

PURPOSES

Pub. L. 105-305, §3(a), Oct. 28, 1998, 112 Stat. 2920, provided that: "The purposes of this Act [see Short Title of 1998 Amendment note above] are—

"(1) to authorize, through the High-Performance Computing Act of 1991 (15 U.S.C. 5501 et seq.), research programs related to—

"(A) high-end computing and computation;

"(B) human-centered systems;

"(C) high confidence systems; and

"(D) education, training, and human resources; and

"(2) to provide, through the High-Performance Computing Act of 1991 (15 U.S.C. 5501 et seq.), for the development and coordination of a comprehensive and integrated United States research program which will—

"(A) focus on the research and development of a coordinated set of technologies that seeks to create a network infrastructure that can support greater speed, robustness, and flexibility than is currently available and promote connectivity and interoperability among advanced computer networks of Federal agencies and departments;

"(B) focus on research in technology that may result in high-speed data access for users that is both economically viable and does not impose a geographic penalty; and

"(C) encourage researchers to pursue approaches to networking technology that lead to maximally flexible and extensible solutions wherever feasible."

DEFINITIONS

Pub. L. 105-305, §7(a), Oct. 28, 1998, 112 Stat. 2924, provided that: "For purposes of this Act [see Short Title of 1998 Amendment note above]—

"(1) GEOGRAPHIC PENALTY.—The term 'geographic penalty' means the imposition of costs on users of the Internet in rural or other locations, attributable to the distance of the user from network facilities, the low population density of the area in which the user is located, or other factors, that are disproportionately greater than the costs imposed on users in locations closer to such facilities or on users in locations with significantly greater population density.

"(2) INTERNET.—The term 'Internet' means the international computer network of both Federal and non-Federal interoperable packet switched data networks."

§ 5502. Purposes

The purposes of this chapter are to help ensure the continued leadership of the United States in high-performance computing and its applications by—

(1) expanding Federal support for research, development, and application of high-performance computing in order to—

(A) expand the number of researchers, educators, and students with training in high-performance computing and access to high-performance computing resources;

(B) promote the further development of an information infrastructure of data bases, services, access mechanisms, and research facilities available for use through the Internet;

(C) stimulate research on software technology;

(D) promote the more rapid development and wider distribution of computing software tools and applications software;

(E) accelerate the development of computing systems and subsystems;

(F) provide for the application of high-performance computing to Grand Challenges;

(G) invest in basic research and education, and promote the inclusion of high-performance computing into educational institutions at all levels; and

(H) promote greater collaboration among government, Federal laboratories, industry, high-performance computing centers, and universities;

(2) improving the interagency planning and coordination of Federal research and development on high-performance computing and maximizing the effectiveness of the Federal Government's high-performance computing network research and development programs;

(3) promoting the more rapid development and wider distribution of networking management and development tools; and

(4) promoting the rapid adoption of open network standards.

(Pub. L. 102-194, §3, Dec. 9, 1991, 105 Stat. 1594; Pub. L. 105-305, §3(b), Oct. 28, 1998, 112 Stat. 2920.)

AMENDMENTS

1998—Pub. L. 105-305, §3(b)(1), substituted "Purposes" for "Purpose" as section catchline.

Pub. L. 105-305, §3(b)(2), substituted "purposes of this chapter are" for "purpose of this chapter is" in introductory provisions.

Par. (1)(A). Pub. L. 105-305, §3(b)(3), redesignated subpar. (B) as (A) and struck out former subpar. (A) which read as follows: "establish a high-capacity and high-speed National Research and Education Network;"

Par. (1)(B). Pub. L. 105-305, §3(b)(3), (4), redesignated subpar. (C) as (B) and substituted "Internet" for "Network". Former subpar. (B) redesignated (A).

Par. (1)(C) to (I). Pub. L. 105-305, §3(b)(3), (5), redesignated subpars. (D) to (I) as (C) to (H), respectively, and struck out "and" at end of par. (H).

Par. (2). Pub. L. 105-305, §3(b)(6), substituted "network research and development programs;" for "efforts."

Pars. (3), (4). Pub. L. 105-305, §3(b)(7), added pars. (3) and (4).

§ 5503. Definitions

As used in this chapter, the term—

(1) "Director" means the Director of the Office of Science and Technology Policy;

(2) "Grand Challenge" means a fundamental problem in science or engineering, with broad economic and scientific impact, whose solution will require the application of high-performance computing resources and multidisciplinary teams of researchers;

(3) "high-performance computing" means advanced computing, communications, and information technologies, including supercomputer systems, high-capacity and high-speed networks, special purpose and experimental systems, applications and systems software, and the management of large data sets;

(4) "Internet" means the international computer network of both Federal and non-Federal interoperable data networks;

(5) "Network" means a computer network referred to as the National Research and Education Network established under section 5512 of this title;

(6) "Program" means the National High-Performance Computing Program described in section 5511 of this title; and

(7) “Program Component Areas” means the major subject areas under which related individual projects and activities carried out under the Program are grouped.

(Pub. L. 102–194, § 4, Dec. 9, 1991, 105 Stat. 1595; Pub. L. 105–305, § 7(b), Oct. 28, 1998, 112 Stat. 2924; Pub. L. 110–69, title VII, § 7024(a)(2), Aug. 9, 2007, 121 Stat. 689.)

AMENDMENTS

2007—Par. (2). Pub. L. 110–69, § 7024(a)(2)(A), inserted “and multidisciplinary teams of researchers” after “high-performance computing resources”.

Par. (3). Pub. L. 110–69, § 7024(a)(2)(B), struck out “scientific workstations,” after “technologies, including” and “(including vector supercomputers and large scale parallel systems)” after “supercomputer systems”, substituted “applications” for “and applications”, and inserted “, and the management of large data sets” after “systems software”.

Par. (4). Pub. L. 110–69, § 7024(a)(2)(C), struck out “packet switched” before “data networks”.

Par. (7). Pub. L. 110–69, § 7024(a)(2)(D)–(F), added par. (7).

1998—Pars. (4) to (6). Pub. L. 105–305 added par. (4) and redesignated former pars. (4) and (5) as (5) and (6), respectively.

SUBCHAPTER I—HIGH-PERFORMANCE COMPUTING RESEARCH AND DEVELOPMENT

§ 5511. National High-Performance Computing Program

(a) National High-Performance Computing Program

(1) The President shall implement a National High-Performance Computing Program, which shall—

(A) provide for long-term basic and applied research on high-performance computing, including networking;

(B) provide for research and development on, and demonstration of, technologies to advance the capacity and capabilities of high-performance computing and networking systems, and related software;

(C) provide for sustained access by the research community throughout the United States to high-performance computing and networking systems that are among the most advanced in the world in terms of performance in solving scientific and engineering problems, including provision for technical support for users of such systems;

(D) provide for widely dispersed efforts to increase software availability, productivity, capability, security, portability, and reliability;

(E) provide for high-performance networks, including experimental testbed networks, to enable research and development on, and demonstration of, advanced applications enabled by such networks;

(F) provide for computational science and engineering research on mathematical modeling and algorithms for applications in all fields of science and engineering;

(G) provide for the technical support of, and research and development on, high-performance computing systems and software required to address Grand Challenges;

(H) provide for educating and training additional undergraduate and graduate students in

software engineering, computer science, computer and network security, applied mathematics, library and information science, and computational science; and

(I) provide for improving the security of computing and networking systems, including Federal systems, including providing for research required to establish security standards and practices for these systems.

(2) The Director shall—

(A) establish the goals and priorities for Federal high-performance computing research, development, networking, and other activities;

(B) establish Program Component Areas that implement the goals established under subparagraph (A), and identify the Grand Challenges that the Program should address;

(C) provide for interagency coordination of Federal high-performance computing research, development, networking, and other activities undertaken pursuant to the Program;

(D) submit to the Congress an annual report, along with the President’s annual budget request, describing the implementation of the Program;

(E) develop and maintain a research, development, and deployment roadmap covering all States and regions for the provision of high-performance computing and networking systems under paragraph (1)(C); and

(F) consult with academic, State, industry, and other appropriate groups conducting research on and using high-performance computing.

(3) The annual report submitted under paragraph (2)(D) shall—

(A) provide a detailed description of the Program Component Areas, including a description of any changes in the definition of or activities under the Program Component Areas from the preceding report, and the reasons for such changes, and a description of Grand Challenges addressed under the Program;

(B) set forth the relevant programs and activities, for the fiscal year with respect to which the budget submission applies, of each Federal agency and department, including—

- (i) the Department of Agriculture;
- (ii) the Department of Commerce;
- (iii) the Department of Defense;
- (iv) the Department of Education;
- (v) the Department of Energy;
- (vi) the Department of Health and Human Services;
- (vii) the Department of the Interior;
- (viii) the Environmental Protection Agency;

(ix) the National Aeronautics and Space Administration;

(x) the National Science Foundation; and

(xi) such other agencies and departments as the President or the Director considers appropriate;

(C) describe the levels of Federal funding for the fiscal year during which such report is submitted, and the levels proposed for the fiscal year with respect to which the budget submission applies, for each Program Component Area;