

**AMENDMENT IN THE NATURE OF A SUBSTITUTE
TO H.R. 4061
OFFERED BY MR. LIPINSKI OF ILLINOIS**

Strike all after the enacting clause and insert the following:

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Cybersecurity En-
3 hancement Act of 2009”.

4 **TITLE I—RESEARCH AND**
5 **DEVELOPMENT**

6 **SEC. 101. DEFINITIONS.**

7 In this title:

8 (1) NATIONAL COORDINATION OFFICE.—The
9 term National Coordination Office means the Na-
10 tional Coordination Office for the Networking and
11 Information Technology Research and Development
12 program.

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

1 **SEC. 102. FINDINGS.**

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

4 (1) by amending paragraph (1) to read as fol-
5 lows:

6 “(1) Advancements in information and commu-
7 nications technology have resulted in a globally
8 interconnected network of government, commercial,
9 scientific, and education infrastructures, including
10 critical infrastructures for electric power, natural
11 gas and petroleum production and distribution, tele-
12 communications, transportation, water supply, bank-
13 ing and finance, and emergency and government
14 services.”;

15 (2) in paragraph (2), by striking “Exponential
16 increases in interconnectivity have facilitated en-
17 hanced communications, economic growth,” and in-
18 serting “These advancements have significantly con-
19 tributed to the growth of the United States econ-
20 omy”;

21 (3) by amending paragraph (3) to read as fol-
22 lows:

23 “(3) The Cyberspace Policy Review published
24 by the President in May, 2009, concluded that our
25 information technology and communications infra-
26 structure is vulnerable and has ‘suffered intrusions

1 that have allowed criminals to steal hundreds of mil-
2 lions of dollars and nation-states and other entities
3 to steal intellectual property and sensitive military
4 information’.”;

5 (4) by redesignating paragraphs (4) through
6 (6) as paragraphs (5) through (7), respectively;

7 (5) by inserting after paragraph (3) the fol-
8 lowing new paragraph:

9 “(4) In a series of hearings held before Con-
10 gress in 2009, experts testified that the Federal cy-
11 bersecurity research and development portfolio was
12 too focused on short-term, incremental research and
13 that it lacked the prioritization and coordination
14 necessary to address the long-term challenge of en-
15 suring a secure and reliable information technology
16 and communications infrastructure.”; and

17 (6) by amending paragraph (7), as so redesign-
18 ated by paragraph (4) of this section, to read as
19 follows:

20 “(7) While African-Americans, Hispanics, and
21 Native Americans constitute 33 percent of the col-
22 lege-age population, members of these minorities
23 comprise less than 20 percent of bachelor degree re-
24 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-
6 Performance 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 other relevant orga-
4 nizations 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 RITY RESEARCH AND DEVELOPMENT PRO-
3 GRAMS.

4 (a) COMPUTER AND NETWORK SECURITY RESEARCH
5 AREAS.—Section 4(a) of the Cyber Security Research and
6 Development Act (15 U.S.C. 7403(a)(1)) is amended in
7 subparagraph (A) by inserting “identity management,”
8 after “cryptography,”.

9 (b) COMPUTER AND NETWORK SECURITY RESEARCH
10 GRANTS.—Section 4(a)(3) of such Act (15 U.S.C.
11 7403(a)(3)) is amended by striking subparagraphs (A)
12 through (E) and inserting the following new subpara-
13 graphs:

- 14 “(A) \$68,700,000 for fiscal year 2010;
15 “(B) \$73,500,000 for fiscal year 2011;
16 “(C) \$78,600,000 for fiscal year 2012;
17 “(D) \$84,200,000 for fiscal year 2013;
18 and
19 “(E) \$90,000,000 for fiscal year 2014.”.

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

- 23 (1) in paragraph (4)—
24 (A) in subparagraph (C), by inserting
25 “and” after the semicolon;

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

3 (C) by striking subparagraph (D);

4 (2) by adding at the end the following new sub-
5 paragraph:

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

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

12 “(7) AUTHORIZATION OF APPROPRIATIONS.—
13 There are authorized to be appropriated to the Na-
14 tional Science Foundation such sums as are nec-
15 essary to carry out this subsection for each of the
16 fiscal years 2010 through 2014.”.

17 (d) COMPUTER AND NETWORK SECURITY CAPACITY
18 BUILDING GRANTS.—Section 5(a)(6) of such Act (15
19 U.S.C. 7404(a)(6)) is amended to read as follows:

20 “(6) AUTHORIZATION OF APPROPRIATIONS.—
21 There are authorized to be appropriated to the Na-
22 tional Science Foundation such sums as are nec-
23 essary to carry out this subsection for each of the
24 fiscal years 2010 through 2014.”.

1 (e) SCIENTIFIC AND ADVANCED TECHNOLOGY ACT
2 GRANTS.—Section 5(b)(2) of such Act (15 U.S.C.
3 7404(b)(2)) is amended to read as follows:

4 “(2) AUTHORIZATION OF APPROPRIATIONS.—
5 There are authorized to be appropriated to the Na-
6 tional Science Foundation such sums as are nec-
7 essary to carry out this subsection for each of the
8 fiscal years 2010 through 2014.”

9 (f) GRADUATE TRAINEESHIPS IN COMPUTER AND
10 NETWORK SECURITY.—Section 5(c)(7) of such Act (15
11 U.S.C. 7404(c)(7)) is amended to read as follows:

12 “(7) AUTHORIZATION OF APPROPRIATIONS.—
13 There are authorized to be appropriated to the Na-
14 tional Science Foundation such sums as are nec-
15 essary to carry out this subsection for each of the
16 fiscal years 2010 through 2014.”

17 (g) POSTDOCTORAL RESEARCH FELLOWSHIPS IN CY-
18 BERSECURITY.—Section 5(e) of such Act (15 U.S.C.
19 7404(e)) is amended to read as follows:

20 “(e) POSTDOCTORAL RESEARCH FELLOWSHIPS IN
21 CYBERSECURITY.—

22 “(1) IN GENERAL.—The Director shall carry
23 out a program to encourage young scientists and en-
24 gineers to conduct postdoctoral research in the fields
25 of cybersecurity and information assurance, includ-

1 ing the research areas described in section 4(a)(1),
2 through the award of competitive, merit-based fel-
3 lowships.

4 “(2) AUTHORIZATION OF APPROPRIATIONS.—

5 There are authorized to be appropriated to the Na-
6 tional Science Foundation such sums as are nec-
7 essary to carry out this subsection for each of the
8 fiscal years 2010 through 2014.”

9 **SEC. 106. FEDERAL CYBER SCHOLARSHIP FOR SERVICE**
10 **PROGRAM.**

11 (a) IN GENERAL.—The Director of the National
12 Science Foundation shall carry out a Scholarship for Serv-
13 ice program to recruit and train the next generation of
14 Federal cybersecurity professionals and to increase the ca-
15 pacity of the higher education system to produce an infor-
16 mation technology workforce with the skills necessary to
17 enhance the security of the Nation’s communications and
18 information infrastructure.

19 (b) CHARACTERISTICS OF PROGRAM.—The program
20 under this section shall—

21 (1) provide, through qualified institutions of
22 higher education, scholarships that provide tuition,
23 fees, and a competitive stipend for up to 2 years to
24 students pursuing a bachelor’s or master’s degree and

1 up to 3 years to students pursuing a doctoral degree
2 in a cybersecurity field;

3 (2) provide the scholarship recipients with sum-
4 mer internship opportunities or other meaningful
5 temporary appointments in the Federal information
6 technology workforce; and

7 (3) increase the capacity of institutions of high-
8 er education to produce highly qualified cybersecu-
9 rity professionals, through the award of competitive,
10 merit-reviewed grants that support such activities
11 as—

12 (A) faculty professional development, in-
13 cluding technical, hands-on experiences in the
14 private sector or government, workshops, semi-
15 nars, conferences, and other professional devel-
16 opment opportunities that will result in im-
17 proved instructional capabilities;

18 (B) institutional partnerships, including
19 minority serving institutions; and

20 (C) development of cybersecurity-related
21 courses and curricula.

22 (c) SCHOLARSHIP REQUIREMENTS.—

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

1 (A) are citizens or permanent residents of
2 the United States;

3 (B) are full-time students in an eligible de-
4 gree program, as determined by the Director,
5 that is focused on computer security or infor-
6 mation assurance at an awardee institution;
7 and

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

10 (2) SELECTION.—Individuals shall be selected
11 to receive scholarships primarily on the basis of aca-
12 demic merit, with consideration given to financial
13 need and to the goal of promoting the participation
14 of individuals identified in section 33 or 34 of the
15 Science and Engineering Equal Opportunities Act
16 (42 U.S.C. 1885a or 1885b).

17 (3) SERVICE OBLIGATION.—If an individual re-
18 ceives a scholarship under this section, as a condi-
19 tion of receiving such scholarship, the individual
20 upon completion of their degree must serve as a cy-
21 bersecurity professional within the Federal workforce
22 for a period of time equal to the length of the schol-
23 arship. If a scholarship recipient is not offered em-
24 ployment by a Federal agency or a federally funded
25 research and development center, the service require-

1 ment can be satisfied at the Director's discretion
2 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 (d) FAILURE TO COMPLETE SERVICE OBLIGATION.—

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

16 (A) fails to maintain an acceptable level of
17 academic standing in the educational institution
18 in which the individual is enrolled, as deter-
19 mined by the Director;

20 (B) is dismissed from such educational in-
21 stitution for disciplinary reasons;

22 (C) withdraws from the program for which
23 the award was made before the completion of
24 such program;

1 (D) declares that the individual does not
2 intend to fulfill the service obligation under this
3 section; or

4 (E) fails to fulfill the service obligation of
5 the individual under this section,
6 such individual shall be liable to the United States
7 as provided in paragraph (3).

8 (2) MONITORING COMPLIANCE.—As a condition
9 of participating in the program, a qualified institu-
10 tion of higher education receiving a grant under this
11 section shall—

12 (A) enter into an agreement with the Di-
13 rector of the National Science Foundation to
14 ~~monitor the compliance of scholarship recipients~~
15 with respect to their service obligation; and

16 (B) provide to the Director, on an annual
17 basis, post-award employment information re-
18 quired under subsection (c)(4) for scholarship
19 recipients through the completion of their serv-
20 ice obligation.

21 (3) AMOUNT OF REPAYMENT.—

22 (A) LESS THAN ONE YEAR OF SERVICE.—
23 If a circumstance described in paragraph (1)
24 occurs before the completion of 1 year of a
25 service obligation under this section, the total

1 amount of awards received by the individual
2 under this section shall be repaid or such
3 amount shall be treated as a loan to be repaid
4 in accordance with subparagraph (C).

5 (B) MORE THAN ONE YEAR OF SERVICE.—
6 If a circumstance described in subparagraph
7 (D) or (E) of paragraph (1) occurs after the
8 completion of 1 year of a service obligation
9 under this section, the total amount of scholar-
10 ship awards received by the individual under
11 this section, reduced by the ratio of the number
12 of years of service completed divided by the
13 number of years of service required, shall be re-
14 paid or such amount shall be treated as a loan
15 to be repaid in accordance with subparagraph
16 (C).

17 (C) REPAYMENTS.—A loan described in
18 subparagraph (A) or (B) shall be treated as a
19 Federal Direct Unsubsidized Stafford Loan
20 under part D of title IV of the Higher Edu-
21 cation Act of 1965 (20 U.S.C. 1087a and fol-
22 lowing), and shall be subject to repayment, to-
23 gether with interest thereon accruing from the
24 date of the scholarship award, in accordance
25 with terms and conditions specified by the Di-

1 rector (in consultation with the Secretary of
2 Education) in regulations promulgated to carry
3 out this paragraph.

4 (4) COLLECTION OF REPAYMENT.—

5 (A) IN GENERAL.—In the event that a
6 scholarship recipient is required to repay the
7 scholarship under this subsection, the institu-
8 tion providing the scholarship shall—

9 (i) be responsible for determining the
10 repayment amounts and for notifying the
11 recipient and the Director of the amount
12 owed; and

13 (ii) collect such repayment amount
14 ~~within a period of time as determined~~
15 under the agreement described in para-
16 graph (2), or the repayment amount shall
17 be treated as a loan in accordance with
18 paragraph (3)(C).

19 (B) RETURNED TO TREASURY.—Except as
20 provided in subparagraph (C) of this para-
21 graph, any such repayment shall be returned to
22 the Treasury of the United States.

23 (C) RETAIN PERCENTAGE.—An institution
24 of higher education may retain a percentage of
25 any repayment the institution collects under

1 this paragraph to defray administrative costs
2 associated with the collection. The Director
3 shall establish a single, fixed percentage that
4 will apply to all eligible entities.

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

13 (e) HIRING AUTHORITY.—For purposes of any law
14 or regulation governing the appointment of individuals in
15 the Federal civil service, upon successful completion of
16 their degree, students receiving a scholarship under this
17 section shall be hired under the authority provided for in
18 section 213.3102(r) of title 5, Code of Federal Regula-
19 tions, and be exempted from competitive service. Upon ful-
20 fillment of the service term, such individuals shall be con-
21 verted to a competitive service position without competi-
22 tion if the individual meets the requirements for that posi-
23 tion.

1 (f) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to appropriated to the National Science
3 Foundation to carry out this section—

4 (1) \$18,700,000 for fiscal year 2010;

5 (2) \$20,100,000 for fiscal year 2011;

6 (3) \$21,600,000 for fiscal year 2012;

7 (4) \$23,300,000 for fiscal year 2013; and

8 (5) \$25,000,000 for fiscal year 2014.

9 **SEC. 107. CYBERSECURITY WORKFORCE ASSESSMENT.**

10 Not later than 180 days after the date of enactment
11 of this Act the President shall transmit to the Congress
12 a report addressing the cybersecurity workforce needs of
13 the Federal Government. The report shall include—

14 ~~(1) an examination of the current state of and~~
15 the projected needs of the Federal cybersecurity
16 workforce, including a comparison of the different
17 agencies and departments, and an analysis of the ca-
18 pacity of such agencies and departments to meet
19 those needs;

20 (2) an analysis of the sources and availability of
21 cybersecurity talent, a comparison of the skills and
22 expertise sought by the Federal Government and the
23 private sector, and an examination of the current
24 and future capacity of United States institutions of
25 higher education to provide cybersecurity profes-

1 sionals with those skills sought by the Federal Gov-
2 ernment and the private sector;

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 and for the transfer of research and
23 development results to the private sector; and

1 (5) make recommendations for how such entity
2 could be funded from Federal, State, and nongovern-
3 mental sources.

4 (c) COMPOSITION.—In establishing the task force
5 under subsection (a), the Director of the Office of Science
6 and Technology Policy shall appoint an equal number of
7 individuals from institutions of higher education and from
8 industry with knowledge and expertise in cybersecurity.

9 (d) REPORT.—Not later than 12 months after the
10 date of enactment of this Act, the Director of the Office
11 of Science and Technology Policy shall transmit to the
12 Congress a report describing the findings and rec-
13 ommendations of the task force.

14 **SEC. 109. CYBERSECURITY CHECKLIST DEVELOPMENT AND**
15 **DISSEMINATION.**

16 Section 8(c) of the Cybersecurity Research and De-
17 velopment Act (15 U.S.C. 7406(c)) is amended to read
18 as follows:

19 “(c) CHECKLISTS FOR GOVERNMENT SYSTEMS.—

20 “(1) IN GENERAL.—The Director of the Na-
21 tional Institute of Standards and Technology shall
22 develop or identify and revise or adapt as necessary,
23 checklists, configuration profiles, and deployment
24 recommendations for products and protocols that
25 minimize the security risks associated with each

1 computer hardware or software system that is, or is
2 likely to become, widely used within the Federal
3 Government.

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

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

23 “(4) AUTOMATION SPECIFICATIONS.—The Di-
24 rector of the National Institute of Standards and
25 Technology shall develop automated security speci-

1 fications (such as the Security Content Automation
2 Protocol) with respect to checklist content and asso-
3 ciated security related data.

4 “(5) DISSEMINATION OF CHECKLISTS.—The
5 Director of the National Institute of Standards and
6 Technology shall ensure that any product developed
7 under the National Checklist Program for any infor-
8 mation system, including the Security Content Auto-
9 mation Protocol and other automated security speci-
10 fications, is made available to Federal agencies.

11 “(6) AGENCY USE REQUIREMENTS.—Federal
12 agencies shall use checklists developed or identified
13 under paragraph (1) to secure computer hardware
14 and software systems. This paragraph does not—

15 “(A) require any Federal agency to select
16 the specific settings or options recommended by
17 the checklist for the system;

18 “(B) establish conditions or prerequisites
19 for Federal agency procurement or deployment
20 of any such system;

21 “(C) imply an endorsement of any such
22 system by the Director of the National Institute
23 of Standards and Technology; or

24 “(D) preclude any Federal agency from
25 procuring or deploying other computer hard-

1 ware or software systems for which no such
2 checklist has been developed or identified under
3 paragraph (1).”.

4 **SEC. 110. NATIONAL INSTITUTE OF STANDARDS AND TECH-**
5 **NOLOGY CYBERSECURITY RESEARCH AND**
6 **DEVELOPMENT.**

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

11 “(e) **INTRAMURAL SECURITY RESEARCH.**—As part of
12 the research activities conducted in accordance with sub-
13 section (d)(3), the Institute shall—

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

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

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

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

6 **TITLE II—ADVANCEMENT OF CY-**
7 **BERSECURITY TECHNICAL**
8 **STANDARDS**

9 **SEC. 201. DEFINITIONS.**

10 In this title:

11 (1) **DIRECTOR.**—The term “Director” means
12 the Director of the National Institute of Standards
13 and Technology.

14 (2) **INSTITUTE.**—The term “Institute” means
15 the National Institute of Standards and Technology.

16 **SEC. 202. INTERNATIONAL CYBERSECURITY TECHNICAL**
17 **STANDARDS.**

18 The Director, in coordination with appropriate Fed-
19 eral authorities, shall—

20 (1) ensure coordination of United States Gov-
21 ernment representation in the international develop-
22 ment of technical standards related to cybersecurity;
23 and

24 (2) not later than 1 year after the date of en-
25 actment of this Act, develop and transmit to the

1 Congress a proactive plan to engage international
2 standards bodies with respect to the development of
3 technical standards related to cybersecurity.

4 **SEC. 203. PROMOTING CYBERSECURITY AWARENESS AND**
5 **EDUCATION.**

6 (a) PROGRAM.—The Director, in collaboration with
7 relevant Federal agencies, industry, educational institu-
8 tions, and other organizations, shall develop and imple-
9 ment a cybersecurity awareness and education program to
10 increase public awareness of cybersecurity risks, con-
11 sequences, and best practices through—

12 (1) the widespread dissemination of cybersecu-
13 rity technical standards and best practices identified
14 by the Institute; and

15 (2) efforts to make cybersecurity technical
16 standards and best practices usable by individuals,
17 small to medium-sized businesses, State and local
18 governments, and educational institutions.

19 (b) MANUFACTURING EXTENSION PARTNERSHIP.—
20 The Director shall, to the extent appropriate, implement
21 subsection (a) through the Manufacturing Extension Part-
22 nership program under section 25 of the National Insti-
23 tute of Standards and Technology Act (15 U.S.C. 278k).

24 (c) REPORT TO CONGRESS.—Not later than 90 days
25 after the date of enactment of this Act, the Director shall

1 transmit to the Congress a report containing a strategy
2 for implementation of this section.

3 **SEC. 204. IDENTITY MANAGEMENT RESEARCH AND DEVEL-**
4 **OPMENT.**

5 The Director shall establish a program to support the
6 development of technical standards, metrology, testbeds,
7 and conformance criteria, taking into account appropriate
8 user concerns, to—

9 (1) improve interoperability among identity
10 management technologies;

11 (2) strengthen authentication methods of iden-
12 tity management systems; and

13 (3) improve privacy protection in identity man-
14 agement systems, including health information tech-

15 nology systems, through authentication and security
16 protocols.



**AMENDMENT TO THE AMENDMENT IN THE
NATURE OF A SUBSTITUTE TO H.R. 4061
OFFERED BY MR. LUJÁN OF NEW MEXICO**

Page 12, line 8, insert “throughout all regions of the United States” after “higher education”.

Page 27, line 17, strike “State and local” and insert “State, local, and tribal”.



**AMENDMENT TO THE AMENDMENT IN THE
NATURE OF A SUBSTITUTE TO H.R. 4061
OFFERED BY MR. McCAUL OF TEXAS**

Page 24, line 6, strike “any product developed” and insert “Federal agencies are informed of the availability of any product developed or identified”.

Page 24, line 10, strike “, is made available to Federal agencies”.

Page 24, lines 11 through 14, strike “Federal agencies” and all that follows through “paragraph does not” and insert “The development of a checklist under paragraph (1) for a computer hardware or software system does not”



**AMENDMENT TO THE AMENDMENT IN THE
NATURE OF A SUBSTITUTE TO H.R. 4061
OFFERED BY MR. WU OF OREGON**

Page 28, line 12, strike “and”.

Page 28, line 16, strike the period and insert “;
and”.

Page 28, after line 16, insert the following new
paragraph:

- 1 (4) improve the usability of identity manage-
- 2 ment systems.

