H.R. 4350—FY22 NATIONAL DEFENSE AUTHORIZATION BILL

SUBCOMMITTEE ON CYBER, INNOVATIVE TECHNOLOGIES, AND INFORMATION SYSTEMS

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Section 2XX—Development and Implementation of Digital Technologies for Survivability and Lethality Testing

This section would direct the Secretary of Defense to expand survivability testing of covered systems to include testing against non-kinetic threats, and to develop digital technologies to test those systems against threats throughout the system's lifecycle. This section would also direct the Secretary to carry out activities to demonstrate digital technologies for live fire testing, and would require the Director of Operational Test and Evaluation to submit a report to the congressional defense committees not later than March 15, 2023, with an assessment of the Secretary's progress on expanding survivability testing, supporting development of digital technologies for live fire testing, and the demonstration activities.

The committee notes that digital technologies and non-kinetic threats have advanced beyond the efficacy of the language in section 2366 of title 10, United States Code, Major systems and munitions programs: survivability testing and lethality testing required before full-scale production, and modernization is necessary. Survivability and lethality are no longer constrained by simple ballistics and are instead today susceptible to contemporary non-kinetic threats including cyber; electromagnetic spectrum operations; chemical, biological, radiological, nuclear, high yield explosives; and directed energy weapons. These threats can interact in inventive ways to degrade, disable, deceive, and destroy a force or mission, and they can evolve continually. It is imperative that the Secretary of Defense take a whole of systems and whole of lifecycle approach in the identification of these threats and their effects to assess the full spectrum of survivability and lethality of any system.

Digital technologies, including digital twins and modeling and simulation, have advanced and enable the Department to build high-fidelity models of systems to test and evaluate this full spectrum of threats, perform many more digital tests, and perform continuous vulnerability discovery and mitigation of the most prominent threats throughout the system's lifecycle. Data from physical and digital testing must be collected and fed back into the models to improve their fidelity and value over the system's lifecycle. Additionally, the Department has a legacy fleet with non-kinetic vulnerabilities and should consider model creation when appropriate and necessary. The committee believes the Department will benefit from broadening its view of survivability and lethality testing and evaluation to include non-kinetic threats. The Department should also broaden its view of live

fire testing to include digital-live fires through models and simulations, which may augment, or in some cases replace, live-testing, and allow for continuous survivability assessments over time. Taken together, these two modernization improvements should provide the foundation for a full spectrum survivability assessment approach throughout the system's lifecycle.

Section 2XX—Pilot Program on the Use of Intermediaries to Connect the Department of Defense with Technology Producers

This section would direct the Secretary of Defense to carry out a 5-year pilot program to help foster transition of the Department of Defense's science and technology programs, projects, and activities into full scale implementation. This section would direct the Secretary to seek to enter into agreements with qualified intermediaries to provide technical assistance to technology producers to better participate in the procurement programs and acquisition processes of the Department. This section would require a briefing to the House Committee on Armed Services not later than December 31, 2022, on the Secretary's progress in implementing the program and any related policy issues. This section would also direct the Comptroller General of the United States to submit a report to the Committees on Armed Services of the Senate and the House of Representatives not later than 5 years after the date of the enactment of this Act on the pilot program's effectiveness.

The committee is aware that there are a growing number of access points for innovative technology companies to engage with the Department of Defense, but there is no support team connecting those businesses between each of the innovation entities and to the appropriate customers in the Department, including program executive offices, program management offices, and science and technology reinvention laboratories. The pilot program would provide support to those technology producers looking to do business with the Department, and guidance on how to navigate unfamiliar processes including those surrounding requirements, budgeting, contracting, and other statutory, regulatory, and cultural hurdles. The committee believes that an entity that specializes in engaging and supporting technology producers is necessary to help the Department become a better buyer and a more attractive customer to innovative commercial companies.

Section 2XX—Modification of Mechanisms for Expedited Access to Technical Talent and Expertise at Academic Institutions

This section would modify section 2358 of title 10, United States Code, on mechanisms for expedited access to technical talent and expertise at academic institutions and would add a 31st mission area called "spectrum activities."

Section 2XX—Duties and Regional Activities of the Defense Innovation Unit

This section would modify section 2358b(c)(2)(B) of title 10, United States Code, to update the Department of Defense's technology strategy documents for which the Joint Reserve Detachment of the Defense Innovation Unit (DIU) is responsible for increasing awareness. Additionally, subject to the availability of appropriations, this section would also authorize the Secretary of Defense to, as appropriate, expand the efforts of the Defense Innovation Unit to engage and collaborate with private-sector industry and communities in various regions of the United States that do not otherwise have a DIU presence.

SUBTITLE C—REPORTS AND OTHER MATTERS

Section 2XX—Modification to Annual Report of the Director of Operational Test and Evaluation

This section would amend section 139(h)(2) of title 10, United States Code, by removing the sunset date for the Director of Operational Test and Evaluation's annual report to Congress.

TITLE VIII—ACQUISITION POLICY, ACQUISITION MANAGEMENT, AND RELATED MATTERS

LEGISLATIVE PROVISIONS

SUBTITLE B—AMENDMENTS TO GENERAL CONTRACTING AUTHORITIES, PROCEDURES, AND LIMITATIONS

Section 8XX—Modification to the Pilot Program for Streamlining Awards for Innovative Technology Projects

This section would amend section 873 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114-92), Pilot Program for Streamlining Awards for Innovative Technology Projects, as amended by section 832 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116-283), to extend the deadline by 2 years to October 1, 2024. This section would also require the Secretary of Defense to submit a recommendation to the congressional defense committees by April 1, 2023, as to whether the pilot should be further extended, and if so include with it the lessons learned from this pilot and usage data.

Section 8XX—Designating Certain SBIR and STTR Programs as Entrepreneurial Innovation Projects

This section would direct the Secretary of Defense and the Secretaries of the military departments to each carry out a pilot program to more effectively transition Small Business Innovation Research programs and Small Business Technology Transfer programs into Phase III. This section would direct the Secretaries to each designate five completed Phase II programs to include in the next Future Years Defense Program as Entrepreneurial Innovation Projects, and to consider them as part of the Department of Defense's planning, programming, budgeting, and execution process. The Secretary of Defense would be responsible for submitting a report annually to the congressional defense committees on the programs selected for the duration of the 5-year pilot.

TITLE IX—DEPARTMENT OF DEFENSE ORGANIZATION AND MANAGEMENT

LEGISLATIVE PROVISIONS

SUBTITLE B—OTHER DEPARTMENT OF DEFENSE ORGANIZATION AND MANAGEMENT MATTERS

Section 9XX—Designation of Senior Official for Implementation of Electromagnetic Spectrum Superiority Strategy

This section would require the Department of Defense to designate a sole senior official responsible for implementing any current or future electromagnetic spectrum superiority strategy of the Department. This section would also require the Secretary of Defense to submit a report to the congressional defense committees not later than 270 days after the date of the enactment of this Act on the sufficiency of electromagnetic warfare rules of engagement.

TITLE XI—CIVILIAN PERSONNEL MATTERS

LEGISLATIVE PROVISIONS

Section 11XX—DARPA Personnel Management Authority to Attract Science and Engineering Experts

This section would amend section 1599h(b) of title 10, United States Code, by adding the ability for the Defense Advanced Research Projects Agency to pay for travel, transportation, and relocation expenses and services when hiring up to 15 individuals in any fiscal year.

TITLE XV—CYBERSPACE-RELATED MATTERS

LEGISLATIVE PROVISIONS

SUBTITLE B—CYBER SYSTEMS AND OPERATIONS

Section 15XX—Legacy Information Technologies and Systems Accountability

This section would mandate that each military service initiate an effort to account for the legacy information technology (IT) systems, applications, and software. Efforts to discover and inventory legacy IT systems, applications, and software ensure that redundant and unnecessary investments can be better aligned to departmental priorities.

DIVISION E—NON-DEFENSE MATTERS

TITLE L—BARRY GOLDWATER SCHOLARSHIP AND EXCELLENCE IN EDUCATION MODERNIZATION ACT

Section 50xx—Short Title

This section would create the short title for the "Barry Goldwater Scholarship and Excellence in Education Modernization Act of 2021". This title would be a modification to the Barry Goldwater Scholarship and Excellence in Education Foundation Authorization included in the National Defense Authorization Act for Fiscal Year 1986 (Public Law 99-145) in honor of Senator Barry Goldwater.

Section 50xx—Clarifying Amendments to Definitions

This section would amend section 1403 of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4702) to include the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau.

Section 50xx—Barry Goldwater Scholarship and Excellence in Education Awards

This section would amend sections 1405(a) and 1405(b) of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4704(a) and 20 U.S.C. 4704(b)) by adding research internships and expanding the fields of study to also include engineering.

Section 50xx—Stipends

This section would amend section 1406 of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4705) to include internship stipends.

Section 50xx—Scholarship and Research Internship Conditions

This section would amend section 1407 of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4706) to include conditions and reports for research internships.

Section 50xx—Sustainable Investments of Funds

This section would amend section 1408 of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4707) to allow under certain conditions for the investment of up to 40 percent of any public or private funds received by the Foundation after the date of enactment of the Barry Goldwater Scholarship and Excellence in Education Modernization Act of 2021 in securities other than public debt securities of the United States.

Section 50xx—Administrative Provisions

This section would amend section 1411(a) of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4710(a)) to allow for the appointment of no more than three employees to carry out the provisions of this title, without regard to the provisions in chapter 33 of title 5, United States Code, with certain exceptions.

BILL LANGUAGE

SEC. 2___[Log 72959]. DEVELOPMENT AND IMPLEMENTATION OF DIGITAL TECHNOLOGIES FOR SURVIVABILITY AND LETHALITY TESTING.

(a) EXPANSION OF SURVIVABILITY AND LETHALITY TESTING.—

(1) IN GENERAL.—The Secretary, in coordination with covered officials, shall—

(A) expand the survivability and lethality testing of covered systems to include testing against non-kinetic threats; and

(B) develop digital technologies to test such systems against such threats throughout the life cycle of each such system.

(2) DEVELOPMENT OF DIGITAL TECHNOLOGIES FOR LIVE FIRE TESTING.—

(A) IN GENERAL.—The Secretary, in coordination with covered officials, shall develop—

(i) digital technologies to enable the modeling and simulation of the live fire testing required under section 2366 of title 10, United States Code; and

(ii) a process to use data from physical live fire testing to inform and refine

the digital technologies described in clause (i).

(B) OBJECTIVES.—In carrying out subparagraph (A), the Secretary shall seek to achieve the following objectives:

(i) Enable assessments of full spectrum survivability and lethality of each covered system with respect to kinetic and non-kinetic threats.

(ii) Inform the development and refinement of digital technology to test and improve covered systems.

(iii) Enable survivability and lethality assessments of the warfighting capabilities of a covered system with respect to—

(I) communications;

(II) firepower;

(III) mobility;

(IV) catastrophic survivability; and

(V) lethality.

(C) DEMONSTRATION ACTIVITIES.—

(i) IN GENERAL.—The Secretary, acting through the Director, shall carry out activities to demonstrate the digital tech-

nologies for full spectrum survivability testing developed under subparagraph (A).

(ii) PROGRAM SELECTION.—The Secretary shall assess and select not fewer than three and not more than ten programs of the Department to participate in the demonstration activities required under clause (i).

(iii) ARMED FORCES PROGRAMS.—Of the programs selected pursuant to clause (ii), the Director shall select—

(I) at least one such program from the Army;

(II) at least one such program from the Navy or the Marine Corps; and

(III) at least one such program from the Air Force or the Space Force.

(3) REGULAR SURVIVABILITY AND LETHALITY TESTING THROUGHOUT LIFE CYCLE.—

(A) IN GENERAL.—The Secretary, in coordination with covered officials, shall—

(i) develop a process to regularly test through the use of digital technologies the

survivability and lethality of each covered system against kinetic and non-kinetic threats throughout the life cycle of such system as threats evolve; and

(ii) establish guidance for such testing.

(B) ELEMENTS.—In carrying out subparagraph (A), the Secretary shall determine the following:

(i) When to deploy digital technologies to provide timely and up-to-date insights with respect to covered systems without unduly delaying fielding of capabilities.

(ii) The situations in which it may be necessary to develop and use digital technologies to assess legacy fleet vulnerabilities.

(b) REPORTS AND BRIEFING.—

(1) ASSESSMENT AND SELECTION OF PROGRAMS.—Not later than 180 days after the date of the enactment of this Act, the Secretary shall submit to the congressional defense committees a report that identifies the programs selected to participate in the demonstration activities under subsection (a)(2)(C).

(2) MODERNIZATION AND DIGITIZATION REPORT.—

(A) IN GENERAL.—Not later than March 15, 2023, the Director shall submit to the congressional defense committees a report that includes—

(i) an assessment of the progress of the Secretary in carrying out subsection (a);

(ii) an assessment of each of the demonstration activities carried out under subsection (a)(2)(C), including a comparison of—

(I) the risks, benefits, and costs of using digital technologies for live fire testing and evaluation; and

(II) the risks, benefits, and costs of traditional physical live fire testing approaches that—

(aa) are not supported by digital technologies;

(bb) do not include testing against non-kinetic threats; and

(cc) do not include full spectrum survivability.

(iii) an explanation of—

(I) how real-world operational and digital survivability and lethality testing data will be used to inform and enhance digital technology;

(II) the contribution of such data to the digital modernization efforts required under section 836 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283); and

(III) the contribution of such data to the decision-support processes for managing and overseeing acquisition programs of the Department;

(iv) an assessment of the ability of the Department to perform full spectrum survivability and lethality testing of each covered system with respect to kinetic and non-kinetic threats;

(v) an assessment of the processes implemented by the Department to manage digital technologies developed pursuant to subsection (a); and

(vi) an assessment of the processes implemented by the Department to develop digital technology that can perform full spectrum survivability and lethality testing with respect to kinetic and non-kinetic threats.

(B) BRIEFING.—Not later than April 14, 2023, the Director shall provide to the congressional defense committees a briefing that identifies any changes to existing law that may be necessary to implement subsection (a).

(c) DEFINITIONS.—In this section:

(1) COVERED OFFICIALS.—The term ''covered officials'' means—

(A) the Under Secretary of Defense for Research and Engineering;

(B) the Under Secretary of Defense for Acquisition and Sustainment;

(C) the Chief Information Officer;

(D) the Director;

(E) the Director of Cost Assessment and Program Evaluation;

(F) the Service Acquisition Executives;

(G) the Service testing commands;

(H) the Director of the Defense Digital Service; and

(I) representatives from—

(i) the Department of Defense Test Resource Management Center;

(ii) the High Performance Computing Modernization Program Office; and

(iii) the Joint Technical Coordination Group for Munitions Effectiveness.

(2) COVERED SYSTEM.—The term ''covered system'' means any warfighting capability that can degrade, disable, deceive, or destroy forces or missions.

(3) DEPARTMENT.—The term ''Department'' means the Department of Defense.

(4) DIGITAL TECHNOLOGIES.—The term ''digital technologies'' includes digital models, digital simulations, and digital twin capabilities that may be used to test the survivability and lethality of a covered system.

(5) DIRECTOR.—The term ''Director'' means the Director of Operational Test and Evaluation.

(6) FULL SPECTRUM SURVIVABILITY AND LETHALITY TESTING.—The term ''full spectrum survivability and lethality testing'' means a series of assessments of the effects of kinetic and non-kinetic

threats on the communications, firepower, mobility, catastrophic survivability, and lethality of a covered system.

(7) NON-KINETIC THREATS.—The term ''non-kinetic threats'' means unconventional threats, including—

(A) cyber attacks;

(B) electromagnetic spectrum operations;

(C) chemical, biological, radiological, nuclear effects and high yield explosives; and

(D) directed energy weapons.

(8) SECRETARY.—The term ''Secretary'' means the Secretary of Defense.

SEC. 2___[Log 72963]. PILOT PROGRAM ON THE USE OF INTERMEDIARIES TO CONNECT THE DEPARTMENT OF DEFENSE WITH TECHNOLOGY PRODUCERS.

(a) IN GENERAL.—The Secretary of Defense shall carry out a pilot program to foster the transition of the science and technology programs, projects, and activities of the Department of Defense from the research, development, pilot, and prototyping phases to full-scale implementation. Under the pilot program, the Secretary shall seek to enter into agreements with qualified intermediaries pursuant to which the intermediaries will—

(1) match technology producers with programs, projects, and activities of the Department that may have a use for the technology developed by such producers; and

(2) provide technical assistance to such technology producers on participating in the procurement programs and acquisition processes of the Department.

(b) ACTIVITIES.—A qualified intermediary that enters into an agreement with the Secretary of Defense under subsection (a) shall, pursuant to such agreement—

(1) guide and advise technology producers on participating in the procurement programs and acquisition processes of the Department, including—

(A) planning, programing, budgeting, and execution processes of the Department.

(B) requirements processes;

(C) the Federal Acquisition Regulation and the Department of Defense Supplement to the Federal Acquisition Regulation;

(D) other procurement programs and authorities, including—

(i) the Small Business Innovation Research Program and the Small Business Technology Transfer Program, as defined in section 9(e) of the Small Business Act (15 U.S.C. 638(e));

(ii) other transaction authority under sections 2371 and 2371b of title 10, United States Code;

(iii) cooperative agreements;

(iv) prizes for advanced technology achievements under section 2374a of title 10, United States Code; and

(v) grant programs; and

(E) new entrant barriers and challenges, including—

(i) accessing secure computing and information technology infrastructure; and

(ii) securing clearances for personnel and facilities; and

(2) match technology producers with programs, projects, and activities of the Department that may have a use for the technology developed by such producers, including programs, projects, and activities carried out by—

(A) program executive officers (as defined in section 1737(a)(4)) of title 10, United States Code);

(B) program management offices;

(C) combatant commands with a command acquisition executive;

(D) Defense Agencies and Department of Defense Field Activities (as such terms are defined, respectively, in section 101 of title 10, United States Code); and

(E) such other elements of the Department as the Secretary considers appropriate.

(c) PRIORITY.—In carrying out the activities described in subsection (b), a qualified intermediary shall

give priority to technology producers that are small business concerns (as defined under section 3 of the Small Business Act (15 U.S.C. 632)), research institutions (as defined in section 9(e) of such Act), or institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C 1001)).

(d) TERMS OF AGREEMENTS.—

(1) IN GENERAL.—The terms of an agreement under subsection (a) shall be determined by the Secretary of Defense.

(2) METHODS OF SERVICE DELIVERY.—In entering into agreements under subsection (a), the Secretary may consider, on a case by case basis, whether the needs of the Department of Defense and technology producers would best be served by a qualified intermediary that provides services in a specific geographic region, serves a particular technology sector, or uses another method of service delivery.

(3) INCENTIVES.—The Secretary of Defense may include terms in an agreement under subsection (a) to incentivize a qualified intermediary to successfully facilitate the transition of science and technology from the research, development, pilot, and

prototyping phases to full-scale implementation within the Department of Defense.

(4) LIMITATION ON USE OF FUNDS.—The Secretary of Defense may not use any amounts required to be expended under section 9(f)(1) of the Small Business Act (15 U.S.C. 638(f)(1)) for any administrative costs incurred by a qualified intermediary associated with the pilot program under this section.

(e) PROTECTION OF PROPRIETARY INFORMATION.—The Secretary of Defense shall implement policies and procedures to protect the intellectual property and any other proprietary information of technology producers that participate in the pilot program under this section.

(f) DATA COLLECTION.—

(1) PLAN REQUIRED BEFORE IMPLEMENTATION.—The Secretary of Defense may not enter into an agreement under subsection (a) until the date on which the Secretary—

(A) completes a plan to for carrying out the data collection required under paragraph (2); and

(B) submits the plan to the appropriate congressional committees.

(2) DATA COLLECTION REQUIRED.—The Secretary of Defense shall collect and analyze data on

the pilot program under this section for the purposes of—

(A) developing and sharing best practices for facilitating the transition of science and technology from the research, development, pilot, and prototyping phases to full-scale implementation within the Department of Defense;

(B) providing information to the leadership of the Department on the implementation of the pilot program and related policy issues; and

(C) providing information to the appropriate congressional committees as required under subsection (g).

(g) BRIEFING.—Not later than December 31, 2022, the Secretary of Defense shall provide to the appropriate congressional committees a briefing on the progress of the Secretary in implementing the pilot program under this section and any related policy issues.

(h) CONSULTATION.—In carrying out the pilot program under this section, the Secretary of Defense shall consult with—

(1) service acquisition executives (as defined in section 101 of title 10, United States Code);

(2) the heads of appropriate Defense Agencies and Department of Defense Field Activities;

(3) procurement technical assistance centers (as described in chapter 142 of title 10, United States Code);

(4) the Administrator of Federal Procurement Policy; and

(5) such other individuals and organizations as the Secretary determines appropriate.

(i) TERMINATION.—The pilot program under this section shall terminate on the date that is five years after the date on which Secretary of Defense enters into the first agreement with a qualified intermediary under subsection (a).

(j) COMPTROLLER GENERAL ASSESSMENT AND REPORT.—

(1) ASSESSMENT.—The Comptroller General of the United States shall conduct an assessment of the pilot program under this section. The assessment shall include an evaluation of the effectiveness of the pilot program with respect to—

(A) facilitating the transition of science and technology from the research, development, pilot, and prototyping phases to full-scale implementation within the Department of Defense; and

(B) protecting sensitive information shared among the Department of Defense, qualified intermediaries, and technology producers in the course of the pilot program.

(2) REPORT.—Not later than the date specified in paragraph (3), the Comptroller General shall submit to the appropriate congressional committees a report on the results of the assessment conducted under paragraph (1).

(3) DATE SPECIFIED.—The date specified in this paragraph is the earlier of—

(A) four years after the date on which the Secretary of Defense enters into the first agreement with a qualified intermediary under subsection (a): or

(B) five years after the date of the enactment of this Act.

(k) DEFINITIONS.—In this section:

(1) The term ''appropriate congressional committees'' means—

(A) the congressional defense committees;

(B) the Committee on Homeland Security and Governmental Affairs of the Senate; and

(C) the Committee on Oversight and Reform of the House of Representatives.

(2) The term ''qualified intermediary'' means a nonprofit, for-profit, or State or local government entity that assists, counsels, advises, evaluates, or otherwise cooperates with technology producers that need or can make demonstrably productive use of the services provided by the intermediary pursuant to the pilot program under this section.

(3) The term ''technology producer'' means an individual or entity engaged in the research, development, production, or distribution of science or technology that the Secretary of Defense determines may be of use to the Department of Defense.

SEC. 2___[Log 73233]. MODIFICATION OF MECHANISMS FOR EXPEDITED ACCESS TO TECHNICAL TALENT AND EXPERTISE AT ACADEMIC INSTITUTIONS.

Section 217(e) of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91; 10 U.S.C. 2358 note) is amended—

(1) by redesignating paragraph (31) as paragraph (32); and

(2) by inserting after paragraph (30) the following new paragraph:

''(31) Spectrum activities.''.

SEC. 2___[Log 73288]. DUTIES AND REGIONAL ACTIVITIES OF THE DEFENSE INNOVATION UNIT.

(a) DUTIES OF DIU JOINT RESERVE DETACHMENT.—Clause (ii) of section 2358b(c)(2)(B) of title 10, United States Code, is amended to read as follows:

"(ii) the technology requirements of the Department of Defense, as identified in the most recent—

"(I) National Defense Strategy;

"(II) National Defense Science and Technology Strategy as directed under section 218 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 132 Stat. 1679); and

"(III) policy and guidance from the Under Secretary of Defense for Research and Engineering and the Under Secretary of Defense for Acquisition and Sustainment; and".

(b) REGIONAL ACTIVITIES.—Subject to the availability of appropriations for such purpose, the Secretary of Defense may expand the efforts of the Defense Innovation Unit to engage and collaborate with private-sector in-

dustry and communities in various regions of the United States—

(1) to accelerate the adoption of commercially developed advanced technology in the areas of manufacturing, space, energy, materials, autonomy, and such other key technology areas as may be identified by the Secretary; and

(2) to expand outreach to communities that do not otherwise have a Defense Innovation Unit presence.

SEC. 2___[Log 73290]. MODIFICATION TO ANNUAL REPORT OF THE DIRECTOR OF OPERATIONAL TEST AND EVALUATION.

Section 139(h)(2) of title 10, United States Code, is amended by striking ", through January 31, 2026".

SEC. 8___[Log 72966]. MODIFICATION TO THE PILOT PROGRAM FOR STREAMLINING AWARDS FOR INNOVATIVE TECHNOLOGY PROJECTS.

(a) EXTENSION.—Section 873(f) of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92; 10 U.S.C. 2306a note) is amended by striking ''October 1, 2022'' and inserting ''October 1, 2024''.

(b) RECOMMENDATION ON EXTENSION.—

(1) IN GENERAL.—Not later than April 1, 2023, the Secretary of Defense shall submit to the congressional defense committees a recommendation regarding the extension of the pilot program for streamlining awards for innovative technology projects established under section 873(f) of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92; 10 U.S.C. 2306a note), and if applicable, the duration of any such extension.

(2) DATA ON EXTENSION.—If the Secretary of Defense recommends an extension of the pilot program under paragraph (1), not later than 60 days after making such recommendation, the Secretary shall submit to the congressional defense committees a report on the outcomes of the pilot program, including—

(A) the number of small business concerns (as defined under section 3 of the Small Business Act (15 U.S.C. 632)) or nontraditional defense contractors (as defined under section 2302 of title 10, United States Code) that benefitted from the implementation of the pilot program;

(B) the number of small business concerns that would not have entered into a contract with the Department of Defense but for the implementation of the pilot program; and

(C) a description of the goods and services acquired by the Department through the pilot program that otherwise would not have been acquired.

SEC. 8___ [Log 73285]. DESIGNATING CERTAIN SBIR AND STTR PROGRAMS AS ENTREPRENEURIAL INNOVATION PROJECTS.

(a) ENTREPRENEURIAL INNOVATION PROJECT PILOT PROGRAM.—

(1) IN GENERAL.—The Secretary of Defense and the covered Secretaries concerned shall each establish and carry out a pilot program to more effectively transition projects that have completed a Phase II SBIR or STTR award and that present the potential to meet operational needs of elements of the Department of Defense to Phase III by designating eligible programs as Entrepreneurial Innovation Projects.

(2) DESIGNATION.—Not later than one year after the date of the enactment of this section, and annually thereafter, not less than five eligible programs shall be designated as Entrepreneurial Innovation Projects by—

(A) each covered Secretary concerned, in consultation with each chief of a covered Armed Force under the jurisdiction of the Secretary concerned; and

(B) the Secretary of Defense for each covered element of the Department.

(b) SELECTION REQUIREMENTS.—

(1) FUTURE YEARS DEFENSE PROGRAM INCLUSION.—The Secretary of Defense shall include the estimated expenditures of each designated program in the first future-years defense program submitted to Congress under section 221 of title 10, United States Code, after such designated program is designated under subsection (a)(2).

(2) PPBE COMPONENT.—Each designated program shall be considered by the designating Secretary as an integral part of the planning, programing, budgeting, and execution process of the Department of Defense.

(3) PROGRAMMING PROPOSAL.—Each designated program shall be included by the designating Secretary under a separate heading in any programming proposals submitted to the congressional defense committees.

(4) DESIGNATION CRITERIA.—In making designations required under subsection (a)(2), the covered Secretary concerned or the Secretary of Defense, as applicable, shall consider—

(A) the potential of the eligible program to—

(i) advance the national security capabilities of the United States;

(ii) provide new technologies or processes, or new applications of existing technologies, that will enable new alternatives to existing programs;

(iii) provide future cost savings; and

(iv) significantly reduce the time to deliver capabilities to members of the covered Armed Forces; and

(B) any other criteria that the covered Secretary concerned or Secretary of Defense, as applicable, determines appropriate.

(5) MITIGATE CONFLICTS OF INTEREST.—The covered Secretary concerned or the Secretary of Defense, as applicable, shall establish procedures for the designation of Entrepreneurial Innovation Projects which will mitigate, to the greatest extent practicable, organizational conflicts of interests, including those from within Governmental organizations or programs that could view the designation and successful completion of an Entrepreneurial In-

novation Project as a competing alternative to an existing or proposed program or other activity.

(6) APPLICATION.—The Secretary of Defense and each covered Secretary concerned shall establish an application process for eligible programs seeking designation as Entrepreneurial Innovation Projects.

(c) REVOCATION OF DESIGNATION.—If the designating Secretary determines that a designated program no longer meets the criteria in subsection (b)(4) or that the technology has become irrelevant, the designating Secretary may revoke the Entrepreneurial Innovation Project designation for such designated program.

(d) REPORTS TO CONGRESS.—

(1) ANNUAL REPORT.—The Secretary of Defense shall submit to congressional defense committees, the Committee on Small Business and Entrepreneurship of the Senate, and the Committee on Small Business of the House of Representatives, concurrently with the President's annual budget request, an annual report that includes for each designated program—

(A) a description of the designated program;

(B) a summary of the potential of the designated program as considered under subsection (b)(4)(A);

(C) the progress made towards inclusion in the future-years defense program;

(D) the progress made towards delivering on the potential of the designated program; and

(E) such other information that the Secretary determines appropriate to inform the congressional defense committees about the status of the pilot programs established under this section.

(2) FINAL REPORT.—In the last report submitted under paragraph (1) prior to December 31, 2027, the Secretary of Defense shall include a recommendation on whether to extend the pilot programs established under this section and the appropriate duration of such extension, if any.

(e) EFFECTIVE DATE.—This section shall take effect on January 1, 2022.

(f) TERMINATION DATE.—The pilot programs established under this section shall terminate on December 31, 2027.

(g) DEFINITIONS.—In this section:

(1) COVERED ARMED FORCES.—The term ''covered Armed Forces'' means—

(A) the Army;

(B) the Navy;

(C) the Air Force;

(D) the Marine Corps; and

(E) the Space Force.

(2) COVERED ELEMENT OF THE DEPARTMENT.—The term ''covered element of the Department'' means any element of the Department of Defense, other than an element referred to in paragraph (3), that is associated with the Small Business Innovation Research or Small Business Technology Transfer programs.

(3) COVERED SECRETARY CONCERNED.—The term ''covered Secretary concerned'' means—

(A) the Secretary of the Army, with respect to matters concerning the Department of the Army;

(B) the Secretary of the Navy, with respect to matters concerning the Department of the Navy (other than matters concerning the Coast Guard); and

(C) the Secretary of the Air Force, with respect to matters concerning the Department of the Air Force.

(4) ELIGIBLE PROGRAM.—The term ''eligible program'' means a project that has completed a Phase II SBIR or STTR award.

(5) DESIGNATED PROGRAM.—The term ''designated program'' means an eligible program that has been designated as an Entrepreneurial Innovation Project under this section and for which such designation has not been revoked under subsection (c).

(6) DESIGNATING SECRETARY.—The term ''designating Secretary'' means—

(A) with respect to a designated program designated as an Entrepreneurial Innovation Project under this section by a covered Secretary concerned, such covered Secretary concerned; and

(B) with respect to all other designated programs, the Secretary of Defense.

(7) PHASE II; PHASE III; SBIR; STTR.—The terms ''Phase II'', ''Phase III'', ''SBIR'', and ''STTR'' have the meanings given such terms in sec-

tion 9(e) of the Small Business Act (15 U.S.C. 638(e)).

SEC. 9___.[Log 72975] DESIGNATION OF SENIOR OFFICIAL FOR IMPLEMENTATION OF ELECTROMAGNETIC SPECTRUM SUPERIORITY STRATEGY.

(a) DESIGNATION.—Not later than 60 days after the date of the enactment of this Act, the Secretary of Defense shall designate a senior official of the Department of Defense to be responsible for, and accountable to the Secretary with respect to, the implementation of the electromagnetic spectrum superiority strategy. The Secretary shall designate the senior official from among individuals who are appointed to a position in the Department by the President, by and with the advice and consent of the Senate.

(b) RESPONSIBILITIES.—The senior official designated under subsection (a) shall be responsible for the following:

(1) Oversight of policy, strategy, planning, resource management, operational considerations, personnel, and technology development necessary to implement the electromagnetic spectrum superiority strategy.

(2) Evaluating whether the amount that the Department of Defense expends on electromagnetic

warfare and electromagnetic spectrum operations capabilities is properly aligned.

(3) Evaluating whether the Department is effectively incorporating electromagnetic spectrum operations capabilities and considerations into current and future operational plans and concepts.

(4) Such other matters relating to electromagnetic spectrum operations as the Secretary specifies for purposes of this subsection.

(c) REPORT.—Not later than 270 days after the date of the enactment of this Act, the Secretary shall submit to the congressional defense committees a report that includes the following:

(1) A review of the sufficiency of the rules of engagement of the Department of Defense relating to electromagnetic spectrum operations, in particular with respect to operating below the level of armed conflict and to protect the Department from electronic attack and disruption.

(2) Any other matters the Secretary determines relevant.

(d) ELECTROMAGNETIC SPECTRUM SUPERIORITY STRATEGY DEFINED.—In this section, the term ''electromagnetic spectrum superiority strategy'' means the Electromagnetic Spectrum Superiority Strategy of the Depart-

ment of Defense published in October 2020, and any such successor strategy.

SEC. 11___. [LOG 72967] DARPA PERSONNEL MANAGEMENT AUTHORITY TO ATTRACT SCIENCE AND ENGINEERING EXPERTS.

Section 1599h(b) of title 10, United States Code, is amended—

(1) in paragraph (2)(B), by striking ''and'' at the end;

(2) in paragraph (3), by striking the period and inserting ''; and''; and

(3) by adding at the end the following:

''(4) during any fiscal year, pay up to 15 individuals newly appointed pursuant to paragraph (1)(B) the travel, transportation, and relocation expenses and services described under sections 5724, 5724a, and 5724c of title 5.''.

SEC. 15___.[Log 72942] LEGACY INFORMATION TECHNOLOGIES AND SYSTEMS ACCOUNTABILITY.

(a) IN GENERAL.—Not later than 270 days after the date of the enactment of this Act, the Secretaries of the Army, Navy, and Air Force shall each initiate efforts to identify legacy applications, software, and information technology within their respective Departments.

(b) SPECIFICATIONS.—To carry out subsection (a), that Secretaries of the Army, Navy, and Air Force shall each document the following:

(1) An identification of the applications, software, and information technologies that are considered active or operational, but which are judged to no longer be required by the respective Department.

(2) Information relating to the sources of funding for the applications, software, and information technologies identified under paragraph (1).

(3) An identification of the senior official responsible for each application, software, and information technology identified under paragraph (1).

(4) A plan to discontinue use and funding for each item application, software, and information technology identified under paragraph (1).

(c) EXEMPTION.—Any effort substantially similar to that described in subsection (a) that is being carried out by the Secretary of the Army, Navy, or Air Force as of the date of the enactment of this Act and completed not later 180 days after such date shall be treated as satisfying the requirement under such subsection.

(d) REPORT.—Not later than 270 days after the date of the enactment of this Act, the Secretaries of the Army, Navy, and Air Force shall each submit to the congressional defense committees the documentation required under subsection (b).

SEC. ___[Log 73291]. SHORT TITLE.

This title may be cited as the ''Barry Goldwater Scholarship and Excellence in Education Modernization Act of 2021''.

SEC. ___[Log 73540]. CLARIFYING AMENDMENTS TO DEFINITIONS.

Section 1403 of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4702) is amended—

(1) by striking paragraph (5) and inserting the following:

''(5) The term 'State' means each of the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the United States Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau.''; and

(2) in paragraph (6), by inserting '', a resident of a State,'' after ''national of the United States''.

SEC. ___[Log 73541]. BARRY GOLDWATER SCHOLARSHIP AND EXCELLENCE IN EDUCATION AWARDS.

(a) AWARD OF SCHOLARSHIPS, FELLOWSHIPS, AND RESEARCH INTERNSHIPS.—Section 1405(a) of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4704(a)) is amended—

(1) in the subsection heading, by striking ''AWARD OF SCHOLARSHIPS AND FELLOWSHIPS'' and inserting ''AWARD OF SCHOLARSHIPS, FELLOWSHIPS, AND RESEARCH INTERNSHIPS'';

(2) in paragraph (1)—

(A) by striking ''scholarships and fellowships'' and inserting ''scholarships, fellowships, and research internships''; and

(B) by striking ''science and mathematics'' and inserting ''the natural sciences, engineering, and mathematics'';

(3) in paragraph (2), by striking ''mathematics and the natural sciences'' and inserting ''the natural sciences, engineering, and mathematics'';

(4) in paragraph (3), by striking ''mathematics and the natural sciences'' and inserting ''the natural sciences, engineering, and mathematics'';

(5) by redesignating paragraph (4) as paragraph (5);

(6) in paragraph (5), as so redesignated, by striking ''scholarships and fellowships'' and inserting ''scholarships, fellowships, and research internships''; and

(7) by inserting after paragraph (3) the following:

''(4) Research internships shall be awarded to outstanding undergraduate students who intend to pursue careers in the natural sciences, engineering, and mathematics, which shall be prioritized for students attending community colleges.''.

(b) BARRY GOLDWATER SCHOLARS AND RESEARCH INTERNS.—Section 1405(b) of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4704(b)) is amended—

(1) in the subsection heading, by adding ''AND RESEARCH INTERNS'' after ''SCHOLARS''; and

(2) by adding at the end the following: ''Recipients of research internships under this title shall be known as 'Barry Goldwater Interns'.''.

SEC. ___[Log 73542]. STIPENDS.

Section 1406 of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4705) is amended by adding at the end the following: ''Each person awarded a research internship under this title shall receive a stipend as may be prescribed by the Board, which shall not exceed the maximum stipend amount awarded for a scholarship or fellowship.''.

SEC. ___[Log 73543]. SCHOLARSHIP AND RESEARCH INTERNSHIP CONDITIONS.

Section 1407 of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4706) is amended—

(1) in the section heading, by inserting ''**AND RESEARCH INTERNSHIP**'' after ''**SCHOLARSHIP**'';

(2) in subsection (a), by striking the subsection heading and inserting ''SCHOLARSHIP CONDITIONS'';

(3) in subsection (b), by striking the subsection heading and inserting ''REPORTS ON SCHOLARSHIPS''; and

(4) by adding at the end the following:

''(c) RESEARCH INTERNSHIP CONDITIONS.—A person awarded a research internship under this title may receive payments authorized under this title only during such periods as the Foundation finds that the person is maintaining satisfactory proficiency and is not engaging in gainful employment other than employment approved by the Foundation pursuant to regulations of the Board.

''(d) REPORTS ON RESEARCH INTERNSHIPS.—The Foundation may require reports containing such information in such form and to be filed at such times as the Foundation determines to be necessary from any person awarded a research internship under this title. Such reports may be accompanied by a certificate from an appro-

priate official at the institution of higher education or internship employer, approved by the Foundation, stating that such person is maintaining satisfactory progress in the internship, and is not engaged in gainful employment, except as otherwise provided in subsection (c).''.

SEC. ___[Log 73544]. SUSTAINABLE INVESTMENTS OF FUNDS.

Section 1408 of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4707) is amended—

(1) by redesignating subsections (c) and (d) as subsections (d) and (e), respectively; and

(2) by inserting after subsection (b) the following:

''(c) INVESTMENT IN SECURITIES.—Notwithstanding subsection (b), the Secretary of the Treasury may invest up to 40 percent of any public or private funds received by the Foundation after the date of enactment of the Barry Goldwater Scholarship and Excellence in Education Modernization Act of 2021 in securities other than public debt securities of the United States, if—

''(1) the Secretary receives a determination from the Board that such investments are necessary to enable the Foundation to carry out the purposes of this title; and

''(2) the securities in which such funds are invested are traded in established United States markets.

''(d) CONSTRUCTION.—Nothing in this section shall be construed to limit the authority of the Board to increase the number of scholarships provided under section

4704, or to increase the amount of the stipend authorized by section 4705, as the Board considers appropriate and is otherwise consistent with the requirements of this title.''.

SEC. ___[Log 73545]. ADMINISTRATIVE PROVISIONS.

Section 1411(a) of the Barry Goldwater Scholarship and Excellence in Education Act (20 U.S.C. 4710(a)) is amended—

(1) by striking paragraph (1) and inserting the following:

''(1) appoint and fix the rates of basic pay of not more than three employees (in addition to the Executive Secretary appointed under section 4709) to carry out the provisions of this title, without regard to the provisions in chapter 33 of title 5, United States Code, governing appointment in the competitive service or the provisions of chapter 51 and subchapter III of chapter 53 of such title, except that—

''(A) a rate of basic pay set under this paragraph may not exceed the maximum rate provided for employees in grade GS–15 of the General Schedule under section 5332 of title 5, United States Code; and

''(B) the employee shall be entitled to the applicable locality-based comparability payment under section 5304 of title 5, United States Code, subject to the applicable limitation established under subsection (g) of such section;'';

(2) in paragraph (2), by striking ''grade GS–18 under section 5332 of such title'' and inserting ''level IV of the Executive Schedule'';

(3) in paragraph (7), by striking ''and'' at the end;

(4) by redesignating paragraph (8) as paragraph (10); and

(5) by inserting after paragraph (7) the following:

''(8) expend not more than 5 percent of the Foundation's annual operating budget on programs that, in addition to or in conjunction with the Foundation's scholarship financial awards, support the development of Goldwater Scholars throughout their professional careers;

''(9) expend not more than 5 percent of the Foundation's annual operating budget to pay the costs associated with fundraising activities, including public and private gatherings; and''.

DIRECTIVE REPORT LANGUAGE

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DIVISION A—DEPARTMENT OF DEFENSE AUTHORIZATIONS

TITLE II—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, ARMY

Items of Special Interest

Autonomous robotic targets for small arms live fire training ranges

The committee is aware of Department of Defense interest in autonomous robotic targets (ART) to improve soldier lethality, team performance, and marksmanship. The committee understands that this technology could provide the Army with an unpredictable and dynamic live fire training adversary, improve warfighter readiness, and enhance soldier and squad performance evaluation tools while expanding the useful life of existing small arms ranges.

The committee is aware of the Army's efforts to improve targets as part of the Future Army System of Integrated Targets Program, and understands the Army is currently working to test trackless moving target efforts, but that these differ from ARTs. The committee understands that ARTs may require some range modifications or accommodations to facilitate complex individual and squad training exercises, but that based in part on the favorable technology review by the Asymmetric Warfare Group in 2013 and the Army Research Institute in 2017, select units in the U.S. Army, Marine Corps, and Special Operations Forces have fielded ARTs in limited capacity, providing outstanding results. Going forward, the committee understands that the Department's Close Combat Lethality Task Force (CCLTF) considers ARTs to be one of the most important training enhancement tools to significantly increase close combat lethality today.

The committee believes ARTs as a range enhancement and training tool significantly contribute to the ongoing CCLTF objectives and therefore supports broader rapid adoption of this commercial-off-the-shelf capability. The committee directs the Secretary of the Army to submit a report to the congressional defense committees not later than April 30, 2022, on how the Army can field this capability in fiscal year 2023, and what assistance the Army may need to accelerate its fielding.

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, AIR FORCE

Items of Special Interest

Report on the Agility Prime program of the U.S. Air Force

The committee recognizes that the U.S. Air Force's Agility Prime program is working towards its goal of ensuring a robust domestic market for electric vertical

takeoff and landing (eVTOL) aircraft, as well as introducing the Department of Defense to zero emissions aviation. eVTOL aircraft can provide the Department with many unique use cases since they are electric, have significantly lower noise levels compared to today's aircraft, lower maintenance and operating costs, and reduced heat signatures. The committee commends the Air Force for prioritizing the Agility Prime program and believes that continued investment in this technology will help to maintain the country's global leadership in the eVTOL market.

Therefore, the committee directs the Secretary of the Air Force to submit a report to the congressional defense committees not later than March 30, 2022, on the research, development, testing, and acquisition strategy for the Agility Prime program. The required report shall address the following matters:

(1) a description and justification for the focus areas of the program.

(2) projected dates for key milestones within the strategy.

(3) cost estimates and a projected budget for a 5-year investment plan.

(4) a description of how the strategy will improve collaboration with the private sector and military exploration of these key areas of innovation.

(5) a description of how the strategy will encourage competition and reward innovation for addressing system performance requirements.

(6) policies that could be pursued by the Department to ensure global leadership in the sector.

(7) a projected timeline for acquisition of electric aircraft.

Space Force higher education strategy

The committee appreciates the Space Force's establishment of a Chief Scientist, a Chief Technology and Innovation Officer, and a University Partnership Program as part of its efforts to improve its science and technology strategic vision and execution as well as its access to the talent, research expertise, and technological capabilities resident in universities. The committee directs the Chief of Space Operations to provide a briefing to the House Committee on Armed Services not later than January 31, 2022, that assess the effectiveness of the Space Force's higher education strategy in creating long-term, strategic relationships; in developing talent; and in providing access to expertise and engineering, research, and development capability. The briefing should outline the Space Force's strategy to engage higher education, to include minority institutions, in foundational research in disciplines that the Chief determines to be critical to the mission of the Space Force, and what role the University Partnership Program plays in that strategy.

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE-WIDE

Items of Special Interest

Advancing Gaming, Exercising, Modeling, and Simulation capabilities

The committee is aware of the Defense Science Board's final report on Gaming, Exercising, Modeling, and Simulation (GEMS), which concluded that the Department of Defense must significantly advance its capabilities to keep pace with competitors and effectively counter threats, both today and in the future. Therefore, the committee directs the Under Secretary of Defense for Research and Engineering to provide a briefing to the House Committee on Armed Services by January 15, 2022, on current and contemplated efforts to invest in and improve Gaming, Exercising, Modeling, and Simulation innovation across the analytical community within the Department of Defense. The briefing should include planned or ongoing efforts, assessments and evaluation, and investments in:

(1) digital engineering to support an enterprise-level GEMS strategy that would promote effective adoption of improved tools.

(2) training and experimentation augmented and facilitated by tools to help inform better implementation of modeling and simulation to discover new tactics and concepts and improve warfighter performance and readiness in the face of emerging threats from peer competitors.

(3) better strategic data collection and use and improved modeling and simulation to enable the evaluation and testing of high-level geopolitical strategies with long time horizons.

(4) integrating the use of technology-based enablers such as game engines and synthetic environments for a wide variety of Department of Defense missions.

(5) promoting effective GEMS governance to enable the proper coordination of activities and uses across the Department and the wider national security enterprise.

Defense Innovation Unit assessment

The committee is concerned that the Defense Innovation Unit (DIU) does not have an adequate size and composition of personnel to accomplish its mission. Therefore, the committee directs the Under Secretary of Defense for Research and Engineering to submit a report to the congressional defense committees not later than March 31, 2022, on the DIU that includes:

(1) a determination of the appropriate size and composition of personnel to accomplish the organization's mission;

(2) an assessment of whether existing structures, offices, and personnel are appropriately resourced to accomplish the organization's mission;

(3) an assessment of any additional authorities that would assist the organization and its affiliated entities in better accomplishing its mission; and

(4) an assessment of the structure, personnel, resources, and field offices that would be sufficient in fulfilling the organization's responsibilities and requirements.

The report shall be submitted in unclassified form that can be made available to the public.

Digital twin assessment and agile verification processes

Implementation of the Software Acquisition Pathway directed in section 800 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116-92) and the digital engineering capability to automate testing and evaluation effort directed in section 231 of Public Law 116-92 have made it clear that digital twins are a critical enabler to extending the efficacy and efficiency of continuous integration/continuous delivery (CI/CD) approaches beyond simple information technology systems. This extension includes systems that have joint and systems-of-systems warfighting requirements, as well as those in which battlefield complexities become a more prominent factor in survivability and effectiveness. The committee is concerned that many acquisition programs do not develop digital twins at all, or they develop twins that are not adequate for test and evaluation purposes.

The determination of a digital twin's adequacy is a lengthy process often appended to the development of a model later, and at a time when most resources have already been exhausted. When the digital twin evolves from an engineering baseline as the program develops, the adequacy of that twin can evolve in a more iterative and incremental way that builds a body of evidence over time.

The committee believes the use of digital twins must be a more prevalent practice in the Department of Defense. To that end, the committee directs the Secretary of Defense, in consultation with the Under Secretary of Defense for Research and Engineering and Director of Operational Test and Evaluation (DOT&E), to submit a report to the congressional defense committees not later than March 1, 2022, that assesses:

(1) the state of digital twin practices in the Department. This assessment should include how many programs on the Software Acquisition Pathway or under DOT&E oversight are applying CI/CD methodologies and have built or are planning to build digital twins. It should also include information on the extent to which these twins are adequate to support test and evaluation as part of a CI/CD process, and where gaps continue to exist.

(2) the existing verification, validation, and accreditation body of work, and provide recommendations on how adequacy can be developed and determined in a more agile process as the digital twin evolves, instead of through a waterfall process enacted at the end of the digital twin development.

Report on flexible funding for transitioning science and technology

The committee is concerned that the Department of Defense struggles to transition and scale critical innovative technologies from development projects to acquisition programs in a time period that meets the needs of the warfighter and ensures technology providers are able to survive. Despite Congress providing significant new acquisition authorities and flexibilities, too often successful prototypes and pilot efforts are unable to transition to successful programs due to a lack of agile funding. Therefore, the committee directs the Deputy Secretary of Defense to submit a report to the congressional defense committees by July 1, 2022,

with an evaluation of the barriers preventing the Department from quickly and successfully scaling innovative technologies to support the warfighter and the Department's critical operational needs. This report shall include:

(1) a description of the systemic challenges associated with scaling innovation, including requirements, acquisition, programming, and culture; and

(2) a discussion of whether flexible funding could help bridge critical innovative technologies into programs of record.

The committee further directs the Deputy Secretary of Defense to include a framework for how the Department would execute any flexible funding for transitioning science and technology, including:

(1) a list of critical operational needs to be addressed;

(2) a recommendation of the level of funding required and appropriate award size;

(3) the government entity best suited to execute and oversee the funding until the program is included in the Fiscal Year Defense Plan (FYDP);

(4) the metrics by which a project will be selected for funding and the success or failure of the transition assessed;

(5) how to prioritize innovative performers with clearly demonstrated and successful past performance;

(6) a plan of action and milestones for selected projects from time of identification to time of funding;

(7) how to ensure such projects are successfully integrated into the FYDP and transitioned to service program executive offices; and

(8) the frequency and substance of congressional reporting recommended to ensure transparency throughout the selection and transition process.

The Deputy Secretary may consider in this report any additional recommendations that would support successful transition of technology pilot and prototype programs to scale to address defined mission requirements, critical operational needs, or emerging threats.

TITLE X—GENERAL PROVISIONS

ITEMS OF SPECIAL INTEREST

OTHER MATTERS

Optimizing AMBIT Adjustments

The committee is aware of the upcoming auction of the 3450-3550 MHz band of mid-band spectrum currently under exclusive license to the Department of Defense. Enabling commercial access to this band will, when combined with existing commercial spectrum, make significant contributions to the effectiveness and efficiency of U.S. 5G and 5G-enabled technologies, benefitting Americans while also bolstering our economic competitiveness.

However, the sale will also require major adjustments to a number of Department of Defense spectrum-dependent systems. Through the Spectrum Relocation Fund (SRF), proceeds from the upcoming auction will help to defray the costs associated with those adjustments. However, SRF funding may only be used for costs associated with achieving "comparable capability" to that lost by the affected systems.

At the same time, there is broad recognition that such "comparable capability" is no longer sufficient to deliver U.S. advantage in a spectrum environment that is increasingly constrained, congested, and contested. That recognition has driven the creation of the Electromagnetic Spectrum (EMS) Superiority Strategy and associated Implementation Plan, though funding to support the scope and scale of necessary advances to support that plan remains scarce.

As the mid-band-dependent systems affected by the upcoming auction make the required adjustments, this presents the Department with an opportunity to achieve leap-ahead advances toward more agile spectrum use. Capitalizing on this opportunity will require deliberate, careful alignment of SRF and appropriated funding to ensure both funding sources are used appropriately, but to maximum combined effect.

To ensure this alignment, the committee directs the Senior Designated Official for EMS, supported by the Office of the Secretary of Defense Chief Information Office, the Under Secretary of Defense for Acquisition and Sustainment, the Under Secretary of Defense for Research and Engineering, and the Under Secretary of Defense, Comptroller, to provide a briefing to the House Committee on Armed Services not later than January 15, 2022. The briefing shall describe the Department's plan to align adjustments to the affected mid-band-dependent systems with the goals of the EMS Superiority Strategy, the expected uses of various funding sources in support of that plan, and the oversight mechanisms to ensure appropriate adherence to the plan.

TITLE XV—CYBERSPACE-RELATED MATTERS

ITEMS OF SPECIAL INTEREST

Briefing on the Joint Artificial Intelligence Center's Data Efforts

The committee supports the Joint Artificial Intelligence Center's creation of the Department of Defense Artificial Intelligence (AI) Enterprise Infrastructure and Cybersecurity Committee and encourages the Department to invest in the necessary machine learning data infrastructure to support Department-wide artificial intelligence efforts. This effort should incorporate foundational data readiness required for ongoing and future AI algorithm development into all programs of record, as appropriate. The committee directs the Director of the Joint Artificial Intelligence Center to provide a briefing to the House Committee on

Armed Services not later than January 15, 2022, on the activities and priorities, including data infrastructure development, of the Department of Defense AI Enterprise Infrastructure and Cybersecurity Committee.

Comptroller General Review of Department of Defense Training to Prepare for Leadership and Operations in a Contested Information Environment

The committee notes the importance of maintaining U.S. dominance in the information environment and ensuring proper training so that leaders can function effectively in a contested information environment.

Accordingly, the committee directs the Comptroller General of the United States to submit a report to the Committees on Armed Services of the Senate and the House of Representatives not later than July 2, 2022, reviewing Department of Defense decision-making policy and training for service members and commanders operating in a contested information environment. The review should assess policy, training and exercises where service members develop and maintain decision-making skills in an information environment where information may be inaccurate, incomplete, or manipulated. The review should also assess the extent to which regulations and tactics, techniques, and procedure allow commanders to apply critical thinking skills and flexible decision making in a contested information environment.

Department of Defense Data Strategy

The committee commends the Department of Defense for developing the 2020 Department of Defense Data Strategy, understanding that data is an important resource that must be managed and secured in order for it to be used for operational effects. Ensuring the trustworthiness and security of this data should be at the foundation of implementation efforts across the Department. The strategy notes that the Department must protect its own data while at rest, in motion, and in use. It also lays out several approaches to data protection, including attribute-based access control. However, it is unclear to the committee how the Department plans to implement this strategy. The committee directs the Chief Information Officer of the Department of Defense, in coordination with the Director of the Defense Information Systems Agency, to provide a briefing to the House Committee on Armed Services not later than February 1, 2022, on efforts to build cohesive data standards, monitoring for compliance and adherence to common frameworks, and planned efforts over the Future Years Defense Program.

Department of Defense Website and Forms Modernization Program

The 21st Century Integrated Digital Experience Act (Public Law 115-336), enacted in December 2018, required that the Department of Defense make all websites and forms related to serving the public available in a secure, consistent, accessible, fully usable and mobile friendly format by December 2020. To ensure

that the Department of Defense continues its path towards compliance, the committee directs the Department of Defense Chief Information Officer to provide a briefing to the House Committee on Armed Services not later than February 15, 2022, on its current trajectory toward form modernization.

Effectiveness Metrics for Information Operations

The committee directs the Comptroller General of the United States to submit a report to the Committees on Armed Services of the Senate and the House of Representatives on the effectiveness and sufficiency of the Department of Defense's assessment capability for defining and measuring the impact of Department information operations. The report will be due not later than 180 days after the Department of Defense designates a Department entity and develops, applies, and refines an assessment capability for defining and measuring the impact of information operations in compliance with section 1749 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Public Law 116-283).

Enterprise Network Endpoint Monitoring

The committee commends actions taken to date by the Department of Defense to increase and improve the visibility across the network of its assets to include endpoints. Nevertheless, the committee remains concerned by the inability of the Department, the Chief Information Officer, and Joint Forces Headquarters-Department of Defense Information Networks (JFHQ-DODIN) to compel components under directive authority for cyberspace operations (DACO) authorities to be configured for and provide live data to JFHQ-DODIN. A key aspect of the Department's vulnerabilities lay in its numerous endpoint devices, with each service and component possibly taking unique approaches toward endpoint monitoring. To address these concerns, the committee directs the Department of Defense Chief Information Officer, in coordination with the JFHQ-DODIN, to provide a briefing to the House Committee on Armed Services not later than April 1, 2022, on the efforts of the Department to increase and ensure compliance at the component level of network endpoint monitoring. Additionally, the briefing should address barriers which prevent or hinder the ability of components under JFHQ-DODIN's authority to provide live data.