there is no information to organize, announce, access, disseminate or preserve. Like identification, this step is often taken for granted, and therefore overlooked, but it is essential to the entire information management process. In order to assign a classification number, prepare a cataloging record or a bibliographic citation, assign indexing terms or write an abstract, the information that is to be described must first be acquired.

Organizing. Information has only potential power. The power of information exists only when it can be put into the mind of a person (or a machine) so that it can be used. It is more of an Information management issue than an information technology issue. Given the rapidly expanding amount of information that is on the Internet, finding information online is as difficult as finding a book in the Library of Congress without a catalog.

Organizing information so those requiring it can find it and utilize it has been a work in progress for centuries. With the beginning of the University movement in the 13th century librarians began to organize information in ways meaningful to a diverse group of individuals, but most of their work was directed to their local community and also suffered in the conflicts between religion, monarchies, and science. In the 18th century the value of knowledge diffusion again became important to those in power. Since then effective standards for bibliographic information have progressively been adopted and improved. Cataloging standards, abstracting and indexing elements, terminology and thesauri, records management, and archiving have been adopted. There is a difference between categorization of information and indexing of information. Information is often categorized into general groups such as travel, medical, or chemistry. These may then be broken down into subcategories (e.g., travel in the U.S., in Europe, in Africa). An example of categorization is a table of contents. It leads a reader to a chapter or chapters that may contain the desired information. Indexing is more specific. Indexing permits specific bits of information to be found. The index of a book indexes specific words or phases

functions are derived from the report of Commission Panel Two available as Appendix 24 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen24.pdf.

[41] The term metadata is used many places in this report. It means, simply, information about information, or data about data, e.g., an abstract and related indexing that describes a document, a cataloging record, or a bibliographic citation.

to the pages where they may be located. Indexing may also use controlled vocabularies to aid in the finding of information. Helicopters and rotary winged vehicles are the same thing. Controlled vocabularies allow information searching to be performed using a specific controlled word or phrase that brings together several words or phrases with the same or similar meaning.

Knowledge is frequently organized along traditional disciplinary lines, as are subject matter indexes, abstracts, and key words. Yet this organizational scheme often frustrates potential users, and makes multidisciplinary utilization of knowledge difficult for users and intermediaries alike. A distinguished information scientist, F. Wilfred Lancaster, has pointed out that although technological advances have undoubtedly increased physical access to sources of information, it is doubtful that intellectual access has increased significantly, if at all. He indicates that although advances in computer and information technology may provide greater access to available knowledge, they do not provide an effective means of filtering it in terms of quality or problem relevance. Contemporary storage and retrieval systems may actually have exacerbated problems of the existing structure, organization, and management of knowledge, and may now be contributing to the very problems they were designed to solve![42]

Digitizing. Work to develop similar methods and techniques for digital information is in the seminal stage. Digital libraries are perhaps an outstanding example of progress in this area. Communities that have "grown up" with digital data in addition to analog data (textual, multimedia and other forms of information) are more advanced than those that have not. The definition of multimedia has evolved to encompass rather startling advances in functionality such that it is no longer possible to simply offer a definition of integrated pictures, sound, data, and video.

The international community versed in Geographic Information Systems has developed only in the past few decades. This community gained an early and abiding interest in metadata, so that the sharing of metadata among geospatial projects and software vendors is now well standardized. The digital *data* communities, while perhaps more advanced in managing digital content than the digital *text* and *multimedia* communities, still share a major challenge—information overload. This information overload is counter-productive and leads to less effectiveness and efficiency despite the power and capabilities of the technology.

Announcing. Regardless of how well organized content is, if those who may need it don't know of its existence it isn't information, it's just a potential resource. The need to provide tools for finding organized relevant information from multiple sources led to a significant sector of the information industry called secondary publishing. Organizations, both public and private, in this sector create reference tools such as bibliographic publications with citations from journals, books, monographs, conference proceedings, databases or other sources containing full text or numeric data. These organizations normally support specific communities of interest by supplying a comprehensive collection of references of interest to the target community. Similar roles are played by government agencies, such as the National Library of Medicine with its *Index Medicus* and MEDLINE database.

Accessing. While it is important to know about the existence of needed content, it is normally more important to obtain the content itself. This, perhaps, is one of the biggest problems facing users and information managers alike. For example, the Defense Technical Information Center (DTIC) has online citations to the nearly two million technical reports in its collection. However, only full text documents brought into the collection since 1994 and those converted based on demand are in digital form. The cost to digitize the full collection is prohibitive. Thus, DTIC still annually supplies tens of

[42] F. W. Lancaster, "Has Technology Failed Us?" *Information Technology and Library Management*, Festschrift in Honour of Margaret Bechman, 13th International Essen Symposium, 22-25 October 1989, A. H. Helal and J. W. Weiss, editors, Essen, Germany: Essen University Library (1991).

thousands of printed documents to its customers. It is interesting to note that, even where documents are in electronic form, a significant demand still exists for them to be supplied as printed documents. The average size of a document in the DTIC collection is 110 pages. It takes no research to know that most people prefer NOT to read a large document online, nor do many people have the capability to download and print large documents locally.

Another consideration in discussing access is how digital documents are stored and delivered. The way that users download and import documents from the web varies depending on the browser being used and the applications on the user(s) system. For example, the Adobe Acrobat Portable Document Format (PDF) is a file type created to allow formatted documents to be widely distributed regardless of whether specific fonts or a postscript printer are available to the viewer's system. PDF files can embed specialized fonts and images within the document as they are distributed and can print on a wide range of printers. This ensures the document remains exactly as formatted by its authors.

Adobe Systems created the PDF format. This company freely distributes its Adobe Acrobat Reader software to anyone who wishes to view PDF files. Some PDF files are merely *images* of the documents and thus support no full text searching. To date, the PDF files created by NTIS are all scanned images files. Other PDF files are created from word processing or typesetting programs and can be searched internally, and with the appropriate software, externally. Adobe Systems is working to improve access to the searchable PDF files by external search engines. There are, of course, other approaches that will allow full-text searching of an electronic document. These, however, may be considerably more expensive to produce, can more easily be altered, and do not ensure the document remains exactly as formatted (which may or may not be important, depending on the document itself and the intent of the user).

It is also important to distinguish between *physica*l access and *intellectual* access. The former term refers to having the physical means and tools to obtain information, such as a computer, modem, necessary software, and so forth. The latter term refers to the requisite degree of mental ability and information literacy necessary to know how to obtain the information efficiently, effectively, and economically. That is to say, the process, the procedures, the systems, and the proper selection and mix of techniques, tools, and approaches to employ. The term “digital divide” is virtually meaningless if it is used to refer only to physical access barriers.

Disseminating. OMB Circular A-130 states that the term *dissemination* means the government-initiated distribution of information to the public. Distribution limited to government employees or agency contractors or grantees, intra- or interagency use or sharing of government information, and responses to requests for agency records under the Freedom of Information Act (5 *U.S.C.* 552) or Privacy Act is not considered dissemination within the meaning of this Circular. As currently defined in the circular, *access,* on the other hand, is an "on-demand" or "pull" function while *dissemination* is a "push" function, normally a subscription type of service based on individual customer needs. Both, however, involve sending information to others.

Access does not equal dissemination, and physical access is not the same thing as intellectual access. The Commission is fearful that at least some federal agencies tend to equate the two sets of terms when they post public information on their websites, thereby providing "physical access," and then claiming that both the "dissemination" requirement and the intellectual access requirement have been fulfilled, when in fact neither has been.

The circular points out that access is a passive function for federal agencies and differs from active dissemination. Access, according to the Circular, "is the government's responsibility," as, for example, when the public comes to the government and asks for information the government has, and to which the public is entitled. Dissemination, however, is when, "the government provides the public with information *without the public having to come and ask for it*. [emphasis added]"[43] These definitions could apply just as well to government organizations at any level of government.

In any event, Access does not equal dissemination. The Commission is fearful that at least some federal agencies tend to equate the two sets of terms when they post public information on their websites, thereby providing "physical access," and then claiming that since both the "dissemination" requirement and the intellectual access requirement have been fulfilled, when in fact neither has been. In short, these agencies make limited or no effort to call attention to the information by reaching out to the special populations who have a need to know not only of its existence and availability, but how to obtain it efficiently, effectively, and economically.

Preserving. Knowledge advances by building upon what has gone before. Sir Isaac Newton attributed his discoveries to the work done by his predecessors, stating, "If I have seen farther than others, it is because I was standing on the shoulders of giants."[44] Indeed, on a grander scale, the period before recorded (and somewhat preserved) information artifacts is called Prehistoric because there are no records of the accomplishments of that time. Information is critical to scientists and engineers, to historians, to decision makers, to students, in fact nearly to everyone. Accordingly, it must be preserved.

The advent of the digital world, however, is bringing new challenges. In the past much of the challenge of preservation was left to specialist such as records managers and archivists to address long-term needs and clerical personnel to handle the short-term needs of the organization and implement the records management policies of the specialists. In the digital world quite often an original document may never get into a preservation system. It may be created to serve the purpose of the author(s), stored and transmitted by a system managed by an information technologist and completely bypass the critical preservation function. Information that may be of critical importance to others may be irretrievably lost, as well as the record of its existence. Long-term retention needs for digital materials with informational, historical, research, evidential, legal, artifactual, or other value must also be taken into account records and archival specialists as well as librarians must be consulted as part of the group of specialists needed to design systems that support both immediate short-term needs and long-term retention. These systems must also provide for the preservation of copies of vital records in the event of the catastrophic failure of a computer system or facility.

It is important to recognize, however, that preservation does not necessarily ensure permanent public availability, while availability, on the other hand, does not necessarily encompass preservation. So discussions about archival policies and practices in this electronic era must include the concept of permanent public availability of information. Furthermore, preservation of digital information involves unknown, and as yet unknowable, costs to migrate the information to different formats and media to prevent technological obsolescence. There is real concern that information will be lost as the equipment and software used to create and use digital information becomes obsolete. Depository librarians and others feel that in a rapidly changing electronic environment, they cannot be sure that the currently available electronic files will be able to be opened and used in the future or that there will

[43] There are, in fact, other types of dissemination not recognized by the definition in the circular. For example, some government agencies allow users to establish a profile, thus "asking" for specific categories of information that are then sent out to them when information matching the profile becomes available. See Finding 4.C for additional discussion of this topic.

[44] Sir Isaac Newton in a letter to Hooke, 5 Feb. 1676.

be an easy, cost-effective means to migrate this generation of electronic products to future formats and media.

However, preservation considerations involve more than just future formats and mediums; preservation must also involve a careful crafting of preservation strategies, a program for preservation, pilot projects to test new approaches, and monitoring of results. Simply replacing obsolescing technologies with newer ones, and then "walking away" from the challenge, will not be adequate.

THE FEDERAL GOVERNMENT'S LEADERSHIP

The federal government's leadership in the area of public information availability and accessibility has been mixed. Let us first look at the positive side of the ledger.

The President, the Congress, individual federal agencies, and the Judiciary are all to be commended for the extraordinary leadership which they have demonstrated, especially in the last four or five years, to exploit the full advantages of the Internet and the World Wide Web, and the incredible power and capabilities underlying information and telecommunications technologies, to maximize the availability of electronic government information and electronic government services to the American people.

Virtually every week in the popular media the citizen is alerted to:

- A new electronic service to simplify and speed up doing business with the government, such as seeking grants, loans, permits, licenses, and many other benefits and entitlements, and to consolidate and integrate related services, such as systems enabling aging veterans to apply for pensions, medical benefits, and other entitlements in a single, multi-purpose application.
- A new website, database, online clearinghouse, or other electronic public information product or service to alert citizens as to what new and existing benefits and entitlements they are eligible for, or help them seek employment, protect their family's health and welfare, ensure safety and security measures at home, in schools, and in the workplace, view a weather forecast to know when to plant crops, and so on.
- A new law or amendment to an existing statute that strengthens the public's ability to identify, search for, locate, retrieve, and utilize the government's vast information holdings.

However, there is a considerable way yet to go. Executive, Legislative and Judicial leadership continues to be needed in harnessing modern information and telecommunications technologies to help job seekers, senior citizens, minorities, small and medium-sized businesses, lower levels of governments, and public and private institutions such as schools and hospitals, to cope with their many challenges, including:

- Helping the private citizen to meet his or her myriad personal, family, and community challenges by learning about hundreds of government assistance programs, and how to find and apply for the benefits and services they provide, but ideally by first improving their public information literacy skills using libraries and information professionals.
- Assisting small and medium-sized enterprises by providing massive amounts of periodically updated scientific, statistical, technical, and other data and information to help find or expand their existing domestic and global markets, to diversify their product lines and increase sales volume, to apply for patents and copyrights and trademarks, and to help government itself perform its functions more efficiently through privatization where appropriate, through value-added service contributions, and through Information Age partnership arrangements; the digital library could be a very helpful tool in this regard.

- Helping lower levels of government, especially individual communities and Native American tribes, carry out their programs and services more efficiently and effectively, and to minimize unnecessary overlap and duplication between the hundreds of programs and services administered by all levels of government—federal, state, local, and tribal.
- Assisting students to finance their education, and helping schools, colleges and universities to modernize their curricula, and assist their faculties and staff by employing distant learning (remote education) and other online educational technologies in consort with traditional modes of teaching and learning.
- Assisting senior citizens, the disabled, the disadvantaged, minorities and other special populations, to meet their medical, economic, legal, and social service information needs, including lifelong learning opportunities.
- Assisting hospitals, nursing homes, community centers, and other healthcare and community social and economic institutions to meet the needs of their clientele for medical, economic, legal, and social service information, including lifelong learning opportunities.
- Helping historians, archivists, librarians, journalists, researchers, genealogists, as well as the general population, find and retrieve official government records and government publications and documents, preserve them once created, index and organize them, correlate them across federal agency and discipline lines, and make them more accessible.
- Assisting legislators, governors, mayors, judges, school district officials, and other public servants to fulfill their governance duties and responsibilities more efficiently, to raise their consciousness level more effectively as to issues and concerns of which they must be aware, and to allow them to interact with their constituents more efficiently through such measures as websites, listservs, electronic bulletin boards, and e-mail messaging.

Information Resources Map

The Commission "mapped" a small sample of some key public information products by correlating nine key attributes in a single matrix-like framework so that policymakers can more readily understand, at a glance, the inter-relationships between: the statutory authority for the resource; who the beneficiary-users are; what the sources of the data or information are; the authors and the nature of value-added contributions; how the resource is distributed or made available; how the resource is financed; and whether a charge is levied for obtaining it or not. The Federal Library and Information Center Committee (FLICC), and GODORT, the Government Documents Roundtable of the American Library Association (ALA) each prepared several "Public Information Resources Maps".[45] Figure 2 provides a representative information resources map for four Department of Labor information products.

Landmark Legislative Initiatives on Government Information

The following selected list of landmark legislative initiatives on government information illustrates how all three branches of government have moved to put in place strengthened electronic government information services, especially in areas where the government interacts with the public:[46]

[45] The Public Information Resources Maps prepared by FLICC and GODORT are available in available as Appendix 29 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen29.pdf. Individual maps can also be accessed from http://www.nclis.gov/govt/assess/assess.html.

[46] Other examples are available in Appendix 32 in Volume 3 of this report: A Bibliography of National Information Policies, compiled by Toni Carbo, Dean, and her associates at the School of Information Sciences, University of Pittsburgh.

Agency *Owner vs. Custodian*	**Department of Labor, Bureau of Labor Statistics**	**Department of Labor, Bureau of Labor Statistics**	**Department of Labor, Employment and Training Administration**	**Department of Labor, Employment Standards Administration**
Resource Name *Type(s), Format(s), Mediums*	Monthly Labor Review	Occupational Outlook Handbook	Dictionary of Occupational Titles; (O*NET is the electronic version)	General Wage Determination Guidelines
Authority *Laws, Agency Regulations, OMB Policies*	29 USC 2 et seq.	29 USC 2 et seq.	29 USC; 20 CFR 601 et seq. (general ETA provisions)	40 USC 276; 29 CFR Parts 1,4 and 5
Beneficiaries *(Users), Internal vs. External, Public vs. Private, Foreign*	Wide distribution to parties with an interest in labor subject area	Wide distribution to parties with an interest in labor subject area	Wide distribution to parties with an interest in labor subject area	Government agencies & government contractors
Sources of Data *Content*	Articles received from solicitation in front cover and BLS editorial staff	Survey results form a variety of professional societies, unions, industrial organizations and government agencies	Research and verification by 40 analysts	Survey results from statutory mandate: all Federal government construction contracts and most contracts for federally assisted construction over $2000.
Value-Added Contributions *Analysts, Brokers, Librarians, Statisticians, Other Specialists*	Statistical and economic analysis provided by contributors including BLS staff	Research and analysis of reported date by BLS staff including occupational analysts	Research and verification by many analysts as in the Forward	Follows Davis Bacon Construction Wage Determinations Manual of Operations for collection of data; regional offices analyzes and tabulates wage and fringe benefit data, and determines the adequacy of data provided, and formalizes the survey results.
Distributors In-house vs. Contract, Other Agencies	BLS in cooperation with Superintendent of Documents, GPO	BLS in cooperation with Superintendent of Documents, GPO	DOL/ETA	NTIS via web or CD subscription
Financing Appropriations, Revolving Fund, User Fee	User fee for production & distribution; research costs covered by DOL appropriations	User fee for production & distribution; research costs covered by DOL appropriations	User fee for production of 1991 edition; research costs covered by DOL appropriations	User fee
Fee/Free Terms and Conditions, Amount	Annual subscription: $31.00 domestic; $38.75 foreign; free through Federal Depository Libraries	BLS Bulletin # 2520: softbound $49.00; hardbound $51.00; free through Federal Depository Libraries	Available without charge on the Internet: http://online.onetcenter.org/	CD-ROM: $2,000 annual subscription inside the US; $3,000 outside the US; Internet: $600 annually to search from a single station

Figure 2: Information Resources Map for Four Department of Labor Information Products

- *A Citizens Guide on Using the Freedom of Information Act and the Privacy Act of 1974 to Request Government Records: First Report*, U.S. House of Representatives, Committee on Government Reform and Oversight, House Report 105-37, March 20, 1997.
- The Electronic Freedom of Information Act Amendments (E-FOIA), Public Law 104-231, October 2, 1996, which makes clear that government electronic material (e.g., e-mail messages) must also be considered an official agency record within the meaning of the Federal Records Act, and directing agencies to establish online reading rooms, and make agency information available in the medium of their choice.
- The Children's Online Privacy Protection Act (COPPA) of 1998, Public Law 105-277, October 21, 1998, which requires federal agencies to obtain verifiable parental consent before collecting personal information from children.
- The Government Paperwork Elimination Act (GPEA), also in Public Law 105-277, October 21, 1998, which sets deadlines for agencies to transfer their paper-based transaction systems to electronic-based systems, including most transactions that take place between the government and the public, including filing tax returns, applying for benefits and other entitlements, and so on; sets 2003 as target date for completion of medium transference for most transactions.
- The Information Technology Management Reform Act (Clinger-Cohen Act), Public Law 104-106, February 10, 1996, which expands and clarifies the CIO role in planning, managing and utilizing agency information technology resources.
- Government Performance and Results Act (GPRA), Public Law 103-62, August 3, 1993, which holds agencies more directly accountable for achieving positive results by using observable and measurable performance indicators, and other means to verify and validate agency performance by comparing actual results achieved with expected and projected results.
- The Paperwork Reduction Act Amendments of 1995, Public Law 104-12, May 22, 1995, and Revised OMB Circular A-130, *Management of Federal Information Resources*, which ties agency information technology and information resources more directly to agency missions and specifically addresses agency public information access and dissemination requirements in that context; and strengthens the role of the Government Information Locator Service (GILS).
- The Rehabilitation Act, Section 508, Public Law 103-62, August 7, 1998, which requires that federal agency electronic and information technology be accessible to persons with disabilities, including members of the public and federal employees.
- Technological, Scientific, and Engineering Information Act, Public Law 81-776, September 9, 1950, the National Technical Information Act, Public Law 100-519, October 24, 1988, and the American Technology Preeminence Act, Public Law 102-245, February 14, 1992, which together direct the Secretary of Commerce to establish and maintain a clearinghouse for the collection and dissemination of scientific, technical, and engineering information.
- GPO Electronic Information Access Enhancement Act, Public Law 103-40, June 8, 1993, which requires the Superintendent of Documents, through the Government Printing Office, to provide online electronic access to the *Federal Register*, the *Congressional Record*, and other appropriate publications. The GPO Access portal launched in June 1994 is established pursuant to this statute.
- Executive Order 12958, *Classified National Security Information,* 1995, which directs the declassification of all classified information 25 years and older within five years of the Order's promulgation, except where otherwise explicitly exempted by statute.
- Memorandum for Chief Information Officers and Federal WebMasters: *Top Privacy Principles for Federal Websites*, issued by GSA, Federal WebMasters Forum, 1998, and which directs agencies

to place high priority on protecting the public's privacy, including notifying the public whenever data is collected on the Internet.

- President's Memorandum on *Privacy and Personal Information in Personal Records*, May 14, 1998, and M-99-05, instructions on complying with the Memorandum, January 7, 1999, which directs agencies to review current information practices and ensure they are being conducted in accordance with privacy law and policy.
- Executive Order 13011, *Federal Information Technology,* 1996, which ties together the respective policies of the Information Technology Management Reform Act, the Paperwork Reduction Act, and the Government Performance and Results Act, and formalizes OMB oversight authority of information technology.
- *Memorandum on Use of Information Technology to Improve Our Society*, and *Memorandum on Electronic Government*, Presidential Memoranda for the Heads of Executive Departments and Agencies, Dec. 17, 1999, designed to strengthen public access to federal government information and services by directing agencies to put more information online that is identified and organized in a way that makes it easier for the public to find the information it seeks.
- OMB Memorandum 98-05, *Guidance on the Government Information Locator Service,* 1998, which continues agency responsibilities with respect to the creation and use of GILS records notwithstanding the expiration of OMB Bulletin 95-01, *Establishment of Government Information Locator Service*, which directed the original establishment of GILS pursuant to the Paperwork Reduction Act and OMB Circular A-130.
- OMB survey of agency plans for e-Gov; on September 19, 2000, Sally Katzen, Deputy Director for Management of OMB sent a letter to Senators Thompson and Lieberman recapping steps Executive Branch agencies have taken to move smoothly toward the e-Gov environment contemplated by the Congress, and the Senate's Committee on Governmental Reform specifically.
- *On Becoming a Researcher in the Electronic Age*, a forthcoming National Research Council booklet that will highlight many of the challenges outlined in the Commission’s report with the aim of increasing the awareness of these issues among scholars.

THE HIDDEN COST OF "ELECTRONWORK"

There is, however, another side of the ledger. There are many areas where the absence of dynamic federal leadership in public information is causing great difficulties.

There are technocrats on all sides who point to the many benefits of the Internet and the World Wide Web, but little is said about the resulting burdens and the costs and how dramatically they are shifting. Some are saying that one of the biggest burdens is "Electronwork." The Commission uses this term to characterize the side effect of utilizing electronic information as the medium to interact with the government instead of utilizing ink-on-paper and other pre-electronic technologies, which were called "paperwork."

For example, librarians and other professional information intermediaries, as well as end-users of public information, are understandably fearful that the formats and mediums they currently use (such as PDF files) are going to inevitably disappear, they are engaged in substantial printing of electronic documents to produce a backup hard copy. This creates an even greater transference of costs from the government to the end users—the public—and much, much more expensive unit cost per copy aggregate costs than even commercial printing! As the current argot goes "Hello? Is anybody out there?" The agencies are not too worried because they don't have to pay—but the end user does pay

and this is a substantial cost to the U.S. economy. There is a priority need to carefully study the dramatic shifts and dislocations of both benefits and costs for public information dissemination in the Internet Age, but the complexity of such a task is beyond the scope of this assessment.

In addition, consider the costs to download and print a 500 or 600 page report. The user incurs telecommunications costs; an amortized utilization of his or her computer equipment, including storage capacity for the electronic file; software costs for the programs to download and to process the electronic file; printer supplies, including a ream of paper and toner or ink; and then there is the time necessary to locate the file, download it and wait for it to print. In short, contrary to the broad, and commonly asserted, myth that information on the World Wide Web is a free good, when all of the "hidden" costs are added up, it certainly is anything but free to the user. A comprehensive benefit-cost analysis of the shifting benefits and burdens is sorely needed.

INFORMATION COLLECTION BUDGET, BUT NO INFORMATION DISSEMINATION BUDGET

The federal government has an *information collection budget* as a disincentive mechanism to help keep the government's programs for collecting information *from* the public from becoming excessive, but the federal government does not have an *information dissemination budget* as an incentive mechanism to enhance the value of the government's programs *for sharing its knowledge treasures more effectively and efficiently with the public.* Disseminating information to the public is too often considered an afterthought, a by-product of an agency's operations, not an integral line item in agency program and project plans, budgets, procurement guidelines, and so on, much less an explicit element of the agency's formal mission and program statements.[47]

On the other hand, many agencies over the years have tried to push the idea of an information collection budget, not necessarily with this formal name, but their efforts have been at the agency level and, for the most part, have not succeeded very well. Perhaps the reason has been because of the fear that unless there was an approved government-wide approach, agencies would be criticized for moving into a sensitive area without Congressional approval.

GOVERNMENT-WIDE PUBLIC INFORMATION SERVICES AND INFORMATION MANAGEMENT AGENCY(IES) MORE IMPORTANT THAN EVER

> The role of the central public information services agencies is to ensure easy access by all segments of the public, including the disadvantaged and other special sectors of the general population, to a wide-range of public information from many agencies on a permanent basis. However, the mission-oriented agencies are more likely to provide ready access to only those documents that further the agency's mission, and only for as long as they further the agency's mission, and only to those well-defined constituency users in whom the agency's management is most interested, and to whom the agency is most accountable.

Admittedly, now with electronic documents on the Web, mission agencies can perform some, but certainly not all, of the same functions of the central service and support agencies themselves without

[47] The need for an information dissemination budget is discussed in more detail in Recommendation 4.

significant cost and efforts. As a result, their support for the government-wide information services provided by NTIS, the Superintendent of Documents, and others, has begun to diminish. The individual agencies believe, incorrectly, that it is less important to provide their documents to the central information service agency since the public can get them from the agency (or bureau or division) websites, notwithstanding the statutory mandates to do so. This is a dangerous fallacy.[48]

When agencies, bureaus or divisions that do not have the primary mission of information dissemination go into the information dissemination business, they do so with a different orientation and different motives than those of the central information services agencies. The role of the central public information services agencies is to ensure easy access by all segments of the public, including the disadvantaged and other special sectors of the general population, to a wide-range of public information from many agencies on a permanent basis. However, the mission-oriented agencies are more likely to provide ready access to only those documents that further the agency's mission,[49] and only for as long as they further the agency's mission, and only to those well-defined constituency users in whom the agency's management is most interested, and to whom the agency is most accountable.

Thus, the principles of public access are not achieved uniformly through all of the agency information systems, and no one knows which of the thousands of systems is missing what specific information products. There is no assurance that the government is providing full public access to what should be public information. There is also no assurance on what that information is, or where it is. Instead, proper public information dissemination depends on the judgment of thousands of unmonitored officials at all levels in thousands of lower level units of government.

Some people seem to be saying that we can get rid of central organizations entirely and move to a fully decentralized and dispersed infrastructure of information and communications, where nobody and no institution is in control of any of it! The Commission strongly disputes this view.

There is also considerable confusion regarding a certain superficial parallelism between strong central policy leadership focus and oversight on the one hand, the dispersed and decentralized information holdings and flows in the Internet Age on the other hand. The pressure to get rid of "big, centralized, organizational structures" on the grounds that they are inappropriate to the "highly dispersed and decentralized storage and handling of information in the Internet Age" must be carefully considered and applied. Some people seem to be saying that we can get rid of central organizations entirely and move to a fully decentralized and dispersed infrastructure of information and communications, where nobody and no institution is in control of (or responsible for) any of it! The Commission strongly disputes this view as simplistic and naive.

The paradox in all of this electronic information largess, in the words of Deanna B. Marcum, one of the Commission's experts, in her comments on an earlier draft of this report: "the easier it is to create and store information, the harder it is to manage, and the greater is the threat that we will not be able to find something when we need it." Marcum continues, "there is simply too much to sort through, but information is useful only if it can be easily found and retrieved. Anyone who has gone to an Internet

[48] This issue discussed in more detail under Finding 6.A.

[49] The major research and development agencies, such as the Departments of Defense and Energy and the National Aeronautics and Space Administration (NASA), do consider access to relevant research and development part of their mission, but have traditionally focused most of the efforts on service to the agency personnel, contractors and grant recipients. Recently the Department of Energy and the Defense Technical Information Center (DTIC) have begun to offer access to the general public through their websites.

search engine with a real if imprecisely worded query and gotten thousands of "hits" in response knows that too much information is as bad as none at all."

The Commission argues that, on the one side, as the pressures to disperse, fragment, distribute and decentralize *information* flows and holdings increase, there is a corresponding need on the other side to ensure that such dispersion, fragmentation, distribution and decentralization is planned and managed *under careful, overall policy leadership and guidance*. Otherwise, the entire infrastructure will devolve into nothing more than a vast network of disconnected databases and collections, systems, and networks that are not interoperable. This may be some Internet telecommunication engineer's ideal fantasy, but it will be of no practical value to most users. The lack of uniform government-wide web electronic publishing guidelines is a golden example of how the federal government currently risks losing control of public information dissemination unless the reforms contemplated in this report are put into place. Fortunately, an updated *Guide to Federal Publishing* by the Interagency Council on Printing and Publications Services and the Federal Publishers Committee will soon be published that addresses many of these issues.[50]

RECENT NCLIS PUBLIC INFORMATION POLICY RESEARCH INITIATIVES

As mentioned above, in 1996 the National Commission on Libraries and Information Science began a series of closely related studies aimed at assessing the strengths and weaknesses of the federal government's public information dissemination machinery. A proposed Statement of Work, prepared by the Computer Science and Telecommunications Board (CSTB) of the National Academy of Sciences (NAS), preceded these studies and recommended three main stages:[51]

- Research and data collection.
- Analysis of results, including the documentation of findings and conclusions.
- Formulating recommendations to the President and the Congress.

Then in 1996, the first research and data collection initiative was taken in the form of a request from the Government Printing Office (GPO) to NCLIS to undertake an assessment of the proliferation of electronic government information products formats, mediums, platforms, and protocols. As mentioned, NCLIS awarded a contract to Westat, Inc. The details of the study are contained in the full report, which is available from the GPO website.[52]

Eight policy and planning issue findings of that earlier study are directly relevant to this study:

1. There is an overall lack of government information policy guiding electronic publishing, dissemination, permanent public availability, and information life cycle management, especially as information policy relates to agency missions. Also, there is a lack of overall coordination of these initiatives at the governmental, branch and agency levels.
2. Responsibility for electronic publishing within agencies is decentralized, diffuse, and unclear. Some agencies either could not identify or had difficulty identifying the proper respondent within their own agency, or even the person who was responsible for a given public information product.

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[50] U.S. Federal Publishers Committee and U.S. Interagency Council on Printing and Publications Services, *Guide to Federal Publishing*, Washington, DC: to be published early in 2001.

[51] The details of the Computer Science and Telecommunications Board proposal to the Commission are contained in documents at http://www.nclis.gov/info/gpo1.html.

[52] Westat, Inc., op. cit.

3. Some government agencies are monitoring the information needs of their users to enhance current access to electronic government information products.
4. There is a lack of specific planning for product development and technological migration, including dealing with the problem of safeguarding the preservation of government information in the face of hardware and software obsolescence.
5. There is a lack of planning for or consideration of web design approaches that comply with the Americans with Disabilities Act (ADA).
6. The concept of "Permanent Public Access"[53] is not well understood, in no small measure because it is not statutorily defined. Respondents also had difficulty distinguishing between this concept as it applies to public use of electronic information on the one hand and archiving electronic federal records pursuant to National Archives and Records Administration (NARA) regulations on the other hand.
7. Metadata and their importance to public access are not well understood, particularly as they may affect permanent public access. Only 27% of respondents reported having a metadata record (such as the Government Information Locator Service or GILS record) for the products surveyed.
8. There is a lack of understanding of what ensuring authenticity entails, and a lack of planning for or consideration of ensuring authenticity of electronic government information products.

Then August 1999, in reaction to the proposed closure of the National Technical Information Service (NTIS) and the transfer of its functions, information holdings, and other resources to the Library of Congress, the Commission launched yet another study to recommend, at least in a preliminary fashion because of the time urgency involved, alternatives open to the President and the Congress to deal with "the NTIS matter."

In her March 16, 2000 letter to the President and the Congress, NCLIS Chairperson Martha Gould offered four key recommendations:[54]

1. NTIS be retained in the Department of Commerce, at least temporarily for the balance of FY 2000 and extending into FY 2001, in order to give the Commission, assisted by a broad group of both public and private sector stakeholders, enough time to study thoroughly the pros and cons, and costs and benefits, of a small number of feasible alternatives, including (but not limited to) the one formally announced by former Secretary of Commerce Secretary Daley in August 1999 (i.e., transfer NTIS collections to the Library of Congress).
2. The Department of Commerce be allowed to utilize the $4.5 million included in its Supplemental FY 2000 budget request (the NTIS Revolving Fund account) to keep NTIS operational for the remainder of FY 2000 at a satisfactory level of staffing and service, instead of using those funds to further downsize and close the agency.

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[53] The term "Permanent Public Access" was used in the Westat survey (Westat, Inc., op. cit.). The Commission uses the phrase "Permanent Public Availability" in lieu of "Permanent Public Access" throughout this report because it more accurately reflects the fact that both availability and accessibility must be permanent, not just accessibility. Availability refers to the basic entitlement of the people to government information not otherwise restricted from disclosure by statute. Accessibility refers to how the public searches for, locates and retrieves the information. There is a substantial amount of agency-initiated information which is *available* to the public under FOIA and other statues, which is not disseminated, an therefore not *accessible*, to the public. "Permanent Public Availability" as defined and used in this report includes both availability and accessibility. This issue is discussed more fully in the section entitled A Working Definition of Public Information. It is also addressed in Findings 1.A, 3.A, 3.C and 5.D and elsewhere in the report.

[54] These recommendations are from the transmittal letter included in U.S. National Commission on Libraries and Information Science, *Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS)*, op. cit.

3. The Congress should authorize an appropriation of $5 million[55] (the estimated funding level required for a full fiscal year) for FY 2001 to sustain NTIS operations at a necessary satisfactory level of service, and allow the Commission to complete its in-depth analysis.
4. Ensure that the final decision on how best to deal with the NTIS situation is not made exclusively on the narrower, fiscally-driven ground of preventing NTIS from falling into a deficit because of the 1992 PL 102-245 Section 3704(b)-1 requirement that operating costs should be recovered primarily *through the collection of fees*. As important as that consideration is, the government must also take into account the larger question of how, in the Information Age, we can strengthen government information dissemination to the public, to private industry to enhance U.S. competitiveness, and to the U.S. scientific research communities. Inter-related concerns of permanent public accessibility, permanent records retention, preservation of materials, and authentication of official government holdings must also be addressed. The government must also consider the magnitude and consequences of shifting costs from end-users to Federal agencies (and therefore the taxpayer) as public access to Federal websites accelerates.

Within weeks of the Commission's publishing its report on NTIS in March 2000, Commission Chairperson Gould received a letter from Chairman John McCain of the Senate Committee on Commerce, Science, and Transportation, asking NCLIS "to undertake a review of the reforms necessary for the federal government's information dissemination practices." The letter goes on to say:

> At a minimum, this review should include assessments of the need for:
>
> 1. Proposing new or revised laws, rules, regulations, missions, and policies;
> 2. Modernizing organizational structures and functions so as to reflect greater emphasis on electronic information planning, management, and control capabilities, and the need to consolidate, streamline, and simplify missions and functions to avoid or minimize unnecessary overlap and duplication;
> 3. Revoking (the) NTIS self-sufficiency requirement; and
> 4. Strengthening other key components of overall federal information dissemination infrastructure.
>
> You are also requested to provide specific recommendations on the future of NTIS. It is hopeful that these recommendations would be consistent with any overall federal information dissemination recommendations that you would also provide.[56]

On July 17, 200, Chairperson Gould received a letter from Senator Joseph I. Lieberman of the Senate Committee on Governmental Affairs,[57] indicating that he was "writing to join in Senator McCain's June 12 request for a review of reforms to improve the federal government's information dissemination practices." He stated:

> The results of that study will prove invaluable to my work as Ranking Democrat of the Governmental Affairs Committee, which has jurisdiction over most of our federal

[55] This estimate for the required annual appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.

[56] Senator McCain's letter is available in Appendix 1 and also at http://www.nclis.gov/govt/assess/mccain.html and http://www.nclis.gov/govt/assess/assess.appen1.pdf.

[57] Senator Lieberman's letter is available in Appendix 3 and also at http://www.nclis.gov/govt/assess/liebermn.html and http://www.nclis.gov/govt/assess/assess.appen3.pdf.

> government's information dissemination practices. The study will also help inform my efforts to promote e-government, which includes making federal information more available over the Internet.

Senator Lieberman then suggested:

> I would suggest two additions to the Commission's study. Senator McCain's letter of June 12 asked that the Commission include assessments of the need for proposing new or revised laws or regulations. I would ask the Commission to include in that review any relevant sections of the Paperwork Reduction Act that may need revision, because the Committee will be considering the law's reauthorization next Congress. Second, when the Commission considers the future of the National Technical Information Service, I would ask that it consider the viability of maintaining NTIS as a centralized fully electronic repository of federal scientific and technical information, accessible via the Internet and equipped with search and retrieval capabilities.

From March through June 2000, when the Commission was planning and organizing for this study effort, contact was also made with key House committee staff liaison officials with whom the Commission had already dealt extensively in the context of its two earlier studies, to ensure that the House was not in disagreement with the Senate's request. The Commission was advised that there were no objections to proceeding along the lines suggested by the two senators.

WHAT THIS REPORT IS ABOUT, AND WHAT IT IS NOT ABOUT

It is always important to carefully delineate the boundaries of complex deliberations of this kind. The requirement to specify one's scope with as much precision as possible is especially important when it comes to the area of disseminating government information to the public, because the area is so very broad and complex. There are hundreds of laws involved, thousands of federal programs with some requirement for disseminating or providing access to the public for government information, and tens of thousands of policy statements at all levels of government.

This report is about recommending reforms to the basic machinery government employs to ensure the public has efficient access to, and is regularly advised of its workings through proactive dissemination initiatives, consistent with the agencies missions. In short, it is about the general and fundamental laws, policies, programs, and practices by which government information is made available and accessible to the public, including both "passive" access arrangements, and "proactive" dissemination arrangements.[58]

While the Commission's investigations inevitably touched upon various "specialized areas," still, the Commission tried to keep its eye on the main target and not wander too far a field into those specialized areas, except in the few instances where addressing one of them was completely unavoidable, such as Section 508 of the Rehabilitation Act pertaining to access to public information by disadvantaged individuals, and in the study of scientific and technical information (STI) because of the direct focus of the NTIS study (including an economic analysis).

"Specialized areas" mean, for example:

1. Computer and telecommunications security matters.

[58] This issue is also discussed in Findings 1.A and 4.K and elsewhere in the report.

2. Intellectual copyright issues, including patents, trademarks, and trade secrets.
3. Privacy concerns.
4. Information interchange with foreign governments, including technology transfer.
5. Confidentiality issues related to the government's custodial role of third party information holdings.
6. Technical standards questions such as encryption and electronic signatures.
7. Observing and measuring information productivity, and the treatment of information as an economic good or commodity.
8. Technical questions relating to the interoperability and interconnectivity of systems and networks.
9. Replacement of actual data with simulated data in federal statistical data files.
10. Linguistic, socio-cultural, and related barriers.
11. Information ethics questions.
12. Electronic financial and business information interchange such as electronic funds transfer (EFT).
13. An historical review of prior public information dissemination reform initiatives.
14. Detailed economic analyses of benefits and costs related to government information.
15. Emergencies such a natural disasters and power outages.

Of course, all of these areas are undeniably important, and it could be argued that they are, in a larger sense, inseparable from and inextricably linked to each other, as well as to the "general" issues of reforming public information dissemination laws, programs, and policies. However, the Commission resisted being drawn into addressing them in depth, not because it was ignorant or naïve in these respects, but because it did want to risk losing sight of the broader aims of the study. Instead, the Commission’s expectation was that these questions of "proper policy balance" to ensure that various competing vested interests in information rights and obligations, as for example in the intellectual property and privacy areas, are heard loudly and clearly, would and should best be taken up later, in the context of Congressional committee hearings, the public’s reactions to report findings and recommendations, stakeholder group comments on the final report, reactions of the media, and in other forums and arenas.

C. METHODOLOGY

NCLIS determined that the best approach to satisfying the requests from Senator McCain and Senator Lieberman would be to maximize the utilization of both public sector and private sector knowledge by asking for volunteer assistance from both sectors.

FOURTEEN MAJOR COMPONENTS OF THE STUDY

The approach agreed upon has fourteen major components:

1. Establish four study panels and ask each to address one of four overarching aspects of the overall study.[59]
2. Create a Group of Experts composed of distinguished public figures with national reputations and special expertise and experience in an area of strategic importance to the study, such as information law, information economics, information science and technology, librarianship, public policy, and private sector contributions to value-added dissemination of government information.[60]
3. Informally survey a cross-section of federal agencies to establish a "baseline" of agency policies and programs relating to the dissemination of government information.[61]
4. Informally survey a cross-section of associations representing the interests of disabled, disadvantaged and special populations, which depend heavily on government information to service the needs of their constituents (e.g., to meet the requirements of Section 508 of the Rehabilitation Act).[62]
5. Update a compilation of all federal laws containing requirements directing agencies to establish some kind of information resource to respond to public information needs, first undertaken in 1996 by the Congressional Research Service.[63]
6. "Map" selected federal laws and policies containing public information resources requirements so as to illuminate the richness and diversity of those resources and help pinpoint where they might be strengthened.[64]
7. Ask the School of Information Sciences at the University of Pittsburgh to update its National Information Policies Bibliography database.[65]

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[59] The Commission panel participants are identified in Appendix 22 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen22.pdf.

[60] The Commission experts are identified in Appendix 22 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen22.pdf.

[61] The results from the agency survey are summarized in Appendix 27 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen27.pdf.

[62] The results from the survey of organizations representing special populations are summarized in Appendix 28 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen28.pdf.

[63] Appendix 33 in Volume 3 of this report describes categories of public information laws and provides an index of recent federal statutes on public information dissemination. The categories of public information legislation are also available at http://www.nclis.gov/govt/assess/statcat.html. Appendix 35 in Volume 4 is a compilation of recent federal statutes pertaining to public information dissemination, with excerpts of relevant provisions. Appendices 33 and 35 are also available at http://www.nclis.gov/govt/assess/assess.appen33.pdf and http://www.nclis.gov/govt/assess/assess.appen35.pdf, respectively.

[64] The Public Information Resources Maps prepared by FLICC and GODORT are available in available as Appendix 29 in Volume 3 of this report and at http://www.nclis.gov/govt/assess/assess.appen29.pdf. Individual maps can also be accessed from http://www.nclis.gov/govt/assess/assess.html.

[65] The bibliography compiled by Commission consultants is available as Appendix 31 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen31.pdf.

8. Revisit the NCLIS 1982 Public-Private Sector Task Force Report,[66] update it, and republish it for study participants as well as for broader government and public use.[67]
9. Communicate and meet with representatives of key federal major public information resources entities, including key Congressional Committee representatives in both the Senate and the House, representatives from the Administrative Office of the U.S. Courts and other elements of the Judiciary, and, in the Executive Branch, Access America and National Partnership for Reinventing Government (NPRG), FirstGov developers, the CIO Council, the Library of Congress, the National Technical Information Service (NTIS), the Government Printing Office (GPO) including the Federal Depository Library Program (FDLP), the National Information Infrastructure Advisory Council (NIIAC), and various interagency committees and councils such as CENDI, the Federal Library and Information Center Committee (FLICC), the Interagency Committee for Statistical Policy (ICSP), the Interagency Council on Printing and Publications Services (ICPPS), the Federal Publishers Committee (FPC), the Federal Webmasters' Forum, and so on.
10. Communicate and meet with public interest groups, especially those that deal heavily with government information, such as the Association of Public Data Users (APDU) and Americans Communicating Electronically (ACE).
11. Communicate and meet with library and information professional associations, including the American Library Association (ALA), the Special Libraries Association (SLA), the Association of Research Libraries (ARL), the Association of College Research Libraries (ACRL), the Chief Officers of State Library Agencies (COSLA), the Urban Libraries Council (ULC), the American Association of Law Libraries (AALL), the Government Documents Roundtable (GODORT) of the ALA, the Public Library Association (PLA), the Association of Independent Information Professionals (AIIP), and others.
12. Research past and current studies touching about reforms of the government's public information dissemination laws, policies, programs, and practices, and determine where their findings, conclusions, and recommendations intersected with the current study's goals and objectives, paying special attention to the Congressionally-mandated studies running more or less concurrently with the extant NCLIS study, (1) of the merits of transferring the Superintendent of Documents programs in GPO to the Library of Congress, and (2) an intensive study of the NTIS missions, functions, and financing by the General Accounting Office.
13. Solicit "white papers" (issue papers) on selected major issues and concerns relevant to the study, including the myths that surround the Internet and the World Wide Web, the reinvigoration of the Information Life Cycle Management concept, and the feasibility of establishing a new Public Information Resources Administration;[68] and
14. Update and broaden the bibliography prepared by the preliminary assessment the Commission completed in March 2000, addressing alternatives for dealing with the proposed closure of NTIS.[69]

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[66] U.S. National Commission on Libraries and Information Science, *Public Sector/Private Sector Interaction in Providing Information Services,* Washington, DC: Government Printing Office, 1982.

[67] Appendix 17 in Volume 3 of this report is a retrospective appraisal of the 1982 report by Robert Hayes, the chairman of the NCLIS Public Sector/Private Sector Task Force. It is also available at http://www.nclis.gov/govt/assess/assess.appen17.pdf. The complete 2000 edition of *Public Sector/Private Sector Interaction in Providing Information Services* is available at http://www.nclis.gov/govt/assess/publpriv.html.

[68] Several White Papers were prepared by NCLIS consultants or submitted by others. They are available as Appendices 15 through 21 in Volume 3 of this report and also from http://www.nclis.gov/govt/assess/assess.html as individual PDF files named http://www.nclis.gov/govt/assess/assess.appen15.pdf, http://www.nclis.gov/govt/assess/assess.appen16.pdf, etc.

[69] The bibliography compiled by Commission consultants is available as Appendix 31 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen31.pdf.

ASSESSMENT MILESTONES AND SCHEDULE

A chronology of study milestones is provided below:

Period	Milestone
March 2000	Report *Preliminary Assessment of the Proposed Closure of NTIS* issued to the President and the Congress by NCLIS
June/July 2000	Congressional request for assessment; communications with Congress, the Executive Branch, the Judiciary, and stakeholder groups participating about the assessment
Early August 2000	Establishment of four panels and identification of group of experts, solicitation of citations to key background research
Late August through October 2000	Panels deliberate; NCLIS concurrent research activities undertaken
October 15, 2000	Panel Final Reports received and disseminated for Group of Experts and public review and comment
November 1, 2000	NCLIS begins drafting final "integrated" (consolidated) report
November 15, 2000	Full Commission meets to hear panel reports; review Experts' comments; review public comments; and consider Commission's first draft of Executive Summary & proposed legislation
November 16, 2000	Draft Executive Summary, draft excerpted sections from proposed legislation, fact sheet on Federal Depository Library Program, and fact sheet on parallel branch of government recommendations, all posted to NCLIS website
November 27, 2000	First draft of full, complete NCLIS final report, including proposed new legislation, posted on the NCLIS website for public review and comment
December 4, 2000	NCLIS Public Meeting, Dirksen Senate Office Building, hosted by Senate Committee on Governmental Affairs
December 11, 2000	Original deadline for public review and comment on draft final report
December 15, 2000	Original deadline for submission of final report to Congress
January 4, 2001	Extended deadline for public review and comment on draft final report and proposed legislation (extended from December 11 at the request of the Senate)
January 26, 2001	Extended deadline for submission of the final report to Congress (extended from December 15 at the request of the Senate and the Administration); pre-print copies available for distribution to Congress, the Administration and key stakeholders; electronic copy posted on NCLIS website

STUDY PANEL DELIBERATIONS

To help the Commission in its investigations, four study panels and one group of experts were established.[70] The four panels were:

1. Panel 1 (**NTIS Business Model**)—Reforming the NTIS business model for the Internet Age;
2. Panel 2 (**Internal Government Reforms**)—The extent to which internal (i.e., individual mission agency needs) for NTIS, GPO, NARA, the national libraries, and other central service bureau types of information services are not being adequately satisfied because of deficient, outmoded, obsolete or unresponsive laws, programs, policies, or practices;
3. Panel 3 (**External User Needs**)—The extent to which external (i.e., non-governmental) user needs for NTIS, GPO, NARA, national library, & other central government information services, as well as individual mission agency public information services are not being adequately satisfied because of deficient, outmoded, obsolete, or unresponsive laws, programs, policies, or practices; user needs include: private corporations; institutions such as universities, research organizations and hospitals; library and other intermediary distributors of public information (including public, state, academic, research, depository and special libraries); public interest groups; and individual citizen needs; and
4. Panel 4 **(Public sector-Private Sector Partnerships**)—Redefining and strengthening public-private sector roles, partnerships, and initiatives vis-à-vis public access to, and dissemination of public information, given the advent of the World Wide Web, the Internet, and associated technological changes that are driving the Information Age.

Four distinguished professional information experts with extensive public and private sector expertise and experience were asked to serve as chairs of the panels, and accepted the invitations. The panel chairs are:

- **Peter Urbach** who chaired the Panel One effort dealing with recommending reforms of the NTIS business model. Now retired, his many-faceted contributions to the library and information profession in both the public and private sectors included a term as deputy director of the National Technical Information Service (NTIS) and as a senior executive with Reed-Elsevier, a major commercial scientific and legal publisher.
- **Kurt Molholm** who chaired Panel Two addressing steps to strengthen federal agency sharing of information to both help achieve their own missions more effectively as well as, in turn, help their agencies serve their own constituencies and clienteles more effectively. He currently serves as director of the Defense Technical Information Center (DTIC) and chairman of CENDI, a consortium of scientific and technical information intensive federal agencies.
- **Miriam Drake** who chaired Panel Three reviewing actions to improve how the government disseminates its information to external groups, including private citizens, corporations, depository libraries, lower levels of government, academia, research institutions, and other sectors. She has provided a lifetime of leadership in the library and information communities including the presidency of the Special Libraries Association (SLA), as well as many key private sector assignments, and is currently dean of libraries for the Georgia Institute of Technology.
- **Wayne Kelley** who chaired Panel Four, reviewing how the public and private sectors could continue their traditional role of helping the Nation disseminate government information efficiently, and in diverse formats and mediums, and to very diverse audiences with special needs

[70] Commission panel members are identified in Appendix 22 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen22.pdf.

by working together. Now retired, he has held key positions in both the public and private sectors, including service as the Superintendent of Documents at the Government Printing Office and as the publisher of *Congressional Quarterly*.

Specifically, the study panels were asked to analyze the key issues and concerns falling within the scope of their respective panels (i.e., perhaps an outdated law, a poorly written or interpreted rule, an obsolete regulation, the need for a new policy, a poorly operating program, a deficient agency practice, or some combination thereof) by answering the following questions:

- What is "wrong," deficient, not working as expected, or is out-of-date; and, if so, exactly how and why; conversely, are there "success stories," wherein something innovative is working especially well, and might be more widely followed?
- What needs to be done to remedy the deficiency (i.e., the reform(s) needed); did the panel make certain assumptions in order to arrive at a recommended (preferred) course of action, and, if so, what are those assumptions?
- What barriers and constraints exist, if any, to fully and effectively implementing the recommended reforms; and, conversely, what enabling actions (e.g., new legislation, parlaying the "success stories" of agency initiatives that are especially creative, innovative and effective) can be taken to create more positive conditions for strengthening the dissemination of government information to the public?
- Should the reforms be subdivided, timeframe-wise, into short, medium, and long-term reforms, and, if so, how and what are those timeframes?

Appendix 14 identifies some of the important issues and concerns the four panels were asked to address,[71] including:

- Try to assess the likely technological state-of-the-art capabilities in the short (two years or less), medium-term (two to five years) and long-term (beyond five years) timeframes that will impact the ability of the government to improve its public information dissemination programs and practices, including hardware, software, networks, and information interchange protocols. The Group of Experts is one source for useful advice on these issues.
- Prepare and submit a draft final panel report to NCLIS with findings, conclusions, and recommendations. Ideally (but not mandatory) include the text, or at least an abstract, or "key points" for any proposed new or amended legislation, executive orders, rules or regulations, other kinds of policy statements (e.g., OMB circulars or bulletins, executive orders), or other requirements.[72]

As mentioned above, the panels were asked not just to look at the "negative side of the equation," that is, the deficiencies in current laws, policies, programs, and practices dealing with public information dissemination. They were also asked to look at the "positive side of the equation." That is, try to identify "success stories" where a law, program, policy, or practice is working particularly well, is innovative, perhaps is because it is interactive, perhaps because it is multimedia, or has a "multiplier impact," and therefore, for these and/or other reasons, could be more broadly emulated and replicated. Reviewing what is working well applies to both the public and private sectors, and especially where private sector practices might be adopted and adapted to the government's programs.

[71] Appendix 14 is in Volume 3 of this report; it is also available at http://www.nclis.gov/govt/assess/appen14.pdf.

[72] The four panel reports are available in Appendices 22 through 25 in Volume 3 of this report; they are also available at http://www.nclis.gov/govt/assess/appen22.pdf, http://www.nclis.gov/govt/assess/appen23.pdf, http://www.nclis.gov/govt/assess/appen24.pdf, and http://www.nclis.gov/govt/assess/appen25.pdf, respectively.

Moreover, the findings and results of the deliberations of each of the four panels were then "cross-fertilized, laterally and horizontally" and shared with each other as well as made available for public review and comment so that as wide a set of viewpoints as is possible was solicited. In short, NCLIS did not want the four panels to operate purely in "stovepipe," or in a vacuum fashion." NCLIS found in its earlier study dealing with the NTIS closure that broad public participation, and the resultant wide stakeholder "back and forth" interaction, fostered a valuable climate for identifying both hidden facts and enlightened opinions.

The Commission panelists were not asked to develop a consensus, but to provide their best advise, noting areas of agreement and disagreement. Participation of an individual in a Panel should not be interpreted to mean concurrence with every statement or recommendation of that Panel, unless the Panel report specifically notes unanimity. The Panel reports were extremely useful to the Commission. However, the Commission did not necessarily accept all of the Panel recommendations, nor was it constrained by areas of disagreement among the panelists.

Neither the chairs nor the members on the Commission Panels were asked to endorse this final report, although they were asked to review it and provide comments to the Commission. This is also true of the Commission's group of experts identified below. Therefore, the participation of these individuals should not be construed as necessarily providing their imprimatur to the study findings, conclusions or recommendations.

THE GROUP OF EXPERTS

The group of experts was composed of nationally recognized, knowledgeable individuals in the fields of information and communications technologies, economics, legal matters, and perhaps other specialized technical fields, including especially the World Wide Web and the Internet, state-of-the-art online approaches, alternative ways of measuring and valuing both the benefits and costs of creating, adding value to, packaging, and making available and distributing government information resources to the public, and so forth. The group also assisted NCLIS in identifying myths, and predicting major future changes and paradigm shifts they perceive on the horizon.

NCLIS forwarded a copy each of the four study panel reports to the group of experts for their review and comment and made available the White Papers and other material received during the course of the assessment. They were also asked to review the draft final report.

The group of experts includes:

- **Christopher Burns**, President, Christopher Burns Inc.
- **Edward A. Fox**, Director, Networked Digital Library of Theses and Dissertations (NDLTD) and Professor, Department of Computer Science, Virginia Polytechnic Institute and State University (Virginia Tech).
- **Robert M. Hayes**, Professor Emeritus, Graduate School of Education and Information Studies, University of California, Los Angeles (UCLA).
- **Donald Langenberg**, Chancellor, University System of Maryland.
- **M. Stuart Lynn**, Retired, and formerly Associate Vice President, Information Resources & Communications, Office of the President, University of California.
- **Deanna Marcum**, President, Council on Library and Information Resources (CLIR).

- **Raymond T. Nimmer**, Leonard Childs Professor of Law, University of Houston Law Center.
- **Henry H. Perritt, Jr.**, Dean, Vice President and Professor of Law, Chicago-Kent College of Law, Chicago.
- **Ron Plesser**, Piper, Marbury, Rudnick & Wolfe LLP.
- **William H. Price**, Retired, and Former Director, Foreign Affairs Information Center, Department of State.
- **Carol A. Risher**, Senior Vice President, Business Development, Savantech, Inc.
- **Thomas Susman**, Ropes & Gray.
- **Paul Uhlir**, National Academy of Sciences.
- **Paul Zurkowski**, Newspaper Editor, and former President, Information Industry Association.

STAKEHOLDER GROUP PARTICIPATION

All stakeholder groups were encouraged to seek participation in the work of all four of the panels, whether they represented public or private sector organizations or institutions. For example, there was no intention that the participation of library professionals be limited just to panel three dealing with external group needs for public information, or the participation of government agency representatives be limited just to panel two dealing with interagency sharing of government information, or the participation of private sector individuals be limited just to panels one or four. The Commissioned tried to foster a climate to maximize the opportunities for stakeholder representation and participation in both its panel work as well as in its various research activities.

OTHER RESEARCH ELEMENTS OF THE STUDY

There were several other key elements of the NCLIS study undertaken that were "over and above" the work of the four study panels and the Group of Experts. For example, the NCLIS Public-Private Sector Task Force report published in 1982 was republished with a new preface explaining why the findings, conclusions, and recommendations in the original report are still quite relevant nearly twenty years later, despite very significant interim technological developments. Also, some excerpts from key landmark studies of public information reforms, such as *Informing the Nation*, a report prepared by the Congressional Office of Technology Assessment in 1998, were included in the republished report. Former NCLIS Chairperson Charles Benton, former NCLIS Executive Director Toni Carbo, and former NCLIS Task Force Chairperson Robert Hayes all were consulted in the republication.[73]

Additionally, the following research activities were undertaken:

- An update of the Congressional Research Service (CRS) review "Compilation of Statutes Authorizing Dissemination of Government Information to the Public" dated March 29, 1996, co-authored by Jane Bortnick Griffith, Harold C. Relyea and Frances A. Bufalo.[74]

[73] A retrospective appraisal of the report by Robert Hayes is available as Appendix 17 in Volume 3 of this report and at http://www.nclis.gov/govt/assess/assess.appen17.pdf.

[74] Appendix 33 in Volume 3 of this report describes categories of public information laws and provides an index of recently enacted public information dissemination statutes. The categories of public information legislation are also available at http://www.nclis.gov/govt/assess/statcat.html. Appendix 35 in Volume 4 of this report is a compilation of recent federal statutes pertaining to public information dissemination, with excerpts of relevant provisions. Appendices 33 and 35 are also

- An update of the "National Information Policies Bibliography" published in 1996 by Dean Toni Carbo of the School of Information Sciences of the University of Pittsburgh, including the newly acquired document collection from former Congressional Research Service (CRS) senior information policy specialist Robert Chartrand.[75]
- An informal survey of a small number of selected federal agency public information dissemination programs and practices, including agency websites, classified by agency type such as cabinet department, regulatory agency, etc., by subject matter coverage, by special interests targeted, and so forth.[76]
- An informal survey of selected associations with memberships composed of disabled, disadvantaged and special populations with substantial needs for public information, including a review of the requirements of Section 508 of the Rehabilitation Act.[77]
- A review of the earlier Westat study, commissioned by the Government Printing Office, completed in 1999, which addressed the rapid proliferation of electronic formats and mediums to which ink-on-paper and other pre-electronic government information products were being migrated to electronic modes, to ensure NCLIS would be fully aware of the state-of-the-art federal IT situation.[78]
- A reassessment of the Phase I study undertaken by Computer Science and Telecommunications Board (CSTB) of the National Academy of Sciences (NAS) for NCLIS, to ensure the original work plan suggestions made by that body were still appropriate, timely, and valid; is currently dean of libraries for the Georgia Institute of Technology.[79]
- Acceptance of opportunities to solicit materials from, brief, and meet with representatives of various key federal players with major public information dissemination authorities and responsibilities, including the National Information Infrastructure Advisory Council, Access America and the National Partnership for Reinventing Government (NPRG), the FirstGov.gov portal initiatives including the Council for Excellence in Government, the Government Printing Office (GPO) including the Federal Depository Library Program and Superintendent of Documents Sales Program and GPO Access portal, Library of Congress and the Thomas portal as well as other Library of Congress programs such as the National Library for the Blind and Physically Handicapped, the National Technical Information Service (NTIS) and the FedWorld portal, various interagency groups such as CENDI, the Federal Library and Information Center Committee (FLICC), the Interagency Committee on Statistical Policy (ICSP) and the Interagency Council on Printing and Publications Services (ICPPS).
- Acceptance of opportunities to solicit materials from, brief, and meet with representatives from public information user groups such as Americans Communicating Electronically (ACE) and the Association of Public Data Users (APDU).

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available at http://www.nclis.gov/govt/assess/assess.appen33.pdf and http://www.nclis.gov/govt/assess/assess.appen35.pdf, respectively.

[75] The revised bibliography compiled by Toni Carbo is available as Appendix 32 in Volume 3 of this report and at http://www.nclis.gov/govt/assess/assess.appen32.pdf.

[76] The results of the agency survey are available as Appendix 27 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen27.pdf.

[77] The results of the survey or organizations representing special populations are summarized in Appendix 28 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen28.pdf.

[78] Westat, Inc., op. cit.

[79] Blumenthal, Marjory S., and Alan S. Inouye. *Assessment of Formats and Standards for the Creation, Dissemination, and Permanent Accessibility of Electronic Government Information Products: Phase I,* Report to the U.S. National Commission on Libraries and Information Science from the Computer Science and Telecommunications Board, National Research Council, National Academy of Science, Washington, DC: 16 July 1997; http://www.nclis.gov/govt/gpo1.html.

- Acceptance of opportunities to solicit materials from, brief, and meet with professional library associations including the American Library Association (ALA), Special Libraries Association (SLA), Association for Research Libraries (ARL), Association for College Research Libraries (ACRL), Public Library Association (PLA), American Association of Law Libraries (AALL), Medical Library Association (MLA), Urban Libraries Council (ULC) and the Chief Officers of State Library Agencies (COSLA), the Association of Independent Information Professionals (AIIP), and others.
- Meetings with representatives of the CIO Council and some of its committees, especially those with responsibilities touching upon public information creation, handling, storage, retrieval, dissemination, archiving, and so forth, including "overseeing" the FirstGov.gov and e-Gov initiatives.
- Preparation of a comprehensive study bibliography which would incorporate base materials already inventoried in connection with the Commission's earlier materials.[80]
- Preparation of a "Public Information Resources Map" which could serve as template and a tool to dramatize and illustrate the richness and diversity of the federal government's public information resources in terms of attributes such as entitlement, regulatory or other topical area, the targeted entitlement or regulated groups and beneficiaries, how the resource is financed (e.g., appropriations, revolving funds, the sale of public information), whether fees are charged for a public information product or service, or whether it is free to the public, and so forth.[81]
- Preparation of various White Papers (issue papers) on selected topics, including a paper on "Major Paradigms: Myths, Realities, and Debunking the Myths," another on "The World Wide Library," another on "Information Life Cycle Management," and others.[82]

FINAL REPORT TO THE CONGRESS AND THE PRESIDENT

NCLIS received inputs for its final report throughout the course of the study from:

1. The four study panels.
2. The group of experts.
3. Review of the various research activities, including literature reviews, the database of current information laws, and so on.
4. A survey of federal agency public information dissemination policies, programs and practices.
5. A survey of the public information needs of special and disadvantaged populations.
6. Meetings with representatives from the CIO Council and its sub-committees, and other key interagency groups including the Federal Publishers Committee (FPC), the Interagency Council on Printing and Publications Services (ICPPS), the Federal Library and Information Center Committee (FLICC), the Federal Webmasters Forum, the Interagency Committee on Statistical

[80] The bibliography compiled by NCLIS consultants is available as Appendix 31 in Volume 3 of this report and at http://www.nclis.gov/govt/assess/assess.appen31.pdf.

[81] The Public Information Resources Maps prepared by FLICC and GODORT are available in available as Appendix 29 in Volume 3 of this report and at http://www.nclis.gov/govt/assess/assess.appen29.pdf. Individual maps can also be accessed from http://www.nclis.gov/govt/assess/assess.html.

[82] NCLIS consultant White Papers are available in Appendices 15 and 16 in Volume 3 of this report. White Papers submitted by members of the NCLIS group of experts are available in Appendices 17 through 21 in Volume 3. The White Papers are also available from http://www.nclis.gov/govt/assess/assess.html as individual PDF files named http://www.nclis.gov/govt/assess/assess.appen15.pdf, http://www.nclis.gov/govt/assess/assess.appen16.pdf, etc.

Policy (ICSP), CENDI, the Federal Depository Library Council, and with key agencies such as OMB, GPO, NTIS, NARA, and the Library of Congress.

7. Meetings with library and information professional associations, including American Library Association (ALA), American Association of Law Libraries (AALL), Special Libraries Association (SAL), Chief Officers of State Library Agencies (COSLA), American Society for Information Science and Technology (ASIST), Association of Research Libraries (ARL), Association of College and Research Libraries (ACRL), Urban Libraries Council (ULC), Public Library Association (PLA), the Association of Independent Information Professionals (AIIP), and others, and with other societies concerned with utilizing public information, including scientific and technical societies;
8. State, local, and tribal government officials, including library and information professional associations with memberships at those levels of government;
9. Private sector groups including trade and industry associations, labor unions, and others, including the National Federation of Federal Employees (NFFE), the Software and Information Industry Association (SIIA), the Computer and Communications Industry Association (CCIA), and the American Association of Publishers (AAP).
10. Public information user groups, including Americans Communicating Electronically (ACE) and the Association of Public Data Users (APDU).
11. Public responses to NCLIS website postings, and other relevant websites including, notably, the new e-Gov website launched by the Senate Governmental Affairs committee.
12. Scanning various listservs and checking bulletin boards that were tracking the issues and concerns addressed by the study.
13. Other sources, such as unsolicited communications.

Because several of the recommendations, and the subject matter itself, affect the Judicial Branch, the report is also being transmitted to senior officers in that Branch, including the Clerk of the Supreme Court, the Judicial Conference, and the Administrative Office of the U.S. Courts.

USING THE NCLIS WEBSITE AND STUDY WEB PAGE

The vehicle of the NCLIS website was once again used as a primary communications and coordination vehicle for securing wide involvement and participation, and obtaining public review and comment at key stages as the study proceeded and dissemination of draft and final documents as they became available. Notices were posted to a number of listservs and sent by e-mail to several hundred individuals and organizations that had asked to be notified as key documents became available. This same approach was followed in the two earlier Commission studies.[83]

The Commission endeavored to follow a "Government in the Sunshine" policy by maximizing the opportunities to solicit broad public review and comment at each step in the study.

[83] Appendix 34 in Volume 3 of this report is a copy of the Commission's study web page as of January 26, 2001. It is also available at http://www.nclis.gov/govt/assess/assess.appen34.pdf.

ORGANIZATION OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The findings and conclusions of this study are subdivided into eleven categories, based on the *sector* or *group* to which a finding is *primarily targeted;* of course, some overlap between categories is inevitable.

1. Individual Citizens (the General Public)
2. Disabled, Disadvantaged and Other Special Populations
3. The Federal Government—Government-Wide Public Information Policy and Standards Leadership and Oversight
4. The Federal Government—Individual Agencies With Operating Missions
5. The Federal Government—Central Agencies With Government-wide Public Information Services and Information Management Roles (Except NTIS)
6. The Federal Government—The National Technical Information Service (NTIS)
7. The Federal Government—Interagency Groups (e.g., CIO Council, Federal WebMasters Forum, CENDI, FLICC and Others)
8. State, Local, and Tribal Levels of Government
9. Commercial (For-Profit) Enterprises and the Professions
10. Not-For-Profit Sector, Including Professional Associations, as well as Academic, Research and Related Institutions
11. All Other Groups

Public Information Dissemination Machinery—Functional Categories

Within each of the above eleven major categories, individual findings may require new or amended laws, rules, regulations, and so forth. These are called *functional* categories, of which there are nine principal ones:

- Laws
- Rules and Regulations
- Policies
- Presidential Directives (e.g., Executive Orders, Presidential Memoranda)
- Standards and Guidelines
- Programs
- Projects
- Practices

These are identified, as appropriate, in the narrative, but are not called out by specific headings.

Findings

The Findings are organized by the eleven categories identified above. Within each category, Findings are assigned an alphabetic identifier. Findings in category 1, Individual Citizens, are numbered 1.A, 1.B, 1.C, and so forth.

Conclusions

The Conclusions section follows the Findings section. It is structured into the same eleven major categories as the Findings section, but there is only one summary conclusion statement for each of the eleven categories. Subheadings are used when the discussion is lengthy or complex.

Recommendations

The Recommendations section follows the Conclusions. It is arranged by degree of importance, rather than by the eleven categories identified above. There are two general classes of recommendations: Strategic Recommendations and Other Recommendations. However, the Recommendations are numbered consecutively in a single sequence across both classes.

Following each recommendation is a statement that identifies the supporting findings by number and letter, with the principal finding boxed for emphasis. For example, the supporting findings for Recommendation 1 are presented as follows:

[Supporting Findings: 1.A, 1.D, 1.G, 1.I, 1.J, 2.B, 3.A, 3.B, 3.D, 4.A, 4.C, 4.O, 5.I, and 10.E]

Timeframes For Addressing Recommendations

The reforms addressed in this report are far-reaching. The implementation timeframe, much less the timeframe in which the ultimate outcomes and results would be realized, extends from the immediate, in some cases, to ten or more years in other cases. The distinction between whether action on the recommendation should begin immediately, or should be deferred until some time in the future, is very important. The key criterion is when to begin implementation, even though it may not be completed in the timeframe. In fact, some actions may need to go on indefinitely. Therefore, the Commission has indicated which of three-timeframes is most appropriate for commencement of each recommendation:

1. **The Short-Term:** begin within two years or less.
2. **The Medium-Term:** begin in two to five years.
3. **The Long-Term:** begin six years or later.

Following the list of Supporting Findings for each Recommendation is a statement that identifies the suggested timeframe for action. For example, the timeframe for Recommendation 1 is presented as follows:

[Timeframe: Short-Term]

Legislative and Regulatory Proposals

For convenience, all findings, conclusions, and recommendations relating to the need for changes in existing legislation, such as the Paperwork Reduction Act, and OMB Circular A-130 are brought together in one place as Appendix 12 in Volume 2 of this report: *Legislative and Regulatory Proposals*.[84]

[84] Appendix 12 is in Volume 2 of this report; it is also available at http://www.nclis.gov/govt/assess/assess.appen12.pdf.

D. FINDINGS

After considering all of the facts and opinions offered and collected, the Commission has developed the following findings.

1. FINDINGS RELATING TO INDIVIDUAL CITIZENS (THE GENERAL PUBLIC)

1.A. The enlightened participation of Americans in the democratic processes of our country lies squarely in how well ordinary citizens are informed as to what their government is doing, or not doing but should be doing. Proactive dissemination of government information to citizens in all walks of life is the key that enables them to have a voice in public affairs, enables them to hold public officials accountable for their actions, prevents their rights from being trampled upon, and empowers them to better meet their personal, family, business and job-related needs and goals, including matters pertaining to their health, safety, security, and enriching the quality of their lives.

> A popular government without 'popular information,' or the means of acquiring it, is but a prologue to a farce or tragedy, or perhaps both. Knowledge will forever govern ignorance, and a people who mean to be their own governors must arm themselves with the power which knowledge gives.
>
> *James Madison, 1822*

The enlightened participation of Americans in the democratic processes of our country requires a well-informed citizenry that knows what their government is doing, or not doing that it should be doing. This applies to government at all levels, at all levels, federal, state, local, and tribal. Proactive dissemination of government information to citizens in all walks of life is the key that enables them to have a voice in public affairs, enables them to hold public officials accountable for their actions, prevents their rights from being trampled upon, and empowers them to better meet their personal, family, and business and job-related needs and goals, including matters pertaining to their health, safety, security, and enriching the quality of their lives.

The words of James Madison are still the most apt and well-known summation of this issue. "A popular government without 'popular information,' or the means of acquiring it, is but a prologue to a farce or tragedy, or perhaps both. Knowledge will forever govern ignorance, and a people who mean to be their own governors must arm themselves with the power which knowledge gives." [85]

Julia Wallace, documents librarian at the University of Minnesota, spoke eloquently of on this issue in her article entitled "Why Government Information?" in *DttP*, saying:

> Although government publications are not the only source for this information, they are the first essential, authoritative, primary resources on which much other information is based. Government information is authoritative because it comes from a known source, which has the authority to collect it, and which generally provides detailed documentation of its methodology. In order to use the government's

[85] James Madison in a letter to W. T. Barry, August 4, 1822.

> information, and to evaluate other information, which is based upon it, it must be easily available to all, without barriers.[86]

Because the government is the source of public information, the burden of independently assessing the credibility of the source of the information is largely obviated. Government must not betray the public's trust in its credibility.

Information that may exist is not usable without the knowledge that it does exist in the first place, what it is called (without knowing its proper name it still remains hidden), what restrictions if any apply to its disclosure and use, how to find it, where to find it, how to retrieve it, how to discern whether or not it is authentic and official, and, most important of all, how to use it for their practical advantage. In general, people need information, not for the sake of the information itself, but because it is a means to an ends—obtaining an entitlement, finding a job, getting into a school, starting a business, retiring, retraining, mitigating a health problem, planning a trip, or even recreation. Proactive dissemination or knowledge diffusion models emphasize a two-way, interactive model between producer and user, whereas the traditional passive dissemination model emphasizes a one-way, producer-to-user approach.

As the Commission will later endeavor to justify, while the existing basic statutory foundations for accessing government information, such as the FOIA and E-FOIA are necessary legal frameworks, they are insufficient mechanisms, and another public information access and dissemination statutory building block is needed.[87] As Canada's Information Commissioner's recent annual report to the House of Commons said:

> In the cat-and-mouse game which persists between members of the public who want to see information and the officials who want them to see as little as possible, there are three hurdles which must be overcome by the information seekers: delay, excessive application of exemptions, and inability to find the requested records. The last is now the most worrisome hurdle. Information Management in the federal government is in such a sorry state that the term has almost become an oxymoron.[88]

The United States can be proud of its outstanding public domain and public interest information tradition, and the Commission does not want to see that tradition eroded, apparently as is already occurring with our neighbor to the North according to the foregoing quote in the Canadian Information Commissioner's report to the Canadian House of Commons.

1.B. Individual citizens are faced with considerable practical difficulties in knowing what government information exists that might help them, searching for it easily and cost effectively, and then understanding and utilizing it once located.

Individual citizens are faced with very substantial barriers to even knowing whether or not government information that might help them even exists or not, and if it does exist, what kind of information is it, where it is located in the labyrinth of government agencies, whether it is available to them or there are

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[86] Julia F. Wallace, op. cit.

[87] This is not to say that the Administration has done little or nothing to improve public access in the context of E-FOIA. OMB Memorandum M-97 was issued on April 7, 1997, and an April 28, 1998, Memorandum for the Heads of Executive Agencies (available at http://www.cio.gov/docs/foia4-23.htm) provides additional guidance regarding more effective utilization of agency index and record locator system.

[88] Neil Burk, "You Can't Disclose What You Can't Find," *Annual Report [of the] Information Commissioner, 1999-2000* [to the Senate and House of Commons], Ottawa: 2000, page 20.

restrictions on its availability, how can they search for and retrieve it, how to reliably authenticate it, and, finally, even if they succeed in surmounting all of those obstacles, will they know how to utilize it once it is found? Of course this problem has always existed to some degree, even in the pre-electronic era, but the advent of the Internet, bringing with it the enormous proliferation of web-availability of agency electronic information, has greatly exacerbated the problem. FirstGov is a step in the right direction, but this assessment will have much more to say about the need for very substantial further development of that portal before it becomes a practical tool.

> Agencies have assumed that by merely making the information electronically accessible, they thereby, somehow, relieve themselves of the obligation of disseminating the information proactively to the public. They incorrectly equate passive information access with proactive information dissemination.

There are two challenges here, computer literacy and information literacy. In the electronic world, a users needs to know a great deal about the technology and software that is necessary to find and utilize the information. This is called computer literacy. To be computer literate, the individual needs to be able to answer questions like the following ones:

- What format is the information in?
- Do I have the compatible hardware and software to access the information?
- Does the machine have enough memory, enough hard disk space, and a fast enough modem (or network connection)?
- Why is the computer crashing when I try to open the document?
- Can I print all or part of the information?

In the electronic world, a user also needs to know a great deal about the information itself, including its authorship and source. This is called information literacy. To be information literate, the individual needs to be able to answer questions like the following ones:

- Where is the information? Is it already in electronic form and on the Internet?
- What information do I have (or need) in order to find what I am seeking: the exact name or title, the author's name, the publisher, the subject or some other information that will help be correctly identify the information?
- Who has the information, and are they a reliable source?
- Is the information authentic and authoritative?
- Is it in a format that I can read or manipulate?
- Is there someone who can assist me to get the answers to these questions if I don't already know them?

Thus the user is faced with the need for basic computer and information literacy skills, as well as the special skills related to understanding and using public information. This is not simply a challenge of knowing which agency houses the information sought, it is a challenge fraught with other complications, such as needing to know:

- Whether the information still under an agency’s control, or has been already transferred to the National Archives.

- If the information is subject to non-disclosure because of a statutory exception or exemption, such as those prescribed in the FOIA and Privacy Acts.
- Whether the information's format and medium can be utilized by the user or not, or whether special, perhaps even proprietary software is required to search for, retrieve, and utilize it.

As the Commission Panel Four on public sector/private sector partnerships said in its report:

> If the Federal government continues to adopt a distributed approach to government information—i.e., each agency develops a website for the distribution of its own information products and services—then the public, especially those with scant knowledge of the structure of the Federal government, will face difficulties in finding government information at the source. The first challenge for government, then, is to assure that the public can identify which agency might hold the information desired. The second challenge becomes navigating the agency's website, which can vary widely in complexity and user friendliness. To navigate them often requires an intimate knowledge of not only the agency's structure but it's internal terminology. It can be very difficult to find a specific item, even if the user knows its name. [89]

There is a very high priority need, in short, for some kind of one stop, invisible or transparent "click through" or "pass through" government search engine that makes the foregoing considerations user-transparent and domain invisible.

Moreover, in rushing to publish their public information products on the web, agencies have shifted the burdens and costs largely (but not exclusively) to the public for (1) even knowing what government information resources exist that could help them, and then (2) searching for and (hopefully) finding that information. In short, agencies have assumed that by merely making the information electronically accessible, they thereby, somehow, relieve themselves of the obligation of disseminating the information proactively to the public. They incorrectly equate passive information access with proactive information dissemination.[90]

> The government must come to understand that merely making information electronically accessible on agency web pages does not relieve them on the responsibility of ensuring that their information is disseminated equitably and cost-effectively to the same publics they have always dealt with, even in the pre-Internet era.

Access to government information by and at all levels of government is essential:

- For the mobility of workers from low job opportunity areas to high opportunity areas.
- For the ability to work at home and use distant learning (remote education) approaches.
- For the ability to establish a new business or expand an existing business.
- For the ability to get advice on how to cope with health, safety, security, or related concerns affecting themselves and their families.

[89] The final report from Commission Panel Four is available as Appendix 26 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen26.pdf.

[90] A more complete discussion of proactive dissemination and passive access is provided in the section entitled "What This Report Is About and What It Is Not About. The issue is also discussed in Finding 4.K.

- To identify and fully understand applicable government rules and regulations affecting their planned purchase of commercial products and services insofar as those informed decisions depend on health, safety, security, and similar considerations.
- To identify and fully understand applicable government rules and regulations relating to their planned application for federal benefits and entitlements, including Social Security, Medicare, educational assistance, and so on.
- To undertake personal research for information, such as statistical comparisons, in order to enable more active community level involvement.
- To identify and fully understand applicable government rules and regulations affecting their responsibilities to the government with regard to the filing of income and other taxes, compliance with government reporting and recordkeeping laws, and so forth.
- To the ability of sole proprietorships and small businesses to identify and apply for assistance and benefits enabling them to secure new capital, identify markets, understand consumer behavior, and so forth.
- To the ability of lower levels of government to interchange information with the federal level to avoid unnecessary overlap and duplication, and to strengthen state, local, and tribal government information outreach programs for their resident citizens.

The government must come to understand that merely making information electronically accessible on agency web pages does not relieve them on the responsibility of ensuring that their information is disseminated equitably and cost-effectively to the same publics they have always dealt with, even in the pre-Internet era. As pointed out above, physical access is not the same thing as intellectual access. Moreover, it is sometimes argued that we are moving from a system of public information access to government information that is based on physical and tangible artifacts to one that is based on intangible, electronic artifacts and is both intellectual and experiential.

Libraries must continue to play a critical local role in making sure that citizens have access to public information. They are regarded by many as the most convenient community electronic access and distribution points, with associated printing capability, for individuals that are unable to utilize computer and telecommunications capabilities at home, work or school.[91]

In its response to the Commission's survey, the Association for the Advancement of Retired Persons (AARP) stressed that moving from "offering simple, passive access to public information to actively getting it into the hands of individuals who need it" is extremely important.

Other respondents expressed the fear that a proactive agency program for public information dissemination, along with an explicit agency information dissemination budget, could result in a misuse of agency resources to promote the agency and generate propaganda, rather than to reach out and inform the public. The Commission does not believe that constructive public policy should be thwarted by such fears, although it acknowledges that the fears exist. Furthermore, vigilant legislative oversight, carefully framed budgetary authorizations, and detailed policy guidance, including the aggressive use of the Government Performance and Results Act (GPRA), are effective safeguards against such an unfortunate potential abuse.

[91] Benton Foundation, *Local Places, Global Connections: Libraries in the Digital Age,* Washington, DC: Benton Foundation, June 3, 1997; http://www.benton.org/Library/Libraries/home.html.

1.C. Individual users of government information are extremely diverse in terms of computer and information literacy skill levels, specific kinds of information needs, economic status, geography, and other demographic variables.

General or public users of public information, other than the federal government itself, are extremely diverse in many respects, and include:

- The citizenry at large.
- Business and industry.
- State, local, and tribal levels of government.
- Scientists and engineers.
- Practicing professionals such as health care practitioners, parents, teachers, librarians and online information specialists, consultants, legal professionals.
- Rural populations.
- Individual inventors, authors, composers, and artists.
- Academic and research institutions.
- Public interest groups.
- Special interest groups dealing with safety in the workplace, environmental protection, ozone, and many other issues.
- Individuals with disabilities and other special populations including those who are disadvantaged financially, geographically, medically, or who are otherwise unable to find and utilize general public information resources (the needs of this group are dealt with in Section 2 below).
- Not-for-profit groups, including foundations.

The machinery which government has established (the Federal Information Infrastructure) to respond to the needs of these quite diverse populations in not yet customized to the unique needs of each of these population groups. There is no "one size fits all" approach to meeting overall public wants and needs for government information. There cannot be one solution for all users, nor should there be. Moreover, both the public and the private sectors, including the not-for-profit sector, all have important roles in helping end users find, obtain, and utilize public information resources.

For example, each citizen has a variety of professional, work related, and personal and family information needs. The availability of accurate and timely information often can often mean the difference between success and failure, health and illness, learning or ignorance, and economic growth or stagnation. Information has no real value until it is used for some end purpose. That purpose may be purely self-enlightenment or recreation.

Information has little or no value when it is:

- Not even known to exist.
- Unavailable to the public, when it should be available.
- Inaccessible to the public, when it should be accessible.
- Not able to be efficiently searched for and retrieved by the public.
- Not able to be used be used by the public because it is inaccurate, untimely, incomplete, unofficial, or its authenticity cannot be determined.

- Not available in a useful and usable format or medium.
- Not able to be fully understood or reliably used by the public because its meaning and significance cannot be easily understood without knowing where and by whom the data was collected, how it was collected, the sample size, response rate, and so forth. In this regard the work of interagency committees such as the Federal Geographic Data Committee (FGDC), and the help of public interest user groups such as the Association of Public Data Users (APDU), is critical.

1.D. Dramatic expansion of numbers of Internet surfers of government websites attests to the importance of federal, state, local, and tribal government electronic information resources as very important national assets.

The availability of public information on the Internet has increased the number of users and uses of government information (at all levels of government) dramatically. The number of users directly accessing information on the Internet has increased many-fold. At the same time, the need for librarians and other information professionals has also increased because citizens are confronted with such a massive volume of disorganized materials that they cannot easily find what they are seeking, even if they are highly computer and information literate. Some have said that the Internet is currently like an “exploded library,” with card catalogs strewn all over the place.

In their most recent annual review of the World Wide Web, OCLC Online Computer Library Center, Inc., estimated (1) that the Web now contains about 7 million unique sites, which is almost a 50% increase over last year's estimate of 4.7 million sites; (2) that the "Public Web," that is, sites that offer content that is freely accessible by the general public, constitutes about 40% of the total Web; and (3) that the Web continues to expand at a rapid pace even though its rate of growth is diminishing over time.

People need access to public information to learn about what their government is doing. They need access to a vast range of information to make their lives better. They need to know of potentially harmful situations and events such as air pollution conditions, dangerous storms, or faulty tires. Researchers, scholars, and product developers need ready and timely access to a wide variety of scientific, technical, and business-related information and data. The cost to citizens of not having information readily available cannot be calculated.

Moreover, taxpayers have paid for the creation of this information and should be able to retrieve and use it. Federal, state, local, and tribal government agencies want to disseminate information easily and cheaply to their constituency publics, and share their information with other agencies easily at the same or different levels of government. The private sector, including libraries and educational institutions, as well as not-for-profit and for-profit organizations, needs to acquire public information and data in raw form so that they can add value and provide additional services to the public.

Citizens require information from all levels of government: federal, state, local, and tribal. State, local, and tribal levels of government are both major public information providers for their respective constituencies, and at the same time users who need to efficiently interchange information with the federal level to minimize and avoid unnecessary overlap and duplication in the creation and use of government information resources.

1.E. FirstGov is a step in the right direction but has a long way to go before becoming fully effective.

The announcement of the FirstGov portal initiative may be the first concrete step in the right direction to make government information available in a truly comprehensive, "yellow pages" approach. Announced September 22, 2000, FirstGov is intended to provide the public with easy, one-stop access to federal government online information and services.[92] The FirstGov website, located at http://www.firstgov.gov, is intended to provide a single online information portal that connects Americans with federal information. FirstGov allows users to search all 27 million federal agency web pages at one time.[93] It can search half a billion documents in less than one-quarter of a second and handle millions of searches a day.

The website also provides access to the home pages of major agencies and entities in all three branches of government, a section that provides topics of current interest to web users (e.g., a direct link to the during hurricane season, to NASA during a shuttle launch, or to IRS during tax season), and key sites that access state and local government web pages. To increase efficiency, allow citizens to find information intuitively—by subject or by keyword.

The search engine used by FirstGov is a significant technological contribution and a very important and versatile user tool. It is undeniably very fast and quite impressive. However, the search engine needs major improvements in ensuring that information retrieved is relevant to the user request. One key element is to develop an underlying thesaurus and taxonomy to insure that the user is getting closer to the information he or she wishes. Such tools should be linked to applications that help make searches context sensitive, such as through natural language or other applications. There are a variety of automatic and semi-automatic tools for vocabulary switching, and other functions that should be examined in this regard.

Although FirstGov states that it provides access to *all* government online information, in fact it does not. Like other public access systems, FirstGov only covers information that has already been determined to be publicly available and therefore has been placed on agency websites. Furthermore, like other search engines, FirstGov cannot penetrate and index Adobe Acrobat PDF files and other proprietary file formats on agency websites, so it can index descriptions of such files that appear on web pages in HTML, but it cannot index the files themselves. Similarly, it does not penetrate databases accessed through agency websites. This limits the searchable content and therefore the efficacy of the retrieval. Furthermore, FirstGov cannot address public information that never was on government servers, but may be in agency files as paper or microfiche documents, or has been published on CD-ROM, nor can FirstGov provide access to files that have been removed from government servers, although the information may still exist in an electronic or a pre-electronic form, format, or medium somewhere at the agency.

FirstGov also does not include enough granularity in its groupings to permit the sophisticated information retrieval capability needed by many government users. As pointed out above, information users come from many and diverse communities. FirstGov developers must be aware that there is a difference between the general categorization of information and the detailed indexing of information. Information is often categorized into general groups such as travel, medical, or chemistry. These may then be broken down in turn into subcategories (e.g., travel in the U.S., in Europe, in Africa). An example of general categorization is a table of contents. It leads a reader to a chapter or chapters that

[92] The White Paper providing a preliminary assessment of FirstGov is available as Appendix 19 in Volume 3 of this report and at http://www.nclis.gov/govt/assess/assess.appen19.pdf.

[93] This is the number of accessible pages reported late in 2000.

may contain the desired information. Indexing, on the other hand, is much more specific and permits more specific information to be found. [94]

Using both general categorization and indexing, a government-wide categorization of information is feasible, while still permitting the more specific identification needed by the organization originally creating the information and specialized users. Thus there is a need for taxonomies at some—or several—level(s).

Categorization, classification, indexing, abstracting, cataloging, thesaurus development, preservation, and related techniques and methods are sometimes referred to as establishing "bibliographic control." They are the business of the librarian and information manager, and other information specialists such as preservation administrators. It should also be pointed out in this context that the private sector has an increasingly important role in assisting the public sector in this regard because it has pioneered in the development of many sophisticated technologies in the search and retrieval field. The expertise of these professionals can provide valuable assistance in the development and testing of First Gov.

1.F. The Internet is a long way from being a library and, in any event, is unlikely to ever take the place of libraries.

The Internet is not yet a library and, in any event, is unlikely to ever take the place of libraries. Instead, to the ordinary citizen, the Internet is currently at a stage in its evolution where it is a veritable jumble of information services and information resources that cannot be easily searched for, retrieved, or utilized. Therefore, librarians and other information specialists are in great demand to organize government information for both public and private sector information providers, to help people find what they need, and to help people evaluate and apply the information they find to their practical everyday challenges, including finding a government entitlement, applying for a student loan, finding a job, starting or expanding a business, researching a particular health care problem, and so forth. Indeed, there is an elite class of information specialists, *government document librarians*, whose unique and specialized skills are directed to helping citizens find the right public information, at the right time, and from the right place. In addition, there is a unique group of about 1,400 libraries across the country that specializes in housing, managing, and preserving government information for continuous public availability and access, namely f*ederal depository libraries*.

In an interview with *Washington Post* staff writer Joel Achenbach in 1999, Librarian of Congress James Billington, a member of the Commission, is quoted as saying that he believes the library must play a role in saving the Internet from turning into a "dumb bunny domain, a mere offshoot of the audiovisual culture." "The Internet," according to Billington, "shortens attention spans, destroys the sentence, the foundation of the English language, with its diction-mangling chat rooms. And, he continues, the Internet is heavily skewed toward recent information, the latest data, with little trace of older material. A person might surf the Web for hours and not encounter anything written before 1995. It's inherently destructive of memory. You think you're getting lots more information until you've found out you've made a bargain with the devil. You've slowly mutated, and have become an extension of the machine."

All libraries, not just federal depository libraries, have a critical role to play in the Internet Age. They serve on the information firing lines to help individuals who do not have the computer or telecommunication capabilities at home, at a neighbor's or on the job, whatever the reasons may be. They serve individuals, even if they do have equipment, who do not have the requisite minimum

[94] Indexing is discussed further in Findings 1.G and 3.E.

computer and information literacy skills to find the public information they need. These are people who are on the wrong side of the Digital Divide.

In a White Paper prepared for this assessment, Christopher Burns suggests that a promising alternative may be to link agency information collections and their catalogs in a "reciprocal access network"[95] with a shared search engine and standard metadata.[96] Such a design would allow users of one online library collection to access more precisely the collections of other libraries affiliated in a group that resembles the regional networks and shared catalogs of the traditional library community. Burns points out that when the interests and activities of a user group begin to diversify and the collection of documents of that group comes to include many different formats, the right architecture is not necessarily the traditional approach, which has been to put all materials into a single database.

In his article on Resource Description Framework (RDF), Tim Bray says:

> Here's a subtle but important point—in theory, metadata is not really necessary: you could go through the library one book at a time looking for donkey books, or through the video store shelves until you found your movie, or call all the numbers in your area code until you find pizza delivery. But that would be very wasteful, in fact, it would be stupid. Metadata is the way to go. ...
>
> The problem at the moment is that there is hardly any metadata on the Web. So how do we find things? Mostly by using dumb, brute force techniques. The dumb, brute force is supplied by the wandering web robots of search engine sites like Altavista, Infoseek, and Excite. These sites do the equivalent of going through the library, reading every book, and allowing us to look things up based on the words in the text. It's not surprising that people complain about search results, or that the robots are always way behind the growth and change of the Web.
>
> In fact there is one metadata-based general purpose lookup facility: Yahoo! Yahoo doesn't use a robot. When you search through Yahoo, you're searching through human-generated subject categories and site labels. Compared to the amount of metadata that a library maintains for its books, Yahoo! is pitiful; but its popularity is clear evidence of the power of (even limited) metadata.[97]

Bray goes on to say:

> People who have thought about these problems, including many librarians and webmasters, generally agree that the Web urgently needs metadata. What would it look like? If the Web had an all-powerful Grand Organizing Directorate (at www.GOD.org), it would think up a set of lookup fields such as Author, Title, Date, Subject, and so on. The Directorate, being, after all, GOD, would simply decree that all Web pages start using this divine Metadata, and that would be that. Of course there would be some details such as how the Web sites ought to package up and interchange

[95] The White Paper by Chris Burns is available in Appendix 18 and also at http://www.nclis.gov/govt/assess/assess.appen18.pdf.

[96] Metadata is information about information, or data about data, e.g., an abstract and related indexing that describes a document, a cataloging record, or a bibliographic citation.

[97] Tim Bray, "What is RDF?" published on xml.com, January 24, 2001, http://www.xml.com/pub/a/2001/01/24/rdf.html?page=1; updated by Dan Brickley from "RDF and Metadata," published on xml.com in June 1998, http://www.xml.com/pub/a/98/06/rdf.html.

> the metadata, and we all know that the Devil is in the details, but GOD can lick the Devil any day.[98]

In his book, *The Age of Intelligent Machines*, Raymond Kurzweil quotes a "view from the future looking back at our present" by the distinguished futurist and artificial intelligence expert, Marvin Minsky. Professor Minsky asks, " Can you imagine that they used to have libraries where the books didn't talk to each other?" He then goes on to say:

> The libraries of today are warehouses for passive objects. The books and journals sit on shelves waiting for us to use our intelligence to find them, read them interpret them, and cause them finally to divulge their stored knowledge. Electronic libraries of today are no better. Their pages are pages of data files, but the electronic pages are equally passive. Now imagine the library as an active, intelligent knowledge server. It stores the knowledge of the disciplines in complex knowledge structures (perhaps in a knowledge representation formalism yet to be invented. It can reason with this knowledge to satisfy the needs of its users. The system can, of course, retrieve and exhibit (i.e., it can act as an electronic textbook). It can collect relevant information; it can summarize it; it can pursue relationships. It acts as a consultant on specific problems, offering advice on particular solutions, justifying those solutions with citations or with a fabric of general reasoning. If the user can suggest a solution or a hypothesis, it can check this and even suggest extensions. Or it can critique the user viewpoint with a detailed rationale of its agreement or disagreement. It pursues relational paths of associations to suggest to the user previously unseen connections. Collaborating with the user, it uses its processes of association and analogizing to brainstorm for remote or novel concepts. More autonomously, but with some guidance from the user, it uses criteria of being interesting to discover new concepts, methods, theories, and measurements. The user of the library of the future need not be a person, but may be another knowledge system, that is, any intelligent agent with a need for knowledge. Thus, the library of the future will be a network of knowledge systems in which people and machines collaborate. Publishing will be an activity transformed. Authors may bypass text, adding their increment to human knowledge directly to the knowledge structures. Since the thread of responsibility must be maintained, and since there may be disagreement as knowledge grows, the contributions are authored (incidentally allowing for the computation of royalties for access and use). Maintaining the knowledge base (updating knowledge) becomes a vigorous part of the new publishing industry.[99]

1.G. Helping the public find government information is more critical than it ever was because of the vastness of newly available electronic public information resources.

The question of whether electronic information can be located without cataloging, indexing, or offering access *at the document level* is a critical consideration, since it directly relates to the full costs that must be associated with, and budgeted for, to provide public access to government information. By comparison, finding information at the broad, generic level is far easier.

Federal agencies should not be expected to provide an equal level of access to all kinds of information—especially if providing this information without adequate summarizing, abstracting and

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[98] Tim Bray, "What is RDF?" published on xml.com, January 24, 2001, http://www.xml.com/pub/a/2001/01/24/rdf.html?page=2.

[99] Raymond Kurzweil, *The Age of Intelligent Machines*, Cambridge, MA: MIT Press, 1990, page 328.

indexing/metadata, created at considerable cost, means that it is only added to a "mountain of digital objects" that users will have to wade through. Hundreds of thousands of "hits" are almost worse than no hits at all.

The private sector and libraries have traditionally filled an important role in adding value to public information by collecting, cataloging, abstracting and indexing, digitizing and providing public access to public information. There is no evidence to suggest that their ability to serve the public through such services has become obsolete. In fact, the government itself frequently buys back its own information from the private sector, repackaged with added value. The government should be more aware of these private sector efforts, and the full associated costs for government to perform these services itself. In some cases, government will find it beneficial to partner with the private sector and libraries to accomplish these tasks. In other cases, the government will determine that it is more appropriate to allow the private sector and libraries to assume responsibility for value-added services such as increased search and retrieval functionality. However, the government must not lose sight of the fact that it has the *primary* responsibility for managing the entire life cycle of electronic government information, including the dissemination and permanent public availability of and access to government information to and by the American public, without copyright-like restrictions.

If the federal government continues to adopt a "distributed" (dispersed and decentralized) approach to public information availability—i.e., each agency develops a website for the distribution of its own information products and services—then the public, especially those with scant knowledge of the structure of the federal government, will face difficulties in finding public information at the source. Again, the digital library approach could be very helpful here. The first challenge for government is to assure that the public does not have to know in advance which agency might hold the information desired.

The second challenge becomes navigating the agency's website, which can vary widely in complexity and user friendliness. To navigate websites seamlessly requires an intimate knowledge of not only the agency's structure but it's internal terminology. It can be very difficult to find a specific item (e.g., a specific document), even if the user knows its name or identifying number. It should be noted, however, that GPO Access's cataloging and locator services and FirstGov, under the authority of the General Services Administration (GSA) do provide access to centralized search capabilities that allow users to retrieve information from a broad array of agencies and branches of government.

Moreover, when individuals search, they want results that might be of use to be shown *in context*, so that they can more easily understand the significance of the information. The citizen-searcher should not have to go back to the home page of an agency in order to relocate particular information on that site, yet many agency websites offer information through site searches that preclude direct links back to a specific document or file.

User assistance is of critical importance in facilitating use of electronic information.[100] Technology continues to enhance the means of providing huge amounts of information in electronic formats—whether on disk, CD-ROM or DVD, or directly through the WWW and the Internet. As the number of resources grows, users are in greater need of tools to help identify both sources of information and data sets—critical components of those information sources—in order to meet their specific needs.

[100] It is also costly, since it requires manpower. A major benefit of the Federal Depository Library Program (FDLP) is that it provides, at no additional cost to the federal government, trained, professional documents librarians as intermediaries to assist users to identify the right information to meet their needs, as well as instruct users on the interpretation and appropriate use of the information. This is an invaluable asset and any restructuring of the FDLP must find way to maintain and enhance this resource. The need for additional training for library and information professionals is discussed in Recommendation 13.

There are several means by which users can gain assistance:

a. Personal interface, e.g., in non-profit and corporate libraries or through federal agency user support hotlines.[101]

b. Summary source information, provided most commonly in any number of formats as of indices and abstracts of information sources, summarizing both general information sources, as well as specific data sets within general sources.

c. Search engines/locator services, used primarily to locate general information resources online effectively and quickly.

d. Search and retrieval technologies, normally specialized software delivered as part of the information product or service and used primarily to locate specific data or data sets once access to a digital information source is achieved.

e. Value-added citations and links, and other services built upon such data. In this regard, various commercial search engines such as www.google.com or the Institute of Scientific Information (ISI) citation research tools can be very helpful.

Several other issues affect the provision of assistance to users. Among the most critical of these—regardless of whether assistance is provided by government, the private sector or libraries are:

1. Cost to both the provider and members of the public.
2. Quality, often tied directly to the cost of providing the assistance.
3. Innovation, i.e., developing, testing and providing new means of obtaining and using information sources or data sets to meet the public demand.

Regardless of whether user assistance is provided by the public or the private sector, however, the public often experiences mixed results. In terms of private sector WWW and Internet locator and search engine services, many such providers rank websites based on special or exclusive—and sometimes economic—agreements with website purveyors or on how frequently websites are requested and successfully found by users. Government agencies are unlikely to enter—and under 44 *U.S.C.* 3506(d), executive branch agencies are statutorily prohibited from entering –into special agreements with the private sector. More importantly, if the public is not aware that an agency has placed a site on the web or added new information sources to the site, it is unlikely that it will be ranked highly on a private sector service due to a large number of hits.

The federal government has also been somewhat successful in the provision of search and retrieval capabilities to assist users once they have gained access to a website. However, depending on how the agency has organized the information provided through the website, the public can sometimes encounter difficulties in locating specific data—unless they are already well-versed in the technologies of the web or unless they have been able to identify specific parameters to help narrow their search (e.g., the date of a notice; the precise name or public law number of a statute or court decision; or the date or number of a regulation implementing a statute).

The inevitable limitations on availability of government resources, however, demand that the government should undertake only the most necessary user assistance activities and need not duplicate

[101] In fact, the government should be more proactive in promoting its information services to the public and offering user support for those services. It also should do more to promote libraries, particularly the federal depository libraries, as additional sources of user support. Conclusion 6 and Recommendation 13 relate specifically to the Federal Depository Library Program (FDLP).

or adopt all types of services that private sector and library providers offer to their customers and patrons. Cost and unmet public needs will always be major factors in the evaluation by government agencies of what user assistance services to provide. In addition, although the government has a general mandate primary responsibility to make widely available the information it creates and maintains, it also has a responsibility to encourage the development of alternative sources for public information, including online sources—whether private or non-profit in origin. Therefore, regardless of what services it develops, government must make them available to the public at large—including private and non-profit sector providers—at no cost.

1.H. Transition from the print era to the electronic era has been at lightning speed; ramifications have barely had time to be even partially assessed, both positive and negative consequences.

The Internet has come upon us with lightning speed. By comparison, cars, telephones, radio, and television crept upon us, giving plenty of time to adjust to them. The government itself has set very stringent deadlines for converting from pre-Internet mediums to the Internet, as is evidenced by the timetable for agency and public compliance with the Government Paperwork Elimination Act, allowing very little time to accommodate to the changes in lifelong habits that are necessary.

> The printed word is not dead yet. Is there anyone left by now who does not appreciate the irony of seeing the volume of paper printing at the individual desk level reach a proportion that is hundreds, if not thousands, of times greater than centralized printing ever was?

In the past public acquisition of government information *depended entirely upon physical mechanisms* — upon government depository and other libraries, upon government and privately owned bookstores, directly from publishers, mail order from GPO or private redistributors such as order fulfillment houses or other outlets, and agency distribution lists. If a person did not live near a library, they simply could not get the information easily or quickly. While this system worked well in the ink-on-paper era, it now has evolved rapidly into an electronic, networked-based public information environment. Younger people, especially, do not want to access information in paper. They are accustomed to using the Internet for quick and easy access to information wherever and whenever they need it.

The electronic mode makes it possible to deliver information wherever the reader may be (for instance, to his or her computer in the home or workplace, or by wireless technology to anyplace), to present information that cannot be captured in print (such as video appendices, tables that can be manipulated and so on), and to facilitate use of information through quality interfaces and search capabilities.

The Internet is the medium of choice for many in business, education, and general information seekers. The Internet does not represent merely an incremental improvement, but a fundamental and far-reaching change in the distribution and dissemination of information in all forms, including public information.

Before the World Wide Web, publishers viewed the Internet as an add-on to print, CD-ROMs, DVDs, and microfilm. Paper was the primary medium for distribution of information. It is still preferred by many people, but is not the medium of choice for the future. Now many publishers and most young people view the Internet as the primary source for information. Print has become the add-on.

However much agency information is not available on the web, or else it has been taken down even though it was once available. For example, in one recent study by the University of California at Berkeley, a list of approximately 70 electronic government publications, which previously were available via the Internet (as text, html or PDF files), are no longer available for a variety of reasons. These files may have been removed because the publications were updated or revised, the issuing agency believed there is no longer a need to provide access to them, the issuing office no longer maintains their website, or for other reasons[102]

As was pointed out by a depository librarian at a Commission public meeting, in some cases a public information product may be available in both electronic and print versions, but only the print version is the authentic and reliable version. Certain tables within the *Statistical Abstract of the United States* are in this category. When a user is confronted with legal, medical, or revenue issues, reliability is absolutely crucial.

In short, the printed word is not dead yet. Is there anyone left by now who does not appreciate the irony of seeing the volume of paper printing at the individual desk level reach a proportion that is hundreds, if not thousands, of times greater than centralized printing ever was?

It should be extremely clear that when the Commission recommends that the government not entirely abandon print media, it is not because of some kind of neo-Luddite mindset, but, rather, because as one moves across the spectrum from the highly information literate one end to the highly information illiterate other end, the dependency on print media becomes proportionately higher. This fact flies in the face of the loud proclamations to the contrary from the dwindling numbers of the "paperless society" gurus. The "paperless society," we have been told with numbing regularity, is "just around the corner." It has been "just around the corner" now for many decades, but, in fact, we are further away from that prediction today than we were in the mid-20th Century![103]

Librarians and others have expressed concern about the assumption than all information can be delivered and used as well or better electronically than in other forms. Commenting on the draft report, Jill Pigeon of Hollins College said, "Tangible documents are better in certain cases for a variety of reasons, ranging from guaranteed historic value and availability to ease of use, [as well as] ensuring access to the technologically or financially disadvantaged."

Agencies are not routinely asking themselves two key questions when they migrate their information products to the web:

- Do the new medium and format improve access for existing and new users with a need for the information?
- Do the new medium and format deter or prohibit access to existing or new users with a need for the information?

1.I. The executive, legislative, and judicial branches still significantly undervalue government information as a public good that offers a substantial return on the investment to the taxpayers.

Dissemination of public information and its use create significant public benefits for all users. Information enables all Americans to learn about their government, issues affecting their quality of

[102] American Library Association (ALA), Government Documents Roundtable (GODORT), "Electronic Information No Longer Available on the Internet, May 10, 2000," available at http://www.lib.berkeley.edu/GODORT/2k0508missing.html.

[103] This issue is addressed in Appendix 15 in Volume 3 of this report: Some Important Information Age Paradigm Shifts and Their Associated Myths and Realities. It is also available at http://www.nclis.gov/govt/assess/assess.appen15.pdf.

life, regulations related to safety in the work place, how to grow healthy children and healthy plants, how to begin or expand a business, research on health and medicine, the exploration of space, etc. More timely release of regulatory information fosters compliance with various laws and rules affecting the environment, health, and the work place.

Elected officials, economists, and policy analysts repeatedly remind us that this is a "knowledge society" where information is the key resource and asset. In this environment, information and learning become the key drivers to maintaining national superiority in science, technology, innovation, and economic growth. The Internet has transformed education and health care. More and more colleges, universities, and private companies offer courses and degrees to users remote from college campuses. Corporations use the Internet to disseminate training and education to employees around the globe. The wide availability of health information is producing consumers with more knowledge of diseases, options for healing, health, and wellness. It is essential that citizens have government-produced information on which they can rely.

As the world's largest producer of information, the federal government has a unique and critical role in the information society and the nation's future scientific and economic development. The investment made by the taxpayers in research, data gathering, and the dissemination of information has been and will continue to be a key resource that returns enormous benefit to the economy and society. The maximum return on this investment and the maximum public good can be achieved only if government produced information and research results are disseminated in an effective manner on the Internet. The work that has been done in evolving and refining the digital library concept actually predates the spread of the World Wide Web, and could be usefully examined in this context.[104]

As Roy Tennant points out in a recent article in *Library Journal*, the guidelines to help organizations decide which of their holdings they should consider for digitizing are complex and vary from institution to institution. "Selection guidelines produced by individual institutions are understandably focused on the needs of the particular institution and its clientele but may [serve as an inspiration to others.]"[105]

1.J. Cost-sharing of public data among user groups is no longer the big issue that it once was.

At a recent meeting of the Association of Public Data Users (APDU) it was reported that only seven years ago, in 1993, an APDU consortium of 18 members spent $5,000 to purchase a set of Public Microdata User Samples (PUMS) tapes from the Census Bureau. The actual cost of duplicating each set of tapes, including a share of the original fee paid to the Census Bureau, was only $1,700 per member. Thus Census was charging at least $3,300 more than the cost of duplication for each set that it sold. This example makes clear that agency efforts to charge more than the cost of dissemination can and will be thwarted by cooperative purchasing or other redissemination methods.

The economics of this equation have been turned upside down by the Internet. The cost sharing of public data is no longer the big issue it once was in most (but not all) areas. Of course the biggest reason for this is that more and more data is now becoming available free on agency websites. Nevertheless, it serves as a reminder that there are valid economic and policy reasons using for cost recovery as the basis for pricing of public information that is not made available free of charge.

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[104] Both the National Academy of Sciences and the National Science Foundation have funded relevant studies on digital libraries are included in the bibliography in Appendix 32. The Appendix is also available at http://www.nclis.gov/govt/assess/assess.appen32.pdf.

[105] Roy Tennant, "Digital Libraries: Selecting Collections to Digitize," *Library Journal*, Vol. 125, no. 19 (November 15, 2000), page 26.

1.K. Direct web surfing is fine, but bypassing the utilization of traditional intermediaries in searching for public information is creating both obvious and not so obvious dysfunctional consequences.

As more and more public users develop their computer and information literacy skills to the point where they are searching for public information directly, by-passing the use of traditional intermediaries such as librarians and information brokers, many apparent as well as many not-so-apparent consequences are cropping up. Some of these consequences might have been anticipated, but others are not so obvious. For example, in the words of a participant at a recent APDU meeting, "the policy behind the [public information] product is being lost as people access data directly without going through intermediaries such as librarians, statisticians, data analysts, records specialists, archivists, museum specialists, and so on."

In the NCLIS staff authored White Paper on Information Age paradigm shifts, it was also pointed out that, in the broadest sense, the separation of content from its original context and provenance as information gets endlessly copied, reproduced, communicated, and re-communicated is another dysfunctional consequence with disquieting ramifications. For one, the separation of content from its original context (or what in records management parlance is "provenance") is frustrating attempts to evaluate the credibility of the information because its source and origin is "hidden".[106]

Most users understandably expect to find a specific item of information, not a web page when they undertake a search. However, when the initial search results refer to another web page, they are still faced with a second search, or following of multiple links, to find the necessary information. For example, Jill Vassilakos-Long, an experienced government documents specialist, described looking for documents using the GPO Browse Electronic Titles feature. She selected a document from the list, but the link took her to another website, instead of to the document itself. She describes her ultimately successful effort to find the document she is seeking, saying: "I see a later edition (1997) of this document on the site; but [not] the 1996 edition. [When] I go under a link that looks as if it is part of the 1997 document—the link is called "reports"—I ... find the 1996 document."[107] This comes about, not through any fault of GPO, but because agencies move and remove documents constantly.

1.L. Electronic government documents often, quite literally, appear one day and disappear without a trace the next.

Many documents specialists fear, with documented evidence, that if a document was "born digital" and never initially came to a depository library in paper form, no depository library will ever have it. Jill Vassilakos-Long, a government documents specialist at the California State University in San Bernadino, estimates that at least 10% of the documents linked to by the GPO Access portal for the use of federal depository libraries and others have been taken down from the agency servers that originally housed them.[108] Here is her description of the current state of affairs and her vision of the future if things continue as they are:

> I have perfect faith that at least 10% of the titles linked to from GPO (i.e. these did not begin as fugitives!) have been taken down from the servers that housed them. I absolutely believe that at least 10% of information that was disseminated in non-

[106] The White Paper on information Age paradigm shifts is available as Appendix 15 in Volume 3 of this report and at http://www.nclis.gov/govt/assess/assess.appen15.pdf.

[107] Jill Vassilakos-Long (jvlong@csusb.edu), "Pitfalls of Digital Storage," Message posted on GOVDOC-L, Friday, July 21, 2000 at 10:48 a.m.

[108] Ibid.

> tangible format is GONE. If it did not also come out in paper and get distributed, I strongly believe that no library will have it. If it has been deemed "old enough" to be taken off the agency server, I strongly believe that no number of calls to the agency will obtain a copy (unless I'm a Senator, but for a constituent—nothing).
>
> It gets worse. If GPO did not have this page up, I might tell the patron that he or she must have the citation wrong, that such a document NEVER EXISTED! It would literally be gone without a trace.
>
> ... I just have no way to convey the enormity of what is happening. [With] 10% gone today, in a decade how much will be left?

While in some cases agencies formally announce plans to discontinue a public information product, as required the Paperwork Reduction Act,[109] in most cases they do not, particularly when the publication is "merely" an electronic file on an agency website. In some cases involving multi-format publications, users cannot distinguish between a multi-format publication losing one of its formats and a web-only publication completely disappearing.

There seems to be an implicit, if not explicit policy in many agencies that once the decision is made to transfer an information product from print, or other pre-electronic medium and format, to a website in electronic form, that the agency thereby relieves itself of any obligation to preserve and maintain prior year data if it was not in electronic form.

As the Commission pointed out in its *Preliminary Assessment of the Proposed Closure of the NTIS*, 30% of document requests for both NTIS and the Defense Technical Information Center (DTIC) are for documents 10 years or older! Provided below are three very brief examples of why permanent public availability of government information is absolutely critical.

From the Gulf War up to the present time, there has been the continuous threat of use by Iraq of mustard gas. Fortunately, the United States still has the technical reports from World War I regarding mustard gas. The chemistry has not changed, nor have the effects. These reports not only remain valid today, but they are still the main part of the knowledge base.

In 1974 the OPEC oil embargo led to increased research in synthetic fuel. The best research in this area was done in Nazi Germany during World War II since the Germans had limited oil fields, and the Allies were closing down crude oil sources. DTIC has the technical reports produced by Germany. These became very popular in 1974 and in the years that followed, and are likely to receive renewed attention due to the recent sharp increases in gasoline and heating oil prices.

In 1998 a depository librarian sent an e-mail to the Social Security Administration (SSA) thanking the agency for retaining multiple years worth of a title on its website, and noting that the historic documents were of value to the researchers using her library. A reply was soon received thanking the librarian for the e-mail, and informing her that SSA had removed the two earlier years from its web page. This title is no longer issued in any tangible form through the depository program, since it was

[109] Section 3506(d)(3) of the Paperwork Reduction Reauthorization Act of 1995 states that agencies shall "provide adequate notice when initiating, substantially modifying, or terminating significant information dissemination products." One problem with this language is the use of the undefined term "significant" to characterize the information dissemination products for which notice is required. In its recommendations for changes existing legislation and OMB Circular A-130, the Commission recommends elimination of this term and clarification of the notice provision. This recommendation is Appendix 12 in Volume 2 of this report, which is available at http://www.nclis.gov/govt/assess/assess.appen12.pdf.

available electronically. This means that the versions from those past years are no longer available in any form. Only the current year is available on the SSA website.

2. FINDINGS RELATING TO DISABLED, DISADVANTAGED AND SPECIAL POPULATIONS

2.A. The hard-core computer "disaffected" are a special population.

According to a recent report released by the Pew Internet & American Life Project,[110] half the adults over 18 years of age in America, approximately 100 million people, do not have Internet access. The survey, conducted in the April 2000 to August 2000 timeframe, found that:

- A third of the Internet non-users, about 31 million people, say they are likely to stay away from the Internet for the purpose of surfing.
- Another 25% of the non-Internet users say they probably will not venture online not just for the purpose of surfing the Internet, but sending and receiving e-mail, using any kind of word processing or spreadsheet or other kinds of software for personal or business purposes, searching online databases, and so forth.
- On the other hand, 12% of those without Internet access say that they definitely will go online, and 29% of non-Internet users say they probably will get Internet access.
- 54% of those not online believe the Internet is a dangerous thing.
- 51% of those not online say they do not think they are missing anything by staying away from the Internet.
- 39% of those not online say the Internet is too expensive.
- 36% of those not online express concern that the online world is a confusing and hard place to negotiate.
- 13% of those who are not online (about 12 million people) have used the Internet at sometime in the past, but have since dropped off.
- Of those who have dropped out, 21% say they no longer have a computer, 14% say they have changed jobs, 11% say paying for Internet access was too expensive, 9% say they didn't find the Internet very interesting or useful, and 8% say they were worried about their privacy.

Of course it is easy to say that the Internet is a brand new communications medium, which is just at the beginning of its product life cycle. Inevitably these numbers will change, but the Commission's purpose in citing the survey findings here is primarily to underscore three points:

First, the government has an obligation to respond to the public information needs *of all of its citizens*, not just those who are highly computer literate and information literate. To the extent that a significant proportion of the population may never acquire Internet literacy, their needs must be provided for by other means and communication mediums. In the words of one depository librarian who appeared as a witness at a Commission meeting, "we still must tell people who come into the library that when you use the mouse, you don't need to pick it up first!" This story may bring a smile to the face of the

[110] Amanda Lenhart, *Who's Not Online: 57% of Those Without Internet Access Say They Do Not Plan to Log On*, Washington, DC: Pew Internet & American Life Project, September 21, 2000; http://63.210.24.35/reports/pdfs/Pew_Those_Not_Online_Report.pdf.

computer literati riding in their latest model desktop Lamborghinis, but it is the truth being confronted on the user front lines every day by librarians all across the country.

Second, the government must provide for the *transition of society* from its current, still largely paper-based mode, to the Internet-of-the-Future promise, by carefully subdividing its planned policies related to e-Gov and the policy implementation into *short, medium, and long-term timeframes programs and projects* to avoid a "damn the torpedoes, full speed ahead" approach.

Third, the government has an obligation to educate and train information professionals who, in turn, can train the general population in how to find and use public information. It is not enough for an agency to merely post information on its website, and then "walk away" from the postings, so to speak.

A majority of Americans has probably never used a public library, or entered a bookstore. Unfortunately, that is most true among those groups in society that most need information to deal with their problems: the poor, the ill educated, the elderly, those suffering chronic and oftentimes incurable illnesses, and the unemployed.

2.B. Individuals with disabilities and those who are otherwise disadvantaged stand to gain the most from the new technologies, which give them tools to gain greater independence and social integration.

> The Administration announced "the Digital Divide" challenge with great fanfare in 1998, but unfortunately too many individuals have thought the term refers just to *physical* access barriers to information resources, not *intellectual* barriers to access. Inadequate computer and information literacy skills are the major barriers to intellectual access. Both types of barriers must be removed before citizens can reap the awards of the Information Age.

The Commission strongly believes that any effort to improve government information dissemination to the public must include those with disabilities and those who are otherwise disadvantaged. It is strengthened in this belief by a study by the Disability Statistics Center at the University of California, San Francisco.[111] This study states that people with disabilities stand to gain greater independence and social integration through computer technology. However, they have among the lowest rates of use, and many are poor and cannot afford computers capable of navigating the Internet. Lower-cost computing and access, simpler user interfaces, and training and support in the use of hardware and software are essential, if this segment of our population is to effectively move into the new age.

Speaking before the House Committee on Government Reform, Subcommittee on Government Management, Information and Technology, OMB Deputy Director for Management Sally Katzen said:

> As the President directed in his Executive Memoranda commemorating the 10th anniversary of the Americans With Disabilities Act on July 26th of this year, agencies

[111] H. Stephen Kaye, *Disability and the Digital Divide*, Abstract 22, San Francisco: Disability Statistics Center, University of California, San Francisco, July 2000; http://www.dsc.ucsf.edu/UCSF/pdf/ABSTRACT22.pdf.

have been asked to make all programs offered on their Internet and Intranet sites accessible to people with disabilities by July 27, 2001.[112]

The Commission identified nine organizations that it believed represented a broad cross section of the disadvantaged groups, and surveyed these groups for the purpose of ascertaining where they believed existing public information dissemination policies and programs impacting disabled and disadvantaged individuals and other special populations could be strengthened.[113] Of these, seven responded, and several other organizations that were not initially approached provided valuable unsolicited comments, as well.

In addition, the Commission received testimony from the National Association of the Deaf, at its December 4, 2000 public meeting.

Of the seven survey responses received, only one organization, the National Library Service (NLS) for the Blind and Physically Handicapped within the Library of Congress, reported having a formal policy on dissemination of government information, and this only insofar as it meets the needs of its particular special clientele. This policy is folded into the NLS collection building policy, which includes the responsibility for making library materials available for the blind and physically handicapped.

Four of those surveyed reported having, or planning, programs to reach their clientele:

- American Association on Mental Retardation. RADAR (Focused Research and Reporting on Critical Developmental Disability Issues) is an online data warehouse to be used for data mapping and trend analysis.
- Association for the Advancement of Retired Persons (AARP). Ageline database of articles and book summaries, licenses to several search services. Plans are for it to be added to the AARP website later this year.
- Columbia Lighthouse for the Blind. Strategic partnership with a Colorado-based audio bookstore (ReelBooks Internet, Inc.) to develop an e-commerce business operated by employees who are blind and visually impaired.
- National Organization on Disabilities. Plans for a program to reach business and volunteer groups on how to effectively serve those with disabilities.

Five of the organizations surveyed identified information they do not receive from government, but which would be useful to their memberships/clienteles. These include:

- Information on key issues on development disabilities (abuse, housing, aging, employment and transportation).
- Information on e-commerce and acquiring career skills to increase job marketability.
- Popular consumer information from various federal agencies and time-sensitive information.
- Information on the "how-to" part of disability work.
- Items that have sound, text or captions, including streaming videos and websites that talk.

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[112] Sally Katzen, Statement before the Committee on Government Reform, Subcommittee on Government Management, Information and Technology, U.S. House of Representatives, October 2, 2000, page 2; http://www.cio.gov/docs/October_2_2000.htm.

[113] The survey results related to special populations are available as Appendix 28 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen28.pdf.

In addition, five of the organizations identified public information that they now receive and that their memberships/clienteles need or want, including:

- Vital policy, financial, research and service information on issues and trends in mental health and substance abuse services.
- Social Security, Medicare, and Medicaid information, obtained through website links.
- Consumer documents and research and statistical information.
- Information on Section 508 of the Rehabilitation Act, and guidance on accessible websites.

The Administration announced "the Digital Divide" challenge with great fanfare in 1998, but unfortunately too many individuals have thought the term refers just to *physical* access barriers to information resources, not *intellectual* barriers to access. Inadequate computer and information literacy skills are the major barriers to intellectual access. Both types of barriers must be removed so that all citizens, whether or not they are disabled or disadvantaged, can reap the awards of the Information Age.

Section 8a(6)(f) of OMB Circular A-130, *Management of Federal Information Resources*, direct agencies to:

> (6) Maintain and implement a management system for all information dissemination products which must, at a minimum: ... (f) Ensure that members of the public with disabilities whom the agency has a responsibility to inform have a reasonable ability to access the information dissemination products...[114]

However, the Commission finds that additional steps are necessary to meet to the needs of special populations.

2.C. Schools and school age children are a disadvantaged special population.

While it is true that more than 95% of all U.S. public schools have access to the Internet, in all likelihood machines are often old, often inaccessible, or the level of computer and information literacy necessary to utilize them effectively causes the number of students using the Internet to lag seriously behind this 95% availability figure. A number of public and private activities have made this connectivity possible. The "digital divide" is a reality, but it is gradually improving although it will probably never disappear entirely. Just as reductions in price resulted in VCRs becoming ubiquitous in U.S. households, reductions in the price of computers and commercial offerings of free Internet access are bringing the Internet into more and more schools. The use of computers and the Internet by more school children also is stimulating sales and access. According to Nielsen/Net Ratings, Internet users with annual incomes between $21,000 and $33,000 spent more time on the Internet than the average Internet user, and this finding is reflected in the relatively high computer and information literacy capabilities of school age children.

Every parent knows how his K-12 children are attracted to the excitement of using computers at home and at school to do research, to play games, to do homework, and for other purposes. It has become a cliché that the parents must sometimes learn how to do something on their PC's by asking their children. The federal government has done innovative things in making public information more easily understandably by, and usable by K-12 school age populations. Many federal websites, including www.whitehouse.gov, include special pages for children. Other federal websites include materials for

[114] U.S. Office of Management and Budget, "Management of Federal Information Resources," OMB Circular A-130, op cit.

K-12 teachers to help them use agency information in the classroom. The Commission finds that federal agencies, for the most part, are already well sensitized to the opportunities in this area, but development of high quality public information services for children should be encouraged at the highest levels of government and carefully monitored by the Department of Education and other agencies.

2.D. Older populations are a disadvantaged population.

The Pew Internet & American Life Project mentioned earlier found that "Most of the strongest Internet holdouts are older Americans, who are fretful about the online world and often don't believe it can bring them any benefits." More specifically, 43% of all adults not online are seniors who are 60 or over. [115]

At the same time, articles in newspapers and magazines record tales of older citizens using the Internet to exchange e-mail with grandchildren, learn more about health care and other issues of interest, and chat with peers. So it would appear that despite initial suspicions, in fact, senior citizens represent a fast-growing segment of Internet users. In short, online access extends across the whole population spectrum and continues to expand its reach exponentially.

Several associations pointed out that quite often senior citizens are physically handicapped in some respect or another. Therefore, applications be available that do not require stringent eye-hand coordination, or fine movement control. Helpful alternatives include scanning or keyboard navigation tools that do not require the simultaneous activation of two buttons and monitors that can display large print formats. Moreover, the operation of the devices and systems should be as simple, predictable, and error-tolerant as possible.

The Association for the Advancement of Retired Persons (AARP) urged the Commission to recommend that the government "move from offering simple, passive access to government information to actively getting it into the hands of individuals who need it."

2.E. Persons with visual impairments are a disadvantaged population.

Information specialists are working to make Adobe Acrobat PDF files more easily accessible to the blind and low vision computer users, and it is hoped that the next release of the Adobe Acrobat Reader will contain this feature. Several associations have suggested that all electronic government information presented visually (or stored as an image) should have an alternative or supplemental presentation (or storage format) that does not require vision (e.g., auditory format or ASCII text that can be "read" by a Braille display or a voice synthesizer).[116] Moreover, alternatives to controls that require eye-hand coordination (e.g., mice, trackballs, ordinary touch screens) should also be provided, such as keyboards, and Talking Fingertip touch screens. These alternatives also assist the physically impaired whether blind or not.

2.F. Persons with hearing impairments are a disadvantaged population.

In 1998, Congress amended the Rehabilitation Act and strengthened provisions covering access to information in the federal sector for people with disabilities. As amended, Section 508 of the

[115] Amanda Lenhart, *Who's Not Online,* op. cit.

[116] Good website practice calls for a text label associated with every image. That may be as simple as a statement like "picture of John Doe" or as elaborate as a paragraph describing a painting by Renoir.

Rehabilitation Act requires access to the federal government's electronic information. The law applies to all federal agencies when they develop, procure, maintain, or use electronic information technology. Federal agencies must ensure that this technology is accessible to employees and the public. The law directs the Access Board to develop access standards that will become part of the federal procurement regulations.

Several of the associations surveyed by the Commission that serve persons with hearing impairments (as well as those serving other disadvantaged populations) strongly recommend that these populations first go to the Access Board's website to read carefully about the rules for Section 508 of the Rehabilitation Act Electronic and Information Technology provisions.[117] The Access Board is an independent Federal agency devoted to accessibility for people with disabilities. It operates with about 30 staff and a governing board of representatives from Federal departments and public members appointed by the President. Key responsibilities of the Board include:

- Developing and maintaining accessibility requirements for the built environment, transit vehicles, telecommunications equipment, and for electronic and information technology;
- Providing technical assistance and training on these guidelines and standards; and
- Enforcing accessibility standards for federally funded facilities.[118]

Beyond the use of the Access Board website, several associations surveyed by the Commission suggested that all audible government information (e.g., information stored as a sound file) should have an alternative or supplemental mode of presentation (or storage format) that does not rely on hearing (e.g., a visual mode or an ASCII text file). A Braille display or a voice synthesizer can read an ASCII text file. Auditory information beeps or any other sounds that convey essential information should be avoided.[119]

Deaf and hard of hearing individuals seek the following in terms of access to libraries and public information:

- Make calls from outside, including after hours (i.e., via TTY as well as through other interactive means).
- Access materials and resources through the Internet.
- Use accessible materials, i.e., books, audiotapes, videos, CDs, software, and the like.
- Attend regularly scheduled or special programs, training sessions, and presentations (including those provided by deaf and hard of hearing persons).
- Obtain assistance from trained staff that are either deaf or hard of hearing, or understand the specific needs of these groups.

Technology, which uses voice as its communication medium has struggled to overcome the tremendous variations in language, dialect, accent, and individual intonation and pitch. These naturally occurring problems in the human population exacerbate the difficulties being experienced by the deaf and hard of hearing when using technologically-based voice command systems.

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[117] The Rehabilitation Act material is available at http://www.access-board.gov/sec508/status.htm.

[118] This description of the Access Board is from http://www.access-board.gov/indexes/aboutindex.htm.

[119] Conversely, auditory information can assist users who are blind or have low vision. This fact reinforces the need for multiple devices and techniques to address the requirements of users with a variety of disabilities.

In public comments that the Commission received on December 4, 2000, from Nancy J. Bloch, Executive Director of the National Association of the Deaf, accessibility to public information was underscored as being of great importance and concern to the 28 million deaf and hard of hearing persons in the United States. It was pointed out in this testimony that information for the deaf is frequently provided without regard to the multilingual needs of this special group, or the needs of those for whom English is a second language. Also, *attitude* was singled out as a barrier to accessing public information that can be even more formidable than physical barriers. Very often intermediaries, such as government officials, neither have the extra time nor the extra patience to work with disabled and disadvantaged groups.

2.G. Small businesses and sole proprietorships are a disadvantaged population.

There is some disagreement among federal agencies as to how far the government could and should go in providing special assistance tools to help sole proprietorships and small businesses to find and utilize needed public information, and to comply with regulatory paperwork requirements as a way to reduce their burden. The Commission believes that sole proprietorships and small businesses are in a very real sense a disadvantaged population that should be afforded special priority, just as special assistance is given to the other disadvantaged groups described above. Government information is a key to helping these businesses start, compete and continue to grow, prosper, and provide increased job opportunities, including jobs for individuals with disabilities and other disadvantages.

2.H. There are other disadvantaged and special populations.

Other disadvantaged and special populations include a wide variety of impairments and "disadvantages" not otherwise covered in the preceding sections, such as the disadvantages faced by Native Americans, by rural Americans, and by individuals that are victims of discrimination. In every case there is a computer and information literacy gap experienced by these special and disadvantaged groups. There is a gap in between knowing and not knowing how to use computers, what public information exists, what information is available to them, how to search for that information, how to access that information in formats and mediums most useful to them (oftentimes special formats and mediums expressly designed to compensate for their disadvantage), and how to utilize that information once it is retrieved.

The National Agricultural Library (NAL) has a rural information center staffed by information specialists who know the available information that is generally useful to, and requested by, rural Americans and how to access it. They work with other NAL information specialists who are organized under broad subject categories to assist users to identify and obtain needed information.

There are also technology and telecommunications gaps for rural Americans. As the Nancy Bolt, speaking for the Colorado State Library, points out in her comments on this assessment:

> Many rural states like Colorado still have substantial geographic areas with no Internet access or where access is prohibitively expensive, even with the e-rate.[120] In addition, a vast number, perhaps majority, of our citizens do not possess the high

[120] The schools and libraries universal service support mechanism, popularly known as the e-rate, was established as part of the Telecommunications Act of 1996 with the express purpose of providing affordable access to telecommunications services for all eligible schools and libraries, particularly those in rural and economically disadvantaged areas. Additional information is available at http://www.fcc.gov/learnnet/.

> speed/download/print-off capacity necessary to truly use the electronic public information dissemination process the Commission's report proposes.[121]

Individuals and institutions with dial-up Internet connections, usually at 56 kbps,[122] will have great difficultly downloading large documents. The longer it takes to download a document, the more likely that an error will interrupt the transmission, requiring the user to restart the download.

Empowering the disadvantaged by increasing their opportunities for improving their information literacy skills should be a constant beacon guiding government's efforts to enhance the value of its public information resources. Strategies for accomplishing that not only include developing and providing specialized hardware and software such as Braille equipment for the blind, nor only enacting legislation such as Section 508 of the Rehabilitation Act, but the day to day vigilance of agency officials to the consequences of their actions, both positive and negative, for the disabled and the disadvantaged.

In some cases language problems, both with immigrants as well as with some Native American populations, are the most serious barriers, and underscore the interrelationship between the new "four R's"—Reading, wRiting, and aRithmetic, and computeR and information literacy.

Finally, it must be remembered that in some disadvantaged populations, such as those on Indian reservations, many individuals are without even basic human infrastructure service needs, such as toilets, telephones and clean water, much less computers.

2.I. Agency guidelines for disabled and disadvantaged individuals are not yet fully implemented.

The final regulations for Section 508 of the Rehabilitation Act were published in the *Federal Register* on December 21, 2000.[123] Because they have just been published, it will be sometime before these regulations are fully implemented.

The standards were developed by the Access Board in close consultation with members of the IT industry, disability advocates, World Wide Web standards groups, members of academia, and Federal officials. These standards will ensure that:

- Federal employees with disabilities are able to use information technology (IT) to do their jobs; and
- Members of the Public with disabilities who are seeking information from Federal sources will be able to use IT to access the information on equal footing with people who do not have disabilities.

The CIO Council memorandum to all agency chief Information Officers on implementation of the final regulations concludes by saying:

> In closing, making IT accessible is not just the morally right thing to do—it is the smart thing to do. We, as a country, sit on a cusp at the dawn of the Information Age. We have the potential to give millions of Americans an even greater freedom in cyberspace. In the end, in the not completely knowable terrain of the human heart is

[121] Nancy M. Bolt, Colorado State Library, in a letter to NCLIS Chair Martha B. Gould, dated January 3, 2001.

[122] 56,000 bits per second, the current speed most commonly used for dial-up access.

[123] U.S. Architectural and Transportation Barriers Compliance Board, " Electronic and Information Technology Accessibility Standards; Final Rule," 36 CFR Part 1194, *Federal Register*, Volume 65, Number 246, Page 80499-80528 (65 FR 80499-80528). These standards are also available at http://www.access-board.gov/ and http://www.section508.gov/.

the real argument for all these efforts. We ask you to look into yours, and to move forward with us together in the challenges that lie ahead. [124]

3. FINDINGS RELATING TO THE FEDERAL GOVERNMENT—GOVERNMENT-WIDE PUBLIC INFORMATION POLICY AND STANDARDS LEADERSHIP AND OVERSIGHT

3.A. The Federal Government's role is critical in formulating and overseeing public information dissemination policy and development of standards to facilitate public access.

There is no single, government-wide focal point for public information policy and standards development, coordination, and oversight, for the government as a whole, or even within each branch. This does not mean that the Commission advocates some kind of Orwellian United States Government Public information Resources commissar. Rather, the Commission sees absence of a lead agency as a very serious deficiency and the need for coordination between branches as essential. Certainly individual agencies must continue to have sufficient autonomy to pursue the most effective cost effective and efficient approaches to information dissemination.

As the Commission stated in the above prefatory materials, the government's movement toward e-Gov is a highly commendable initiative. However, for the benefits and values of the World Wide Web and the Internet to be fully realized and exploited, the federal government cannot abdicate its government-wide policy and standards leadership and oversight role in developing and enforcing policies, standards, and guidelines for:

- Electronic publishing of public information resources.
- Permanent public information availability and accessibility.
- Permanent records retention.
- Integrated government information life cycle management.
- Preservation of government Information to guard against the obsolescence of storage and handling mediums and formats.
- Authentication of official agency electronic information.
- Digitization of non-digital information
- Other purposes.

The federal government plays a strategic role in creating, collecting, organizing, and providing government information for the public. For example, the government has taken the lead to establish some landmark, highly effective public information resources in past years. These initiatives will always stand as beacons to guide the development of similar resources in the future, not only at the federal level, but also at lower levels of government, and even in foreign countries. These include, for example, the databases, clearinghouses, E-FOIA reading rooms, agency libraries, specialized

[124] Craig Luigart and James Flyzik, "Publication of Final Regulations Implementing Section 508," Memorandum for Chief Information Officers, Washington, DC: CIO Council, December 21, 2000, http://www.cio.gov/docs/Sec508RollOut.htm.

information services for the disadvantaged, online information services, and other public information resources of such model agencies as the:

- Department of Agriculture (USDA).
- Department of Defense, primarily through the Defense Technical Information Center (DTIC).
- Department of Energy (DOE).
- Environmental Protection Agency (EPA).
- National Aeronautics and Space Administration (NASA).
- National Library of Medicine (NLM).
- National Oceanic and Atmospheric Administration (NOAA).
- Securities and Exchange Commission (SEC).
- National Technical Information Service (NTIS).
- Government Printing Office, including the Federal Depository Library Program (FDLP) and the Superintendent of Documents' Sales Program.
- Major portals for public information including FedWorld, GPO Access, Library of Congress Thomas, StatUSA, and now FirstGov.
- National Science Foundation, especially because of their work on the Digital Libraries Initiative and National Science Digital Library (NSDL).

Federal agencies and organizations in all three branches are now caught between the proverbial devil and the deep blue sea. On the one hand, they are being correctly congratulated for the superb initiative they have shown in mounting more and more of their information resources on their websites, and making their information products much more widely available and accessible, and in creative and innovative ways. On the other hand, they are also being correctly criticized for the absence of effective internal and external coordination of their policy and standards development and implementation as they pertain to the electronic publishing, permanent public availability of holdings, effective and efficient search and retrieval of their information, reliable authentication of their electronic documents and data, preservation of materials housed on obsolescing technologies, and related matters.

All of these resources have made it easier for researchers, students, job seekers, individuals with health problems, and innumerable other challenges, to find and use needed public information. However, much work remains to be done.

Federal agencies and organizations in all three branches are now caught between the proverbial devil and the deep blue sea. On the one hand, they are being correctly congratulated for the superb initiative they have shown in mounting more and more of their information resources on their websites, and making their information products available and accessible in creative and innovative ways. On the other hand, they are also being correctly criticized for the absence of effective internal and external coordination of their policy and standards development and implementation as they pertain to the electronic publishing, permanent public availability of holdings, effective search and retrieval of their information, reliable authentication of their documents, preservation of materials housed in obsolescing formats and mediums, and related matters.

The agencies find this dilemma difficult. Existing government-wide public information policy and standards leadership and oversight machinery is simply inadequate to cope with the challenges confronting the entire government. There is no single, government-wide focal point for public information policy and standards development, coordination, and oversight, for the government as a whole, or even within each branch. This does not mean that the Commission advocates some kind of Orwellian United States Government Public Information Resources commissar. Rather, the Commission sees absence of a lead agency as a very serious deficiency and the need for coordination between branches as essential. Certainly individual agencies must continue to have sufficient autonomy to pursue the most effective cost effective and efficient approaches to information dissemination.[125]

3.B. The time is ripe for the Congress to direct a review of the hundreds of laws that have been enacted since the Birth of the Republic, for the purpose of assessing the cumulative, overall impacts and effectiveness of the statutory foundations for public information resources availability. The current overall statutory foundation for public access to government's information is too heavily tilted toward providing a legal framework for adversarial proceedings, and too lightly oriented to regarding government information as a strategic national asset needed by all Americans to help achieve their personal, family, and job-related goals and aspirations.

Since the birth of the nation, Congress has enacted hundreds of laws with provisions of one kind or another requiring federal agencies to establish some kind of public information resource. Many of these laws are still in effect.[126] These laws fall into several major categories, and the Commission has identified some illustrative examples of recent laws in each category.[127]

It has been assumed, incorrectly, that public information needs are entirely met by the fortuitous enactment of this wide variety of individual laws, each of which contains quite specific public information resource provisions. However, many public needs for government information are not adequately met by *any* existing law and no systematic effort has been made to identify these needs and determine how best to meet them.

> The major cornerstones of federal public access laws ... are essentially legal frameworks for adversarial proceedings. That is to say, the rights of government are pitted against the rights of citizens. What is completely overlooked in this construct is the idea that government's data, information, and knowledge resources are a strategic national asset, owned by the people and held in trust by their government. ... This is the missing "building block" in the federal statutory foundation of public information dissemination.

[125] The need for government-wide public information policy leadership and standards development is also discussed in Finding 5.A and Conclusion 3.

[126] Jane Bortnick Griffith, op. cit., includes an index of statutes relating to the dissemination of public information. More recent laws on dissemination of public information are identified in Appendix 33 in Volume 3 of this report: Index to a Compilation of Recent Federal Statutes Pertaining to Public Information Dissemination and as Appendix 35 in Volume 4: A Compilation of Recent Federal Statutes Pertaining to Public Information Dissemination. Appendices 33 and 35 are also available at http://www.nclis.gov/govt/assess/assess.appen33.pdf and http://www.nclis.gov/govt/assess/assess.appen35.pdf, respectively.

[127] The categories are in Appendix 33 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen33.pdf.

For the most part, during the early stages of bill drafting, the rather well-established processes of legislative history review, combined with the subject expertise of the legislative drafters (e.g., environmental law, energy law) succeeds in identifying most unnecessary overlap and duplication, and both substantive and legal inconsistencies with existing legislation. Nevertheless, the Congress has apparently not utilized the 1996 compilation of public information laws[128] to review and eliminate contradictory policies in operating information dissemination programs, identify unmet public information needs, and assess how the government's overall public information dissemination program could be strengthened, especially in the light of the Internet.[129]

Although the foundation of public access to government information is found in Title 17 of the U.S. Code, which specifically prohibits copyright of federal information,[130] the major cornerstones of federal public access laws are the Freedom of Information Act (including E-FOIA), the Privacy Act, the Administrative Procedure Act, and the Government in the Sunshine Act. However, these Acts are essentially legal frameworks for adversarial proceedings. That is to say, the rights of government are pitted against the rights of citizens. What is completely overlooked in this construct is the idea that government's data, information, and knowledge resources are a strategic national asset, owned by the people and held in trust by their government.[131] This information should be permanently available to the people, with limited exceptions for national security, privacy and similar compelling reasons. This is the missing "building block" in the federal statutory foundation of public information dissemination.

There are other, more specific areas of concern. For example, sometimes government-funded research ends up being published through professional journals or other copyrighted publications, with no version available in the public domain. There are also certain NSF-funded grants where the grant terms do not specify the production of a report, but a deliverable that is much less concrete and specific, such as "the advancement of knowledge." Since the results of such government-funded work is not in the public domain, it is not available through NTIS or GPO, and it does not find it way into the FDLP for free public access.[132]

3.C. The Federal government's public information resources dissemination obligations are not completely fulfilled by agency website postings alone.

Despite statements and inferences to the contrary, just because federal agencies are, very commendably, making such massive quantities of government information electronically available to the public, much more easily accessible, and for free in most cases, on their websites, does not in any way mitigate or alter, much less eliminate, their legal and ethical responsibilities to ensure the:

- Permanent public availability of government information for the public.
- Preservation of government information, in the face of the continuing obsolescence of formats and mediums in which it was originally created and is stored and handled.
- Permanent records retention of government information in the face of the ephemeral nature of e-mail messages, website postings, and other electronic information.

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[128] Jane Bortnick Griffith, op. cit.

[129] This issue is addressed by Recommendation 19.

[130] The prohibition of copyright for federal government information is contained in Title 17 U.S. C. 105: "Copyright protection under this title is not available for any work of the United States Government, but the United States Government is not precluded from receiving and holding copyrights transferred to it by assignment, bequest, or otherwise."

[131] Recognition of public information as a strategic national asset does not imply exploitation of that asset to generate revenue for the government, like the sale of lumber or mineral rights on federal land. On the contrary, it must result in optimizing timely and permanent public access to the information for its owners, the people of the United States.

[132] This issue is addressed by Recommendation 17.

- Efficient, effective, and easy-to-understand means for the public to ascertain the authenticity of official government information.
- Continuous, integrated life cycle management of government information from creation to disposition.
- Adequacy of safeguards be developed and put in place to guard against the inadvertent or fraudulent disclosure of public information held in trust by the government for private individuals, businesses, and others.
- Protection of sensitive national security and foreign information.

In a May 2000, the Department of Energy hosted a workshop at the National Academy of Sciences, discussing ways to improve the physical sciences information infrastructure. At that workshop the recommendation was made that a conceptual change is needed that allows better integration of information types (e.g., text, data, images, animations), as well as information at various stages in the analysis process (raw data, partially processed data, text summaries of analyzed data in varying degrees of analyses, and unreviewed or peer-reviewed documents). In the words of the report "such a conceptual change would facilitate serendipity and insights that can be gained by dealing with these multiple information types and their interrelationships."[133]

What is "missing" is an overall, *government information life cycle framework* for meeting these requirements in an integrated, "single, one stop" fashion. When agency officials create new information (e.g., whether a publication, an e-mail message, a report, or some other document), or receive information from another office inside or outside the agency, certain statutory and agency-mandated requirements must be fulfilled. A systems approach to dealing with this problem, such as the development of a fully integrated, government information life cycle management software module as a tool for those who create and manage information,[134] has never been used. The absence of such a systematic approach results in enormous frustration by individual agency officials, agency management officials, and the government-wide information services and information management mission agencies such as GPO, NTIS, and NARA.

Admittedly, OMB Circular A-130 does call for the integrated life cycle planning for information, and outlines objectives for that planning process. *However, the requirement fails to stress the linking of that concept to the broader goals of information resources management.* Instead, the Circular seems to exacerbate the problem of dealing with an intangible resource such as "information" because management's focus for at least four decades has thought of "information resources" as primarily hardware and software. Yet, the Circular's policy framework emphasizes *both* **content** and technology under the information management heading. However, in the planning context, the bias is toward information *systems,* rather than use of the information content.

Government information resources management problems and challenges that impact public information resources more likely than not affect internal agency information resources as well, which is why the Commission maintains the two areas are increasingly converging. Such problems and challenges include:

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[133] *Workshop Report on a Future Information Infrastructure for the Physical Sciences: The Facts of the Matter: Finding, Understanding, and Using Information About Our Physical World*, Washington, DC, May 30-31, 2000, Washington, DC: Department of Energy, Office of Scientific and Technical Information, no date, page 8.

[134] Government information life cycle management is explained in more detail in the White Paper available in Appendix 16 in Volume 3 of this report. Appendix 16 is also available at http://www.nclis.gov/govt/assess/assess.appen16.pdf.

- Increasing amounts of information in electronic form make knowing where to look for it an even more daunting challenge than it was in the pre-electronic eras.
- Information hoarding is a very big, wasteful problem, in large part because subordinate units, especially those in remote locations, do not trust "the central system" to provide them with the information the need.
- Although information usually arrives in time to be helpful, it is unlikely to be in the right format for decision-making, and therefore significant re-working is often required.
- The government wastes a lot of time and money re-inventing information rather than finding and retrieving virtually the same, or closely similar information.

In a recent revision to its Circular A-130, OMB points out:

> A key part of communicating with the public is providing adequate notice of agency information dissemination plans. Because agencies' information dissemination actions affect other agencies as well as the public, agencies must forewarn other agencies of significant actions. The decision to initiate, terminate, or substantially modify the content, form, frequency, or availability of significant products should also trigger appropriate advance public notice.[135]

One of the Commission's consultants also authored a white paper suggesting a model for government information life cycle management.[136]

3.D. The federal government should make government information openly available in readily reproducible form without any constraints on subsequent uses.

This general principles that the 1982 NCLIS Public Sector/Private Sector Task Force first articulated, have stood the test of time, and the current study reaffirms the soundness of these principles notwithstanding the dramatic changes that have occurred in the interim because of the tremendous use of electronic information handling technologies. Several of these key general principles are ones on which the Commission relies in making the case for continuing the mission of NTIS regardless of its federal organizational locus. Specific reasons for NTIS, and the other central information services and information management agencies with government-wide missions to continue in this critical role, even in the face of the dramatic increases in agency website utilization for public information, are covered in greater detail below in Section 7 dealing specifically with NTIS.

In its final report, Commission Panel Three on public users needs said:

> Federal agencies are not mandated by law to disseminate all information collected or gathered in the course of their operations. In its efforts to foster efficient agency operations and save money, Congress has discouraged issuing "unnecessary" reports and information, often not realizing that these reports and data may constitute valuable research material.[137]

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[135] U.S. Office of Management and Budget, "Management of Federal Information Resources, Appendix IV: Analysis of Key Sections," OMB Circular A-130, op cit.

[136] The White Paper on government information life cycle management is Appendix 16 in Volume 3 of this report; it is also available at http://www.nclis.gov/govt/assess/assess.appen16.pdf.

[137] The final report from Commission Panel Three is available as Appendix 25 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen25.pdf.

The core idea here is that the public interest is best served by a diversity of sources and channels for public access to government information. This is reaffirmed by the requirement of Section 3506(d)(1)(A) of the of the Paperwork Reduction Act that agencies shall "(1) ensure that the public has timely and equitable access to the agency's public information, including ensuring such access through (A) encouraging a diversity of public and private sources for information based on government public information." Agencies should not refrain from value–added information dissemination services when that is consistent with their missions. However, agencies may not frustrate private sector redissemination activities by imposing restrictions or by limiting private sector access to electronic formats. Commenting on the report of Panel 4, Henry H. Perritt, Jr., of the Chicago-Kent College of Law at the Illinois Institute of Technology, said "The most important things to avoid are government-sponsored monopolies, in which agencies enter into arrangements with private entities to lock up public information through copyright or copyright-like arrangements. Title 17's prohibition on copyright of federal information should be honored broadly." The Commission strongly concurs.

3.E. Certain key necessary information preparation tasks required before posting electronic documents to agency websites are inherently governmental functions (public goods) and should be budgeted for, and financed using congressionally appropriated funds, not financed by indirect cost recovery tools such as the sale of public information.

It must always be remembered that the taxpayer has paid for the creation or compilation of government information. Therefore the people own the information and the government holds the information in trust, utilizing it to formulate public policy and to plan and implement programs for the benefit of the people. The government has an obligation to utilize this asset efficiently and effectively and to optimize its availability to the people.

In its earlier report this year to the Congress dealing specifically with the planned NTIS closure, the Commission said that:

> The Congress (should) annually appropriate sufficient funds beginning in FY 2000 to finance that portion of legislatively mandated NTIS activities and services, which are inherently governmental in nature… These activities and services include the orderly collection, organization, preservation of, and permanent public access to scientific and technical information of potential use to future generations of researchers.[138]

The current study has not caused the Commission to modify its stance in this regard. On the contrary, the current study's findings buttress the above position in even stronger terms. It must always be remembered that the taxpayer has paid for the creation or compilation of government information. Therefore the people own the information and the government holds the information in trust, utilizing it to formulate public policy and to plan and implement programs for the benefit of the people. The government has an obligation to utilize this asset efficiently and effectively and to optimize its availability to the people.

Certain costs incurred by any central information service and information management agency with a government-wide mission (not just NTIS) that are inherently governmental in nature include:

[138] U.S. National Commission on Libraries and Information Science, *Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS),* op. cit.

collection or acquisition, processing using scanning and microfiching and archiving, indexing and abstracting and cataloging, creating and maintaining the database itself for Internet access, mounting the full text of reports online, and maintaining the historical collection of files.[139] In some instances, these services are provided central information service units within the department, such as the Office of Scientific and Technical Information (OSTI) in the Department of Energy or the Defense Technical Information Service (DTIC) in the Department of Defense. The unclassified information that these organizations in turn feed into NTIS is already acquired, indexed, and stored digitally or in microform. The expenses that must be incurred to defray the costs of these activities are absolutely necessary to accessibility of the information. They cannot, and should not, be avoided or hidden, nor can they be "automated" as if by magic. They are human-intensive and costly, and they require the expertise of experienced STI information professionals.

An information facility such as NTIS cannot "acquire" (the technically precise term) an official agency R&D report information product if it is not in appropriate form. Moreover, the product must be adequately described, such descriptions must be in a proper database, that database must be online, and the full text must be online, and it must be archived. If these conditions are not met, the information is not identifiable and therefore not useable.

Additionally, these costs are each completely independent of the specific user. They are fixed costs, not variable costs, to use accounting terminology. They are necessary for the access in general, not for the individual. They represent capital investments in the means for providing access, not the costs in serving any specific individual.

There are some exceptions to these inherently governmental expenses that are discussed below in Section 7.

Finally, there is room for consolidation, simplification and avoidance of unnecessary overlap and duplication among agencies with central information services and information management functions, as is pointed out below.

3.F. Disseminating information to the public is not accorded the status of a line item in individual agency and program, or in the President's budget. The cost of disseminating information to the public is hidden as an overhead cost or treated as an unfunded mandate. It should be considered openly in the agency budget preparation process as an essential and integral cost of an agency's normal mission business.

The cost of disseminating information to the public is usually overlooked, buried or hidden in overhead accounts and is often treated as an unfunded mandate by agencies when they prepare detailed project and program plans, enter into contracts, and prepare their annual budget plans for the President to review and consolidate, and eventually submit to the Congress to appropriate funds. The exceptions are the major statistical agencies, the national libraries, and some major central information service agencies such as GPO and NTIS, with major information dissemination expenses clearly identified in their budget documents. Indeed, many Internet gurus say, "the cost of dissemination is an outmoded concept." The Commission completely disagrees with this view. In short, access does not equal dissemination.

The penalty of not identifying the cost of information dissemination as a discrete agency budgetary line item is that too often the public is short-changed by either not receiving information at all, or

[139] This issue is also addressed in Finding 10.E and Recommendation 11.

receiving only some of the information generated, or being told "the information is on our website somewhere – but it's up to you to find it!" The failure to disseminate is particularly critical in the instance of information generated as a result of the government's awarding contracts to private contractors for undertaking R&D work, but it is equally true of non-R&D contracts with the private sector in other sectors, including education, the environment, energy, national defense, and so on.

Many Internet gurus say, "The cost of dissemination is an outmoded concept." **The Commission strongly disagrees with this view.** The ease and cost of access to public information have indeed been enormously improved, but the burdens and costs of dissemination are still with us. In short, access does not equal dissemination.

Too often agencies view the requirement to disseminate information to the public as simply another unfunded mandate or a source of revenue. There are instances where the sale of public information is appropriate, as with the current GPO Sales Program. However, such sales could never result in an adequate level of revenues to finance the public good functions that are the underling information infrastructure for such a program.[140]

In some cases the dissemination of government information to the public is an absolutely critical requirement (as in the case of R&D contracts, and in the case of the major statistical agencies and the some central government-wide information service agencies, such as GPO and NTIS, and the national libraries). There are other instances, however, where this requirement is less critical. However, the example of the Department of the Navy's Diving Manual is instructive in this regard. The Navy initially intended, and expected, that this product would be used exclusively by Seabees and other Navy personnel in official government diving and salvage operations. However it soon became apparent that citizen-divers, diving instructors, and others, both in the U.S. and abroad, soon saw the efficacies of using the much-needed and practical information contained in the Manual for a far broader range of general purposes and applications, especially in training and certifying young people in Scuba diving and related recreational activities. This is an excellent example of why public information utility should not be at the mercy of initial agency expectations and determinations. Continual monitoring of public information needs is essential.[141]

Another example is the School Lunch program of the Food and Nutrition Service of the Department of Agriculture. Agriculture Marketing Service tracks food through the food chain to determine where bacteria or other causes of spoilage might occur. This information is of considerable interest to the public, although this prospective interest was not considered in initial planning for this program. If the USDA had considered the dissemination costs for this program as an integral part of their agency budget request, program by program, at the line item level, the information would have been disseminated much more widely.

Disseminating information to the public is not accorded the status of a line item in individual agency and program budgets and then aggregated into the President's budget. There is an Information Collection Budget (ICB) as a *disincentive* mechanism to discourage agencies from collecting excessive amounts of information *from* the public, but there is not Information Dissemination Budget (IDB) as an agency *incentive* mechanism to encourage agencies to disseminate information *to* the public. They are two sides of the same coin. They are two sides of the same coin. Burying public

[140] These public good functions are identified in Conclusion 6 and Recommendation 11.

[141] This issue is addressed in Recommendation 19.

information dissemination expenses in overhead accounts or treating them as unfunded mandates is completely inappropriate and counter-productive in the Information Age.

There is general agreement that government-funded research and development are incomplete without dissemination of the results. Many statutes reviewed by the Commission as part of this study authorize, and even mandate, the dissemination of research results, best practices and model programs as an integral part of the program. Yet, the funding for this dissemination is rarely identified and separated out as a discrete cost in either the authorizing or the appropriations language.

Disseminating information to the public is not accorded the status of a line item in individual agency and program budgets and then aggregated into the President's budget. There is an Information Collection Budget (ICB) a *disincentive* mechanism to discourage agencies from collecting excessive amounts of information *from* the public, but there is not Information Dissemination Budget (IDB) as an agency *incentive* mechanism *to* encourage agencies to disseminate information *to* the public. They are two sides of the same coin. Burying public information dissemination expenses in agency overhead accounts or treating them as unfunded mandates is completely inappropriate and counter-productive in the Information Age.

Harmonizing existing explicit statutory authority and budgetary authority language and provisions with the IDB mechanism suggested here would be a priority order of business for OMB and the new Public Information Resources Administration (PIRA) suggested elsewhere in this report. In no event should agencies, such as a major statistical agency with strong existing statutory and budgetary authorities for disseminating information to the public, be placed at risk through the erosion of existing budgetary authorities at levels below current levels.

3.G. A single, central, comprehensive and authoritative online inventory and database of publicly available government information holdings is essential both as a primary resource to facilitate public access and as a "failsafe" resource that complements individual agency inventories.

A single, central, comprehensive and authoritative online inventory and database of publicly available government information holdings is essential both as a primary resource to facilitate public access and as a "failsafe" resource that complements individual agency inventories. Section 8a(6)(c) of OMB circular A-130 requires all agencies to "establish and maintain inventories of all agency information dissemination products."[142] If these inventories are developed using appropriate standards, are sufficiently detailed and are updated regularly, a single, central, comprehensive and authoritative inventory could be established by combining and appropriately indexing and cross-indexing these individual inventories. This would be of inestimable value for the FirstGov portal and for a wide variety of other public information resources management purposes. GPO Access already offers the ability to search across agency GILS records whether they are on GPO servers or on agency servers.

The Commission's research into these past inventory attempts convinces it that they deserve top Legislative and Executive endorsement. To promulgate the requirement with lukewarm endorsement is a recipe for failure. Therefore, a renewed effort must be made to mobilize top-level support in both branches.

[142] U.S. Office of Management and Budget, "Management of Federal Information Resources," OMB Circular A-130, op cit.

The developments already undertaken to establish the major portals for public information, including FedWorld, GPO Access, Library of Congress Thomas, StatUSA, and now FirstGov, are a logical starting point for a single, central, comprehensive and authoritative online inventory and database of publicly available government information holdings. Although currently disparate both in purpose, scope, organizational location, content, and data formats and mediums, the experience gained in developing these portals and the data already gathered, will be invaluable in the design and development of a comprehensive inventory and database of public information resources. Integration of these resources is the logical beginning of a truly comprehensive inventory.[143]

3.H. Absence of an overall government-wide policy framework, as well as detailed guidance, is hampering inter-branch, interagency and intergovernmental information sharing.

Interagency sharing of information, much less inter-branch and intergovernmental sharing, is a stepchild of often inconsistent and contradictory information laws and policies, and in some cases is actually discouraged!

For example, the main body of the OMB Circular A-130 is concerned primarily with information management and "(t)he *free flow of information* between the government" and *not* information *technology* (IT).[144] The Circular correctly recognizes that exploitation of the value of information is not an information technology issue—it's an information content issue. The circular points out that IT is not an end in itself, but rather is only one set of resources that can improve the effectiveness and efficiency of federal program delivery. Human resources, financial resources, and property and equipment resources are also all important and needed.

> The "default" for government information should be to make all of its information resources available to the public, to other agencies, and to other levels of government, subject only to statutory non-disclosure provisions.

Unfortunately, none of the Circular's "Basic Considerations and Assumptions," addresses interagency sharing of information. In fact intra-agency and interagency sharing of government information is specifically excluded from the definition of the term *dissemination* in the Circular. Sharing of information *systems*, not information *content* is the focus of the policy requirement. However in the Commission's view both are positive considerations and should be addressed, not just systems sharing.

Notwithstanding, paragraph 7k of the Circular, "Considerations and Assumptions," does state, "The open and efficient exchange of scientific and technical government information, subject to applicable national security controls and the proprietary rights of others, fosters excellence in scientific research and effective use of federal research and development funds."

Ironically, in another section of the Circular, (8(a)(d)), agencies are directed to "Seek to satisfy new information needs through interagency or intergovernmental sharing of information, or through commercial sources, where appropriate, before creating or collecting new information." However, this is a somewhat negative construct, not a truly positive construct. A more positive construct would encourage interagency sharing of information *even if no new information needs were identifiable*, on the grounds that *most of the time one agency simply does not even know what another agency has, so*

[143] Implementation of this comprehensive inventory and database is addressed in Conclusion 5 and Recommendation 27.

[144] U.S. Office of Management and Budget, "Management of Federal Information Resources," op. cit., 1996.

how can it ask for it or benefit from it? The concept of "knowledge diffusion" is a much more positive concept that should be incorporated into the Circular's revisions, so that interagency sharing of information resources is seen as a part of an overall government knowledge diffusion goal.

It has long been recognized that information needs and uses can never be predicted in advance with accuracy. Former Vice President Hubert Humphrey once remarked that he often feared that the answers needed to solve the challenge of dealing with cancer lie hidden, long forgotten, in some data vault somewhere because the data was improperly cataloged, unindexed, and unabstracted. Certainly the immediate needs that led to the information's creation or collection were predicted or the agency and the Congress would not have funded its creation, but the *potential uses* of information very often materialize and manifest themselves only long after the information is produced. Like any resource, by amplifying and magnifying information uses beyond initial expectations, the government can multiply and magnify the information's value many-fold, like a prism.

> The government has an obligation to do more than just make public information resources available to the public—it has an obligation to help citizens improve their information literacy, their ability to find and evaluate government information, and their ability to use government information continuously for lifelong learning and to achieve personal goals.

Government information that is already available to the public can, and should be more easily and cost-effectively accessible, and should have greater practical utility to citizens. The government has to do more than just make public information resources available to the public—it has an obligation to help citizens improve their information literacy, their ability to find and evaluate public information, and their ability to use public information continuously for lifelong learning.

Agency information resources that are not already available to the public, and which are not subject to statutory prohibitions against disclosure and sharing pursuant to the FOIA disclosure exemptions, Privacy Act disclosure exemptions, national security legislation, and similar laws, should be reviewed for the purpose of making it available to the public. In short, the "default" for government information should be to make all of its information resources available to the public, to other agencies, and to other levels of government, subject only to statutory non-disclosure provisions.

In addition, most of the interagency efforts to share government information among federal agencies have been the result of informal and collegial efforts within communities of mutual interest, not because they have been directed as part of an explicit federal information policy. Obviously, government interfaces with the general public, e.g., NTIS, GPO's Superintendent of Documents, are also available to federal agencies. These services, however, may not fulfill the information needs of specific communities. In many cases federal agencies have no central information content management organization and thus no mechanism to promote sharing.

3.I. Safeguarding sensitive, proprietary and nonpublic information are legitimate barriers to interagency sharing and public access.

Information sharing among federal agencies, between branches and among levels of government does not mean that *all* federal information is, or should be, available to all agencies any more than it is available to the general public. There are many statutes that restrict federal employees from sharing information not releasable to the public or other agencies. Several of these laws have some proscriptions against disclosure, but, as in the case of the FOIA and the Privacy Act, the laws identify

disclosure exemption categories of certain information from mandatory disclosure. Among these laws are:

- The Procurement Integrity Act (41 *U.S.C.* 423) restricts the release of source selection and contractor bid and proposal information.
- The Trade Secrets Act (18 *U.S.C.* 1905) makes it a crime to improperly release contractor trade secrets and other confidential information outside the Government because improper release of data could result in claims from the owner for breach of contract or loss of business.
- The Privacy Act (5 *U.S.C.* 552a) restricts release of personal information about individuals, such as for private marketing purposes.
- Freedom of Information Act (FOIA) (5 *U.S.C.* 552) as Amended by Public Law 104-231, 110 Stat. 3048, includes several exemptions relating to release of federal information to the public.[145]

3.J. There are budgetary and organizational barriers to interagency sharing of government information.

In addition to legal and policy constraints, barriers, and obstacles, there are significant technical, budgetary, and organizational challenges to the active interagency, inter-branch and intergovernmental dissemination and sharing of federal government information. The President's Information Technology Advisory Committee (PITAC) reported in 1999[146] that such technical challenges developing significant improvements in systems and methods for accessing data—including high performance data storage and tools to locate and present information, and developing reliable, secure networks and software to deliver and protect critical data needed to be addressed. The PITAC charged its Panel on Transforming Government to identify key technical challenges and develop a long-range technology-based strategy to harness the power of advanced information systems to make government's stores of information and vital services easily accessible to and usable by all U.S. Citizens.

In its report *Transforming Access to Government through Information Technology*, PITAC findings address the issues from the perspective of public access. They are translatable into equivalent concerns for active intergovernmental dissemination and sharing of government information content. In terms of finding, sharing, and using government information resident in an agency, other government agencies are often no better situated than the public, and at lower levels of government the problems are exacerbated.

As noted earlier in this report, the first finding of the PITAC Panel on Transforming Government was that:

> Major technological barriers prevent citizens from easily accessing government information resources that are vital to their well-being. Today government information is often unavailable, inadequate, out of date, and needlessly complicated. ... The government stores large amounts of important information. However, finding that information in the government's many databases is difficult, and correlating the

[145] The nine FOIA exemptions are listed earlier in this report in the section entitled A Working Definition of Public Information.

[146] U.S. Executive Office of the President, National Coordination Office for Information Technology Research and Development, *Information Technology Research: Investing in Our Future*, final report of the President's Information Technology Advisory Committee, Washington, DC: National Coordination Office for Information Technology Research and Development, 1999; available at http://www.ccic.gov/ac/report/.

> meaning of findings from a number of inconsistently defined databases requires deep knowledge of the existence, contents, and management schemes of those databases. [147]

The Panel also noted that:

> In addition, stovepiping of both congressional and executive review processes causes stovepiping of plans and programs. The Government Performance and Results Act (GPRA), for example, while valuable in requiring agencies to set goals against which they can be held accountable, tends to hinder agency interdependencies in plans and programs because no agency will create a GPRA objective that depends on budgeting and operational success in another agency.[148]

3.K. Sunk Costs of Obsolete Information and Communication Hardware, Software, Systems, and Network Investments

In his comments on the draft report, Terry Ballard, an automation librarian at Qunnipiac College in Hamden, Connecticut, pointed out that the move from CD-ROM or DVD, paper, and microform to the Web has come during eight years of economic growth, "but the day is coming when the economy will pack its bags and head South. Once libraries purchase these products and redesign their work flow to accommodate them, they can't go back to doing things the old way."

Mr. Ballard makes the case for planning and budgetary guidance and policies that take into account the enormous sunk costs involved as a result of the continual replacement of older information and communication technologies with newer ones. Libraries, archives, museums, and records depositories should not be punished for "bad mistakes" in these investments. They must be treated as non-recoverable sunk costs in most cases.

3.L. Lack of uniformly prescribed standards for determining authenticity of official agency electronic information creates mistrust and fosters public disillusionment in utilizing government information

To date, the most common means to guarantee of the authenticity of official government information has been *reliance on source credibility*. Increasing electronic dissemination of information by federal government agencies, however, highlights the need for agencies to take added measures to assure the public that specific electronic information—especially that contained on government websites—has not only been created, validated, and initially provided by the federal government, but to understand which information carries the imprimatur of an official agency promulgation. The growing decentralization of agency electronic information dissemination activities, coupled with the ease of tampering or misrepresenting digital records, are likely to increase the focus on authentication procedures in the near future.

Despite the lack of agency application of sophisticated digital watermarking or authentication technology, public concerns that information provided by government in electronic formats may not be authentic have been kept relatively minimal. The American public continues to rely on a trusted source for such information, e.g., an established agency website. This is well earned trust that should not be betrayed.

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[147] U.S. Executive Office of the President, National Coordination Office for Information Technology Research and Development, *Transforming Access to Government Information Through Information Technology,* op. cit.

[148] Ibid., page 13.

The federal government must assume the primary role of assuring authenticity. Several challenges must be overcome, however. Although there are some agencies working on methods to ensure authentication, no standard procedures have as yet been adequately analyzed, tested and translated into sound overall government policy and guidance. A system like FirstGov does nothing to overcome this inadequacy. Second, government information is produced by so many agencies in all three branches of government that any attempt at consistent application of standards or new technologies to provide a digital watermark or other types of digital rights management controls is almost impossible—not to mention the threat that employing such technologies may likely interfere with unrestricted access to and re-dissemination of public information. Third, technology that would provide some sort of automatic electronic authentication is still in the developmental stages. Applying such technologies would be costly or technologically challenging—both for government and the public.

As the era of e-government advances, with its concomitant and significantly increased public need to interact with government information electronically, concerns about what constitutes authentic government information provided by federal agencies will also grow. If a technological solution is chosen, the greatest challenge will be to ensure that the public itself has the technological means by which to authenticate government information.

A closely related question is related to the need for fire walls to help compartmentalize information so as to minimize the potentially disastrous effects of government website "invasions." However, this is a specialized topic that is beyond the scope of this study.

3.M. Central official scientific and technical information policy and oversight executive branch authority never established.

In 1962 Dr. Jerome Wiesner, Science Advisor to the President, appointed a special task force to examine federal STI programs. The task force made two major organizational recommendations to improve the flow of STI within the federal government. One was a central authority to define the objectives of government information programs; to plan, develop, and guide organization of government information activities; and to develop criteria (including financial) for effective operation of government-wide information system. The second recommendation was that each research and development agency of the federal government should set up an office exercising agency-wide direction and control of information activities."

> The intent was to establish a coordinated, consistent framework for obtaining STI. This included the establishment of a standard information categorization system known as the COSATI standard—the code for the cataloging of technical information. This "standard" is still used by DTIC, NTIS and some commercial organizations. However, the central authority has never been established.

The then Office of Science and Technology (now the Office of Science and Technology Policy (OSTP), an agency by law designated to coordinate and provide oversight in the effective management and dissemination of scientific and technical information (STI), assigned a fulltime staff member to information systems and an interagency committee, the Committee on Scientific and Technical Information (COSATI) was established in 1963. The recommendation that each R&D agency establish an organization responsible for management of the Department's STI Program was largely implemented.

COSATI was created to develop among the Executive Agencies a coordinated, but decentralized, STI system for scientists, engineers and other technical professions. Additionally, it sought to foster an improved national system for handling STI and it was made clear that if the blueprint didn't include the private sector there was little chance of an orderly growth of a national information system. COSATI became the national focal point for coordinating the development of a national network of independently operating but at the same time, cooperating STI systems. The key factor responsible for the success of COSATI was its organizational placement in the Executive Office of the President—essentially above the level of the federal agencies themselves. The central authority was not intended to be a central operating activity. The intent was to establish a coordinated, consistent framework for obtaining STI. This included the establishment of a standard information categorization system known as the COSATI standard—the code for the cataloging of technical information. This "standard" is still used by DTIC, NTIS and some commercial organizations. However, the central authority has never been established.

Indeed a dramatic decline began from the high level interest in management and transfer of scientific and technical information that was the hallmark of the 1960's science policy. The result was, by the mid-1970s, the disestablishment of the COSATI and the virtual elimination of OSTP staff associated with STI systems. Beginning about this time and continuing through the mid-1980s leaders of the STI facilities in major R&D agencies met regularly but informally to discuss and, if possible, take action to address problems associated with the cooperative management and transfer of federal STI. These meetings led to the formal establishment of CENDI in 1985. Details of the role of CENDI appear below under Findings Relating to the Federal Government—Interagency Groups.

4. FINDINGS RELATING TO THE FEDERAL GOVERNMENT—INDIVIDUAL FEDERAL AGENCIES WITH OPERATING MISSIONS

4.A. The potential value of agency websites as the prime component of the federal public information dissemination infrastructure is unchallenged, but needs to be strengthened.

All thirteen of the agencies the Commission surveyed in its limited survey designed to try and pinpoint key public information dissemination policy and program issues recognized the value of the web in helping federal agencies to make their information publicly available, but indicated that the government still had a long way to go to create a federal information infrastructure that was fully responsive.

A more aggressive public information dissemination program management is needed to ensure that the public receives effective and complete access to, and dissemination of, agency information.

The responding agencies also felt strongly that information paid for by the taxpayers must be accessible within the context of legal restrictions governing its release. However, they asserted that a more aggressive public information dissemination program management is needed to ensure that the public receives effective and complete dissemination of, or access to, agency information. One agency suggested that a requirement should be imposed for the creation and maintenance of an authoritative and comprehensive listing of all available information on every agency website. At the same time, many agencies felt that any new requirements imposed should carefully evaluate the impact of workload and staff capacity to meet the workloads or burdensome and unreasonable expectations or deadlines.

Dan O'Mahony, Brown University government documents librarian, in testimony before the Senate Committee on Rules and Administration said:

> I think it is important to recognize that despite the tremendous potential and, in many cases, compelling advantages of electronic information, the reliable and flexible information infrastructure necessary to support a predominantly electronic Federal Depository Library Program is not yet in place—not in the federal agencies, not in the Internet and supporting networks, not at the libraries, and not with the public at large.[149]

4.B. Many agencies have established standing public information dissemination policies and programs, but there are wide differences among them, and they could be standardized to a greater degree without sacrificing individual agency differences or stifling agency initiative.

Although many agencies have established effective public information dissemination policies and program, there are wide differences between them and they need to be standardized. This inconsistency could be eliminated by ensuring that there is a standard provision in the enabling legislation for each agency incorporating public information dissemination as a primary agency responsibility, integral to its mission. This requirement should apply to all entities in all three branches of the federal government.

Information dissemination is an essential, integral part of every agency's mission. When agencies administer their programs, they often fail to ask themselves the following important questions:

• What information have I gathered, or do I hold, that could be useful to the public?

• How can I best make the public aware of the availability of this information and provide public access to it?

In saying this, the Commission is not suggesting that agencies should disseminate information to the public that is inconsistent with their statutory mission, but rather that information dissemination is an essential, integral part of every agency's mission. When agencies administer their programs, they often fail to ask themselves the following important questions:

- What information have I gathered, or do I hold, that could be useful to the public?
- How can I best make the public aware of the availability of this information and provide public access to it?

As OMB acknowledged in its November 2000 analysis of key sections of the revised OMB Circular A-130, there is no standard approach to information dissemination in each agency's mission:

> As agencies satisfy these requirements [of the Paperwork Reduction Act], they provide the public basic information about government activities. Other statutes direct specific agencies to issue specific information dissemination products or to conduct

[149] Daniel P. O'Mahony, testimony before the U.S. Congress, Senate, Committee on Rules and Administration, Hearing on Public Access to Government Information in the 21st Century, May 22, 1996; http://www.nclis.gov/govt/assess/mahtest.html (testimony) and http://www.nclis.gov/govt/assess/mahprep.html (prepared statement).

> information dissemination programs. Beyond generic and specific statutory requirements, agencies have responsibilities to disseminate information as a necessary part of performing their functions. For some agencies the responsibility is made explicit and sweeping; for example, the Agriculture Department is directed to "...diffuse among people of the United States, useful information on subjects connected with agriculture...." (7 *U.S.C.* 2201) For other agencies, the responsibility may be much more narrowly drawn.[150]

The analysis goes on to say:

> Information dissemination is also a consequence of other agency activities. Agency programs normally include an organized effort to inform the public about the program. Most agencies carry out programs that create or collect information with the explicit or implicit intent that the information will be made public. Disseminating information is in many cases the logical extension of information creation or collection.
>
> In other cases, agencies may have information that is not meant for public dissemination but which may be the subject of requests from the public. When the agency establishes that there is public demand for the information and that it is in the public interest to disseminate the information, the agency may decide to disseminate it automatically.
>
> The policy in Section 8a(5)(d) sets forth several factors for agencies to take into account in conducting their information dissemination programs. First, agencies must balance two goals: maximizing the usefulness of the information to the government and the public, and minimizing the cost to both. Deriving from the basic purposes of the PRA (44 *U.S.C.* 3501), the two goals are frequently in tension because increasing usefulness usually costs more. Second, Section 8a(5)(d)(ii) requires agencies to conduct information dissemination programs equitably and in a timely manner.

As noted above, the Commission surveyed a dozen or so federal agencies as a part of this study, asking them about their public information policies, programs, and practices.[151] Their responses were quite "upbeat."

Within the last five years, significant strides have been made in the dissemination of public information in electronic format. Agencies are convinced of the advantages both for accessibility and availability and the resultant economic, effectiveness, and efficiency gains, as well as programmatic gains. Information provided to the public is timelier when in electronic format, and the posting of rules and regulations requiring public comment provide a quick and easy means of transmitting comments within the review period. Filing of information required for permits, licenses, and the like, can often be done electronically and, in fact, will be required under the Government Paperwork Elimination Act (GPEA). Those wishing to acquire information on a specific subject can search the catalogs of publications (printed and electronic) posted on the website, be told where to obtain the information, and in many instances request the information through e-mail to the site.

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[150] U.S. Office of Management and Budget, "Management of Federal Information Resources, Appendix IV: Analysis of Key Sections," OMB Circular A-130, Washington, DC: Office of Management and Budget, November 30, 2000; http://www.whitehouse.gov/omb/circulars/a130/a130appendix_iv.html.

[151] The results of the agency survey are available in Appendix 27 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen27.pdf.

All agency survey respondents reported having websites at the departmental and lower unit levels. For example, the Administrative Office of the U.S. Courts' Office of Public Affairs manages the AO website. The department/agency sites include policies and procedures, press releases, fact sheets, listings, and indexes of publications, and in some instances the full text of a publication, statistical, and other data sets. Respondents for the Departments of Labor and Treasury, and the U.S. Geological Survey (USGS) specifically mentioned the requirement for appropriate review and clearance of information being placed on the web. Most respondents indicated the existence of policies and procedures for the web, although only the Indian Health Services, the Departments of Defense and Treasury, and the AO indicated coverage for adding, changing, and deleting information.

The Electronic Freedom of Information Act (E-FOIA) appears to have impacted agencies heavily, in that several agencies reported indexes and search capabilities for use by the public in FOIA Reading Rooms. The Indian Health Services and the Department of Veterans Affairs refer to their E-FOIA Reading Rooms, though they do not specifically refer to the E-FOIA itself.

Only the Department of Defense and the Smithsonian Institution report a comprehensive listing of electronically published information. In DOD information is included in the DOD Resource Locator. In other departments, the divisions, bureaus, and small organizational units maintain listings of their publications (print and electronic) on the web.

4.C. The opportunities for strengthening customer-based current awareness programs offers bright promise for moving agencies closer to a fully proactive public information dissemination model

Federal agencies have individually experimented with a wide variety of approaches and techniques for helping to keep their constituencies and clienteles aware of current agency public information products of special interest to them. This approach has been called "Selective Dissemination of Information" or SDI in the literature of librarianship. The term "current awareness" is more commonly used today.

For example, the U.S. EPA has been providing the public with a variety of current awareness options for years. The agency currently operates over 50 externally available e-mail services that the public can subscribe to and they send information as frequently as appropriate. Perhaps the agency's most successful venture in this regard is the *Federal Register* Listserv. This listserv offers 12 separate categories and transmits the full text of relevant *Federal Register* notices to subscribers by noon on the day of issue. The agency starts this process at 7:00 am daily and reviews the published *Federal Register* and categorizes all environmental notices for this purpose. The categorization supports both the e-mail lists and the agency's in-house *Federal Register* collection that is available for the public on the Web, also on the day of issue.

Other EPA lists that have been very successful include the Internet Newsbrief and the EPA News Releases Lists. Internet Newsbrief posts a weekly notice of new and noteworthy Internet websites of interest to EPA staff and environmental professionals. The EPA News Releases list posts approximately twice a week and includes all headquarters press announcements that have been sent out in the last few days. These services are important to people that work on environmental issues and also to the EPA staff and contractors who need to know what is happening in other offices and regions.

The Defense Department and the military services have a wide variety of current awareness programs. For example:

- Automatic Document Distribution (ADD)--full-text technical reports in microfiche.

- Automatic Magnetic Tape Distribution (AMTD)--citations to ALL technical reports on magnetic tape.
- Current Awareness Bibliography (CAB)--citations from the Technical Reports Bibliographic Database in paper copy or electronically by e-mail.
- DTIC Review--a sampling of full-text documents on a topic of current interest, as well as other related references and Internet addresses.
- ECAB-DOCS -- customized bibliographies with full-text documents (requires Secure STINET subscription) that can be printed, downloaded and saved to disk or file.
- Hot Topic Bibliographies/Documents--bibliographic citations to technical reports on topics of interest.
- STINET Subject Categories Searching--the most current information via specific fields and groups.
- Subscription Products--latest updates from the Research Summaries (RS) and the Independent Research and Development (IR&D) databases.
- Technical Report Awareness Internet Links (TRAIL)--subject-based e-mail lists. For example: Aviation Technology, Chemistry, Communications, Military Sciences, Physics and Space Technology.

From a broader perspective, the DOD DefenseLink (which the Defense Technical Information Center (DTIC) operates) provides a similar, but less granular, system called News by E-mail. It doesn't allow a subject profile, but it does allow for an e-mail "push" to subscribers. Subscribers choose each product they want e-mailed to them:

- Defense News (official DOD releases), including News Releases, Contract Announcements, Advisories and Transcripts.
- American Forces News (from the American Forces Press Service), including News Articles.

In their article on "The 'Blur' of Federal Information and Services," Joan Lippincott and Joan Cheverie ask "Will an information website be able to 'learn' about a user, if the user wishes, and anticipate his/her needs and send appropriate new information as it appears?"[152] Current awareness is a two-way street. That is, a user must be willing to divulge is or her special interests so that an information provider can develop an accurate user profile. That raises the potential for an invasion of privacy. There is a trade-off between the willingness to disclose some personal information and the benefits of automatically receiving new and updated information—whether from a commercial information provider or the government.

4.D. There are many success stories in interagency sharing of government information.

Despite the many statutory and policy barriers to interagency sharing, the Commission found many success stories for which the agencies must be given a good deal of credit. Here are just a few, and additional examples appear in Panel Two's Final Report.[153]

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[152] Joan K. Lippincott and Joan F. Cheverie, "The 'Blur' of Federal Information and Services: Implications for University Libraries," *Journal of Government Information*, Vol. 26, no. 1 (January-February 1999), page 26.

[153] The final report from Commission Panel Two is available as Appendix 24 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen24.pdf.

The National Biological Information Infrastructure (NBII) is a broad, collaborative program to provide increased access to data and information on the nation's biological resources. The NBII links diverse, high-quality biological databases, information products, and analytical tools maintained by NBII partners and other contributors in government agencies, academic institutions, non-government organizations, and private industry. Resource managers, scientists, educators, and the general public use the NBII to answer a wide range of questions related to the management, use, or conservation of this nation's biological resources.

Gray literature is foreign or domestic open source material that usually is available through specialized channels and may not enter normal channels or systems of publication, distribution, bibliographic control, or acquisition by booksellers or subscription agents. The GrayLIT Network makes the gray literature of U.S. federal agencies easily accessible over the Internet. It taps into the search engines of distributed gray literature collections, enabling the user to find information without first having to know the sponsoring agency. The GrayLIT Network is a comprehensive portal to federal gray literature. By offering a mode of communication for this hard-to-find class of literature, the GrayLIT Network enables convenient access by the American public to government information. The Department of Energy (DOE) provides public access to this research tool through GPO Access in partnership with the Government Printing Office. Federal agencies participating in this project are DOD (through DTIC), DOE, EPA, and NASA. Participation will be expanding as the site develops.

A new program area at Commerce assumed responsibility for bringing the *Commerce Business Daily* (CBD) into the 21st century. They solicited proposals from organizations to fulfill their vision of a new, electronic CBD that would serve the needs of the government procurement community and American business in the information age. The result was a partnership with the Government Printing Office to produce CBDNet. This popular database is available free to the public on the GPO Access system.

The *Federal Register* must also be included in any list of success stories for interagency sharing of government information for the public good. NARA indicates that *Federal Register* publications account for almost 90% of the traffic on GPO Access.

The Commission is delighted to acknowledge that even as it was preparing this report for publication, the final draft of a new edition of *Guide to Federal Publishing* reached its desks. This new edition reflects the ideas and participation of the Interagency Council on Printing and Publications, the Federal Publishers Committee, the Government Printing Office, this Commission, the Consumer Information Center, NTIS, and the Federal WebMasters Forum, among others. It is a significant updating of the prior edition, taking into account the Web and Internet publishing. Yet, it remains unofficial guidance to government publishers.

4.E. Statistical indicators of interagency information sharing show positive results.

There are indicators that there is demand for government information both from inside government as well as outside. Namely, there is a demand from one federal organization for information generated by another government organization. For example,

- GPO is a public access point. During a recent 11-day period, GPO extracted the number of .gov and .mil addresses (excluding state and municipal .gov sites) referring users to GPO Access and the number of referrals and compared them to overall addresses referring and the total number of referrals. Some 635 distinct URLs referred users to the resources of GPO Access. This was 12

percent of the total. In all 32,185 referrals were received from these federal government addresses, *or a little more than 23 percent*.

- DTIC is an access point for the Defense Department, Defense contractors and grant recipients. In FY 1999 DTIC provided nearly 53,000 unclassified non-digital documents to 30 federal government organizations in the Executive and Legislative branches. While 45% of these documents went to NTIS and the Library of Congress for their collections serving both the Public and Private sectors, 55% went to federal agencies to meet local needs. In addition to these "physical" documents 2,410 digital documents were provided to other federal agencies. Delivery of digital documents will continue to grow, as more documents are made available electronically.
- NTIS is an access point for federal scientific and technical information (STI). Annually NTIS disseminates:[154]

Paper Reports	75,000
Microfiche/SRIM	750,000
Subscriptions	175,000
Best Selling Books	75,000
Computer Products	20,000
Audiovisuals	7,000
Online/Distributions	Millions

4.F. Technical information handling standards and protocols are needed.

With respect to technical information handling standards and protocols, a recent OMB survey of agency e-Gov plans indicated that:

- Agencies agreed that common standards would be useful, especially in the XML area. However, agencies generally opposed mandating a common XML or "GXML" standard by statute because this would be slow and overly prescriptive. Furthermore, they contended that it has not been demonstrated that government information is so significantly different that a separate language (GXML) is needed.
- In general agencies did not believe that new statutory direction is needed in the area of interoperability standards. A strong administrative effort, they contended, would yield the benefits of common standards in terms of interoperability while minimizing prescriptive laws. Agencies also noted that OMB policy requires relying on private sector standards wherever possible.
- In the authentication arena, agencies strongly favored an interoperable public key infrastructure (PKI) through which multiple agencies could rely on a single digital signature. A federal PKI Steering Committee is studying the "Bridge" as a means for accomplishing this objective.

4.G. Agency policy guidance on public information resources availability, management, and dissemination is still spotty, with some notable exceptions that could be emulated by other agencies.

The Commission found that agency policy and procedural guidance laying out clearly what the agency's policies are for planning and managing its public information resources, making its information easily and cost-effectively available, findable, and accessible by the public is spotty with a few notable exceptions. One notable exception is the guidance laid out in the Environment Protection

[154] NTIS does not separately report government and non-government use; however, it is reasonable to assume that a significant percentage of NTIS use is by government organizations.

Agency *IRM Policy Manual*, in the chapter entitled "Policy on Public Access to EPA Information."[155] This document clearly establishes:

- Purpose.
- Scope and applicability.
- Background.
- Authorities and references.
- Policies (discussed below).
- Responsibilities.
- Definitions.

Here are the EPA public information resources policies:

- The Agency shall ensure that all information products created electronically be inventoried, stored, retrieved and, if appropriate, disseminated electronically. Agency contract agreements, grants, and interagency agreements shall require that deliverables be submitted in both paper and electronic format.
- The Agency shall provide an array of information products and services targeted to the customer and determined to be cost-effective. These services may include simplified, integrated entry points for information seekers, such as information telephone service and a single Internet address connecting to all EPA-provided information.
- All new and enhanced data systems, data collections, and databases shall be designed with consideration of the need to permit and facilitate public access to that information.
- The Agency shall provide, where available, information on the uses and limits of each data product released to the public. The information provided may describe the Agency's purpose for collecting the data, the source of the data, the known quality of the data, the Agency's application of the data, and limitations or cautions in using the data. The Agency may issue a disclaimer against using the data for other than the purpose intended, because there is a high risk of misinterpretation of the information.
- The Agency shall encourage and facilitate the integration of data and the exchange of information across EPA programs and with federal and state agencies to conserve resources and to improve the usefulness of the information to the public.
- The Agency shall adhere to its written, Universal Customer Service Standards, and in particular to the EPA Customer Service Standards for Public Access.
- The Agency should consider, to the extent resources allow, ways to overcome barriers many citizens face in obtaining information, such as lack of Internet access, language, and physical disability (hearing and sight, especially).

It is clear from the EPA guidance that this agency takes full responsibility for not only producing information, but organizing that information, inventorying it, indexing it, and maintaining records of what they have available. In so doing, not only does the agency make the information more easily and readily available, both internally to other agencies and externally to the public, but it also makes the jobs of the central information service agencies such as NTIS, GPO and the FDLP, NARA, as well as

[155] U.S. Environmental Protection Agency, "Policy on Public Access to EPA Information," *IRM Policy Manual*, Chapter 21, Washington, DC: Environmental Protection Agency, February 1998; http://www.epa.gov/irmpoli8/polman/chaptr21.htm.

the Library of Congress and the national libraries, much easier, not to mention the jobs of their own agency libraries, information centers, and E-FOIA reading rooms.

If the CIO Council establishes a "best practices" portfolio for model agency public information resources policy statements, in the Commission's view the EPA Chapter 21 material should certainly be included. There are other, very worthy examples as well that the Commission discovered as a result of its agency survey.[156]

4.H. Retention periods for public information on agency websites are inadequate to satisfy research and general public needs.

Retention periods for public information resources on agency websites are inadequate to satisfy research and general public needs, including genealogical research.

For example, two high profile Department of Commerce publications are cited in the departmental Fact Sheet[157] issued in August of 1999 as part of the proposal to close the NTIS. The Department used these reports as examples, stating "the American people can get technical and business reports for free that they are forced to pay for to obtain them from NTIS." The Department of Commerce proposal for the public to rely on free access to these publications from the Commerce website in lieu of purchasing copies from the NTIS left unanswered several key questions:

- How long would these documents be maintained on the Commerce Department website?
- How easily could the documents be located and retrieved?

The Fact Sheet provided no specific, permanent Internet address for either document, and a year later one report was found only with great difficulty and the other could not be found at all. [158]

The solution proposed by the Department of Commerce also fails to address many other less prominent documents that may never be posted on its website, and it ignores older publications that pre-date the availability of the website. Most of these reports are not currently available on any website. The issue of access to older materials gives rises to several additional questions:

- Does Commerce intend to invest millions of dollars in converting these older documents to web-ready form?

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[156] The results of the survey of government agencies are available as Appendix 27 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen27.pdf.

[157] U.S. Department of Commerce, "Providing the American People Information for the 21st Century: The Commerce Department Proposes to Close NTIS and Ensure That People Can Receive Technical Information for Free Over the Internet," Fact Sheet, Washington, D.C.: Department of Commerce, no date; http://204.193.246.62/public.nsf/docs/EA7BD28117EEF74D852567CB006B7D20.

[158] Here is an example of the effort that an experienced searcher made to find the two documents mentioned (but not cited by their Internet addresses) in the Fact Sheet. On November 26, 2000, an NCLIS staff member went to the Department of Commerce website (www.doc.gov) to determine the current availability of the reports referenced in the Fact Sheet. The document entitled Emerging Digital Economy II could not be found searching the site; however a search of the GPO *Catalog of U.S. Government Publications* (http://www.access.gpo.gov/su_docs/locators/cgp/index.html) quickly located the document at http://www.ecommerce.gov/ede/report.html. A subsequent search of the National Telecommunications and Information Administration website (www.ntia.doc.gov) retrieved a slide presentation about the report that included the correct Internet address. A similar search for the other report referenced in the Fact Sheet, the first annual report of the U.S. Government working group on electronic commerce, found a link to the second annual report (http://www.ecommerce.gov/annrpt.htm), but there were no links to the first annual report on the GPO, Commerce or NTIA or websites. A search of the www.ecommerce.gov website also located only the second annual report. The site map for www.commerce.gov does not include a link to the www.ecommerce.gov website, although there is a link labeled "E-Commerce Initiative" elsewhere on the main page. Apparently the www.ecommerce.gov website is not included in the search of the www.commerce.gov website.

- Does Commerce expect other agencies to do so?
- If agencies are expected to convert their own publications, at whose expense and with what funds?

If conversion is not intended or funded, then users will be left with reduced access the historical files and to new material that does not find its way onto agency websites. This is of great concern to NTIS customers since 36% of NTIS report titles sold in 1998 were over 10 years old. Agency-based web servers cannot meet this demand unless substantial investment in backfile conversion is made. It cannot be assumed that anything previously published that is not already in web-ready form is of no value to the public and no longer requires public access. Clearly this is not the case.

4.I. The current laws requiring transfer of information products to NTIS, GPO and NARA lack the means to ensure agency compliance. The absence of enforcement mechanisms with real consequences results in incomplete collection and dissemination of the information required by the governing statutes.

Sometimes unpopular agency policy positions disappear quickly from their websites, or never appear at all. The depository library community, among others, has expressed concern about the availability of such things as studies paid for with taxpayer funds whose results do not support the Department's policy positions. The librarians doubt that such studies will be featured on the Department's website, distributed through the FDLP, or be readily located by even the most sophisticated search engines. Furthermore, the first transfer of power from one Administration to another since the advent of agency websites as a major means of public information dissemination raises concerns about what will happen to information posted by the prior Administration when new officials take over the agencies.

The Freedom of Information Act (FOIA) and E-FOIA will remain necessary tools for public oversight of government activities, and strengthened rules for transfer of all appropriate agency information products to a central facility will help to safeguard current and future access to public information. However, central information service agencies are merely stewards for the information entrusted to them. The current laws requiring transfer of information products to NTIS, GPO and NARA lack the means to ensure agency compliance. The absence of enforcement mechanisms with real consequences results in incomplete collection and dissemination of the information required by the governing statutes.

4.J. Serving populations, including lower levels of government, that are not directly associated with operating agency missions is secondary insofar as the agency is concerned, but the central mission agencies must address the needs of the general public.

Agency websites are intended to provide agency information (and perhaps other information related to the agency mission) to the agency's constituency in support of the agency's mission. That may not be consistent with providing government information to those members of the general public, including lower levels of government, not specifically associated with the agency mission. Discussing this issue in their comments on this assessment, the Government Document Roundtable (GODORT) raised the following example: the Defense Department is responsible for providing access to its extensive collection of research reports to its internal scientists and engineers and its large contractor community. How much effort should DOD expend to insure that non-defense users have adequate access to this information and how concerned should the Defense Appropriations Committees be with this expenditure? Will a website designed to meet the needs of the Defense community always meet the needs of a non-defense university researcher or small businessman who may also find the information useful? Should it?

The fundamental mission of providing access to government information to avoid duplication of research effort and to promote economic growth—a mission that might at one time have been thought to be a part of the Department of Commerce—gets lost in the specific missions of the various mission agencies and their many websites.

4.K. The critical distinction is oftentimes not made between a "passive dissemination" agency posture and a "proactive dissemination" agency posture.

Having Defense (as well as other mission agencies) make its (their) technical information available to the general public as a near-free by-product of meeting its mission needs is worthwhile and should be encouraged. It is not, however, sufficient to fulfill the government's responsibility to make government information passively available to, and accessible by the public. There needs to be a clear focus on *proactive* public information dissemination, which is not likely to be present (at least all of the time) in the mission agencies. This is not a role for NTIS.[159]

The differences in definitions as between "access" on the one hand, and "dissemination" on the other hand, as between different statutes, has created considerable confusion in this area. Moreover, at least some agencies virtually equate dissemination with access, taking the position that once they've posted a public document to their website, they have no further obligation to the public. In the Commission's view, as stated earlier, this should be the distinction:

- Proactive dissemination occurs when an agency decides that making information available to the public is an essential part of its mission, and moves to create policies and programs that carry out this aspect of their mission. The information (except that with any legal restrictions) is made available in whatever form and medium the agency wishes to use, through channels that the agency believes will deliver it most efficiently and effectively to the end users most in need of it, or those who simply wish to have it. In many instances, the agency will announce the availability of the information through press releases and current awareness systems or in other ways advertise the existence of such information. Proactive dissemination is a knowledge diffusion model that emphasizes two-way, interactive communication, including informal, collegial exchanges between producers and users. Those agencies who proactively make their information available are probably also the most likely to ensure that it is permanently available.
- Passive dissemination occurs when an agency, in compliance with laws, regulations, or directives, places its information with an intermediary disseminator or directly makes the information available to those who request it. No effort is made to aggressively reach end users and make them aware of the existence and availability of the information. However, no attempt is made to restrict the information, and when a user finds out about the information and requests it, the agency or its intermediary will make it available to the requester. Passive dissemination is a one-way, producer-to-user dissemination model. These agencies are not as likely to be concerned with making this information permanently available.

The absence of explicit, unequivocal, and standard language in all agency mission and program statements in their enabling legislation is, in the Commission's view, a root cause of these differences in interpretation, and needs to be remedied. "[Each] agency's mission should be framed as broadly as possible. It should enable rather than discourage dissemination."[160]

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[159] These terms are defined and discussed earlier in the report in the section entitled What This Report Is About and What It Is Not About. The issue is also discussed in Findings 1.A and 4.K.

[160] J. Timothy Sprehe, op. cit., page 269.

4.L. The need for safety net remains, no matter how much information is posted to agency websites.

> A central information service agency needs to take advantage of each mission agency's efforts to distribute the agency's information to minimize duplicative costs, and it also must be prepared to step in and provide access when the mission agency cannot or does not.

There needs to be a safety net or failsafe mechanism to insure that public information that an agency chooses not to disseminate, does not post on its website, or takes down from its website is still available for permanent public access. That is the role that the National Technical Information Service (NTIS) serves for scientific and technical information (STI) and that the Government Printing Office (GPO) serves through its *Catalog of U.S. Government Publications* and the Federal Depository Library Program (FDLP) for public information on a wide range of topics. Both agencies are well aware that they fall short of comprehensive coverage, in spite of statutory mandates for agency submission of information and their own best efforts to obtain information from the agencies.[161] Clearly a central information service agency needs to take advantage of individual mission agency efforts to distribute the agency's information to minimize duplicative costs, but it also must be prepared to step in and provide access when the mission agency cannot or does not. That is currently the role for NTIS and GPO, and if the Commission recommendations are accepted, will be the role for the proposed Public Information Resources Administration (PIRA).[162]

Some of the shortcomings identified in this section can and probably will be overcome in time. Once standards are set and adhered to some of these access problems will disappear. As the technology improves some of these problems will disappear, but others, as yet unforeseen, may take their place. Ye*t today, with the current state of the Internet, standards and technology, public access to agency publications via agency websites is very much a hit or miss proposition*. Once again, there is a need for a safety net or failsafe mechanism to insure that the public has access to the mission agency reports and publications. NTIS and GPO currently provide that safety net, and if the Commissions recommendations are accepted, PIRA will provide it.[163]

4.M. Older format and medium conversions are not systematically and regularly taking place, especially digitization of pre-electronic information resources, and preservation of materials to protect against technological obsolescence is not a high priority.

As mentioned in other findings, there is the rather significant matter of providing access to the tens of thousands of valuable reports and publications that are not in web-ready form. These require either

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[161] As noted in Finding 6.C, in spite of the efforts of the federal STI organizations, NTIS estimates that approximately 25% of reports that should be submitted to them under the American Technology Preeminence Act are not submitted, and are therefore not available for current and future use. While no precise numbers are available, the Government Printing Office also estimates that there are a significant number of "fugitive documents" that come under the statutory mandate for inclusion in its *Catalog of U.S. Government Publications* and the Federal Depository Library Program (FDLP), but are never provided to GPO for dissemination.

[162] It should be noted that a significant part of the information available through NTIS comes from DOD, DOE and NASA, which provide just such a safety net for the information products of their own agencies through their STI programs. Many other publishing agencies lack this additional safety net.

[163] The need for a central authoritative inventory and database is also discussed in also Findings 3.G, 5.D, 5.K, Conclusion 4 and Recommendation 27.

expensive conversion to web-ready form, usually done through scanning page images,[164] or old-technology reproduction (paper and microform) and represent at least one half of the total current NTIS demand. Clearly, there is a role here for a central information service and management agency such as the NTIS. There is also a substantial and complex challenge for the government to identify and prioritize of the holdings that should be digitized, and to establish to costs for that effort.

Furthermore, systematic and regular conversion of public information resources that are already in digital form is not taking place. Consequently, software and hardware obsolescence threaten the future availability of significant amounts of public information. The government needs to identify and prioritize the conversion of such materials to useable formats and mediums and to establish to costs for that effort.

4.N. Need for specialized searching and locator tools requires substantial new knowledge and research.

In addition to mounting the full text of some of their reports on their websites and thereby providing some public access, the mission agencies may also provide some finding tools to identify reports sought by users. These tools might include some indexing, abstracting, cataloging, and preservation of the reports and publications, or they might not, as is the case with the two Commerce Department examples discussed in Finding 4.H above. The tools might include a search engine on the website to locate reports or the site might rely upon users accessing commercial Web search engines to locate reports on the site. The search engines will work for some reports but not for others. Where reports and publications are stored in PDF image form without a full text search capability neither the search engine on the site or the commercial search engine will find the document. Where the agency chooses—for more efficient searching of its material—to store its reports and publications in a separate searchable database on its website, an external search engine will not be able to search the contents of the database and the reports will not be found.

4.O. Permanent public availability of, and access to, government information are critical parts of the overall strategy to meet the public information needs of the public, and they must be strengthened. Individual agencies are the "first line of defense" in this regard.

> Individual agencies are the "first line of defense" for permanent public availability of their own public information resources and have primary responsibility for permanent public availability of, and access to, their own public information resources, unless they arrange to have that responsibility assumed by a central information services agency such as GPO or NTIS.

As government information has migrated from paper publications to electronic information, the concern that such information will no longer be permanently publicly available has become a critical consideration. As a result, the term "permanent public availability" has become a very important concept that also must be defined in statute.[165]

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[164] Optical Character Recognition (OCR) is a preferred method of scanning since it creates a searchable document, although it is more expensive since it currently requires post-scanning editing.

[165] The Commission uses the phrase "Permanent Public Availability" in lieu of "Permanent Public Access" throughout this report because it more accurately reflects the fact that both availability and accessibility must be permanent, not just accessibility. Availability refers to the basic entitlement of the people to government information not otherwise restricted from disclosure by statute. Accessibility refers to how the public searches for, locates and retrieves the information. There is

The Commission defines permanent public availability as "the making available to, and accessible by, the public the maximum amount of public information resources on an indefinite, continuing basis, free of charge."[166] This is further qualified by the statement that "this public availability is distinct from the deposit of an official copy for "Permanent Records Retention" by the National Archives and includes information resources that may not come under the Federal Records Act definitions of a federal record because they are acquired, organized and preserved solely for convenience of public reference; furthermore, public availability is meant to convey immediate access through the World Wide Web (or its successor technology) or availability through collections, both digital and non-digital, held by a widely distributed national network of libraries such as the federal depository libraries."

"Permanent Access to Federal Records" is a closely related, but different, term, provided for by the Federal Records Act. However, many agency publications and other important documents are exempt under the provisions of Section 3301 of the Federal Records Act. As a result they are not transferred to NARA for permanent retention, and under current law, they will not be available for permanent public access unless individual agencies take action to make them so. Many agencies do not schedule all of their publications and important documents as permanent records, nor do they have policies to ensure permanent public availability whether this information is scheduled as official agency records or not.

Individual agencies are the "first line of defense" for permanent public availability of their own public information resources and have primary responsibility for permanent public availability of, and access to, their own public information resources, unless they arrange to have that responsibility assumed by a central information services agency such as GPO or NTIS. Agencies such as DTIC and DOE OSTI already assume primary responsibility for the permanent public availability of R&D results for their agencies since dissemination of that information is directly and explicitly tied to the primary missions of their agencies. However, for most other agencies dissemination of information is a secondary, rather than a primary function, and therefore they usually rely on the central information services agencies.

The Federal Depository Library Program provides a mechanism for no-fee permanent public availability to information distributed through the program to regional depository libraries. In addition, GPO guarantees permanent public access to all public information resources available through GPO Access. NTIS provides another mechanism for permanent public availability of scientific and technical information through the sale of information in its collection. However, there is a substantial amount of public information that is not made available for permanent public access through either program, and therefore has no formal mechanism to ensure its permanent public availability.

Government information to which the public should have access, particularly the results of research work that are likely to have long-term value beyond the purpose of the original research, are often not permanently availably to and accessible by the public. Public availability should not end when the agency sponsoring the research decides—possibly for budgetary reasons—that the report will no longer be made available on the agency's website. For example, the research reports on energy conservation and alternative energy sources from the early 1970's are suddenly very relevant again today, but they are not available on the web servers of the Departments of Energy and Transportation.

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a substantial amount of agency-initiated information which is *available* to the public under FOIA and other statues, which is not disseminated, an therefore not *accessible*, to the public. "Permanent Public Availability" as defined and used in this report means both availability and accessibility. This issue is discussed more fully in the section entitled A Working Definition of Public Information. It is also addressed in Findings 1.A and 5.K and elsewhere in the report.

[166] These definitions are from Appendix 11 in Volume 2 of this report: The Public Information Resources Reform Act of 2001. Appendix 11 is also available at http://www.nclis.gov/govt/assess/assess.appen11.pdf.

NTIS is the failsafe source to make such research results available when they are no longer available from the originating agency.[167]

In reviewing the current NTIS practices, Commission Panel 1 recommended that, in the future, when agencies mount their information on their own servers and make it available to the public free of charge, NTIS should provide pointers to the information on the agency's website. When the information is removed from the original agency's website NTIS should provide access to the full text of the information on its own website or by some other means.[168] In the case of older, less frequently accessed, information, the public requester will have to purchase a print or microfiche copy of the report from the NTIS archive or have a digital copy created through scanning. However, once the first person purchases a retrospective report and pays for its digital conversion as part of the purchase price, it should then be free on the website. In other words, a surcharge is not charged either to the first, or to subsequent purchasers of the same report. This policy may need to be re-examined under the proposed new NTIS business model to ensure that their sales program is truly self-sustaining.

In the past, if a publishing agency deemed a product sufficiently important to print (paper) copies or duplicate a CD-ROM, GPO would ride the order and include copies in the FDLP, even if there was an electronic copy available on the agency website. Recent instructions from the Congressional appropriations committees preclude distribution in tangible form if an electronic copy is available online. There is no assurance in the present highly volatile technological environment that government information electronic files created today will be useable 10 or 20 years in the future. The absence of the authority for the Government Printing Office to ride agency orders for tangible products (primarily print) for at least the 53 regional depository libraries, the National Archives and Records Administration (NARA), and the Library of Congress increases the likelihood that this information will be lost to future generations. Distribution of the tangible copies provides a safety net ensuring permanent public availability of the material.

GPO cannot ride an order for electronic information products that are not in CD-ROM or some other tangible form. Therefore, the new policy is that GPO will catalog, announce and point to such public information resources. In some cases, GPO is copying the electronic files for storage on its own servers to ensure permanent public availability. By statute, GPO operates what should be a comprehensive inventory (the *Catalog of U.S. Government Publications*) and the Federal Depository Library Program, which should be a comprehensive collection of government publications. Originating agencies are not providing electronic copies to GPO, or even notifying GPO of the existence of copies on their websites, so that GPO must expend extensive resources identifying, locating and capturing electronic information resources.[169] This impedes the development of a comprehensive inventory and failsafe collection for permanent public availability.

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[167] To the extent that this information also falls under the statutory mandate of the FDLP, and much of it does, the federal depository libraries should also receive it. Some of this information already flows through GPO to the depository libraries; however, many agencies are unaware of this responsibility or falsely assume that by placing the information in NTIS it reaches the depository libraries. The recommendation to combine NTIS and the GPO Superintendent of Documents responsibilities in a new Public Information Resources Administration (PIRA) will help to close the gap in both the NTIS and the FDLP safety nets. This is included in Recommendation 5. The text of the proposed legislation is in Appendix 11 in Volume 2 of this report and also at http://www.nclis.gov/govt/assess/assess.appen11.pdf.

[168] GPO is already taking such steps for information that falls within the scope of the FDLP and NTIS should find ways to join in this effort so that both programs are strengthened, and new redundant efforts are not initiated.

[169] In fact, if the recommendations of Commission Panel One are followed, NTIS will soon begin a similar process.

5. FINDINGS RELATING TO THE FEDERAL GOVERNMENT—CENTRAL AGENCIES WITH GOVERNMENT-WIDE PUBLIC INFORMATION SERVICES AND INFORMATION MANAGEMENT ROLES (EXCEPT NTIS)

5.A. Central government-wide public information services and information management roles are still crucial. Overall public information policy and standards leadership and oversight is largely unfulfilled.

Some agencies believe, incorrectly, that it is less important to provide their documents to the central public information service agencies since the public can get the information directly from the agency (or bureau or division) website, notwithstanding the statutory mandates to do so. This is a dangerous fallacy.

As mentioned early in this report, central public information service agencies within the government such as NTIS and the Federal Depository Library Program and Sales Program of the Superintendent of Documents, as well as the sales programs of the Census Bureau, the U.S. Geological Survey (USGS), the National Weather Service (NWS), and many others, all have made their mark by providing a convenient central service to federal agencies, as well as to their ultimate service beneficiaries—the public. The services of these central agencies have had the virtue of eliminating some of the agency burdens of distributing information products to the public and to users in other agencies.

Admittedly, with electronic documents and the Web, agencies can perform many of the same functions themselves without significant cost and efforts, so their support for the government-wide information services provided by NTIS, the Superintendent of Documents, and others, has begun to diminish. Some agencies believe, incorrectly, that it is less important to provide their documents to the central information service agencies since the public can get the information directly from the agency (or bureau or division) website, notwithstanding the statutory mandates to do so. This is a dangerous fallacy.

When agencies, bureaus or divisions that do not have a primary mission of information dissemination go into the information dissemination business, they do so with a different orientation and different motives than those of the central information service agencies. The central information service agencies ensure easy access to all segments of the public for all of the information products on a permanent basis.

The mission oriented agencies, however, are more likely to provide ready access to only those documents that further the agency's mission, and only for as long as they further the agency's mission,[170] and only to those particular users and user groups in whom the agency's management is most interested. Moreover, when agencies stray too far from their legislatively mandated and authorized missions, Congress chastises them for doing things that they are not supposed to do with their appropriated funds.

[170] The major research and development agencies, such as the Departments of Defense and Energy and the National Aeronautics and Space Administration (NASA), do consider access to relevant research and development part of their mission, but have traditionally focused most of the efforts on service to the agency personnel, contractors and grant recipients. Recently the Department of Energy and the Defense Technical Information Center (DTIC) have begun to offer access to the general public through their websites.

Thus, the principles of public access are not achieved uniformly through all of the agency information systems, and no one knows which of the thousands of systems is missing what particular information products. There is therefore no assurance that the government is providing full public access to what should be public information. There is also no assurance on what that information is, or where it is. Instead, proper public information dissemination depends on the judgment of thousands of unmonitored officials at all levels in thousands of lower level units of government.

There is a critical lack of overall policy and standards leadership and oversight in the area of public information resources management. While it is true that the Congress intended that Administrator of Office of Information and Regulatory Affairs (OIRA) at the Office of Management and Budget (OMB) have the overall role of federal information resources management policy oversight (both internal agency information as well as public information, and both information technology and information content), the Commission believes that a new independent agency in the Executive Branch is also needed because the migration of information from pre-electronic to electronic formats and mediums has been so rapid, so dramatic, and so pervasive and far-reaching, that there is an enormous need for *detailed* public information resources policy, program, and other guidance, standards, procedures, coordination, and so forth. The Commission is convinced that OIRA has its hands full in fulfilling its Paperwork Reduction Act statutory mandate for general information technology and information policy oversight guidance, of which public information resources are only a small part. The recent Y2K crisis was but the latest example of the kind of crisis management, which that tiny, hard-working staff must confront and deal with all the time. Yet consider the list of security, privacy, e-Commerce, GPEA, copyright, and all of the rest of the challenges that affect all government information resources, not just public information resources, any one of which could easily turn into yet another crisis!

5.B. Reorganization of government public information resources management authorities, missions, functions, programs, policies, and resources is essential.

The Superintendent of Documents was established within the Government Printing Office at a time when all government publishing was done in print form and the Congress did nearly all printing and printing procurement for the entire government. Times have changed. As Executive Branch publishing and information dissemination has increased dramatically, the issue of Congress doing so much printing and distribution for Executive Branch agencies has been raised as a separation of powers issue. The advent of information technology and the Internet/Web have further exacerbated this situation and made it virtually impossible and impractical to effectively manage Executive Branch information activities from a Legislative Branch office.

> The Commission also strongly believes that Congress will always remain closer to the people than the Executive, and therefore Congressional support and active legislative oversight of the new agency is absolutely critical. Coordination between the branches is also critical to a comprehensive, authoritative and effective system for permanent public availability.

In the Commission's view, two additional corollary arguments can be made for positioning a new government-wide public information policy oversight agency in the Executive Branch:

- First, the dramatic decline of the role of conventional, pre-electronic printing technology roles and capabilities. The government's public information dissemination system of the 19th and 20th centuries was largely paper-based, and it made sense then to tie the system closely to printing and printing procurement so that the government could obtain the documents for public sale and

dissemination as they came off of the printing presses. This system began to break down with photocopying and the advent of more sophisticated local printing technology, such as the Xerox Docutech machines, and now is breaking down much more quickly with the advent of electronic files and the Internet. The Government Printing Office was established in the Legislative Branch with the primary purpose of fulfilling Congressional printing requirements. The Executive Branch printing was added to the GPO mission to avoid redundancy and provide the printing plant with work during the congressional recesses.

- Second, the dramatically expanding role and capabilities of the Executive agencies to make information electronically accessible directly from their websites. By virtue of its size and complexity, the Executive Branch produces significantly more public information than either the Legislative or Judicial Branches. The advent of the web and the Internet has seen a significant expansion in the quantity of public information produced by the Executive Branch in increasing to a much higher percentage than in the pre-Internet age.

The Commission is mindful that in the 19th and 20th centuries the centralized dissemination function began as a legislative function, and NCLIS expects this issue will be subjected to robust debate when the Congress addresses the Commission's recommendations in public hearings. Having said that, the Commission also strongly believes that Congress will always remain closer to the people than the Executive, and therefore Congressional support and active oversight of the new agency and its authorities, especially as regards agency compliance, is absolutely critical. Coordination among the branches is also critical to a comprehensive, authoritative and effective system for permanent public availability. No one branch can do the total job alone. The legislative reform and its oversight must be a bi-partisan and bi-cameral.

Returning to the NTIS situation, there has always been a tension between NTIS and SuDocs. In recent years this tension has gotten more intense as NTIS has sought to achieve or retain profitability in difficult financial circumstances. Both agencies have similar problems with congressional appropriations committees that seek to cut appropriations for their public good functions, mistakenly believing either that the costs can be recovered entirely from sales or that, with the Internet, there are no costs. Both agencies will have to streamline their operations for the Internet and make the case to Congress that their public good functions should be properly funded with appropriated funds.[171]

Other issues between the two agencies include differences in bibliographic control and the fact that most NTIS documents do not make it into the depository libraries. As long as the two agencies exist as separate entities the elusive goal of "one stop shopping" for public information will continue to be that much harder to achieve.

Combining NTIS and SuDocs into a single organization is an obvious alternative. It would provide the means to eliminate the unnecessary and unhealthy tension and competition between the two organizations, make it easier to standardize cataloging and bibliographic processes, consolidate databases and searching tools, and begin a serious move to simpler, unified public access to government information. There will also be significant opportunities for cost savings by elimination of duplication of effort. Particularly with both agencies moving rapidly toward Web based distribution of much of their information, the notion of a consolidation is attractive.

Several of the study panels addressed the idea of merging the two organizations, and concluded that the disadvantages would be primarily political. For example, could such a merger be made to happen when either the Executive or the Legislative Branch would be perceived to lose a major central

[171] These public good functions are identified in Conclusion 6 and Recommendation 11.

information distribution component to the other? The likelihood of the Congress approving a shift of the Superintendent of Documents (SuDocs) to the Executive Branch seemed so remote to many of the panel members that they were reluctant to even propose it, leaving it to the Commission to take up the matter.

One panel discussed an even broader reorganization proposal that would consolidate even more of the existing public information activities from various agencies than just NTIS and SuDocs. Such a consolidation, involving not only NTIS and SuDocs but also related functions from NARA, LC, OMB and GSA, was believed to have merit, but admittedly the Commission Panel felt it would be far more difficult to achieve politically than just a merger of NTIS and SuDocs. However the Commission, after taking into account the views of many experts and stakeholder groups on this matter, believes it is appropriate to raise the matter.

Certainly the combining of the two organizations is not a new idea. For example, as early as 1988 OTA said:

> Regardless of the ultimate institutional structure, there are significant opportunities for improvement in both NTIS and SuDocs product line analyses, development, and marketing. Strengthened cooperation between NTIS and SuDocs would not only help identify mutually advantageous joint activities, but would seem almost mandatory to the extent that both agencies pursue sales of electronic format products and that SuDocs enters the low-demand market. The major reasons advanced for improved NTIS/SuDocs cooperation (whether or not through formal consolidation) are: efficiencies in management and operations, improved coordination of federal information dissemination, enhanced opportunities for use of new technology, strengthened joint marketing programs, reduced overlap and duplication in government dissemination activities, and improved overall public access to federal information. Possible drawbacks of or barriers to improved cooperation include: some differences in current missions of the NTIS and SuDocs and resultant potential problems in more closely coordinating these functions, difficulties inherent in cooperative activities of agencies from different branches of government, and reluctance on the part of some federal agencies to cooperate with NTIS and/or SuDocs, regardless of institutional barriers.[172]

5.C. A new, independent, central leadership agency is required in lieu of maintaining the status quo, which is perpetuating existing fragmented, splintered, and compartmentalized organization, program, and mission arrangements and simply "patching them up piecemeal."

The Commission identified a very wide range of problems in this report under many different headings—overlap and duplication of missions and functions, overlap and duplication of data holdings, overlap and duplication of programs, lack of funding, obsolete pre-Internet practices, lack of uniform public information policies across statutory lines, lack of enforcement of existing laws, lack of agreed-upon terms and definitions across different laws, and so on.[173]

It is fair to ask, "Why cannot the President and the Congress simply fix all of these problems individually, utilizing the existing framework of organizations, missions, functions, authorities, responsibilities, and programs, perhaps reinvigorated and slightly reorganized? Why, in short, is a

[172] U.S. Congress, Office of Technology Assessment, op. cit., pages 107 and 119.

[173] A more detailed list appears earlier in this report under "Problems That Need to Be Fixed."

brand new organization (the Public Information Resources Administration) required, instead of simply maintaining the status quo and dealing piecemeal with each of the problems?

The Commission is certainly mindful in the current climate of downsizing government and reducing the unnecessary proliferation of new agencies, that it shares a heavy burden of proof in defending the course of action it suggests. To that end, here are the Commission's main reasons why a new, focal leadership agency, a new statute, and new budget authorities are all required:

1. It is inconceivable to the Commission that the President and the Congress would affirm the idea that government information is a strategic national resource without creating a new organization, mission, appropriate functions and programs, funding, and so forth; otherwise this national goal becomes nothing more than "another high-sounding, motherhood and apple pie statement that everybody can agree to and then walk away from. It would be better not to announce a national goal at all, than to announce it by paying only lip service.
2. The existing major central information service organizations, especially the Government Printing Office (GPO) and the National Technical Information Service (NTIS) have been virtually "warring fiefdoms" for decades, since the creation of NTIS. Their missions, functions and programs are irreconcilably overlapping and duplicative. That overlap and duplication, when translated into staffing, plant capacity, data collections, budgetary authorities, and other resources and assets, is extremely wasteful and, indeed, harmful, and has cost the taxpayer a substantial amount of monies over the years. To perpetuate that duplication and unnecessary cost is unconscionable, not to mention the enormous confusion caused by inconsistent, contradictory, and conflicting bibliographic systems of control.
3. Without a new statute, an independent agency with teeth in its authorities, and a suitable funding mechanism such as the Information Dissemination Budget proposed by the Commission in this report, individual mission agencies cannot be expected to "see the light" and suddenly disseminate their government information to the public in proactive ways because they have no real incentive to do so. Quite the opposite—they will undoubtedly continue to get into serious difficulties with the Congress if they try to do so on the grounds that they are straying too far from their basic mission and program authorities.
4. Recent initiatives and decisions taken in recent years by the Congress when taken in the aggregate, present a certain vision of an electronic, Internet Age government information world that is consistent with the strategic future directions advocated in this report. These include: the dissolution of the Joint Committee on Printing; several GAO studies that seek to move to a more fully electronic repository concept and model for Superintendent of Documents programs, including the Federal Depository Library Program, and NTIS; downsizing the Superintendent of Documents funding and staffing by decreasing its budgetary authorizations progressively and mandating increasing electronic dissemination; and others. The Commission does not see any of these initiatives and decisions taken by Congress as pointing to the status quo alternative, that is, strengthening GPO-centered or NTIS-centered authorities; quite the contrary.
5. Some agencies, including OMB and the Department of Justice, advocate an interpretation of the Chadha decision[174] that removes the GPO monopoly over government printing. Moreover, the degree of Executive Branch agency cooperation in providing government information to the Legislative Branch is not very "enthusiastic," as measured by the amount of agency originated "fugitive material" that never reaches the FDLP. In the Commission's view, providing agency information to another Executive Branch agency should result in much less fugitive material.

[174] *INS v Chada*, U.S. Supreme Court, 462 U.S. 919, 103 S.Ct. 2764, 77 L.Ed.2d 317 (1983).

6. The Department of Commerce is still intending to close down NTIS despite the fact that no Member of Congress has supported legislation to do so. The Commission does not see the logic in bolstering an agency's authorities when its current parent (Commerce) does not want it, and the new parent proposed by Commerce (the Library of Congress) apparently does not want it either, but it most assuredly should not be shut down.

These are the reasons why the Commission has rejected the status quo as a viable alternative. Any possibility of existing organizational self-renewal seems very unlikely, given the history of missed opportunities and mounting unmet challenges.

5.D. Central information services and information management agencies have an even more critical role in the Internet age than they did in the pre-Internet age.

There are some who believe the Web signifies a world of completely dispersed, decentralized, and distributed missions and functions that requires virtually no coordination or controls. The Commission strongly disagrees with this viewpoint and holds to the view that, for a wide variety of reasons, central information services and information management missions and functions are even more critical in the Internet Age than they were in the pre-Internet Age.

The general reason is to ensure overall policy and standards leadership and oversight of public information resources management. Some specific reasons are:

- Concerted and centralized acquisitions of mission agency information products to ensure that government-wide collections of information (such as STI information collected by NTIS) are complete and the public does not have to confront a bewildering array of different websites. It should be remembered that even if powerful new search engines such as the one contained in FirstGov eventually succeed in enabling cross-agency searching, the user still would be confronted with a bewildering array of websites and web pages once the search was completed, from which *to* obtain the information; and even then there would be no guarantee that all of the information needed was identified.
- Permanent public availability and accessibility policies are more likely to be followed and applied in a uniform fashion than if each agency were left to its own policies.
- Concerted and closer attention can be paid to authentication of the official version of a public information product, the minimization of the proliferation of unofficial, unauthenticated versions, and a reliable means to distinguish between the two.
- Single, central, comprehensive and authoritative inventory and database for the major collections of public information resources would greatly simplify the initial location, search, retrieval, access, and delivery of the information and provide a safety net or failsafe system for all users of public information.
- Information product content is becoming increasingly interrelated with associated services, a phenomenon sometimes called "blurring" in the professional literature. There are both positive and negative consequences involved that need to be carefully evaluated.[175]
- Cost effectiveness determinations to consider fully the trade-offs between the relative benefits and values on the one hand, and the costs and burdens on the other hand, of alternative information formats, mediums, and other publishing considerations.

[175] Joan K. Lippincott, op. cit.

- A standard cataloging and indexing system appropriate for the majority of public users would be followed by all agencies, or provided by the central information dissemination agency, to simplify and streamline the process of identifying public information products when they are brought into the system.[176]
- The availability of many products, which are not in electronic form, both "current" and "old," could be much more easily assured.
- The availability of products in non-electronic form for those users unable to use Web-based information because they are insufficiently computer literate, information literate, or do not have convenient and easy access to a public information resources facilities such as a library, could be more easily ensured.
- Assurance, in most cases, that products will make it into depository library system albeit under a changed set of guidelines as described elsewhere in this report.
- A single, authoritative focal point for issuance of policy guidelines for use by agencies to coordinate the negotiation of value-added services for government information products for the public would be a better approach than the current alternative of no guidance, or conflicting and inconsistent guidance. [177]

Having said that, it is true, as the Office of Technology Assessment pointed out over ten years ago in its report entitled *Informing The Nation*:

> At a fundamental level, electronic technology is changing or even eliminating many distinctions between reports, publications, databases, records, and the like, in ways not anticipated by existing statutes and policies. Electronic technologies permit information dissemination on a decentralized basis that is cost-effective at low levels of demand, but in ways that may challenge traditional roles, responsibilities, and policies. In contrast, ink-on-paper printing technology tends to be cost-effective with more centralized production and distribution and higher levels of demand. [178]

Yet the Commission finds that decentralized and dispersed information handling is a positive development that should not be equated to, or confused with, a completely permissive policy leadership posture. On the contrary, the Commission believes that a key requirement of a decentralized, dispersed information system is a strong central coordination and policy leadership role. That is true in the area of financial resources, which is why there is the Treasury Department and the OMB. It is also true in the area of human resources, which is why there is OPM. It is true of physical resources, which is why there is GSA, and it is true in the area of natural resources, which is why there is the Department of the Interior.

5.E. The legislative, executive, and judicial branches need to take additional steps to strengthen existing government-wide policy and procedural guidance.

Several of the thirteen agencies the Commission surveyed suggested that additional guidance on implementation of the E-FOIA from the Department of Justice is needed. Also, from the Office of

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[176] Such a service is currently provided by the *Catalog of U.S. Government Publications* produced by the Government Printing Office *(www.access.gpo.gov/su_docs/locators/cgp/index.html)*. A standard cataloging and indexing systems would augment, but not necessarily replace, the specialized controlled vocabulary indexing developed for the primary community of users in specific disciplines, such as the National Library of Medicine Medical Subject Headings (MeSH).

[177] Such an office could also serve as a facilitator of and ombudsman for public sector/private sector partnerships.

[178] U.S. Congress, Office of Technology Assessment, op. cit., page 8.

Management and Budget, strengthened guidance is needed on the Privacy Act as well. The reauthorization of the Paperwork Reduction Act in 2001 offers yet a third opportunity to improve government-wide policy leadership focus and guidance. In addition, better guidance is needed from government central oversight agencies on web posting and content management (which is dealt with in the following section).

Current legislative and executive mandates were initiated largely for a paper-based world, but a great deal of agency information is either not available as an electronic version, nor are there any plans to ever make the information available in electronic form, for many reasons including that there are simply too many graphics and visual materials to make digitizing a cost-effective alternative, there are simply too many scientific and technical data attachments, the material is simply too old to be able to be deciphered because the physical substrate medium is beyond "refreshing", and many other reasons.

Moreover, much of this information is incomplete, inaccurate, untimely because it is outdated, not officially recognizable (cannot be authenticated) as being a "certified, true copy" by the agency, unreliable (e.g., the content is replaced or overwritten without notice), or far more difficult to use in electronic form than the paper or pre-electronic forms ever were, because of the vagaries of specialized formats or mediums, or proprietary software requirements.

Then there are problems with privacy and security mandates. At least one agency in the Commission's special survey of agency practices sees the need to review existing requirements with the objective of strengthening the government's ability to address security and privacy concerns associated with the aggregation of unclassified information made possible and increasingly easy to handle and access by electronic means such as the World Wide Web.

Another agency surveyed suggested that federal libraries should be mandated to disseminate agency information and copies of everything printed (or issued electronically) should be forwarded to the library for cataloging for later retrieval. In some instances, issues/restrictions imposed on delivery of information on the web involved security considerations. Security, in particular, is in many cases overriding issues of public access and the free flow of information. Another challenge relates to the "dot com" (.com) links, which the public does not always understand are not agency endorsements of a particular set of information, but represent sites selected to meet specific agency needs. Libraries need to be able to apply their criteria for collection building to commercial and other sources. Technology should enhance libraries in their ability to disseminate information, not be an end in itself or place undue restrictions on what libraries do and do well in delivering content, selectivity and quality.

The survey of agencies conducted as part of this assessment confirm that agencies need the National Archives and Records Administration (NARA) to move quickly to establish Internet Age policies and standards for archiving. Responding agencies suggested that NARA should be directed to receive CD-ROM or DVD, as well as files electronically transmitted to them, or that NARA should "designate the PDF or another file formats as acceptable for transfer of official records. Requiring 6,250 bpi tape, no extraneous characters, and 7-digit block factor is simply not acceptable in today's environment."[179] The NARA response to the Commission survey is that they have long received permanent records via CD-ROM or DVD, and that NARA is preparing to accept electronic file transmissions. Obviously there is some misunderstanding between the agencies surveyed and the stated policies of the National Archives, perhaps more on the acceptable file formats than the transfer media. The Commission will work with NARA to contact the surveyed agencies to ensure they correctly understand NARA policies and that NARA fully understands their concerns.

[179] The results of the survey of government agencies are available in Appendix 27 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen27.pdf.

5.F. Government-wide business models for self-funding programs for the sale of public information must be revised.

Government-wide information service roles and activities are usually legislatively mandated to be self-supporting, either through fees paid by other agencies or by funds derived from the sale of public information resources. Document sales income is often used not only to pay the costs of actually providing the ordered document, but of running the central service and processing the new documents into the central system.

This posture may have made sense when the central service was the primary source for the agency information and its sales income could support the central service. Now, however, with agency documents being made available for free on the Web, the bottom is cut out from under the central sales services, and they are destined to fail financially sooner or later.

Continuation of present funding policies based on the pre-Internet environment will result in the elimination of all of the self-funding programs as one after the other fails to achieve the level of sales income necessary to sustain its operations. NTIS just happened to be the "tip of the iceberg" that first popped into the public spotlight. However the same significant questions that were raised in the debate surrounding the proposal to close NTIS must also be answered for the other self-funding information dissemination programs, including:

- If the public can get free access to agency documents from agency websites at minimal cost to the government and the user, why continue to operate other self-funding dissemination programs such as GPO Sales Program and StatUSA?
- Do the central service agencies provide any distinct value that is not otherwise obtained by the mounting of documents for public access on agency, bureau, or division websites?
- Isn't any document of consequence likely to be mounted on one or another of the thousands of government websites where it can probably be found by one search engine or another?

The public good functions[180] of the self-funding information dissemination programs should be supported through appropriations. The central services agencies perform valuable services for mission agencies and for the public. Searching for a specific piece of information across many agency websites is like searching for the needle in the haystack. It is a long, complicated, frustrating and costly process.

The Commission is not the only body to recognize that "front-end" information preparation tasks must be undertaken by any agency that is preparing information products for the public (not just NTIS). For example, the Computer and Communications Industry Association (CCIA) commissioned three distinguished economists, all of who had held key positions in the Clinton Administration, to study the *Role of the Government in the Digital Age*.

The authors first established three sets of "Principles for Government Action" which they designated as "green," "yellow," and "red." Green principles are those that they asserted the government should undertake with little concern; yellow those that the government should undertake with caution; and red those that the government should generally not undertake.[181] Three principles under the red light category were identified. Principle 11 says, "The government (including governmental corporations) should generally not aim to maximize net revenues or take action that would reduce competition." Then on page 118 of their report, they say:

[180] These public good functions are identified in Conclusion 6 and Recommendation 11.

[181] Stiglitz; Joseph E., Peter R. Orszag, and Jonathan M. Orszag, "The Role of Government in a Digital Age." Commissioned by the Computer & Communications Industry Association, October 2000; http://www.ccianet.org/digitalgovstudy/main.html.

Principle 11 raises serious questions about whether NTIS should be a "self sustaining" agency. The core clearinghouse function of NTIS, which entails the collection and dissemination of government scientific, technical, and engineering information, is certainly a proper government role (see Principle 1). But based on the principles described above, it would be more appropriate for the Congress to appropriate funds for this public good function than to require that NTIS offset losses in the clearinghouse with other business lines.

5.G. The Federal Depository Library Program has a permanent mission, but there is a critical need for a new vision and an updated service model.

The Federal Depository Library Program is a strategic element of the Nation's information infrastructure, but as is the case with NTIS, the FDLP is in dire need of a new vision and an updated service model appropriate to the Internet Age. John Q. Citizen can communicate just as easily and directly, or more easily and directly, with a federal agency website, access a remote library's electronic catalog, or even access a foreign archive or museum, as he can walk to, or telephone or fax the nearest library in his own home town. Moreover, the word "depository" means to deposit *something*, meaning to physically take it from one place and put it in another place, but eventually there will be few tangible information products[182] left to "deposit" once public information is almost entirely in electronic digital form. Instead of shipping tangible information products, links and pointers to electronic files are being established, database access is being provided, and electronic files are being transferred over the Internet. In short, the term "deposit " is becoming less and less appropriate as the key operative word to describe this program, although the program itself will remain a critical and strategic resource. The challenge, however, is that *we are a long way from that Utopian state of affairs.*[183] In the meantime, it is imperative that the many interim steps necessary to effect that transition be identified and scheduled for action in the short-term, in the mid-term and in the long-term.[184]

Repositioning and restructuring the FDLP in response to the Internet Age does not necessarily mean starting all over from ground zero. On the contrary, the Commission found many aspects of the program's traditional mission and practices that are not conditioned on changing information policy and technology.

Repositioning and restructuring the FDLP in response to the Internet Age does not necessarily mean starting all over from ground zero. On the contrary, the Commission found many aspects of the program's traditional mission and practices that are not conditioned on changing information policy and technology. For example, the program's proactive public outreach initiatives can and should

[182] Tangible information products include any information that can be physical transferred, e.g., a paper publication, a paper map, a poster, a document on microfiche, a CD-ROM, or a video tape. This is in contrast to intangible information products, such as a file posted on an agency website or available in as an online database.

[183] GPO and the federal depository libraries have been working on this transition since the first CD-ROM titles came into the program in 1990. A formal transition plan was developed in 1996 in conjunction with a report to the Congress entitled *Study to Identify Measures Necessary for a Successful Transition to a More Electronic Federal Depository Library Program* (http://www.access.gpo.gov/su_docs/fdlp/pubs/study/studyhtm.html) and that effort has accelerated each year. This statement is not intended as a criticism of what has already been accomplished, but rather as a recognition that there is much more to be done.

[184] The Commission defines these three-timeframes as: (1) the short-term: begin within two years or less, (2) the medium-term: begin in two to five years, and (3) the long-term: begin in six years or later. This is discussed in greater detail in the section entitled Timeframes for Address Recommendations at the end of Section C.

continue. Similarly, Congressional designation and other criteria for becoming a Federal Depository Library should be retained.

The FDLP has long played an important role in providing public access to government information. The system, based initially on low cost override printing by the Superintendent of Documents, later augmented by microfiche distribution and now moving rapidly to the Internet, provides broad public access at no cost to the public user. Most NTIS reports do not make it into the FDLP since they are not printed by or through the Government Printing Office.[185] Agencies are required by 44 *U.S.C.* 1903 to provide copies of their publications to GPO for the FDLP when those publications are not printed at, or procured through, GPO. Many agencies are unaware of this responsibility or falsely assume that by placing the information in NTIS it reaches the depository libraries. This has been a longstanding source of disagreement between GPO, NTIS and the report originating agencies. There is some limited purchasing of NTIS microfiche by a handful of depository libraries and a new pilot program between NTIS and GPO to provide some libraries with access to NTIS material on the Web in image form. However, generally the depository libraries do not have ready access to NTIS reports. The future availability of NTIS reports without charge on the Web should solve this problem since depository libraries serve their users through Web access. No fee public access through federal depository libraries is one more reason for making sure as many NTIS reports as possible are available without charge on the Web. When NTIS reports are available without charge to federal depository libraries, GPO will recognize the reports as officially coming under the auspices of the FDLP, as many publications on agency websites already are, and no-fee public access to NTIS reports through the FDLP will be assured.

Commenting on the draft report and the proposed legislation, Professor Charles A. Seavey of the School of Information Resources and Library Science at the University of Arizona said:

> One of the inevitable consequences of the move towards a more electronic dissemination system is that every library is essentially a depository library. Somewhere along the line Congress, and/or the [Public Information Resources Administration (PIRA)] has to figure out a role for the existing FDLP libraries. There is a huge pool of expertise in those libraries, yet if the intent of Congress is to move towards purely electronic dissemination, what is the point of a paper-based FDLP?

The Commission strongly believes that there is, and will continue to be, a substantial need for a distributed network of libraries nationwide with a commitment to assist the public with the identification, search, retrieval and use of public information resources.

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These libraries maintain integrated collections of public information in many formats and media (paper, microfiche, and digital). More importantly, they have highly trained professional staff that understand the information content and formats and can assist users to identify, locate and use public information.

[185] Most paper publications get into the FDLP because Superintendent of Documents has the opportunity to "ride" the agency printing requisition to purchase copies for the program.

5.H. Central agencies with government-wide information services and information management missions are needlessly overlapping, duplicative, and wasteful of resources and operate under conflicting and inconsistent policies and guidelines.

The Commission strongly supports the need for continuing central, government-wide information services for the reasons outlined above. Nevertheless, the Commission found that the mission, functions, and activities of the existing central information services agencies and programs are sometimes needlessly overlapping, duplicative, and inconsistent, and therefore wasteful.[186] They also operate under conflicting and inconsistent policies and guidelines.[187]

The government currently has multiple programs and channels for dissemination and access to tangible and electronic public information products and services, but the systems are not coordinated to guarantee comprehensive coverage and ready access or retrieval for current electronic information resources, much less long-term or permanent public availability. The National Archives and Records Administration (NARA) has responsibility for the *retention and preservation of the records* of government, *but not necessarily for all publications of the federal government.* For example, Section 3301 of the Federal Records Act of 1950, which defines the term "records," specifically excludes "library or museum material made and acquired and preserved solely for reference purposes." NARA disagrees with this contention, indicating that the problem lies not with the scope of coverage, but rather with the fact that agencies may not be scheduling *all* publications as records, and/or that agencies are applying the schedules incorrectly. In any event, at least from an agency standpoint, there is considerable confusion as to the laws, policies, and guidelines they should apply in differentiating between records that must be scheduled under the Federal Records Act and other kinds of publications, including library reference materials that they retain even though they are not an official agency record.

GPO distributes tangible publications to depository libraries for current and permanent access in decentralized locations around the country, and provides cataloging and locator services for tangible and online federal public information products and services. In addition, GPO Access provides a number of electronic publications from all three branches of government to the public. GPO also offers many high-interest federal government print and CD-ROM publications for sale on a cost recovery basis.

Let us be more specific about the inconsistency, overlap, and duplication between GPO and NARA. First of all, many of the publications in the Federal Depository Library Program (FDLP) would never be accepted by NARA for permanent preservation as records, but for the fact that they are evidence of GPO fulfilling its mission to operate the FDLP. NARA itself will not accept deposits of documents from the FDLP except every four years at the end of a Presidential term (and the agency would prefer to take them when they are even older). NARA refers routine inquiries for government documents to the regional depository libraries (as do many federal agencies).

In short, the NARA staff indicates it wants to be considered the 'source of last resort,' not the source of first resort. Also, NARA does not have a program for interlibrary loans; they will duplicate material for a fee, but not lend materials. Depositories do loan as well as duplicate, and, as libraries, are usually

[186] The Commission does not mean to imply that all duplication is bad. For example, agencies maintaining information collections for internal agency use and agency contractors can focus their resources on these primary constituencies and save both time and money for their agencies, while the Federal Depository Library Program has proven a cost effective means of establishing distributed collections of government information throughout the nation, accompanied by staff with expertise to assist users.

[187] The proposal to consolidated these agencies and programs into a more effective government-wide public information resources organization is discussed in Conclusion 4 and Recommendation 2.

able to respond more quickly when the occasion calls for it. NARA collects information at the end of the government information life cycle, not in the middle or at the beginning of it (but NARA believes the situation will change with the advent of its Electronic Records Archives (ERA) project, and indicates that it has long called on agencies to implement information management controls at the front end of the life cycle).

NARA arranges materials in groupings by archival categories (such as agency programs), not by library classification or subject headings. Consequently, accessing at the level of individual items is far more difficult using the National Archives Information Locator (NAILS), currently under development, and a prototype of the agency's Archival Research Catalog (ARC), than using library systems. In addition, NARA contends that neither ARC nor NAILS were ever intended to be an item level catalog of all of the individual files held in the National Archives.

Finally, NARA is not currently set up (or funded) to handle the volume of requests that would occur if that agency were the sole source, or even the primary source, of government publications and information products. NARA points out that these inconsistencies arise because depository libraries and archives function differently because they have different missions and principles under which they operate. The public could care less about bureaucratic distinctions of this kind. The public wants easy, uncomplicated and, preferably, one-stop access.

NTIS collects scientific and technical information (STI) for their permanent collection and makes copies available for sale in multiple formats. The NTIS catalog and index are only available to the public on a fee basis and most of the STI reports included in the NTIS clearinghouse are not provided to the FDLP for no-fee public access.

The Commission fully understands the historical reasons why these different entities with overlapping and duplicative central information services and information management missions and functions were established. However, the seekers of the data, documents, and literature held by these different entities, including agencies, other levels of government, and the public, have the heavy burden of learning and utilizing quite different for searching and retrieving policies, procedures, and tools. They should not have to bear this burden.

There is considerable room for harmonizing these statutory requirements by using an overall systems approach, including greater utilization of the information life cycle management concept so as to integrate searching into a single, unified protocol. The Commission addresses this approach in greater detail in its White Paper dealing with the government information life cycle management approach.[188]

5.I. Central mission agencies may also overlap with cabinet departments and independent agencies with operating missions with respect to public information resources collections and services.

A number of operating agencies sponsor subject-oriented information clearinghouses for material in tangible and electronic formats in no-fee or cost recovery programs (DTIC, ERIC, MEDLINE, NCJRS, etc.). In addition, many agencies operate public information centers, public reading rooms, or specialized depository programs (such as the Census Bureau, PTO). As a rule, however, operating agencies are focused exclusively, or primarily, on their statutorily mandated missions, which may or may not emphasize provision of current or long-term broad public access to and dissemination of their information products to the public. This occurs despite Title 44 requirements for distribution to GPO,

[188] The White Paper on government information life cycle management is available in Appendix 16 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen16.pdf.

the Administrative Procedure Act, and legislation requiring submission of scientific and technical reports to the NTIS.

5.J. Lack of uniformly applicable guidelines and standards to create electronic information products causes confusion at all levels of government.

Agencies are producing an increasing volume of their information products and services on a decentralized, local basis through the Internet. Nevertheless, public access to these web-based information resources may be limited, since they are not consistently included in the various existing government programs that foster information dissemination or information access, such as the FDLP, GPO Access or NTIS. Moreover, there are no agreed-upon standards used by federal agencies to produce tangible or online electronic products. The lack of standards causes problems for access to current materials, as well as for preservation and permanent public availability of historical materials. Likewise, there are no coordinated programs or standards for permanent availability or preservation of either tangible or online electronic media across all branches of government, much less across all levels of government. Notwithstanding this finding, the Commission was pleased to see that new edition of *Guide to Federal Publishing*[189] that will soon be issued by the Federal Publishers Committee and the Interagency Council on Printing and Publishing Services addresses many of the issues of publishing electronic information.

5.K. The Government Information Locator Service (GILS) and metadata are critical to the national information infrastructure.

> The crucial question to address is whether the government can and should invest the resources required to add metadata/indexing functionalities **to all** federal government information or whether priorities, primarily the needs of the American public to gain access, should be established as to which classes of information require such detailed handling.

An example of an attempt to instill some discipline in the federal government, so that information, or information sources, can be discovered and accessed is Government Information Locator Service (GILS). The Paperwork Reduction Act of 1995 (44 *U.S.C.* 3511) directed the establishment of GILS to help the public and federal, state, and local government agencies locate and access information throughout the federal government. In concept, GILS could also assist agencies in complying with aspects of the Federal Records Act (44 *U.S.C.* 3301) and the Freedom of Information Act (FOIA) as amended in 1996 (5 *U.S.C.* 552). To date GILS, however, has been less successful than anticipated for a wide variety of reasons. Federal components that had significant information management organizations or interest (e.g., GPO, EPA, NTIS, DOD) successfully implemented GILS. GPO, with its GPO Access and NTIS with its FedWorld, implemented GILS systems that can serve all federal agencies and the public at large.

As well intentioned as these efforts are, they are at the mercy of the various federal agencies implementing GILS. Many federal agencies, having higher spending priorities than GILS, did not implement GILS and OMB failed to enforce the requirement. OMB Bulletin 95-1, "Establishment of Government Information Locator Service," which guided the initial startup of GILS, expired. In lieu thereof OMB Bulletin No. 98-03, November 18, 1997 requires agencies to describe GILS progress in their annual reporting under the Paperwork Reduction Act of 1995. It is an irony that GILS has been

[189] U.S. Federal Publishers Committee, op. cit.

far more successfully implemented by many states and internationally through the Global Information Locator Service—the international byproduct of the U.S. GILS—than in the U. S. federal government.

Problems also exist in regard to government locator services. GPO Access, for example, contains a broad array of links to federal public information resources. Yet in many instances, GPO must on its own seek out these online resources in order to assure that the general public is aware of them. Similar problems plague the Library of Congress Thomas system in its collection of congressional information, and NTIS FedWorld in its efforts to collect federal scientific and technical information. The judicial branch has proven particularly problematic in terms of providing locator services of even the most basic nature. This is due primarily to the lack of a defined and implemented program for posting opinions and court decisions online.

Beyond GILS, there are very important technical questions relating to the need to standardize metadata elements.

There is currently much discussion about the need for developing and deploying "metadata" or indexing systems to aid in the retrieval of documents, data sets, and other digital objects. If federal government agencies do not go to the effort of adding metadata/indexing terms to the digital objects they are providing on the WWW, neither the Internet search engines nor agency/interagency search engines can retrieve them in a reliable or consistent way or rank them for the user. The result of skipping the indexing step is a bad experience for most users.

The more information that becomes available in electronic form, the more necessary it is to provide would-be users of the information with a summary of the contents to facilitate indexing and retrieval. Of the technologies available today, many automatic summarization programs generally extract only the first few lines of text as the summary. This method works if the author of the document has summarized its findings in the first few lines. Too frequently, however, the first few lines tell the user nothing about the contents of the document. This exacerbates the ability of the public to sort through an answer set effectively—one that may include hundreds of possible "hits"—to find the information sought. In short, summarizing or abstracting information has classically been done by humans, and often at great expense. That situation may well continue into the foreseeable future, but there are glimmers of some very promising avenues of research that could dramatically improve the situation that need to be watched carefully.

The crucial question to address is whether the government can and should invest the resources required to add metadata/indexing functionalities to all federal government information or whether priorities, primarily the needs of the American public to gain access, should be established as to which classes of information require such detailed handling.

There is another side to this issue. The following response from one the Departmental libraries queried for this effort is typical of the responses from others:

> The Main Departmental Library does not have a formal or informal arrangement with another government agency. We use the Library of Congress and GPO extensively and are pleased with the responses. We are a selective depository library, which adequately meets the needs of our Department. We receive minimal requests from other government agencies to share depository items. I would estimate that 50% of our clients' needs are satisfied via free websites. We rely on private sector products for

> about 30% of the needs of our Departmental clientele. Standardization could improve the environment of interagency sharing of information.[190]

Finally, as pointed out in the National Research Council's publication, *The Unpredictable Certainty: Information Infrastructure 2000*,[191] government databases provide a natural focus for government applications of information infrastructure, given the federal government's unique collections of data and information that are of broad interest and might be more broadly used in the future if made more accessible. The Government Information Locator Service (GILS) is a crosscutting information access initiative that could be used to explore various approaches and implementation issues.

5.L. The Government Information Locator Service (GILS) and FirstGov are both commendable initiatives and should receive continued support for development and testing.

The Government Information Locator Service (GILS) established under the Paperwork Reduction Act of 1995 might have been expected to solve some of the problems identified in this section, and perhaps to a very limited extent it has. However, GILS has not been widely implemented throughout the government. The GILS record structure was publicized and agencies were required to use GILS but were permitted wide latitude in how GILS was to be applied. The result, to the extent that agencies participate, is a lack of consistency and predictability in search results.

Similarly, the very new FirstGov.gov website might solve some of these problems in time, but the initial implementation of the website suggests that much work remains to be done, particularly with respect to search precision, which is critical to the retrieval of research reports, legal materials and many other types of public information.

Even if GILS or FirstGov improve dramatically, some issues—such as detailed searching within a very large database such as the full text of NTIS reports—will not be solved by these very large government-wide systems. Thus, there will continue to be a role for NTIS.

5.M. Unnecessary duplication and overlap among agencies with central government-wide information services and information management roles and activities, particularly with respect to cataloging and classification of information resources, is counterproductive and must be resolved.

The relationship between NTIS, the Superintendent of Documents, including the Federal Depository Library Program, the Library of Congress and the national libraries, and NARA, clearly involves some unnecessary conflict, overlap, and duplication among these organizations and their missions and functions, insofar as effective and efficient information and records interchange is concerned. Among other things, these agencies use different cataloging and indexing rules, thesauri and classification schemes that make it difficult to compare their holdings and to identify and merge records describing the same information. There is a critical need to harmonize their respective roles, especially when it comes to metadata standards and guidelines governing data, document, and literature interchange. It neither does the government nor the public any good for these agencies to maintain staunchly that their missions and functions are each disparate and unique, and the agencies therefore have no legal obligation to harmonize their inconsistencies and incompatibilities. In the Commission's view, that

[190] The results of the Commission survey of federal agencies are available in Appendix 27 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen27.pdf.

[191] National Research Council, NII 2000 Steering Committee, *The Unpredictable Uncertainty: Information Infrastructure Through 2000*, Washington, DC: National Academy Press, 1996.

mindset must give way to an enlightened discourse on how to streamline, simplify and integrate inconsistent and conflicting information policy requirements. This challenge, while beyond the capabilities of the four panels to resolve because of the very severe time constraints under which they operated, nevertheless is addressed squarely by the Commission in this report based on overall research, findings, and conclusions.

In a nutshell, recordkeeping systems utilize essentially file-based ("container"-based) classification schemes oriented to administrative categories, whereas library systems utilize essentially content-based classification schemes oriented to technical content. Yet what most users need is the answer to a specific question, using words and terms and provided in a format that they can understand and use. They neither want nor need a collection of documents or records that they have to sift through, evaluate, reorganize, reclassify, and translate before they can find the answer to their question. Even when records are indexed, the guiding indexing concepts are quite different. Therein lies a massive harmonization challenge!

For example, agency records managers have always used internally devised methods for indexing that meet their agency's culture. NARA has never directed agencies to use standard indexing terms, because records are considered to be the property of the creating agency until they are submitted to NARA as archives. However, even stored in NARA record centers, the records are still the property of the creating agency, and this is critical for Privacy and FOIA reasons. Once records go the NARA for permanent storage, they are indexed using NARA methods. Even the key terms used are different. Archivists use the terms "genre" or "form of material" to cover what is defined by the word "format" in non-archival settings. In short, there is much room here for standardization in the interests of public information searching and retrieval simplification and streamlining, without sacrificing either agency customization requirements or the statutory obligations of NARA. In a nutshell, recordkeeping systems utilize essentially file-based ("container"-based) classification schemes oriented to administrative categories, whereas library systems utilize essentially content-based classification schemes oriented to technical content.

Yet what most users need is the answer to a specific question, using words and terms and provided in a format that they can understand and use. They neither want nor need a collection of documents or records that they have to sift through, evaluate, reorganize, reclassify, and translate before they can find the answer to their question. Even when records are indexed, the guiding indexing concepts are quite different. Therein lies a massive harmonization challenge!

There appears to be—especially at this stage of Internet development—a clear need for an NTIS-like organization to provide overall management of the system that provides public access to agency scientific and technical reports and publications. Sometimes this organization would directly provide public access to reports and publications, sometimes it would simply point to where the material is available on agency websites and it would insure that all content is available and accessible. It would also provide access to private vendors seeking to redistribute public information. Closing NTIS before such alternative systems are in place and operating would deprive the public of the access to government information that was available in pre-Internet days.

6. FINDINGS RELATING TO THE FEDERAL GOVERNMENT—THE NATIONAL TECHNICAL INFORMATION SERVICE (NTIS)

6.A. The pre-1980's NTIS sales-based business model is an historical artifact that is no longer appropriate.

In the 1970's and earlier, NTIS and its predecessor organizations received a mix of funding from appropriations, sales income and reimbursements from other agencies. The basic business model, however, was based on sales revenue, with report sales and subscription income generating the lion's share of revenue. Appropriations in the earlier years were used primarily for the costs associated with acquiring publications and for processing the publications into the NTIS collection—the costs of indexing abstracting, creating master microfiche and archiving master copies. Sales income was recovered from the purchasers of publications and subscription services, essentially for the incremental costs of providing these services, although in later years excess sales income was also used for input processing to offset declining appropriations. Reimbursements from other agencies were received to cover the costs of the services provided to these agencies.

6.B. The transition in 1980 to a sales income model was detrimental to core mission of the NTIS.

Over the years there was an ongoing pressure to reduce appropriations and increase sales income and in good times—with many new publications coming in and with substantial sales—this was feasible. Increasing prices and new products combined with growing sales volume contributed to growing sales income. In fact, all appropriations for input processing were phased out by 1977 and sales income was used to pay all input costs from that point on.

In 1992, as part of the American Technology Preeminence Act (15 USC 3074b-1), Congress added the requirement that "operating costs…associated with the acquisition, processing, storage, bibliographic control, and archiving of information and documents shall be recovered primarily through the collection of fees." This had the effect of locking in the practice of shifting the costs for the central collection and initial processing of the NTIS publications for public availability from the general taxpayer to the purchaser of NTIS products and services. The government was essentially abandoning responsibility for paying for the management and organization of its information, the very library-like functions that have always been taxpayer-financed. The report buyer—whose tax dollars had already paid for the agency research and the preparation of the research report itself and who was being charged the incremental cost of distribution of the report—was now also being asked to pay the costs of making the reports accessible to the public through a central repository.

This had the effect of making NTIS more entrepreneurial and aggressive in its business dealings to raise the operating funds lost in the appropriation. These activities were sometimes at the expense of the core mission for collection, organization and dissemination of scientific and technical information (STI). Competition with the Superintendent of Documents for popular titles increased with NTIS seeking to offer the publication-originating agency a more attractive arrangement to secure the publication for its list. Deals were struck with private vendors a development that had the Commerce Department Inspector General "…concerned that in order to replace lost sales, NTIS is seeking business opportunities on the perimeter of its statutory mission, where it risks competing against private businesses." [192]

[192] U.S. Department of Commerce, Office of the Inspector General, *Semiannual Report to the Congress*, Washington, DC: Department of Commerce, March 31 1999, page 14.

Electronic enabling technologies have changed the basic nature of what NTIS needs to do to fulfill its statutory mission.

6.C. Agency competition with NTIS began in the 1990's with free web availability.

Concurrently, in the late 1980's and 1990's, because of the strong economy there was a shift from publicly funded research to private research and as a consequence the number of government research reports provided to NTIS declined. At the same time, with the growth of the Internet, agencies began to make their research reports available on agency websites for free, competing with NTIS report sales. The combination of lower new report input (a 35% drop in items added to the collection from 1993 to 1998) and competing free sources for the information sold by NTIS, resulted in declining sales (a 43% drop in publications sold from 1993 to 1998). This in turn led to the financial difficulties of NTIS. In August 1999, based on these financial difficulties and political considerations beyond the control of NTIS—possibly relating to the Govsearch and World News Connection controversies—the Department of Commerce recommended the closing of NTIS and the transfer of its archive to the Library of Congress.[193]

6.D. Incomplete holdings available on agency websites force users to search both publishing agency and central mission agency websites, such as NTIS FedWorld.

If the picture painted in the Department of Commerce Fact Sheet and Press Release[194] is correct, all agencies will mount all of their publications and reports on their own websites, which are then kept there as long as the public has a need to access the information. Powerful search engines search the full text of all the reports across all agency sites to identify the specific information the public user requires. The identified full text of the publication is then available for free downloading from the agency website. Thus, the public has free access to all public information all of the time and anything required can be located with ease and there is no need for a central NTIS, a central Superintendent of Documents or any central document locating service or information accessing tools. *This picture, however, is not anywhere near accurate.*

Unfortunately, not all of each agency's public information is available on the agency's website and perhaps much of it never will be. What is there today may not be there tomorrow. Not all of the information on the Web can be searched and found with the search engines. The Commission strongly believes that the United States cannot afford to rely upon the simplistic and utopian picture painted by the Department of Commerce, including the shutdown of the government's central information repositories.

6.E. The NTIS collections are "of value to business and industry" regardless of subject matter.

NTIS' predecessor organizations began operations with a scope limited primarily to scientific, technical and engineering information, the so-called STEI gray report literature. Over the years the scope of the NTIS collection expanded to include social science and business information to meet the needs of government agencies for the distribution of their content.

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[193] U.S. Department of Commerce, "Commerce Secretary William M. Daly Announces Intention to Close National Technical Information Service," Press Release, Washington, D.C.: Department of Commerce, August 12, 1999; http://204.193.246.62/public.nsf/docs/FFF05791D63331D1852567CB00693643; and U.S. Department of Commerce, "Providing the American People Information for the 21st Century, op. cit.

[194] Ibid.

These changes in scope were approved in a 1954 Controller General opinion, later codified in the Code of Federal Regulations (15 CFR 1180). Scientific, Technical and Engineering Information is defined as "information that bears on business and industry generally, such as economic information, market information and related information" that "can embrace matters beyond the restricted field of applied science and the mechanical arts" so long as it is "limited to information which has a direct relationship to business, industry or technology" (15 CFR 1180.2).

The Commission does not believe NTIS' scope should be restricted to science and technology *narrowly defined*. However, the scope should *not* include general public information that does not have a strong and direct relationship with business, industry or technology. In its efforts to find revenue to support its operations, NTIS has expanded to scope of its coverage well beyond its primary mission.[195]

In short, the NTIS mission, which began (in the days when it was known as the Publications Board) with a focus on the cataloging, announcement and sale of copies of captured World War II technical documents, has changed and expanded over the years, and was later expanded by statutes such as the American Technology Preeminence Act. There was some sense among the study participants that in recent years the mission and scope had expanded well beyond the statutory boundaries in part to increase revenues to offset declining sales income and decreasing appropriations. The scope of NTIS information has expanded from scientific and technical reports to almost all manner of reports and publications of interest to business, industry and technology

6.F. NTIS operations in the Internet age require searchable access that cuts across agency boundaries.

The roles for NTIS in the Internet age—at least until such time as improvements in standards and technology solve some of the current problems—would be to provide:

1. Searchable access to the reports and publications published by the mission agencies, particularly to those users outside the agency's constituency,
2. Pointers to where the report may be obtained on an agency (or other) website,
3. Backup distribution of the report or publication content itself when it is no longer available from the originating agency or where the user requires a paper or microfiche copies and the agency only provides electronic access, and
4. Permanent Availability and Accessibility.

Providing searchable access to agency reports has been the basic business of NTIS and its predecessors since its inception over half a century ago. NTIS performs this function by cataloging, indexing and abstracting the reports of the smaller agencies and other sources that do not perform these tasks for their own audiences and creates the searchable NTIS database. For the larger agencies that do this work themselves (DOD, DOE, NASA, etc.), NTIS obtains their cataloging, indexing and abstracting information in machine readable form, reformats it, if necessary, and adds it to the searchable NTIS database. NTIS now augments this with similar data obtained by NTIS' web capture of agency documents not forwarded to NTIS. The resulting NTIS database provides consistent searchable access to the NTIS collection across all of the participating agencies.

[195] For example, the Department of Commerce has questioned NTIS' role in the dissemination of tax forms for the Internal Revenue Service (IRS), and GPO has questioned the need for NTIS to distribute the *Government Manual* and other GPO general interest "best sellers." There is additional discussion of these issues under Recommendation 14.

This database should be made available on an NTIS website for free public search, thus providing free (publicly funded) access to a searching capability of the information collected by NTIS. This same capability would provide depository libraries and their patrons with convenient, free searchable access to the NTIS database. Note that this is not access to the content of NTIS reports, but only to the database of information about the reports, usually referred to as the bibliographic database.

6.G. Linking to documents on agency websites is an essential service that NTIS should offer.

Providing access to information about the document is only the first step. The Commission Panel recommended that NTIS provide the user with a means of obtaining the documents identified. In the past, NTIS sold the documents from its warehouse, produced copy on demand when requested or distributed microfiche. In the future, in addition to these established methods of distribution, NTIS will also point the user to the document on the agency's website where the full text of the document is available for free. Whenever there is a Web version of the document available, NTIS, through its bibliographic database, would point the user to the agency's Web location where the document can be viewed or downloaded. In some instances a document that is not available on an agency's site, might be available at the Government Printing Office (GPO) or on a depository library site under the Federal Depository Library Program Electronic Collection. NTIS would then point to that site. The Commission notes that the Government Printing Office (GPO) is already taking steps to establish such links for information that falls within the scope of the FDLP, as most of the NTIS collection does, and NTIS should find ways to join in this effort, so that both programs are strengthened, and new redundant efforts are not initiated.

The Commission Panel recommended that NTIS develop and operate, in conjunction with the originating agencies,[196] a Persistent Uniform Resource Locator (PURL)[197] system for all of the agency documents included in the NTIS database. This would provide a means of maintaining the public accessibility of documents on agency websites as the agencies move the documents from site to site and from location to location. The NTIS database would provide the PURL address of the document so that users of the database would always be able to access the complete text of the document available for free on the Web. NTIS would operate a PURL server, which keeps track of actual document locations on the Web updated with new location information provided by the agencies or by monitoring of existing links to documents in the database by NTIS. Again, the Commission notes that the Government Printing Office (GPO) is already taking such steps for information that falls within the scope of the FDLP, and NTIS should find ways to join in this effort, so that both programs are strengthened, and new redundant efforts are not initiated.

[196] As noted elsewhere, GPO is already taking such steps for information that falls within the scope of the FDLP. Therefore, NTIS should not just cooperate with the originating agencies, it should find ways to join in the GPO effort, so that both programs are strengthened, and new redundant efforts are not initiated.

[197] The use of PURL here is not a definitive statement of the appropriate technology. Another option identified by the Commission is the Digital Object Identifier (DOI), currently used by the Defense Technical Information Center (DTIC). The statement here is rather an indication that some effort must be made to provide stable links to information on agency websites. It should be noted that establishing a PURL or a DOI cannot ensure that the agency will maintain the publication on its website; it merely increases the chances that the user will find the information as long as it does remain on the website. Moreover, there may be some places in this report where the term "PURL" is used, where the term "URN" (Uniform Resource Name) may be more technically appropriate because in some cases individuals will use DOIs or handles or other types of URNs instead of PURLs.

6.H. NTIS should continue to use the profile-driven dissemination approach for proactive dissemination.

There are other types of dissemination not recognized by the definition in OMB Circular A-130 that says that dissemination is when "the government provides the public with information *without the public having to come and ask for it"* [emphasis added]. Some government agencies allow users to establish a profile, thus "asking" for specific categories of information that are then sent out to them when information matching the profile becomes available. The National Technical Information Service (NTIS) is one example of a profile-driven approach to dissemination. NTIS provides its customers documents based on individual user profiles. These documents can be in paper, microfiche or electronic form, but the most popular form is through the SRIM product, Selected Research In Microfiche. What NTIS does is not unique. Most information management organizations provide similar services. The profile-driven dissemination approach addresses the challenge of "information overload" to specific users or organizing by allowing users to tailor information services to meet their specific needs.

The ability of individuals to address some of their "information overload" through portal technology is just beginning. Based on personal preferences, portals allow individuals to tailor a web page to establish such things as calendars, automatic access to favorite sites, and notification of updates to information sources that meet their specific needs. Portals can also be established for the organization or enterprise as a whole. These allow organizations to combine internal business process information and appropriate content found on the Internet as a whole. They can also be used to help those both internal and external users find information located throughout the enterprise.

The recently announced FirstGov portal is an example. This website is intended, when mature, to provide a single online information portal that connects people with U.S. government information. FirstGov allows users to search all 27 million federal agency web pages at one time. The website provides access to the home pages of major agencies and entities in all three branches of government, a section that provides topics of current interest to web users (e.g., a direct link to the National Weather Service (NWS) during hurricane season, to NASA during a shuttle launch, or to IRS during tax season), as well as key sites that access state and local government web pages.

6.I. NTIS should become a backup distribution source.

The user would normally only come to NTIS and pay for a document when it is not available for free on a website or when the user desires a paper or microfiche copy, a magnetic tape or a CD-ROM. Some users would no doubt find paper or microfiche preferable to Web access and would choose to pay NTIS for the copy, paying the full incremental cost of distribution even though free Web access is available.

In addition to pointing to documents on agency websites, an NTIS website would provide free access to the full text of selected NTIS documents in reasonable demand (recent important documents) which are not available on agency websites. To do this effectively, NTIS will have to change the way in which it scans reports for the Web. NTIS currently scans documents in image-only format, which does not provide for searchable full text, limits the utility of the product offered on the Web and increases the costs of storage and electronic distribution. By moving to fully electronic documents with encoded text, NTIS can lower storage and bandwidth costs and improve product utility. This will however increase scanning costs incurred by NTIS.

There will continue to be a substantial number of image-only scanned documents in the NTIS system for some time (representing at least the three-year backfile that has already been scanned). Over time more and more of the publications available from NTIS should be available in full electronic format, either forwarded to NTIS from other agencies or scanned in full electronic form (OCR) by NTIS itself.

All of these documents in Web-ready form, whether in image-only form or in full electronic form, would be made available to the public without charge from an NTIS website if they are not available on the originating agency's website or some other publicly accessible website, e.g., Depository library site.

As a result of this approach—substantial free access to documents on agency and NTIS websites—NTIS document sales income will continue to decline dramatically as more and more content is made available on the Web without charge. This expected decline in sales income would have to be considered in the new business model. Specifically, the notion of free public access to NTIS reports on an NTIS website requires the appropriation of funds for the so-called public good operations of NTIS.[198]

6.J. NTIS has a permanent mission, but needs a new vision and new business model.

Only one Commission expert disagreed with the basic idea that the fundamental reason for an NTIS remains valid. This expert believes that agency publishing on the Web has, or will soon completely replace the need for an NTIS, no matter where it might be organizationally located. All other experts and the four panels agreed that the NTIS mission remains valid in the Internet Age, but needs to be revisited, updated, and strengthened.[199]

7. FINDINGS RELATING TO INTERAGENCY GROUPS (E.G., CIO COUNCIL, FEDERAL WEBMASTERS FORUM, CENDI, FLICC AND OTHERS)

7.A. CENDI was established because of an absence of central official STI policy and oversight authority in the Executive Branch.

CENDI was originally the **C**ommerce, **E**nergy, **N**ASA, **D**efense, **I**nformation group, a voluntary group comprised of the heads of Commerce's National Technical Information Service (NTIS), Energy's Office of Scientific and Technical Information (OSTI), NASA's Scientific and Technical Information (STI) program, and Defense's Defense Technical Information Center (DTIC).

The four founding organizations from some of the largest federal agencies involved in research development were principally involved in managing STI recorded in technical reports. This type of report is not formally published but records results of federal R&D done either in house or through contracts or grants. Such reports may or may not be made publicly available since they may contain information falling within the exemptions of the Freedom of Information Act (FOIA) or classified for reasons of national security. The Energy, NASA, and Defense organizations traditionally shared their collections with each other and provided publicly available information to NTIS for acquisition by the general public. In 1986 the National Library of Medicine (NLM) joined CENDI. NLM, while not handling technical reports, had many of the same information management challenges. Thus, with these five organizations meeting regularly and sponsoring working groups and standing committees,

[198] These public good functions are identified in Conclusion 6 and Recommendation 11.

[199] The details of the new vision and business model are contained in Recommendations 10 and 11.

the federal agencies responsible for over 90% of federal R&D had established a voluntary interagency information sharing and information management effort to fill the void left with the disestablishment of COSATI. CENDI now has ten members from nine different departments or agencies. The CENDI Secretariat is paid for through member contributions.

CENDI has certainly been a success story and exemplifies what can be accomplished through informal interagency cooperation.

7.B. Federal Geographic Data Committee (FGDC) is also a success story.

The Federal Geographic Data Committee (FGDC) is an interagency committee, organized under OMB Circular A-16. Organized in 1990 the FGDC promotes the coordinated use, sharing, and dissemination of geospatial data on a national basis. The FGDC is composed of representatives from seventeen Cabinet level and independent federal agencies. The Steering Committee sets high-level strategic direction for the FGDC as a whole. The Coordination Group advises on the day-to day business of the FGDC. The FGDC Secretariat staff provides staff support for FGDC committees. For example, the Federal Geographic Data Committee coordinates the development of the National Spatial Data Infrastructure (NSDI). The NSDI encompasses policies, standards, and procedures for organizations to cooperatively produce and share geographic data. The federal agencies that make up the FGDC are developing the NSDI in cooperation with organizations from state, local and tribal governments, the academic community, and the private sector.

Former Secretary of the Interior Bruce Babbitt not only supported the FGDC, but attended many of its meetings himself, which was a wonderful inducement to his own agency's participation and that of the other departments as well. Some believe that a contribution to its success is that it is not really centrally managed, other than routine housekeeping matters. Instead, all participating agencies contributed to the sub-group efforts.

Both the CENDI group mentioned in the preceding finding and the FGDC efforts mentioned here are excellent examples of what can be done to share information among agencies. There are three keys to these efforts. One key is agency recognition that their information may have a wider value beyond its original use. A second key is the existence of either a central agency information management organization or an organization that acts as one. A third key is some level of funding.

7.C. The CIO Council still leaves unfulfilled expectations vis-à-vis information content management.

The President's Information Technology Advisory Committee (PITAC) Panel on Transforming Government said in its Finding 3 that:

> The Federal CIO Council's ... mandates require them to focus primarily on near-term operational issues and acquisitions. Budget planning processes make it difficult to carry out effective cross-agency coordination and execution and the long-term research efforts that many of the goals require.[200]

Discussing this finding, the Panel noted that:

[200] U.S. Executive Office of the President, National Coordination Office for Information Technology Research and Development, *Transforming Access to Government Information Through Information Technology,* op. cit.

> While the CIO Council has established mechanisms for sharing results and lessons, the process of creating standardized processes and information representations, eventually leading to cross-agency transactions and information federation and integration, is much harder and requires cross-agency budget planning and execution. Creating cross-agency budgets requires substantial work and, therefore, is used only for large initiatives. Depending on cross-agency plans is very risky because of the uncertainty that all participants will receive adequate funding. Therefore, cross-agency projects and initiatives currently have to be large enough to warrant the effort but partitionable enough that no one really must depend on anyone else's appropriations or performance.[201]

In its Fourth Annual Top Ten Challenges Survey, the Association for Federal Information Resources Management (AFFIRM) did not identify a single challenge that had to do specifically with information content or improvement in the management and dissemination of public information resources. The top ten challenges were:

1. Hiring and retaining skilled professionals.
2. Preventing unauthorized system intrusions (hackers, terrorists, etc.).
3. Implementing electronic commerce solutions.
4. Integrating or consolidating program/administrative information systems.
5. Using IT to improve service to customers/stakeholders/citizens.
6. Obtaining adequate funding.
7. Implementing IT capital planning and investment management across the agency.
8. Identifying specific CIO/IRM measures/outcomes under the Government Performance and Results Act and reporting on them.
9. Formulating or implementing an agency IT architecture.
10. Addressing and developing IT competencies (training and education).[202]

Notwithstanding this criticism, the CIO Council is to be commended for its recent efforts to coordinate federal activities more closely with the National Association of State Information Resource Executives (NASIRE). For example, in late September a roundtable discussion participated in by representatives of both groups took place, with state issues as the central focus.

Moreover, the CIO Council is also coordinating its plans with the Chief Financial Officers (CFO) Council, and the Procurement Executives Council (PEC), both of which are commendable initiatives.

However, the lion's share of the central focus of the Council has been on IT-related major issues such as the very tight GPEA deadlines imposed on agencies, getting agency websites up and running, and the FirstGov effort, which has required considerable coordination. Attention to public information content matters, including dissemination initiatives, has been correspondingly minimal. There is no question but that the lightning speed with which the Internet has sprung onto the agency landscape has created many problems, but the Commission believes the CIO Council's role is crucial to dealing with those problems.

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[201] Ibid., pages 5-6.

[202] Association for Federal Information Resources Management, "The Federal Chief Information Officer: Fourth Annual Top Ten Challenges Survey," Washington, DC: AFFIRM, December 1999, page 2.

7. D. The Federal WebMasters Forum is off to a fast start

Within the context of the CIO Council, the Federal WebMasters Forum is a commendable effort to coordinate the initiatives being taken by agency webmasters so that positive experiences can be interchanged, and negative experiences avoided.

The challenges being faced by this group are many:

- Should a print-on-paper or microform product be automated and placed on the agency's websites? What are the factors that should be taken into account in making this decision? Which agency officials and offices need to be involved in this decision – in a coordination role, in a clearance role, in an approval role?
- How should a pre-electronic product be optimally redesigned to maximize the capabilities of the web?
- What format changes may be necessary, or at least be considered as an alternative, when migrating products from pre-electronic mediums to the web?
- Is multimedia an option that should be considered? What about listservs? Bulletin boards?
- What kind of education and training programs should be put in place to help agency personnel become more web-literate? Where can that training be obtained?
- What kind of core competencies, skills, and experiences should personnel assigned to the agency Webmaster's office have? Where can they obtain that training?
- What controls are there in place to preclude the unnecessary proliferation of agency websites?
- Should another agency or the private sector be considered as a host agency website?
- Are there preferred agency formats or mediums that could and should be considered as an agency standard—if not "de jure" (i.e., official), then at least a "de facto" standard?
- Does the agency have a set of policies and guidelines to help program offices when they are considering developing new public information products for the web, as well as a "do's and don'ts" list?

7.E. The Federal Library and Information Center Committee facilitates communication among agency library and information center staff.

The Federal Library and Information Center Committee (FLICC) facilitates communication among agency library and information center staff. Its mission is to foster excellence in federal library and information services through interagency cooperation and to provide guidance and direction for the Federal Library and Information Network (FEDLINK). FLICC provides programs and services to support the many federal libraries and information centers and provides a forum for development of policies and best practices, exchange of ideas, and mutual information exchange.

FLICC was created in 1965. Its members include the Library of Congress, National Library of Medicine, National Library of Education, and National Agriculture Library as well as representatives of cabinet-level executive departments, legislative, judicial and independent federal agencies with major library programs. It is chaired by the chaired by the Librarian of Congress and housed within the Library of Congress. It is another example of successful voluntary cooperation among agencies.

FLICC is increasingly working with the CIO Council and its committees and taskforces, including the very important FirstGov development effort. This is a very positive development.

7.F. The Federal Publishers Committee (FPC) and the Interagency Committee on Printing and Publications Services (ICPPS) continue to play an effective role as they make the transition to electronic modes of publishing

The Federal Publishers Committee (FPC) and the Interagency Committee on Printing and Publications Services (ICPPS) continue to play important roles in providing a forum for education of their members and the exchange of ideas, concerns and "best practices," as well as the discussion of developing standards and guidelines and other "hot topics." The FPC and ICPPS provide collegial support and encourage cooperation among their members. The benefits of these interagency groups is substantial, and in the Commission's view, absolutely necessary. The soon to be published *Guide to Federal Publishing*[203] is an excellent and timely example of a high quality product that can be produced in a reasonable timeframe by groups of this kind with the potential to benefit a large number of government employees involved in the production and dissemination of government information. This publication contains substantive advice to agency personnel on information life cycle management, with particular emphasis on the new issues that arise from the substantial increase in electronic publishing.

8. FINDINGS RELATING TO STATE, LOCAL, AND TRIBAL LEVELS OF GOVERNMENT

8.A. Distinctions between different levels of government are critical in finding public information resources.

In its October 18th evaluation of FirstGov, the American Library Association noted that many users of public information portals and websites:

> ... are not aware that the .gov domain may also be used by state or local governments. FirstGov is supposed to be primarily a federal government information resource. Links to state and local governments that come up in search results should, therefore, either be expressly identified as such to distinguish them, or be searched with a different form of search.

The point here can be usefully generalized. Too often agencies assume when they design, develop, test, and eventually "go live" with information systems, portals, websites, and other information resources designed for the public, that important distinctions can and should be made between the federal level and the other levels of government when it comes to public information resources availability and accessibility conventions. In some cases it may make sense to make such systems and resources applicable to all governmental levels, but if that is the decision, the scope of the holdings to be made available should clearly indicate all levels of government. In other cases, however, only the federal level is applicable, and in still others only the state level, or only local level, or only the tribal level, and so forth.

The liaison coordination the federal CIO Council has recently established with the National Association of State Information Resources Executives (NASIRE) is a very useful relationship that can and should be further exploited, but not just for IT-related matters, but I-related matters as well.

[203] U.S. Federal Publishers Committee, op. cit.

8.B. Public information resources management and dissemination problems experienced by one level of government are commonly experienced by all levels of government

The problems of searching for, retrieving, and communicating government information to the public that are experienced by one level of government, such as the federal level, are more often than not being experienced by the other levels of government as well – State, local, and tribal. For example, the Missoula Montana Independent in its Nov. 24-Dec. 6, 1999 edition, under the caption "Hacking through country bureaucracy," documented the trials and tribulations of Hamilton County resident Darwin Ernst who, for more than three years, according to this article, "fought to gain access to data held inside Ravalli County computers without success." In a June 1998 letter from a county executive, Mr. Ernst was advised that "computerized data would only be available to the general public after the data set was 100 percent complete, the data had been verified for accuracy, a description of the data had been prepared, the data was provided in a uniform format, and the county was using the data for its intended purpose." The absence of copying equipment, Mr. Ernst was later informed, was the reason given by the country for not being able to supply the data earlier.[204]

It is for this reason – the commonality of problems being faced by all levels of government when dealing with the public vis-à-vis providing government information – that the Commission strongly urges the need for intensified intergovernmental coordination in the public information resources management area.

In the words of the October 24, 2000 revised "Guidelines for Legal Deposit Legislation," available from the International Federation of Library Associations and Institutions (IFLA), "If we presume that local government is a basic unit of democracy, then the information produced by local government should be made available and be preserved, not just for local use, but for the nation as well."[205]

8.C. Beyond standardizing and harmonizing information finding tools the federal government needs to strengthen its intergovernmental information interchange coordination role so that expertise, experiences, anecdotal examples, research, and "best practices" are cross-fertilized.

Beyond the questions above surrounding the importance of governmental level distinctions in finding tools for public information, the Commission found that the coordination between and among the different levels of government when it comes to interchanging and sharing government information is flawed and needs to be strengthened. Undoubtedly there is much expertise, experience, research, and anecdotal examples of success stories and other "best practices" of "this worked for me" that could be cross-fertilized among intergovernmental levels.

The Office of Intergovernmental Affairs (OIA) in the Executive Office of the President is well positioned to facilitate and coordinate this activity in conjunction with the new Public Information Resources Administration.

[204] Thorning, Ruth, "Hacking Through County Bureaucracy," *Missoula Independent*, November 24 – December 2, 1999, page 6.

[205] Jules Larivière, *Guidelines for Legal Deposit Legislation*, The Hague: International Federation of Library Associations and Institutions, October 24, 2000; http://www.ifla.org/VII/s1/gnl/legaldep1.htm.

9. FINDINGS RELATING TO THE COMMERCIAL (FOR-PROFIT) SECTOR AND THE PROFESSIONS

9.A. The private sector has a key role both acting independently and as a "partner/provider" with the public sector to add value and re-disseminates public information.

The private sector plays an important role in providing government information to the public, as well as in enhancing the value of products and services, in online, print, and other mediums and formats. Libraries and businesses rely heavily on the private sector for packaged and repackaged information products and services. However, for that purpose, the private sector, like libraries and federal agencies, needs to acquire public information efficiently, quickly, and in usable and flexible formats and mediums, in order to supply value-added information to its customers. Private industry also can help government by sharing experience and expertise in electronic publishing, packaging, and related fields.

The private sector role in adding value to public information to create new products and services fulfills the needs of those citizens who are willing and financially able to pay for these enhancements, and/or who wish to obtain access to public information from sources other than the government itself. Private sector organizations, both for-profit and non-profit, play an essential, complementary role in making optimum use of public information. They may repackage the information in value-added products, and provide value-added dissemination, in order to reach wider audiences including disabled, disadvantaged and special populations. By incorporating the information in supplemental catalogs and indexes, they expand use many times over. Moreover, the fact that the government sells raw (i.e., non value-added) products at incremental cost does not detract from the private sector opportunity to sell the value-added product at a substantially higher price if value is truly added.

In some cases, through public-private sector joint partnerships, the private sector assists in the publication of information products that may otherwise not have been published. In the best models of such public-private sector partnership programs, the products are included in GPO'S cataloging services, and the publications are provided to the FDLP for some limited no-fee public access to complement the sales access. Moreover, the private sector plays an important role in the development of new technology and new systems for information publication, access and retrieval—functions that enhance government programs. It is very likely that when there is market demand, value-added private-sector public information products and services will be maintained for permanent public availability. Once the economic motive disappears, the future access to such products and services is less certain.

There is a minimal dissemination responsibility that the government has, after which the private sector can repackage and add value and further distribute it to the public. In the online era of the 1980’s and early 1990’s, the government’s responsibilities included indexing and abstracting, but did not include online distribution. Pioneering companies like Lockheed Dialog and SDC added value and innovated. With today’s pervasive Internet presence, web distribution is considered as part of the government’s responsibility, and the private sector therefore must go beyond simple online access to add marketable value to re-disseminated public information.

Finally, it should be remembered that information content, unlike many other resources and goods, is not homogenous and of equal value to all. It therefore must be target-marketed. The private sector is highly skilled at target marketing, and its expertise in this regard could be valuable to the federal government.

9.B. Business and industry utilization of public information is additional evidence of the return on the taxpayer's investments in government information, especially R&D.

Business and industry, not to mention universities and other elements of the private sector all need public information for all aspects of their operations. Their public information needs range from regulatory information to financial, economic, and demographic data, scientific and technical information, and weather. Making information easily accessible to business and industry can result in better decisions, better compliance with regulations, greater productivity, and improved balance of trade status. Efficient and widespread dissemination of information using the Internet is the key to connecting agencies collecting and storing information with the individuals and organizations that can use the information to solve problems and generate new knowledge.

One very specific and tangible example of this is that R&D contractors who do business with the government often look upon the reports deposited with NTIS as a de facto archive of their information, rather than go to the expense of creating their own special archival collections that duplicate what they've deposited with the government. This is a substantial return on investment that would be eliminated if NTIS were to disappear.

9.C. The private sector faces difficulties in keeping up with government rules and regulations relating to public information dissemination.

Specialized government search and locator services run by private or non-profit sector entities have even greater difficulty than the government itself does in keeping up with new federal information sources provided online. Unlike the Government Printing Office or the Library of Congress, the private sector, including private sector libraries and educational institutions, enjoys no special relationship, nor has it been able to rely on legal or regulatory mandates, to assure that they are kept informed of new public information services. Two areas of user assistance in which the private sector tends to excel for those who purchase the services are in providing personal interfaces and in maintaining quality search and retrieval mechanisms. They have likewise been more effective in developing and providing summary source information, including special indexing and abstracting services.

9.D. Joint ventures and private sector partnerships are often a preferred modality, rather than government trying to "go it alone".

As the result of the National Technical Information Act of 1988, NTIS has unique statutory authority for joint ventures with private sector information vendors (15 *U.S.C.* 3704b(a)(1)(A)). NTIS will typically use this authority to find a private sector partner who is willing to underwrite the cost of producing an information product that an agency can no longer produce either because it lacks the funds for printing or the staff resources to develop it. It will then share the resulting revenue with the partner and provide copies to the depository libraries. A good example is the Commerce Department's own "U.S. Industry and Trade Outlook," the successor to the "U.S. Industrial Outlook" which had been produced for more than thirty years but had been discontinued. It was reintroduced in 1998 with a new focus on trade pursuant to a partnership between NTIS and the McGraw Hill Companies and published again in 1999 and 2000.

In each publication, McGraw-Hill states below the copyright notice on the back of title page that portions of the publication prepared by U.S. government employees are not copyrighted, except that copyright is claimed on tables, graphs and charts unless the sole designated source is the U.S. government. Since these copyrighted tables and graphs may appear on pages that are otherwise in the

public domain, some users complained that it was difficult to separate the information protected by copyright from that in the public domain.

In addition to joint ventures, NTIS makes its own bibliographic database available to vendors who add value to it, redistribute it, and pay NTIS a portion of the revenue they derive from it. Although this royalty may not be appropriate under the new business model to be suggested by this report, the role of NTIS in providing a central gateway to public information for potential private sector vendors is a valuable role that would continue in the Internet age.

9.E. Proactive dissemination of public information also means opportunities for the business sector

Elsewhere in this report the Commission has stressed the importance of shifting from a passive to a much more proactive stance when federal agencies dissemination their information to the public. Implicitly this means, of course, that the commercial business sector, as a segment of the broader "public," will itself be in an excellent position to become aware of value-adding opportunities simply because it will be more keenly aware of the market value of public information. In this context, at least, the government is the information provider, and the commercial for-profit sector is the user, but the "uses" here mean the ability to identify enhanced business opportunities. The value of a proactive dissemination policy goes far beyond conventional means that the private sector traditionally uses for this purpose, such as the *Federal Register* and the *Commerce Business Daily,* because under a proactive policy the private sector itself becomes a targeted constituency.

9.F. The roles of the traditional information professions in the Information Age are changing dramatically and need to be redefined appropriately by government occupational and job authorities, such as in the Department of Labor Dictionary of Occupational Titles and the Office of Personnel Management civil service occupational category and position classifications systems.

The traditional information professionals such as librarians, records specialists, public affairs specialists, technical information specialists, and so forth, are transforming themselves in the workplace into knowledge professionals appropriate to the Internet Age. All of these traditional professions are becoming more diversified, their skill and competency requirements enriched, and their experience portfolios widened as a result of the demands placed upon them by their jobs. A librarian, for example, is become a “knowledge navigator,” a records specialist is becoming a “knowledge organizer,” an industrial engineer is becoming a “knowledge engineer,” and so forth.

However, the traditional ways government classifies positions and duties in the various manpower and personnel systems it employs, such as the Department of Labor’s Dictionary of Occupational Titles, and the Office of Personnel Management’s system of classifying civil service positions, and the Department of State’s system of classifying foreign service positions, and the Department of Health and Human Service’s system of classifying health professional positions, and so on, are not keeping pace. As a result, careers in government are not as attractive as they are in private industry, are not paid as well, and opportunities for training and re-training, and professional development, are not as attractive. All of these things need to be corrected if the vision the Commission has for transforming government information into a strategic national asset can be realized.

There is also a role here for the professional associations and societies with academic memberships since they are instrumental in redesigning and reforming curricula so that the nation’s schools begin to turn out the modern information professional with the appropriate competencies and skills. For

example, in the library area, the Association of Library and Information Science Education (ALISE) is a key player in this regard. There are corresponding associations in the computer science area as well.

9.G. The roles of the other professions need to take into account new interfaces and relationships with modern government information professionals.

Within the government context, the medical, legal, engineering, architectural, and other professions employed by the government may wish to consider reconfiguring in some respects their roles to take into account the availability and pervasiveness of modern government information professionals to assist them in fulfilling their duties and responsibilities.

10. FINDINGS RELATING TO THE NOT-FOR-PROFIT SECTOR, INCLUDING PROFESSIONAL ASSOCIATIONS, AS WELL AS ACADEMIC, RESEARCH AND RELATED INSTITUTIONS

10.A. The not-for-profit sector is a user of public information and is quite diverse.

The not-for-profit sector, like the other sectors, is quite diverse, and includes associations and societies, foundations, think tanks, consulting organizations, public interest groups, consumer groups, local community organizations, social clubs, and so on.[206] These organizations play a major role in the redissemination of public information, including notification of their constituencies of the availability of relevant public information products and, in some cases, value-added republishing. Many public libraries and academic libraries, whether publicly or privately funded, organize collections of public information and have knowledgeable staff to assist their patrons with the location and use of public information, as do associations, foundations, and public interest groups. These organizations are important links between the government and users of public information.

10.B. Role of not-for-profit sector is important in adding value to public information

Like the for-profit sector, the not-for-profit sector also plays an important role in adding value to public information for all users, not just serving a current awareness role. More specifically and importantly, associations and societies, and public interest groups, repackage information for their respective members or special clienteles, making the information easier to use, and more applicable and relevant to their specific concerns. The results of the Commission's survey of disabled, disadvantaged and special populations attests to the importance of this role.[207]

10.C. Professional associations are increasingly moving to online modes of membership and constituency alerting services.

As an example of how professional associations are increasingly responding to the information needs of their memberships and constituencies, the Medical Society Cooperative, a group of nine small medical associations, is banding together to offer free Web services to their combined 80,000 members—a sign that doctors continue to move online. Each of the member associations is also

[206] For purposes of this report, academic and research institutions, many of which are not-for-profit, are included separately in this category.

[207] The survey results relating to special populations are summarized in Appendix 28 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen28.pdf.

contributing resources, including health-care content. The California Academy of Family Physicians just launched Web services and hopes to sign up 20% of its members over the next two years. Services will include Websites for doctors offering daily news updates, online continuing medical education, and the ability to create online forums to communicate with other physicians. Doctors also can customize practice Websites aimed at their patients, offering a secure e-mail option and educational materials. As more patients tap the Internet for health data, doctors are seeking ways to direct them to credible information.[208]

10.D. Library and information professional associations are well positioned to expand education, training, career advancement, and related professional opportunities workshops; funding should be provided in part through grants from the library services and technology act grants programs

Elsewhere in this report the Commission has addressed the need to transform the Federal Depository Library Program (FDLP) from a largely paper-based collections model to a modern, Internet-based electronic model.[209] One of the expanded functions contemplated for the revitalized FDLP would be as a trainer to other librarians, information managers, and other information professionals, user groups, and the public at large, for accessing government information. There is a critical need to expand significantly and extend the education and training of librarians who are not already in the FDLP because, in an Internet-based model, not just depository libraries, but public, academic, school, law, and special libraries, information centers, record and archive facilities, museums, and other repositories, will also require specialized public information access skills and knowledge.

Many depository librarians already offer training and instruction to other librarians and user groups within their respective Congressional Districts and beyond. A central web list of FDLP reference and training partnership participants could be established and linked to by several central information services agencies as well as individual mission agencies. This web list could be organized by topic or expertise of the partnership participants and by geographic area. The FDLP reference and training partnership participants could list training expertise and preferred audience: business, K-12, special libraries, and so on, and preferred geographic area served.

Speaking to this very issue, Carol Henderson and Frederick King wrote:

> Given public libraries' advantages as public training and assistance sites, and thus as creators of demand for Vice President Gore's vision of an information superhighway, the administration should consider devoting a modest amount of new funding to the program that already exists to stimulate use of new technology and to leverage other sources of funding. Even $20 million annually added to the LSCA[210] funds devoted exclusively to Internet connectivity and training for public libraries would send a powerful message.[211]

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[208] Ann Carrns, *Wall Street Journal*, January 8, 2001, page B5, and Milt Freudenheim, "Digital Doctoring," *New York Times,* January 8, 2001, page C1, as summarized in Communications-Related Headlines for January 8, 2001, a free daily online news service provided by the Benton Foundation; http://www.benton.org/News/

[209] This issue is addressed in Conclusion 5.

[210] The Library Services and Construction Act, predecessor of the Library Services and Technology Act (LSTA).

[211] Carol C. Henderson and Frederick D. King, "The Role of Public Libraries in Providing Public Access to the Internet," Public Access to the Internet, edited by Brian Kahin and James Keller, Cambridge, MA: MIT Press, 1995, pages 169-170.

10.E. Academic and research institutions place a high value on government information as a public good that offers a substantial return on the investment of tax dollars in research and development.

The federal government funds a substantial portion of all scientific and technical research. This research helps the U.S. maintain its competitive edge in medicine, science, and technology. Failure to disseminate research results widely means that this valuable asset remains unused and unproductive. Inaccessible research results cannot be transformed into products and processes that contribute to economic growth and productivity. In spite of the efforts of the federal STI organizations, NTIS estimates that approximately 25% of reports that should be submitted to them under the American Technology Preeminence Act are not submitted, and are therefore not available for current and future use. While no precise numbers are available, the Government Printing Office also estimates that there are a significant number of "fugitive documents" that come under the statutory mandate for inclusion in its *Catalog of U.S. Government Publications* and the Federal Depository Library Program (FDLP), but are never provided to GPO for dissemination.[212]

In addition, as noted by Dena Hutto in her review of recent literature on government information in the *Journal of Government Information*:

> The electronic format, while eliminating physical barriers to access, may actually raise new intellectual barriers. Most of the documents on the *10 Most Wanted Government Documents*[213] list were already available via the Internet, but citizens were unaware of this fact because the documents were so difficult to find.[214]

Scientific and technological development does not just happen. Scientists and engineers rely on a wide body of previous and current work to provide the foundation for their work. In addition, they learn about new methodologies, successful and unsuccessful experiments and processes. Scientific and technological advances often take years. Chemists, physicists, mechanical engineers, civil engineers, and others depend on work done in the past. This work must be archived, made available for access, and be preserved, so that individuals and institutions can continue to learn from the past. J. Robert Oppenheimer in his book, *Uncommon Sense*, stated, "The history of science is rich in examples of the fruitfulness of bringing two sets of techniques, two sets of ideas developed in separate contexts for the pursuit of new truth, into touch with one another."[215]

Today, some areas of science are becoming highly interdisciplinary. For example, the development of new building materials involves chemists, mechanical engineers, structural engineers, and materials scientists. Development of artificial limbs may involve mechanical engineers working with orthopedic surgeons and materials scientists. The central point here is that there is an increasing need for an interdisciplinary, multidisciplinary database, otherwise what is left is a "stovepipe" configuration wherein each agency, each discipline, and each sector must be separately searched in order to find materials that are relevant – a time-consuming and extremely inefficient practice.

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[212] The need for a safety net is discussed in Findings 3.G and 6.I and is addressed in Recommendation 27.

[213] Center for Democracy and Technology and OMB Watch, *10 Most Wanted Government Documents*, Washington, DC: Center for Democracy and Technology and OMB Watch, 1999; http://www.cdt.org/righttoknow/10mostwanted/aboutthe10.html.

[214] Dena Holiman Hutto, "Challenges of the Electronic Age: Titles of Note in the Literature of Government Information," Recent Literature on Government Information, *Journal of Government Information*, Vol. 27, no. 2 (March/April 2000), page 195.

[215] J. Robert Oppenheimer, *Uncommon Sense*, Boston: Birkhèauser Boston, 1984.

This is not just applicable to STI and R&D work. The same point concerning return on investment is equally applicable to government programs of all kinds, whether formally classified as R&D or not. For example, the Departments of Agriculture, Commerce, Labor, Interior, and others are not always, or customarily, called "R&D agencies," although they may harbor an STI component, and yet these agencies manage enormously important programs where the dissemination of information to the public is extremely valuable.

10.F. Partnerships between federal agencies and major research libraries are critical to preservation and access solutions.

The major research libraries of the country are key elements of any system for preservation and access of public information. These libraries are actively working on the software and technology for the digital libraries of the future. The government supports this effort with research grants and contracts and benefits from the resulting knowledge.[216]

Partnership arrangements that currently exist between the two sectors should be strengthened to squarely address the challenges of managing large collections of digital information. One commendable arrangement is the one entered into by the Government Printing Office, the Department of State, and the University of Illinois at Chicago for the selection, acquisition, preservation, and archiving of certain foreign affairs materials. Another example is the agreement between the University of North Texas and GPO to provide permanent online access to electronic publications of selected federal agencies that have ceased operation, such as the Advisory Commission on Intergovernmental Relations, the Commission on Structural Alternatives for the Federal Courts of Appeals Research Collection, and the National Civil Aviation Review Commission Research Collection.

10.G. Library and information science schools and programs, as well as those for computer science and MIS, have key roles to play in information and computer literacy education and training.

Library and information science schools and programs, as well as those for computer science and MIS, have key roles to play in information and computer literacy. This report documents the critical importance of academia in helping to overcome the barriers to computer and information literacy that are widespread in the population. Public affairs and political science schools and programs can also collaborate with the information and technology oriented schools and programs to ensure that literacy training is placed in appropriate public policy contexts.

10.H. Research into techniques such as the Artificial Intelligence (AI) and Expert Systems (ES) techniques and methods developed during the 1980's and early 1990's can help address many public information resources management challenges

Academic and research institutions have an important role to play in helping to address the many and complex problems faced in the public information resources management arena. For example, the Artificial Intelligence (AI) and Expert Systems (ES) techniques and methods that were developed during the 1980's and early 1990's, but never really fully tested and applied for a wide variety of reasons having very little to do with the quality, relevance and applicability of the methods to problem areas addressed in this report. The portfolio of AI and ES techniques and methods, as well as the more

[216] The White Paper on this topic is available as Appendix 20 in Volume 3 of this report and at http://www.nclis.gov/govt/assess/assess.appen20.pdf.

recent and emerging field sometimes called intelligent and knowledge-based systems, could be revisited in the light of public information resources management challenges.

Another important area is in automatic indexing and abstracting. To a certain extent state-of-the-art research that is driving search engine technologies is being stymied by the failure of automatic indexing and abstracting research to keep pace. While many semi-automatic indexing and abstracting software packages are commendable, there is plenty of room for much-needed progress.

Finally public affairs and political science departments in academia could well take the lead to propose a variety of "policy research demonstration projects," in such areas of user needs assessments for public information, digital libraries, preservation, information literacy, e-medicine, e-agriculture, e-commerce, and so forth. Such projects might be collaboratively designed and developed with the participation of library and information schools and programs, and computer science and MIS schools and programs, as well as cognitive psychology faculties.

11. FINDINGS RELATING TO OTHER AREAS, INCLUDING INTERNATIONAL INFORMATION POLICY

11.A. The United States is looked upon as a leader in the Internet Age and should share its findings and expertise to help other countries, especially those in the developing world, better exploit and utilize their government information holdings for the betterment of all of their citizens.

The United States already participates in many international intergovernmental forums with other nation-states in arenas where various "specialized" information policy issues and concerns are debated and discussed. These include the United Nations and its many specialized agencies, as well as the International Telecommunications Union (ITU), the International Council of Scientific Unions (ICSU), and many others. However, there may not be an ideal, fully appropriate existing international inter-governmental forum in which the key concepts espoused by the Commission in this report—the idea of treating public sector information as a strategic national asset—can be aggressively advanced and discussed.

Based on promising and late-breaking news, the U.S. is apparently close to a resolution of its dues structure for the United Nations and an agreement for the repayment of past dues. If the United States also chooses to rejoin UNESCO soon, that organization might well be the most appropriate forum for this purpose. As the Commission goes to press with this report, the Clinton Administration has left office reiterating the desirability of the U.S. rejoining UNESCO.[217] However, if U.S. membership in UNESCO is appreciably delayed, then other international avenues need to be explored. The Commission is already committed to supporting the National Forum on Information Literacy (NFIL), in close coordination with the U.S. Department of Education, in planning the first international congress for information literacy. UNESCO is a possible forum for that event even though the U.S. as of the date of this report has not yet rejoined the organization.

[217] U.S. Executive Office of the President, "Statement by the President," January 16, 2001; available at http://www.pub.whitehouse.gov/uri-res/I2R?urn:pdi://oma.eop.gov.us/2001/1/1/17/13.text.1.

11.B. The exchange of information through bi-lateral and multi-lateral agreements has enriched access to foreign information by U.S. Scientists and engineers.

Bi-lateral and multi-lateral agreements for the exchange of information enrich access to foreign information by U.S. Scientists and engineers. Two excellent examples of the benefits that accrue to U.S. science are:

1. The International Nuclear Information System (INIS). Through this system the U.S. receives worldwide nuclear information in exchange for U.S. information. It includes English language abstracts and extensive indexing of foreign material for ease of access.
2. The Energy Technology Data Center (ETDC). The International Energy Agency (IEA) operates the ETDC under a multi-lateral agreement. Through the ETDC energy information is exchanged with major allies and provided developing countries. This has been both a tool for international diplomacy and an asset that enhances the productivity of the U.S. science community,.

E. CONCLUSIONS

After reflecting carefully on all of its findings, the Commission reached the following conclusions with respect to the significance, implications, and consequences of the findings. Conclusions consolidate the findings relating to each of the twelve corresponding categories.

1. CONCLUSIONS RELATING TO INDIVIDUAL CITIZENS (THE GENERAL PUBLIC)

The federal government should continue with the development of prototype new portals, such as FirstGov, for the purpose of putting in place a "yellow pages" approach to help citizens know what government information exists that may help them, where it is available, how it is identified so they can search for and retrieve it, and how to utilize it effectively to meet their needs once retrieved. However, libraries and information professionals should play a greater role in these efforts.

Lower levels of government should coordinate closely with the federal initiatives to ensure that the availability and accessibility of public information can be determined by level of government, as well as by subject matter, and to ensure the various finding tools from different levels of government level are complementary and consistent. Locator tools must be fine-grained enough to distinguish the full range in the level and quality of computer and information literacy among the many diverse segments of the public at large, from the very sophisticated at the one extreme, to the disadvantaged and severely disabled at the other. The public should come to regard government information as one of the first sources to consult, not a "court of last resort." User assistance methods, tools, and techniques should be tailored to the full range of diverse users—there is no "one size fits all" approach

End user assistance often involves a librarian. A story reported on CNN on November 28th notes:

> "With seemingly infinite research data at the fingertips of everybody linked to the Internet, you might think reference librarians are doomed to go the route of door-to-door salesmen and elevator operators. Instead, many Internet users have found the information glut daunting and confusing. And frequently, it's a reference librarian they turn to make sense of it."[218]

2. CONCLUSIONS RELATING TO DISABLED, DISADVANTAGED AND SPECIAL POPULATIONS

The federal government should monitor very carefully compliance with the Americans With Disabilities Act and Section 508 of the Rehabilitation Act, as well as other statutes with provisions to responding to the needs of the disadvantaged and disabled, to ensure that the goals and objectives of the legislation are implemented both in spirit, and "to the letter of the law." Disabled, disadvantaged and special populations all face formidable barriers to accessing public information that are not faced to the same degree by the general population. This is especially true for physically and emotionally handicapped and disabled individuals, but is also true for other special populations such as victims of discrimination for race, religion, culture, ethnicity, or gender, as well as senior citizens, school age children, the poor and rural populations.

[218] Larry Keller, "Not an Endangered Career: Looking It Up," posted November 28, 2000, at 6:08 p.m. on cnn.com; www.cnn.com/2000/CAREER/trends/11/28/librarians/index.html

The government must be sensitive to these special needs and constantly strive to innovate in the application of state-of-the-art technologies and approaches to providing public information resources. While Section 8a(6)(f) of OMB Circular A-130[219] requires that agencies take appropriate steps to ensure that members of the public with disabilities have reasonable access to information, the Commission believes much more remains to be done to meet to the needs of special populations.

Professional societies and associations have stressed the importance of consumer feedback mechanisms from groups representing disadvantaged and disabled and special populations, especially, for all federal government IT development activities. Working with individual agencies, the government should ensure that new electronic public information products and services take into account the findings detailed elsewhere in this report and its appendices.

3. CONCLUSIONS RELATING TO THE FEDERAL GOVERNMENT—GOVERNMENT-WIDE PUBLIC INFORMATION POLICY AND STANDARDS LEADERSHIP AND OVERSIGHT

New and Strengthened Policy and Standards Leadership

The government should not undermine or close down central information service agencies that provide indispensable services to all mission agencies just because of the Internet or to save a few million dollars. The services these agencies need and use, and the policy leadership and oversight they require, cannot be accomplished nearly as efficiently or effectively by each agency individually, much less in a coordinated fashion across all agencies, to serve their own missions as well as the public at large. The challenge is to redesign, reconfigure, and consolidate government-wide public information services agencies and programs, policy leadership and oversight in five areas:

- The agency or program area.
- The statutory and regulatory area.
- The policy guidance area.
- The technical guidance area, including standards development.
- The budget and finance area.

Traditional information services and information management approaches, including public information dissemination machinery, must be harmonized and blended with electronic, web-based approaches so that both domains are "invisible" and are perceived by the public as part of the same whole fabric, not overlapping and competitive, or absolutely inconsistent and incompatible as is currently true in some cases. At the same time, the level and quality of central government-wide information service agencies, such as NTIS and GPO, must not be degraded until such reforms can be affected.

This means:

- Consolidating, simplifying, and streamlining the government-wide public information services organizations into a single, new Executive Branch agency, such as the proposed Public Information Resources Administration,[220] and creating comparable organizations in both the Judicial and the Legislative branches.

[219] U.S. Office of Management and Budget, "Management of Federal Information Resources," OMB Circular A-130, op cit.
[220] This issue is addressed in Recommendation 2.

- Revisiting the mandates for using sales income to support the central services and, instead, providing appropriated funds for the limited central services (public good function[221]) that provide a true benefit to the public that would not otherwise be provided by uncoordinated individual agency web initiatives.
- Upgrading and modernizing pre-Internet Age authorities, responsibilities, missions, and functions, with a new vision that is Web-based and predicated on the ultimate, inevitable shift of more and more public information products from pre-Internet to Internet availability.
- Paying special attention to the information needs of the disabled, disadvantaged and other special populations.
- Improving intergovernmental, inter-branch and interagency sharing of government information.
- Making better use of public-private sector partnerships, without permitting copyright or copyright-like restrictions on public information resources.
- Renewing attention to the development of information standards and guidelines, as well as supporting research and development for software and technical solutions to facilitate government information life cycle management.
- Strengthening government-wide detailed guidance on interagency information sharing. OMB Circular A-130 does not adequately address sharing government information between and among federal organizations. There is provision to guard against the creation of new information flows and systems where existing flows and systems could satisfy a need, and thereby to preclude the development of new, duplicative flows and systems. However, Circular A-130 addresses information sharing among government agencies primarily from the standpoint of paperwork reduction, urging agencies to look at satisfying new information needs through interagency or inter-governmental sharing. In fact, interagency use and sharing of government information is specifically excluded from the A-130 definition of the term dissemination. Sharing of information *systems*, not information *content*, is the focus of the current policy requirement, but sharing of content is even more important than avoidance of unnecessary overlap and duplication of systems.
- Key public information resources management terms and concepts must be clearly and consistently stated in statutes and appropriate policies, including such terms as public information resources (replacing government publication and government document), permanent public availability, authentication, and preservation. Moreover, the first one of these, permanent public availability, needs to be carefully harmonized with the notion of permanent records retention as that term is used in the Federal Records Act. The interests of records managers and librarians intersect in defining the attributes that determine when public access to a record and/or records collection (series) is "required or appropriate," and therefore the skills of both professions working in a collaborative mode, are needed here.
- The government information life cycle management concept[222] needs to be strengthened, clarified and integrated in the forthcoming reauthorization of the Paperwork Reduction Act in 2001, and the corresponding changes in the next revision of OMB Circular A-130 so as to link internal and external agency information management more closely together at each stage of the life cycle. The Commission concludes that the internal agency resource management problems and challenges and the external public information challenges are increasingly converging because of the Internet, and therefore their solutions must be more closely integrated. FLICC Executive Director Susan Tarr emphasized this convergence, saying, "Therefore, when an agency improves access to its

[221] These public good functions are identified in Conclusion 6 and Recommendation 11.

[222] A White Paper on government information life cycle management is in Appendix 16 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen16.pdf.

information to the public, it improves the likelihood that federal personnel, in another agency or even within the same agency, will also be able to find whatever they need."[223] The converse is also true. When an agency improves its internal information management, it is easier to identify and make appropriate information available to the public.

- The time is overdue for the Congress to review the patchwork quilt of hundreds of laws currently in effect that relate to creation, management and dissemination of government information and to assess how the government's cumulative, overall public information resources program can be strengthened, especially in the Internet Age.[224] Such a review should eliminate contradictory policies in operating information dissemination programs, as well as identifying unmet public information needs.

Central Policy Leadership Does Not Mean Central Control

Whenever a new agency is proposed, inevitably the traditional alarm bells of "centralized control," "centralized approach," and "central data bank" ring loudly. The Commission understands the basis for this concern, but in this case rejects them for the following reasons.

No one disagrees any longer that *information is a resource* which government needs to do its job, just like any institution, public or private, does. Every organization needs human resources, financial resources, physical resources, natural resources, and information resources. The four objectives of resource management (all resources) are to:

- Maximize the value and benefits by utilizing the resource to achieve missions and end-purposes.
- Minimize the cost of acquiring, storing, handling, and utilizing the resource.
- Fix accountability in individuals for the effective and efficient use of the resource.
- Ensure a reliable, continuous, and uninterrupted flow and supply of the resource, including the creation of a new source of supply for the resource if and when needed.

The above four general objectives are as applicable to manpower as they are to dollars, to wildlife, to computers, to energy, or to data. They all require central policy leadership and guidance. The only thing that differs is the specific set of methods, techniques, tools, and guidelines that have been developed over the years for each area (each resource has its own unique and customized set of techniques and tools).

In the federal government, since the birth of the Republic, there has been established:

- An Office of Personnel Management (OPM) to provide central policy leadership focus, coordination, management, and oversight of the government's manpower resources and labor pool.
- A Treasury Department to provide central policy leadership focus, coordination, management, and oversight of the government's financial resources.
- A General Services Administration (GSA) to provide central policy leadership focus, coordination, management, and oversight over the government's physical resources, including property, supplies, buildings. GSA also provides central policy leadership focus, coordination, management, and oversight of government procurement and travel regulations.

[223] Susan M. Tarr, "Board Talk," *FLICC Newsletter*, No. 194/195 (Summer/Fall 2000), page 2.

[224] The need for such an analysis is discussed in Findings 3.B and Recommendation 19.

- A Department of the Interior to provide central policy leadership focus, coordination, management, and oversight over the nation's natural resources, including fish and wildlife, parks, wilderness, and so forth.

The existence of these central policy leadership, coordination, management, planning, control and oversight offices has not eroded the authorities and responsibilities of the mission agencies to manage their own resources. For example, creating a policy leadership public information resources agency would in no way diminish the autonomy of individual agencies to pursue the most cost effective and efficient approaches to public information dissemination, suitable to their own distinct needs and circumstances.

The existing, relatively tiny policy staffs in the Executive Office of the President are simply too small and too crisis-oriented to deal efficiently with the day-to-day complex challenges involved in the resource management areas. For example, the Administrator of Office of Information and Regulatory Affairs (OIRA) at the Office of Management and Budget (OMB) has his hands full with the myriad issues of security, privacy, intellectual property rights, and so forth, to deal with public information resources management issues effectively. The Commission does not believe that OMB should have the day-to-day operating responsibility for issues and questions relating to public information resources. This same reasoning applies to the OMB Office of Federal Procurement Policy (OFPP), which is why GSA is needed, and to the responsibilities of the OMB Assistant Director for Budget, which is why the Treasury Department is needed, and so forth.

Finally, the Domestic Council Committee on the Right of Privacy said in its 1976 report:

> For years, a sense of mutual accommodation with respect to the sharing of information was lacking in the relationship between Congress and the Executive Branch. The atmosphere has often been combative and only sometimes cooperative. Arrangements governing information sharing have generally been flexible and not clearly defined. The information sharing pattern between Executive and Legislative Branch has been largely hit or miss in the past. With increases in systematic sharing between these two branches may come the necessity for formal guidelines to preserve the separation of powers.[225]

In sum, a central public information resource policy leadership, coordination, oversight, planning, management, and control agency is absolutely essential to the smooth functioning of any large institution, much less the largest and most complex institution in the world—the federal government.

Financing Public Information Dissemination

Information dissemination is still not an integral part of agency information resources management (IRM) programs. The cost of disseminating information to the public should be considered as an integral cost of doing business. It should therefore be include as a line item in agency budgets. Establishing an Information Dissemination Budget (IDB) will help to eliminate the agency view that dissemination is an unfunded mandate and, consequently, increase dissemination of information to the public. While the Paperwork Reduction Act in several places uses the term "dissemination," neither in that Act nor elsewhere has Congress given the Executive Branch a single, standard set of statutory authorities regarding the responsibilities of all federal agencies for proactively disseminating public

[225] U.S. Domestic Council Committee on the Right of Privacy, *National Information Policy: Report to the President of the United States* [The Rockefeller Report], Washington, DC: National Commission on Libraries and Information Science, 1976, page 165.

information. These same observations were made twelve years ago by the OTA study "Informing the Nation," and, unfortunately, they are still as true today as they were then.[226]

Many statutes reviewed by the Commission as part of this study authorize, and even mandate, the dissemination of research results, best practices and model programs as an integral part of the program. Since government-funded research and development are incomplete without dissemination of the results, the Commission has concluded the Congress should reserve a fraction of one percent of all funds appropriated for research, development, demonstration and comparable government and government-funded activities to fund the dissemination of the results of such activities through mission agencies the proposed Public Information Resources Administration (PIRA) and other information dissemination programs, and the preservation of materials. This would ensure that a reasonable amount of funds was allocated for identification, acquisition, cataloging and indexing, preservation, and dissemination of information for every $1 billion spent on research. There is, moreover, the danger that without such a reserve set-aside, agency dissemination budgetary line items would be much more vulnerable to reductions during tough budget years. The Commission believes this reserve is a modest investment that would maximize the proactive dissemination of the research results. [227]

4. CONCLUSIONS RELATING TO THE FEDERAL GOVERNMENT—INDIVIDUAL AGENCIES WITH OPERATING MISSIONS

Public Information Dissemination as an Integral Part of Every Agency Mission

There is a need for the inclusion of a standard provision in the enabling legislation for each agency incorporating public information dissemination as a primary agency responsibility, integral to its mission. This requirement must apply to all entities in all three branches of the federal government.

There is a need for strong enforcement mechanisms to ensure agency compliance with statues governing participation in the FDLP and NTIS. In addition, strong incentive mechanisms, such as the Information Dissemination Budget line item, are needed so that agencies no longer regard information dissemination as simply another unfunded mandate. Both a carrot and a stick are required to accomplish the goal of making public information dissemination a primary agency responsibility.

While on the one hand agencies are to be commended for seizing on opportunities to disseminate their information products more effectively to the public, or at least provide access to such information, on the other hand if they stray too far from explicit enabling and authorizing language in that direction, Congress often pulls them back. That is why the Commission strongly believes standard language must be included in agency organic and program legislation that makes disseminating information to the public an "above board," legal requirement that should ideally be financed through appropriated funds as a normal and integral part of the agency's doing business.

Individual agencies are always experimenting with employing creative and innovative ways to disseminate information to the public, and to interact with the public using state-of-the-art interactive and multi-media formats. Yet many of these experiences, and the lessons learned, are lost because there are so few effective arrangements for systematically capturing and recording these experiences

[226] U.S. Congress, Office of Technology Assessment, op. cit., page 256.

[227] In FY 2001, $85 billion is proposed for federal R&D funding. Reserving three one-hundredths of one percent of that R&D budget would provide approximately $25.5 million for public good functions necessary to ensure the dissemination of the research results.

and sharing them among the federal agencies, between branches, and even inter-governmentally. Smaller agencies, in particular, are disadvantaged in this respect, because they need such ideas the most, but yet they have the least effective capabilities to capture this kind of information. An expert advisory list, an e-mail newsletter and portfolio with interesting "What's Worked for Me" ideas, and/or tools that is available for the agencies to use, etc., could be very helpful. The CIO Council could pull together such a compilation of such tools. Some excellent work has already been done along these lines. A number of excellent model agency public information resources policy statements could be included in such a portfolio of best practices, such as "Policy on Public Access to EPA Information"[228] which Chapter 21 of the Environmental Protection Agency *IRM Policy Manual*.

Current Awareness Services

Librarians have established current awareness services, or as they are sometimes called Selective Dissemination of Information (SDI), for many decades as a tool to alert patrons selectively when the libraries acquire a new book, a back-ordered serial, an inter-library loan item, and so forth. This allows patrons to pre-select materials by creating a profile of their information needs and interests. "Standing Interest Profiles" are kept on file so that as new or requested materials are received, the materials are automatically transmitted to the individuals with matching profiles or the individuals are notified of the availability of the new materials.

Federal agencies have a variety of electronic notification systems, such as those utilized for their press releases, to electronically notify the news media, constituents, beneficiaries, and other targeted clientele when they generate an important item of information. Instead of standing interest profiles, for press release purposes and regular publications purposes, however, various mailing lists are maintained depending on a variety of wants and needs factors (e.g., Group A wants materials only in category X, Group B wants materials only in category Y, etc.).

In the Internet Age current awareness techniques and methods are more cost-effective and more effective than they were in the online era and in preceding pre-electronic eras. Therefore, individual agency initiatives could be studied and the particularly promising approaches that many agencies have developed distilled and transformed into guidelines from which all agencies might benefit.[229]

Proliferation of Formats and Mediums

As has been noted elsewhere in this report, the current information technology environment is extremely volatile. New formats are being developed every week and every month. Not without cause, many are worried, for example, that the advent of XML will automatically cause the obsolescence of public information products available in other formats, especially PDF which is considered vulnerable because the scanned images of text cannot be manipulated. There is a strong feeling in federal agencies that periodically, at least once every three years, a survey should be undertaken similar to the one undertaken by Westat for NCLIS on the migration of pre-electronic to electronic formats and the migration from one electronic format to another.[230] That survey would endeavor to pinpoint "preferred" formats for the full range of data types:

- Bibliographic data.
- Graphical data (photos, charts, graphs, drawings).

[228] U.S. Environmental Protection Agency, op. cit.

[229] Recommendation 29 addresses the need for extending SDI services to the public.

[230] Recommendation 25 addresses the need for such a survey.

- Numerical data.
- Sound.
- Spatial data (maps, coordinate files).
- Textual data (books, serials, reports).
- Video.
- Multimedia (sound, video, text, graphics).
- Other formats.

The major format types should also be surveyed to attempt to discern patterns of preference, including:

- Database formats (Oracle, Sybase, dBase, WAIS, MARC).
- Spreadsheet formats (Excel, Lotus 1-2-3).
- Tagged Markup formats (HTML, XML, SGML).
- Image formats (GIF, JPEG, TIFF, PDF).
- Audio formats (WAV, AU, AIFF).
- Video formats (MOV, MPEG, AVI).
- Text format (ASCII, Rich Text, ANSI).
- Word Processing format (WordPerfect, Microsoft Word).
- Other formats.

Online approaches would also be tracked. For example:

- User Interfaces Supported (Netscape, Internet Explorer, Telnet, FTP, non-graphical/dial-up shell).
- Web Design Approaches (Basic HTML only, Tables, Frames, CGI Scripts, use of Java script, Use of Java Applets, XML).
- Bulletin Board Systems (Graphical interface/browser).

How information products are searched, how they are retrieved, changes if any in the type of data included, changes if any in what particular timeframe (short, medium, long-term), the use of metadata records, and policies relating to permanent public availability and accessibility, permanent records retention, preservation, and authentication, would also be surveyed.

Single, Central, Comprehensive and Authoritative Inventory and Database of Public Information Resources

Despite the fact that paragraph 9(a)5 of OMB Circular A-130 specifically requires that agencies "maintain an inventory of agencies' major information systems, holdings, *and information dissemination products* [emphasis added], as required by 44 *U.S.C.* 3511, this requirements has never been adequately enforced. Without a single, central, comprehensive and authoritative inventory of public information, it is virtually impossible to know systematically whether a given information resource:

- Ever existed
- Currently exists or not

- Has been changed or not and, if so, when and in what respect(s)
- Has been discontinued entirely, or perhaps, as occurs more commonly, the print version has been discontinued and replaced with an electronic version.

Is it any wonder that the public views with alarm the tendency of some agencies to take down from their websites products that were put up only a few days or weeks before? This is why it is absolutely essential that a central information services agency, such as PIRA, design, develop, pilot test and implement a single, central, comprehensive and authoritative public information resources inventory and database.[231]

Commenting on an early draft of this report, James Jacobs, data services librarian at the University of California, San Diego, suggested that Section 3506(d)(1)(C) of the Paperwork Reduction Act could be amended to say "agency dissemination of public information in an efficient, effective, and economical manner, including deposit of publications with depository libraries through the Federal Depository Library Program (FDLP) or its successors." OMB Circular A-130 could be similarly strengthened.

Moreover, despite the language in OMB Circular A-130 requiring agencies to utilize the *Federal Register* as the vehicle for notifying the public when they propose to initiate, modify, or terminate an information dissemination product, there is no standard, uniform process for doing so. Clarifying these rules should be a task of the newly proposed Public Information Resources Administration.

Revitalized Role for Agency Public Affairs Officials

Finally, the Commission is disappointed that in most agencies, with the notable exceptions of the defense, foreign affairs, and intelligence communities, by and large agency public affairs officials do not normally involve themselves in "institutional matters relating to electronic information publishing and dissemination." Perhaps, in the paper era they did get involved, but few such officials with whom the Commission discussed this matter, indicated that they had "hands on responsibility" to work with agency webmasters, for example, in the development of agency electronic publishing guidelines. Perhaps it can be argued that such officials have their hands already full putting out the hour-to-hour fires related to the agency's complex relationships with the media, public speeches of their principal officers, legislative liaison with the Congress, and so on.

However, a laissez-faire, hands-off attitude cannot but exacerbate the already difficult challenges facing agency chief information officers in the electronic publishing arena. In short, most agency public affairs offices are staffed with professionals whose expertise in dealing with the public on agency information products is unmatched anywhere else within the agency. Their expertise must be harnessed and mobilized in the service of public information dissemination.

5. CONCLUSIONS RELATING TO THE FEDERAL GOVERNMENT—CENTRAL AGENCIES WITH GOVERNMENT-WIDE INFORMATION SERVICES AND INFORMATION MANAGEMENT MISSIONS (EXCEPT NTIS)

There is an unnecessary and wasteful proliferation among agencies with government-wide information services and information management missions and functions, including databases and collections, portals and websites for access, and metadata locator and classification tools. This wasteful overlap

[231] This issue is also discussed in Finding 3.B and Recommendation 19.

and duplication should cease, and these missions and functions should be consolidated into a new Public Information Resources Administration.

> It seems quite apparent that the same problems that precipitated the proposal to close NTIS in the first place are not limited to NTIS, but are endemic to all agencies with public information dissemination missions and functions, both agencies with government-wide, central missions and those with operating missions. … The statutorily authorized sales policies, the statutorily authorized revenue policies, and the statutorily authorized charging policies for all agencies should be reasonably consistent.

Changing the Status Quo

Over the years, many prior groups that have studied public information dissemination have concluded that there are significant opportunities for improvement in both NTIS and GPO product line analyses, development, and marketing. In the words of the 1988 OTA study, "strengthened cooperation between NTIS and GPO would not only help identify mutually advantageous joint activities, but would seem almost mandatory to the extent that both agencies pursue sales of electronic format products and that GPO enters the low-demand market."[232]

After carefully considering the option of trying to patch together and build on the current missions, functions, and programs of the existing central federal public information institutions, including GPO, NTIS and NARA, among others, the Commission believes the wisest course of action is to create a new institutional framework for public information resources. This would consolidate the first two institutions with programs from other agencies, add new functions not currently addressed by any of the current organizations, and place a streamlined, integrated institution, fully appropriate for the Internet Age, alongside NARA and the Library of Congress.

Maintaining the status quo for the current public information dissemination structures is both unwise and inadequate, as well as not responsive to the charge that the Commission received from the Senate Committees. The only viable means for eliminating wasteful overlap and duplication among information dissemination missions, functions and programs is to consolidate these activities into a new Public Information Resources Administration. Furthermore, the Commission concludes that public information dissemination in the Internet Age can be much more effectively and efficiently managed as an executive rather than a legislative function.

It is too late for incremental changes. A new public information dissemination law, a new independent public information resources management agency, and a reinvigorated government-wide public information resources policy leadership and coordinated are all required, not simply applying bubble gum and bailing wire to structures that have all but fallen apart completely.

Federal Depository Library Program

With respect to the Government Printing Office (GPO) and the Federal Depository Library Program (FDLP), a new vision and a new service model are needed.

[232] U.S. Congress, Office of Technology Assessment, op. cit., page 107.

Regional depository libraries provide a safety net of last resort for no-fee permanent access to public information that they receive through the FDLP, but NTIS reports are not generally distributed to depository libraries and, in any event, to the extent that depository libraries acquire NTIS reports outside of the FDLP, they are not required to maintain them permanently. Whatever the problems with permanent accessibility may have been in pre-Internet days—and there were many—they have been compounded with the extensive federal agency uses of the Internet to publish information.

What is needed is a new vision, and a new Internet Age business model to replace the traditional depository library program, and one in which the role of the government documents librarian is more fully expanded, extended, and exploited to help citizens diagnose their information problems and help them learn how to use the information they have found more effectively in applying that information to help them cope with their personal, family, job-related, and other challenges.

The full realization of this vision of the transition from a fully or partially tangible product program to a virtual program where the great bulk of public information products are in electronic form is still a very long way off. Congress should not take the growth of the Web and the increasing amount of government content available on the Web as a signal to cut appropriations to the Federal Depository Library Program. For many years yet to come, substantial numbers of important government documents will not be available on the Web. In addition, many citizens will not have ready access to the Web, and thereby be able to quickly, easily, and reliably find and retrieve documents that are available.

What is needed is a new vision, and a new Internet Age business model to replace the traditional depository library program, and one in which the role of the government documents librarian is more fully expanded and exploited to help citizens diagnose their information problems and help them learn how to use the information they have found more effectively in applying that information to help them cope with their personal, family, job-related, and other challenges. Repositioning and restructuring the FDLP in response to the Internet Age does not necessarily mean starting all over from ground zero. On the contrary, as noted earlier, the Commission found aspects of the program's traditional mission and practices that are not conditioned on changing information policy and technology. However, other aspects of the mission and practices need to be restructured and otherwise updated in light of changing policies and technologies. GPO and the federal depository libraries have been working on this transition since the first CD-ROM titles came into the program in 1990. A formal transition plan was developed in 1996 in conjunction with a report to the Congress entitled *Study to Identify Measures Necessary for a Successful Transition to a More Electronic Federal Depository Library Program*[233] and that effort has accelerated each year. This statement is not intended as a criticism of what has already been accomplished, but rather in recognition that there is much more to be done.

The Federal Depository Library Program (FDLP) is well positioned to expand its collections and services from so-called tangible information products to digital publications distributed over the Internet directly to the depository libraries. Most depository libraries have adapted rapidly to the changes in the program and their services to the public have kept pace with the expanded volume of digital materials. The current FDLP should immediately include such items for selection by depository libraries and ensure their delivery to the libraries prefer affirmative dissemination to access. The

[233] U.S. Government Printing Office, *Study to Identify Measures Necessary for a Successful Transition to a More Electronic Federal Depository Library Program; Report to the Congress* (GPO Publication 500.11), Washington, DC: Government Printing Office, 1996; http://www.access.gpo.gov/su_docs/fdlp/pubs/study/studyhtm.html.

proposed Public Information Resources Administration (PIRA) should have as its foundation the active dissemination of digital publications to widely distributed, locally based and maintained digital library collections of federal depository libraries in exchange for their continued commitment to no-fee public access to the materials received or accessed.

Nevertheless, the Commission also recognizes that one of the inevitable consequences of moving to a fully electronic public information dissemination model is that every library, in essence, becomes *ipso facto* a depository library.

In a digital age of instant access over the Internet, there are still good reasons for establishing and maintaining the dissemination of electronic public information to depository libraries, even while the federal government provides services for the same materials. Among these are:

- It provides a diversified and redundant infrastructure for preservation and access, outside the federal government, that will protect access and preservation against future changes in policy, mission and funding of federal agencies.
- It results in multiple, specialized collections in the depository library community. Each library, by addressing the needs of its own community (whether or not that is a geographically local community, as it has been historically been, or a virtual community of users with common interests) will be able to select, organize, preserve and provide access to that information that is most important to its community. This will provide better access than a government-centered collection that contains only public information, by providing many different user-centered collections and presentations of public information. In addition, libraries can continue to integrate and provide their collections of federal public information along with other types of government information (foreign, state, local, tribal, etc.), private sector publications and value-added products. Decisions about the value of particular publications and about the preservation of free access to those publications can then reside with the local communities of interest, regardless of decisions made at the federal level.
- It can be implemented immediately without additional legislation or funding and can provide a foundation on which the changes that the Commission recommends can be built. The FDLP exists today and has no-fee public access to federal public information as its primary mission. In the event that the proposed legislation to establish a Public Information Resources Administration (PIRA) is not passed quickly, or is significantly altered or inadequately funded, the dissemination of digital publications to depository libraries would provide much more assurance of permanent public availability than exists today.
- It fulfills the requirement of Section 3506(d)(1)(A) of the of the Paperwork Reduction Act that agencies shall "(1) ensure that the public has timely and equitable access to the agency's public information, including ensuring such access through (A) encouraging a diversity of public and private sources for information based on government public information."

Slowly, but inexorably, the case-by-case marketing decisions that were formerly made by the GPO to select agency documents for the GPO sales program are, in effect, being replaced by aggressive agency practices to mount as many of their public information resources as practicable on their websites. That is highly commendable, but that transition, alone, does not negate the need for strong policy leadership focus and oversight to guard against fugitive materials, the continuing need for paper products in certain cases such as the needs of the disabled and the disadvantaged, obsolescing mediums and formats, and other potential dysfunctional consequences of moving to the Internet as the preferred dissemination medium.

6. CONCLUSIONS RELATING TO THE FEDERAL GOVERNMENT—THE NATIONAL TECHNICAL INFORMATION SERVICE (NTIS)

Preliminary Assessment of the Future of NTIS (March 2000)

In its March 2000 report dealing with NTIS,[234] the Commission indicated that more time was needed to investigate carefully the pros and cons, and the benefits and costs of alternative solutions to the "NTIS matter." Eleven different alternatives were then considered, including:

- Retaining NTIS in the Department of Commerce.
- Transferring collections and service responsibilities to the Library of Congress as initially proposed by Commerce.
- Transferring collections and service responsibilities to the Government Printing Office.
- Transferring collections and service responsibilities to the National Archives and Records Administration.
- Establishing a new national library of science, engineering, and technology, sometimes also designated as the national library of science, energy, and technology.
- Transferring some or all of the NTIS collections and services to the National Academy of Sciences, the National Science Foundation, or the Smithsonian Institution.
- Creating a new independent agency as a service bureau to consolidate public information management functions now dispersed.
- Privatizing some NTIS activities.
- Establishing NTIS as quasi-governmental corporation.
- Transferring NTIS collections and services to a "lead host scientific and technical information intensive agency such as NASA, DOE, or DOD.
- Transferring NTIS collections and services to the General Services Administration.

Since the Commission's initial investigations, a number of other closely related Congressional proposals have been initiated to study similar alternatives, not for NTIS, but for the transfer of the Superintendent of Documents functions in the Government Printing Office to the Library of Congress. During the FY 2001 budget hearings, the Appropriations Committees' Conference conferees directed the General Accounting Office (GAO) to study such a transfer and report to it March 30, 2001. Moreover, Congressmen Moran and Davis, and Congresswoman Morella, directed GAO to study NTIS operations in greater depth. Both of these studies are still underway as the Commission goes to press with this report. It is hoped that the GAO will take the Commission's findings and recommendations into account in these related current endeavors. And, reciprocally, should the Congress take up the Commission's proposed legislation creating a new independent agency, the findings and recommendations of the aforementioned GAO studies, which specifically will include an assessment of the feasibility of transferring the depository library program to the Library of Congress, should be very helpful to the Congress in crafting final provisions and language for the Commission's proposed bill.

It seems quite apparent that the basic problems that precipitated the NTIS problems in the first place are not limited to NTIS, but are endemic to all agencies with public information dissemination

[234] U.S. National Commission on Libraries and Information Science, *Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS),* op. cit.

missions and functions, agencies with government-wide, central missions and those with operating missions. Moreover, many of the findings the Commission identifies in the preceding section relating to NTIS also apply to the GPO since the missions and functions of the two central information service agencies, as well as the problems being faced, have close similarities.

> Only one of the eleven alternatives ... holds out real hope for dealing with the root cause of the problem instead of continuing to deal piecemeal with the effects, and that is to create a new independent agency in the Executive Branch as a service bureau to consolidate government-wide public information resources management missions, functions, and programs now highly fragmented, dispersed, compartmentalized, and unfocused. Not only would the new independent agency have overall policy leadership responsibility over the government's public information resources dissemination programs, but it would also be the federal government's staunch advocate for explaining, advancing, and diffusing government knowledge holdings as a strategic national asset.

In short, the Commission faults the rationale that would lead to a "solution" of the problems by one such agency (e.g., NTIS), when, in fact, a different solution is left in place for another agency (e.g., GPO, U.S. Geological Survey (USGS), the National Weather Service (NWS), the Census Bureau, and so on). The statutorily authorized sales policies, the statutorily authorized revenue policies, and the statutorily authorized charging policies for all agencies should be reasonably consistent, albeit taking into account some exceptions.

Only one of the eleven alternatives listed above, in the Commission's view, holds out real promise for dealing with the root cause of the problem instead of dealing with the effect, and that is to create a new independent agency in the Executive Branch as a service bureau to consolidate government-wide public information resources management missions, functions, and programs. Not only would the new independent agency have overall policy leadership responsibility over the government's public information resources dissemination programs, but it would also be the federal government's staunch advocate for explaining, advancing, and diffusing government knowledge holdings as a strategic national asset.[235]

For the reasons identified by the Commission throughout this report, maintaining the status quo, while not formally listed as one of the eleven alternatives, is, in the Commission's view, simply unthinkable.[236] Such an option was not even discussed or recommended by any of the hundreds of participants the Commission involved in the two earlier stages of its investigations that lead to the current effort.

The NTIS Mission

The government should not abandon the need for a central R&D policy and oversight agency in the Executive Branch because of past difficulties. It cannot be a surprise that the combination of events described in the Findings section above— lower report input, competition with free agency websites, loss of appropriated funds, aggressive entrepreneurial zeal with perhaps inappropriate business

[235] Recognition of public information as a strategic national asset does not imply exploitation of that asset to generate revenue for the government, like the sale of lumber or mineral rights on federal land. On the contrary, it must result in optimizing timely and permanent public access to the information for its owners, the people of the United States.

[236] This issue is discussed in Finding 5.C.

arrangements -– led to financial and other difficulties for NTIS. However, it does not follow that the government should therefore abandon the notion of a central source for government technical information charged with making this information accessible to the Public.

The NTIS mission in the Internet age should have four primary components:

- The collection and processing of government scientific, technical, and engineering information so that it can be made accessible to the public, including facilitating access by linking to the information on government websites.
- The sale of this STIE information to the public in print, microfiche and tangible electronic form, such as CD-ROM or data tapes.
- Related statutorily authorized services to other government agencies on a cost reimbursable basis.
- Value-added information services provided by NTIS itself or by NTIS in conjunction with private sector information vendors, so long as the underlying information content remains available for free public excess.

The last point is potentially the most controversial because it is here that the potential lies for conflict and competition with the private sector. Value-added services would seem to be appropriate when the service is directly related to the dissemination of information, or a natural outgrowth of, activities that NTIS would normally perform in furtherance of its own mission, such as disseminating an agency's database or delivering specific information products to an agency's customers. In the 1988 OTA "Informing the Nation" study, the notion of multiple levels of value-added was recommended, with the private sector frequently providing additional levels of value or enhancement beyond those provided by the government. The only difference today would appear to be that both the government and the private sector offerings have moved (as predicted in the OTA report) to a higher level of technological sophistication.[237]

The NTIS Business Model

The "new" business model for NTIS recommended by the Commission is a return to the earlier model with a mix of appropriated funds for input processing, sales income from report and publication and subscription sales and reimbursable funds for services provided to other agencies.

Some of the functions performed by NTIS benefit the people of the United States and government agencies as a whole. These are the functions that make the results of government funded research and other NTIS publications accessible to the public. They include the functions of processing information into the NTIS collection and maintaining a searchable archive of public information for public access. These functions, which benefit the public at large and permit public access to public information, are properly supported with public funds, i.e., appropriations.

When the Department of Defense (DOD) processes a research report of Defense funded research into its system and mounts it on its Web server for Defense community and public access all of the costs are taxpayer funded. The Department of Transportation recently received a $250,000 appropriation expressly for the purpose of mounting Transportation Department reports on a Web server for public access.[238] Even the Department of Commerce, when it mounted its two policy reports mentioned in its "Fact Sheet" referred to in the earlier section of this paper, used taxpayer funds to pay for the

[237] U.S. Congress, Office of Technology Assessment, op. cit., page 270.

[238] DOT Gives Users Free Ride to Online Research", *Government Computer News*, April 3, 2000, page 13, at http://www.gcn.com/vol19no7/news/1630-1.html.

preparation, processing, mounting and public availability of the reports. Why should providing public access to reports at DOD, Transportation and Commerce be a taxpayer-funded public good while providing the same access to the same reports via NTIS require user charges? At present, unlike GPO, Library of Congress, DOD, Transportation or Commerce, NTIS is required to fund these same public good operations from sales receipts. When prices are high, there is enough money to fund the entire operation. When sales turn down, however, the reverse is true. The consequence of this approach to funding is the inevitable development of shortsighted recommendations to close down the money losing operation, when the real problem is not with shifts in consumer buying habits or swings in the economy, but with the business model itself.

The government has the responsibility to insure that the public has adequate access to the government reports and publications collected by NTIS from originating agencies. This responsibility cannot be met by shifting it to mission agencies that do not have public information distribution or economic growth missions. Nor can it be met—and the funding saved—by transferring the responsibility to other central information repositories, which would require essentially the same level of funding to perform the same tasks. The government's continuing responsibility to provide public access to government information carries with it a responsibility to adequately fund dissemination operations. That is why the Commission formally advocates an Information Dissemination Budget (IDB) as part of the President's budget.[239]

This is not to say that specific users should not pay the incremental cost of specific access not normally provided and that incurs extraordinary costs. They should, but in today's Internet world, normally free access is likely to mean Web access, which can be provided by the government at negligible incremental cost for each additional user.

The Public Good Functions

The specific operations that benefit the general public and, therefore, should be treated as inherently government functions and funded with appropriated funds are:

- Collection or acquisition of reports.
- The indexing, abstracting, cataloging, and preservation of these reports.
- The further processing of reports into the NTIS collection by scanning, microfiching and archiving.
- The creation and maintenance of the NTIS database which provides searching and locating information for this report collection, including the maintenance of a PURL or comparable system to maintain accessibility to reports on agency websites.
- The mounting and maintaining of the searchable NTIS database on a website for free public access.
- The mounting of the full text of the reports—to the extent they are not available on agency servers—on NTIS servers for free public access.
- The maintenance of archive files to insure permanent, but not necessarily free, public access to material not otherwise available.

[239] The information dissemination budget is in Recommendation 4.

These functions would cost an estimated $5 million per year in ongoing operating costs and would permit NTIS to operate effectively independently of the vagaries of future report input or demand.[240] There will also be some one-time startup costs to establish the new system. These costs are on the order of $1.7 million. NTIS estimates for performing these tasks are shown in Appendix B to the Panel One report.[241] Note that periodic updating and replacement of IT hardware, possibly every five years, is not included in the recurring cost estimate in Appendix B.

The same public good costs would be incurred and the same level of appropriated funds would be required to support these functions if the functions of NTIS were transferred to the Library of Congress as proposed by the Department of Commerce, or to the Superintendent of Documents in the Government Printing Office, to NARA, or anywhere else. The Commission made this point in its September 2000 letter to the Secretary of Commerce, strongly suggesting that permanent full time position (FTE) hiring authority be reinstated in order to bring the agency up to a satisfactory staffing and service level, and avoid the danger of the agency falling below that satisfactory level.

User Fee Activities

In contrast to the inherently governmental responsibilities that the Commission recommends be paid for with appropriated funds, there are functions of NTIS that should remain self-funding. Such activities include the sale of print or microfiche copies of reports and of tangible electronic products such as CD-ROM titles and data tapes, in response to individual orders or through subscription services. These NTIS services incur specific, measurable, costs for each additional user and provide benefit only the specific individuals who use the services. These activities should be paid for directly by the user who benefits through a fee that recovers the incremental cost of the product or service distributed.

Moreover, the work performed by NTIS for other agencies would also be reimbursed on the basis of costs actually incurred and should be directly related to its primary mission.

If the changes contemplated in this report are accepted by the President and the Congress, then even if NTIS document sales income continues to fall dramatically as more and more content is made available for free access on the Web, it should be relatively simple to manage the operation without the kinds of deficiency problems faced in the past. Document sales income would only be used to pay the actual costs of document distribution and not the cost of processing documents or maintaining the PURL system, so costs of sales can be managed without degradation of the primary mission of providing permanent public access to a comprehensive collection of federal STI. Without those pressures of generating sufficient revenue to fund the public good functions, the financial instability would be reduced, and some of the excessive entrepreneurial zeal that led to aggressive competition with the GPO and questionable partnerships might also be reduced. This would temporarily stabilize NTIS and provide ongoing public access to government information in its collection. However, the Commission believes that the only viable solution to the "NTIS problem" lies in its merger with the Superintendent of Documents programs from GPO into the Public Information Resources Administration.

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[240] This estimate for the required annual appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.

[241] The report from Commission Panel One is available as Appendix 23 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen23.pdf.

7. CONCLUSIONS RELATING TO FEDERAL GOVERNMENT INTERAGENCY GROUPS (E.G., CIO COUNCIL, FEDERAL WEBMASTERS FORUM, CENDI, FLICC AND OTHERS)

More often than not, the most knowledgeable official for a particular public information product may not even be in one of the central agency staff offices, but, rather, in a subordinate operating sub-unit in a program area, at the bureau, division, branch, or even lower level, but the arrangements for identifying, harnessing and mobilizing all of this expertise are too often deficient. The situation cries out for closer agency coordination and control. Oftentimes there is not even an "IRM committee" that is agency-wide, to advise the Chief Information Officer (CIO).

It is evident that while responsibility for public information dissemination is *nominally* vested in agency chief information officers pursuant to the Paperwork Reduction Reauthorization Act of 1995, and the Stevenson-Wydler Act, responsibility is, in fact, decentralized and splintered among a wide variety of agency central staff and operating program sub-unit offices within individual agencies. For example, the following central agency staff offices are all intimately involved in one way or another, at some stage in public information dissemination:

- Public affairs office.
- Printing and publishing activities.
- Information technology staffs.
- Libraries, information centers, clearinghouses and referral offices.
- Webmasters.
- Records management and archives staffs.
- Statistical and reporting staffs.
- Legislative liaison offices.
- FOIA and Privacy Act staffs, including reading room staff.

Moreover, more often than not, the most knowledgeable official for a particular public information product may not even be in one of the central agency staff offices, but, rather, in a subordinate operating sub-unit in an program area, at the bureau, division, branch, or even lower level, but the arrangements for identifying, harnessing and mobilizing all of this expertise are too often deficient. The situation cries out for closer agency coordination and control. Oftentimes there is not even an "IRM committee" that is agency-wide, to advise the Chief Information Officer (CIO).

The CIO position in agencies was only established a few years ago with the passage of Information Technology Management Reform Act (Public Law 104-106), also know as the Clinger-Cohen Act, in 1996.[242] Although the statue assigns the CIO responsibility for information *content,* i.e., "promoting the effective and efficient design and operation of all major information resources management processes," as well as information *technology*, the emphasis in almost every agency has been overwhelmingly on technology. Clearly the intense efforts to prepare agency computer systems for Preparations for the year 2000 (Y2K) drew both attention and resources away from content issues.

[242] Excerpts from the Information Technology Management Reform Act, Public Law 104-106 (40 USC 1425), February 10, 1996, are available at http://www.cio.gov/docs/s1124_en.htm.

This, coupled with the newness of the CIO position itself and the incumbent officials, compounds the problem of coordination and control because these individuals are so new to their jobs.

CENDI, FLICC, FGDC and similar interagency groups continue to perform extremely valuable functions and should be continued. The recently revised *Guidelines for Federal Publishing*[243] developed by the FPC and ICPPS is an excellent example of the substantial contributions that such interagency groups can make.

8. CONCLUSIONS RELATING TO STATE, LOCAL, AND TRIBAL LEVELS OF GOVERNMENT

Distinctions can and should be made in public information resources regarding the scope and applicability of holdings as to whether they are all government, federal only, state only, tribal only, or some permutation of these categories. FirstGov is an example of the critical need to make these governmental level distinctions.

The proliferation of information at the federal level is, to a considerable extent, masking the need for indigenous information generated by the lower levels of government, and integrating that information efficiently and effectively with federal information. After all, it is at the local level that decisions are made affecting people's lives, but no one fully understands to what extent these needs are filled by the kinds of federal information being generated and disseminated. The evidence is that considerable local level public information is being produced, but it is not being effectively meshed with federal data. For example, according to Professor Marta Dosa, it is common knowledge that much locally produced *environmental* data and information is passed along *informal channels* among planners, legislators, consultants, the administrators of service agencies, and the research sector. Yet, she asks, what is meant by "local environmental information," and should it not be correlated more closely with national environmental information?[244]

Dosa reminds us that it is essential to know the structures and role of resources such as:

- Local sources of data useful in the construction of environmental indicators.
- Operational data assembled by planning agencies, utility companies, consulting firms, etc.
- Publications and in-house documents of environmental agencies.
- Local collections of draft and final environmental impact statements.
- Current unclassified research related to environmental problems.
- Local and regional development plans, site data, maps, etc.
- Alerting systems for environmental action groups on public hearings and controversial issues.[245]

Several American Indian tribes have made extensive use of the Serial Set microfiche collections provided by government document libraries, such as the Oklahoma Department of Libraries, because legal and genealogical research is increasing significantly. As the tribes improve their computer and information literacy, the demand for electronic public information is likely to increase.

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[243] U.S. Federal Publishers Committee, op. cit.

[244] Marta Dosa "Environmental Information Policy: Search For Identity," paper presented at the Special Libraries Association's 66th Annual Conference, Chicago, Illinois, June 10, 1975, pp. 14-15.

[245] Ibid.

For these reasons, the Commission places so much emphasis on the need for closer intergovernmental information interchange, coordination, standards development, and research.

9. CONCLUSIONS RELATING TO THE COMMERCIAL (FOR-PROFIT) SECTOR

The American public's access to government information needs has traditionally been best served through multiple, non-exclusive program and delivery channels provided by both the public and the private sectors so as to reach the widest possible public audiences, and meet the most diverse and specialized kinds of information needs. Neither sector can meet fully the totality of all public user needs for government information, nor should they even if they could. Sometimes the public sector can best handle a job, sometimes the private sector, and sometimes the two sectors acting together can accomplish more than either one acting separately.

Moreover, users who are clienteles of a given agency (or perhaps even a few different agencies because of overlapping subject matter) develop a certain kinship and affiliation for "their" agencies. That is fine and natural, and is as it should be, but it is another reason why diverse and multiple channels are essential to a democracy.

While the federal government must continue to have primary responsibility for the entire life cycle of government information, including the dissemination and permanent public availability to public information resources to the American public without restrictions on its use or reuse, it should also actively encourage a vigorous private sector information industry. It should avoid policies and practices that create exclusive arrangements or copyright-like restrictions on government information in order to promote wide availability of government information. Commenting on this issue in its analysis of key provisions of OMB Circular A-130, OMB noted:

> If an agency is willing to provide public access to a database, the agency should be willing to sell copies of the database itself.
>
> By the same reasoning, agencies should behave in an even-handed manner in handling information dissemination products. If an agency is willing to sell a database or database services to some members of the public, the agency should sell the same products under similar terms to other members of the public, unless prohibited by statute. When an agency decides it has public policy reasons for offering different terms of sale to different groups in the public, the agency should provide a clear statement of the policy and its basis.
>
> Agencies should not attempt to exert control over the secondary uses of their information dissemination products. In particular, agencies should not establish exclusive, restricted, or other distribution arrangements which interfere with timely and equitable availability of information dissemination products, and should not charge fees or royalties for the resale or redissemination of government information. These principles follow from the fact that the law prohibits the Federal Government from exercising copyright. [246]

Typically the private sector develops and utilizes innovative hardware and software before the government. That expertise should be sought out by the government and applied by the government to every stage of the information life cycle.

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[246] U.S. Office of Management and Budget, "Management of Federal Information Resources, Appendix IV: Analysis of Key Sections," OMB Circular A-130, op. cit.

The opportunities for value-added publishing by the private sector, alone or in partnership with the government, will expand greatly in the Internet Age. While the private sector cannot and should not try to enjoin the government from using new information technologies to improve public service, especially in activities that are inherently governmental, neither should the government try to enjoin the private sector for exercising its initiative to developed value-added information products and services.

As Donald Keith says in his recent article in Government Executive:

> As globalization is internationalizing American policy, devolution is localizing it. ... From Medicare to Medicaid, environmental planning to transportation policy, the federal government shares responsibility with state and local governments and with for-profit and nonprofit organizations. ... At every level of American government, such partnerships are proliferating. They have made government more horizontal, across an array of non-governmental partners that must be integrated and coordinated to provide services, and vertical, across more levels of government for more programs.[247]

If the NTIS mission were to disappear, those corporations that have come to regard their information deposited with NTIS as a de facto archive, would have to go to considerable expense to establish and maintain their own individual archives and could no longer retrieve information deposited with NTIS over a number of years.

10. CONCLUSIONS RELATING TO THE NOT-FOR-PROFIT SECTOR, INCLUDING PROFESSIONAL ASSOCIATIONS AND ACADEMIC AND RESEARCH INSTITUTIONS

Education, Training and Curriculum Reform

Understanding how to use information will ultimately become a far greater and more complex challenge that knowing how to search for and access it. That challenge is implicit in the concept of information literacy.

Education and training, including career and professional development, for librarians and other information professionals does not require new funding mechanisms. Existing mechanisms, such as the Library Services and Technology Act (LSTA), can be given new funding to meet new goals.

The LSTA program is an excellent financing mechanism, already in place and operating well, to encourage libraries to develop model education and training programs for public information resources. Such programs could provide librarians and other information professionals with the skills and expertise needed to help the public to locate and use public information. Another appropriate strategy is for the FDLP, or its successor, to increase the emphasis on training government documents librarians who in turn train and support other library and information professionals and users.

Academia and professional societies composed of academic memberships should address the curricula reforms necessary to bring the education and training of modern information professionals into line with actual duties and responsibilities being performed by these professionals.

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[247] Donald F. Ketti, "What's Next: The World and the Country Are Changing, and the Federal Government Had Better Figure Out How to Catch Up," *Government Executive*, Vol. 33, no. 1 (January 2001), page 25.

Government occupational and position classification authorities need to take into account the dramatically changing character of the modern information professions so that the government's labor force appropriately reflects those changes in terms of pay, status, training opportunities, career development opportunities, professional development opportunities, occupational standards, position descriptions, and actual duties and responsibilities.

The Commission will work with the Institute for Museum and Library Services (IMLS), and other appropriate governmental and non-governmental bodies (e.g., the library and information schools, professional societies, and commercial education and training associations) to identify and encourage education and training opportunities and financing mechanisms.

Public/Not-For-Profit Partnerships

The sort of arrangement entered into by the GPO, the State Department, and the University of Illinois at Chicago with respect to the latter institution providing various services to the public and the government with respect to foreign affairs materials, should be emulated more broadly across mission agency lines to other sectors, including, for example, the environment, energy, space, defense, and others.

New Information Policy Research

Professor Marta Dosa of Syracuse University, writing succinctly in 1986 in the area of the usability of environmental information by research institutions and public policy makers, pointed out that the proliferation of computerized data banks underscores the need for coordinated federal information policies more than ever because of the increasing problems in seven areas.

- Validity of data and information (what methodology was used, on what assumptions was the research based?).
- Credibility of data (who collected the data, under whose sponsorship and for what specific purpose?).
- Ownership of information (intellectual property laws, issues of creativity, productivity and innovation, proprietary information, trade secret legislation, definitions of public domain, subsidized information, market forces in information production and distribution, etc.).
- Free flow of information, privacy and security (public and private sector relationships, freedom of information and sunshine laws, privacy legislation, computer security, scientific information exchange, transborder data flow).
- Equity in information access (interpretation of information "free" of charge and "barrier-free" access, society's responsibility for making information available on an equitable basis, and who are the information poor, role of consumer and environmental organizations).
- Technology transfer (dissemination of environmental research results to policy makers and practitioners, relationships of technology, information and knowledge transfer, problems of access to technology assessment, risk assessment and social impact assessment, intercultural and trade issues in international technology transfer).

- Information overload (is access to information sources or the availability of too much information the greater problem? Who should organize and evaluate data and information resources? What is the role of information education?).[248]

New Information Science and Technology Research

Academic and research institutions should look carefully at Artificial Intelligence (AI) and Expert Systems (ES), as well as the more recent and emerging field sometimes called intelligent and knowledge-based systems. Research institutions should pursue research in these fields, along with automatic indexing and abstracting, more aggressively, first at the laboratory bench, then in pilot test modalities, and finally in practical applications.

Achieving the vision of a learning (or knowledge) society requires a much deeper understanding of how people learn. This is an enormous research challenge and opportunity. Although it is outside the scope of this report, the Commission strongly believes that the government should encourage and support such research since it is inextricably linked to the improvement of information literacy and, therefore, the economic development of this country.

11. CONCLUSIONS RELATING TO OTHER AREAS, INCLUDING INTERNATIONAL INFORMATION POLICY

If the United States rejoins UNESCO that forum should be explored as a suitable venue for the U.S. to pro-actively assist other countries, especially developing countries, learn how to organize, disseminate, and more generally exploit the notion of regarding public sector information as a strategic national resource. Meanwhile, the Commission, in collaboration with the Department of Education, and other stakeholders, is working with the National Forum on Information Literacy (NFIL) to prepare for the first international congress on information literacy.

Of course, there are other international forums through which the U.S. can pursue these objectives as well, including the International Council of Scientific Unions (ICSU), the International Standards Organizations (ISO), and the World Intellectual Property Organization (WIPO).

Public information has long been recognized as a tool in international diplomacy. There is a role of information to be used in development and capacity building with developing countries, especially in the areas of science and technology. For example, the U.S. is promoting establishment of a Biosafety Clearinghouse as part of a biosafety protocol to help developing countries obtain the data necessary to deal with biosafety issues.

In the Commission's view, some countries are ahead of the United States in establishing truly innovative Internet-assisted public information search and retrieval systems. One such country, Singapore, has developed its "Tiara" system with the assistance of the Gartner Group, a U.S. consulting firm. Readers may wish to browse www.tiara.com.sg for a preview of some very creative approaches to this challenge.

[248] Marta Dosa, "Information for Environmental Decision Making," *Environment 2000*: *Environmental Information and Public Perceptions*, Proceedings of a Conference held in Albany, New York, 1986, Albany: NY: New York State Department of Environmental Conservation, 1987, pp. 88-89.

F. RECOMMENDATIONS

Public information should be formally recognized by the United States as a strategic national resource. Recognition of public information as a strategic national resource does not imply exploitation of that asset to generate revenue for the government, like the sale of lumber or mineral rights on federal land. On the contrary, it must result in diffusion of that knowledge by optimizing timely and permanent public availability of the information for its owners, the people of the United States.

To provide the necessary statutory foundation and other arrangements necessary to achieve the goals and objectives of this new national mission for management of public information resources, the Commission has sixteen *strategic* recommendations and additional important, but not absolutely critical, recommendations. All strategic recommendations should be acted upon and, ideally, accomplished in the short-term (within two years). Some recommendations can be implemented whether or not the proposed legislation is enacted or the new agency is created. However, the Commission recommends that both courses of action proceed expeditiously, so as to create an optimal national framework and climate for improving public access to government information.

As requested by the Congress, these are the recommendations of the Commission itself.[249] Although comments were requested and received through the Office of Management and Budget (OMB), this report does not represent an official position of the current, or former, Administration. In addition, although a wide variety of stakeholders were encouraged to participate in the development of this report and their comments were extremely useful to the Commission, these recommendations do not necessarily represent a consensus of stakeholders.

STRATEGIC RECOMMENDATIONS

1. **The United States Government should formally recognize and affirm the concept that public information is a strategic national resource. The President should issue an Executive Order or Memorandum to the Heads of Executive Departments and Agencies emphasizing the importance of agency proactive initiatives in making their information resources more effectively and efficiently available to, and permanently accessible by, all Americans, including those who are disabled or disadvantaged. The President and the Congress should ensure that this concept is reflected in appropriate statutory, oversight, policy, budgetary, and other contexts.**

   [Supporting Findings: 1.A, 1.D, 1.G, 1.I, 1.J, 2.B, 3.A, 3.B, 3.D, 4.A, 4.C, 4.O, 5.I, and 10.E]

   [Time Frame: Short-Term][250]

The United States Government should formally recognize and affirm the concept that public information is a strategic national resource. To accomplish this, the President should issue an Executive Order or a Memorandum to the Heads of Executive Departments and Agencies formally designating the government's knowledge holdings as a strategic national asset and emphasizing the

[249] This aspect of the report is discussed in more depth in Section A, the role of NCLIS.

[250] For each recommendation, the suggested time frame is noted. The three-timeframes are: (1) the short-term: begin within two years or less, (2) the medium-term: begin in two to five years, and (3) the long-term: begin in six years or later. This is discussed in greater detail in the section entitled Timeframes for Address Recommendations at the end of Section C.

importance of agency proactive initiatives in making their information resources more effectively and efficiently available to, and permanently accessible by all Americans, including those who are disabled or disadvantaged. The Commission would be pleased to assist in the drafting of such an instrument.

Both the President and the Congress should ensure that the concept that public information is a strategic national resource is reflected in appropriate statutory, policy, budgetary, oversight and other contexts.

The Commission has determined that there is an absence of a leadership and accountability statutory and organizational focus for the coordination, management and oversight of public information resources as a strategic national asset.

2. **The Congress should authorize and fund, and the President should establish, a new independent lead agency in the Executive Branch, the Public Information Resources Administration (PIRA), to plan for and implement the treatment public information resources as a strategic national asset. This requires some new authorities, functions, programs and responsibilities, as well as the transfer of existing authorities, functions, programs and responsibilities from other government entities.**

   [Supporting Findings: 1.F, 1.G, 1.L, 3.A, 3.B, 3.C, 3.H, 4.B, 4.C, 5.A, 5.B, 5.C, 5.D, 5.E, 5.I, 5.J, 8.B, 9.C, and 10.C]

   [Time Frame: Short-Term]

The Congress should authorize and fund, and the President should establish, a new independent agency in the Executive Branch, the Public Information Resources Administration (PIRA) to serve as the lead agency for overall policy and standards leadership, to plan for and implement the treatment public information resources as a strategic national asset and to provide overall policy leadership, management, oversight, coordination, and accountability for public information resources. The President should announce the creation of the new agency, stressing the importance the Administration places on making agency information holdings more easily available to and accessible by the public on a permanent basis. For this purpose the President may use an Executive Order or other appropriate instrument.

> All subsequent recommendations in this report assume that, once it is established, the Public Information Resources Administration (PIRA) should either assume the lead or participate in implementing the recommendation.

Following enactment of the proposed legislation,[251] the Congress and the President should take the necessary steps to establish a new independent lead agency in the Executive Branch, the Public Information Resources Administration (PIRA). The absence of a clear, single, central focal lead agency within the government with responsibility for overall policy leadership, planning and program management, and oversight, is very serious. It is exacerbating technical problems in efficient cross-platform handling of public information, and it is reflected in the lack of effective information interchange policies, standards and guidelines; poorly enforced laws and regulations; and minimal

[251] The Public Information Resources Reform Act of 2001 is available in Appendix 11 in Volume 2 of this report and also at http://www.nclis.gov/govt/assess/assess.appen11.pdf.

intergovernmental, inter-branch, and interagency sharing of government information resources. Other wasteful and dysfunctional practices include:

- Unnecessary and wasteful overlap and duplication of government-wide information services and information management missions, roles, and functions that are now fragmented, dispersed, compartmentalized and unfocused all over government.
- The loss of public information resources because there is no single, authoritative "failsafe" electronic repository for public information that agencies post on their websites and then later remove.[252]
- Inadequate attention to the special public information needs of disadvantaged and disabled Americans.
- The difficulty of inter-branch, intergovernmental, and interagency sharing of government information, and the lack of a federal information infrastructure that can be linked effectively to state, local, and tribal government public information infrastructures.
- A serious lack of coordination in public information storage, communication and handling policies, programs, standards, guidelines and practices that is hampering information preservation and storage, communication and interchange between the government and public users, as well as the efficient and effective interchange of public information between platforms, systems, and networks because of inadequate locator and other metadata tools and controls.

The PIRA will consolidate the missions, functions and programs of NTIS, the Superintendent of Documents, FirstGov and other portals for citizen access to government information and services, as well as other related activities. The new agency will consolidate, streamline, and simplify currently diverse, fragmented, compartmentalized, and unfocused public information management authorities and functions into a coordinated, focused, and cohesive system of public information dissemination management. The new public information resources agency will reduce the unnecessary overlap and duplication in existing authorities and functions, but still allows public information creation to remain on a decentralized basis (in each agency), and public information storage and handling to remain in a fully dispersed information handling configuration (multiple agency websites, servers, and networks, all linked together). The underlying rationale for this recommendation dealing with the federal *public information* resources area follows well-established organizational consolidation precedents and lead agency authorities that have long ago been vested in the other major federal resources areas—manpower, dollars, supplies and equipment, and the Nation's wilderness, forests, and wildlife:

- The federal *personnel* resources area (i.e., the Office of Personnel Management).
- The federal *financial* resources area (i.e., the Department of the Treasury).
- The federal *real and personal property* resources area (i.e., the General Services Administration).
- The federal *natural resources* area (i.e., the Department of the Interior).

The existence of these central policy leadership, coordination, management, and oversight offices has not eroded the authorities and responsibilities of the mission agencies to manage their own resources. For example, creating a policy leadership public information resources agency would in no way diminish the autonomy of individual agencies to pursue the most cost effective and efficient

[252] The major research and development agencies, such as the Departments of Defense and Energy and the National Aeronautics and Space Administration (NASA) have centralized information programs, but even these programs do not capture all public information resources relevant to their missions. The FDLP and NTIS have central information collection missions, but both acknowledge that there are a significant number of "fugitive documents" that should be provided to them under their governing statutes, but are never received, and therefore included in their collections for permanent public access.

approaches to public information dissemination, suitable to their own distinct needs and circumstances.[253]

All subsequent recommendations in this report assume that, once it is established, the Public Information Resources Administration (PIRA) should either assume the lead or participate in implementing the recommendation.

3. The Congress and the President should direct the inclusion of a standard provision in the enabling legislation for each agency incorporating public information dissemination as a primary agency responsibility integral to its mission. This requirement must apply to all entities in all three branches of the federal government. The Congress should ensure through its oversight responsibilities that the revised mission statements, once promulgated, are appropriately reflected in agency plans, budgets, programs, and performance.

[Supporting Findings: 3.C, 3.E, 3.F, 4.B, and 4.K]

[Time Frame: Short-Term]

The Congress and the President direct the inclusion of a standard provision in the enabling legislation for each agency incorporating public information dissemination as a primary agency responsibility, integral to its mission. This requirement must apply to all entities in all three branches of the federal government.

For convenience and simplicity, such standard language could be prescribed in technical amendments to the existing major cornerstones of public information availability listed here, and thereby simultaneously made legally applicable and binding to all individual agency enabling statutes, in all three branches of government:

1. The Freedom of Information Act, including the Electronic Freedom of Information Act.
2. The Administrative Procedure Act.
3. The Government in the Sunshine Act
4. The Paperwork Reduction Act.
5. The Privacy Act.

Simultaneously, these laws should be amended to harmonize and strengthen other provisions related to the creation, management and dissemination of public information resources. [254] Such amendments must make it explicit that the default position of the government should be to make all of its information resources available to the public, to other agencies, and to other levels of government, subject only to statutory non-disclosure provisions. While the Commission is reluctant to specify precise language for a standard clause, the provision in 7 *U.S.C.* 2201 that directs the Department of Agriculture to "...diffuse among the people of the United States, useful information on subjects connected with Agriculture..." reflects the spirit of the Commission's recommendation.

[253] There is additional discussion of this issue in Conclusion 4.

[254] As requested of Senator Lieberman, the Commission has developed specific recommendations for amendments to the Paperwork Reduction Act, which are included in Appendix 12 in Volume 2 of this report. It is available at http://www.nclis.gov/govt/assess/assess.appen12.pdf. The Commission would be pleased to develop comparable recommendations with respect to amendment of the other statutes mentioned here.

When inserting this provision, the Congress should make clear that the cost of disseminating information to the public is considered an essential, integral and direct cost of an agency's doing business, not an overhead cost. Furthermore, agencies should not view public information dissemination expenses as an unfunded mandate. This requirement should be reflected in such contexts as procurement and contracting regulations, the annual budget process as prescribed by OMB Circular A-11, performance reviews required by the Government Performance and Results Act (GPRA), and in other contexts. Too often disseminating information to the public is viewed as a by-product of other, more important agency business, or subsumed in agency overhead calculations, and yet, disseminating government information to the public should be considered an essential and integral cost of the agency's doing business.

There are instances where the sale of public information is appropriate, as with the current GPO Sales Program. However, such sales could never result in an adequate level of revenues to finance the public good functions that are the underling information infrastructure for such a program.[255]

The Commission acknowledges that the major research and statistical agencies and the central information service agencies, such as GPO, NTIS and NARA, as well as the Library of Congress and the national libraries, already have public information dissemination authorities and responsibilities explicitly identified in their enabling legislation. Yet these agencies are the exception, and the public information responsibilities under their enabling statutes are quite varied and inconsistent. For the most part, however, the mission agencies do *not* have such wording in their organic laws, much less consistent government-wide wording. The public information dissemination language utilized in the mission statements of the research, statistical and central information service agencies should be harmonized with the standard language suggested in this report fore the mission agencies.

The Internet provides an unparalleled opportunity to adjust traditional incentives and disincentives with respect to motivating agencies to maximize rather than minimize their information flows to the public, as well as interagency, inter-branch and intergovernmental information sharing. Agencies are now able to reach out to all citizens in a far more effective manner because of the Internet, and they are, therefore, motivated to do so. Not only are the incentives to provide information to the public enhanced, the disincentives to withhold information are reduced by the ease and cost-effectiveness of publishing on the Internet. To the extent that individual agencies are successful in disseminating their own information directly, some burdens on, and costs to, central information service agencies are correspondingly reduced, but others are increased. However, in a battle for resources within a mission agency, broad public access will usually loose to the service demands of the agency's primary constituents. A central, consistent and authoritative inventory and database is still absolutely essential to provide easy and efficient "one stop" public access, comprehensive cataloging and indexing, permanent public availability, and as a safeguard to protect against catastrophic loss, budget cuts, and other loss of public information.

4. **The President should require an Information Dissemination Budget (IDB) line item at the individual agency level and establish an overall Information Dissemination Budget line item in the President's Budget that aggregates individual agency requirements with those of the new Public Information Resources Administration (PIRA). To help finance this budget, the Congress should enact legislation that automatically reserves a fraction of one percent of all funds appropriated for direct government research, development and demonstration and comparable government-funded R&D contracts, grants and activities. This reserve would be a minimal reduction of the funds available for R&D, but it would ensure that a satisfactory**

[255] These public good functions are identified in Conclusion 6 and Recommendation 11.

portion for every $1 billion expended on the research was available for identification, acquisition, cataloging, indexing, preservation, and dissemination of research and development results, in addition to funds already provided by direct appropriations.[256]

[Supporting Findings: 3.E and 3.F]

[Time Frame: Short-Term]

Under the Paperwork Reduction Reauthorization Act of 1995, the government employs an "Information *Collection* Budget" budgetary line item as a *disincentive* mechanism to help keep control of otherwise burgeoning agency collections of information from the public, businesses, lower levels of government, and so forth. The Commission believes it only fair and equitable, on the other hand, that the President should require an "Information *Dissemination* Budget" (IDB) budgetary line item as an *incentive* mechanism, in order to ensure that individual agency efforts, and the overall government effort, to maximize the dissemination of information to the public, are clearly identified, statutorily enabled, and satisfactorily funded. Currently many agencies regard public information dissemination expenses as an unfunded mandate. This approach would also ameliorate mission agency fears that the Congress may cut their regular budgets because they have strayed too far from utilizing regular appropriations for public information dissemination purposes that some may argue are not directly and explicitly related to their primary mission and program authorizations. To this end, two levels of IDBs are required, one at the individual agency level, and the other an overall IDB in the President's Budget that aggregates individual agency information dissemination requirements with those of the new Public Information Resources Administration (PIRA) to arrive at government-wide total.

To help fund this budgetary line item, the Congress should enact legislation that automatically reserves a fraction of one percent of all funds appropriated for research, development, and comparable government and government-funded activities, to fund the Information Collection Budget, including the relevant public good functions currently performed by the National Technical Information Service (NTIS) and the Government Printing Office (GPO). This reserve would be a miniscule reduction of the funds available for R&D, but it would ensure that a satisfactory amount was available for identification, acquisition, cataloging, indexing, preservation, and dissemination of information reporting research and development results for every $1 billion expended on the research itself. The reserve would make available at least a modest sum to finance direct agency public information dissemination programs as well as the relevant public good functions currently performed by the major central information service agencies such as the National Technical Information Service (NTIS) and the Government Printing Office (GPO).[257]

The federal government cannot afford to erode the level and quality of public information services provided to the nation's academic, research, related institutions, and the professions. The science laboratories, the classrooms and lecture halls, and the workbenches of individual entrepreneurial

[256] The specific amount to be earmarked for this Reserve Fund will be determined by the President and the Congress in the context of normal executive budgetary and legislative processes. However, the Commission believes that the amount should be a fraction of 1 percent of the R&D budget.

[257] For example, the Defense Technical Information Center (DTIC), the Department of Energy (DOE) and the National Aeronautics and Space Administration (NASA) all identify, collect, abstract, index and either scan or microfilm reports for their own agency missions that are eligible for public information dissemination. They then transfer the abstracting and indexing records, and in some cases, copies of the documents themselves, to NTIS for public availability, which right now means sale. If this effort was not performed by DTIC, DOE and NASA, it would have to be performed by NTIS in order to make these materials available to the public; therefore, the public good functions of collecting, abstracting, indexing, and scanning or microfilming of these public information resources, in so far as they are related to the results of federally funded R&D, could and should be funded through the reserve.

inventors working in their garages or basements across the country are, in a very real sense, the R&D front lines of America's highly touted distinctive economic competency in the world. The government cannot risk reducing the level of public information services to these individuals and institutions on the firing line because of bureaucratic quarreling over the financing of a miniscule fraction of the total annual R&D budget.

Once established, the Public Information Resources Administration (PIRA) will estimate its own budgetary requirements, and assist OMB in the review of other Executive Branch agencies IDBs. The Congressional Information Resources Office (CIRO) and Judicial Information Resources Office will review their respective branch IDBs. All of those requirements will be included in the overall IDB. The portion of PIRA requirements not funded by the reserve from the R&D budgets, or through its statutorily authorized information sales programs, will still require direct appropriations. Until PIRA is created, funding for the relevant public good functions of the National Technical Information Service (NTIS) and the portions of the Superintendent of Documents' expenses that are related to the identification, acquisition, cataloging and organization, as well as the dissemination of the results of federally funded R&D through the Federal Depository Library Program (FDLP), should be financed through the funds reserved from the R&D appropriations. However, this will not eliminate the requirements for appropriated funds to support and sustain the FDLP and other channels for dissemination of public information not generated through federally funded R&D.

There is also the need to recognize that both new and existing budgetary authorities must be involved in these calculations. In the case of the major statistical agencies, for example, and some major central information service agencies such as GPO and NTIS, and the national libraries, substantial budgetary authorities for public information dissemination are already authorized. In short, there must not be any "double counting" between existing budgetary authority amounts already appropriated to the mission agencies on the one hand and the new budgetary authorities appropriated to a central information service agency, such as PIRA, on the other. Where an agency already has explicit statutory authority enabling it to disseminate its information to the public, the Commission recommends that budgetary authority remain in place and continue. Those existing budget authority amounts, most assuredly, should not be considered as "budgetary trade-offs or offsets" against the PIRA budget.

Implementing this recommendation to establish an Information Dissemination Budget line item will help to eliminate the agency view that dissemination is an unfunded mandate and provide a strong incentive to increase dissemination of information to the public.

5. The President and the Congress should review and, as necessary, refine and modify the legislative proposal of the Commission, "The Public Information Resources Reform Act of 2001." The Congress should enact, and the President should approve, the legislation in the 107th Congress.

[Supporting Findings: 1.A, 1.B, 1.G, 1.I, 2.B, 3.A, 3.I, 4.A, 5.F and 10.E]

[Time Frame: Short-Term]

The Commission has proposed legislation, the Public Information Resources Reform Act of 2001,[258] *to provide a new statutory foundation for the formal establishment of government's knowledge holdings as a strategic national asset*. The proposal is an expanded outline of key provisions, but is

[258] The proposed Public Information Resources Reform Act of 2001 is available in Appendix 11 in Volume 2 of this report and also at http://www.nclis.gov/govt/assess/assess.appen11.pdf.

not a complete bill. It is not written, for the most part, in a traditional draft legislation style or format. Instead, the different sections contain the most important points and topics the Commission believes should be covered when a Member of Congress drafts a complete and appropriately formatted bill for introduction. It is fully recognized that both the new President and the new Congress will need to examine the detailed provisions of the proposal very carefully, consider hearings on this issue, and make whatever modifications they believe necessary. The Commission's intent in preparing the proposal was to facilitate this process and provide a catalyst for discussion and action.

Such a bill could be introduced early in the First Session of the 107th Congress. Because this is proposal for government-wide reform, it affects the jurisdiction of virtually every committee of Congress. One possibility is for the Senate Committee on Governmental Affairs and the House Committee on Government Reform to take the lead in reviewing the proposal, modifying it as necessary, and eventually sponsoring a revised bill in their respective Houses because these committees have paramount jurisdiction over government information matters. Because of their keen interest in this matter and their leadership in addressing the proposed closure of the National Technical Information Service, the Senate Committee on Commerce, Science, and Transportation and the House Committee on Science should continue to play a key leadership role. Undoubtedly the Appropriations Committees of both Houses will also be keenly interested, as will the Senate Committee on Rules and Administration and the House Committee on House Administration.

The Commission hopes that a bipartisan, bicameral spirit will prevail in addressing this issue since it affects all Americans ability to access information from their government.

Congress could amend the Printing Act, the Depository Library Act, Administrative Procedure Act, the Government in the Sunshine Act, the Paperwork Reduction Act, the Freedom of Information Act (including E-FOIA), the Privacy Act and other legislation to essentially accomplish the key purposes and objectives set out in this report. Nevertheless, the Commission believes this would be a mistake for the following reasons.

First, there would remain a patchwork quilt of laws in which the triad of key ideas: (1) treating public information as a strategic national asset, (2) enabling agencies to proactively, with direct appropriations support, disseminate their information to the public, and (3) putting a new statutory cornerstone in place for public access to government information would be so watered down, and masked by the other overriding provisions of those laws, that the idea of treating public information as a national resource might as well not have been affirmed as a national goal in the first place.

Second, all of those existing laws have significant thrusts in, albeit, related, but quite different directions, and this would mix "legislative intent apples with oranges" to a large extent.

The Commission therefore recommends the opposite tack, i.e., implementation of Public Information Resources Reform Act of 2000. Other laws that currently touch upon public information dissemination should be amended to make them consistent with the new legislation. That is in part what the Commission has done in Appendix 12 for the Paperwork Reduction Act, and NCLIS would be pleased to assist the President and the Congress in doing this for other statutes and policies.

The Commission is not unmindful of the fact that enlightened knowledge diffusion cannot be legislated, any more than morality. However, without appropriate laws, policies and structures, there is virtually no hope whatsoever that progress can be made.

6. **The Congress should establish and fund a new office, the Congressional Information Resources Office (CIRO), with appropriate authorities, functions, funding, and programs necessary to support the full range of Legislative Branch public information resources management responsibilities. The CIRO should incorporate the Government Printing Office responsibilities for Legislative Branch printing and related publishing services, whether performed directly or procured.**

   [Supporting Findings: 1.A, 3.A, 3.B, and 5.C]

   [Time Frame: Short-Term]

The Legislative Branch should also establish and fund a new office, the Congressional Information Resources Management Office (CIRO). This new entity should have authorities, functions, and programs necessary to support the full range of Legislative Branch public information resources management responsibilities, throughout the entire legislative information life cycle. The new office would provide overall policy leadership focus, oversight, coordination, and accountability for the Legislative Branch's public information resources programs and have new responsibilities for working with the Clerk of the House, Secretary of the Senate, and the heads of other Legislative Branch offices and agencies to ensure that information resources management principles and practices are diffused more widely throughout the entire Legislative information life cycle.

As the 1988 OTA report, "Informing the Nation" points out, "given the large number of House, Senate, and congressional support offices and units involved with the creation and dissemination of congressional information, Congress may wish to establish a formal coordinating mechanism to maximize the exchange of learning and minimize the potential overlap, and to take advantage of the opportunities for technologically enhanced access. In many respects, electronic dissemination of congressional decisions via the Internet is just as important as communicating them by radio and television coverage of congressional hearings and floor sessions."[259]

The Government Printing Office (GPO) is a long-established institution that has served the nation extremely well. However, a new vision and business model appropriate to the Internet Age are now needed, just as they are needed for NTIS. Incorporation of parts of the GPO into a new CIRO, and other parts into PIRA, will streamline, simplify, and modernize the mission of that organization, so that it can continue to support printing and related publishing services, whether performed directly or procured, to meet the needs of the Congress and other entities in the Legislative Branch.

7. **The Judicial Branch should establish, and Congress should fund, a new office, the Judicial Information Resources Office (JIRO), in the Administrative Office of the U.S. Courts, with comparable authorities, functions, funding, and programs necessary to support the full range of Judicial Branch public information resources management responsibilities, including procurement of printing and related publishing services. The JIRO should incorporate the Government Printing Office responsibilities for procurement of Judicial Branch printing and related publishing services.**

   [Supporting Findings: 1.A, 3.A, 3.B and 5.C]

   [Time Frame: Short-Term]

[259] U.S. Congress, Office of Technology Assessment, op. cit., page 21.

Similar to the foregoing recommendation with respect to the Legislative Branch, the Judicial Branch should also establish, and the Congress should fund, a new office, the Judicial Information Resources Management Office (JIRO), in the Administrative Office of the U.S. Courts. This new entity should have comparable authorities, functions, and programs necessary to support the full range of Judicial Branch public information resources management responsibilities, throughout the entire judicial information life cycle. The new office would provide overall policy leadership focus, oversight, coordination, and accountability for the Judicial Branch's overall public information resources programs and have new responsibilities for working with the Clerk of the Supreme Court and other Judicial Branch offices to ensure that information resources management principles and practices are diffused more widely throughout the entire Judicial information life cycle.

8. The Congress should extend key provisions of the Paperwork Reduction Act, notably Section 3506(d), to the Legislative and Judicial Branches.

[Supporting Findings: 1.J, 3.A, and 3.B]

[Time Frame: Short-Term]

The scope of the Paperwork Reduction Act of 1995 currently applies only to the Executive Branch. However, several key sections, notably Section 3506(d), *could usefully be extended to the Legislative and Judicial Branches as well.* For example, section 3506(d) of the Paperwork Reduction Reauthorization Act of 1995 states:

> (d) With respect to information dissemination, each agency shall -
>
> (1) ensure that the public has timely and equitable access to the agency's public information, including ensuring such access through
> (A) encouraging a diversity of public and private sources for information based on government public information;
> (B) in cases in which the agency provides public information maintained in electronic format, providing timely and equitable access to the underlying data (in whole or in part); and
> (C) agency dissemination of public information in an efficient, effective, and economical manner;
>
> (2) regularly solicit and consider public input on the agency's information dissemination activities;
>
> (3) provide adequate notice when initiating, substantially modifying, or terminating significant information dissemination products; and[260]
>
> (4) not, except where specifically authorized by statute -
> (A) establish an exclusive, restricted, or other distribution arrangement that interferes with timely and equitable availability of public information to the public;

[260] One problem with this language in the PRA is the use of the undefined term "significant" to characterize the information dissemination products for which notice is required. In its recommendations for changes existing legislation and OMB Circular A-130, the Commission recommends clarification of the notice provision to make sure that public needs are adequately addressed. This recommendation is in Appendix 12 in Volume 2 of this report, which is available at http://www.nclis.gov/govt/assess/assess.appen12.pdf.

> (B) restrict or regulate the use, resale, or redissemination of public information by the public;
> (C) charge fees or royalties for resale or redissemination of public information; or
> (D) establish user fees for public information that exceed the cost of dissemination.

Other stakeholders commented that notification under Section 3506(d)(3) currently provides no specific mechanism for notice. The Commission recommends that this section require notice through the *Federal Register* in addition to any other means the agency may choose to use.

9. State, local, and tribal levels of government should consider establishing comparable public information resources planning, management, and control machinery as that contemplated by this report, but tailored to their unique requirements and circumstances.

[Supporting Findings: 3.J, 3.L, 4.F, 4.J, 5.G, 7.C, 8.A, 8.B and 8.C]

[Time Frame: Short-Term]

The Commission recommends above that public information be considered a strategic *national* asset (not just a *federal* resource). Therefore, state, local, and tribal levels of government should consider establishing comparable public information resources planning, management, and control machinery as that contemplated by this report for the federal level, but tailored and customized to their own unique local requirements and circumstances. Lower levels of government should be encouraged to formally designate their respective knowledge holdings as strategic assets and to take appropriate actions to implement that concept, so that it is not regarded just as an exhortation, but has practical value and utility as reflected by operational programs, policies, and practices at each level of government.

Because the public information resources management problems and challenges faced by one level of government are more often than not faced by all levels of government, the Commission believes that optimal solutions should ideally be multi-governmental level in scope and applicability. The resolution of such problems by each level of government, unilaterally, in a disconnected and disjointed fashion, should be discouraged.

The National Association of State Information Resources Executives (NASIRE) could play a very useful role in this regard, in collaboration with other appropriate State, Local, and Tribal government bodies at the state legislative, gubernatorial, mayoral, and tribal chief levels.

10. The President should direct the Secretary of Commerce to affirm that the NTIS mission and functions are fundamentally sound even though the agency's business model needs to be changed. The agency should remain in the Department of Commerce, operating at a satisfactory level of staffing and service, until such time as it is transferred to the proposed new Public Information Resources Management Administration (PIRA).

[Supporting Findings: 6.E and 6.J]

[Time Frame: Short-Term]

The President and the Congress should reject the August 1999 proposal made by the Department of Commerce to close NTIS and transfer its authorities, collections, and resources to the Library of Congress. Instead, NTIS should remain in operation in the Department of Commerce, empowered to perform at a satisfactory level of service and staffing, until such time as it's mission and functions are transferred into the proposed new Public Information Resources Administration (PIRA).

Commerce should make the necessary adjustments in its FY 2001, and subsequent fiscal year budgets relating to NTIS, so long as that agency remains in the Department, to change the NTIS financing plan in accordance with the mix of revenue requirements recommended below. Commerce should also ensure that as soon as the Congress authorizes the use of appropriated funds, NTIS change its business model as recommended below.

As the Commission pointed out in its October 10, 2000 letter to Secretary of Commerce Norman Y. Mineta, NTIS cannot afford to lose the skills and experience of key staff as personnel, uncertain of their agency's future, seek opportunities in environments far less unsettled. Furthermore, if key personnel leave, NTIS must insure adequate and speedy replacement. That is why the Commission pointed out that wherever NTIS ends up, it is important that its skilled workers, along with their equipment and real property, be transferred as a fully functioning operating entity. The alternative is the continued, gradual erosion of the agency's capability, inevitably reaching a point where it will have become so dysfunctional that revitalizing it would be extremely daunting, if not impossible.

11. Congress should ensure that the public good functions of the NTIS, and other programs for the sale of public information, are recognized as inherently governmental activities that should be funded directly with appropriated funds.

[Supporting Findings: 3.E, 5.D, 5.F, 5.H, 6.A, 6.B, 6.C, 6.D, 6.E, 6.F, 6.G, 6.H, 6.I and 6.J]

[Time Frame: Short-Term]

Beginning in FY 2001, the National Technical Information Service (NTIS), wherever it may be located, should receive appropriated funds to cover its public good activities related to the acquisition, organization, and preservation of scientific and technical information for public access because those activities are inherently governmental in nature. *NTIS should not be required to recover the costs of those activities from sales income*. These public good operations include the functions necessary to ensure that NTIS reports are *permanently accessible to the public.* These functions include:

- Collection or acquisition of reports from agencies and contractors.
- Indexing, abstracting, cataloging, and preservation of these reports.
- Further processing of reports into the NTIS collection by scanning, microfilming, and archiving.
- Creation and maintenance of the NTIS database which provides searching and locating information for this report collection, including the maintenance of a uniform locator system to maintain accessibility to reports on agency websites.
- Mounting and maintaining of the searchable NTIS database on a website for free public access.
- Mounting of the full text of the reports—to the extent that they are not available on agency servers —on NTIS servers for free public access, including participation in the Federal Depository Library Program.

- Maintenance of its collection to insure permanent, but not necessarily cost-free, public availability to historical material not otherwise available.[261]

The Congress should also reform the business models for other programs based on self-sustaining operations for the sale of public information by funding the public good activities through appropriations.

In its March 2000 preliminary assessment report to the President and the Congress on NTIS, the Commission recommended the currently estimated annual appropriation sufficient to defray these inherently governmental activities to be $5 million per year.[262]

Recommendation 4 to establish an information dissemination budget mechanism implicitly recognizes the inherently governmental functions of NTIS and provides the agency with a clearly identifiable budgetary line item to give it "legal force and effect."

12. The President should direct the Secretary of Commerce to take the necessary steps to ensure that the NTIS business model is updated, and revenues derived from an appropriate mixture of three sources: appropriated funds, sales income, and reimbursements from other agencies for services provided. Charging policies need also to be simultaneously modified and updated.

[Supporting Findings: 5.F, 6.A, 6.B, 6.C, 6.D, 6.E, 6.F, 6.G, 6.H, 6.I and 6.J]

[Time Frame: Short-Term]

The updated proposed NTIS business model should include a mix of three sources of revenue, appropriated funds, sales income, and reimbursements from other agencies for services provided. If the proposed Information Dissemination Budget (IDB) proposed elsewhere in this report[263] is approved, the appropriated funds portion of the revenue mix would be included therein.

Other key elements of the revised business model are:

- NTIS should no longer charge royalties or impose copyright-like restrictions for products or services it provides.
- Charges for report copies and other tangible information products, regardless of medium or format, should be based on the incremental cost of providing the copies.
- NTIS bibliographic database must be available for free public access.
- All NTIS public information resources (reports, databases, CD-ROM titles, etc.), other than undigitized materials in the retrospective report collection, must be available to the public without charge through the Federal Depository Library Program or its successor. This includes undigitized reports from the historical collection that are subsequently converted.

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[261] As is discussed elsewhere in this report, the collection of information for permanent public access is distinct and separate from the responsibility of the originating agency to schedule an official record copy of each of its reports and other information products for disposition and possible transfer to the National Archives and Records Administration (NARA) for "permanent records retention" under the Federal Records Act.

[262] This estimate for the required annual appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.

[263] The proposal to establish an IDB is in Recommendation 4.

The cost of providing access to and delivering older, as yet undigitized reports will oftentimes be higher than the cost of providing and delivering current reports because of format and medium conversions and other special information handling requirements. These costs should be recovered through the pricing for such reports.

13. The President should ensure that public and private sector partnerships are strengthened, extended, and expanded in areas where the private sector, including both the for-profit and the not-for-profit sectors, can serve as the government's agent or partner in a wide variety of public information dissemination roles. This effort will augment, but not replace, the government, which must continue to have the primary responsibility for the entire life cycle of government information.

[Supporting Findings: 9.A, 9.B and 9.D]

[Time Frame: Short-Term]

The President should ensure that public and private sector partnerships are strengthened, extended, and expanded in areas where the private sector can serve as the government's agent or partner in a wide variety of public information dissemination roles. In this context, the private sector is used very broadly to mean entities other than the government itself, not just the commercial, for-profit sector. This includes both for-profit and not-for-profit organizations, such as academic and public libraries, professional societies and trade associations, hybrids that are joint government/private enterprise, and commercial enterprises. Organizations such as these continue to play a crucial role by partnering with the government to enhance and enrich the production, organization, searchability, access to, and dissemination of public information.

The government has an affirmative obligation to facilitate a multiplicity and a diversity of sources and roles for gaining access to and disseminating public information. Even if government could handle this total responsibility alone (which it cannot) the public and private sectors working together in a partnership will produce a far better mix of public information products and services for all citizens. However, the federal government must continue to have primary responsibility for the entire life cycle of electronic government information, including the dissemination and permanent public availability of government information to the American public, without restrictions on its use or reuse.

In addition to participation in public-private sector partnerships, the government should recognize the need for, and encourage, *independent* efforts by the private sector—both profit and not-for-profit—in disseminating information and providing value-added products and services that cannot be achieved efficiently by the public sector alone or in partnership with the private sector.

14. The President should ensure that the unique and special public information needs of the disabled, the disadvantaged, and other special populations are more broadly, effectively, and efficiently taken into account by federal, state, local, and tribal government level plans, programs and practices, especially those that address the provisions of Sections 504 and 508 of the Rehabilitation Act, the Americans With Disabilities Act, and other statutes which seek to remove barriers to public information availability and accessibility for these groups.

[Supporting Findings: 2.A, 2.B, 2.C, 2.D, 2.E, 2.F, 2.G, 2.H and 2.I]

[Time Frame: Short-Term]

The Commission reaffirms the importance of agency compliance with all applicable federal laws protecting the rights of disabled and disadvantaged individuals to access public information resources, as broadly defined above in this report, easily, effectively, and for free. Each special population has it owns unique and distinctive access challenges that must be addressed if they are to be adequately served.
For example, agencies should carefully study the following guidelines in developing their programs deaf and hard of hearing persons:

- *Guidelines for Library Services to the American Deaf Community*, published in 1996 by the Association of Specialized and Cooperative Library Agencies (ASCLA).[264]
- *Guidelines for Library Services to Deaf People*, published in 1991 by the International Federation of Library Associations and Institutions (IFLA).[265]

Agencies should consult the following resources, guidelines and model programs in developing their own programs for blind and sight-impaired individuals:

- The National Library Services (NLS) Collection Building policy, *Sources of Braille Reading Material*, and National Braille Association (NBA) *Suggestions for Producing Large Print Materials*, 2000.
- ReelBooks.com, an online audio bookstore designed to provide training and employment opportunities for the sight impaired and other disabled groups, operated as a strategic partnership with the Columbia Lighthouse for the Blind (CLB).

For other disabilities there are no doubt numerous organizations which have issued similar helpful guidelines, and agencies should consider their guidelines to the extent they make public information more easily and readily available to these segments of our society. [266]

The Web-Based Education Commission is also addressing these problems, and agencies are encouraged to consult their reports and recommendations.

15. The President should direct the Director of the Office of Management and Budget (OMB) to meet with appropriate officials in both the Legislative and Judicial branches to identify ways to strengthen partnering arrangements and to promote closer and more effective coordination among the respective public information dissemination plans, programs, and practices of the Legislative, Judicial and Executive Branches.

[Supporting Findings: 3.A, 3.H and 3.J]

[Time Frame: Short-Term]

An effective means should be established for consultation and cooperation among the three branches of government to assure, to the greatest extent possible, that all federal government information is available to, and accessible by the public, and maintained in a cost effective manner that reduces

[264] Association of Specialized and Cooperative Library Agencies (ASCLA), *Guidelines for Library Services to the American Deaf Community*, edited by Marti Goddard, Chicago: American Library Association: 1996.
[265] International Federation of Library Associations and Institutions, *Guidelines for Library Services to Deaf People*, edited by John Michael Day, 2nd edition, IFLA Professional Reports Series 62, The Hague: International Federation of Library Associations and Institutions, 2000.
[266] The survey results related to special populations are summarized in Appendix 28 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen28.pdf.

unnecessary overlap and duplication. For example, the development of multi-branch public information products is preferable policy than the unnecessary proliferation of single-branch products, which too often entails inconsistent and sometimes contradictory availability and accessibility policies and guidelines that confuse and frustrate the public. Coordination of policies and procedures across the Executive, Legislative and Judicial Branches is very important to realization of the overarching Commission recommendation that government information be treated as a strategic national asset. A commitment by officials in each branch to share information and ideas would be advantageous to all involved in disseminating and providing access to public information. If the Congress enacts the Commission's proposed legislation, then the inter-branch, intergovernmental, interagency council proposed would serve as one very useful forum for this purpose, but vigilant leadership and enduring commitment would still be required

16. **Library and information science professional associations, schools and programs, are well positioned to expand education, training, career advancement, and related professional programs to prepare librarians and other information professionals to better assist citizen end users of public information. Computer science and MIS associations, schools and programs should also participate in this effort. Funding for model training programs should be provided to libraries and other institutions through the Library Services and Technology Act (LSTA) grant programs, as well as through other financing mechanisms.**

    [Supporting Findings: 10.D, 10.E, 10.F, and 10.G]

    [Time Frame: Short-Term]

The Commission will work closely with the Institute for Museum and Library Services (IMLS), various professional library and information societies[267], library and information schools, and others to develop a program aimed at securing grants through the Library Services and Technology Act (LSTA) authorities, for the purpose of developing training courses and modules, including online tutorials and other materials, targeted to librarians that assist end users of public information. A core of trained experts already exists for this purpose in the cadre of highly skilled government document librarians who serve the public in virtually every Congressional District in the country through the Federal Depository Library Program (FDLP). The FDLP should be given responsibility for increased training of these depository librarians and they, in turn, should assume increased responsibility for training reference and other librarians to assist the public in the effective identification and use of public information. The total grant authority currently available through the LSTA will need to be substantially augmented to handle the expansion of training requirements contemplated in this report.

Computer science and MIS associations, schools and programs can play a similar role for information professionals with greater IT needs.

OTHER RECOMMENDATIONS

The Commission has identified various additional budgetary, programmatic, and technical recommendations that should be implemented by the President, the Congress, the National Archives and Records Administration (NARA, the Office of Management and Budget (OMB), the National

[267] This will include the American Library Association (ALA), the American Association of Law Libraries (AALL), the Special Libraries Association (SLA), the Association of Research Libraries (ARL), Association of College and Research Libraries (ACRL), the Chief Officers of State Library Agencies (COSLA), the Urban Libraries Council (ULC), the Medical Library Association (MLA), among others.

Science Foundation, and other appropriate agencies and organizations to improve dissemination of, and access to, public information resources.

17. The Department of Commerce and NTIS management should take the necessary actions to implement other recommendations contained within this report pertaining to NTIS that are appropriate to their levels of authority.

[Supporting Findings: 6.F, 6.G, 6.H and 6.I]

[Time Frame: Short-Term]

> The Commission reaffirms its recommendation made in the March 2000 report to the President and the Congress that a one-time appropriation, estimated by NTIS to be $1.6 million,[268] should be approved to defray the costs to set up a mechanism to provide free and permanent public availability of current materials and future acquisitions, primarily by electronic means, through the Federal Depository Library Program.

The Commission Panel on the Reform of the NTIS Business Model[269] recommends that the scope of the NTIS collections continue to be guided by 15 CFR 1180 to include information that relates to business and industry. The Commission does not believe NTIS' scope should be restricted to science and technology *narrowly defined*. However, the scope should *not* include general public information that does not have a strong and direct relationship with business, industry or technology. The primary focus of NTIS should be on its statutory mission to disseminate scientific and technical information (STI), and it should not be distracted from that mission by efforts to find sources of revenue. In its efforts to find revenue to support its operations, NTIS has expanded the scope of its coverage well beyond its primary mission, and even beyond the expanded mission described in 15 CFR 1180.[270]

The Commission agrees with the Panel finding that NTIS should continue to sell report copies in paper, microfiche and electronic medium formats, as long as the demand for a particular format or medium justifies continuing its use.

The Panel made a number of technical recommendations related to NTIS operations, including:

- Full Electronic Scanning. NTIS should consider changing its method of scanning of report input from image-only scanning, which has high storage and bandwidth requirements and limited utility on the Internet, to full electronic scanning, which permits full text searching across documents, and has lower storage and bandwidth requirements.
- Source Data Automation. NTIS should obtain full text electronic files of reports from other agencies whenever possible to avoid scanning costs.

[268] This estimate for a one-time appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.

[269] Additional details are available in the report from Commission Panel One, which is Appendix 23 in Volume 3 of this report. It is also available at http://www.nclis.gov/govt/assess/assess.appen23.pdf.

[270] For example, the Department of Commerce has questioned NTIS' role in the dissemination of tax forms for the Internal Revenue Service (IRS), and GPO has questioned the need for NTIS to distribute the *Government Manual* and other GPO general interest "best sellers."

- Pointing to Agency Websites. NTIS should provide its users with access to reports made available by other agencies on the other agency's websites by pointing from the NTIS database to the appropriate location on the other agency's site.[271]
- Persistent Uniform Resources Locator (PURL) System. NTIS should develop a Persistent Uniform Resources Locator (PURL) system and track reports within their scope that are available on other agency websites so that NTIS users can find reports on other agency sites when they are moved from site to site.[272]
- Older Reports and Special Handling Requirements. Reports not available for free on agency sites should be made available without charge on an NTIS website whenever it is economically feasible to do so. Older reports not in electronic form would not be made available in this manner and reports that require special high cost handling could also be excluded.[273] The technology used to maintain accessibility to older, less frequently used reports, should be selected so as to minimize storage and handling costs.

The Department of Commerce should lift the hiring freeze currently imposed on NTIS to the extent necessary to permit the hiring of a sufficient number of proper qualified information professionals needed to sustain NTIS at a satisfactory level of service and staffing until such time as it is transferred to the Public Information Resources Administration. As the Commission indicated in its October 10, 2000 letter to the Commerce Department, no matter where, ultimately, NTIS is located organizationally, its functions and operations must continue. The government cannot afford to lose the skills and expertise of key NTIS staff as more and more NTIS information professionals, uncertain of their agency's future, seek opportunities in environments far less unsettled. If the agency's capabilities are allowed to erode gradually and inevitably, to a point where it will have become so dysfunctional that revitalizing it would be extremely daunting, if not impossible, then no one is the "winner"—the Department, the government, the information user, or the taxpayer.

The Commission reaffirms the recommendation made in the March 2000 report to the President and the Congress that a one-time appropriation, estimated by NTIS to be $1.6 million,[274] should be approved to defray the costs to set up a mechanism to provide free and permanent public availability current materials and future acquisitions, primarily by electronic means, through the Federal Depository Library Program. Other details of this recommendation are contained in the earlier Commission report on the proposed closure of NTIS.[275]

18. The Congress should exercise greater oversight in authorization and appropriation hearings and agency budget reviews on the extent to which lack of enforcement of existing laws is a serious impediment to effective public information dissemination. The President should ensure that adequate attention is paid to compliance with public information laws through

[271] GPO is already taking such steps for information that falls within the scope of the FDLP and NTIS should find ways to join in this effort so that both programs are strengthened, and new redundant efforts are not initiated.

[272] GPO is already taking such steps for information that falls within the scope of the FDLP and NTIS should find ways to join in this effort so that both programs are strengthened, and new redundant efforts are not initiated.

[273] No explanation of, or justification for creating or charging for, "reports that require special high cost handling" was provided by the Panel. Such reports should be funded by the originating agency or some other means, rather than creating an exception to the policies recommend by the Commission for free public access and public sale of NTIS reports once the public good functions are funded.

[274] This estimate for a one-time appropriation was provided by NTIS as part of the Commission's earlier study. The specific purposes for which it is to be utilized, along with the exact amount required, must be verified before final numbers are presented to the House and Senate Appropriations Committees.

[275] U.S. National Commission on Libraries and Information Science, *Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS),* op. cit.

the budget process, in performance reviews such as those required under the Government Performance and Results Act (GPRA), and in other appropriate oversight contexts.

[Supporting Findings: 3.A, 3.C, 3.D, 4.I and 4.O]

[Time Frame: Short-Term]

Realistic statutory enforcement provisions with real consequences are needed to assure that agencies abide by requirements to disseminate and provide access to public information. Such enforcement mechanisms are important regardless of whether the requirement is a more general one, e.g., to provide such information to all members of the public, or more specific, e.g., the provisions for information to GPO for cataloging, indexing and no-fee public access to federal government information through the FDLP. Agencies that do not comply with the laws should be subject to enforcement mechanisms with real consequences.

Now and in the future, the Congress should exercise greater oversight in authorization and appropriation hearings and agency budget reviews on the extent to which lack of compliance with existing laws is a serious impediment to effective public information dissemination. The President should ensure that adequate attention is paid to compliance with public information laws through the budget process, in performance reviews such as those required under the Government Performance and Results Act (GPRA), and in other appropriate oversight contexts. In the short-term, the Congress and the President should conduct compliance reviews on the requirements for deposit of the results of federally funded research at NTIS and for full participation in the *Catalog of U.S. Government Publications* and the FDLP of GPO. Current laws do not provide enforcement provisions with real consequences, but by calling attention to non-compliance, the President and the Congress can signal to agencies that non-compliance is not acceptable and will no longer be tolerated.

19. The Congress should request that the National Commission on Libraries and Information Science (NCLIS) undertake a comprehensive assessment of public laws which contain provisions for establishing and maintaining public information resources in order to identify (1) specific legislative changes necessary to implement the treatment of public information as a strategic national asset, (2) gaps where existing laws do not meet known public needs for government information and (3) inconsistencies and unnecessary overlap and duplication in public information dissemination provisions. The assessment could also be extended to include current statutory, grant, procurement, and other government rules, regulations, and guidelines that permit government-funded research to avoid dissemination through the NTIS and FDLP.

[Supporting Finding: 3.B]

[Time Frame: Medium-Term]

The Congress should request that NCLIS undertake a comprehensive assessment of the hundreds of laws currently in effect that contain provisions for the establishment and maintenance of public information resources. [276] The Commission would be pleased to perform this task, but would prefer to do so with the assistance of the Congressional Research Service (CRS), the General Accounting Office (GAO), and the National Academy of Sciences. Obviously, such an analysis will require close collaboration with senior officials in all three branches of the federal government.

[276] The need for such an analysis is discussed in Conclusion 4.

The purpose of such an assessment would be to harmonize individual existing statutes with the Commission's legislative proposal and other recommendations. It should not be assumed that the existing statutory foundation for disseminating government information to the public, notably FOIA and E-FOIA, but including the Privacy Act and other Congressional and Executive guidance, is adequate because the public has many information needs that are not necessarily and fortuitously addressed by existing legislation. Diffusing government knowledge to the public depends on first identifying the public's real needs for government information without being constrained by existing laws.[277] This research should be closely coordinated with the analysis of public needs for public information resources included in Recommendation 25.

In addition, the Congress should request that the Commission, in consultation with other agencies, determine if statutory, grant, procurement, and other government rules, regulations, and guidelines, might be strengthened to maximize the availability to the public of the results of government-funded work. As noted earlier, sometimes government-funded research ends up being published through professional journals or other copyrighted publications, with no version available in the public domain. There are also certain NSF-funded grants where the grant terms do not specify the production of a report, but a deliverable that is much less concrete and specific, such as "the advancement of knowledge." Such information does not currently find its way into the public domain. As a result, it is not available through NTIS or GPO, and it does not find it way into the FDLP for free public access. These "loopholes" need to be addressed to ensure that the public receives access as part of the return on its investment of tax dollars.

20. The President should direct the Office of Management and Budget (OMB), in collaboration with the new Public Information Resources Administration (PIRA), to strengthen, and institutionalize if necessary, interagency and intergovernmental cooperative efforts to promote greater interagency and intergovernmental information sharing.

[Supporting Findings: 3.H, 4.B, 4.D, 4.E, 4.F, 4.G, 5.C, 5.G, 5.H, 7.C, 8.A, 8.B and 8.C]

[Time Frame: Medium-Term]

At a minimum, OMB Circular A-130 should be amended to promote greater intergovernmental and interagency sharing of government information resources*, not just for the purpose of avoiding unnecessary proliferation of new information systems where existing systems could serve the need, which is the current rationale*, *but, at the information product level for the purpose of diffusing knowledge to a far wider government agency audience.* In short, for both the "negative reasons" currently cited (i.e., avoiding unnecessary systems duplication), as well as for the "positive reasons" mentioned herein (i.e., because greater diffusion of knowledge leads to a multiplier effect for obtaining greater value from information investments).

21. The President should direct the Office of Management and Budget (OMB) to streamline, simplify, and integrate "Government Information Life-Cycle Planning and Management" in the next revision of OMB Circular A-130, including taking steps to design, develop, and pilot test an integrated information life cycle management software tool that would satisfy multiple, statutory information policy requirements in a systematic and comprehensive manner. The Congress should include comparable and consistent revisions in the forthcoming reauthorization of the Paperwork Reduction Act in 2001.

[277] This recommendation closely relates to Recommendation 21 on the need for new research in this area.

[Supporting Findings: 5.E, 5.G, 5.H, 5.I and 5.J]

[Time Frame: Short-Term]

The phrase "information life-cycle planning" as defined in OMB Circular A-130, and its practical applicability to agency planning and management goals, should be strengthened to address planning for the sharing and use of information content for research and development, for decision-making, and to ensure an adequate record of governmental activities. The core idea is to put in place an integrated and synchronized software tool that would satisfy in a one-stop service fashion the multiple and diverse statutory requirements for managing and disseminating information once created,[278] such as scheduling official agency records, creating GILS records, submitting information to GPO for the *Catalog of U.S. Government Publications* and the FDLP. Analysis, recently begun by GAO, should be carried forward to determine what is needed to ensure privacy, confidentiality, security, and authenticity as information is shared and integrated across agencies, and policies established and implemented. As mentioned in Recommendation 15, OMB and PIRA officials should meet with Legislative and Judicial officials to identify mutually agreeable steps that could lead to greater realization of the full potentials of the integrated information life cycle concept.

Because the problems and challenges faced by agencies in managing their internal agency information resources are increasingly converging with the problems and challenges they face in managing their public information resources, the integrated government information life cycle concept is a tool that offers greater promise than ever in simplifying, streamlining, and speeding up the many processes involved. Moreover, it is already identified in OMB Circular A-130 as an important concept, but it s full potential has never been realized.

This effort should be integrated with work on information life cycle management that is already ongoing at NARA and other agencies, as well as other federal agency initiatives addressing preservation and accessibility issues.

22. The President should direct the Office of Management and Budget (OMB) to utilize the Federal WebMasters Forum and CIO Council to lead an effort to explore the design, development, and pilot testing of a comprehensive public information current awareness system to enable affirmative dissemination of public information.

[Supporting Findings: 1.A, 1.B, 1.C, 1.D, 1.G, 1.K, 2.B, 3.C, 4.C and 4.O]

[Time Frame: Medium-Term]

The Federal WebMasters Forum, working with other elements of the CIO Council, should explore the design, development, and pilot testing of a comprehensive public information current awareness system. This work should involve CENDI member agencies and other federal agencies and entities experienced with selective dissemination of information (SDI). Consultation with electronic publishing specialists, public affairs specialists, and other interagency groups such as FLICC, the FPC, and the FGDC, and public interest groups such as APDU and ACE, is also recommended. The system should allow individuals and groups to prepare standing profiles of their government information needs that could be used to affirmatively disseminate public information relevant to their respective special interests in a given topic. Such a system should operate at both the agency level, and at the

[278] A White Paper on government information life cycle management is in Appendix 16 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen16.pdf.

level of the central information service agencies. It should allow user profiles to be updated periodically to reflect changes in their needs and interests.

In the Internet Age current awareness techniques and methods are more efficient and cost-effective than they were in the online era, much less in pre-electronic eras. Therefore, individual agency initiatives should be studied and the most promising approaches that agencies have developed should be distilled and transformed into prototypes, best practices and guidelines from which all agencies might benefit. Workshops to help the smaller agencies, and those with less IT-intensive capabilities, would seem especially helpful.

Such a comprehensive current awareness system should be able to operate at both the agency level and at the level of the central information service agencies. In the Commission's view, such a system would go a very long way toward satisfying the need for "proactive dissemination" that the Commission identifies throughout this report.

23. The President should establish an interagency committee, coordinated by the CIO Council, to identify and recommend how standard and consistent federal identifiers can be used to assist agencies and the public to obtain information residing in different agencies.

[Supporting Findings: 3.J, 3.L, 4.F, 5.G and 5.H]

[Time Frame: Medium-Term]

An interagency committee should identify and recommend how standard and consistent federal identifiers can be used to assist agencies and the public to obtain information residing in different agencies. This effort should be coordinated by the CIO Council and include the participation of the National Institute of Standards and Technology (NIST), the National Information Standards Organization (NISO) and the new Public Information Resources Administration (PIRA). The use of standard federal identifiers applies to all government information, not just public information resources.

Establishing standard and consistent identifiers reduces the burden on both agencies and the public who now use multiple identifiers to comply with inconsistent and duplicative requirements steaming from a variety of laws and regulations. Access reforms should be designed to help agencies and the public to comply with the laws and regulations. Such recommendations should be forwarded to the President's Management Council for use in the development of FirstGov, the government's web portal.

24. The President should direct the Office of Management and Budget (OMB), in partnership with the CIO Council, to conduct a comprehensive analysis and make recommendations addressing the most efficient ways to crosswalk, coordinate, and harmonize the many state and local government uniquely assigned identification numbers. This effort should include the participation of the National Institute of Standards and Technology (NIST) and the National Information Standards Organization (NISO).

[Supporting Findings: 1.D, 1.E, 3.H, 3.L, 4.F, 5.G and 5.H]

[Time Frame: Medium-Term]

A comprehensive analysis should be conducted and recommendations formulated as to the most efficient ways to translate, coordinate, crosswalk, and harmonize the many state and local government uniquely assigned identification numbers that are used to manage permitting, licensing, and compliance records with the corresponding federal unique identifiers**.** Both the Federal Information Processing Standards (FIPS) and the Federal Telecommunications Standards (FTS) programs are important vehicles for accomplishing this goal.

25. **The President should direct the Director of the Office of Management and Budget (OMB), in collaboration with the CIO Council, to conduct a comprehensive analysis regarding which currently non-digital government information holdings should be converted to digital mediums, and the benefits as well as costs to do so. This effort should address the role of digital libraries with respect to public information resources.**

    [Supporting Findings: 3.J, 4.F and 4.M]

    [Time Frame: Medium-Term]

The Office of Management and Budget (OMB) should establish an interagency ad hoc committee, in collaboration with the CIO Council, to conduct a comprehensive analysis regarding which currently non-digital government information holdings should be converted to digital mediums, and the benefits as well as the costs to do so. The committee should also conduct a comprehensive analysis regarding what needs to be done to assure permanent public availability of, accessibility to, preservation of, and authentication of digital publications produced by federal agencies.

In consort with the National Institute of Standards and Technology (NIST), National Information Standards Organization (NISO), the Federal Library and Information Center Committee (FLICC) and others, the committee should develop an information taxonomy for government-wide use. The advice of the National Academy of Sciences and the National Science Foundation might also be solicited. This is essential to portals such as First Gov and for maintaining a minimum level of consistent description for all government information resources, regardless of what other cataloging and indexing may be done for specialized purposes.[279]

The committee should ensure the development of an Government Information Life Cycle Management software module for use throughout the federal government that would permit the satisfying of multiple statutory information resource management requirements in a systematic, harmonized, integrated fashion so as to eliminate or minimize overlapping, duplicative, and conflicting ad hoc polices, procedures, and guidelines currently being followed.[280]

26. **The President should direct the Office of Management and Budget (OMB), in partnership with the CIO Council and the Federal WebMasters Forum, to develop guidelines regarding the availability of public information resources holdings by each branch and level of government. Each of the three branches of the federal government, as well as federal only, state only, local only, tribal only, or some permutation of these categories should be differentiated.**

    [Supporting Findings: 3.H, 5.G, 8.A, 8.B and 8.C]

[279] There is additional discussion of this issue under Finding 6.B.

[280] A White Paper on government information life cycle management is available as Appendix 16 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen16.pdf.

[Time Frame: Medium-Term]

The President should direct the Office of Management and Budget (OMB), in partnership with the CIO Council and the Federal WebMasters Forum, to develop draft guidelines regarding public information resource availability by each branch and level of government, including all three branches of the federal government, the federal level only, the state level only, the tribal level only, or some permutation of these in order to avoid unnecessary overlap and duplication. The guidelines should be submitted to the CIO Council for review and concurrence. Knowledgeable interagency committees such as CENDI, the Interagency Committee on Federal Statistics (ICFS) and the Office of Intergovernmental Affairs (OIA) in the Executive Office of the President should assist it in the development of the guidelines, as well public user groups such as Association of Public Data Users (APDU) and Americans Communicating Electronically (ACE).

27. The President should direct the Office of Management and Budget (OMB) to utilize the CIO Council and the Federal WebMasters Forum to begin preliminary design work for the development of a single, central, comprehensive and authoritative online inventory and database of public information resources by reviewing the developments to-date, both positive and negative, to establish major portals for public information including FedWorld, GPO Access, Library of Congress Thomas, StatUSA, and FirstGov.

[Supporting Findings: 1.A, 1.B, 1.C, 1.E, 1.G, 3.C, 3.G, 4.L, 5.D, 5.K and 5.L]

[Time Frame: Short-Term]

As noted earlier in this report, the developments already undertaken to establish the major portals for public information, including FedWorld, GPO Access, Library of Congress Thomas, StatUSA, and FirstGov, are a logical starting point for a single, central, comprehensive and authoritative online inventory and database of publicly available public information resources. Although currently disparate in purpose, scope, organizational location, content, and data formats and mediums, the experience gained in developing these portals and the data already gathered, will be invaluable in the design and development of a comprehensive inventory and database. Utilization of these experiences and integration of these resources is the logical beginning of a truly comprehensive inventory and database of public information resources.

Pending the establishment of PIRA, which should have the ultimate responsibility for the design and implementation of such a comprehensive inventory and database, the Federal WebMasters Forum should conduct a preliminary exploration and summation of government experiences to date, both negative and positive, with the design, development, and implementation of the major portals. The objective should be to prepare a set of findings and recommendations on a preferred approach for the development and operation of a comprehensive inventory of public information resources. This effort should be accomplished in collaboration with NARA, other agencies that have already established portals and interagency organizations knowledgeable about publishing and information dissemination. The WebMasters recommendations would be submitted to the CIO Council and shared with stakeholders inside and outside of government. It would become the basis for consolidation of the existing portals under PIRA as soon as that agency is established.

28. The President should direct federal agencies to specify the metadata by which each of their records series will be classified when seeking National Archives and Records Administration (NARA) approval to schedule or dispose of their records.

[Supporting Findings: 4.O, 5.J, 5.K and 5.L]

[Time Frame: Short-Term]

This approach will aid in the searching and acquisition of public information, preferably on the Internet. Agencies should also be required to consult with their stakeholders concerning needed information taxonomies within the context of their annual GPRA performance plans and reports. It is fully realized that the mission of the National Archives with respect to the Federal Records Act, and the mission of the new Public Information Resources Administration (PIRA) as contemplated herein, will require some accommodation because "public information products" are defined somewhat differently, using different words and terms. Still, the Commission strongly believes there is ample room for achieving a greater degree of harmony and consistency in the metadata requirements so that neither federal agencies nor the public face the burdens and frustrations of having to learn excessive details in order to search the holdings of the various record and document collections and databases.

29. Existing central information service agencies, such as GPO, NTIS and NARA, should identify additional partnering arrangements whereby academic and other types of libraries, mission agencies and government-wide information service agencies can collaborate to ensure digitization, preservation and permanent public availability of public information resources.

[Supporting Findings: 9.D and 10.F]

[Time Frame: Medium-Term]

The GPO should extend and expand its efforts to establish formal agreements for collaboration between academic and other types of libraries (particularly federal depository libraries), mission agencies, and GPO and/or other government-wide information services agencies. This responsibility should be transferred to the Public Information Resources Administration, if and when it is statutorily established. GPO should work closely with the existing government-wide information services agencies, such as NTIS and NARA, as well as the Library of Congress, the national libraries, and NCLIS. Various interagency committees, such as CENDI, FLICC, FPC, ICPPS and the CIO Council, can assist in the effort to identify additional opportunities for collaboration that ensures digitization, preservation and permanent public availability of public information resources. The agreement entered into by the University of Illinois at Chicago, the Department of State, and the Government Printing Office with respect to the selection acquisition, preservation, and archiving of certain foreign affairs materials is an excellent model for this collaboration.

30. The National Commission on Libraries and Information Science (NCLIS), the National Academy of Sciences (NAS), and the Public Information Resources Administration (PIRA) should coordinate the planning and undertaking of an information research program to identify the public's most critical unmet requirements for public information resources.

[Supporting Findings: 1.C, 1.G, 2.A, 3.B, 4.O, 10.E, 10.F and 10.H]

[Time Frame: Long-Term]

As noted earlier, many needs for public information resources are not adequately met by any existing law or program, and no systematic effort has been made to identify these needs and determine how

best to meet them.[281] An information research program should be established to address the public's most critical requirements for public information resources. This research should be aimed at identifying what new government knowledge sources, services, and systems need to be developed to help the public cope more effectively with the gaps in their knowledge.

The public's information needs do not always neatly match legislated program requirements, and many needs are as yet unfulfilled.

Traditionally, Congress has required government to disseminate information to the public primarily as a by-product response to very specific and carefully circumscribed program areas, such as energy, the environment, safety in the workplace, and so forth. Yet the public's information needs do not always neatly match these legislated program requirements, and many public information needs are as yet unfulfilled. This is a chicken-and-the-egg proposition—which comes first, the public information need or the legislation to address it. The Commission believes the former should not necessarily be predicated on the latter. That is why brand new government knowledge resources need to be identified, designed, developed, and provided to the public based on a continuous monitoring process for identifying the public's unmet needs. This recommendation closely relates to the recommendation above regarding the need for the Congress to analyze existing statutes in this context. This research should be closely coordinated with the analysis of federal information dissemination statues included in Recommendation 18.

31. The National Commission on Libraries and Information Science (NCLIS), National Academy of Sciences (NAS) and the National Science Foundation (NSF) should coordinate the development and undertaking of an information research program to address the full range of federal government's most critical unmet requirements for specialized and state-of-the-art technologies in such fields as information security, privacy, authentication, preservation, and data integration, as well as the application of artificial intelligence and experts system.

[Supporting Findings: 4.N and 10.H]

[Time Frame: Long-Term]

An information research program should be established to address technological and software solutions to the federal government's most critical unmet requirements for specialized and state-of-the-art technologies as well as the application of artificial intelligence and experts system. Certainly these needs include: information security (including information integrity and authenticity), privacy, data integration, preservation, and the development of scalable federal information infrastructure.

The Artificial Intelligence (AI) and Expert Systems (ES) areas, as well as automatic indexing and abstracting, are other research areas that offer promise. NCLIS, NAS and NSF, in consultation with the DOD Advanced Research Projects Agency (ARPA) and other agencies, should look carefully at academic and research proposals, government-sponsored research opportunities, and financial assistance possibilities to support both pure and applied research in these areas. Members of CENDI and FGDC could also serve as expert technical advisors to this initiative.

[281] This is identified as an issue that needs to be addressed in the section entitled "The Problems That Need to Be Fixed."

32. The President should direct the Office of Science and Technology Policy (OSTP), in collaboration with the new Public Information Resources Administration (PIRA), to assume its statutory role to provide policy guidance and oversight in the effective management of scientific and technical information (STI)—and perhaps even to form a COSATI-like group, which has membership from both the public and private sectors.

[Supporting Findings: 3.M, 5.A, 5.B, 5.C, 5.D, 7.A and 7.B]

[Time Frame: Medium-Term]

Although scientific and technical information (STI) is perhaps better managed than most government information, it is a critical national resource that warrants a strong special central leadership capability to maximize resource sharing, both among government agencies and with the general public, and to provide policy leadership focus, oversight, and program management coordination. The Office of Science and Technology Policy (OSTP) should provide this leadership, in collaboration with the new Public Information Resources Administration (PIRA).

33. The Director of the Office of Management and Budget (OMB) should closely monitor the cooperation between the proposed Public Information Resources Administration (PIRA) and the National Archives and Records Administration (NARA), to ensure the establishment of uniform standards and guidelines that would make it much simpler and easier for agencies to provide one copy of an information product, when it is first created at the earliest possible moment in the information life cycle, for both permanent public availability and, if scheduled by NARA, for permanent records retention.

[Supporting Findings: 4.B, 4.H, 4.I, 5.H, 5.J and 5.M]

[Time Frame: Medium-Term]

> There is understandable and justifiable concern that electronic public information resources are being lost even while we are struggling to develop and implement the necessary laws, policies and standards to preserve it.

Under the watchful eye of the Director of the Office of Management and Budget (OMB), the Public Information Resources Administration (PIRA) and the National Archives and Records Administration (NARA) should establish a formal relationship to ensure that standards and guidelines are established within one year of enactment of the proposed Public Information Resources Reform Act of 2001, so that an agency transferring its public information resources to PIRA for permanent public availability can, by that same transfer, ensure that its obligations for permanent records retention under the Federal Records Act will also be met simultaneously. Moreover, other federal information policy requirements can also simultaneously be met, such as the creation of a Government Information Locator Service (GILS) record. To accomplish these actions, PIRA and NARA must establish and promulgate cooperative standards and guidelines for the authentication and transfer of agency public information resources to PIRA. The PIRA will ensure the permanent public availability of these public information resources, and through cooperative agreements and partnership arrangements with NARA and the originating agency, PIRA will either maintain the public information resources that NARA schedules for permanent records retention, or transfer the official record copy of those public information resources to NARA at the appropriate time and in the appropriate format.

Public information resources *not* scheduled for permanent records retention because the information product does not fall within the scope of the Federal Records Act, will nevertheless be maintained by PIRA for permanent public availability. Agencies that maintain their own permanent public availability by agreement with PIRA will be responsible for transfer of the official record copy of those public information resources to NARA at the appropriate time and in the appropriate format, if they are scheduled for permanent records retention.
The Public Printer and the Superintendent of Documents have been conducting interagency meetings on the subject of permanent public availability for some time. NARA is a participant in those meetings, as are the Commission, the Library of Congress, the other national libraries, and other interested parties. Until the Public Information Resources Reform Act of 2001 is enacted, these meetings should continue as an important forum for the discussion of development and implementation of government-wide guidelines and standards to ensure the harmonization of permanent public availability requirements with permanent records retention requirements.

There is understandable and justifiable concern that electronic public information resources are being lost even while we are struggling to develop and implement the necessary laws, policies and standards to preserve it. Electronic publishing is widely decentralized in most agencies, making it difficult, if not impossible, to educate all of the individuals who need to know about the statutory obligations for transfer of agency information products to the Government Printing Office (GPO) for the Federal Depository Library Program (FDLP), the National Technical Information Service (NTIS) and NARA. Developing a simple, cost-effective means to transfer agency public information resources once and, by so doing, fulfill all of the statutory mandates for organizing and describing (cataloging, indexing, abstracting), announcing, depositing or transferring, archiving and authentication of that information is crucial to effective compliance. There are no statutory barriers to such an effort, and intra- and interagency collaboration is essential to preserve our public information resources, both for permanent public availability and, where appropriate, for permanent records retention.

34. The Director of the Office of Management and Budget (OMB) should ensure that each data element in the agency reporting requirements for the Government Paperwork Elimination Act (GPEA) should be reported in XML and stored in a comprehensive and authoritative registry. A survey of the impact of changing formats should be periodically undertaken at least once every three years.

[Supporting Findings: 3.L, 4.B and 4.F]

[Time Frame: Short-Term]

Government Paperwork Elimination Act (GPEA), Title XVII of Public Law 105-277, promotes the use of digital signatures and the submission of reports to the federal government electronically**.** Attachment B, Element #4, Interagency Reporting Requirements of the OMB implementing guidance calls for "a short description of the interagency report or information dissemination product." Generic descriptions of each report and "dissemination product" are better than nothing. (By law, any "dissemination product" deemed to be "major" already should be described in the Government Information Locator Service (GILS).) However, in order to share information efficiently and effectively across agencies, as well as with the public, each "data element" within each report or "dissemination product" will need to be identified and its characteristics should be specified. The logical time to do so is when designing the "forms" which will gather the data. The best way to avoid needless redundancies is provide for a comprehensive and authoritative registry of the data elements and require the agencies to consult it before establishing any new elements on any forms. These data

elements should be reported to OMB in eXtensible Markup Language (XML) to facilitate creation and management of the database.

At least once every three years, a survey should be undertaken by the PIRA, or in its absence, by NCLIS, on the migration of pre-electronic to electronic formats and the migration from one electronic format to another. This survey would be modeled on the survey that Westat performed for NCLIS in 1998.[282] That survey would endeavor to pinpoint "preferred" formats for the full range of data types:

- Bibliographic data.
- Graphical data (photos, charts, graphs, drawings).
- Numerical data.
- Sound.
- Spatial data (maps, coordinate files).
- Textual data (books, serials, reports).
- Video.
- Multimedia (sound, video, text, graphics).
- Other formats.

The major format types should also be surveyed to attempt to discern patterns of preference, including:

- Database formats (Oracle, Sybase, dBase, WAIS, MARC).
- Spreadsheet formats (Excel, Lotus 1-2-3).
- Tagged Markup formats (HTML, XML, SGML).
- Image formats (GIF, JPEG, TIFF, PDF).
- Audio formats (WAV, AU, AIFF).
- Video formats (MOV, MPEG, AVI).
- Text format (ASCII, Rich Text, ANSI).
- Word Processing format (WordPerfect, Microsoft Word).
- Other formats.

Online approaches would also be tracked. For example:

- User Interfaces Supported (Netscape, Internet Explorer, Telnet, FTP, non-graphical/dial-up shell).
- Web Design Approaches (Basic HTML only, Tables, Frames, CGI Scripts, use of Java script, Use of Java Applets, XML).
- Bulletin Board Systems (Graphical interface/browser).

How information products are searched, how they are retrieved, changes if any in the type of data included, changes if any in what particular timeframe (short, medium, long-term), the use of metadata records, and policies relating to permanent public availability and accessibility, permanent records retention, preservation, and authentication, would also be surveyed.

[282] Westat, Inc., op. cit.

35. The President should direct the Director of the Office of Personnel Management (OPM) and the Secretary of Labor to review federal civil service classifications and the *Dictionary of Occupational Titles*, respectively, to ensure that they adequately reflect the new skills and occupations required by the Internet Age. The President should also direct the Director of the OPM to identify the critical training needs of the federal workforce and then review training programs offered by the government and by the private sector to ensure the availability of computer and information literacy programs adequate to meet the needs of the federal workforce.

[Supporting Findings: 9.F and 9.G]

[Time Frame: Short-Term]

The traditional information professionals such as librarians, records specialists, public affairs specialists, technical information specialists, and so forth, are transforming themselves in the workplace into knowledge professionals appropriate to the Internet Age. All of these traditional professions are becoming more diversified, their skill and competency requirements enriched, and their experience portfolios widened as a result of the demands placed upon them by their jobs. However, the traditional ways government classifies positions and duties in the various manpower and personnel systems it employs, such as the Department of Labor's *Dictionary of Occupational Titles*, and the Office of Personnel Management's system of classifying civil service positions, and the Department of State's system of classifying foreign service positions, and the Department of Health and Human Service's system of classifying health professional positions, and so on, are not keeping pace. As a result, careers in government are not as attractive, or as well paid, as they are in private industry. Therefore the Director of the Office of Personnel Management (OPM) and the Secretary of Labor should coordinate a review of these various classifications systems to ensure that they adequately reflect the new skills and occupations required by the Internet Age.

Similarly, opportunities for training, re-training, and professional development are not adequate to ensure the computer and information literacy needs of the federal workforce or to attract and hold a skilled federal workforce. The Director of the Office of Personnel Management (OPM) should identify the training needs of the workforce and then review training programs offered by the government and by the private sector to ensure the availability of computer and information literacy programs adequate to meet the needs of the federal workforce. This review should include individual training agency programs, the USDA Graduate School, the Institute for Federal Printing and Electronic Publishing at GPO, programs sponsored by the Small Agency Council, and training offered by various interagency groups. It should also include training available through the for-profit and not-for-profit private sector, including professional associations and societies, academic institutions, trade schools, and other commercial training programs.

All of these things need to be accomplished in order to attract, retain and develop a skilled federal workforce and transform government information into a strategic national asset.

36. The Commission, working with the Department of State, the Department of Education, the National Forum on Information Literacy (NFIL), and other interested individuals and organizations, should pro-actively pursue the idea of advancing the concept of treating public sector information as a strategic national asset in other nations.

[Supporting Findings: 11.A]

[Time Frame: Medium-Term]

The Commission, working with the U.S. Department of State, the U.S. Department of Education, the National Forum on Information Literacy (NFIL), and other interested individuals and organizations, should pro-actively pursue the idea of advancing the concept of treating public sector information as a strategic national asset in other nations. A modest start in this direction could be a planning workshop utilizing UNESCO as the venue. Since the European Union has already moved in this direction, it could be a useful partner as well.

The European Union has already held the United States up as a model for public access to information in its Green Paper entitled *Public Sector Information: A Key Resource For Europe; Green Paper on Public sector Information in the Information Society*.[283] The U.S. government can do more to make these policies known to other countries, and to the extent that the U.S. government reforms its own public information dissemination laws and policies as recommended by the Commission in this report, it can become an even better model for other countries to follow.

[283] European Commission, *Public Sector Information: A Key Resource For Europe*, op. cit. Excerpts from the Green Paper are available as Appendix 30 in Volume 3 of this report and also at http://www.nclis.gov/govt/assess/assess.appen30.pdf.

G. IMPLEMENTATION

It should be emphasized that the foregoing recommendations are just that, recommendations. The Commission believes that implementation of these recommendations will vastly improve the condition of government information dissemination in the United States, but it also recognizes that others have different views. It is up to the President and Congress, as the recipients of this report, to determine whether and to what extent these recommendations should be implemented. The Commission stands ready to fulfill its statutory obligation to provide advice to the President and Congress in whatever way may be helpful.

APPENDICES

NOTE: Appendices 1 through 10 are included in this volume of the Commission's report, *A Comprehensive Assessment of Public Information Dissemination, Volume 1*.

Appendices 11 and 12 are in Volume 2, *Legislative and Regulatory Proposals*; it is available at http://www.nclis.gov/govt/assess/assess.vol2.pdf.

Appendices 13 through 34 are in Volume 3, *Supplementary Reference Materials*; it is available at http://www.nclis.gov/govt/assess/assess.vol3.pdf.

Appendix 35 is in Volume 4, *Compilation of Recent Federal Statutes on Information Dissemination*; it is available at http://www.nclis.gov/govt/assess/assess.vol4.pdf.

Each appendix is also available at http://www.nclis.gov/govt/assess/assess.html as an individual file. The unique file name for each appendix is included as the appendix is inserted or identified below.

Most of the appendices were posted on the Commission website during the course of the study to facilitate public access, review and comment. The appendices, and other files providing background on the assessment, will remain on the Commission website for permanent public availability. The Commission feels that this method of distribution is in keeping with the subject matter of this report, which encourages agencies to ensure the permanent public availability of their electronic government information resources.

Appendices submitted to the Commission as paper copies have been scanned and reformatted, so the content is as submitted, but the format is different. Electronic submissions have also been reformatted, but the content is as submitted.

APPENDIX 1. LETTER FROM SENATOR JOHN MCCAIN TO NCLIS CHAIRPERSON MARTHA B. GOULD, JUNE 12, 2000

United States Senate
Committee on Commerce, Science, and Transportation
Washington, DC 20510-6125

June 12, 2000

The Honorable Martha Gould
Chairperson
United States National Commission on Libraries and Information Science
1110 Vermont Avenue, NW

Suite 820
Washington, DC 20005-3552

Dear Chairperson Gould: [284]

On October 21, 1999, the Commerce Committee held a hearing on the re-organization of the National Technical Information Service. At that hearing, the Committee heard testimony on the need for a formal study on the proposed organizational changes to the National Technical Information Service (NTIS) and overall government information dissemination policy.

The Committee would like to request that you undertake a review of the reforms necessary for the federal government's information dissemination practices. At a minimum, this review should include assessments of the need for:

- proposing new or revised laws, rules, regulations, missions, and policies;
- modernizing organization structures and functions so as to reflect greater emphasis on electronic information planning, management, and control capabilities, and the need to consolidate, streamline, and simplify missions and functions to avoid or minimize unnecessary overlap and duplication;
- revoking NTIS self-sufficiency requirement; and
- strengthening other key components of the overall federal information dissemination infrastructure.

You are also requested to provide specific recommendations on the future of NTIS. It is hopeful that these recommendations would be consistent with any overall federal government information dissemination recommendations that you would also provide.

In formulating this review, I ask that you consult with the Federal agencies, the research library communities, the state librarian communities, the user communities, and other relevant public and private sector organizations, as well as individual citizens. I feel that these are key stakeholders in this area and they input will be of great value to the Commission in completing this request.

To facilitate action on this matter during the next Congressional session, I ask that you complete your review and recommendations December 15, 2000. If you have any additional questions or need further assistance, please feel free to contact my staff at 202-224-8172.

Sincerely,

/signed/

John McCain
Chairman

[284] Available at http://www.nclis.gov/govt/assess/mccain.html and http://www.nclis.gov/govt/assess/assess.appen1.pdf.

APPENDIX 2. REPLY FROM NCLIS CHAIRPERSON MARTHA B. GOULD TO SENATOR JOHN MCCAIN, JUNE 27, 2000

United States National Commission on Libraries and Information Science

June 27, 2000

The Honorable John McCain
Chairman
Committee on Commerce, Science and Transportation
United States Senate
Washington, D.C. 20510-6125

Dear Chairman McCain, [285]

Thank you very much for your June 12, 2000 letter to me asking the U.S. National Commission on Libraries and Information Science (NCLIS) to undertake a review of the reforms necessary for the federal government's information dissemination practices. You also requested us to provide specific recommendations on the future of NTIS that are consistent with any overall recommendations we provide.

We are honored that your Committee has asked us to make this comprehensive assessment of the government's public information dissemination laws, policies, programs, and practices. We have already learned that several other Senate and House committees are also quite interested in this undertaking. We will endeavor to stay in close touch with the Congress as we proceed, as well as key elements of the Executive Branch including the Department of Commerce, the Office of Management and Budget, and the Office of Science and Technology.

We shall also coordinate our review closely with the major government information resources agencies and other stakeholder groups, including the National Technical Information Service, the Library of Congress, the Government Printing Office, the Chief Information Officers Council, and various interagency committees, public data user groups, public interest groups, library associations and groups, information and information technology trade associations, and the unions.

We will do our utmost to complete the study by December 15, 2000, as you request.

Sincerely yours,

/signed/

Martha Gould
NCLIS Chair

[285] Available at http://www.nclis.gov/govt/assess/replymcc.html and http://www.nclis.gov/govt/assess/assess.appen2.pdf.

APPENDIX 3. LETTER FROM SENATOR JOSEPH I. LIEBERMAN TO NCLIS CHAIRPERSON MARTHA B. GOULD, JULY 17, 2000

United States Senate
Committee on Governmental Affairs
Washington, DC 20510-6250

July 17, 2000

The Honorable Martha Gould
Chairperson
United States National Commission on Libraries and Information Science
1110 Vermont Avenue, NW
Suite 820
Washington, DC 20005-3552

Dear Chairperson Gould: [286]

I am writing to join in Senator McCain's June 12 request for a review of reforms to improve the federal government's information dissemination practices. The results of that study will prove invaluable to my work as Ranking Democrat of the Governmental Affairs Committee, which has jurisdiction over most of our federal government's information dissemination practices. The study will also help inform my efforts to promote e-government, which includes making federal information more available over the Internet.

I would suggest two additions to the Commission's study. Senator McCain's letter of June 12 asked that the Commission include assessments of the need for proposing new or revised laws or regulations. I would ask that the Commission include in that review any relevant sections of the Paperwork Reduction Act that may need revision, because the Committee will be considering the law's reauthorization next Congress. Second, when the Commission considers the future of the National Technical Information Service, I would ask that it consider the viability of maintaining NTIS as a centralized fully electronic repository of federal scientific and technical information, accessible via the Internet and equipped with search and retrieval capabilities.

Please contact Kevin Landy of my staff at (202) 224-7194 with questions about this request.

Sincerely,

/signed/

Joseph I. Lieberman

[286] Available at http://www.nclis.gov/govt/assess/liebermn.html and http://www.nclis.gov/govt/assess/assess.appen3.pdf.

APPENDIX 4. REPLY FROM NCLIS CHAIRPERSON MARTHA B. GOULD TO SENATOR JOSEPH I. LIEBERMAN, AUGUST 7, 2000

United States National Commission on Libraries and Information Science

August 7, 2000

The Honorable Joseph I. Lieberman
Ranking Democrat
Committee on Governmental Affairs
706 Hart Senate Office Building
United States Senate
Washington, D.C. 20510-6250

Dear Senator Lieberman: [287]

I am writing this letter, on the very day Vice President Gore has announced you as his running mate, to thank you for your July 17 letter to me regarding the NCLIS study of public information dissemination reforms. I therefore am taking advantage of this opportunity to congratulate you on this momentous occasion. I am confident that your well-known dedication to our great Country's ideals, values, and traditions, could be of even greater advantage to the Nation should you serve as Vice President.

The Commission is pleased by your interest in our comprehensive assessment of the government's public information dissemination laws, policies, programs, and practices. Incorporating the two additional assessments that you requested is quite feasible, and we are very pleased to be able to accommodate your request.

The Commission is mindful of your recent endeavors to help mobilize and harness the advantages of the World Wide Web and the Internet to serve the American people. The recent interactive citizen-government website that you have undertaken with Senator Thompson and your support for e-Gov legislation are important means of bringing government information and government services to the people.

We will continue to stay in close contact with Kevin Landy of your staff to ensure that he is kept abreast of study plans and developments as they occur, and of course, we will review the findings, conclusions, and recommendations with him once they emerge.

Sincerely yours,

/signed/

Martha Gould
NCLIS Chairperson

[287] Available at http://www.nclis.gov/govt/assess/liebresp.html and http://www.nclis.gov/govt/assess/assess.appen4.pdf.

cc: Senator John McCain
OMB Director Jacob Lew
Congressional Staff Liaisons for NCLIS Study

APPENDIX 5. LETTER FROM NCLIS CHAIRPERSON MARTHA B. GOULD TO SECRETARY OF COMMERCE NORMAN Y. MINETA, AUGUST 1, 2000

United States National Commission on Libraries and Information Science

August 1, 2000

The Honorable Norman Mineta
Secretary of Commerce
Department of Commerce
14th Street and Constitution Avenue N.W.
Washington, D.C. 20230

Dear Mr. Secretary: [288]

First of all, let me congratulate you on your appointment as the new Secretary of Commerce. Undoubtedly the President can depend on your proven outstanding leadership abilities as a public administrator, sensitive to the needs of both the Congress and the Executive, to assist the Administration to accomplish its remaining goals and objectives. I'm also convinced that you will help to build a solid platform for the future.

I am writing to alert you to a recently concluded study which the United States Commission on Libraries and Information Science (NCLIS) completed in March of this year, dealing with the planned closure of the National Technical Information Service (NTIS). Your Department announced plans in August 1999, to close that agency down, and transfer its resources and programs to the Library of Congress. In our report to the President and the Congress (copy enclosed), we pointed out that the dramatic changes taking place in how, and at what cost, the general public is now able to far more easily and cost-effectively access the Federal Government's vast store of electronic information are not just scientific and technical information (STI) challenges. Rather, the STI challenges are, in reality, a part of the same broad set of issues and concerns with which the entire government is faced, for all kinds of data and information it makes publicly available and accessible.

The Senate Committee on Commerce, Science, and Transportation, chaired by Senator John McCain, requested just such a follow-on study of broad reforms needed in the government's public information dissemination laws and programs, and requested my Commission to undertake the second study. The Committee requested that a final report be submitted by December 15, 2000.

Many other Senate and House committees have also expressed an interest in seeing the results of the study. I have already alerted the President, the Director of the Office of Management and Budget, and the Director of the Office of Science and Technology Policy of the study, and wanted to alert you also as you take office. Details of our early planning can be viewed at
http://www.nclis.gov/govt/assess/assess.html.

We are pleased that a high level former Department official participated actively in the earlier NTIS study to which I alluded above, and we would like to continue that kind of direct working relationship with the Department for the current study. To that end, we would welcome your designation of a

[288] Available at http://www.nclis.gov/govt/assess/mineta1.html and http://www.nclis.gov/govt/assess/assess.appen5.pdf.

liaison official with whom we can coordinate the study's planning, implementation, and the review of draft final reports. I would appreciate your furnishing me with the name and contact information for this individual at your earliest convenience.

I look forward to hearing from you on this matter and, again, wish you success in your challenging endeavor!

Sincerely yours,

/signed/

Martha Gould
Chairperson

P.S. I know you attended the Washington, D.C. memorial service for Jeanne Hurley Simon, my predecessor as chair of NCLIS. I am sorry that I did not get the chance to meet you then. Jeanne was a strong supporter of broad public access to government information. I know she would be greatly pleased to see you take over the leadership at the Commerce Department (even though you're not from Chicago!)

APPENDIX 6. REPLY FROM SECRETARY OF COMMERCE NORMAN Y. MINETA TO NCLIS CHAIRPERSON MARTHA B. GOULD, SEPTEMBER 1, 2000

The Secretary of Commerce
Washington, DC 20230
Sep 1 2000

Ms. Martha Gould
Chairperson
United States National Commission on Libraries and Information Science
1110 Vermont Avenue, NW
Washington, DC 200053552

Dear Chairperson Gould: [289]

Thank you for your kind words on my appointment as Secretary of Commerce and for the copy of your Commission's report to the President and Congress – Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS).

I am pleased to designate Ms. Laureen Daly, Senior Advisor, Office of Policy and Strategic Planning, (202 482-6062, as the Commerce Department's Liaison to work with the Commission on its next study.

I look forward to working with you on this project and on the broad reforms needed in the Government's public information dissemination laws and programs.

Sincerely yours,

/signed/

Norman Y. Mineta

Congratulations on your becoming the Chair of NCLIS![290]

[289] Secretary Mineta's letter is available at http://www.nclis.gov/govt/assess/mineta.pdf (as a scanned image) and also at http://www.nclis.gov/govt/assess/assess.appen6.pdf (as an appendix to this report).
[290] This is the text of a hand written note at the end of the letter.

APPENDIX 7. LETTER FROM NCLIS CHAIRPERSON MARTHA B. GOULD TO SECRETARY OF COMMERCE NORMAL Y. MINETA, OCTOBER 10, 2000

United States National Commission on Libraries and Information Science

October 10, 2000

The Honorable Norman Y. Mineta
Secretary
U.S. Department of Commerce
14th Street and Constitution Avenue, NW
Washington, DC 20230

Dear Secretary Mineta: [291]

Thank you for your letter of September 1, 2000 in response to my correspondence describing the studies of the National Commission on Libraries and Information Science aimed at updating and strengthening the government's public information dissemination laws, policies, and programs, including the mission and programs of NTIS. You indicated that Ms. Laureen Daly, Senior Advisor, Office of Policy and Strategic Planning, would be the Department's Liaison to work with the Commission on these studies. I am pleased that Ms. Daly will be meeting with the Commission's deputy director and our project consultant next week.

However, I want to take this opportunity to share my deep concern that NTIS is rapidly falling below the minimum satisfactory level of staffing needed to sustain it as an effective program to support federal R&D information dissemination to the public. In our report last March, we warned the President and the Congress this situation might occur if corrective actions were not taken.

Specifically, we have learned from a number of federal agencies that the hiring freeze imposed on NTIS (despite the ability of that agency to compensate in part for the loss of key direct-hire professionals with contractor assistance) is being viewed with alarm; these agencies rely on NTIS to disseminate their scientific and technical information and they are fearful that the freeze's continuation will adversely impact their missions. We also have evidence of increasing concern by the nation's corporate and federal depository library communities—as well as private contractors—which heavily rely on the scientific and technical information products and services of NTIS.

I think you will agree that, no matter where, ultimately, NTIS is located organizationally, its functions and operations must continue. We cannot afford to lose the skills and experience of key NTIS staff as personnel, uncertain of their agency's future, seek opportunities in environments far less unsettled; yet if key staff do leave, we must insure adequate and speedy replacement. If you concur in that reasoning, would it not be prudent to bring the agency to the minimum satisfactory level of staffing and service? Wherever NTIS ends up, we should be confident that skilled workers, along with their equipment and real property, could then be transferred as a fully functioning operating entity.

The alternative, it seems to me, will be the continued, gradual erosion of the agency's capability, inevitably reaching a point where it will have become so dysfunctional that revitalizing it would be

[291] Available at http://www.nclis.gov/govt/assess/mineta2.html and http://www.nclis.gov/govt/assess/assess.appen7.pdf.

extremely daunting, if not impossible. Whether NTIS remains in Commerce or is transferred to another agency such as the Library of Congress as originally proposed, this situation would affect all of us concerned with the information handling capabilities of our government and our nation.

I urge that you look into the matter and take swift action to remove the hiring restrictions before the situation becomes any more critical.

Sincerely yours,

/signed/

Martha Gould
Chairperson

cc: Laureen Daly

APPENDIX 8. REPLY FROM SECRETARY OF COMMERCE NORMAN Y. MINETA TO CHAIRPERSON MARTHA B. GOULD, NOVEMBER 21, 2000

The Secretary of Commerce
Washington, DC 20230

November 21, 2000

Ms. Martha Gould
Chairperson
U.S. National Commission on Libraries and Information Science
1110 Vermont Avenue, N.W., Suite 820
Washington, DC 20005-3552

Dear Ms. Gould[292] [Martha][293]

Thank you for your letter on the National Technical Information Service (NTIS) and for sharing your concerns about NTIS's hiring freeze.

As you know, last year, NTIS was losing money and facing potential anti-deficiency. In order to restore solvency, the Commerce Department worked with NTIS to place 40 of its employees in other jobs in the Department, thereby enabling NTIS to cut costs and generate a modest surplus. This effort also is enabling NTIS to reconfigure the skills mix of its employees. Over the past year, we have carefully monitored the financial situation at NTIS, and in order to stabilize the situation, we have allowed the agency to hire the resources it required on a contract basis. Due to these cost-saving measures, NTIS has sufficient resources at this time to proceed with a small number of full-time hires in critical areas. We continue, however, to have concerns about the long-term viability of NTIS, which have been confirmed by a recent General Accounting Office report.

I look forward to NCLIS's Study of Public Information Dissemination Reforms. This is an important subject and deserves an in-depth examination. Technology is changing information dissemination and government institutions must reflect that change. I encourage you to take a broad look at reform and make recommendations that reflect present day realities and will carry us into the future.

Sincerely yours,

/signed/

Norman Y. Mineta

[292] Secretary Mineta's letter is available at http://www.nclis.gov/govt/assess/mineta11-00.pdf (as a scanned image) and also at http://www.nclis.gov/govt/assess/assess.appen8.pdf (as an appendix to this report).
[293] This is hand written over the salutation in the letter.

APPENDIX 9. NCLIS PRESS RELEASE ANNOUNCING THE COMPREHENSIVE ASSESSMENT OF PUBLIC INFORMATION DISSEMINATION, JUNE 26, 2000

NCLIS PRESS RELEASE

United States National Commission on Libraries and Information Science
1110 Vermont Avenue, NW ♦ Suite 820 ♦ Washington, DC 20005-3552
Phone: 202/606-9200 ♦ Fax: 202/606-9203 ♦ E-Mail: info@nclis.gov ♦ Web: www.nclis.gov

For Immediate Release
June 26, 2000

For Information Contact
Forest Woody Horton

NCLIS LAUNCHES COMPREHENSIVE ASSESSMENT OF THE FEDERAL GOVERNMENT'S PUBLIC INFORMATION DISSEMINATION POLICIES AND PRACTICES[294]

Washington, DC - The U.S. National Commission on Libraries and Information Science (NCLIS) announces the launching of a major study to identify reforms necessary in the federal government's public information dissemination machinery. The Senate Committee on Commerce, Science, and Transportation, chaired by Senator John McCain, requested the study. Other Senate and House committees have expressed an interest in the matter.

The comprehensive study grows directly out of earlier work done by NCLIS regarding the National Technical Information Service (NTIS). In August 1999 the Department of Commerce announced plans to close NTIS and transfer its collections, functions, services and assets to the Library of Congress. Following the announcement, both the Science Subcommittee of the Senate Commerce Committee, as well as the Technology Subcommittee of the House Committee on Science, held hearings on the subject.

Subsequently, NCLIS held three public meetings involving over 100 individuals, representing a wide variety of interested groups. On March 16, 2000, the Commission submitted its "Preliminary Assessment" report to the President and Congress. That report was completed quickly because of the effects of uncertainty on the staffing and operation of NTIS. The NCLIS report recommended that NTIS be temporarily retained in the Department of Commerce at a minimal satisfactory level of service until the core issues could be studied more thoroughly by the Commission and an optimal permanent solution be developed.

In the course of these efforts, it became apparent that the "NTIS matter" should not be addressed as an isolated event, that is, simply as a "routine" government reorganization in the scientific and technical information (STI) arena. Issues raised by the proposed actions with respect to *NTIS are part of a framework of reforms needed in public information dissemination overall.*

The "Preliminary Assessment" report's recognition of the need to streamline and simplify the government's overall public information dissemination policies and practices was consistent with findings in an earlier Commission study, "Assessment of Electronic Government Information

[294] Available at http://www.nclis.gov/news/pr2000/assess1.html and at http://www.nclis.gov/govt/assess/assess.appen9.pdf.

Products," completed a year ago at the request of the Government Printing Office. The accelerating agency migration of governmental information products and services from paper-based formats to web-based and other electronic formats is principally driving this critical need for basic reforms. Additionally, there is the need to assess the economic equation resulting from the shift in the benefits and the burdens among the providers, intermediaries and users. The roles and responsibilities of the public and private sector need to be refined also.

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APPENDIX 10. NCLIS PRINCIPLES OF PUBLIC INFORMATION, JUNE 29, 1990

PREAMBLE[295]

From the birth of our nation, open and uninhibited access to public information has ensured good government and a free society. Public information helps to educate our people, stimulate our progress and solve our most complex economic, scientific and social problems. With the coming of the Information Age and its many new technologies, however, public information has expanded so quickly that basic principles regarding its creation, use and dissemination are in danger of being neglected and even forgotten.

The National Commission on Libraries and Information Science, therefore, reaffirms that the information policies of the U.S., government are based on the freedoms guaranteed by the Constitution, and on the recognition of public information as a national resource to be developed and preserved in the public interest. We define **public information** as information created, compiled and/or maintained by the Federal Government. We assert that public information is information owned by the people, held in trust by their government, and should be available to the people except where restricted by law. It is in this spirit of public ownership and public trust that we offer the following Principles of Public Information.

PRINCIPLES

1. The public has the right of access to public information.

> Government agencies should guarantee open, timely and uninhibited access to public information except where restricted by law. People should be able to access public information, regardless of its format, without any special training or expertise.

2. The Federal Government should guarantee the integrity and preservation of public information, regardless of its format.

> By maintaining public information in the face of changing times and technologies, government agencies assure the government's accountability and the accessibility of the government's business to the public.

3. The Federal Government should guarantee the dissemination, reproduction, and redistribution of public information.

> Any restriction of dissemination or any other function dealing with public information must be strictly defined by law.

4. The Federal Government should safeguard the privacy of persons who use or request information, as well as persons about whom information exists in government records.

[295] Available at http://www.nclis.gov/info/pripubin.html and http://www.nclis.gov/govt/assess/assess.appen10.pdf.

5. The Federal Government should ensure a wide diversity of sources of access, private as well as governmental, to public information.

Although sources of access may change over time and because of advances in technology, government agencies have an obligation to the public to encourage diversity.

6. The Federal Government should not allow cost to obstruct the people's access to public information.

Costs incurred by creating, collecting and processing information for the government's own purposes should not be passed on to people who wish to utilize public information.

7. The Federal Government should ensure that information about government information is easily available and in a single index accessible in a variety of formats.

The government index of public information should be in addition to inventories of information kept within individual government agencies.

8. The Federal Government should guarantee the public's access to public information, regardless of where they live and work, through national networks and programs like the Depository Library Program.

Government agencies should periodically review such programs as well as the emerging technology to ensure that access to public information remains inexpensive and convenient to the public.

CONCLUSION

The National Commission on Libraries and Information Science offers these Principles of Public Information as a foundation for the decisions made throughout the Federal Government and the nation regarding issues of public information. We urge all branches of the Federal Government, state and local governments and the private sector to utilize these principles in the development of information policies and in the creation, use, dissemination and preservation of public information. We believe that in so acting, they will serve the best interests of the nation and the people in the Information Age.

Adopted by the U.S. National Commission on Libraries and Information Science
June 29, 1990

VOLUME 2. LEGISLATIVE AND REGULATORY PROPOSALS

APPENDIX 11. THE PUBLIC INFORMATION RESOURCES REFORM ACT OF 2001

Available at http://www.nclis.gov/govt/assess/assess.appen11.pdf.

APPENDIX 12. SUGGESTED REVISIONS TO THE PAPERWORK REDUCTION ACT AND OMB CIRCULAR A-130

Available at http://www.nclis.gov/govt/assess/assess.appen12.pdf.

VOLUME 3. SUPPLEMENTARY REFERENCE MATERIALS

APPENDIX 13. NCLIS STUDY PLAN OUTLINE

Available at http://www.nclis.gov/govt/assess/assess.appen13.pdf.

APPENDIX 14. SOME ISSUES/CONCERNS TO ADDRESS

Available at http://www.nclis.gov/govt/assess/concerns.html and http://www.nclis.gov/govt/assess/assess.appen14.pdf.

APPENDIX 15. SOME IMPORTANT INFORMATION AGE PARADIGM SHIFTS AND THEIR ASSOCIATED MYTHS AND REALITIES

Written by F. Woody Horton, NCLIS Consultant

Available at http://www.nclis.gov/govt/assess/assess.appen15.pdf.

APPENDIX 16. GOVERNMENT INFORMATION LIFE CYCLE MANAGEMENT

Written by F. Woody Horton, NCLIS Consultant

Available at http://www.nclis.gov/govt/assess/assess.appen16.pdf.

APPENDIX 17. AN INVITED RETROSPECTIVE APPRAISAL OF THE 1982 NCLIS PUBLIC SECTOR/PRIVATE SECTOR TASK FORCE REPORT

Written by Robert M. Hayes, Member, NCLIS Group of Experts

Available at http://www.nclis.gov/govt/assess/hayes.html and http://www.nclis.gov/govt/assess/assess.appen17.pdf.

APPENDIX 18. THE WORLD WIDE LIBRARY

Written by Christopher Burns, Member, NCLIS Group of Experts

Available at http://www.nclis.gov/govt/assess/assess.appen18.pdf.

APPENDIX 19. FIRSTGOV: A PRELIMINARY ASSESSMENT

Written by William H. Price, Member, NCLIS Group of Experts

Available at http://www.nclis.gov/govt/assess/assess.appen19.pdf.

APPENDIX 20. LINKING THE INFORMATION LIFE CYCLE CONCEPT WITH DIGITAL LIBRARIES

Written by Satadip Dutta, Department of Computer Science,
Virginia Polytechnic Institute and State University (Virginia Tech)
Reviewed by Edward A. Fox and Shalin Urs

Available at http://www.nclis.gov/govt/assess/assess.appen20.pdf.

APPENDIX 21. CREATING THE MAGIC OF INFORMATION

Written by Paul G. Zurkowski

Available at http://www.nclis.gov/govt/assess/assess.appen21.pdf.

APPENDIX 22. STUDY PANELS AND GROUP OF EXPERTS MEMBERSHIPS

Available at http://www.nclis.gov/govt/assess/assess.appen22.pdf.

APPENDIX 23. PANEL ONE: FINAL REPORT ON A REFORMED NTIS BUSINESS MODEL FOR THE INTERNET AGE

Available at http://www.nclis.gov/govt/assess/assess.appen23.pdf.

APPENDIX 24. PANEL TWO: FINAL REPORT ON FEDERAL AGENCY NEEDS FOR CENTRAL INFORMATION SERVICES AND INFORMATION MANAGEMENT

Available at http://www.nclis.gov/govt/assess/assess.appen24.pdf.

APPENDIX 25. PANEL THREE: FINAL REPORT ON CITIZEN, BUSINESS, LOWER LEVELS OF GOVERNMENT, LIBRARY, AND OTHER NEEDS FOR PUBLIC INFORMATION PRODUCTS AND SERVICES

Available at http://www.nclis.gov/govt/assess/assess.appen25.pdf.

APPENDIX 26. PANEL FOUR: FINAL REPORT ON RENEWED AND STRENGTHENED PARTNERSHIPS BETWEEN THE PUBLIC AND PRIVATE SECTORS FOR PUBLIC INFORMATION DISSEMINATION

Available at http://www.nclis.gov/govt/assess/assess.appen26.pdf.

APPENDIX 27. SURVEY OF SELECTED FEDERAL AGENCY POLICIES, PROGRAMS AND PRACTICES RELATING TO PUBLIC INFORMATION DISSEMINATION

Conducted by F. Woody Horton and Sarah T. Kadec, NCLIS Consultants

Survey instrument available at http://www.nclis.gov/govt/assess/nclismsg.html.
Complete appendix available at
http://www.nclis.gov/govt/assess/assess.appen27.pdf.

APPENDIX 28. SURVEY OF THE PUBLIC INFORMATION NEEDS OF DISABLED, DISADVANTAGED AND SPECIAL POPULATIONS (SUMMARY AND INDIVIDUAL ASSOCIATION RESPONSES)

Conducted by F. Woody Horton and Sarah T. Kadec, NCLIS Consultants

Survey instrument available at http://www.nclis.gov/govt/assess/special.html.
Complete appendix available at
http://www.nclis.gov/govt/assess/assess.appen28.pdf.

APPENDIX 29. PUBLIC INFORMATION RESOURCES MAPS

Compiled by the Federal Library and Information Center Committee (FLICC) and the Government Documents Roundtable (GODORT) of the American Library Association (ALA).

The public information resources maps are listed individually on the Commission website, under "4. Panel and Board of Experts Communications" at
http://www.nclis.gov/govt/assess/assess.html.

Complete appendix available at
http://www.nclis.gov/govt/assess/assess.appen29.pdf.

APPENDIX 30. EUROPEAN COMMISSION GREEN PAPER ON PUBLIC SECTOR INFORMATION IN THE INFORMATION SOCIETY

Complete report available at
http://europa.eu.int/ispo/docs/policy/docs/com(98)585/gp-intro.html.

Excerpts included in this appendix available at
http://www.nclis.gov/govt/assess/assess.appen30.pdf.

APPENDIX 31. A BIBLIOGRAPHY OF GOVERNMENT INFORMATION DISSEMINATION RESOURCES

Compiled by Sarah T. Kadec and Barbara Whiteleather, NCLIS Consultants

Available at http://www.nclis.gov/govt/assess/assess.appen31.pdf.

APPENDIX 32. A BIBLIOGRAPHY OF NATIONAL INFORMATION POLICIES

Compiled by Toni Carbo, Dean, and Associates
School of Information Sciences, University of Pittsburgh

Available at http://www.nclis.gov/govt/assess/assess.appen32.pdf.

APPENDIX 33. INDEX TO A COMPILATION OF RECENT FEDERAL STATUTES PERTAINING TO PUBLIC INFORMATION DISSEMINATION

Compiled by Sarah T. Kadec, NCLIS Consultant

Statutes Enacted During the 104th Through the 106th Congresses

Available at http://www.nclis.gov/govt/assess/assess.appen33.pdf.

The entire compilation is published in Appendix 35, which is Volume 4 of this report.

APPENDIX 34. NCLIS COMPREHENSIVE ASSESSMENT WEB PAGE CONTENTS

A copy of the Assessment Web Page as of January 26, 2001 (http://www.nclis.gov/govt/assess/assess.html).

Available at http://www.nclis.gov/govt/assess/assess.appen34.pdf.

VOLUME 4. COMPILATION OF RECENT FEDERAL STATUTES PERTAINING TO PUBLIC INFORMATION DISSEMINATION

APPENDIX 35. A COMPILATION OF RECENT FEDERAL STATUTES PERTAINING TO PUBLIC INFORMATION DISSEMINATION

Compiled by Sarah T. Kadec, NCLIS Consultant

Statutes Enacted During the 104th Through the 106th Congresses

This compilation updates a 1996 compilation by Jane Bortnick Griffith, Harold C. Relyea and Frances A. Bufalo of the Congressional Research Service.

Available at http://www.nclis.gov/govt/assess/assess.appen35.pdf.

A Comprehensive Assessment of Public Information Dissemination is published in 4 volumes.

Volume 1 is available in electronic form at http://www.nclis.gov/govt/assess/assess.vol1.pdfand in print. It contains the executive summary, the report and Appendices 1 through 10.

Volume 2 is available in electronic form at http://www.nclis.gov/govt/assess/assess.vol2.pdf and in print. It contains Appendices 11 and 12, the Legislative and Regulatory Proposals.

Volume 3 is available only in electronic form at http://www.nclis.gov/govt/assess/assess.vol3.pdf. It contains Appendices 13 through 34, the Supplementary Reference Materials.

Volume 4 is available only in electronic form at http://www.nclis.gov/govt/assess/assess.vol4.pdf. It contains Appendix 35, Compilation of Recent Statutes Relating to Public Information Dissemination.

The Commission web page containing other documents related to *A Comprehensive Assessment of Public Information Dissemination* is at http://www.nclis.gov/govt/assess/assess.html.

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