106TH CONGRESS
2D SESSION

H. R. 2086

[Report No. 106–472, Part I]

To authorize funding for networking and information technology research and development for fiscal years 2000 through 2004, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JUNE 9, 1999

Mr. SENSENBRENNER (for himself, Mr. BROWN of California, Mr. DAVIS of Virginia, Mrs. MORELLA, Mr. EWING, Mr. COOK, Mr. BRADY of Texas, Mr. EHLERS, Mr. ETHERIDGE, Mr. WELDON of Florida, Mr. KUYKENDALL, Ms. STABENOW, Mr. LUCAS of Oklahoma, Mr. SMITH of Michigan, Mr. DOYLE, Mr. ROHRABACHER, Ms. EDDIE BERNICE JOHNSON of Texas, Ms. JACKSON-LEE of Texas, Mr. CAPUANO, Mr. BARTLETT of Maryland, Mr. UDALL of Colorado, Ms. WOOLSEY, Mr. CALVERT, Mr. GUTKNECHT, Ms. LOFGREN, and Mr. GORDON) introduced the following bill; which was referred to the Committee on Science, and in addition to the Committee on Ways and Means, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

NOVEMBER 16, 1999

Reported from the Committee on Science with an amendment

[Strike out all after the enacting clause and insert the part printed in italic]

NOVEMBER 16, 1999

Referral to the Committee on Ways and Means extended for a period ending not later than February 29, 2000

FEBRUARY 3, 2000

Additional sponsors: Mr. CAMPBELL, Mr. LARSON, Mr. COSTELLO, Mr. BARTON of Texas, Mr. LAMPSON, Mr. BOEHLERT, Mr. DREIER, Mr. WU, Mr. LAFALCE, Mr. WICKER, Mr. ENGLISH, Mr. GOODLATTE, Mr. BAIRD, Mr. MARTINEZ, Mr. WEINER, Mr. BOUCHER, Mrs. BIGGERT, Ms. ESHOO, Mr. PICKERING, and Mr. BILBRAY

[For text of introduced bill, see copy of bill as introduced on June 9, 1999]

A BILL

To authorize funding for networking and information technology research and development for fiscal years 2000 through 2004, 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 "Networking and Information Technology Research and Development Act".

SEC. 2. FINDINGS.

The Congress makes the following findings:

(1) Information technology will continue to change the way Americans live, learn, and work. The information revolution will improve the workplace and the quality and accessibility of health care and education and make government more responsible and accessible.

(2) Information technology is an imperative enabling technology that contributes to scientific disciplines. Major advances in biomedical research, public safety, engineering, and other critical areas depend on further advances in computing and communications.

(3) The United States is the undisputed global leader in information technology.

(4) Information technology is recognized as a catalyst for economic growth and prosperity.

(5) Information technology represents one of the fastest growing sectors of the United States economy, with electronic commerce alone projected to become a trillion-dollar business by 2005.

(6) Businesses producing computers, semiconductors, software, and communications equipment account for one-third of the total growth in the United States economy since 1992.

(7) According to the United States Census Bureau, between 1993 and 1997, the information technology sector grew an average of 12.3 percent per year.

(8) Fundamental research in information technology has enabled the information revolution.

(9) Fundamental research in information technology has contributed to the creation of new industries and new, high-paying jobs.

(10) Our Nation's well-being will depend on the understanding, arising from fundamental research, of the social and economic benefits and problems arising

from the increasing pace of information technology transformations.

(11) Scientific and engineering research and the availability of a skilled workforce are critical to continued economic growth driven by information technology.

(12) In 1997, private industry provided most of the funding for research and development in the information technology sector. The information technology sector now receives, in absolute terms, one-third of all corporate spending on research and development in the United States economy.

(13) The private sector tends to focus its spending on short-term, applied research.

(14) The Federal Government is uniquely positioned to support long-term fundamental research.

(15) Federal applied research in information technology has grown at almost twice the rate of Federal basic research since 1986.

(16) Federal science and engineering programs must increase their emphasis on long-term, high-risk research.

(17) Current Federal programs and support for fundamental research in information technology is in-

adequate if we are to maintain the Nation's global leadership in information technology.

SEC. 3. AUTHORIZATION OF APPROPRIATIONS.

(a) NATIONAL SCIENCE FOUNDATION.Ð Section 201(b) of the High-Performance Computing Act of 1991 (15 U.S.C. 5521(b)) is amendedÐ

(1) by striking `From sums otherwise authorized to be appropriated, there'' and inserting `There'';

(2) by striking `1995; and'' and inserting `1995;''; and

(3) by striking the period at the end and inserting `; $439,000,000 for fiscal year 2000; $468,500,000 for fiscal year 2001; $493,200,000 for fiscal year 2002; $544,100,000 for fiscal year 2003; and $571,300,000 for fiscal year 2004. Amounts authorized under this subsection shall be the total amounts authorized to the National Science Foundation for a fiscal year for the Program, and shall not be in addition to amounts previously authorized by law for the purposes of the Program.''.

(b) NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.Ð Section 202(b) of the High-Performance Computing Act of 1991 (15 U.S.C. 5522(b)) is amendedÐ

(1) by striking `From sums otherwise authorized to be appropriated, there'' and inserting `There'';

(2) by striking `1995; and'' and inserting `1995;''; and

(3) by striking the period at the end and inserting `; $164,400,000 for fiscal year 2000; $201,000,000 for fiscal year 2001; $208,000,000 for fiscal year 2002; $224,000,000 for fiscal year 2003; and $231,000,000 for fiscal year 2004.''.

(c) DEPARTMENT OF ENERGY.Ð Section 203(e)(1) of the High-Performance Computing Act of 1991 (15 U.S.C. 5523(e)(1)) is amendedÐ

(1) by striking `1995; and'' and inserting `1995;''; and

(2) by striking the period at the end and inserting `; $106,600,000 for fiscal year 2000; $103,500,000 for fiscal year 2001; $107,000,000 for fiscal year 2002; $125,700,000 for fiscal year 2003; and $129,400,000 for fiscal year 2004.''.

(d) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.Ð (1) Section 204(d)(1) of the High-Performance Computing Act of 1991 (15 U.S.C. 5524(d)(1)) is amendedÐ

(A) by striking `1995; and'' and inserting `1995;''; and

(B) by striking `1996; and'' and inserting `1996; $9,000,000 for fiscal year 2000; $9,500,000 for

fiscal year 2001; $10,500,000 for fiscal year 2002; $16,000,000 for fiscal year 2003; and $17,000,000 for fiscal year 2004; and''.

(2) Section 204(d) of the High-Performance Computing Act of 1991 (15 U.S.C. 5524(d)) is amended by striking ``From sums otherwise authorized to be appropriated, there'' and inserting ``There''.

(e) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.Ð Section 204(d)(2) of the High-Performance Computing Act of 1991 (15 U.S.C. 5524(d)(2)) is amendedÐ

(1) by striking ``1995; and'' and inserting ``1995;''; and

(2) by striking the period at the end and inserting `; $13,500,000 for fiscal year 2000; $13,900,000 for fiscal year 2001; $14,300,000 for fiscal year 2002; $14,800,000 for fiscal year 2003; and $15,200,000 for fiscal year 2004.''.

(f) ENVIRONMENTAL PROTECTION AGENCY.Ð Section 205(b) of the High-Performance Computing Act of 1991 (15 U.S.C. 5525(b)) is amendedÐ

(1) by striking ``From sums otherwise authorized to be appropriated, there'' and inserting ``There'';

(2) by striking ``1995; and'' and inserting ``1995;''; and

(3) by striking the period at the end and inserting `; $4,200,000 for fiscal year 2000; $4,300,000 for fiscal year 2001; $4,500,000 for fiscal year 2002; $4,600,000 for fiscal year 2003; and $4,700,000 for fiscal year 2004.".

SEC. 4. NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT.

(a) NATIONAL SCIENCE FOUNDATION.Ð Section 201 of the High-Performance Computing Act of 1991 (15 U.S.C. 5521) is amended by adding at the end the following new subsections:

`(c) NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT.Ð (1) Of the amounts authorized under subsection (b), $310,000,000 for fiscal year 2000; $333,000,000 for fiscal year 2001; $352,000,000 for fiscal year 2002; $390,000,000 for fiscal year 2003; and $415,000,000 for fiscal year 2004 shall be available for grants for long-term basic research on networking and information technology, with priority given to research that helps address issues related to high end computing and software; network stability, fragility, reliability, security (including privacy), and scalability; and the social and economic consequences of information technology.

`(2) In each of the fiscal years 2000 and 2001, the National Science Foundation shall award under this sub-

section up to 20 large grants of up to $1,000,000 each, and in each of the fiscal years 2002, 2003, and 2004, the National Science Foundation shall award under this subsection up to 30 large grants of up to $1,000,000 each.

``(3)(A) Of the amounts described in paragraph (1), $40,000,000 for fiscal year 2000; $40,000,000 for fiscal year 2001; $45,000,000 for fiscal year 2002; $45,000,000 for fiscal year 2003; and $50,000,000 for fiscal year 2004 shall be available for grants of up to $5,000,000 each for Information Technology Research Centers.

``(B) For purposes of this paragraph, the term `Information Technology Research Centers' means groups of 6 or more researchers collaborating across scientific and engineering disciplines on large-scale long-term research projects which will significantly advance the science supporting the development of information technology or the use of information technology in addressing scientific issues of national importance.

``(d) MAJOR RESEARCH EQUIPMENT.Ð (1) In addition to the amounts authorized under subsection (b), there are authorized to be appropriated to the National Science Foundation $70,000,000 for fiscal year 2000, $70,000,000 for fiscal year 2001, $80,000,000 for fiscal year 2002, $80,000,000 for fiscal year 2003, and $85,000,000 for fiscal year 2004 for grants for the development of major research

equipment to establish terascale computing capabilities at 1 or more sites and to promote diverse computing architectures. Awards made under this subsection shall provide for support for the operating expenses of facilities established to provide the terascale computing capabilities, with funding for such operating expenses derived from amounts available under subsection (b).

``(2) Grants awarded under this subsection shall be awarded through an open, nationwide, peer-reviewed competition. Awardees may include consortia consisting of members from some or all of the following types of institutions:

``(A) Academic supercomputer centers.

``(B) State-supported supercomputer centers.

``(C) Supercomputer centers that are supported as part of federally funded research and development centers.

Notwithstanding any other provision of law, regulation, or agency policy, a federally funded research and development center may apply for a grant under this subsection, and may compete on an equal basis with any other applicant for the awarding of such a grant.

``(3) As a condition of receiving a grant under this subsection, an awardee must agreeÐ

``(A) to connect to the National Science Foundation's Partnership for Advanced Computational Infrastructure network;

``(B) to the maximum extent practicable, to coordinate with other federally funded large-scale computing and simulation efforts; and

``(C) to provide open access to all grant recipients under this subsection or subsection (c).

``(e) INFORMATION TECHNOLOGY EDUCATION AND TRAINING GRANTS.Ð

``(1) INFORMATION TECHNOLOGY GRANTS.Ð The National Science Foundation shall provide grants under the Scientific and Advanced Technology Act of 1992 for the purposes of section 3(a) and (b) of that Act, except that the activities supported pursuant to this paragraph shall be limited to improving education in fields related to information technology. The Foundation shall encourage institutions with a substantial percentage of student enrollments from groups underrepresented in information technology industries to participate in the competition for grants provided under this paragraph.

``(2) INTERNSHIP GRANTS.Ð The National Science Foundation shall provideÐ

``(A) grants to institutions of higher education to establish scientific internship programs in information technology research at private sector companies; and

``(B) supplementary awards to institutions funded under the Louis Stokes Alliances for Minority Participation program for internships in information technology research at private sector companies.

``(3) MATCHING FUNDS.Ð Awards under paragraph (2) shall be made on the condition that at least an equal amount of funding for the internship shall be provided by the private sector company at which the internship will take place.

``(4) DEFINITION.Ð For purposes of this subsection, the term `institution of higher education' has the meaning given that term in section 1201(a) of the Higher Education Act of 1965 (20 U.S.C. 1141(a)).

``(5) AVAILABILITY OF FUNDS.Ð Of the amounts described in subsection (c)(1), $10,000,000 for fiscal year 2000, $15,000,000 for fiscal year 2001, $20,000,000 for fiscal year 2002, $25,000,000 for fiscal year 2003, and $25,000,000 for fiscal year 2004 shall be available for carrying out this subsection.

``(f) EDUCATIONAL TECHNOLOGY RESEARCH.Ð

``(1) RESEARCH PROGRAM.Ð As part of its responsibilities under subsection (a)(1), the National Science Foundation shall establish a research program to develop, demonstrate, assess, and disseminate effective applications of information and computer technologies for elementary and secondary education. Such program shallÐ

``(A) support research projects, including collaborative projects involving academic researchers and elementary and secondary schools, to develop innovative educational materials, including software, and pedagogical approaches based on applications of information and computer technology;

``(B) support empirical studies to determine the educational effectiveness and the cost effectiveness of specific, promising educational approaches, techniques, and materials that are based on applications of information and computer technologies; and

``(C) include provision for the widespread dissemination of the results of the studies carried out under subparagraphs (A) and (B), including maintenance of electronic libraries of the best

educational materials identified accessible through the Internet.

``(2) REPLICATION.Ð The research projects and empirical studies carried out under paragraph (1)(A) and (B) shall encompass a wide variety of educational settings in order to identify approaches, techniques, and materials that have a high potential for being successfully replicated throughout the United States.

``(3) AVAILABILITY OF FUNDS.Ð Of the amounts authorized under subsection (b), $10,000,000 for fiscal year 2000, $10,500,000 for fiscal year 2001, $11,000,000 for fiscal year 2002, $12,000,000 for fiscal year 2003, and $12,500,000 for fiscal year 2004 shall be available for the purposes of this subsection.

``(g) PEER REVIEW.Ð All grants made under this section shall be made only after being subject to peer review by panels or groups having private sector representation.''.

(b) OTHER PROGRAM AGENCIES.Ð

(1) NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.Ð Section 202(a) of the High-Performance Computing Act of 1991 (15 U.S.C. 5522(a)) is amended by inserting `, and may participate in or support research described in section 201(c)(1)'' after `and experimentation''.

(2) DEPARTMENT OF ENERGY.Ð Section 203(a) of the High-Performance Computing Act of 1991 (15 U.S.C. 5523(a)) is amended by striking the period at the end and inserting a comma, and by adding after paragraph (4) the following:

``and may participate in or support research described in section 201(c)(1).''.

(3) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.Ð Section 204(a)(1) of the High-Performance Computing Act of 1991 (15 U.S.C. 5524(a)(1)) is amended by striking ``; and'' at the end of subparagraph (C) and inserting a comma, and by adding after subparagraph (C) the following:

``and may participate in or support research described in section 201(c)(1); and''.

(4) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.Ð Section 204(a)(2) of the High-Performance Computing Act of 1991 (15 U.S.C. 5524(a)(2)) is amended by inserting ``, and may participate in or support research described in section 201(c)(1)'' after ``agency missions''.

(5) ENVIRONMENTAL PROTECTION AGENCY.Ð Section 205(a) of the High-Performance Computing Act of 1991 (15 U.S.C. 5525(a)) is amended by inserting ``, and may participate in or support research de-

scribed in section 201(c)(1)'' after ``dynamics models''.

SEC. 5. NEXT GENERATION INTERNET.

Section 103 of the High-Performance Computing Act of 1991 (15 U.S.C. 5513) is amendedÐ

(1) by amending subsection (c) to read as follows:

``(c) STUDY OF INTERNET PRIVACY.Ð

``(1) STUDY.Ð Not later than 90 days after the date of enactment of the Networking and Information Technology Research and Development Act, the National Science Foundation may enter into an arrangement with the National Research Council of the National Academy of Sciences for that Council to conduct a study of privacy on the Internet.

``(2) SUBJECTS.Ð The study shall addressÐ

``(A) research needed to develop technology for protection of privacy on the Internet;

``(B) current public and private plans for the deployment of privacy technology, standards, and policies;

``(C) policies, laws, and practices under consideration or formally adopted in other countries and jurisdictions to protect privacy on the Internet;

``(D) Federal legislation and other regulatory steps needed to ensure the development of privacy technology, standards, and policies; and

``(E) other matters that the National Research Council determines to be relevant to Internet privacy.

``(3) TRANSMITTAL TO CONGRESS.Ð The National Science Foundation shall transmit to the Congress within 21 months of the date of enactment of the Networking and Information Technology Research and Development Act a report setting forth the findings, conclusions, and recommendations of the National Research Council.

``(4) FEDERAL AGENCY COOPERATION.Ð Federal agencies shall cooperate fully with the National Research Council in its activities in carrying out the study under this subsection.

``(5) AVAILABILITY OF FUNDS.Ð Of the amounts described in subsection (d)(2), $900,000 shall be available for the study conducted under this subsection.''; and

(2) in subsection (d)Ð

(A) in paragraph (1)Ð

(i) by striking ``1999 and'' and inserting ``1999,''; and

(ii) by inserting `, $15,000,000 for fiscal year 2001, and $15,000,000 for fiscal year 2002'' after `fiscal year 2000'';

(B) in paragraph (2), by inserting `, and $25,000,000 for fiscal year 2001 and $25,000,000 for fiscal year 2002'' after `Act of 1998'';

(C) in paragraph (4)Ð

(i) by striking `1999 and'' and inserting `1999,''; and

(ii) by inserting `, $10,000,000 for fiscal year 2001, and $10,000,000 for fiscal year 2002'' after `fiscal year 2000''; and

(D) in paragraph (5)Ð

(i) by striking `1999 and'' and inserting `1999,''; and

(ii) by inserting `, $5,500,000 for fiscal year 2001, and $5,500,000 for fiscal year 2002'' after `fiscal year 2000''.

SEC. 6. REPORTING REQUIREMENTS.

Section 101 of the High-Performance Computing Act of 1991 (15 U.S.C. 5511) is amendedÐ

(1) in subsection (b)Ð

(A) by redesignating paragraphs (1) through (5) as subparagraphs (A) through (E), respectively;

(B) by inserting `(1)" after `ADVISORY COMMITTEE.Ð "; and

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

`(2) In addition to the duties outlined in paragraph (1), the advisory committee shall conduct periodic evaluations of the funding, management, implementation, and activities of the Program, the Next Generation Internet program, and the Networking and Information Technology Research and Development program, and shall report not less frequently than once every 2 fiscal years to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on its findings and recommendations. The first report shall be due within 1 year after the date of the enactment of the Networking and Information Technology Research and Development Act."; and

(2) in subsection (c)(1)(A) and (2), by inserting `, including the Next Generation Internet program and the Networking and Information Technology Research and Development program" after `Program" each place it appears.

SEC. 7. EVALUATION OF CAPABILITIES OF FOREIGN ENCRYPTION.

(a) STUDY.Ð The National Science Foundation shall undertake a study comparing the availability of encryption technologies in foreign countries to the encryption technologies subject to export restrictions in the United States.

(b) REPORT TO CONGRESS.Ð Not later than 6 months after the date of enactment of this Act, the National Science Foundation shall transmit to the Congress a report on the results of the study undertaken under subsection (a).

SEC. 8. RESEARCH CREDIT MADE PERMANENT.

(a) IN GENERAL.Ð Section 41 of the Internal Revenue Code of 1986 (relating to credit for increasing research activities) is amended by striking subsection (h).

(b) CONFORMING AMENDMENT.Ð Paragraph (1) of section 45C(b) of such Code is amended by striking subparagraph (D).

(c) EFFECTIVE DATE.Ð The amendments made by this section shall apply to amounts paid or incurred after June 30, 1999.

SEC. 9. STUDY OF APPROPRIATIONS IMPACT ON INFORMATION TECHNOLOGY RESEARCH.

Within 90 days after the date of the enactment of this Act, the Comptroller General, in consultation with the National Science and Technology Council and the President's Information Technology Advisory Committee, shall trans-

mit to the Congress a report on the impact on information technology research of the fiscal year 2000 appropriations acts for the Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies; for the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies; and for Energy and Water Development.

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