

10 USC Ch. 327: WEAPON SYSTEMS DEVELOPMENT AND RELATED MATTERS**From Title 10—ARMED FORCES**

Subtitle A—General Military Law

PART V—ACQUISITION

Subpart F—Major Systems, Major Defense Acquisition Programs, and Weapon Systems Development

CHAPTER 327—WEAPON SYSTEMS DEVELOPMENT AND RELATED MATTERS

Subchapter

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EDITORIAL NOTES**PRIOR PROVISIONS**

A prior chapter 327 "RESEARCH AND DEVELOPMENT CENTERS AND FACILITIES", consisting of reserved section 4401, was repealed by Pub. L. 116–283, div. A, title XVIII, §1841(a)(1)(A), Jan. 1, 2021, 134 Stat. 4242.

A prior chapter 329 "OPERATIONAL TEST AND EVALUATION; DEVELOPMENTAL TEST AND EVALUATION", consisting of reserved section 4451, was repealed by Pub. L. 116–283, div. A, title XVIII, §1841(a)(1)(A), Jan. 1, 2021, 134 Stat. 4242.

SUBCHAPTER I—MODULAR OPEN SYSTEM APPROACH IN DEVELOPMENT OF WEAPON SYSTEMS

Sec.	
4401.	Requirement for modular open system approach in major defense acquisition programs; definitions.
4402.	Requirement to address modular open system approach in program capabilities development and acquisition weapon system design.
4403.	Requirements relating to availability of major system interfaces and support for modular open system approach.

§4401. Requirement for modular open system approach in major defense acquisition programs; definitions

(a) **MODULAR OPEN SYSTEM APPROACH REQUIREMENT.**—A major defense acquisition program that receives Milestone A or Milestone B approval after January 1, 2019, shall be designed and developed, to the maximum extent practicable, with a modular open system approach to enable incremental development and enhance competition, innovation, and interoperability. Other defense acquisition programs shall also be designed and developed, to the maximum extent practicable, with a modular open system approach to enable incremental development and enhance competition, innovation, and interoperability.

(b) **DEFINITIONS.**—In this chapter:

(1) The term "modular open system approach" means, with respect to a major defense acquisition program, an integrated business and technical strategy that—

(A) employs a modular design that uses modular system interfaces between major systems, major system

components and modular systems;

(B) is subjected to verification to ensure that relevant modular system interfaces—
 (i) comply with, if available and suitable, widely supported and consensus-based standards; or
 (ii) are delivered pursuant to the requirements established in subsection (a)(2)(B) of section 804 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, including the delivery of—

- (I) software-defined interface syntax and properties, specifically governing how values are validly passed and received between major subsystems and components, in machine-readable format;
- (II) a machine-readable definition of the relationship between the delivered interface and existing common standards or interfaces available in Department interface repositories; and
- (III) documentation with functional descriptions of software-defined interfaces, conveying semantic meaning of interface elements, such as the function of a given interface field;

(C) uses a system architecture that allows severable major system components and modular systems at the appropriate level to be incrementally added, removed, or replaced throughout the life cycle of a major system platform to afford opportunities for enhanced competition and innovation while yielding—

- (i) significant cost savings or avoidance;
- (ii) schedule reduction;
- (iii) opportunities for technical upgrades;
- (iv) increased interoperability, including system of systems interoperability and mission integration; or
- (v) other benefits during the sustainment phase of a major weapon system; and

(D) complies with the technical data rights set forth in sections 3771 through 3775 of this title.

(2) The term "major system platform" means the highest level structure of a major weapon system that is not physically mounted or installed onto a higher level structure and on which a major system component can be physically mounted or installed.

(3) The term "major system component"—

(A) means a high level subsystem or assembly, including hardware, software, or an integrated assembly of both, that can be mounted or installed on a major system platform through modular system interfaces; and

(B) includes a subsystem or assembly that is likely to have additional capability requirements, is likely to change because of evolving technology or threat, is needed for interoperability, facilitates incremental deployment of capabilities, or is expected to be replaced by another major system component.

(4) The term "modular system interface" means a shared boundary between major systems, major system components, or modular systems, defined by various physical, logical, and functional characteristics, such as electrical, mechanical, fluidic, optical, radio frequency, data, networking, or software elements.

(5) The term "modular system" refers to a weapon system or weapon system component that—

(A) is able to execute without requiring coincident execution of other specific weapon systems or components;

(B) can communicate across component boundaries and through interfaces; and

(C) functions as a module that can be separated, recombined, and connected with other weapon systems or weapon system components in order to achieve various effects, missions, or capabilities.

(6) The term "program capability document" means, with respect to a major defense acquisition program, a document that specifies capability requirements for the program, such as a capability development document or a capability production document.

(7) The terms "program cost targets" and "fielding target" have the meanings provided in section 4271(a) of this title.

(8) The term "major defense acquisition program" has the meaning provided in section 4201 of this title.

(9) The term "major weapon system" has the meaning provided in section 3455(f) of this title.

(Added Pub. L. 114–328, div. A, title VIII, §805(a)(1), Dec. 23, 2016, 130 Stat. 2252, §2446a; renumbered §4401 and amended Pub. L. 116–283, div. A, title VIII, §804(b)(1), title XVIII, §1851(b)(1), (2), Jan. 1, 2021, 134 Stat. 3737, 4272.)

EDITORIAL NOTES

REFERENCES IN TEXT

Section 804 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, referred to in subsec. (b)(1)(B)(ii), is section 804 of Pub. L. 116–283, which is set out as a note below.

AMENDMENTS

2021—Pub. L. 116–283, §1851(b)(1), renumbered section 2446a of this title as this section.

Subsec. (a). Pub. L. 116–283, §804(b)(1)(A), inserted at end "Other defense acquisition programs shall also be designed and developed, to the maximum extent practicable, with a modular open system approach to enable incremental development and enhance competition, innovation, and interoperability."

Subsec. (b)(1)(A). Pub. L. 116–283, §804(b)(1)(B)(i)(I), substituted "modular system interfaces between major systems, major system components and modular systems;" for "major system interfaces between a major system platform and a major system component, between major system components, or between major system platforms;"

Subsec. (b)(1)(B). Pub. L. 116–283, §804(b)(1)(B)(i)(II), substituted "that relevant modular system interfaces—" for "major system interfaces comply with, if available and suitable, widely supported and consensus-based standards;" and added cls. (i) and (ii).

Subsec. (b)(1)(C). Pub. L. 116–283, §804(b)(1)(B)(i)(III), inserted "and modular systems" after "severable major system components" in introductory provisions.

Subsec. (b)(1)(D). Pub. L. 116–283, §1851(b)(2)(A), substituted "sections 3771 through 3775" for "section 2320".

Subsec. (b)(3)(A). Pub. L. 116–283, §804(b)(1)(B)(ii), substituted "modular system interfaces" for "well-defined major system interfaces".

Subsec. (b)(4). Pub. L. 116–283, §804(b)(1)(B)(iii), amended par. (4) generally. Prior to amendment, par. (4) defined major system interface.

Subsec. (b)(5), (6). Pub. L. 116–283, §804(b)(1)(B)(iv), (v), added par. (5) and redesignated former pars. (5) and (6) as (6) and (7), respectively.

Subsec. (b)(7). Pub. L. 116–283, §1851(b)(2)(B), which directed amendment of par. (6) of subsec. (b) by substituting "section 4271(a)" for "section 2448a(a)", was executed by making the substitution in par. (7) to reflect the probable intent of Congress and the intervening amendment by section 804(b)(1)(B)(iv) of Pub. L. 116–283 which redesignated par. (6) as (7). See below.

Pub. L. 116–283, §804(b)(1)(B)(iv), redesignated par. (6) as (7). Former par. (7) redesignated (8).

Subsec. (b)(8). Pub. L. 116–283, §1851(b)(2)(C), which directed amendment of par. (7) of subsec. (b) by substituting "section 4201" for "section 2430", was executed by making the substitution in par. (8) to reflect the probable intent of Congress and the intervening amendment by section 804(b)(1)(B)(iv) of Pub. L. 116–283 which redesignated par. (7) as (8). See below.

Pub. L. 116–283, §804(b)(1)(B)(iv), redesignated par. (7) as (8). Former par. (8) redesignated (9).

Subsec. (b)(9). Pub. L. 116–283, §1851(b)(2)(D), which directed amendment of par. (8) of subsec. (b) by substituting "section 3455(f)" for "section 2379(f)", was executed by making the substitution in par. (9) to reflect the probable intent of Congress and the intervening amendment by section 804(b)(1)(B)(iv) of Pub. L. 116–283 which redesignated par. (8) as (9). See below.

Pub. L. 116–283, §804(b)(1)(B)(iv), redesignated par. (8) as (9).

STATUTORY NOTES AND RELATED SUBSIDIARIES

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by section 1851(b)(1), (2) of Pub. L. 116–283 effective Jan. 1, 2022, with additional

provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Pub. L. 114–328, div. A, title VIII, §805(a)(4), Dec. 23, 2016, 130 Stat. 2255, provided that: "Subchapter I of chapter 144B of title 10, United States Code [see, now, this subchapter], as added by paragraph (1), shall take effect on January 1, 2017."

IMPLEMENTATION OF MODULAR OPEN SYSTEMS APPROACHES

Pub. L. 116–283, div. A, title VIII, §804, Jan. 1, 2021, 134 Stat. 3735, provided that:

"(a) REQUIREMENTS FOR INTERFACE DELIVERY.—

"(1) IN GENERAL.—Not later than one year after the date of the enactment of this Act [Jan. 1, 2021], the Under Secretary of Defense for Acquisition and Sustainment, in coordination with the Joint All-Domain Command and Control cross-functional team and the Director for Command, Control, Communications, and Computers/Cyber, shall issue regulations and guidance applicable to the military departments, Defense Agencies, Department of Defense Field Activities (as such terms are defined, respectively, in section 101 of title 10, United States Code), and combatant commands, as appropriate, to—

"(A) facilitate the Department of Defense's access to and utilization of modular system interfaces;

"(B) fully realize the intent of [former] chapter 144B of title 10, United States Code [see this chapter and sections 4271 and 4272 of this title], by facilitating the implementation of modular open system approaches across major defense acquisition programs (as defined in section 2430 of title 10, United States Code [now 10 U.S.C. 4201]) and other relevant acquisition programs, including in the acquisition and sustainment of weapon systems, platforms, and components for which no common interface standard has been established, to enable communication between such weapon systems, platforms, and components; and

"(C) advance the efforts of the Department to generate diverse and recomposable kill chains.

"(2) ELEMENTS.—The regulations and guidance required under paragraph (1) shall include requirements that—

"(A) the program officer for each weapon system characterizes, in the acquisition strategy required under section 2431a of title 10, United States Code [now 10 U.S.C. 4211] or in other documentation, the desired modularity of the weapon system for which the program officer is responsible, including—

"(i) identification of—

"(I) the modular systems that comprise the weapon system;

"(II) the information that should be communicated between individual modular systems (such as tracking and targeting data or command and control instructions); and

"(III) the desired function of the communication between modular systems (such as fire control functions); and

"(ii) a default configuration specifying which modular systems should communicate with other modular systems, including modular systems of other weapon systems;

"(B) each relevant Department of Defense contract entered into after the date on which the regulations and guidance required under paragraph (1) are implemented includes requirements for the delivery of modular system interfaces for modular systems deemed relevant in the acquisition strategy or documentation referred to in subparagraph (A), including

— "(i) software-defined interface syntax and properties, specifically governing how values are validly passed and received between major subsystems and components, in

machine-readable format;

"(ii) a machine-readable definition of the relationship between the delivered interface and existing common standards or interfaces available in the interface repositories established pursuant to subsection (c); and

"(iii) documentation with functional descriptions of software-defined interfaces, conveying semantic meaning of interface elements, such as the function of a given interface field;

"(C) the relevant program offices, including those responsible for maintaining and upgrading legacy systems—

"(i) that have not characterized the desired modularity of the systems nevertheless meet the requirements of paragraph (2)(A), if the program officers make an effort, to the extent practicable, to update the acquisition strategies required under section 2431a of title 10, United States Code [now 10 U.S.C. 4211], or to develop or update other relevant documentation; and

"(ii) that have awarded contracts that do not include the requirements specified in subparagraph (B) of paragraph (2) nevertheless acquire, to the extent practicable, the items specified in clauses (i) through (iii) of such subparagraph, either through contractual updates, separate negotiations or contracts, or program management mechanisms; and

"(D) the relevant program officers deliver modular system interfaces and the associated documentation to at least one of the repositories established pursuant to subsection (c).

"(3) APPLICABILITY OF REGULATIONS AND GUIDANCE.—

"(A) APPLICABILITY.—The regulations and guidance required under paragraph (1) shall apply to any program office responsible for the prototyping, acquisition, or sustainment of a new or existing weapon system.

"(B) EXTENSION OF SCOPE.—Not earlier than 1 year before, and not later than 2 years after the regulations and guidance required under paragraph (1) are issued for weapon systems, the Under Secretary of Defense for Acquisition and Sustainment may extend such regulations and guidance to apply to software-based non-weapon systems, including business systems and cybersecurity systems.

"(4) INCLUSION OF COMPONENTS.—For the purposes of paragraph (2)(A), each component that meets the following requirements shall be treated as a modular system:

"(A) A component that is able to execute without requiring coincident execution of other weapon systems or components and can communicate across component boundaries and through interfaces.

"(B) A component that can be separated from and recombined with other weapon systems or components to achieve various effects, missions, or capabilities.

"(C) A component that is covered by a unique contract line item.

"(5) MACHINE-READABLE DEFINITION.—Where appropriate and available, the requirement in paragraph (2)(B)(ii) for a machine-readable definition may be satisfied by using a covered technology.

"(b) EXTENSION OF MODULAR OPEN SYSTEMS APPROACH AND RIGHTS IN INTERFACE SOFTWARE.—

"(1) REQUIREMENT FOR MODULAR OPEN SYSTEM APPROACH.—[Amended section 4401 of this title.]

"(2) RIGHTS IN TECHNICAL DATA.—

"(A) IN GENERAL.—[Amended former section 2320 of this title.]

"(B) REGULATIONS.—Not later than 180 days after the date of the enactment of this Act [Jan. 1, 2021], the Secretary of Defense shall update the regulations required by section 2320(a)(1) of title 10, United States Code [see 10 U.S.C. 3771(a)], to reflect the amendments made by this paragraph.

"(c) INTERFACE REPOSITORIES.—

"(1) ESTABLISHMENT.—Not later than 90 days after the date of the enactment of this Act [Jan. 1, 2021], the Under Secretary of Defense for Acquisition and Sustainment shall—

"(A) direct the Secretaries concerned and the heads of other appropriate Department of Defense components to establish and maintain repositories for interfaces, syntax and properties, documentation, and communication implementations delivered pursuant to the requirements established under subsection (a)(2)(B);

"(B) establish and maintain a comprehensive index of interfaces, syntax and properties, documentation, and communication implementations delivered pursuant to the requirements established under subsection (a)(2)(B) and maintained in the repositories required under subparagraph (A); and

"(C) if practicable, establish and maintain an alternate reference repository of interfaces, syntax and properties, documentation, and communication implementations delivered pursuant to the requirements established under subsection (a)(2)(B).

"(2) DISTRIBUTION OF INTERFACES.—

"(A) IN GENERAL.—Consistent with the requirements of section 2320 of title 10, United States Code [see 10 U.S.C. 3771 et seq.], the Under Secretary of Defense for Acquisition and Sustainment shall, in coordination with the Director of the Defense Standardization Program Office, use the index and repositories established pursuant to paragraph (1) to provide access to interfaces and relevant documentation to authorized Federal Government and non-Governmental entities.

"(B) NON-GOVERNMENT RECIPIENT USE LIMITS.—A non-Governmental entity that receives access under subparagraph (A) may not further release, disclose, or use such data except as authorized.

"(d) SYSTEM OF SYSTEMS INTEGRATION TECHNOLOGY AND EXPERIMENTATION.—

"(1) DEMONSTRATION AND ASSESSMENT.—

"(A) IN GENERAL.—Not later than one year after the date of the enactment of this Act [Jan. 1, 2021], the Director for Command, Control, Communications, and Computers/Cyber and the Chief Information Officer of the Department of Defense, acting through the Joint All-Domain Command and Control cross-functional team, shall conduct demonstrations and complete an assessment of the technologies developed under the System of Systems Integration Technology and Experimentation program of the Defense Advanced Research Projects Agency, including a covered technology, and the applicability of any such technologies to the Joint All-Domain Command and Control architecture.

"(B) COVERAGE.—The demonstrations and assessment required under subparagraph (A) shall include—

"(i) at least three demonstrations of the use of a covered technology to create, under constrained schedules and budgets, novel kill chains involving previously incompatible weapon systems, sensors, and command, control, and communication systems from multiple military services in cooperation with United States Indo-Pacific Command or United States European Command;

"(ii) an evaluation as to whether the communications enabled via a covered technology are sufficient for military missions and whether such technology results in any substantial performance loss in communication between systems, major subsystems, and major components;

"(iii) an evaluation as to whether a covered technology obviates the need to develop, impose, and maintain strict adherence to common communication and interface standards for weapon systems;

"(iv) the appropriate roles and responsibilities of the Chief Information Officer of the Department of Defense, the Under Secretary of Defense for Acquisition and Sustainment, the heads of the combatant commands, the Secretaries concerned, the Defense Advanced Research Projects Agency, and the defense industrial base in using and maintaining a covered technology to generate diverse and recomposable kill chains as part of the Joint All-

Domain Command and Control architecture;

"(v) for at least one of the demonstrations conducted under clause (i), demonstration of the use of technology developed under the High-Assurance Cyber Military Systems program of the Defense Advanced Research Projects Agency to secure legacy weapon systems and command and control capabilities while facilitating interoperability;

"(vi) an evaluation of how the technology referred to in clause (v) and covered technology should be used to improve cybersecurity and interoperability across critical weapon systems and command and control capabilities across the joint forces; and

"(vii) coordination with the program manager for the Time Sensitive Targeting Defeat program under the Under Secretary of Defense for Research and Engineering and the Under Secretary of Defense for Intelligence and Security.

"(2) CHIEF INFORMATION OFFICER ASSESSMENT.—

"(A) IN GENERAL.—The Chief Information Officer for the Department of Defense, in coordination with the Principal Cyber Advisor to the Secretary of Defense and the Director of the Cybersecurity Directorate of the National Security Agency, shall assess the technologies developed under the System of Systems Integration Technology and Experimentation program of the Defense Advanced Research Projects Agency, including the covered technology, and applicability of such technology to the business systems and cybersecurity tools of the Department.

"(B) COVERAGE.—The assessment required under subparagraph (A) shall include—

"(i) an evaluation as to how the technologies referred to in such subparagraph could be used in conjunction with or instead of existing cybersecurity standards, frameworks, and technologies designed to enable communication between, and coordination of, cybersecurity tools;

"(ii) as appropriate, demonstrations by the Chief Information Office of the use of such technologies in enabling communication between, and coordination of, previously incompatible cybersecurity tools; and

"(iii) as appropriate, demonstrations of the use of such technologies in enabling communication between previously incompatible business systems.

"(3) SUSTAINMENT OF CERTAIN ENGINEERING RESOURCES AND CAPABILITIES.—During the period the demonstrations and assessments required under this subsection are conducted, and thereafter to the extent required to execute the activities directed by the Joint All-Domain Command and Control cross-functional team, the Joint All-Domain Command and Control cross-functional team shall sustain the System of Systems Technology Integration Tool Chain for Heterogeneous Electronic Systems engineering resources and capabilities developed by the Defense Advanced Research Projects Agency.

"(4) TRANSFER OF RESPONSIBILITY.—Not earlier than 1 year before, and not later than 2 years after the date of the enactment of this Act, the Secretary of Defense may transfer responsibility for maintaining the engineering resources and capabilities described in paragraph (3) to a different organization within the Department.

"(e) OPEN STANDARDS.—Nothing in this section shall be construed as requiring, preventing, or interfering with the use or application of any given communication standard or interface. The communication described in subsection (a)(2)(A) may be accomplished by using existing open standards, by the creation and use of new open standards, or through other approaches, provided that such standards meet the requirements of subsection (a)(2)(B).

"(f) DEFINITIONS.—In this section:

"(1) The term 'covered technology' means the domain-specific programming language for interface field transformations and its associated compilation toolchain (commonly known as the 'System of Systems Technology Integration ToolChain for Heterogeneous Electronic Systems') developed under the Defense Advanced Research Projects Agency System of Systems

Integration Technology and Experimentation program, or any other technology that is functionally equivalent.

"(2) The term 'desired modularity' means the desired degree to which weapon systems, components within a weapon system, and components across weapon systems can function as modules that can communicate across component boundaries and through interfaces and can be separated and recombined to achieve various effects, missions, or capabilities, as determined by the program officer for such weapon system.

"(3) The term 'machine-readable format' means a format that can be easily processed by a computer without human intervention.

"(4) The terms 'major system', 'major system component', 'modular open system approach', 'modular system', 'modular system interface', and 'weapon system' have the meanings given such terms, respectively, in section 2446a of title 10, United States Code [now 10 U.S.C. 4401]."

§4402. Requirement to address modular open system approach in program capabilities development and acquisition weapon system design

(a) PROGRAM CAPABILITY DOCUMENT.—A program capability document for a major defense acquisition program shall identify and characterize—

(1) the extent to which requirements for system performance are likely to evolve during the life cycle of the system because of evolving technology, threat, or interoperability needs; and

(2) for requirements that are expected to evolve, the minimum acceptable capability that is necessary for initial operating capability of the major defense acquisition program.

(b) ANALYSIS OF ALTERNATIVES.—The Director of Cost Assessment and Performance Evaluation, in formulating study guidance for analyses of alternatives for major defense acquisition programs and performing such analyses under section 139a(d)(4) of this title, shall ensure that any such analysis for a major defense acquisition program includes consideration of evolutionary acquisition, prototyping, and a modular open system approach.

(c) ACQUISITION STRATEGY.—In the case of a major defense acquisition program that uses a modular open system approach, the acquisition strategy required under section 4211 of this title shall—

(1) clearly describe the modular open system approach to be used for the program;

(2) differentiate between the major system platform and major system components being developed under the program, as well as major system components developed outside the program that will be integrated into the major defense acquisition program;

(3) clearly describe the evolution of major system components that are anticipated to be added, removed, or replaced in subsequent increments;

(4) identify additional major system components that may be added later in the life cycle of the major system platform;

(5) clearly describe how intellectual property and related issues, such as technical data deliverables, that are necessary to support a modular open system approach, will be addressed; and

(6) clearly describe the approach to systems integration and systems-level configuration management to ensure mission and information assurance.

(d) REQUEST FOR PROPOSALS.—The milestone decision authority for a major defense acquisition program that uses a modular open system approach shall ensure that a request for proposals for the development or production phases of the program shall describe the modular open system approach and the minimum set of major system components that must be included in the design of the major defense acquisition program.

(e) MILESTONE B.—A major defense acquisition program may not receive Milestone B approval under section 4252 of this title until the milestone decision authority determines in writing—

(1) in the case of a program that uses a modular open system approach, that—

(A) the program incorporates clearly defined major system interfaces between the major system platform and major system components, between major system components, and between major system platforms;

(B) such major system interfaces are consistent with the widely supported and consensus-based standards that exist at the time of the milestone decision, unless such standards are unavailable or unsuitable for

particular major system interfaces; and

(C) the Government has arranged to obtain appropriate and necessary intellectual property rights with respect to such major system interfaces upon completion of the development of the major system platform; or

(2) in the case of a program that does not use a modular open system approach, that the use of a modular open system approach is not practicable.

(f) **IMPLEMENTATION GUIDANCE.**—The Secretaries of the military departments shall issue guidance to implement the requirements of this section.

(Added Pub. L. 114–328, div. A, title VIII, §805(a)(1), Dec. 23, 2016, 130 Stat. 2253, §2446b; amended Pub. L. 115–91, div. A, title X, §1081(a)(40), Dec. 12, 2017, 131 Stat. 1596; Pub. L. 116–92, div. A, title VIII, §840(a), Dec. 20, 2019, 133 Stat. 1499; renumbered §4402 and amended Pub. L. 116–283, div. A, title XVIII, §1851(b)(1), (3), Jan. 1, 2021, 134 Stat. 4272.)

EDITORIAL NOTES

AMENDMENTS

2021—Pub. L. 116–283, §1851(b)(1), renumbered section 2446b of this title as this section.

Subsec. (c). Pub. L. 116–283, §1851(b)(3)(A), substituted "section 4211" for "section 2431a" in introductory provisions.

Subsec. (e). Pub. L. 116–283, §1851(b)(3)(B), substituted "section 4252" for "section 2366b" in introductory provisions.

2019—Subsec. (f). Pub. L. 116–92 added subsec. (f).

2017—Subsec. (e). Pub. L. 115–91 substituted "in writing—" for "in writing that—" in introductory provisions and inserted ", that" after "open system approach" in introductory provisions of par. (1).

STATUTORY NOTES AND RELATED SUBSIDIARIES

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Section effective Jan. 1, 2017, see section 805(a)(4) of Pub. L. 114–328, set out as a note under section 4401 of this title.

§4403. Requirements relating to availability of major system interfaces and support for modular open system approach

The Secretary of each military department shall—

(1) coordinate with the other military departments, the defense agencies, defense and other private sector entities, national standards-setting organizations, and, when appropriate, with elements of the intelligence community with respect to the specification, identification, development, and maintenance of major system interfaces and standards for use in major system platforms, where practicable;

(2) ensure that major system interfaces incorporate commercial standards and other widely supported consensus-based standards that are validated, published, and maintained by recognized standards organizations to the maximum extent practicable;

(3) ensure that sufficient systems engineering and development expertise and resources are available to support the use of a modular open system approach in requirements development and acquisition program planning;

(4) ensure that necessary planning, programming, and budgeting resources are provided to specify, identify, develop, and sustain the modular open system approach, associated major system interfaces, systems integration, and any additional program activities necessary to sustain innovation and interoperability;

(5) ensure that adequate training in the use of a modular open system approach is provided to members of the requirements and acquisition workforce; and

(6) issue guidance to implement the requirements of this section.

(Added Pub. L. 114–328, div. A, title VIII, §805(a)(1), Dec. 23, 2016, 130 Stat. 2255, §2446c; amended Pub. L. 116–92, div. A, title VIII, §840(b), Dec. 20, 2019, 133 Stat. 1499; renumbered §4403, Pub. L. 116–283, div. A, title XVIII, §1851(b)(1), Jan. 1, 2021, 134 Stat. 4272.)

EDITORIAL NOTES

PRIOR PROVISIONS

Prior sections 4411 to 4414 were renumbered sections 7481 to 7484 of this title, respectively.

A prior section 4415, added Pub. L. 100–180, div. A, title III, §319(a)(1), Dec. 4, 1987, 101 Stat. 1077; amended Pub. L. 100–526, title I, §106(c), Oct. 24, 1988, 102 Stat. 2625, related to United States Army School of the Americas, prior to repeal by Pub. L. 106–398, §1 [[div. A], title IX, §911(b)], Oct. 30, 2000, 114 Stat. 1654, 1654A-228.

Prior sections 4416 and 4417 were renumbered sections 7486 and 7487 of this title, respectively.

AMENDMENTS

2021—Pub. L. 116–283 renumbered section 2446c of this title as this section.

2019—Par. (6). Pub. L. 116–92 added par. (6).

STATUTORY NOTES AND RELATED SUBSIDIARIES

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Section effective Jan. 1, 2017, see section 805(a)(4) of Pub. L. 114–328, set out as a note under section 4401 of this title.

SUBCHAPTER II—DEVELOPMENT, PROTOTYPING, AND DEPLOYMENT OF WEAPON SYSTEM COMPONENTS OR TECHNOLOGY

Sec.	
4421.	Weapon system component or technology prototype projects: display of budget information.
4422.	Weapon system component or technology prototype projects: oversight.
4423.	Requirements and limitations for weapon system component or technology prototype projects.
4424.	Mechanisms to speed deployment of successful weapon system component or technology prototypes.
4425.	Definition of weapon system component.

§4421. Weapon system component or technology prototype projects: display of budget information

(a) **REQUIREMENTS FOR BUDGET DISPLAY.**—In the defense budget materials for any fiscal year, the Secretary of Defense shall, with respect to advanced component development and prototype activities (within the research, development, test, and evaluation budget), set forth the amounts requested for each of the following:

- (1) Acquisition programs of record.
- (2) Development, prototyping, and experimentation of weapon system components or other technologies, including those based on commercial products and technologies, separate from acquisition programs of record.
- (3) Other budget line items as determined by the Secretary of Defense.

(b) **ADDITIONAL REQUIREMENTS.**—For purposes of subsection (a)(2), the amounts requested for development, prototyping, and experimentation of weapon system components or other technologies shall be—

- (1) structured into either capability, weapon system component, or technology portfolios that reflect the priority areas for prototype projects; and
- (2) justified with general descriptions of the types of capability areas and technologies being funded or expected to be funded during the fiscal year concerned.

(c) **DEFINITIONS.**—In this section, the terms "budget" and "defense budget materials" have the meaning given those terms in section 234 of this title and the term "commercial product" has the meaning given that term in section 103 of title 41.

(Added Pub. L. 114–328, div. A, title VIII, §806(a)(1), Dec. 23, 2016, 130 Stat. 2256, §2447a; amended Pub. L. 115–232, div. A, title VIII, §836(e)(8), Aug. 13, 2018, 132 Stat. 1870; Pub. L. 116–92, div. A, title XVII, §1731(a)(51), Dec. 20, 2019, 133 Stat. 1815; renumbered §4421, Pub. L. 116–283, div. A, title XVIII, §1851(c)(1), Jan. 1, 2021, 134 Stat. 4272.)

EDITORIAL NOTES

AMENDMENTS

2021—Pub. L. 116–283 renumbered section 2447a of this title as this section.

2019—Subsec. (a). Pub. L. 116–92 struck out "after fiscal year 2017" after "any fiscal year" in introductory provisions.

2018—Subsec. (a)(2). Pub. L. 115–232, §836(e)(8)(A), substituted "commercial products and technologies" for "commercial items and technologies".

Subsec. (c). Pub. L. 115–232, §836(e)(8)(B), inserted before period at end "and the term 'commercial product' has the meaning given that term in section 103 of title 41".

STATUTORY NOTES AND RELATED SUBSIDIARIES

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE OF 2018 AMENDMENT

Amendment by Pub. L. 115–232 effective Jan. 1, 2020, subject to a savings provision, see section 836(h) of Pub. L. 115–232, set out as an Effective Date of 2018 Amendment; Savings Provision note under section 453b of Title 6, Domestic Security.

EFFECTIVE DATE

Pub. L. 114–328, div. A, title VIII, §806(a)(2), Dec. 23, 2016, 130 Stat. 2259, provided that: "Subchapter II of chapter 144B of title 10, United States Code [see, now, this subchapter], as added by paragraph (1), shall take effect on January 1, 2017."

§4422. Weapon system component or technology prototype projects: oversight

(a) **ESTABLISHMENT.**—The Secretary of each military department shall establish an oversight board or identify a similar existing group of senior advisors for managing prototype projects for weapon system components and other technologies and subsystems, including the use of funds for such projects, within the military department concerned.

(b) **MEMBERSHIP.**—Each oversight board shall be comprised of senior officials with—

- (1) expertise in requirements; research, development, test, and evaluation; acquisition; sustainment; or other relevant areas within the military department concerned;
- (2) awareness of technology development activities and opportunities in the Department of Defense, industry, and other sources; and
- (3) awareness of the component capability requirements of major weapon systems, including scheduling and fielding goals for such component capabilities.

(c) **FUNCTIONS.**—The functions of each oversight board are as follows:

(1) To issue a strategic plan every three years that prioritizes the capability and weapon system component portfolio areas for conducting prototype projects, based on assessments of—

- (A) high priority warfighter needs;
- (B) capability gaps or readiness issues with major weapon systems;
- (C) opportunities to incrementally integrate new components into major weapon systems based on commercial technology or science and technology efforts that are expected to be sufficiently mature to prototype within three years; and
- (D) opportunities to reduce operation and support costs of major weapon systems.

(2) To annually recommend funding levels for weapon system component or technology development and prototype projects across capability or weapon system component portfolios.

(3) To annually recommend to the service acquisition executive of the military department concerned specific weapon system component or technology development and prototype projects, subject to the requirements and limitations in section 4423 of this title.

(4) To ensure projects are managed by experts within the Department of Defense who are knowledgeable in research, development, test, and evaluation and who are aware of opportunities for incremental deployment of component capabilities and other technologies to major weapon systems or directly to support warfighting capabilities.

(5) To ensure projects are conducted in a manner that allows for appropriate experimentation and technology risk.

(6) To ensure projects have a plan for technology transition of the prototype into a fielded system, program of record, or operational use, as appropriate, upon successful achievement of technical and project goals.

(7) To ensure necessary technical, contracting, and financial management resources are available to support each project.

(8) To submit to the congressional defense committees a semiannual notification that includes the following:

- (A) each weapon system component or technology prototype project initiated during the preceding six months, including an explanation of each project and its required funding.
- (B) the results achieved from weapon system component prototype and technology projects completed and tested during the preceding six months.

(Added Pub. L. 114–328, div. A, title VIII, §806(a)(1), Dec. 23, 2016, 130 Stat. 2257, §2447b; renumbered §4422 and amended Pub. L. 116–283, div. A, title XVIII, §1851(c)(1), (2), Jan. 1, 2021, 134 Stat. 4272.)

EDITORIAL NOTES

AMENDMENTS

2021—Pub. L. 116–283, §1851(c)(1), renumbered section 2447b of this title as this section. Subsec. (c)(3). Pub. L. 116–283, §1851(c)(2), substituted "section 4423" for "section 2447c".

STATUTORY NOTES AND RELATED SUBSIDIARIES

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Section effective Jan. 1, 2017, see section 806(a)(2) of Pub. L. 114–328, set out as a note under section 4421 of this title.

§4423. Requirements and limitations for weapon system component or technology prototype projects

(a) **LIMITATION ON PROTOTYPE PROJECT DURATION.**—A prototype project shall be completed within two years of its initiation.

(b) **MERIT-BASED SELECTION PROCESS.**—A prototype project shall be selected by the service acquisition executive of the military department concerned through a merit-based selection process that identifies the most promising, innovative, and cost-effective prototypes that address one or more of the elements set forth in subsection (c)(1) of section 4422 of this title and are expected to be successfully demonstrated in a relevant environment.

(c) **TYPE OF TRANSACTION.**—Prototype projects shall be funded through contracts, cooperative agreements, or other transactions.

(d) **FUNDING LIMIT.**—(1) Each prototype project may not exceed a total amount of \$10,000,000 (based on fiscal year 2017 constant dollars), unless—

(A) the Secretary of the military department, or the Secretary's designee, approves a larger amount of funding for the project, not to exceed \$50,000,000; and

(B) the Secretary, or the Secretary's designee, submits to the congressional defense committees, within 30 days after approval of such funding for the project, a notification that includes—

(i) the project;

(ii) expected funding for the project; and

(iii) a statement of the anticipated outcome of the project.

(2) The Secretary of Defense may adjust the amounts (and the base fiscal year) provided in paragraph (1) on the basis of Department of Defense escalation rates.

(e) **RELATED PROTOTYPE AUTHORITIES.**—Prototype projects that exceed the duration and funding limits established in this section shall be pursued under the rapid prototyping process established by section 804 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92; 10 U.S.C. 2302 note). In addition, nothing in this subchapter shall affect the authority to carry out prototype projects under section 4022 or any other section of this title related to prototyping.

(Added Pub. L. 114–328, div. A, title VIII, §806(a)(1), Dec. 23, 2016, 130 Stat. 2258, §2447c; renumbered §4423 and amended Pub. L. 116–283, div. A, title XVIII, §1851(c)(1), (3), Jan. 1, 2021, 134 Stat. 4272, 4273; Pub. L. 117–263, div. A, title X, §1081(a)(5), Dec. 23, 2022, 136 Stat. 2797.)

EDITORIAL NOTES

AMENDMENTS

2022—Subsec. (e). Pub. L. 117–263 substituted "section 4022" for "section 4003".

2021—Pub. L. 116–283, §1851(c)(1), renumbered section 2447c of this title as this section.

Subsec. (b). Pub. L. 116–283, §1851(c)(3)(A), substituted "section 4422" for "section 2447b".

Subsec. (e). Pub. L. 116–283, §1851(c)(3)(B), substituted "section 4003" for "section 2371b".

STATUTORY NOTES AND RELATED SUBSIDIARIES

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Section effective Jan. 1, 2017, see section 806(a)(2) of Pub. L. 114–328, set out as a note under section 4421 of this title.

§4424. Mechanisms to speed deployment of successful weapon system component or technology prototypes

(a) SELECTION OF PROTOTYPE PROJECT FOR PRODUCTION AND RAPID FIELDING.—A weapon system component or technology prototype project may be selected by the service acquisition executive of the military department concerned for a follow-on production contract or other transaction without the use of competitive procedures, notwithstanding the requirements of sections 3201 through 3205 of this title, if—

- (1) the follow-on production project addresses a high priority warfighter need or reduces the costs of a weapon system;
- (2) competitive procedures were used for the selection of parties for participation in the original prototype project;
- (3) the participants in the original prototype project successfully completed the requirements of the project; and
- (4) a prototype of the system to be procured was demonstrated in a relevant environment.

(b) SPECIAL TRANSFER AUTHORITY.—(1) The Secretary of a military department may, as specified in advance by appropriations Acts, transfer funds that remain available for obligation in procurement appropriation accounts of the military department to fund the low-rate initial production of the rapid fielding project until required funding for full-rate production can be submitted and approved through the regular budget process of the Department of Defense.

(2) The funds transferred under this subsection to fund the low-rate initial production of a rapid fielding project shall be for a period not to exceed two years, the amount for such period may not exceed \$50,000,000, and the special transfer authority provided in this subsection may not be used more than once to fund procurement of a particular new or upgraded system.

(3) The special transfer authority provided in this subsection is in addition to any other transfer authority available to the Department of Defense.

(c) NOTIFICATION TO CONGRESS.—Within 30 days after the service acquisition executive of a military department selects a weapon system component or technology project for a follow-on production contract or other transaction, the service acquisition executive shall notify the congressional defense committees of the selection and provide a brief description of the rapid fielding project.

(Added Pub. L. 114–328, div. A, title VIII, §806(a)(1), Dec. 23, 2016, 130 Stat. 2259, §2447d; renumbered §4424 and amended Pub. L. 116–283, div. A, title XVIII, §1851(c)(1), (4), Jan. 1, 2021, 134 Stat. 4272, 4273.)

EDITORIAL NOTES

AMENDMENTS

2021—Pub. L. 116–283, §1851(c)(1), renumbered section 2447d of this title as this section.

Subsec. (a). Pub. L. 116–283, §1851(c)(4), substituted "sections 3201 through 3205" for "section 2304" in introductory provisions.

STATUTORY NOTES AND RELATED SUBSIDIARIES

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed

implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Section effective Jan. 1, 2017, see section 806(a)(2) of Pub. L. 114–328, set out as a note under section 4421 of this title.

§4425. Definition of weapon system component

In this subchapter, the term "weapon system component" has the meaning given the term "major system component" in section 4401 of this title.

(Added Pub. L. 114–328, div. A, title VIII, §806(a)(1), Dec. 23, 2016, 130 Stat. 2259, §2447e; renumbered §4425 and amended Pub. L. 116–283, div. A, title XVIII, §1851(c)(1), (5), Jan. 1, 2021, 134 Stat. 4272, 4273.)

EDITORIAL NOTES

AMENDMENTS

2021—Pub. L. 116–283, §1851(c)(5), substituted "section 4401" for "section 2446a".
Pub. L. 116–283, §1851(c)(1), renumbered section 2447e of this title as this section.

STATUTORY NOTES AND RELATED SUBSIDIARIES

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Section effective Jan. 1, 2017, see section 806(a)(2) of Pub. L. 114–328, set out as a note under section 4421 of this title.