

109TH CONGRESS  
1ST SESSION

# S. 2109

To provide a national innovation initiative.

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## IN THE SENATE OF THE UNITED STATES

DECEMBER 15, 2005

Mr. ENSIGN (for himself, Mr. LIEBERMAN, Mr. LUGAR, Mr. DEWINE, Mr. ALLEN, Mr. BINGAMAN, Mr. ALEXANDER, Mr. CHAMBLISS, Mr. BAYH, Mr. NELSON of Florida, Mr. KOHL, Mr. CORNYN, Mr. ISAKSON, Mr. SMITH, Mr. LEAHY, and Mr. NELSON of Nebraska) introduced the following bill; which was read twice and referred to the Committee on Finance

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## A BILL

To provide a national innovation initiative.

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

### 3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the  
5 “National Innovation Act of 2005”.

6 (b) TABLE OF CONTENTS.—

7 The table of contents for this Act is as follows:

- Sec. 1. Short title; table of contents.
- Sec. 2. Findings and purposes.
- Sec. 3. Definitions.

TITLE I—INNOVATION PROMOTION

- Sec. 101. President’s Council on Innovation.
- Sec. 102. Innovation acceleration grants.
- Sec. 103. A national commitment to basic research.
- Sec. 104. Regional economic development.
- Sec. 105. Development of advanced manufacturing systems.
- Sec. 106. Study on service science.

## TITLE II—MODERNIZATION OF SCIENCE, EDUCATION, AND HEALTHCARE PROGRAMS

### Subtitle A—Science and Education

- Sec. 201. Graduate fellowships and graduate traineeships.
- Sec. 202. Professional science master’s degree programs.
- Sec. 203. Increased support for science education through the National Science Foundation.
- Sec. 204. Innovation-based experiential learning.

### Subtitle B—21st Century Healthcare System

- Sec. 211. Sense of Congress regarding 21st century healthcare system.

## TITLE III—INCENTIVES FOR ENCOURAGING INNOVATION

### Subtitle A—Research Credits

- Sec. 301. Permanent extension of research credit.
- Sec. 302. Increase in rates of alternative incremental credit.
- Sec. 303. Alternative simplified credit for qualified research expenses.

### Subtitle B—Health and Education

- Sec. 311. Study and report on catastrophic healthcare.
- Sec. 312. Lifelong learning accounts.

### Subtitle C—Savings and Investments

- Sec. 321. Regulations relating to private foundation support of innovations in economic development.
- Sec. 322. Advisory group regarding valuation of intangibles.

## TITLE IV—DEPARTMENT OF DEFENSE MATTERS

### Subtitle A—Defense Research and Education

- Sec. 401. Revitalization of frontier and multidisciplinary research.
- Sec. 402. Enhancement of education.

### Subtitle B—Defense Advanced Manufacturing

- Sec. 411. Manufacturing research and development.
- Sec. 412. Transition of transformational manufacturing processes and technologies to the defense manufacturing base.
- Sec. 413. Manufacturing technology strategies.
- Sec. 414. Planning for adoption of strategic innovation.
- Sec. 415. Report.
- Sec. 416. Authorization of appropriations.

## TITLE V—JUDICIARY AND OTHER MATTERS

Sec. 501. Sense of Congress on retaining high-tech talent in the United States.  
Sec. 502. Study on barriers to innovation.  
Sec. 503. Sense of Congress on patent reform.

1 **SEC. 2. FINDINGS AND PURPOSES.**

2 (a) FINDINGS.—Congress makes the following find-  
3 ings:

4 (1) The United States is the most innovative  
5 Nation in the world. Since our Nation's founding,  
6 exploration, opportunity, and discovery have re-  
7 mained essential to fulfilling our Nation's strategic  
8 economic and political objectives.

9 (2) In the 21st century, a well-educated and  
10 trained workforce, investment in research and devel-  
11 opment, and a regulatory and physical infrastructure  
12 that supports innovators are essential to ensuring  
13 that the United States continues to lead the global  
14 economy on innovation.

15 (3) America's future economic and national se-  
16 curity will largely depend on the creativity and com-  
17 mitment of our Nation to unleash its innovation ca-  
18 pacity.

19 (4) The world has become dramatically more  
20 interconnected and competitive. Cutting edge re-  
21 search, world-class education, and highly skilled  
22 labor pools are no longer within the sole purview of  
23 the United States.

1           (5) The United States investment in basic re-  
2           search is currently insufficient to meet the chal-  
3           lenges we face.

4           (6) Federal support for basic research in the  
5           physical sciences has consistently lagged behind that  
6           given to the life sciences in recent years.

7           (7) Traditional measurements of innovation ca-  
8           pacity focused solely on inputs, such as research and  
9           development spending, number of patents and value  
10          of physical infrastructure. The traditional measure-  
11          ments are necessary but are not sufficient metrics  
12          for innovation in the 21st century's knowledge econ-  
13          omy.

14          (8) Current Federal budget constraints require  
15          prioritization of spending and new programs must  
16          be funded through existing funds or through identi-  
17          fiable funding offsets whenever possible.

18          (9) A national, private sector-led, and govern-  
19          ment supported plan is required if the United States  
20          is to adequately respond to the challenges of in-  
21          creased global competition and take advantage of the  
22          opportunities this changing global dynamic presents.

23          (b) PURPOSES.—The purposes of this Act are to—

24                (1) make innovation a fundamental economic  
25                priority for the United States;

1           (2) create the most fertile policy environment  
2           for innovation to occur;

3           (3) develop greater numbers of American sci-  
4           entists, mathematicians, and engineers;

5           (4) enhance the quality of math and science  
6           education at all levels;

7           (5) increase the Federal Government’s invest-  
8           ment in basic research, especially in the physical  
9           sciences;

10          (6) direct greater funding toward multidisci-  
11          plinary and frontier research where tomorrow’s inno-  
12          vations are most likely to occur;

13          (7) secure a strong advanced manufacturing  
14          base in the United States to ensure that as innova-  
15          tions occur, America is poised to reap the benefits  
16          via the creation of new jobs and investment; and

17          (8) examine both the incentives for, and bar-  
18          riers to, innovation to better understand what addi-  
19          tional policy changes are warranted.

20   **SEC. 3. DEFINITIONS.**

21       In this Act:

22          (1) CONGRESSIONAL DEFENSE COMMITTEES.—  
23       The term “congressional defense committees” has  
24       the meaning given that term in section 101(a)(16)  
25       of title 10, United States Code.

1           (2) DEFENSE MANUFACTURING BASE.—The  
2       term “defense manufacturing base” includes any  
3       supplier of the Department of Defense, including a  
4       supplier of raw materials.

5           (3) EXECUTIVE AGENCY.—The term “Executive  
6       agency” has the meaning given that term in section  
7       105 of title 5, United States Code.

8           (4) EXTENDED PRODUCTION ENTERPRISE.—  
9       The term “extended production enterprise” means a  
10      system in which key entities in the manufacturing  
11      chain, including entities engaged in product design  
12      and development, manufacturing, sourcing, distribu-  
13      tion, and user entities, are linked together through  
14      information technology and other means to promote  
15      efficiency and productivity.

16          (5) INNOVATION.—The term “innovation”  
17      means the intersection of invention and insight lead-  
18      ing to the creation of social and economic value, in-  
19      cluding through efforts meeting fundamental tech-  
20      nology challenges and involving multidisciplinary  
21      work and a high degree of novelty.

22          (6) MANUFACTURING EXTENSION PARTNERSHIP  
23      PROGRAM.—The term “Manufacturing Extension  
24      Partnership Program” means the Manufacturing

1 Extension Partnership Program of the Department  
2 of Commerce.

3 (7) MANUFACTURING TECHNOLOGY PRO-  
4 GRAM.—The term “Manufacturing Technology Pro-  
5 gram” means the Manufacturing Technology Pro-  
6 gram under section 2521 of title 10, United States  
7 Code.

8 (8) PROFESSIONAL SCIENCE MASTERS PRO-  
9 GRAM.—The term “professional science masters pro-  
10 gram” means a graduate degree program in science  
11 and mathematics that extends science training to  
12 strategic planning and business management and fo-  
13 cuses on multidisciplinary specialties such as busi-  
14 ness and information technology (IT), biology and  
15 IT (bioinformatics), and computational chemistry.

16 (9) REGIONAL INNOVATION HOT SPOTS DE-  
17 FINED.—The term “regional innovation hot spots”  
18 means regions that are defined by a high degree of  
19 innovation and the availability of talent, investment,  
20 and infrastructure necessary to create and sustain  
21 such innovation.

22 (10) SERVICE SCIENCE.—The term “service  
23 science” means curriculums, research programs, and  
24 training regimens, including service sciences, man-  
25 agement, and engineering (SSME) programs, that

1       exist or that are being developed to teach individuals  
 2       to apply technology, organizational process manage-  
 3       ment, and industry-specific knowledge to solve com-  
 4       plex problems.

5           (11) SMALL BUSINESS INNOVATION RESEARCH  
 6       PROGRAM.—The term “Small Business Innovation  
 7       Research Program” has the meaning given that  
 8       term in section 2500(11) of title 10, United States  
 9       Code.

10          (12) SMALL BUSINESS TECHNOLOGY TRANSFER  
 11       PROGRAM.—The term “Small Business Technology  
 12       Transfer Program” has the meaning given that term  
 13       in section 2500(12) of title 10, United States Code.

14          (13) SSME.—The term “SSME” means the  
 15       discipline known as service sciences, management,  
 16       and engineering that—

17           (A) applies scientific, engineering and  
 18           management disciplines to tasks that one orga-  
 19           nization performs beneficially for others, gen-  
 20           erally as part of the services sector of the econ-  
 21           omy; and

22           (B) integrates computer science, operations  
 23           research, industrial engineering, business strat-  
 24           egy, management sciences, and social and legal  
 25           sciences, in order to encourage innovation in



1           how organizations create value for customers  
2           and shareholders that could not be achieved  
3           through such disciplines working in isolation.

4           **TITLE I—INNOVATION**  
5           **PROMOTION**

6   **SEC. 101. PRESIDENT’S COUNCIL ON INNOVATION.**

7           (a) IN GENERAL.—The President shall establish a  
8   President’s Council on Innovation (in this section referred  
9   to as the “Council”).

10          (b) DUTIES.—The Council’s duties shall include—

11               (1) monitoring implementation of legislative  
12               proposals and initiatives for promoting innovation,  
13               including policies related to research funding, tax-  
14               ation, immigration, trade, and education that are  
15               proposed in this and other Acts;

16               (2) in consultation with the Director of the Of-  
17               fice of Management and Budget, developing a proc-  
18               ess for using metrics to assess the impact of existing  
19               and proposed policies and rules that affect innova-  
20               tion capabilities in the United States;

21               (3) identifying opportunities and making rec-  
22               ommendations for the heads of executive agencies to  
23               improve innovation, monitoring, and reporting on  
24               the implementation of such recommendations;

1           (4) developing metrics for measuring the  
2 progress of the Federal Government with respect to  
3 improving conditions for innovation, including  
4 through talent development, investment, and infra-  
5 structure improvements; and

6           (5) submitting an annual report to the Presi-  
7 dent and Congress on such progress.

8       (c) MEMBERSHIP AND COORDINATION.—

9           (1) MEMBERSHIP.—The Council shall be com-  
10 posed of the Secretary or head of each of the fol-  
11 lowing:

12                   (A) The Department of Commerce.

13                   (B) The Department of Defense.

14                   (C) The Department of Education.

15                   (D) The Department of Energy.

16                   (E) The Department of Health and  
17 Human Services.

18                   (F) The Department of Homeland Secu-  
19 rity.

20                   (G) The Department of Labor.

21                   (H) The Department of the Treasury.

22                   (I) The National Aeronautics and Space  
23 Administration.

24                   (J) The Securities and Exchange Commis-  
25 sion.

1 (K) The National Science Foundation.

2 (L) The Office of the United States Trade  
3 Representative.

4 (M) The Office of Management and Budg-  
5 et.

6 (N) The Office of Science and Technology  
7 Policy.

8 (2) CHAIRPERSON.—The Secretary of Com-  
9 merce shall serve as chairperson of the Council.

10 (3) COORDINATION.—The chairperson of the  
11 Council shall ensure appropriate coordination be-  
12 tween the Council and the National Economic Coun-  
13 cil and the National Security Council.

14 (d) DEVELOPMENT OF INNOVATION AGENDA.—

15 (1) IN GENERAL.—The Council shall develop a  
16 comprehensive agenda for strengthening the innova-  
17 tion capabilities of the Federal Government and  
18 State governments, academia, and the private sector  
19 in the United States.

20 (2) CONSULTATION.—The comprehensive agen-  
21 da required by paragraph (1) shall be developed in  
22 consultation with appropriate representatives of the  
23 private sector, scientific organizations, and academic  
24 organizations.

1 **SEC. 102. INNOVATION ACCELERATION GRANTS.**

2 (a) GRANT PROGRAM.—The President shall establish  
3 a grant program, to be known as the “Innovation Accel-  
4 eration Grants Program”, to support and promote innova-  
5 tion in the United States. Priority in the awarding of  
6 grants shall be given to projects that meet fundamental  
7 technology challenges and that involve multidisciplinary  
8 work and a high degree of novelty.

9 (b) AWARDING OF GRANTS THROUGH DEPARTMENTS  
10 AND AGENCIES.—

11 (1) FUNDING GOALS.—The President shall en-  
12 sure that it is the goal of each Executive agency that  
13 finances research in science, mathematics, engineer-  
14 ing, and technology to allocate at least 3 percent of  
15 the agency’s total annual research and development  
16 budget to funding grants under the Innovation Ac-  
17 celeration Grants Program.

18 (2) ADMINISTRATION.—

19 (A) IN GENERAL.—Each head of an Exec-  
20 utive agency awarding grants under paragraph  
21 (1) shall submit a plan for implementing the  
22 grant program within such Executive agency to  
23 the Director of the Office of Science and Tech-  
24 nology Policy and the Director of the Office of  
25 Management and Budget. The implementation  
26 plan shall be submitted not later than 90 days

1 after the date of enactment of this Act. The im-  
2 plementation plan may incorporate existing ini-  
3 tiatives of the Executive agencies that promote  
4 research in innovation as described in sub-  
5 section (a).

6 (B) REQUIRED METRICS.—The head of  
7 each Executive agency submitting an implemen-  
8 tation plan pursuant to this section shall in-  
9 clude metrics upon which grant funding deci-  
10 sions will be made and metrics for assessing the  
11 success of the grants awarded.

12 (C) GRANT DURATION AND RENEWALS.—

13 (i) IN GENERAL.—Any grants issued  
14 by an Executive agency under this section  
15 shall be for a period not to exceed 3 years.

16 (ii) EVALUATION.—Not later than 90  
17 days prior to the expiration of a grant  
18 issued under this section, the Executive  
19 agency that approved the grant shall com-  
20 plete an evaluation of the effectiveness of  
21 the grant based on the metrics established  
22 pursuant to subparagraph (B). In its eval-  
23 uation, the Executive agency shall consider  
24 the extent to which the program funded by

1 the grant met the goals of quality improve-  
2 ment and job creation.

3 (iii) PUBLICATION OF REVIEW.—The  
4 Executive agency shall publish and make  
5 available to the public the review of each  
6 grant approved pursuant to this section.

7 (iv) FAILURE TO MEET METRICS.—  
8 Any grant that the Executive agency  
9 awarding the grant determines has failed  
10 to satisfy any of the metrics developed pur-  
11 suant to subparagraph (B), shall not be el-  
12 igible for a renewal.

13 (v) RENEWAL.—A grant issued under  
14 this section that satisfies all of the metrics  
15 developed pursuant to subparagraph (B),  
16 may be renewed once for a period not to  
17 exceed 3 years. Additional renewals may be  
18 considered only if the head of the Execu-  
19 tive agency makes a specific finding that  
20 the program being funded involves a sig-  
21 nificant technology advance that requires a  
22 longer timeframe to complete critical re-  
23 search, and the research satisfies all the  
24 metrics developed pursuant to subpara-  
25 graph (B).

1 **SEC. 103. A NATIONAL COMMITMENT TO BASIC RESEARCH.**

2 (a) **PLAN FOR INCREASED RESEARCH.**—Not later  
3 than 180 days after the date of the enactment of this Act,  
4 the Director of the National Science Foundation shall sub-  
5 mit to Congress a comprehensive, multiyear plan that de-  
6 scribes how the funds authorized in subsection (b) shall  
7 be used. Such plan shall be developed with a focus on uti-  
8 lizing basic research in physical science and engineering  
9 to optimize the United States economy as a global compet-  
10 itor and leader in productive innovation.

11 (b) **INCREASED FUNDING FOR NATIONAL SCIENCE**  
12 **FOUNDATION.**—There are authorized to be appropriated  
13 to the National Science Foundation for the purpose of  
14 doubling research funding the following amounts:

15 (1) \$6,440,000,000 for fiscal year 2007.

16 (2) \$7,280,000,000 for fiscal year 2008.

17 (3) \$8,120,000,000 for fiscal year 2009.

18 (4) \$8,960,000,000 for fiscal year 2010.

19 (5) \$9,800,000,000 for fiscal year 2011.

20 (c) **RECOMMENDATIONS FOR RESEARCH AND DEVEL-**  
21 **OPMENT FUNDING.**—Not later than 1 year after the date  
22 of the enactment of this Act, the Director of the Office  
23 of Science and Technology Policy shall evaluate and, as  
24 appropriate, submit to Congress recommendations for an  
25 increase in funding for research and development in phys-  
26 ical sciences and engineering in consultation with agencies

1 and departments of the United States with significant re-  
 2 search and development budgets.

3 **SEC. 104. REGIONAL ECONOMIC DEVELOPMENT.**

4 (a) DEVELOPMENT OF FUNDING STRATEGY.—

5 (1) IN GENERAL.—The Assistant Secretary for  
 6 Economic Development of the Department of Com-  
 7 merce shall review Federal programs that support  
 8 local economic development and prepare and imple-  
 9 ment a strategy to focus funding on initiatives that  
 10 improve the ability of communities to participate  
 11 successfully in the modern economy through innova-  
 12 tion. In preparing the strategy, priority should be  
 13 given to projects that—

14 (A) emphasize private sector cooperation  
 15 with State and local governments and nonprofit  
 16 organizations focused on regional economic de-  
 17 velopment as the means of achieving specific  
 18 objectives related to the support and promotion  
 19 of innovation; and

20 (B) are the most successful in meeting the  
 21 metrics established under subsection (b).

22 (2) COORDINATION.—The Assistant Secretary  
 23 shall coordinate the development and implementation  
 24 of the strategy with the activities carried out by the



1 Under Secretary for Technology under subsection  
2 (d).

3 (b) EVALUATION OF PROGRAMS.—The Assistant Sec-  
4 retary for Economic Development of the Department of  
5 Commerce shall develop metrics to measure the success  
6 of Federal programs in supporting and promoting innova-  
7 tion at the local community level while minimizing bu-  
8 reaucracy and overhead expenses.

9 (c) PROMOTION OF ECONOMIC DEVELOPMENT OP-  
10 PORTUNITIES.—The Assistant Secretary for Economic  
11 Development of the Department of Commerce should work  
12 with organizations focused on economic development to  
13 highlight opportunities for such organizations to serve  
14 local communities through grants focused on economic de-  
15 velopment and investment in companies pursuing innova-  
16 tion.

17 (d) REGIONAL INNOVATION HOT SPOTS.—

18 (1) PROMOTION OF REGIONAL INNOVATION HOT  
19 SPOTS.—The Under Secretary for Technology of the  
20 Department of Commerce shall coordinate activities  
21 focused on promoting innovation through the devel-  
22 opment of regional innovation hot spots.

23 (2) GUIDE TO DEVELOPING SUCCESSFUL RE-  
24 GIONAL INNOVATION HOT SPOTS.—

1 (A) IN GENERAL.—Not later than 1 year  
2 after the date of enactment of this Act, the Sec-  
3 retary of Commerce, in consultation with rep-  
4 resentatives of regional innovation hot spots,  
5 shall publish a report, to be titled the “Guide  
6 to Developing Successful Regional Innovation  
7 Hot Spots”, that examines successful regional  
8 innovation hot spots and includes recommenda-  
9 tions for establishing and fostering regional in-  
10 novation hot spots.

11 (B) CONTENT.—The report required under  
12 subparagraph (A) shall—

13 (i) include information on the evalua-  
14 tion of human capital;

15 (ii) include information on the role of  
16 sponsoring institutions, such as univer-  
17 sities, nonprofit organizations, and labora-  
18 tories, in establishing and fostering re-  
19 gional innovation hot spots;

20 (iii) include information on the role of  
21 State and local government leaders, leaders  
22 in the research and business communities,  
23 and community organizations in estab-  
24 lishing and fostering regional innovation  
25 hot spots;

1 (iv) discuss the importance of collabo-  
 2 ration by public and private sector leaders;

3 (v) identify sources of funding for  
 4 these activities within Federal, State, and  
 5 local governments and the private sector;  
 6 and

7 (vi) include recommendations for de-  
 8 veloping strategic plans to stimulate inno-  
 9 vation, including recommendations relating  
 10 to knowledge transfer and commercializa-  
 11 tion, the support of regional entrepreneur-  
 12 ship and increased innovation within exist-  
 13 ing regional firms, and the linking of pri-  
 14 mary institutions engaged in the innova-  
 15 tion process.

16 (3) REGIONAL INNOVATION HOT SPOT  
 17 METRICS.—

18 (A) DEVELOPMENT OF METRICS.—In con-  
 19 junction with publishing the report required  
 20 under paragraph (2), the Secretary of Com-  
 21 merce shall develop the following sets of  
 22 metrics:

23 (i) Metrics to be considered for identi-  
 24 fying potential regional innovation hot

spots (in this subsection referred to as “identifying metrics”).

(ii) Metrics to be considered for evaluating the impact and effectiveness of established regional innovation hot spots (in this subsection referred to as “evaluation metrics”).

(B) USE OF METRICS.—The Under Secretary of Commerce for Technology shall use the identifying metrics to conduct biannual assessments of potential regional clusters and shall use the evaluation metrics to assess the impact and effectiveness of established regional innovation hot spots in improving the regional economy and regional job market. The Under Secretary shall also assess the cost effectiveness of operating within each regional hot spot. The Under Secretary shall report the biannual assessments to Congress.

**SEC. 105. DEVELOPMENT OF ADVANCED MANUFACTURING SYSTEMS.**

(a) RESEARCH AND DEVELOPMENT.—The Director of the National Institute of Standards and Technology shall support research and development in collaboration with entities and organizations from the industrial sector

1 to supplement and support work in the private sector on  
2 advanced manufacturing systems designed to increase pro-  
3 ductivity and efficiency and to create competitive advan-  
4 tages for United States businesses. These research and de-  
5 velopment activities should focus on the following activi-  
6 ties:

7 (1) Supporting industry efforts to develop inno-  
8 vative, state-of-the-art manufacturing processes, ad-  
9 vanced technologies through interoperable standards,  
10 and related concepts, including—

11 (A) advanced distributed and desktop man-  
12 ufacturing linked to and made compatible with  
13 the extended production enterprise system de-  
14 scribed in paragraph (2);

15 (B) non-contact quality inspection proc-  
16 esses linked to and made compatible with the  
17 extended production enterprise system;

18 (C) small lot manufacturing processes that  
19 are—

20 (i) as cost-effective as mass produc-  
21 tion processes; and

22 (ii) linked to and compatible with the  
23 extended production enterprise system; and

24 (D) the use of state-of-the-art materials  
25 and processes at the nanotechnological level.

1           (2) Supporting industry efforts to develop an  
2           extended production enterprise system that inte-  
3           grates key entities, including entities engaged in  
4           product design and development, manufacturing,  
5           sourcing, distribution, and user entities, including  
6           through the development of—

7                   (A) interoperable software and standards  
8                   designed to maximize the compatibility of the  
9                   design, modeling, and manufacturing stages of  
10                  the manufacturing process; and

11                  (B) supply chain software.

12           (b) COORDINATION OF ACTIVITIES.—The Director of  
13           the National Institute of Standards and Technology shall  
14           coordinate activities under subsection (a) with activities  
15           under—

16                   (1) the Small Business Innovation Research  
17                   Program;

18                   (2) the Small Business Technology Transfer  
19                   Program; and

20                   (3) the Manufacturing Technology Program of  
21                   the Department of Defense.

22           (c) TESTING.—The Director of the National Institute  
23           of Standards and Technology shall support the work of  
24           entities and organizations from the industrial sector in de-  
25           veloping prototypes and testing areas for testing and refin-

1 ing, in actual production conditions, the processes, tech-  
 2 nologies, and extended production enterprise system de-  
 3 scribed in subsection (a)(2) in order to maximize produc-  
 4 tivity gains and cost efficiencies.

5 (d) DEVELOPMENT OF STANDARDS.—The Director  
 6 of the National Institute of Standards and Technology,  
 7 in coordination with entities and organizations from the  
 8 industrial sector and the Manufacturing Technology Pro-  
 9 gram, shall support standards to be used as manufac-  
 10 turing performance criteria to accelerate the adoption of  
 11 improvements and innovative processes and protocols de-  
 12 veloped under subsection (a).

13 (e) PILOT TEST BEDS OF EXCELLENCE.—

14 (1) ESTABLISHMENT.—The Director of the Na-  
 15 tional Institute of Standards and Technology shall,  
 16 in collaboration with entities and organizations from  
 17 the industrial sector, support not more than 3 pilot  
 18 test beds of excellence in manufacturing fields im-  
 19 portant to advanced technologies developed under  
 20 subsection (a), such as nanotechnology, to be used  
 21 by the public and private sector. The test beds of ex-  
 22 cellence shall focus on production development, par-  
 23 ticularly the invention, prototyping, and engineering  
 24 development stages of the manufacturing process.

1           (2) COMPETITION.—The Secretary of Com-  
2 merce shall conduct a competition to select the pilot  
3 test beds of excellence based on criteria and metrics  
4 established by the Secretary prior to the competi-  
5 tion.

6           (3) FUNDING.—The Secretary of Commerce  
7 may provide the pilot test beds of excellence selected  
8 pursuant to the competition set forth in paragraph  
9 (2) with an appropriate level of funding if and only  
10 if the following conditions are satisfied:

11               (A) No more than  $\frac{1}{3}$  of the funding of  
12 each test bed of excellence is provided by the  
13 Federal Government.

14               (B) At least  $\frac{1}{3}$  of the cost of each test bed  
15 of excellence is provided by participants from  
16 the private sector.

17               (C) At least  $\frac{1}{3}$  of the cost of each test bed  
18 of excellence is provided by State or local gov-  
19 ernments.

20           (4) REVIEW OF FUNDED TEST BEDS.—Within 3  
21 years of the start of Federal funding for any test  
22 bed of excellence pursuant to this section, the Sec-  
23 retary of Commerce shall use the metrics established  
24 pursuant to paragraph (2) and any additional review  
25 metrics that the Secretary determines appropriate to



1        assess the performance of the federally funded test  
2        beds of excellence. Any test bed of excellence that  
3        fails to satisfy any of the performance metrics will  
4        be ineligible for additional Federal funding.

5            (5) SUNSET PROVISION.—Federal funding of  
6        any test bed of excellence shall cease 5 years after  
7        the date of enactment of this Act.

8            (f) MANUFACTURING EXTENSION PARTNERSHIP  
9        FOCUS ON INNOVATION.—The Director of the National  
10       Institute of Standards and Technology shall ensure that  
11       the Manufacturing Extension Partnership program devel-  
12       ops a focus on innovation, including through technology  
13       diffusion, supply and distribution chain integration, and  
14       the dissemination of the processes, technologies, and ex-  
15       tended production enterprise systems developed under this  
16       section.

17           (g) AUTHORIZATION OF APPROPRIATIONS.—There  
18       are authorized to be appropriated to the Department of  
19       Commerce for the purpose of carrying out activities under  
20       this section the following amounts:

- 21            (1) \$20,000,000 for fiscal year 2007.
- 22            (2) \$40,000,000 for fiscal year 2008.
- 23            (3) \$60,000,000 for fiscal year 2009.
- 24            (4) \$80,000,000 for fiscal year 2010.
- 25            (5) \$100,000,000 for fiscal year 2011.

1 **SEC. 106. STUDY ON SERVICE SCIENCE.**

2 (a) SENSE OF CONGRESS.—It is the sense of Con-  
3 gress that, in order to strengthen the competitiveness of  
4 United States enterprises and institutions and to prepare  
5 the people of the United States for high-wage, high-skill  
6 employment, the Federal Government should better under-  
7 stand and respond strategically to the emerging vocation  
8 and learning discipline known as service science.

9 (b) STUDY.—Not later than 270 days after the date  
10 of the enactment of this Act, the Director of the National  
11 Science Foundation shall conduct a study and report to  
12 Congress regarding how the Federal Government should  
13 support, through research, education, and training, the  
14 new discipline of service science.

15 (c) OUTSIDE RESOURCES.—In conducting the study  
16 under subsection (b), the Director of the National Science  
17 Foundation shall consult with leaders from 2- and 4-year  
18 institutions of higher education, as defined in section 101  
19 of the Higher Education Act of 1965 (20 U.S.C. 1001),  
20 leaders from corporations, and other relevant parties.

1 **TITLE II—MODERNIZATION OF**  
2 **SCIENCE, EDUCATION, AND**  
3 **HEALTHCARE PROGRAMS**

4 **Subtitle A—Science and Education**

5 **SEC. 201. GRADUATE FELLOWSHIPS AND GRADUATE**  
6 **TRAINEESHIPS.**

7 (a) GRADUATE RESEARCH FELLOWSHIP PRO-  
8 GRAM.—

9 (1) IN GENERAL.—During the 5-year period be-  
10 ginning on the date of the enactment of this Act, the  
11 Director of the National Science Foundation shall  
12 expand the Graduate Research Fellowship Program  
13 of the Foundation so that an additional 1250 fellow-  
14 ships are awarded to United States citizens under  
15 such Program during such period.

16 (2) EXTENSION OF FELLOWSHIP PERIOD.—The  
17 Director of the National Science Foundation is au-  
18 thorized to award fellowships under the Graduate  
19 Research Fellowship Program for a period of 5  
20 years, subject to funds being made available for such  
21 purpose.

22 (3) AUTHORIZATION OF APPROPRIATIONS.—In  
23 addition to any other amounts authorized to be ap-  
24 propriated, there are authorized to be appropriated  
25 \$34,000,000 for each of the fiscal years 2007

1 through 2011 to provide an additional 250 fellow-  
 2 ships under the Graduate Research Fellowship Pro-  
 3 gram during each such fiscal year.

4 (b) INTEGRATIVE GRADUATE EDUCATION AND RE-  
 5 SEARCH TRAINEESHIP PROGRAM.—

6 (1) IN GENERAL.—During the 5-year period be-  
 7 ginning on the date of the enactment of this Act, the  
 8 Director of the National Science Foundation shall  
 9 expand the Integrative Graduate Education and Re-  
 10 search Traineeship program of the Foundation so  
 11 that an additional 1,250 United States citizens are  
 12 awarded grants under such program during such pe-  
 13 riod.

14 (2) AUTHORIZATION OF APPROPRIATIONS.—In  
 15 addition to any other amounts authorized to be ap-  
 16 propriated, there are authorized to be appropriated  
 17 \$57,000,000 for each of the fiscal years 2007  
 18 through 2011 to provide grants to an additional 250  
 19 individuals under the Integrative Graduate Edu-  
 20 cation and Research Traineeship program during  
 21 each such fiscal year

22 **SEC. 202. PROFESSIONAL SCIENCE MASTER'S DEGREE PRO-**  
 23 **GRAMS.**

24 (a) DEFINITION OF INSTITUTION OF HIGHER EDU-  
 25 CATION.—In this section, the term “institution of higher

1 education” has the meaning given the term in section  
2 101(a) of the Higher Education Act of 1965 (20 U.S.C.  
3 1001(a)).

4 (b) CLEARINGHOUSE.—

5 (1) DEVELOPMENT.—From amounts appro-  
6 priated under subsection (d), the Director of the Na-  
7 tional Science Foundation shall establish a clearing-  
8 house, in collaboration with 4-year institutions of  
9 higher learning, industries, and Federal agencies  
10 that employ science-trained personnel, to share pro-  
11 gram elements used in successful professional  
12 science master’s degree programs.

13 (2) AVAILABILITY.—The Director of the Na-  
14 tional Science Foundation shall make the clearing-  
15 house of program elements developed under para-  
16 graph (1) available to institutions of higher edu-  
17 cation that are developing professional science mas-  
18 ter’s degree programs.

19 (c) PILOT PROGRAMS.—

20 (1) PROGRAM AUTHORIZED.—From amounts  
21 appropriated under subsection (d), the Director of  
22 the National Science Foundation shall award grants  
23 for pilot programs to 4-year institutions of higher  
24 education to facilitate the institutions’ creation or

1 improvement of professional science master's degree  
2 programs.

3 (2) APPLICATION.—A 4-year institution of  
4 higher education desiring a grant under this section  
5 shall submit an application at such time, in such  
6 manner, and accompanied by such information as  
7 the Director of the National Science Foundation  
8 may require. The application shall include—

9 (A) a description of the professional  
10 science master's degree program that the insti-  
11 tution of higher education will implement;

12 (B) the amount of funding from non-Fed-  
13 eral sources, including from private industries,  
14 that the institution of higher education shall  
15 use to support the professional master's degree  
16 program; and

17 (C) an assurance that the institution of  
18 higher education shall encourage students in  
19 the professional science master's degree pro-  
20 gram to apply for all forms of Federal assist-  
21 ance available to such students, including appli-  
22 cable graduate fellowships and student financial  
23 assistance under title IV of the Higher Edu-  
24 cation Act of 1965 (20 U.S.C. 1070 et seq.).

1           (3) PREFERENCE FOR ALTERNATIVE FUNDING  
 2 SOURCES.—The Director of the National Science  
 3 Foundation shall give preference in making awards  
 4 to 4-year institutions of higher education seeking  
 5 Federal funding to support pilot professional science  
 6 master's degree programs, to those applicants that  
 7 secure more than  $\frac{2}{3}$  of the funding for such profes-  
 8 sional science master's degree programs from  
 9 sources other than the Federal Government.

10           (4) NUMBER OF GRANTS; TIME PERIOD OF  
 11 GRANTS.—

12           (A) NUMBER OF GRANTS.—Subject to the  
 13 availability of appropriated funds, the Director  
 14 of the National Science Foundation shall award  
 15 grants under paragraph (1) to a maximum of  
 16 200 4-year institutions of higher education.

17           (B) TIME PERIOD OF GRANTS.—Grants  
 18 awarded under this section shall be for one 3-  
 19 year term. Grants may be renewed only once  
 20 for a maximum of 2 additional years.

21           (5) EVALUATION AND REPORTS.—

22           (A) DEVELOPMENT OF PERFORMANCE  
 23 BENCHMARKS.—Prior to the start of the grant  
 24 program, the National Science Foundation, in  
 25 collaboration with 4-year institutions of higher

1 education, shall develop performance bench-  
2 marks to evaluate the pilot programs assisted  
3 by grants under this section.

4 (B) EVALUATION.—For each year of the  
5 grant period, the Director of the National  
6 Science Foundation, in consultation with 4-year  
7 institutions of higher education, industry, and  
8 Federal agencies that employ science-trained  
9 personnel, shall complete an evaluation of each  
10 pilot program assisted by grants under this sec-  
11 tion. Any pilot program that fails to satisfy the  
12 performance benchmarks developed under sub-  
13 paragraph (A) shall not be eligible for further  
14 funding.

15 (C) REPORT.—Not later than 180 days  
16 after the completion of an evaluation described  
17 in subparagraph (A), the Director of the Na-  
18 tional Science Foundation, in consultation with  
19 industries and Federal agencies that employ  
20 science-trained personnel, shall submit a report  
21 to Congress that includes—

22 (i) the results of the evaluation de-  
23 scribed in subparagraph (A); and

24 (ii) recommendations for administra-  
25 tive and legislative action that could opti-



1           mize the effectiveness of the pilot pro-  
 2           grams, as the Director determines to be  
 3           appropriate.

4       (d) AUTHORIZATION OF APPROPRIATIONS.—There  
 5 are authorized to be appropriated to carry out this section  
 6 \$20,000,000 for fiscal year 2007 and such sums as may  
 7 be necessary for each succeeding fiscal year.

8   **SEC. 203. INCREASED SUPPORT FOR SCIENCE EDUCATION**  
 9                   **THROUGH THE NATIONAL SCIENCE FOUNDA-**  
 10                  **TION.**

11       There are authorized to be appropriated to carry out  
 12 the science, mathematics, engineering, and technology tal-  
 13 ent expansion program under section 8(7) of the National  
 14 Science Foundation Authorization Act of 2002 (Public  
 15 Law 107–368, 116 Stat. 3042) the following amounts:

- 16           (1) For fiscal year 2007, \$35,000,000.
- 17           (2) For fiscal year 2008, \$50,000,000.
- 18           (3) For fiscal year 2009, \$100,000,000.
- 19           (4) For fiscal year 2010, \$150,000,000.

20   **SEC. 204. INNOVATION-BASED EXPERIENTIAL LEARNING.**

21       (a) PILOT PROGRAM.—

22           (1) PROGRAM AUTHORIZED.—The Director of  
 23 the National Science Foundation shall award grants  
 24 to local educational agencies to enable the local edu-  
 25 cational agencies to implement innovation-based ex-

1 periential learning in a total of 500 secondary  
 2 schools and 500 elementary or middle schools in the  
 3 United States.

4 (2) APPLICATION.—A local educational agency  
 5 desiring a grant under this section shall submit an  
 6 application at such time, in such manner, and ac-  
 7 companied by such information as the Director of  
 8 the National Science Foundation may require.

9 (b) AUTHORIZATION OF APPROPRIATIONS.—There  
 10 are authorized to be appropriated to carry out this section  
 11 \$10,000,000 for fiscal year 2007 and \$20,000,000 for  
 12 each of the fiscal years 2008 and 2009.

## 13 **Subtitle B—21st Century** 14 **Healthcare System**

### 15 **SEC. 211. SENSE OF CONGRESS REGARDING 21ST CENTURY** 16 **HEALTHCARE SYSTEM.**

17 (a) SENSE OF CONGRESS.—It is the sense of Con-  
 18 gress that, in order to improve the United States  
 19 healthcare system for the 21st century, the Federal Gov-  
 20 ernment should encourage the widespread adoption of  
 21 interoperable health information technology by—

22 (1) facilitating the creation of standards for  
 23 interoperable electronic reporting of healthcare data;  
 24 and

1           (2) after such standards have been created,  
 2           each Federal agency or department that collects  
 3           data for the purposes described in subsection (b)  
 4           should collect such data in a manner that is con-  
 5           sistent with such standards.

6           (b) PURPOSES DESCRIBED.—The purposes described  
 7           in this subsection include quality reporting, surveillance,  
 8           epidemiology, adverse event reporting, research, or for  
 9           other purposes determined appropriate by the Secretary  
 10          of Health and Human Services.

11           **TITLE III—INCENTIVES FOR**  
 12           **ENCOURAGING INNOVATION**  
 13           **Subtitle A—Research Credits**

14          **SEC. 301. PERMANENT EXTENSION OF RESEARCH CREDIT.**

15           (a) IN GENERAL.—Section 41 of the Internal Rev-  
 16           enue Code of 1986 (relating to credit for increasing re-  
 17           search activities) is amended by striking subsection (h).

18           (b) CONFORMING AMENDMENT.—Section 45C(b)(1)  
 19           of the Internal Revenue Code of 1986 is amended by strik-  
 20           ing subparagraph (D).

21           (c) EFFECTIVE DATE.—The amendments made by  
 22           this section shall apply to amounts paid or incurred after  
 23           the date of the enactment of this Act.

1 **SEC. 302. INCREASE IN RATES OF ALTERNATIVE INCRE-**  
 2 **MENTAL CREDIT.**

3 (a) IN GENERAL.—Subparagraph (A) of section  
 4 41(c)(4) of the Internal Revenue Code of 1986 (relating  
 5 to election of alternative incremental credit) is amended—

6 (1) by striking “2.65 percent” and inserting “3  
 7 percent”;

8 (2) by striking “3.2 percent” and inserting “4  
 9 percent”; and

10 (3) by striking “3.75 percent” and inserting “5  
 11 percent”.

12 (b) EFFECTIVE DATE.—The amendments made by  
 13 this section shall apply to taxable years ending after the  
 14 date of the enactment of this Act.

15 **SEC. 303. ALTERNATIVE SIMPLIFIED CREDIT FOR QUALI-**  
 16 **FIED RESEARCH EXPENSES.**

17 (a) IN GENERAL.—Subsection (c) of section 41 of the  
 18 Internal Revenue Code of 1986 (relating to base amount)  
 19 is amended by redesignating paragraphs (5) and (6) as  
 20 paragraphs (6) and (7), respectively, and by inserting  
 21 after paragraph (4) the following new paragraph:

22 “(5) ELECTION OF ALTERNATIVE SIMPLIFIED  
 23 CREDIT.—

24 “(A) IN GENERAL.—At the election of the  
 25 taxpayer, the credit determined under sub-  
 26 section (a)(1) shall be equal to 12 percent of so

1 much of the qualified research expenses for the  
2 taxable year as exceeds 50 percent of the aver-  
3 age qualified research expenses for the 3 tax-  
4 able years preceding the taxable year for which  
5 the credit is being determined.

6 “(B) SPECIAL RULE IN CASE OF NO  
7 QUALIFIED RESEARCH EXPENSES IN ANY OF 3  
8 PRECEDING TAXABLE YEARS.—

9 “(i) TAXPAYERS TO WHICH SUBPARA-  
10 GRAPH APPLIES.—The credit under this  
11 paragraph shall be determined under this  
12 subparagraph if the taxpayer has no quali-  
13 fied research expenses in any 1 of the 3  
14 taxable years preceding the taxable year  
15 for which the credit is being determined.

16 “(ii) CREDIT RATE.—The credit de-  
17 termined under this subparagraph shall be  
18 equal to 6 percent of the qualified research  
19 expenses for the taxable year.

20 “(C) ELECTION.—An election under this  
21 paragraph shall apply to the taxable year for  
22 which made and all succeeding taxable years  
23 unless revoked with the consent of the Sec-  
24 retary. An election under this paragraph may

1 not be made for any taxable year to which an  
 2 election under paragraph (4) applies.”.

3 (b) COORDINATION WITH ELECTION OF ALTER-  
 4 NATIVE INCREMENTAL CREDIT.—

5 (1) IN GENERAL.—Section 41(c)(4)(B) of the  
 6 Internal Revenue Code of 1986 (relating to election)  
 7 is amended by adding at the end the following: “An  
 8 election under this paragraph may not be made for  
 9 any taxable year to which an election under para-  
 10 graph (5) applies.”.

11 (2) TRANSITION RULE.—In the case of an elec-  
 12 tion under section 41(c)(4) of the Internal Revenue  
 13 Code of 1986 which applies to the taxable year  
 14 which includes the date of the enactment of this Act,  
 15 such election shall be treated as revoked with the  
 16 consent of the Secretary of the Treasury if the tax-  
 17 payer makes an election under section 41(c)(5) of  
 18 such Code (as added by subsection (a)) for such  
 19 year.

20 (c) EFFECTIVE DATE.—The amendments made by  
 21 this section shall apply to taxable years ending after the  
 22 date of the enactment of this Act.

## 1   **Subtitle B—Health and Education**

### 2   **SEC. 311. STUDY AND REPORT ON CATASTROPHIC** 3                   **HEALTHCARE.**

4           (a) STUDY.—The Secretary of Health and Human  
5 Services and the Secretary of Labor (in this subsection  
6 referred to as the “Secretaries”) jointly shall conduct a  
7 study to explore methods for managing costs associated  
8 with catastrophic healthcare events and costs associated  
9 with chronic disease. The Secretaries shall work with  
10 healthcare providers, pharmaceutical manufacturers, large  
11 and small employers, health plans, and other interested  
12 private and public sector entities to develop a consensus  
13 regarding potential innovative approaches for reducing the  
14 financial risks presented by such health problems and im-  
15 proving such outcomes. The study shall consider, among  
16 other factors, the role that best practices, health informa-  
17 tion technology, evidence-based medicine, quality incen-  
18 tives, and comparative clinical effectiveness research can  
19 play in improving quality, value, and efficiency throughout  
20 the United States healthcare system.

21           (b) REPORT.—Not later than 1 year after the date  
22 of enactment of this Act, the Secretaries shall submit a  
23 report to Congress on the results of the study conducted  
24 under subsection (a), together with such recommendations

1 for administrative and legislative action as the Secretaries  
2 determine to be appropriate.

3 **SEC. 312. LIFELONG LEARNING ACCOUNTS.**

4 (a) STUDY.—The Secretary of the Treasury, in col-  
5 laboration with the Secretary of Labor and the Secretary  
6 of Education, shall conduct a study with recommendations  
7 for establishing lifelong learning accounts which would be  
8 exempt from taxation under the Internal Revenue Code  
9 of 1986 and from which funds could only be used for edu-  
10 cational or training purposes. Such study shall consider  
11 whether individuals should be allowed to transfer to such  
12 an account, without incurring tax liability or penalties,  
13 funds which are—

14 (1) held in accounts established under a plan  
15 described in section 401(k), 403(b), or 457 of the  
16 Internal Revenue Code of 1986; and

17 (2) held in a qualified tuition program under  
18 section 529 of such Code.

19 (b) REPORT.—Not later than 1 year after the date  
20 of the enactment of this Act, the Secretary of the Treasury  
21 shall submit to Congress a report on the study conducted  
22 under subsection (a).



## **Subtitle C—Savings and Investments**

### **SEC. 321. REGULATIONS RELATING TO PRIVATE FOUNDATION SUPPORT OF INNOVATIONS IN ECONOMIC DEVELOPMENT.**

The Secretary of the Treasury or the Secretary's delegate shall as soon as practicable issue regulations under subchapter A of chapter 42 of the Internal Revenue Code of 1986 (relating to excise taxes on private foundations) which—

(1) clearly identify when distributions by private foundations for purposes of stimulating economic development will be treated as made for an exempt purpose described in section 170(c)(2)(B) of such Code; and

(2) clarify the circumstances under which private foundations may make program-related investments described in section 4944(c) of such Code in start-up ventures.

### **SEC. 322. ADVISORY GROUP REGARDING VALUATION OF INTANGIBLES.**

(a) ESTABLISHMENT.—The Secretary of the Treasury shall establish an advisory group consisting of representatives of the public and private investment sector. The advisory group shall include representatives from the

1 Department of Commerce, the Securities and Exchange  
2 Commission, the Commodity Futures Trading Commis-  
3 sion, the Board of Governors of the Federal Reserve Sys-  
4 tem, the New York Stock Exchange, the National Associa-  
5 tion of Securities Dealers Automatic Quotation System,  
6 and significant industry sectors.

7 (b) DUTIES.—The advisory group established under  
8 subsection (a) shall—

9 (1) examine and make recommendations of best  
10 practices for valuation of intangibles in order to—

11 (A) provide investors with an improved  
12 method for assessing the impact intangibles  
13 have on the accuracy of a company's financial  
14 picture; and

15 (B) support industry trade associations in  
16 efforts to adopt guidelines for intangibles ap-  
17 propriate to particular industry sections; and

18 (2) submit to the Secretary of the Treasury a  
19 recommendation regarding whether a litigation safe  
20 harbor should be established for those companies  
21 that make good faith estimates regarding the value  
22 of intangibles under the best practice standards de-  
23 veloped under paragraph (1).

24 (c) RESEARCH NETWORK.—The Secretary of Com-  
25 merce shall establish a research network of industry and

1 academic expertise to study metrics and solutions for in-  
 2 tangible disclosure, and provide such research results to  
 3 the advisory group.

4 (d) ACCOUNTING STANDARDS.—The Secretary of the  
 5 Treasury and the advisory group shall encourage the Fi-  
 6 nancial Accounting Standards Board to reinstate its  
 7 project on disclosure of information about intangible as-  
 8 sets not recognized in financial statements and to move  
 9 expeditiously toward issuance of a statement of financial  
 10 accounting standards concerning valuation and disclosure  
 11 of key intangible assets.

12 (e) REPORT.—Not later than 2 years after the date  
 13 of the enactment of this Act, the advisory group shall sub-  
 14 mit to the Secretary of the Treasury the results of the  
 15 examination under subsection (b)(1) and the recommenda-  
 16 tion under subsection (b)(2).

17 **TITLE IV—DEPARTMENT OF**  
 18 **DEFENSE MATTERS**  
 19 **Subtitle A—Defense Research and**  
 20 **Education**

21 **SEC. 401. REVITALIZATION OF FRONTIER AND MULTIDISCI-**  
 22 **PLINARY RESEARCH.**

23 It shall be the goal of the Department of Defense to  
 24 allocate at least 3 percent of the total Department of De-  
 25 fense budget to science and technology. Of this amount,

1 it shall be the goal of the Department of Defense to allo-  
 2 cate at least 20 percent to basic research.

3 **SEC. 402. ENHANCEMENT OF EDUCATION.**

4 (a) SCIENCE, MATHEMATICS, AND RESEARCH FOR  
 5 TRANSFORMATION (SMART) SCHOLARSHIPS.—

6 (1) EXTENSION OF PROGRAM.—Section  
 7 1105(a)(2) of the Ronald W. Reagan National De-  
 8 fense Authorization Act for Fiscal Year 2005 (Pub-  
 9 lic Law 108–375; 118 Stat. 2074; 10 U.S.C. 2192  
 10 note) is amended by striking “for three years begin-  
 11 ning on the date of the enactment of this Act” and  
 12 inserting “through September 30, 2011”.

13 (2) EXPANSION OF PROGRAM.—The Secretary  
 14 of Defense shall, utilizing amounts authorized to be  
 15 appropriated by paragraph (3), increase the number  
 16 of participants in the Science, Mathematics, and Re-  
 17 search for Transformation (SMART) Defense Schol-  
 18 arship Pilot Program under section 1105 of the  
 19 Ronald W. Reagan National Defense Authorization  
 20 Act for Fiscal Year 2005 in each of fiscal years  
 21 2007 through 2011—

22 (A) by an additional 160 participants pur-  
 23 suing doctoral degrees in each such fiscal year;  
 24 and

1 (B) by an additional 60 participants pur-  
 2 suing masters degrees in each such fiscal year.

3 (3) AUTHORIZATION OF APPROPRIATIONS.—

4 There is hereby authorized to be appropriated to the  
 5 Department of Defense for each of fiscal years 2007  
 6 through 2011 the amount of \$41,300,000 for pur-  
 7 poses of carrying out this subsection, of which—

8 (A) \$36,000,000 shall be available in each  
 9 such fiscal year for additional participants in  
 10 the Science, Mathematics, and Research for  
 11 Transformation (SMART) Defense Scholarship  
 12 Pilot Program who are pursuing doctoral de-  
 13 grees under paragraph (2)(A); and

14 (A) \$5,300,000 shall be available in each  
 15 such fiscal year for additional participants in  
 16 the Science, Mathematics, and Research for  
 17 Transformation (SMART) Defense Scholarship  
 18 Pilot Program who are pursuing masters de-  
 19 grees under paragraph (2)(B).

20 (b) NATIONAL DEFENSE SCIENCE AND ENGINEER-  
 21 ING GRADUATE FELLOWSHIPS.—

22 (1) EXPANSION OF PROGRAM.—The Secretary  
 23 of Defense shall, utilizing amounts authorized to be  
 24 appropriated by paragraph (2), increase the number  
 25 of participants in the National Defense Science and

1       Engineering Graduate (NDSEG) fellowship program  
2       in each of fiscal years 2007 through 2011 by an ad-  
3       ditional 200 participants in each such fiscal year.

4               (2) AUTHORIZATION OF APPROPRIATIONS.—

5       There is hereby authorized to be appropriated to the  
6       Department of Defense for each of fiscal years 2007  
7       through 2011 the amount of \$45,000,000 for pur-  
8       poses of carrying out this subsection.

9               (c) INSTITUTION-BASED TRAINEESHIPS.—

10              (1) PROGRAM REQUIRED.—The Secretary of  
11       Defense shall, utilizing amounts authorized to be ap-  
12       propriated by paragraph (4), carry out a program to  
13       award, on a competitive basis, traineeships to under-  
14       graduate and graduate students at institutions of  
15       higher education in order to permit such students to  
16       pursue studies in areas of importance to the Depart-  
17       ment of Defense in mathematics, science, or engi-  
18       neering in settings or programs that provide such  
19       students exposure to multidisciplinary studies, inno-  
20       vation-oriented studies, and academic, private-sector,  
21       or government laboratories and research. It shall be  
22       the goal of the traineeship program for a trainee to  
23       work for the Department of Defense for 10 years  
24       after completing his or her degree.

1           (2) PARTICIPANTS.—In each of fiscal years  
2       2007 through 2011, the number of participants in  
3       the program required by paragraph (1) shall be as  
4       follows:

5           (A) Not more than 30 participants pur-  
6       suing doctoral degrees.

7           (B) Not more than 30 participants pur-  
8       suing masters degrees.

9           (C) Not more than 20 participants pur-  
10      suing undergraduate degrees.

11          (3) ANNUAL REPORTS.—Not later than Novem-  
12      ber 30 each year, the Secretary of Defense shall sub-  
13      mit to the Committees on Armed Services of the  
14      Senate and the House of Representatives a report on  
15      the carrying out of the program required by para-  
16      graph (1) during the preceding fiscal year. The re-  
17      port shall describe the participants, and the studies  
18      pursued by such participants, in the program during  
19      the fiscal year covered by the report, and shall in-  
20      clude an assessment of the benefits of the program  
21      to the Department of Defense.

22          (4) AUTHORIZATION OF APPROPRIATIONS.—  
23      There is hereby authorized to be appropriated to the  
24      Department of Defense for each of fiscal years 2007  
25      through 2011 the amount of \$11,100,000 for pur-

1 poses of carrying out the program required by this  
 2 subsection, of which—

3 (A) \$7,000,000 shall be available in each  
 4 such fiscal year for participants in the program  
 5 who are pursuing doctoral degrees under para-  
 6 graph (2)(A);

7 (B) \$2,600,000 shall be available in each  
 8 such fiscal year for participants in the program  
 9 who are pursuing masters degrees under para-  
 10 graph (2)(B); and

11 (C) \$1,500,000 shall be available in each  
 12 such fiscal year for participants in the program  
 13 who are pursuing undergraduate degrees under  
 14 paragraph (2)(C).

## 15 **Subtitle B—Defense Advanced** 16 **Manufacturing**

### 17 **SEC. 411. MANUFACTURING RESEARCH AND DEVELOP-** 18 **MENT.**

19 (a) IDENTIFICATION OF ENHANCED PROCESSES AND  
 20 TECHNOLOGIES.—The Under Secretary of Defense for  
 21 Acquisition, Technology, and Logistics, acting through the  
 22 Director of Defense Research and Engineering, shall iden-  
 23 tify advanced manufacturing processes and technologies  
 24 whose utilization will achieve significant productivity and  
 25 efficiency gains in the defense manufacturing base.



1 (b) RESEARCH AND DEVELOPMENT.—The Under  
 2 Secretary shall undertake research and development on  
 3 processes and technologies identified under subsection (a)  
 4 that addresses, in particular—

5 (1) innovative manufacturing processes and ad-  
 6 vanced technologies; and

7 (2) the creation of extended production enter-  
 8 prises using information technology and new busi-  
 9 ness models.

10 (c) DEFENSE PRIORITIES.—In undertaking research  
 11 and development under subsection (b), the Under Sec-  
 12 retary shall consider defense priorities established in the  
 13 most current Joint Warfighting Science and Technology  
 14 Plan.

15 **SEC. 412. TRANSITION OF TRANSFORMATIONAL MANUFAC-**  
 16 **TURING PROCESSES AND TECHNOLOGIES TO**  
 17 **THE DEFENSE MANUFACTURING BASE.**

18 (a) ACCELERATION OF TRANSITION FROM SCIENCE  
 19 AND TECHNOLOGY.—

20 (1) IN GENERAL.—The Under Secretary of De-  
 21 fense for Acquisition, Technology, and Logistics  
 22 shall undertake appropriate actions to accelerate the  
 23 transition of transformational manufacturing tech-  
 24 nologies and processes (including processes and tech-  
 25 nologies identified under section 411) from the re-

1 search stage to utilization by manufacturers in the  
2 defense manufacturing base.

3 (2) EXECUTION.—The actions undertaken  
4 under paragraph (1) shall include a memorandum of  
5 understanding among the Director of Defense Re-  
6 search and Engineering, other appropriate elements  
7 of the Department of Defense, and the Joint De-  
8 fense Manufacturing Technology Panel to accelerate  
9 the transition of technologies and processes as de-  
10 scribed in that paragraph.

11 (b) PROTOTYPES AND TEST BEDS.—

12 (1) IN GENERAL.—The Under Secretary shall,  
13 utilizing the Manufacturing Technology Program,  
14 undertake the development of prototypes and test  
15 beds to promote the purposes of this section.

16 (2) COORDINATION OF ACTIVITIES.—The Under  
17 Secretary shall coordinate activities under this sub-  
18 section with activities under the Small Business In-  
19 novation Research Program and the Small Business  
20 Technology Transfer Program.

21 (c) DEVELOPMENT OF IMPROVEMENT PROCESS.—

22 The Under Secretary shall, in consultation with persons  
23 and organizations in the defense manufacturing base, de-  
24 velop and implement a program to continuously identify  
25 and utilize improvements and innovative processes in ap-

1 appropriate defense acquisition programs and by manufac-  
 2 turers in the defense manufacturing base.

3 (d) DIFFUSION OF ENHANCEMENTS INTO DEFENSE  
 4 MANUFACTURING BASE.—The Under Secretary shall en-  
 5 sure the utilization in industry of enhancements in produc-  
 6 tivity and efficiency identified by reason of activities under  
 7 this subtitle through the following:

8 (1) Research and development activities under  
 9 the Manufacturing Technology Program, including  
 10 the establishment of public-private partnerships.

11 (2) Outreach through the Manufacturing Ex-  
 12 tension Partnership Program under memoranda of  
 13 agreement, cooperative programs, and other appro-  
 14 priate arrangements.

15 (3) Coordination with activities under such  
 16 other current programs for the dissemination of  
 17 manufacturing technology as the Under Secretary  
 18 considers appropriate.

19 (4) Identification of incentives for contractors  
 20 in the defense manufacturing base to incorporate  
 21 and utilize manufacturing enhancements in manu-  
 22 facturing activities.

23 **SEC. 413. MANUFACTURING TECHNOLOGY STRATEGIES.**

24 (a) IN GENERAL.—The Under Secretary of Defense  
 25 for Acquisition, Technology, and Logistics may—

(1) identify an area of technology where the development of industry-prepared roadmaps for new manufacturing and technology processes applicable to defense manufacturing requirements would be beneficial to the Department of Defense; and

(2) establish a task force, and act in cooperation with the private sector, to map the strategy for the development of manufacturing processes and technologies needed to support technology development in the area identified under paragraph (1).

(b) COMMENCEMENT OF ROADMAPPING.—The Under Secretary shall commence any roadmapping identified pursuant to subsection (a)(1) not later than January 2007.

15 SEC. 414. PLANNING FOR ADOPTION OF STRATEGIC INNO-  
16 VATION.

(a) IN GENERAL.—The Secretary of Defense, acting through the Under Secretary of Defense for Acquisition, Technology, and Logistics, shall ensure that each contract of a value of \$50,000,000 or more under a technology or logistics program of the Department of Defense includes requirements for planning by the contractor under such contract for the adoption of innovative technologies under such contract.

1 (b) PARTICULAR REQUIREMENTS.—The require-  
2 ments included in a contract under subsection (a) shall  
3 include—

4 (1) requirements for plans for the identifica-  
5 tion, monitoring, and transition to the utilization  
6 under such contract of applicable emerging tech-  
7 nologies from the private sector;

8 (2) requirements for plans for the identifica-  
9 tion, monitoring, and development under such con-  
10 tract of emerging research initiatives in academia;  
11 and

12 (3) a requirement to submit to the Under Sec-  
13 retary on an annual basis a report on the implemen-  
14 tation of the planning carried out pursuant to the  
15 requirements included in such contract.

16 **SEC. 415. REPORT.**

17 (a) IN GENERAL.—Not later than December 31,  
18 2008, the Under Secretary of Defense for Acquisition,  
19 Technology, and Logistics shall submit to the congres-  
20 sional defense committees a report on the actions under-  
21 taken by the Under Secretary under this subtitle during  
22 fiscal year 2007.

23 (b) ELEMENTS.—The report under subsection (a)  
24 shall include—

1           (1) a comprehensive description of the actions  
2           undertaken under this subtitle during fiscal year  
3           2007;

4           (2) an assessment of effectiveness of such ac-  
5           tions in enhancing research and development on  
6           manufacturing technologies and processes, and the  
7           implementation of such technologies and processes  
8           within the defense manufacturing base; and

9           (3) such recommendations as the Under Sec-  
10          retary considers appropriate for additional actions to  
11          be undertaken in order to increase the effectiveness  
12          of the actions undertaken under this subtitle in en-  
13          hancing manufacturing activities within the defense  
14          manufacturing base.

15 **SEC. 416. AUTHORIZATION OF APPROPRIATIONS.**

16          Funds are hereby authorized to be appropriated for  
17          the Department of Defense for purposes of carrying out  
18          this subtitle for fiscal years as follows:

19               (1) For fiscal year 2007, \$20,000,000.

20               (2) For fiscal year 2008, \$40,000,000.

21               (3) For fiscal year 2009, \$60,000,000.

22               (4) For fiscal year 2010, \$80,000,000.

23               (5) For fiscal year 2011, \$100,000,000.

1           **TITLE V—JUDICIARY AND**  
2                   **OTHER MATTERS**

3   **SEC. 501. SENSE OF CONGRESS ON RETAINING HIGH TECH**  
4                   **TALENT IN THE UNITED STATES.**

5           It is the sense of Congress that comprehensive immi-  
6   gration reform should ensure that the United States re-  
7   tains foreign-born high-tech talent educated in the United  
8   States and remains the leader in innovation and techno-  
9   logical development in an emerging global marketplace.  
10   Such comprehensive reform should ensure—

11           (1) that the United States continues to retain  
12   foreign nationals who have received master's or  
13   higher degrees in the sciences, technology, engineer-  
14   ing or mathematics from United States institutions  
15   of higher education under either—

16                   (A) the H–1B visa program; or

17                   (B) as employment-based immigrants;

18           (2) that the United States must take a forward  
19   looking approach with respect to any limitations on  
20   the H–1B visa program; and

21           (3) that immigration reform should also include  
22   systematic improvements to the Government's tech-  
23   nology infrastructure in order to eliminate delays in  
24   processing immigration proceedings, including em-  
25   ployment-based visa applications.

1 **SEC. 502. STUDY ON BARRIERS TO INNOVATION.**

2 (a) IN GENERAL.—The National Academy of  
3 Sciences shall conduct and complete a study to identify,  
4 and to review methods to mitigate, new forms of risk for  
5 businesses beyond conventional operational and financial  
6 risk that affect the ability to innovate, including studying  
7 and reviewing—

8 (1) incentive and compensation structures that  
9 could effectively encourage long-term value creation  
10 and innovation;

11 (2) methods of voluntary and supplemental dis-  
12 closure by industry of intellectual capital, innovation  
13 performance, and indicators of future valuation;

14 (3) means by which government could work  
15 with industry to enhance the legal and regulatory  
16 framework to encourage the disclosures described in  
17 paragraph (2);

18 (4) practices that may be significant deterrents  
19 to United States businesses engaging in innovation  
20 risk-taking compared to foreign competitors, includ-  
21 ing tort litigation, the nature and extent of any re-  
22 sulting defensive management practices, and rec-  
23 ommendations on practices to restore innovation  
24 risk-taking and to overcome defensive practices;

25 (5) means by which industry, trade associa-  
26 tions, and universities could collaborate to support



1 research on management practices and methodolo-  
 2 gies for assessing the value and risks of longer term  
 3 innovation strategies; and

4 (6) means to encourage new, open, and collabo-  
 5 rative dialogue between industry associations, regu-  
 6 latory authorities, management, shareholders, and  
 7 other concerned interests to encourage appropriate  
 8 approaches to innovation risk-taking.

9 (b) REPORT REQUIRED.—The National Academy of  
 10 Sciences shall, not later than 1 year after the date of en-  
 11 actment of this Act, submit to Congress a report on the  
 12 study conducted under subsection (a).

13 (c) AUTHORIZATIONS OF APPROPRIATIONS.—There  
 14 are authorized to be appropriated to the National Acad-  
 15 emy of Sciences \$1,000,000 for fiscal year 2007 for the  
 16 purpose of carrying out the study required under this sec-  
 17 tion.

18 **SEC. 503. SENSE OF CONGRESS ON PATENT REFORM.**

19 It is the sense of Congress that—

20 (1) to bolster the United States economy and  
 21 strengthen innovators in the United States, the pat-  
 22 ent system should be reformed to enhance the qual-  
 23 ity of patents, to leverage patent databases as inno-  
 24 vation tools, and to create best practices for global  
 25 collaborative standard setting; and

1           (2) to achieve the objectives described in para-  
2 graph (1), the Federal Government should—

3           (A) fully fund the Patent and Trademark  
4 Office and enable the Office to direct its fees to  
5 fund process improvements;

6           (B) improve compliance with existing pat-  
7 enting requirements and create incentives for  
8 improved search and disclosure of prior art;

9           (C) create new standards for searchability  
10 of patent applications and new patents;

11          (D) establish a fair and balanced post-  
12 grant patent review procedure for future pat-  
13 ents and patent applications;

14          (E) invest in retroactively creating search-  
15 able keywords for a subset of the most highly  
16 cited historical patents;

17          (F) secure reciprocal access to foreign pat-  
18 ent databases; and

19          (G) set best practices and processes for  
20 standards bodies to align incentives for collabo-  
21 rative standard setting, and to encourage broad  
22 participation.

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