

112TH CONGRESS
1ST SESSION

H. R. 2096

To advance cybersecurity research, development, and technical standards,
and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JUNE 2, 2011

Mr. McCAUL (for himself and Mr. LIPINSKI) introduced the following bill;
which was referred to the Committee on Science, Space, and Technology

A BILL

To advance cybersecurity research, development, and
technical standards, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Cybersecurity En-
5 hancement Act of 2011”.

6 **TITLE I—RESEARCH AND**
7 **DEVELOPMENT**

8 **SEC. 101. DEFINITIONS.**

9 In this title:

1 (1) NATIONAL COORDINATION OFFICE.—The
2 term National Coordination Office means the Na-
3 tional Coordination Office for the Networking and
4 Information Technology Research and Development
5 program.

6 (2) PROGRAM.—The term Program means the
7 Networking and Information Technology Research
8 and Development program which has been estab-
9 lished under section 101 of the High-Performance
10 Computing Act of 1991 (15 U.S.C. 5511).

11 **SEC. 102. FINDINGS.**

12 Section 2 of the Cyber Security Research and Devel-
13 opment Act (15 U.S.C. 7401) is amended—

14 (1) by amending paragraph (1) to read as fol-
15 lows:

16 “(1) Advancements in information and commu-
17 nications technology have resulted in a globally
18 interconnected network of government, commercial,
19 scientific, and education infrastructures, including
20 critical infrastructures for electric power, natural
21 gas and petroleum production and distribution, tele-
22 communications, transportation, water supply, bank-
23 ing and finance, and emergency and government
24 services.”;

1 (2) in paragraph (2), by striking “Exponential
2 increases in interconnectivity have facilitated en-
3 hanced communications, economic growth,” and in-
4 serting “These advancements have significantly con-
5 tributed to the growth of the United States econ-
6 omy”;

7 (3) by amending paragraph (3) to read as fol-
8 lows:

9 “(3) The Cyberspace Policy Review published
10 by the President in May, 2009, concluded that our
11 information technology and communications infra-
12 structure is vulnerable and has ‘suffered intrusions
13 that have allowed criminals to steal hundreds of mil-
14 lions of dollars and nation-states and other entities
15 to steal intellectual property and sensitive military
16 information’.”; and

17 (4) by amending paragraph (6) to read as fol-
18 lows:

19 “(6) While African-Americans, Hispanics, and
20 Native Americans constitute 33 percent of the col-
21 lege-age population, members of these minorities
22 comprise less than 20 percent of bachelor degree re-
23 cipients in the field of computer sciences.”.

1 **SEC. 103. CYBERSECURITY STRATEGIC RESEARCH AND DE-**
2 **VELOPMENT PLAN.**

3 (a) IN GENERAL.—Not later than 12 months after
4 the date of enactment of this Act, the agencies identified
5 in subsection 101(a)(3)(B)(i) through (x) of the High-Per-
6 formance Computing Act of 1991 (15 U.S.C.
7 5511(a)(3)(B)(i) through (x)) or designated under section
8 101(a)(3)(B)(xi) of such Act, working through the Na-
9 tional Science and Technology Council and with the assist-
10 ance of the National Coordination Office, shall transmit
11 to Congress a strategic plan based on an assessment of
12 cybersecurity risk to guide the overall direction of Federal
13 cybersecurity and information assurance research and de-
14 velopment for information technology and networking sys-
15 tems. Once every 3 years after the initial strategic plan
16 is transmitted to Congress under this section, such agen-
17 cies shall prepare and transmit to Congress an update of
18 such plan.

19 (b) CONTENTS OF PLAN.—The strategic plan re-
20 quired under subsection (a) shall—

21 (1) specify and prioritize near-term, mid-term
22 and long-term research objectives, including objec-
23 tives associated with the research areas identified in
24 section 4(a)(1) of the Cyber Security Research and
25 Development Act (15 U.S.C. 7403(a)(1)) and how
26 the near-term objectives complement research and

1 development areas in which the private sector is ac-
2 tively engaged;

3 (2) describe how the Program will focus on in-
4 novative, transformational technologies with the po-
5 tential to enhance the security, reliability, resilience,
6 and trustworthiness of the digital infrastructure;

7 (3) describe how the Program will foster the
8 transfer of research and development results into
9 new cybersecurity technologies and applications for
10 the benefit of society and the national interest, in-
11 cluding through the dissemination of best practices
12 and other outreach activities;

13 (4) describe how the Program will establish and
14 maintain a national research infrastructure for cre-
15 ating, testing, and evaluating the next generation of
16 secure networking and information technology sys-
17 tems;

18 (5) describe how the Program will facilitate ac-
19 cess by academic researchers to the infrastructure
20 described in paragraph (4), as well as to relevant
21 data, including event data; and

22 (6) describe how the Program will engage fe-
23 males and individuals identified in section 33 or 34
24 of the Science and Engineering Equal Opportunities

1 Act (42 U.S.C. 1885a or 1885b) to foster a more di-
2 verse workforce in this area.

3 (c) DEVELOPMENT OF ROADMAP.—The agencies de-
4 scribed in subsection (a) shall develop and annually update
5 an implementation roadmap for the strategic plan re-
6 quired in this section. Such roadmap shall—

7 (1) specify the role of each Federal agency in
8 carrying out or sponsoring research and development
9 to meet the research objectives of the strategic plan,
10 including a description of how progress toward the
11 research objectives will be evaluated;

12 (2) specify the funding allocated to each major
13 research objective of the strategic plan and the
14 source of funding by agency for the current fiscal
15 year; and

16 (3) estimate the funding required for each
17 major research objective of the strategic plan for the
18 following 3 fiscal years.

19 (d) RECOMMENDATIONS.—In developing and updat-
20 ing the strategic plan under subsection (a), the agencies
21 involved shall solicit recommendations and advice from—

22 (1) the advisory committee established under
23 section 101(b)(1) of the High-Performance Com-
24 puting Act of 1991 (15 U.S.C. 5511(b)(1)); and

1 (2) a wide range of stakeholders, including in-
2 dustry, academia, including representatives of mi-
3 nority serving institutions and community colleges,
4 and other relevant organizations and institutions.

5 (e) APPENDING TO REPORT.—The implementation
6 roadmap required under subsection (c), and its annual up-
7 dates, shall be appended to the report required under sec-
8 tion 101(a)(2)(D) of the High-Performance Computing
9 Act of 1991 (15 U.S.C. 5511(a)(2)(D)).

10 **SEC. 104. SOCIAL AND BEHAVIORAL RESEARCH IN CYBER-**
11 **SECURITY.**

12 Section 4(a)(1) of the Cyber Security Research and
13 Development Act (15 U.S.C. 7403(a)(1)) is amended—

14 (1) by inserting “and usability” after “to the
15 structure”;

16 (2) in subparagraph (H), by striking “and”
17 after the semicolon;

18 (3) in subparagraph (I), by striking the period
19 at the end and inserting “; and”; and

20 (4) by adding at the end the following new sub-
21 paragraph:

22 “(J) social and behavioral factors, includ-
23 ing human-computer interactions, usability,
24 user motivations, and organizational cultures.”.

1 **SEC. 105. NATIONAL SCIENCE FOUNDATION CYBERSECURITY RESEARCH AND DEVELOPMENT PROGRAMS.**
2
3

4 (a) COMPUTER AND NETWORK SECURITY RESEARCH
5 AREAS.—Section 4(a)(1) of the Cyber Security Research
6 and Development Act (15 U.S.C. 7403(a)(1)) is amend-
7 ed—

8 (1) in subparagraph (A) by inserting “identity
9 management,” after “cryptography,”; and

10 (2) in subparagraph (I), by inserting “, crimes
11 against children, and organized crime” after “intel-
12 lectual property”.

13 (b) COMPUTER AND NETWORK SECURITY RESEARCH
14 GRANTS.—Section 4(a)(3) of such Act (15 U.S.C.
15 7403(a)(3)) is amended by striking subparagraphs (A)
16 through (E) and inserting the following new subpara-
17 graphs:

18 “(A) \$90,000,000 for fiscal year 2012;

19 “(B) \$90,000,000 for fiscal year 2013; and

20 “(C) \$90,000,000 for fiscal year 2014.”.

21 (c) COMPUTER AND NETWORK SECURITY RESEARCH
22 CENTERS.—Section 4(b) of such Act (15 U.S.C. 7403(b))
23 is amended—

24 (1) in paragraph (4)—

25 (A) in subparagraph (C), by striking

26 “and” after the semicolon;

1 (B) in subparagraph (D), by striking the
2 period and inserting “; and”; and

3 (C) by adding at the end the following new
4 subparagraph:

5 “(E) how the center will partner with gov-
6 ernment laboratories, for-profit entities, other
7 institutions of higher education, or nonprofit re-
8 search institutions.”; and

9 (2) in paragraph (7) by striking subparagraphs
10 (A) through (E) and inserting the following new
11 subparagraphs:

12 “(A) \$4,500,000 for fiscal year 2012;

13 “(B) \$4,500,000 for fiscal year 2013; and

14 “(C) \$4,500,000 for fiscal year 2014.”.

15 (d) COMPUTER AND NETWORK SECURITY CAPACITY
16 BUILDING GRANTS.—Section 5(a)(6) of such Act (15
17 U.S.C. 7404(a)(6)) is amended by striking subparagraphs
18 (A) through (E) and inserting the following new subpara-
19 graphs:

20 “(A) \$19,000,000 for fiscal year 2012;

21 “(B) \$19,000,000 for fiscal year 2013; and

22 “(C) \$19,000,000 for fiscal year 2014.”.

23 (e) SCIENTIFIC AND ADVANCED TECHNOLOGY ACT
24 GRANTS.—Section 5(b)(2) of such Act (15 U.S.C.
25 7404(b)(2)) is amended by striking subparagraphs (A)

1 through (E) and inserting the following new subpara-
2 graphs:

3 “(A) \$2,500,000 for fiscal year 2012;

4 “(B) \$2,500,000 for fiscal year 2013; and

5 “(C) \$2,500,000 for fiscal year 2014.”.

6 (f) GRADUATE TRAINEESHIPS IN COMPUTER AND
7 NETWORK SECURITY.—Section 5(c)(7) of such Act (15
8 U.S.C. 7404(c)(7)) is amended by striking subparagraphs
9 (A) through (E) and inserting the following new subpara-
10 graphs:

11 “(A) \$24,000,000 for fiscal year 2012;

12 “(B) \$24,000,000 for fiscal year 2013; and

13 “(C) \$24,000,000 for fiscal year 2014.”.

14 (g) CYBER SECURITY FACULTY DEVELOPMENT
15 TRAINEESHIP PROGRAM.—Section 5(e) of such Act (15
16 U.S.C. 7404(e)) is repealed.

17 **SEC. 106. FEDERAL CYBER SCHOLARSHIP FOR SERVICE**
18 **PROGRAM.**

19 (a) IN GENERAL.—The Director of the National
20 Science Foundation shall continue a Scholarship for Serv-
21 ice program under section 5(a) of the Cyber Security Re-
22 search and Development Act (15 U.S.C. 7404(a)) to re-
23 cruit and train the next generation of Federal cybersecu-
24 rity professionals and to increase the capacity of the high-
25 er education system to produce an information technology

1 workforce with the skills necessary to enhance the security
2 of the Nation's communications and information infra-
3 structure.

4 (b) CHARACTERISTICS OF PROGRAM.—The program
5 under this section shall—

6 (1) provide, through qualified institutions of
7 higher education, scholarships that provide tuition,
8 fees, and a competitive stipend for up to 2 years to
9 students pursuing a bachelor's or master's degree and
10 up to 3 years to students pursuing a doctoral degree
11 in a cybersecurity field;

12 (2) provide the scholarship recipients with sum-
13 mer internship opportunities or other meaningful
14 temporary appointments in the Federal information
15 technology workforce; and

16 (3) increase the capacity of institutions of high-
17 er education throughout all regions of the United
18 States to produce highly qualified cybersecurity pro-
19 fessionals, through the award of competitive, merit-
20 reviewed grants that support such activities as—

21 (A) faculty professional development, in-
22 cluding technical, hands-on experiences in the
23 private sector or government, workshops, semi-
24 nars, conferences, and other professional devel-

1 opment opportunities that will result in im-
2 proved instructional capabilities;

3 (B) institutional partnerships, including
4 minority serving institutions and community
5 colleges; and

6 (C) development of cybersecurity-related
7 courses and curricula.

8 (c) SCHOLARSHIP REQUIREMENTS.—

9 (1) ELIGIBILITY.—Scholarships under this sec-
10 tion shall be available only to students who—

11 (A) are citizens or permanent residents of
12 the United States;

13 (B) are full-time students in an eligible de-
14 gree program, as determined by the Director,
15 that is focused on computer security or infor-
16 mation assurance at an awardee institution;
17 and

18 (C) accept the terms of a scholarship pur-
19 suant to this section.

20 (2) SELECTION.—Individuals shall be selected
21 to receive scholarships primarily on the basis of aca-
22 demic merit, with consideration given to financial
23 need, to the goal of promoting the participation of
24 individuals identified in section 33 or 34 of the
25 Science and Engineering Equal Opportunities Act

1 (42 U.S.C. 1885a or 1885b), and to veterans. For
2 purposes of this paragraph, the term “veteran”
3 means a person who—

4 (A) served on active duty (other than ac-
5 tive duty for training) in the Armed Forces of
6 the United States for a period of more than
7 180 consecutive days, and who was discharged
8 or released therefrom under conditions other
9 than dishonorable; or

10 (B) served on active duty (other than ac-
11 tive duty for training) in the Armed Forces of
12 the United States and was discharged or re-
13 leased from such service for a service-connected
14 disability before serving 180 consecutive days.

15 For purposes of subparagraph (B), the term “serv-
16 ice-connected” has the meaning given such term
17 under section 101 of title 38, United States Code.

18 (3) SERVICE OBLIGATION.—If an individual re-
19 ceives a scholarship under this section, as a condi-
20 tion of receiving such scholarship, the individual
21 upon completion of their degree must serve as a cy-
22 bersecurity professional within the Federal workforce
23 for a period of time as provided in paragraph (5).
24 If a scholarship recipient is not offered employment
25 by a Federal agency or a federally funded research

1 and development center, the service requirement can
2 be satisfied at the Director's discretion by—

3 (A) serving as a cybersecurity professional
4 in a State, local, or tribal government agency;
5 or

6 (B) teaching cybersecurity courses at an
7 institution of higher education.

8 (4) CONDITIONS OF SUPPORT.—As a condition
9 of acceptance of a scholarship under this section, a
10 recipient shall agree to provide the awardee institu-
11 tion with annual verifiable documentation of employ-
12 ment and up-to-date contact information.

13 (5) LENGTH OF SERVICE.—The length of serv-
14 ice required in exchange for a scholarship under this
15 subsection shall be 1 year more than the number of
16 years for which the scholarship was received.

17 (d) FAILURE TO COMPLETE SERVICE OBLIGA-
18 TION.—

19 (1) GENERAL RULE.—If an individual who has
20 received a scholarship under this section—

21 (A) fails to maintain an acceptable level of
22 academic standing in the educational institution
23 in which the individual is enrolled, as deter-
24 mined by the Director;

1 (B) is dismissed from such educational in-
2 stitution for disciplinary reasons;

3 (C) withdraws from the program for which
4 the award was made before the completion of
5 such program;

6 (D) declares that the individual does not
7 intend to fulfill the service obligation under this
8 section; or

9 (E) fails to fulfill the service obligation of
10 the individual under this section,

11 such individual shall be liable to the United States
12 as provided in paragraph (3).

13 (2) MONITORING COMPLIANCE.—As a condition
14 of participating in the program, a qualified institu-
15 tion of higher education receiving a grant under this
16 section shall—

17 (A) enter into an agreement with the Di-
18 rector of the National Science Foundation to
19 monitor the compliance of scholarship recipients
20 with respect to their service obligation; and

21 (B) provide to the Director, on an annual
22 basis, post-award employment information re-
23 quired under subsection (e)(4) for scholarship
24 recipients through the completion of their serv-
25 ice obligation.

1 (3) AMOUNT OF REPAYMENT.—

2 (A) LESS THAN ONE YEAR OF SERVICE.—

3 If a circumstance described in paragraph (1)
4 occurs before the completion of 1 year of a
5 service obligation under this section, the total
6 amount of awards received by the individual
7 under this section shall be repaid or such
8 amount shall be treated as a loan to be repaid
9 in accordance with subparagraph (C).

10 (B) MORE THAN ONE YEAR OF SERVICE.—

11 If a circumstance described in subparagraph
12 (D) or (E) of paragraph (1) occurs after the
13 completion of 1 year of a service obligation
14 under this section, the total amount of scholar-
15 ship awards received by the individual under
16 this section, reduced by the ratio of the number
17 of years of service completed divided by the
18 number of years of service required, shall be re-
19 paid or such amount shall be treated as a loan
20 to be repaid in accordance with subparagraph
21 (C).

22 (C) REPAYMENTS.—A loan described in
23 subparagraph (A) or (B) shall be treated as a
24 Federal Direct Unsubsidized Stafford Loan
25 under part D of title IV of the Higher Edu-

1 cation Act of 1965 (20 U.S.C. 1087a and fol-
2 lowing), and shall be subject to repayment, to-
3 gether with interest thereon accruing from the
4 date of the scholarship award, in accordance
5 with terms and conditions specified by the Di-
6 rector (in consultation with the Secretary of
7 Education) in regulations promulgated to carry
8 out this paragraph.

9 (4) COLLECTION OF REPAYMENT.—

10 (A) IN GENERAL.—In the event that a
11 scholarship recipient is required to repay the
12 scholarship under this subsection, the institu-
13 tion providing the scholarship shall—

14 (i) be responsible for determining the
15 repayment amounts and for notifying the
16 recipient and the Director of the amount
17 owed; and

18 (ii) collect such repayment amount
19 within a period of time as determined
20 under the agreement described in para-
21 graph (2), or the repayment amount shall
22 be treated as a loan in accordance with
23 paragraph (3)(C).

24 (B) RETURNED TO TREASURY.—Except as
25 provided in subparagraph (C) of this para-

1 graph, any such repayment shall be returned to
2 the Treasury of the United States.

3 (C) RETAIN PERCENTAGE.—An institution
4 of higher education may retain a percentage of
5 any repayment the institution collects under
6 this paragraph to defray administrative costs
7 associated with the collection. The Director
8 shall establish a single, fixed percentage that
9 will apply to all eligible entities.

10 (5) EXCEPTIONS.—The Director may provide
11 for the partial or total waiver or suspension of any
12 service or payment obligation by an individual under
13 this section whenever compliance by the individual
14 with the obligation is impossible or would involve ex-
15 treme hardship to the individual, or if enforcement
16 of such obligation with respect to the individual
17 would be unconscionable.

18 (e) HIRING AUTHORITY.—For purposes of any law
19 or regulation governing the appointment of individuals in
20 the Federal civil service, upon successful completion of
21 their degree, students receiving a scholarship under this
22 section shall be hired under the authority provided for in
23 section 213.3102(r) of title 5, Code of Federal Regula-
24 tions, and be exempted from competitive service. Upon ful-
25 fillment of the service term, such individuals shall be con-

1 verted to a competitive service position without competi-
2 tion if the individual meets the requirements for that posi-
3 tion.

4 **SEC. 107. CYBERSECURITY WORKFORCE ASSESSMENT.**

5 Not later than 180 days after the date of enactment
6 of this Act the President shall transmit to the Congress
7 a report addressing the cybersecurity workforce needs of
8 the Federal Government. The report shall include—

9 (1) an examination of the current state of and
10 the projected needs of the Federal cybersecurity
11 workforce, including a comparison of the different
12 agencies and departments, and an analysis of the ca-
13 pacity of such agencies and departments to meet
14 those needs;

15 (2) an analysis of the sources and availability of
16 cybersecurity talent, a comparison of the skills and
17 expertise sought by the Federal Government and the
18 private sector, an examination of the current and fu-
19 ture capacity of United States institutions of higher
20 education, including community colleges, to provide
21 cybersecurity professionals with those skills sought
22 by the Federal Government and the private sector,
23 and a description of how successful programs are en-
24 gaging the talents of females and individuals identi-
25 fied in section 33 or 34 of the Science and Engineer-

1 ing Equal Opportunities Act (42 U.S.C. 1885a or
2 1885b);

3 (3) an examination of the effectiveness of the
4 National Centers of Academic Excellence in Infor-
5 mation Assurance Education, the Centers of Aca-
6 demic Excellence in Research, and the Federal
7 Cyber Scholarship for Service programs in pro-
8 moting higher education and research in cybersecu-
9 rity and information assurance and in producing a
10 growing number of professionals with the necessary
11 cybersecurity and information assurance expertise;

12 (4) an analysis of any barriers to the Federal
13 Government recruiting and hiring cybersecurity tal-
14 ent, including barriers relating to compensation, the
15 hiring process, job classification, and hiring flexibili-
16 ties; and

17 (5) recommendations for Federal policies to en-
18 sure an adequate, well-trained Federal cybersecurity
19 workforce.

20 **SEC. 108. CYBERSECURITY UNIVERSITY-INDUSTRY TASK**
21 **FORCE.**

22 (a) ESTABLISHMENT OF UNIVERSITY-INDUSTRY
23 TASK FORCE.—Not later than 180 days after the date of
24 enactment of this Act, the Director of the Office of Science
25 and Technology Policy shall convene a task force to ex-

1 plore mechanisms for carrying out collaborative research
2 and development activities for cybersecurity through a
3 consortium or other appropriate entity with participants
4 from institutions of higher education and industry.

5 (b) FUNCTIONS.—The task force shall—

6 (1) develop options for a collaborative model
7 and an organizational structure for such entity
8 under which the joint research and development ac-
9 tivities could be planned, managed, and conducted
10 effectively, including mechanisms for the allocation
11 of resources among the participants in such entity
12 for support of such activities;

13 (2) propose a process for developing a research
14 and development agenda for such entity, including
15 guidelines to ensure an appropriate scope of work fo-
16 cused on nationally significant challenges and requir-
17 ing collaboration;

18 (3) define the roles and responsibilities for the
19 participants from institutions of higher education
20 and industry in such entity;

21 (4) propose guidelines for assigning intellectual
22 property rights, for the transfer of research and de-
23 velopment results to the private sector; and

1 recommendations for products and protocols that
2 minimize the security risks associated with each
3 computer hardware or software system that is, or is
4 likely to become, widely used within the Federal
5 Government.

6 “(2) PRIORITIES FOR DEVELOPMENT.—The Di-
7 rector of the National Institute of Standards and
8 Technology shall establish priorities for the develop-
9 ment of checklists under this subsection. Such prior-
10 ities may be based on the security risks associated
11 with the use of each system, the number of agencies
12 that use a particular system, the usefulness of the
13 checklist to Federal agencies that are users or po-
14 tential users of the system, or such other factors as
15 the Director determines to be appropriate.

16 “(3) EXCLUDED SYSTEMS.—The Director of
17 the National Institute of Standards and Technology
18 may exclude from the requirements of paragraph (1)
19 any computer hardware or software system for
20 which the Director determines that the development
21 of a checklist is inappropriate because of the infre-
22 quency of use of the system, the obsolescence of the
23 system, or the inutility or impracticability of devel-
24 oping a checklist for the system.

1 “(4) AUTOMATION SPECIFICATIONS.—The Di-
2 rector of the National Institute of Standards and
3 Technology shall develop automated security speci-
4 fications (such as the Security Content Automation
5 Protocol) with respect to checklist content and asso-
6 ciated security related data.

7 “(5) DISSEMINATION OF CHECKLISTS.—The
8 Director of the National Institute of Standards and
9 Technology shall ensure that Federal agencies are
10 informed of the availability of any product developed
11 or identified under the National Checklist Program
12 for any information system, including the Security
13 Content Automation Protocol and other automated
14 security specifications.

15 “(6) AGENCY USE REQUIREMENTS.—The devel-
16 opment of a checklist under paragraph (1) for a
17 computer hardware or software system does not—

18 “(A) require any Federal agency to select
19 the specific settings or options recommended by
20 the checklist for the system;

21 “(B) establish conditions or prerequisites
22 for Federal agency procurement or deployment
23 of any such system;

1 “(C) imply an endorsement of any such
2 system by the Director of the National Institute
3 of Standards and Technology; or

4 “(D) preclude any Federal agency from
5 procuring or deploying other computer hard-
6 ware or software systems for which no such
7 checklist has been developed or identified under
8 paragraph (1).”.

9 **SEC. 110. NATIONAL INSTITUTE OF STANDARDS AND TECH-**
10 **NOLOGY CYBERSECURITY RESEARCH AND**
11 **DEVELOPMENT.**

12 Section 20 of the National Institute of Standards and
13 Technology Act (15 U.S.C. 278g–3) is amended by redес-
14 ignating subsection (e) as subsection (f), and by inserting
15 after subsection (d) the following:

16 “(e) INTRAMURAL SECURITY RESEARCH.—As part of
17 the research activities conducted in accordance with sub-
18 section (d)(3), the Institute shall—

19 “(1) conduct a research program to develop a
20 unifying and standardized identity, privilege, and ac-
21 cess control management framework for the execu-
22 tion of a wide variety of resource protection policies
23 and that is amenable to implementation within a
24 wide variety of existing and emerging computing en-
25 vironments;

1 “(2) carry out research associated with improv-
2 ing the security of information systems and net-
3 works;

4 “(3) carry out research associated with improv-
5 ing the testing, measurement, usability, and assur-
6 ance of information systems and networks; and

7 “(4) carry out research associated with improv-
8 ing security of industrial control systems.”.

9 **TITLE II—ADVANCEMENT OF CY-**
10 **BERSECURITY TECHNICAL**
11 **STANDARDS**

12 **SEC. 201. DEFINITIONS.**

13 In this title:

14 (1) DIRECTOR.—The term “Director” means
15 the Director of the National Institute of Standards
16 and Technology.

17 (2) INSTITUTE.—The term “Institute” means
18 the National Institute of Standards and Technology.

19 **SEC. 202. INTERNATIONAL CYBERSECURITY TECHNICAL**
20 **STANDARDS.**

21 The Director, in coordination with appropriate Fed-
22 eral authorities, shall—

23 (1) ensure coordination of United States Gov-
24 ernment representation in the international develop-

1 nership program under section 25 of the National Insti-
2 tute of Standards and Technology Act (15 U.S.C. 278k).

3 (c) REPORT TO CONGRESS.—Not later than 90 days
4 after the date of enactment of this Act, the Director shall
5 transmit to the Congress a report containing a strategy
6 for implementation of this section.

7 **SEC. 204. IDENTITY MANAGEMENT RESEARCH AND DEVEL-**
8 **OPMENT.**

9 The Director shall continue a program to support the
10 development of technical standards, metrology, testbeds,
11 and conformance criteria, taking into account appropriate
12 user concerns, to—

13 (1) improve interoperability among identity
14 management technologies;

15 (2) strengthen authentication methods of iden-
16 tity management systems;

17 (3) improve privacy protection in identity man-
18 agement systems, including health information tech-
19 nology systems, through authentication and security
20 protocols; and

21 (4) improve the usability of identity manage-
22 ment systems.

○