SECTION BY SECTION
Amendment in the Nature of a Substitute to
H.R. 4186, the FIRST ACT OF 2014

Sec. 1. Short Title; Table of Contents.
This section establishes the short title of the bill as the "Frontiers in Innovation, Research, Science, and Technology Act of 2014" or the ''FIRST Act of 2014."

Sec. 2. Definition.
This section defines STEM and STEM education.

TITLE I – NATIONAL SCIENCE FOUNDATION

Sec. 101. Authorization of Appropriations.
This section authorizes $7,171,918,000 for fiscal year 2014 for NSF, including $5,808,918,000 for research and related activities, $846,500,000 for education and human resources, $200,000,000 for major research equipment and facilities construction, $298,000,000 for agency operations and award management, $4,300,000 for the Office of the National Science Board, and $14,200,000 for the Office of the Inspector General.
This section authorizes $7,277,257,000 for fiscal year 2015 for NSF, including $5,900,497,000 for research and related activities, $858,500,000 for education and human resources, $200,760,000 for major research equipment and facilities construction, $298,000,000 for agency operations and award management, $4,300,000 for the Office of the National Science Board, and $15,200,000 for the Office of the Inspector General.

Sec. 102. Findings.
This section contains findings regarding the importance of the research and education activities of the NSF.

Sec. 103. Policy Objectives.
Section 103 states that in allocating resources, NSF must have the objectives of: renewing and maintaining the Nation's international leadership in science and technology through specified activities; increasing overall workforce skills; and strengthening innovation by expanding the focus of competitiveness and innovation policy at the regional and local level.

Sec 104. Definitions.
This section provides relevant definitions within Title I.

Sec 105. Accountability and Transparency.
Section 105 states that it is the sense of Congress that: sustained, predictable Federal funding is essential to U.S. leadership in science and technology; building understanding of and confidence in investments in basic research are essential to support for Federal funding; and NSF should commit itself to transparency and accountability as well as clear public communication regarding the national interest for every NSF-awarded grant and cooperative agreement.

Sec. 106. Greater Accountability in Federal Funding for Research.
Section 106 states that NSF shall award funding for basic research and education in the sciences through a new grant or cooperative agreement only if a determination is made and written justification is published by NSF affirming that such grant or agreement is worthy of Federal funding and is in the national interest, determined by meeting one or more specified criteria. A determination shall be made after a proposal has satisfied NSF's review for merit and broader impacts. This section does not alter NSF's intellectual merit or broader impacts criteria for evaluating applications. This section requires the National Science Board to develop, and the Director to implement, a policy for carrying out these requirements that provides for educating NSF's staff and applicants on these policies. This section requires the National Science Board to transmit a report to Congress describing plans for implementing these requirements. Additionally, it requires an annual report to Congress by the Director, and a subsequent review of each annual report by the National Science Board.

Sec. 107. Obligation of Major Research Equipment and Facilities Construction Funds.
This section states that no funds may be obligated for a construction project for NSF until 30 days after the report required under section 14 (a)(2) of the National Science Foundation Authorization Act of 2002 is transmitted to Congress.

Sec. 108. Management and Oversight of Large Facilities.
This section requires the Director to maintain a Large Facilities Office within NSF. The Large Facilities Office shall support the research directorates in the development and implementation of major research facilities. This section requires the Director to appoint a senior agency official within the Office of the Director whose primary responsibility is oversight of major research facilities. This section directs the Director to ensure that NSF's policies for developing and managing major research facilities are consistent with best practices described in the March 2009 GAO Report GAO-09-3SP. This section requires a report to Congress describing NSF's policies for developing and managing major research facility construction costs.

Sec. 109. Graduate Student Support.
Section 109 amends the America COMPETES Reauthorization Act of 2010 to state that the Director may only increase funding for NSF's Graduate Research Fellowship program over the previous year's funding levels at the same rate as a corresponding increase for the Integrative Graduate Education and Research Traineeship program (language previously required the two programs to share increases and decreases). This section also specifies essential elements of the Integrative Graduate Education and Research Traineeship that must be maintained. This section instructs the Director to enter into an agreement with the National Research Council to convene a workshop to examine models of Federal support for STEM graduate students. The purpose of the workshop or roundtable shall be to compare and evaluate the extent to which each model helps to prepare graduate students for diverse careers utilizing STEM degrees. This section establishes criteria for the workshop and requires that the participants include current or recent STEM graduate students. This section requires a report to Congress on the findings and recommendations of the workshop.

Sec 110. Permissible Support.
This section allows the Directorate for Education and Human Resources to support informal education grants for the participation of students in nonprofit competitions, out-of-school activities, and field experience related to STEM subjects and allows support to broaden secondary school students' access to and interest in careers that require academic preparation in STEM subjects.

Sec. 111. Expanding STEM Opportunities.
Section 111 states that within the Directorate for Education and Human Resources, under existing programs targeting broadening participation, the Director shall provide grants on a merit-review competitive basis for research on programming that engages underrepresented students in grades kindergarten through 8th in STEM. This section states that grants awarded under this section shall be used toward research to advance engagement of underrepresented students in grades kindergarten through 8th in STEM through providing before-school, after-school, out-of-school, or summer activities, and specifies permitted activities under these grants. It describes the application requirements for such grants and states that in awarding grants under this section, the Director shall give priority to applicants that include or partner with a non-profit, nongovernmental organization that has experience and expertise in increasing the participation of underrepresented students in STEM. It also requires that no later than 5 years after the date of enactment, the Director shall evaluate the program established under this Act, and provide a report to Congress on the evaluation and make the report widely available. The Director is required to consult, cooperate, and coordinate with relevant Federal agencies to enhance program effectiveness and avoid duplication.

Sec. 112. Review of Education Programs.
This section requires the Director to review NSF's education programs to determine whether there is any duplication in these programs and how these programs are being evaluated and assessed for outcome-oriented effectiveness. The Director must complete a report and submit the report to Congress.

Sec. 113. Recompetition of Awards.
Section 113 includes findings related to the merit-review process and the value of requiring expiring awards to be recompeted. This section requires the Director to ensure that the system for recompetition of Maintenance and Operation of facilities is fair, consistent, and transparent and allows for renewal of grants and awards in a timely manner. It also requires that the Director periodically evaluate whether the criteria are being applied in a manner that is transparent, reliable, and valid.

Sec. 114. Sense of the Congress Regarding Industry Investment in STEM Education.
This section states that it is the sense of Congress that: in order to bolster the STEM workforce pipeline, many industry sectors are becoming involved in STEM at K-12, undergraduate, and graduate levels; partnerships with education providers, STEM focused competitions, and other opportunities are important pieces of private sector efforts to strengthen the STEM workforce; understanding the private sector's efforts in STEM will inform the Federal Government's role in STEM education; and NSF should support successful private sector STEM initiatives.

Sec. 115. Misrepresentation of Research Results.
Section 115 states the findings and conclusions of any article authored by a principal investigator (PI) receiving a research grant from NSF, using the results of research conducted under the grant, that is published in a peer review publication may not contain any falsification, fabrication, or plagiarism. The section requires the Inspector General of NSF to investigate suspected violations, and submit the results to the Director, with a recommendation of whether a violation has occurred. The Director shall subsequently make a determination of whether the PI knowingly violated the requirements outlined in this section this section. If the Director determines that a PI knowingly violated these requirements, NSF shall not, for a period of five to 10 years, as determined by the Director, provide a research grant or extension to such a PI, except pursuant to appeal. The Director must notify a PI of such a determination not later than seven days after the determination is made. The Director must establish a process by which a PI may appeal a determination of the ban. Subject to disposition of an appeal, this section contains guidelines for making a violation of this section publicly available.

Sec. 116. Citations Supporting Research Grant Applications.
This section states that a peer-reviewed grant proposal application to NSF may not include more than five citations to articles published by the PI within the section supporting the credentials of the PI submitting the proposal. NSF may not consider more than five citations to such articles in determining whether to award the grant. This section specifies guidelines for exceptions to this policy.

Sec. 117. Research Grant Conditions.
Section 117 requires NSF to establish procedures to ensure that: a research grant awarded by NSF to a PI does not duplicate the aims and scope of any grants being directly funded by another agency; a PI includes in a grant application to the NSF a list of all Federal funding received by the PI and any outstanding funding requests; unpublished results used to support a proposal made to NSF do not contain knowing misrepresentations of data; PIs who have received more than five years of NSF funding at any point in their careers (with specified exceptions) are only awarded additional grants by NSF if the grant contributes original, creative and transformative research; and PIs who receive NSF grant funding under more than one grant at the same time have sufficient resources to conduct the proposed research under each of those grants appropriately under the terms of the grant.

Sec. 118. Computing Resources Study.
This section requires the Comptroller General to transmit to Congress a report on the results of a study on the use of computing resources funded by NSF at institutions of higher education.

Sec. 119. Scientific Breakthrough Prizes.
This section requires the Director of NSF to place a high priority on designing and administering pilot programs for scientific breakthrough prizes that are consistent with Office of Science and Technology Policy guidelines.

Sec. 120. Rotating Personnel.
Section 120 states that in order to control the costs to NSF of individuals employed pursuant to the Intergovernmental Personnel Act of 1970: a written justification and waiver shall be provided by the Deputy Director in each instance in which maximum rate of pay for members of the Senior Executive Service is exceeded; a detailed written justification and waiver shall be provided by the Director in each instance in which the annual salary rate of the Vice President of the United States is exceeded; and the National Science Board shall provide an annual report to Congress on the costs and value to the Foundation of employing such individuals.

Sec. 121. Sense of Congress Regarding Innovation Corps.
This section contains a sense of Congress stating that: NSF's Innovation Corps was established to foster a national innovation ecosystem; the Innovation Corps includes investment in entrepreneurship and commercialization education, training, and mentoring, leading to the practical deployment of technologies, products, processes, and services that improve the Nation's competitiveness, promote economic growth, and benefit society; and by building networks of entrepreneurs, mentors, institutions, and collaborations, and supporting specialized education and training, the Innovation Corps is at the leading edge of a strong, lasting foundation for an American innovation ecosystem.

Sec. 122. United States-Israeli Cooperation.
This section amends the Energy Independence and Security Act of 2007 to state that NSF should collaborate with the Israel Science Foundation.

Sec. 123. Sense of Congress Regarding Agricultural Research.
This section contains a sense of Congress stating that NSF should support basic science research in the plant sciences to identify and preserve valuable plant genes and interdisciplinary research to understand important basic research problems in the plant sciences.

Sec. 124. Brain Research through Advancing Innovative Neurotechnologies Initiative.
Section 124 encourages the NSF to support the funding of research activities related to the Brain Research through Advancing Innovative Neurotechnologies Initiative.

Sec. 125. Noyce Scholarship Program Amendments.
This section amends the NSF Noyce Master Teaching Fellowship program to allow participants with a bachelor's degree working toward a Master's to participate in the program. This section adds computer science to current definitions in the Noyce Teacher Scholarship Program.

TITLE II – SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHETMATICS

Sec. 201. Findings; Sense of Congress.
Section 201 includes findings regarding the STEM workforce and STEM education. This section contains a sense of Congress stating that: more effective coordination and adoption of performance measurement based on objective outcomes for federally supported STEM programs is needed; leveraging private and non-profit investment in STEM is essential to strengthening the

Federal STEM portfolio; strengthening the Federal STEM portfolio may require program consolidations and terminations, but that changes should be made based on evidence with stakeholder input; the President's FY 14 budget proposal did not explain proposed changes to the Federal STEM portfolio and did not elicit outside expertise in making those decisions, resulting in the need for Congress to limit the Administration's implementation of that proposal; coordinating STEM programs and activities across the Federal Government in order to limit duplication and engage stakeholders will strengthen the results of our Federal STEM education programs and activities and in turn strengthen the United States economy; and as the National Science and Technology Council's Committee on STEM Education implements the 5-Year Strategic Plan for Federal STEM education, STEM education stakeholders must be engaged and outcome-based evaluation metrics should be considered in the coordination and consolidation efforts for the Federal STEM portfolio.

Sec. 202. STEM Education Advisory Panel.
This section instructs the President to establish a STEM Education Advisory Panel incorporating key stakeholders from the education and industry sectors within the President's Council of Advisors on Science and Technology. It establishes qualifications for panel members. This section requires panel members to advise the President, the committee on STEM education, and the STEM Education Coordinating Office on matters relating to STEM education and to provide guidance to every agency with STEM programs or activities. The panel must also assess: criteria for evaluations the effectiveness of Federal STEM education programs and activities; ways to encourage public private partnerships to strengthen STEM; ways to leverage private and nonprofit investments and utilize expertise resulting from STEM-related competitions; ways to incorporate workforce needs into Federal STEM programs; the work of the STEM Education Coordinating Office and the committee on STEM education established under the National Science and Technology Council; whether societal and workforce concerns are adequately addressed by current Federal STEM programs; the extent to which Federal STEM education programs and activities are contributing to recruitment and retention of women and underrepresented students in the STEM education and workforce pipeline; ways to encourage geographic diversity in STEM education and the workforce pipeline; and significant links among K-12 education, higher education, and industry. The panel must report to Congress and President on the aforementioned assessments. This section allows travel expenses for panel members.

Sec. 203. Committee on STEM Education.
This section amends the America COMPETES Reauthorization Act of 2010 to require the Committee on STEM Education to: update the strategic plan for STEM once every three years; propose the effective dissemination of Federal STEM education expertise and resources; assist in coordinating the STEM education activities and programs of the Federal agencies; and encourage access to and dissemination of innovations, expertise, and best practices derived from agency activities across the Federal Government.

Sec. 204. STEM Education Coordinating Office.
Section 204 requires the Director of NSF to establish a STEM Education Coordinating Office within the Directorate for Education and Human Resources. This section outlines the responsibilities of the Coordinating Office. It also requires the Director of the Coordinating Office to submit an annual report to Congress containing: a description of STEM education

programs across the Federal Government; an evaluation of duplication and fragmentation of Federal STEM programs and recommendations for consolidation or termination; a description of how the Federal government is leveraging private and non-profit expertise from STEM-related competitions to build the STEM workforce; and a description of the progress made in carrying out the three year strategic plan. This section requires the Director of NSF to encourage and monitor the efforts of the Coordinating Office to ensure that the strategic plan is implemented effectively.

TITLE III – OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Sec. 301. Authorization of Appropriations.
This section authorizes $5,555,000 for fiscal year 2014 and $5,555,000 for fiscal year 2015 for the Office of Science and Technology Policy.

Sec. 302. Regulatory Efficiency.
Section 302 includes a sense of Congress highlighting the problems with higher administrative costs for performing research and stating that it is critically important to American competitiveness that administrative costs for research be streamlined so that a higher proportion of taxpayer dollars flow into research. This section requires the Director of OSTP to establish a working group to review federal regulations affecting research and research universities and make recommendations on how to harmonize, streamline, and eliminate duplicative regulations and reporting requirements and minimize the regulatory burden on institutions of higher education performing federally funded research. This section establishes guidelines for the working group to take into account stakeholder input. The Director must submit a report to Congress on what steps have been taken to carry out the recommendations of the working group.

Sec. 303. Public Access to Research Articles and Data.
This section requires the National Science and Technology Council (NSTC) to establish policies, procedures, and standards for the Federal science agencies to enable archiving and retrieving covered materials in digital form for public availability in perpetuity. NSTC must use a transparent process for soliciting views from stakeholders. This section requires recipients of Federal research grants to make covered materials associated with the grant available. In making such research available, each agency must provide for: submission of, or links to, an electronic version of materials by or on behalf of recipients of research grants made by the agency, free online public access to such covered materials as directed, implementation in a manner and format that enables and ensures full-text search, productive use, and long-term preservation, production of an online bibliography of all research papers that are publicly available in its repository, and access to all data that is used directly or indirectly by the agency to support the promulgation of a Federal regulation. At least once every five years, NSTC must review and revise, as appropriate, the policies, procedures, and standards established under this section. Extensions may be granted in consultation with stakeholders. Except as provided, nothing in this section shall be construed to affect titles 17 or 35 of U.S. Code. This section provides relevant definitions.

Sec. 304. Strategic Plan for Advanced Manufacturing Research and Development.
Section 304 amends the America COMPETES Reauthorization Act of 2010 to: require the Director to establish a Committee on Technology to plan and coordinate Federal programs and activities in advanced manufacturing research and development. The Committee on Technology is required to consult with the National Economic Council; identify barriers that inhibit United States advanced manufacturing ; require the strategic plan for advanced manufacturing to be updated every four years ; require that the plan include a description of progress made in achieving the objectives from the National Strategic Plan for Advanced Manufacturing and any subsequent updates; and require the analysis of factors that impact innovation and competitiveness for U.S. manufacturing. This section also requires the place to elicit the recommendations of stakeholders. This section would require the President to include information regarding the consistency of the budget with the goals and recommendations in the strategic plan and with the goals and recommendations for United States advanced manufacturing in preparing the budget for each fiscal year. This section would require the Advanced Manufacturing Partnership Steering Committee to provide input to assist in the development and updates of the strategic plan. This section would also update the reporting requirement in existing law and would create an advisory committee to assist with the development of the strategic plan. This section requires the President to include information regarding the consistency of the budget with the goals and recommendations for U.S. advanced manufacturing developed under this section.

Sec. 305. Coordination of the International Science and Technology Partnerships.
This section directs the Director of OSTP to establish a body under the National Science and Technology Council to identify and coordinate international science and technology cooperation that can strengthen the U.S. science and technology enterprise, improve economic and national security, and support U.S. foreign policy goals. This body shall be co-chaired by senior level officials from the Office of Science and Technology Policy and the Department of State. This section requires the Director of OSTP to submit an annual report to Congress describing the work of the body, the ongoing and new partnerships established since the last report, the means by which stakeholder input was received, and the issues influencing United States scientists' abilities to collaborate with foreign counterparts.

Sec. 306. Alternative Research Funding Models.
This section requires the heads of science agencies to conduct pilot programs to validate alternative research funding models, including scientific breakthrough prize programs. It allows for pilot programs to be conducted through relationship with a non-Federal entity regarding the design, administration, and funding of the program. This section establishes parameters for judging prize competitions and requires prize competitions to be widely advertised. Finally, it requires a report to Congress on the programs identified and conducted.

Sec. 307. Amendments to Prize Competitions.
This section makes changes of a technical nature regarding prize competitions in the Stevenson-Wydler Technology Innovation Act of 1980. This section amends current law to require notices of prize competitions to be published online, by creating a waiver for the requirement for liability insurance, by exempting private judges for prize competitions of less than $10,000 from federal financial disclosure requirements or for an aggregate of prize competitions with a total purse of

$50,000 or less, and by explicitly allowing prize funding to come from for profit or nonprofit entities in the private sector.

TITLE IV – INNOVATION AND TECHNOLOGY TRANSFER
Subtitle A- NIST Reauthorization

Sec. 401. Authorization of Appropriations.
This section authorizes $850,000,000 for fiscal year 2014 for the National Institute of Standards and Technology. This section specifies that $651,000,000 shall be for scientific technical research and services laboratory activities, $56,000,000 shall be for construction and maintenance of facilities, and $143,000,000 shall be for industrial services activities, including $128,000,000 for the Manufacturing Extension Partnership. This section authorizes $855,800,000 for fiscal year 2015 for the National Institute of Standards and Technology. This section specifies that $670,500,000 shall be for scientific technical research and services laboratory activities, $55,300,000 shall be for construction and maintenance of facilities, and $130,000,000 shall be for industrial services activities, of which $130,000,000 shall be for the Manufacturing Extension Partnership.

Sec. 402. Standards and Conformity Assessment
This section amends Section 2 of the National Institute of Standards and Technology Act by: adding language stating that the Director of NIST is authorized to serve "as the President's principal adviser on standards policy pertaining to the Nation's technological competitiveness and innovation ability"; replacing standards language to read: "facilitate standards-related information sharing and cooperation between Federal agencies''; and enabling more seamless technical standards related information sharing. This section would also add language authorizing the Director of NIST to participate in and support scientific conferences and perform pre-competitive measurement science and technology research in partnership with higher education and industry to promote U.S. competitiveness.

Sec. 403. Visiting Committee on Advanced Technology.
Section 403 would amend Section 10 of the National Institute of Standards and Technology Act by changing the size of the Committee from 15 members to "not fewer than 11 members" and revising proportions of membership requirements accordingly. This section would also permit consultation with the National Research Council in making recommendations for policy. Finally, this section would remove references to the Technology Innovation Program from the required annual report on NIST.

Sec. 404. Policy and Security Authority.
This section would amend Section 15 of the National Institute of Standards and Technology Act to authorize the Secretary of Commerce to undertake activities for the protection of NIST buildings and other facilities.

Sec. 405. Education and Outreach.
Section 405 would codify education and outreach efforts critical to NIST's mission including the authority to provide stipends directly to students and teachers participating in NIST summer education programs and to United States citizens performing research and technical activities of NIST. This section states that the Director shall seek persons to receive such fellowships on the basis of ability and the relevance of the proposed work to the missions of NIST. It requires the Director to establish and conduct a post-doctoral fellowship program that shall include not fewer than 20 fellows per fiscal year.

Sec. 406. Programmatic Planning Report.
This section would require NIST's three year planning document to describe how the Director is addressing recommendations from the Visiting Committee on Advanced Technology.

Sec. 407. Assessments by the National Research Council.
This section would require NIST to contract with the National Research Council to perform a comprehensive review of the NIST laboratory programs. This section would also amend Section 24 of the National Institute of Standards and Technology act to require NIST to contract with NIST to perform reviews of each laboratory every three years. This section describes additional process requirements for these assessments.

Sec. 408. Hollings Manufacturing Extension Partnership.
This section would amend Section 25 of the National Institute of Standards and Technology Act. It requires the Director to provide assistance for U.S. manufacturing through the creation and support of Hollings Manufacturing Extension Centers. In order to enhance competitiveness, productivity and technological performance, Centers help manufacturers with adoption of advanced production technologies, transfer and dissemination of research findings, and other improvements. Centers are selected by the Director through a competitive, merit-based process; nonprofit institutions or consortia or state or local governments may apply. This section states that the Secretary may not provide more than 50 percent of the capital and annual operating and maintenance funds for a Center. This section would require Center applicants to provide assurances and, if selected, enter into legal agreements, that non-federal assets will meet not less than 50 percent of the costs incurred for the first three years. Section 409 would require each MEP to be evaluated in its third year of operation by a panel of private experts: a Center receiving positive evaluation may receive funding through the sixth year; a Center not receiving a positive evaluation is to be placed on probation. After the sixth year, a Center may receive additional support if it has received another positive evaluation. This section also would require a Center to undergo an independent eight year review. If a Center has received funding for 10 years the Director shall conduct a new competition. NIST is required to submit a report on the plan for conducting reviews, assessment and reapplication, and independent assessment of the reapplication competition process, as well as a report that assesses the effects of higher federal contributions to newly selected Centers on services provided to small manufacturing companies. Chapter 18 or title 35 and Section 552 or title 5 shall apply. Each Center is required to have a Board of Directors and an Advisory Board. Center Advisory Boards must institute conflict of interest policies to be approved by the Director and Board Members may not serve as a vendor or provide services to the Center. Centers may accept funds from other federal agencies; the Director will determine whether those funds count toward the federal share. Funds

from the private sector may not be considered towards the federal share. This section establishes the MEP Advisory Board, to consist of not fewer than 10 members serving three year terms, at least two on or from Center Advisory Boards and at least 5 from U.S. small manufacturing businesses. This section also sets other policies for the MEP Advisory Board and requires it to report to Congress on the status of the program within 30 days of the President's annual budget request. This section establishes a competitive grant program within the Hollings Manufacturing Extension Partnership in order to address new or emerging manufacturing problems determined by the Director. Centers or consortia of Centers may participate under the application and selection process described in this section. Grant recipients are not required to provide matching contributions. The Director may take into consideration whether an application has significant potential to enhance competitiveness of small and medium manufacturers. Grants shall not last more than 3 years. The Director is required to evaluate obstacles unique to small manufacturers. This section also provides definitions for area career and technical education schools and community colleges.

Sec. 409. Elimination of Obsolete Reports.
This section would eliminate the report required by the Enterprise Integration Act of 2002 and the annual report on the Technology Innovation Program.

Sec. 410. Modifications to Grants and Cooperative Agreements.
Section 8(a) of the Stevenson-Wydler Technology Innovation Act of 1980 is amended by striking, ''The total amount of any such grant or cooperative agreement may not exceed 75 percent of the total cost of the program.''

Subtitle B – Innovative Approaches to Technology Transfer

Sec. 421. Innovative Approaches to Technology Transfer.
This section revises Section 9 (jj) of the Small Business Act to provide guidelines for a grant program to support innovative approaches to technology transfer at institutions of higher education, non-profit research institutions, and Federal laboratories. This section details the process for awarding grants, the program oversight board's responsibilities, grant amounts, and program evaluation and data dissemination.

Sec. 422. National Academies Report on University Incubators and Accelerators.
This section directs the Secretary of Commerce to enter into an arrangement with the National Academy of Science to conduct a study on the role of incubators and accelerators in the commercialization of federally funded research and regional economic development.

TITLE V – NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT

Sec. 501. Short Title.
This title may be cited as the ''Advancing America's Networking and Information Technology Research and Development Act of 2014''.

Sec. 502. Program Planning and Coordination.
Section 502 would amend the High-Performance Computing Act of 1991 by adding periodic reviews to assess the Program Component Areas and to ensure that the Program includes large-scale, long-term, interdisciplinary research and development activities. This section would also amend the High-Performance Computing Act of 1991 to require the development of a strategic plan to guide the activities described by the Act. It would amend the Act to add encouraging and monitoring the efforts of the agencies participating in the Program to allocate the level of resources and management attention necessary to ensure that the strategic plan is developed and executed effectively and that the objectives of the Program are met to the Director's responsibilities. This section would also amend the qualifications for membership on the advisory committee on high performance computing, and amend the criteria of the annual report on high performance computing and update the definitions in the Act.

Sec. 503. Large-Scale Research in Areas of National Importance.
This section would direct the National High-Performance Computing Program to encourage Federal agencies to support large-scale, long-term, interdisciplinary research and development activities in networking and information technology directed toward application areas that have the potential for significant contributions to national economic competitiveness and for other societal benefits. This section would direct the advisory committee described in law to make recommendations for candidate research and development areas for support.

Sec. 504. Cyber-Physical Systems.
This section would provide for increased understanding of the scientific principles of cyber-physical systems and improve the methods available for the design, development, and operation of cyber-physical system that are characterized by high reliability, safety, and security and provide for research and development on human-computer interactions, visualization, and big data. This section would require the Director of the National Coordination Office to convene a workshop to explore mechanisms for carrying out collaborative research and development activities for cyber-physical systems.

Sec. 505. Cloud Computing Services for Research.
Section 505 would require the Director of the National Coordination Office to convene an interagency working group to examine research and development needs related to cloud computing and how Federal science agencies can facilitate the use of cloud computing for federally funded science and engineering research. This section requires the working group to consult with specified stakeholders, and also requires the Director of the National Coordination Office to report to Congress on the findings and recommendations of the working group. The working group shall terminate upon transmittal of the report.

Sec. 506. National Coordination Office.
This section formally codifies the National Coordination Office with a Director and full-time staff. This section outlines the functions of this office and states that the operation of the Office will be supported by funds from each agency participating in the National High-Performance Computing Program.

Sec. 507. Improving Networking and Information Technology Education.
This section directs the NSF to use its existing programs to improve the teaching and learning of networking and information technology and to increase participation in networking and information technology fields.

Sec. 508. Conforming and Technical Amendments.
This section makes conforming and technical amendments.