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103D CONGRESS
1ST SESSION

H. R. 1757

To provide for a coordinated Federal program to accelerate development and dissemination of applications of high-performance computing and high-speed networking, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 21, 1993

Mr. BOUCHER (for himself, Mr. BOEHLERT, Mr. BROWN of California, Mr. VALENTINE, Mr. TRAFICANT, Mr. HAYES, Mr. BACCHUS of Florida, Mr. CRAMER, Mr. BARCIA, Mr. KLEIN, Mr. FINGERHUT, Mr. MCHALE, Ms. ESHOO, Ms. EDDIE BERNICE JOHNSON of Texas, Mr. HINCHEY, Mr. COLEMAN, Mr. WISE, Mr. BLACKWELL, and Mr. KANJORSKI) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

JUNE 15, 1993

Additional sponsors: Mr. PAYNE of New Jersey, Mr. TOWNS, and Mr. MACHTLEY

A BILL

To provide for a coordinated Federal program to accelerate development and dissemination of applications of high-performance computing and high-speed networking, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''High Performance Computing and High Speed Networking Applications Act of 1993''.

SEC. 2. FINDINGS.

The Congress finds that—

(1) high-performance computing and high-speed networks have proven to be powerful tools for improving America's national security, industrial competitiveness, research capabilities, and ability to make a wide array of information available for a variety of applications;

(2) Federal programs, such as the High-Performance Computing Program and National Research and Education Network established by Congress in 1991, are vital to the maintenance of United States leadership in high-performance computing and high-speed network development, particularly in the defense and research sectors;

(3) high-performance computing and high-speed networking have the potential to expand dramatically access to information in many fields, including education, libraries, government information dissemination, and health care, if adequate resources are devoted to the research and development activities needed to do so;

(4) the Federal Government should ensure that the applications achieved through research and development efforts such as the High-Performance Computing Program directly benefit all Americans;

(5) the Federal Government should stimulate the development of computing and networking applications and support wider access to network resources so that the benefits of applications so developed can reach the intended users throughout the Nation; and

(6) a coordinated, interagency undertaking is needed to identify and promote applications of computing and networking advances developed by the High-Performance Computing Program which will provide large economic and social benefits to the Nation, including new tools for teaching, the creation of digital libraries of electronic information, the development of standards and protocols to make the stores of government information readily accessible by electronic means, and computer systems to improve the delivery of health care.

SEC. 3. APPLICATIONS OF THE HIGH-PERFORMANCE COMPUTING PROGRAM.

The High-Performance Computing Act of 1991 is amended by adding at the end the following new title:

''TITLE III—APPLICATIONS OF COMPUTING AND NETWORKING

''SEC. 301. ESTABLISHMENT OF APPLICATIONS PROGRAM.

''The Director, through the Federal Coordinating Council for Science, Engineering, and Technology, shall, in accordance with this title—

''(1) establish a coordinated interagency applications program to develop applications of computing and networking advances achieved under the Program described in section 101, that are designed to be accessible and useable by all persons in the United States, in the fields of education, libraries, health care, the provision of government information, and other appropriate fields; and

''(2) develop a Plan for Computing and Networking Applications (hereafter in this title referred to as the 'Plan') describing the goals and proposed activities of the applications program established under paragraph (1), taking into consideration the recommendations of the advisory committee on high-performance computing and applications established under section 101(b).

The President shall designate the Federal agencies and departments which shall participate in the applications program established under paragraph (1).

"SEC. 302. PLAN FOR COMPUTING AND NETWORKING APPLICATIONS.

''(a) REQUIREMENT.—The Plan shall contain a statement of steps which should be taken to implement the applications program established under section 301(1) for the fiscal year in which the Plan is submitted and the succeeding four fiscal years, and shall be submitted to the Congress within one year after the date of enactment of this title. The Plan shall be revised and resubmitted to the Congress at least once each two years thereafter.

''(b) CONTENTS.—The Plan shall—

''(1) establish the goals and priorities for the applications program established under section 301(1), consistent with this title;

''(2) set forth the specific responsibilities of each Federal agency and department participating in the applications program established under section 301(1) to achieve the goals and priorities established under paragraph (1) of this subsection; and

''(3) describe the recommended levels of Federal funding required for each agency and department to carry out the specific responsibilities set forth in paragraph (2) of this subsection.

''(c) COLLABORATION WITH NON-FEDERAL ENTITIES.—To the maximum extent possible, the applications program shall involve cost sharing and partnerships

among participating Federal departments and agencies, State and local governments, and private sector entities.

''(d) PROGRESS IN IMPLEMENTING PLAN.—(1) Accompanying the initial submission of the Plan shall be—

''(A) a summary of the achievements of Federal efforts during the preceding fiscal year to develop computing and networking applications and to advance the technologies on which the applications depend; and

''(B) any recommendations regarding additional action or legislation which may be required to assist in implementing the Plan.

''(2) Accompanying each subsequent submission of the Plan shall be—

''(A) a summary of the achievements of Federal efforts since the previous submission of the Plan to develop computing and networking applications and to advance the technologies on which the applications depend, including an estimate of the number of users served in each application;

''(B) an evaluation of the progress made toward achieving the goals and priorities established under subsection (b)(1);

''(C) a summary of problems encountered in implementing the Plan; and

''(D) any recommendations regarding additional action or legislation which may be required to assist in implementing the Plan.

"SEC. 303. RESPONSIBILITIES OF THE FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY.

''The Federal Coordinating Council for Science, Engineering, and Technology shall—

''(1) develop the Plan as provided in section 301(2);

''(2) coordinate the activities of Federal agencies and departments undertaken pursuant to the Plan and report at least annually to the President, through the Chairman of the Council, on any recommended changes in agency or departmental roles that are needed better to implement the Plan; and

''(3) review, prior to the President's submission to the Congress of the annual budget estimate, each agency and departmental budget estimate in the context of the Plan and make the results of that review available to the appropriate elements of the Executive Office of the President, particularly the Office of Management and Budget.

"SEC. 304. COORDINATOR.

''The Director shall designate an individual on the staff of the Office of Science and Technology Policy to serve as the Coordinator of the Program described in section 101 and the applications program established under section 301(1) (hereafter in this section referred to as the 'Coordinator'). The Coordinator shall—

''(1) monitor the activities of the Federal agencies and departments participating in the Program described in section 101 and the applications program established by section 301(1), for the purpose of preparing the report required under paragraph (2) of this section;

''(2) report to the Director any discrepancies between Federal activities carried out pursuant to this Act and the goals and priorities specified in the report required by section 101 or specified in the Plan pursuant to section 302(b)(1);

''(3) assist in ensuring interagency coordination of activities carried out pursuant to this Act; and

''(4) serve as the point of contact for Congress and the public regarding activities carried out under this Act.

"SEC. 305. AGENCY REPORTS.

''(a) REQUIREMENT.—Each Federal agency and department designated by the President under section 301

as a participant in the applications program shall, as part of its annual request for appropriations to the Office of Management and Budget, submit a report to that Office—

''(1) identifying each element of its activities which—

''(A) contributes primarily to the implementation of the Plan; or

''(B) contributes primarily to the achievement of other objectives but aids Plan implementation in important ways; and

''(2) stating the portion of its request for appropriations that is allocated to each such element.

''(b) OFFICE OF MANAGEMENT AND BUDGET REVIEW.—The Office of Management and Budget shall review each report under this section in light of the goals, priorities, and agency and departmental responsibilities set forth in the Plan. The President's annual budget request shall include a statement of the portion of each appropriate agency or department's annual budget request that is allocated to efforts to achieve the goals and priorities established under section 302(b)(1).

"SEC. 306. NETWORK ACCESS.

''(a) CONNECTIONS PROGRAM.—The Plan shall include a program administered by the National Science Foundation to—

''(1) foster the creation of local networks in communities which will connect institutions of higher education, elementary and secondary schools, libraries, and State and local governments to each other; and

''(2) provide for connection of such local networks to the Internet.

Such program shall include funding for the acquisition of required hardware and for the establishment of broadband connections to the Internet. In making awards under this subsection, the National Science Foundation shall ensure that not more than 75 percent of the cost of the project for which the award is made is provided under this Act.

''(b) TRAINING.—The Plan shall include programs administered by the National Science Foundation and other appropriate agencies and departments to train teachers, students, librarians, and State and local government personnel in the use of computer networks and the Internet. Training programs for librarians shall be designed to provide skills and training materials needed by librarians to instruct the public in the use of hardware and software for accessing and using computer networks and the Internet.

''(c) REPORT.—The Director shall, within one year after the date of enactment of this title, submit a report to Congress which shall include—

''(1) findings of an examination of the extent to which the education and library communities and State and local government have access to the Internet, including the numbers and the geographic distribution, by type, of institutions having access;

''(2) a statement of the extent to which broadband connections to the Internet exist for the education and library communities and State and local governments, including the numbers and the geographic distribution, by type, of institutions having access;

''(3) an assessment of the factors limiting access by schools, libraries, and State and local governments to the Internet and an estimate of the cost of providing universal broadband access for those institutions to the Internet; and

''(4) recommendations for collaborative programs among Federal, State, and local governments and the private sector to expand connectivity to the Internet for educational institutions, libraries, and State and local governments.

''(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for the purposes of this section, $20,000,000 for fiscal year 1994, $60,000,000 for fiscal year 1995, $70,000,000 for fiscal year 1996, $80,000,000 for fiscal year 1997, and $80,000,000 for fiscal year 1998.

"SEC. 307. RESEARCH IN SUPPORT OF APPLICATIONS.

''(a) IN GENERAL.—The Plan shall specify the basic and applied research and human resource development activities in areas, such as computer science and engineering, mathematics, computer visualization, and human cognition, that will provide the foundation for achieving the applications included in the Plan. The Plan shall specify those activities included in the Program under title I which contribute to the development of applications included in the Plan.

''(b) NETWORK SECURITY AND PRIVACY.—The Plan shall specify research programs needed to create means to ensure the security and privacy of transmissions over the Internet and the integrity of digital information accessed via the Internet.

''(c) EASE OF INTERNET USE.—The Plan shall specify research programs needed to develop and demonstrate human/computer interfaces that will simplify access to and

use of the Internet by nonspecialists in computing and networking technologies.

''(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated for the purposes of this section, $10,000,000 for fiscal year 1994, $30,000,000 for fiscal year 1995, $35,000,000 for fiscal year 1996, $38,000,000 for fiscal year 1997, and $38,000,000 for fiscal year 1998.

"SEC. 308. APPLICATIONS FOR EDUCATION.

''(a) IN GENERAL.—The Plan shall specify projects to develop and apply computing and networking technologies for use in education at all levels. The National Science Foundation shall be the lead agency for implementing the activities required by this section. Activities under this section shall include—

''(1) projects, including support for acquisition of required computer hardware and software, that demonstrate the educational value of the Internet in providing for advances in distance learning and electronic classrooms, facilitating nationwide communication among educators and students, access to databases of information in digital format, and access to innovative curricular materials;

''(2) development, testing, and evaluation of computer systems, computer software, and computer networks for—

''(A) teacher training; and

''(B) informal education outside of school, including workforce training in mathematics, science, and technology and in specific job-related skills; and

''(3) development, testing, and evaluation of advanced educational software and of network-based information resources.

''(b) ELEMENTARY AND SECONDARY EDUCATION.—In accordance with subsection (a), applications for elementary and secondary education shall be designed to complement and strengthen ongoing national and State educational restructuring and reform activities and shall include—

''(1) projects in computing and networking that—

''(A) provide for network connections among elementary and secondary schools in local regions and connections to the Internet to enable students and teachers to—

''(i) communicate with their peers;

''(ii) communicate with educators and students in colleges and universities; and

''(iii) access educational materials and other computing resources; and

''(B) address the needs of rural populations and of urban communities;

''(2) collection and dissemination of information about ongoing elementary and secondary educational projects based on application of computing and networking technologies, and about other educational resources available over the Internet;

''(3) development and evaluation of undergraduate courses in the educational applications of computing and networking for the instruction of students preparing for teaching careers, including courses that will ensure the early familiarization and training of these students in the use of the Internet; and

''(4) development, testing, and evaluation of educational software designed for collaborative use over the Internet, including tools that will enable classroom teachers easily to adapt software to local conditions.

''(c) COOPERATION.—In carrying out the requirements of this section, the National Science Foundation

and other Federal agencies participating in such activities shall work with the computer and communications industry, authors and publishers of educational materials, State education departments, and local school districts, as appropriate.

''(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for the purposes of this section, $24,000,000 for fiscal year 1994, $70,000,000 for fiscal year 1995, $82,000,000 for fiscal year 1996, $94,000,000 for fiscal year 1997, and $94,000,000 for fiscal year 1998.

"**SEC. 309. APPLICATIONS FOR HEALTH CARE.**

''(a) IN GENERAL.—The Plan shall specify projects to develop and apply high-performance computing and high-speed networking technologies for use in the health care sector. The Department of Health and Human Services, through the National Library of Medicine, the National Institutes of Health, and the Centers for Disease Control, shall be the lead agency for implementing the activities required by this section.

''(b) CLINICAL INFORMATION SYSTEMS.—In accordance with subsection (a), applications related to clinical information systems shall include—

''(1) testbed networks for linking hospitals, clinics, doctor's offices, medical schools, medical librar-

ies, and universities to enable health care providers and researchers to share medical images and to develop computer-based records;

''(2) software and visualization technology for visualizing the human anatomy and analyzing diagnostic images and records;

''(3) virtual reality technology for simulating surgical and medical procedures;

''(4) collaborative technology to allow several health care providers in remote locations to provide real-time treatment to patients;

''(5) database technology to provide health care providers with access to relevant medical information and literature; and

''(6) database technology for storing, accessing, and transmitting patients' medical records while protecting the accuracy and privacy of those records.

''(c) HEALTH INFORMATION TO THE PUBLIC.—In accordance with subsection (a), applications related to delivery of health information to the public shall include—

''(1) development, testing, and evaluation of database and network technologies for the storage of consumer-oriented, interactive, multimedia materials for health promotion, and for the distribution of such materials to public access points, such as com-

munity health and human service agencies, schools, and public libraries;

''(2) pilot programs to develop, test, and evaluate the effectiveness and cost efficiency of interactive, multimedia materials to assist patients in deciding among health care options;

''(3) development and demonstration of human/computer interfaces to allow nonspecialists in computing and networking technologies ease of access to and use of databases of health information and networks providing health information services; and

''(4) development, testing, and evaluation of database and network access technologies to provide individuals with health information, including health risk appraisal, preventative medical advice, and disease treatment options, which is oriented to nonhealth professionals and which is customized to take into consideration an individual's medical history.

''(d) HEALTH DELIVERY SYSTEMS AND POPULATION DATA SETS.—In accordance with subsection (a), applications for health delivery systems and for gathering population data sets shall include—

''(1) testbed networks and software that permits collaborative communication among local public

and private health and human service providers, such as health centers, clinics, entitlement offices, and school-based clinics, to enable health and human service providers to work together in delivering coordinated services for at-risk populations;

''(2) pilot programs to develop high speed communications networks and software for providing health care providers with—

''(A) immediate, on-line access to up-to-date clinic-based health promotion and disease prevention recommendations from the Centers for Disease Control and other Public Health Service agencies; and

''(B) a two-way communications link with prevention specialists in State and local health departments, and other agencies with information germane to clinic-based health promotion and disease prevention; and

''(3) development, testing, and evaluation of database technologies to provide clinicians with access to information to guide and assist them in providing diagnosis, providing treatment, and providing advice regarding health promotion and disease prevention to patients, and to facilitate the gathering of systematic population data sets in compatible for-

mats on the efficacy of treatments and on national health trends.

''(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary of Health and Human Services for the purposes of this section, $24,000,000 for fiscal year 1994, $70,000,000 for fiscal year 1995, $82,000,000 for fiscal year 1996, $94,000,000 for fiscal year 1997, and $94,000,000 for fiscal year 1998.

"SEC. 310. APPLICATIONS FOR LIBRARIES.

''(a) IN GENERAL.—The Plan shall specify projects to develop technologies for 'digital libraries' of electronic information. The National Science Foundation shall be the lead agency for implementing the activities required by this section.

''(b) DIGITAL LIBRARIES.—In accordance with subsection (a), activities to support the development of digital libraries shall include—

''(1) development of advanced data storage systems capable of storing hundreds of trillions of bits of data and giving thousands of users simultaneous and nearly instantaneous access to that information;

''(2) development of high-speed, highly accurate systems for converting printed text, page images,

graphics, and photographic images into electronic form;

''(3) development of database software capable of quickly searching, filtering, and summarizing large volumes of text, imagery, data, and sound;

''(4) encouragement of the development and adoption of common standards and, where appropriate, common formats for electronic data;

''(5) development of computer-based means to categorize and organize electronic information in a variety of formats;

''(6) training of database users and librarians in the use of and development of electronic databases;

''(7) development of means for simplifying the utilization of networked databases distributed around the Nation and around the world; and

''(8) development of visualization methods for quickly browsing large volumes of imagery.

''(c) DEVELOPMENT OF PROTOTYPES.—In accordance with subsection (a), the Plan shall provide for the development of prototype digital libraries to serve as testbeds for the systems, software, standards, and methods developed under subsection (b). The prototype digital libraries shall be accessible by the public via the Internet.

In carrying out this subsection, an evaluation shall be conducted of the suitability and utility of distributing electronic information over the Internet, including cataloging and evaluating the kinds of uses and determining barriers that impair use of the Internet for this purpose.

''(d) DEVELOPMENT OF DATABASES OF REMOTE-SENSING IMAGES.—The National Aeronautics and Space Administration shall develop databases of software and remote-sensing images to be made available over computer networks.

''(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated—

''(1) to the National Science Foundation for the purposes of this section, $10,000,000 for fiscal year 1994, $30,000,000 for fiscal year 1995, $35,000,000 for fiscal year 1996, $44,000,000 for fiscal year 1997, and $44,000,000 for fiscal year 1998; and

''(2) to the National Aeronautics and Space Administration for the purposes of this section, $6,000,000 for fiscal year 1994, $16,000,000 for fiscal year 1995, $20,000,000 for fiscal year 1996, $20,000,000 for fiscal year 1997, and $20,000,000 for fiscal year 1998.

"SEC. 311. APPLICATIONS FOR GOVERNMENT INFORMATION.

''(a) IN GENERAL.—The Plan shall specify projects needed to develop and apply high-performance computing and high-speed networking technologies to provide improved public access to information generated by Federal, State, and local governments.

''(b) PROJECTS.—In accordance with subsection (a), projects shall be undertaken which—

''(1) connect depository libraries and other sources of government information to the Internet to enable—

''(A) access to Federal Government information and databases in electronic formats;

''(B) access to State or local government information;

''(C) access to related resources which enhance the use of government information; and

''(D) linkages with other libraries and institutions to enhance use of government information; and

''(2) demonstrate, test, and evaluate technologies to increase access to and to facilitate effective use of government information and databases for support of research and education, economic development, and an informed citizenry.

''(c) FEDERAL INFORMATION LOCATOR.—In accordance with subsection (a), an information locator system shall be established which is accessible by the public via the Internet and which provides citations to Federal information and guidance on how to obtain such information.

''(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated for the purposes of this section, $8,000,000 for fiscal year 1994, $24,000,000 for fiscal year 1995, $26,000,000 for fiscal year 1996, $30,000,000 for fiscal year 1997, and $30,000,000 for fiscal year 1998.''.

SEC. 4. HIGH-PERFORMANCE COMPUTING AND APPLICATIONS ADVISORY COMMITTEE.

Section 101(b) of the High-Performance Computing Act of 1991 is amended to read as follows:

''(b) HIGH-PERFORMANCE COMPUTING AND APPLICATIONS ADVISORY COMMITTEE.—The President shall establish an advisory committee on high-performance computing and applications consisting of non-Federal members, including representatives of the research, elementary and secondary education, higher education, and library communities, consumer and public interest groups, network providers, and the computer, telecommunications, and information industries, who are specially qualified to provide the Director with advice and information on high-

performance computing and on applications of computing and networking. The recommendations of the advisory committee shall be considered in reviewing and revising the Program described in section 101 and the Plan required by section 301(2). The advisory committee shall provide the Director with an independent assessment of—

''(1) progress in implementing the Program described in section 101 and the Plan required by section 301(2);

''(2) the need to revise the Program described in section 101 and the Plan required by section 301(2);

''(3) the balance between the components of the activities undertaken pursuant to this Act;

''(4) whether the research, development and demonstration projects undertaken pursuant to this Act are helping to maintain United States leadership in computing and networking technologies and in the application of those technologies;

''(5) whether the applications developed under title III are successfully addressing the needs of the targeted populations, including assessment of the number of users served by those applications; and

''(6) other issues identified by the Director.''.

SEC. 5. NATIONAL RESEARCH AND EDUCATION NETWORK AMENDMENTS.

Section 102 of the High-Performance Computing Act of 1991 is amended to read as follows:

"SEC. 102. NATIONAL RESEARCH AND EDUCATION NETWORK PROGRAM.

''(a) ESTABLISHMENT.—As part of the Program described in section 101, the National Science Foundation, the Department of Defense, the Department of Energy, the Department of Commerce, the National Aeronautics and Space Administration, and other agencies participating in the Program shall support the establishment of the National Research and Education Network Program. The Network Program shall consist of the following components:

''(1) Research and development of networking software and hardware required for the transmission of data at a speed of one gigabit per second or greater.

''(2) Experimental test bed networks for—

''(A) developing and demonstrating advanced networking technologies resulting from the activities described in paragraph (1); and

''(B) providing connections for purposes consistent with this Act which require levels of

network performance not available from privately operated commercial networks.

''(3) Provision of support for researchers, educators, and students to obtain access to and use of the Internet to allow for communication with other individuals in the research and education communities and to allow for access to high-performance computing systems, electronic information resources, other research facilities, and libraries.

''(b) TEST BED NETWORK CHARACTERISTICS.—The test bed networks shall—

''(1) be developed and deployed in coordination with the computer, telecommunications, and information industries;

''(2) be designed, developed, and operated in collaboration with potential users in government, industry, and research institutions and educational institutions;

''(3) be designed, developed, and operated in a manner which fosters and maintains competition and private sector investment in high-speed data networking within the telecommunications industry;

''(4) be designed and operated in a manner which promotes and encourages research and development leading to the creation of commercial data

transmission standards, enabling the establishment of privately developed high-speed commercial networks;

''(5) be designed and operated so as to ensure the application of laws that provide network and information resources security, including those that protect copyright and other intellectual property rights, and those that control access to data bases and protect national security;

''(6) have accounting mechanisms which allow users or groups of users to be charged for their usage of copyrighted materials available over the test bed networks and, where appropriate and technically feasible, for their usage of the test bed networks;

''(7) be interoperable with Federal and non-Federal computer networks, to the extent appropriate, in a way that allows autonomy for each component network; and

''(8) be developed by purchasing standard commercial transmission and network services from vendors whenever feasible, and by contracting for customized services when not feasible, in order to minimize Federal investment in network hardware.

''(c) NETWORK ACCESS.—The Federal agencies and departments participating in activities under this section

shall develop a plan with specific goals for implementing the requirements of subsection (a)(3), including provision for financial assistance to educational institutions, public libraries, and other appropriate entities. This plan shall be submitted to the Congress not later than one year after the date of enactment of the High Performance Computing and High Speed Networking Applications Act of 1993. Each year thereafter, the Director shall report to Congress on progress in implementing subsection (a)(3).

''(d) RESTRICTION ON USE OF TEST BED NETWORKS.—(1) The test bed networks shall not be used to provide services that could otherwise be provided satisfactorily using privately operated commercial networks.

''(2) This subsection shall take effect 18 months after the date of enactment of the High Performance Computing and High Speed Networking Applications Act of 1993.

''(e) DEFENSE ADVANCED RESEARCH PROJECTS AGENCY RESPONSIBILITY.—As part of the Program, the Department of Defense, through the Defense Advanced Research Projects Agency, shall support research and development of advanced fiber optics technology, switches, and protocols needed to develop the Network Program.

''(f) INFORMATION SERVICES.—The Director shall assist the President in coordinating the activities of appropriate agencies and departments to promote the develop-

ment of information services that could be provided over the Internet consistent with the purposes of this Act. These services may include the provision of directories of the users and services on computer networks, data bases of unclassified Federal scientific data, training of users of data bases and computer networks, and technology to support computer-based collaboration that allows researchers and educators around the Nation to share information and instrumentation.

''(g) USE OF GRANT FUNDS.—All Federal agencies and departments are authorized to allow recipients of Federal research grants to use grant moneys to pay for computer networking expenses.''.

SEC. 6. ACCESS TO SCIENTIFIC AND TECHNICAL INFORMATION.

(a) ASSOCIATE DIRECTORS.—Section 203 of the National Science and Technology Policy, Organization, and Priorities Act of 1976 (42 U.S.C. 6612) is amended—

(1) by striking ''four'' in the second sentence and inserting in lieu thereof ''five''; and

(2) by adding at the end the following new sentence: ''Among other duties, one Associate Director shall oversee Federal efforts to disseminate scientific and technical information.''.

(b) FUNCTIONS OF DIRECTOR.—Section 204(b) of the National Science and Technology Policy, Organization, and Priorities Act of 1976 (42 U.S.C. 6613(b)) is amended—

(1) by striking ''and'' at the end of paragraph (3);

(2) by striking the period at the end of paragraph (4) and inserting in lieu thereof ''; and''; and

(3) by inserting after paragraph (4) the following new paragraph:

''(5) assist the President in disseminating scientific and technical information.''.

SEC. 7. CONFORMING AMENDMENTS.

The High Performance Computing Act of 1991 is amended—

(1) in section 3(1)—

(A) by amending subparagraph (A) to read as follows:

''(A) accelerate progress toward a universally accessible high-capacity and high-speed data network for the Nation;''; and

(B) by striking ''Network'' and inserting in lieu thereof ''Internet'' in subparagraph (C);

(2) in section 4—

(A) by redesignating paragraphs (1), (2), (3), (4), and (5) as paragraphs (2), (3), (4), (6), and (7), respectively;

(B) by inserting before paragraph (2), as so redesignated by subparagraph (A) of this paragraph, the following new paragraph:

''(1) 'broadband' means a transmission rate for digital information on a communications network which exceeds the maximum rate possible for transmission of digital information on normal copper telephone wires;'';

(C) by inserting after paragraph (4), as so redesignated by subparagraph (A) of this paragraph, the following new paragraph:

''(5) 'Internet' means the network of both Federal and non-Federal interoperable packet-switched data networks;'';

(D) by amending paragraph (6), as so redesignated by subparagraph (A) of this paragraph, to read as follows:

''(6) 'Network Program' means the National Research and Education Network Program established under section 102;'';

(E) by striking the period at the end and inserting in lieu thereof ''; and''; and

(F) by adding at the end the following new paragraph:

''(7) 'test bed networks' means the experimental test bed networks described in section 102(a)(2).'';

(3) in section 101(a)(2)(A) and (B), by striking ''Network'' and inserting in lieu thereof ''test bed networks'';

(4) in section 101(a)(2)(C), by inserting ''the private sector, States, and'' after ''computer networks of'';

(5) in section 101(a)(4)(C), by striking ''establishment of the Network'' and inserting in lieu thereof ''Network Program'';

(6) in section 201(a)(2), by striking ''Network'' both places it appears and inserting in lieu thereof ''Internet'';

(7) in section 201(a)(3), by striking ''Network'' and inserting in lieu thereof ''Internet for the purposes of this Act''; and

(8) in section 201(a)(4), by inserting ''consistent with section 102,'' before ''assist regional networks''.

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