



BUSINESS SYSTEMS MODERNIZATION

DOD Has Made Progress in Addressing Recommendations to Improve IT Management, but More Action Is Needed

Accessible Version

March 2020

Why GAO Did This Study

DOD spends billions of dollars each year on systems to support its key business areas, such as personnel and logistics. For fiscal year 2020, DOD reported that its business system investments are expected to cost about \$8.9 billion. GAO has made many recommendations to DOD aimed at strengthening defense business systems management. Further, U.S. Code Title 10, Section 2222 requires DOD to perform activities aimed at ensuring that these investments are managed efficiently and effectively.

The *National Defense Authorization Act for Fiscal Year 2016* included a provision for GAO to report on the extent to which DOD is complying with the code's requirements. Accordingly, the objective of this review was to assess the extent to which DOD has taken actions that comply with the code's requirements for ensuring that business system investments are managed efficiently and effectively.

To do so, GAO selected 12 recommendations that DOD had not implemented as of June 2019, and assessed the department's subsequent actions on the recommendations (through November 2019) against the requirements in the code. GAO also analyzed DOD's business systems guidance and business enterprise architecture documentation, and interviewed relevant DOD officials.

What GAO Recommends

GAO is not making any new recommendations in this report. As of November 2019, DOD had not yet implemented eight of the 12 prior recommendations. GAO will continue to monitor DOD's actions to address the remaining recommendations.

View [GAO-20-253](#). For more information, contact Carol Harris at (202) 512-4456 or harriscc@gao.gov.

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What GAO Found

As of November 2019, the Department of Defense (DOD) had taken actions that addressed some, but not all, of the 12 prior GAO recommendations for strengthening defense business systems management. In doing so, the department made progress in complying with related business system investment management requirements contained in U.S. Code Title 10 Section 2222 (the code or U.S. Code).

Specifically, as of November 2019, DOD had implemented four of the 12 recommendations (see table). For example, with respect to the requirement associated with investment management guidance, DOD had implemented the recommendation to issue policy requiring full consideration of sustainability and technological refreshment requirements for its business system investments.

However, DOD had not yet implemented eight other recommendations relating to the code's requirements. The recommendations that had not been implemented relate to the department's actions to:

- integrate its business and information technology (IT) architectures,
- ensure that portfolio assessments are conducted in key areas identified in the GAO Information Technology Investment Management framework.
- develop a skills inventory, needs assessment, gap analysis, and plan to address identified gaps as part of a strategic approach to human capital planning, among other things.

Status of Department of Defense Implementation of GAO Recommendations Relating to U.S. Code Title 10 Section 2222 Requirements for Strengthening Defense Business Systems Management, as of November 2019

Code requirement	Number of recommendations implemented	Number of recommendations not yet implemented	Total
Establish business system investment management guidance	1	0	1
Develop and maintain a business and IT enterprise architecture	0	5	5
Ensure business system investment review and certification	3	2	5
Other (ensure a strategic approach to human capital)	0	1	1
Total	4	8	12

Source: GAO analysis of DOD documentation. | GAO-20-253

Taking further actions to implement all of the recommendations is essential to helping the department achieve compliance with all of the requirements—and, ultimately, further strengthen the management of its defense business system investments as well as its efforts to effectively transform its business operations.

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Abbreviations

CIO	chief information officer
CMO	chief management officer
DOD	Department of Defense
IT	information technology
NDAA	National Defense Authorization Act
OMB	Office of Management and Budget

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March 5, 2020

Congressional Committees

The Department of Defense (DOD) spends billions of dollars each year on systems that are fundamental to achieving its business transformation goals. These include systems that address key areas such as personnel, financial management, health care, and logistics. According to DOD's information technology (IT) investment data, as of April 2019, the department had 1,958 business system investments and planned to spend approximately \$8.9 billion on developing, modernizing, operating, and maintaining its business systems in fiscal year 2020.¹

Since 1995, we have designated DOD's business systems modernization efforts as high risk due, in part, to the large amount of money spent each year on these systems.² We have reported that significant potential exists for identifying and avoiding costs associated with duplicative functionality across the department's portfolio of defense business systems.³ In addition, the department has continued to face critical challenges in improving its business system acquisition management and investment

¹DOD's *IT-1 Report*, which is generated by the department's Select & Native Programming-IT system (a database application used to collect and assemble information required in support of the IT budget submitted to Congress) (April 2019); and Department of Defense, *Information Technology and Cyberspace Activities Budget Overview: Fiscal Year 2020 President's Budget Request* (March 2019).

²GAO, *High-Risk Series: Substantial Efforts Needed to Achieve Greater Progress on High-Risk Areas*, [GAO-19-157SP](#) (Washington, D.C.: March 6, 2019). GAO's high-risk program focuses attention on government operations with greater vulnerabilities to fraud, waste, abuse, and mismanagement, or that are in need of transformation to address economy, efficiency, or effectiveness challenges. Agencies can show progress by addressing GAO's five criteria for removal from the list: leadership commitment, capacity, action plan, monitoring, and demonstrated progress.

³GAO, *Opportunities to Reduce Potential Duplication in Government Programs, Save Tax Dollars, and Enhance Revenue*, [GAO-11-318SP](#) (Washington, D.C.: March 1, 2011) and *Follow-up on 2011 Report: Status of Actions Taken to Reduce Duplication, Overlap, and Fragmentation, Save Tax Dollars, and Enhance Revenue*, [GAO-12-453SP](#) (Washington, D.C., February 28, 2012). For GAO's latest assessment of DOD's efforts to address actions that GAO identified for the department to optimize business operations and systems, see http://www.gao.gov/duplication/action_tracker/DOD%27s_Business_Systems/action1.

management, and in leveraging its federated business enterprise architecture.⁴

Since 1995, we have made a series of recommendations aimed at strengthening the department's institutional approach to its business systems modernization and reducing the risks associated with its key investments.⁵ Congress subsequently included provisions consistent with our recommendations in certain years of the department's annual authorizing legislation.

Specifically, the department's authorizing legislation for fiscal year 2005 amended U.S. Code Title 10 to add Section 2222 (the code or U.S. Code)⁶ and included provisions related to DOD's business system investments that were consistent with our recommendations. In addition, more recently, the National Defense Authorization Act for Fiscal Year 2016 (NDAA), which was enacted in November 2015, amended the code to include provisions that required DOD to perform certain activities aimed at ensuring that its business system investments are managed efficiently and effectively.⁷

⁴DOD has developed a business enterprise architecture that is intended to serve as a blueprint to guide and constrain the implementation of interoperable defense business systems. The architecture does so by, among other things, documenting the department's business functions and activities. A federated business enterprise architecture refers to an architecture in which member architectures (e.g., of the Air Force, Army, and Navy) conform to an overarching corporate or parent architecture and use a common vocabulary. This approach is to provide governance across all business systems, functions, and activities within the department and improve visibility across the respective efforts.

⁵See, for example, GAO, *Defense Business Systems: DOD Needs to Continue Improving Guidance and Plans for Effectively Managing Investments*, [GAO-18-130](#) (Washington, D.C.: April 16, 2018); *DOD Business Systems Modernization: Additional Action Needed to Achieve Intended Outcomes*, [GAO-15-627](#) (Washington, D.C.: July 16, 2015); *Business Systems Modernization: Summary of GAO's Assessment of the Department of Defense's Initial Business Enterprise Architecture*, [GAO-03-877R](#) (Washington, D.C.: July 7, 2003); *Information Technology: Architecture Needed to Guide Modernization of DOD's Financial Operations*, [GAO-01-525](#) (Washington, D.C.: May 17, 2001); and *High-Risk Series: An Overview*, [GAO/HR-95-1](#) (Washington, D.C.: February 1995).

⁶Pub. L. No. 108-375, § 332, 118 Stat. 1811, 1851-1856 (2004), as amended by Pub. L. No. 113-291, § 901, 128 Stat. 3292 (2014), Pub. L. No. 113-66, § 901, 127 Stat. 672, 815 (2013), Pub. L. No. 112-239, § 906, 126 Stat. 1632, 1869 (2012), Pub. L. No. 112-81, § 901, 125 Stat. 1298, 1527 (2011), and Pub. L. No. 111-84, § 1072, 123 Stat. 2190, 2470 (2009).

⁷Pub. L. No. 114-92, § 883, 129 Stat. 726, 942 (2015).

The NDAA for fiscal year 2016 included a provision for GAO to assess, biennially, the department's compliance with the requirements in the code related to managing defense business systems.⁸ Accordingly, our specific objective for this review was to assess the extent to which DOD has taken actions that comply with the U.S. Code Title 10, Section 2222 requirements for ensuring that business system investments are managed efficiently and effectively.

To address the objective, we first identified and reviewed the requirements in U.S. Code Title 10, Section 2222 that related to DOD's management of its business system investments. We also identified in prior GAO reports, the recommendations that we had made to the department related to managing its defense business systems. We selected for review, the 12 recommendations that DOD had not implemented at the start of our audit in June 2019.⁹

We then obtained and analyzed available documentation pertaining to the department's actions to address each of the 12 recommendations. This included analyzing DOD investment decision memorandums and guidance on certifying and approving defense business systems. We compared information on the actions that the department took to address the recommendations to the business system investment management requirements specified in the code. We assessed whether the department's actions on the recommendations fulfilled the requirements in the code.

In addition, we supplemented our analysis with interviews of relevant DOD officials regarding the status of the department's actions to implement the recommendations and comply with the related requirements in the code. These included officials in the Office of the

⁸This Fiscal Year 2016 NDAA provision continued GAO's existing reporting requirement, although modified it to call for biennial reporting. However, section 833 of the *John McCain National Defense Authorization Act for Fiscal Year 2019* (Fiscal Year 2019 NDAA) repealed GAO's business systems reporting requirement, effective January 1, 2020. Pub. L. No. 115-232, § 833, 132 Stat. 1636, 1858-1859 (Aug. 13, 2018.) Accordingly, this report will be the last one issued in response to the Fiscal Year 2016 NDAA reporting requirement. The Fiscal Year 2019 NDAA contains a provision that requires GAO to assess acquisition programs and initiatives, including selected information technology systems and initiatives.

⁹These 12 recommendations were included in GAO reports issued from 2012 through 2018. All recommendations related to DOD's business systems modernization made prior to 2012 had been closed as either implemented or not implemented at the time that we began this work.

Chief Management Officer (CMO), the Office of the Chief Information Officer (CIO), and the Offices of the CMOs in the Departments of the Air Force and Army. We also observed a demonstration of the Office of the CMO's business enterprise architecture to better understand the actions taken to address our related recommendations.

We conducted this performance audit from June 2019 to December 2019, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

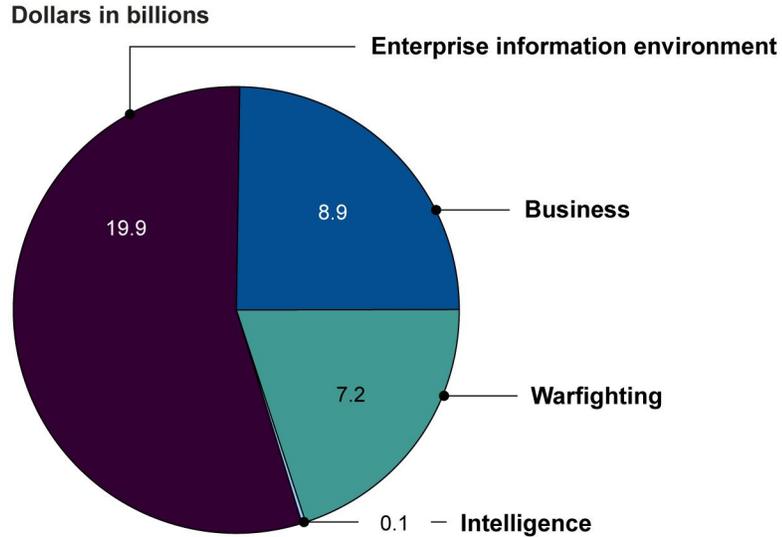
Background

DOD is the largest U.S. government department and one of the most complex organizations in the world. In support of its military operations, the department manages many interdependent business functions, including logistics management, procurement, health care management, and financial management. DOD relies extensively on IT to support its business functions.

The department's IT budget organizes investments in four categories, called mission areas—enterprise information environment, business, warfighting, and intelligence. Figure 1 shows the amount of DOD's total requested fiscal year 2020 IT budget (of \$36.1 billion) that the department plans to spend on each of its mission areas¹⁰ (including the approximately \$8.9 billion it plans to spend on developing, modernizing, operating, and maintaining its business systems).

¹⁰Department of Defense, *Information Technology and Cyberspace Activities Budget Overview: Fiscal Year 2020 President's Budget Request* (March 2019).

Figure 1: Department of Defense (DOD) Fiscal Year 2020 Information Technology Budget by Mission Area (projected)



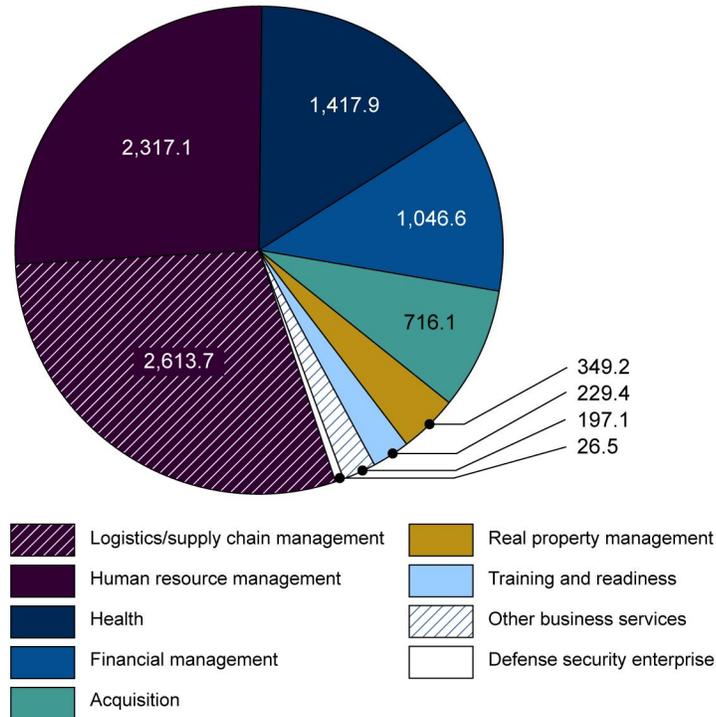
Source: GAO analysis of DOD information technology budget documentation. | GAO-20-253

The department further organizes its IT budget by segments.¹¹ In this regard, the business mission area segments are logistics/supply chain management, human resource management, health, financial management, acquisition, real property management, training and readiness, other business services, and defense security enterprise. Figure 2 shows the department’s projected fiscal year 2020 spending (of \$8.9 billion) for each segment in the business mission area.

¹¹According to the department, segments are part of a portfolio management concept required by the Office of Management and Budget. Segments are to serve as the basis for organizing IT investments for both budget management and performance management.

Figure 2: Department of Defense (DOD) Information Technology Business Mission Area Fiscal Year 2020 Budget, by Segment (projected)

Dollars in millions



Source: DOD Information technology budget documentation. | GAO-20-253

U.S. Code Establishes Requirements for Managing Defense Business Systems

As amended in 2016, the U.S. Code requires DOD to perform certain activities aimed at ensuring that its business system investments are managed efficiently and effectively.¹² Specifically, the amendments established four sets of requirements for the department related to (1) issuing policy and guidance for managing defense business systems; (2) developing and maintaining a defense business enterprise architecture; (3) establishing a Defense Business Council to provide advice to the Secretary on managing defense business systems; and (4) obtaining

¹²U.S. Code Title 10, Section 2222.

approvals before systems proceed into development (or if no development is required, into production or fielding).

Further, the amendments to the code established specific designations and thresholds that, among other things, provided additional details about the department's requirements:

- **Covered defense business systems.** The code defines a covered defense business system as a system that is expected to have a total amount of budget authority of over \$50 million over a period of 5 years or more.¹³
- **Priority defense business systems.** The code establishes a category of system, called a priority defense business system. This refers to a system that is (1) expected to have a total amount of budget authority of over \$250 million over the period of the current future-years defense program, or (2) designated by the DOD chief management officer (CMO) as a priority defense business system based on specific program analyses of factors including complexity, scope, and technical risk, and after notification to Congress of such designation.
- **Thresholds and officials responsible for review and certification of defense business systems.** The code states that, unless otherwise assigned by the Secretary of Defense, military department CMOs are to have approval authority for their covered defense business system investments of below \$250 million over the future-years defense program. The CMO is to have approval authority for defense business systems owned by DOD components other than the military departments, systems that will support the business process of more than one military department or other component, and priority defense business systems.
- **Certification requirements.** The code requires that a defense business system program be reviewed and certified at least annually, on the basis of its compliance with the business enterprise architecture and appropriate business process reengineering. In addition, the code requires that the business system program be reviewed and certified on the basis of having valid, achievable

¹³DOD requires programs to reflect estimated expenditures and proposed appropriations to be included in the DOD budget. This estimate is to cover the budget-submission fiscal year and at least the four succeeding fiscal years. This estimate is called the future-years defense program and is to be submitted to Congress by the Secretary of Defense each year, at or about the time that the President's budget is submitted to Congress.

requirements and a viable plan for implementing the requirements; having an acquisition strategy designed to eliminate or reduce the need to tailor commercial off-the-shelf systems; and being in compliance with the department’s auditability requirements.¹⁴

DOD Has Assigned Roles and Responsibilities for Managing Defense Business Systems

DOD *Instruction 5000.75: Business System Requirements and Acquisitions* assigns roles and responsibilities for managing defense business system investments.¹⁵ Table 1 identifies the key entities and their responsibilities for managing defense business system investments.

Table 1: Key Department of Defense Entities and Their Responsibilities for Managing Defense Business System Investments

Entity	Responsibilities
DOD chief management officer (CMO)	Establish policy and provide oversight for certification of business system investments. Maintain the business enterprise architecture. Establish policy and processes for business system capability management and its appropriate linkage to the business enterprise architecture. Establish policy and processes for validating business needs and identifying capability requirements for business systems. Validate requirements for priority defense business systems, which are systems that are expected to have a total amount of budget authority over the period of the current future-years defense program greater than \$250 million, or that are designated as priority by the DOD CMO based on complexity, scope, and technical risk. Certify priority defense business systems. Validate requirements for defense business systems of DOD components, other than the military departments, that are expected to have a total amount of budget authority between \$50 million and \$250 million over the period of the current future-years defense program. Co-Chair the Defense Business Council/Investment Review Board with the DOD chief information officer (CIO).
Military department CMOs	Validate requirements and certify military department defense business systems that are expected to have a total amount of budget authority of between \$50 million and \$250 million during the period of the current future-years defense program.

¹⁴The department’s auditability requirements are specified in DOD’s *Financial Improvement and Audit Readiness Guidance* (April 3, 2017) which provides a standard, multi-phased methodology for DOD components to follow to assess their financial management processes and controls and develop and implement financial improvement plans.

¹⁵Department of Defense, *DOD Instruction 5000.75: Business Systems Requirements and Acquisition* (February 2, 2017). The instruction supersedes *DOD Instruction 5000.02: Operation of the Defense Acquisition System* (January 7, 2015) for all business system acquisition programs that are not designated as major defense acquisition programs.

Entity	Responsibilities
Defense Business Council	<p>Provide advice to the Secretary on developing the business enterprise architecture, reengineering the department's business processes, developing and deploying business systems, and developing requirements for business systems.</p> <p>Serve as the Investment Review Board for defense business systems.</p> <p>Oversee business enterprise architecture implementation for all business systems.</p> <p>Co-chaired by the DOD CMO and the DOD CIO. Members are the CMOs of the military departments; the Under Secretary of Defense (Acquisition and Sustainment); the Under Secretary of Defense (Comptroller); and the Under Secretary of Defense for Personnel and Readiness; or their designees.</p>

Source: GAO analysis of Department of Defense documentation. | GAO-20-253

GAO Previously Has Reported on DOD Business Systems Modernization Efforts

GAO designated the department's business systems modernization efforts as high risk in 1995 and has continued to do so in the years since. In addition, since 2005, we have issued 12 reports in which we assessed DOD's actions to respond to the business system investment management requirements contained in U.S. Code Title 10, Section 2222. These 12 reports, which are listed in appendix I, collectively contained 29 recommendations to help strengthen the department's management of its business systems. For example,

- In 2014,¹⁶ we reported that DOD had taken steps to comply with key provisions in the NDAA for Fiscal Year 2005; however, the department continued to face challenges in fully complying with the provisions and modernizing its business systems environment. As a result, we recommended that the department improve its business system certification and approval process. DOD agreed with, and implemented this recommendation.
- In 2015,¹⁷ we reported that DOD had implemented 5 of the 16 recommendations made by GAO since June 2011 to address each of the overarching provisions for improving business systems management described in the NDAA for Fiscal Year 2005. The department had partially implemented the other 11 recommendations. We also reported that DOD's business enterprise architecture and process reengineering efforts were not fully achieving the intended outcomes described in statute. Thus, we made a recommendation aimed at ensuring that the

¹⁶GAO, *Defense Business Systems: Further Refinements Needed to Guide the Investment Management Process*, [GAO-14-486](#) (Washington, D.C. May 12, 2014).

¹⁷[GAO-15-627](#).

department better achieve business process reengineering and enterprise architecture outcomes and benefits. DOD agreed with this recommendation and took steps toward implementing it.

- In 2018,¹⁸ we reported that DOD had made progress in complying with most legislative provisions for managing its defense business systems, but that additional actions were needed. For example, the NDAA for Fiscal Year 2016 required DOD and the military departments to issue guidance to address five requirements for reviewing and certifying the department's business systems. We reported that, while DOD had issued guidance addressing all of the requirements, the military departments had shown mixed progress. Accordingly, we recommended that the military departments issue guidance to address certifying their business systems on the basis of the five requirements. While DOD partially agreed with these recommendations, the military departments implemented them.¹⁹

As of June 2019, the department had implemented 15 of the 29 recommendations contained in the 12 reports. In addition, we closed two of the recommendations as "not implemented" because the actions taken by the department did not sufficiently address the recommendations. The department had not yet taken actions to address the other 12 recommendations.²⁰

Table 2 identifies the four sets of requirements for strengthening DOD's management of defense business systems identified in the U.S. Code. In addition, the table identifies a fifth category associated with human capital, which supports the department's execution of the other four sets of requirements. The table also identifies the 12 GAO recommendations that remained to be implemented as of June 2019.

¹⁸[GAO-18-130](#).

¹⁹DOD stated that Air Force and Army agreed with the recommendation and that Navy partially agreed. Specifically, DOD stated that Navy agreed to issue guidance but disagreed with the recommendation, as written, and suggested that GAO revise the recommendation to support alignment with the timeline for certifying the department's business systems driven by the chief management officer investment review timeline. However, we did not revise the wording of our recommendation, as we believed it appropriately reflected the importance of Navy taking action to ensure the issuance of its guidance.

²⁰These 12 recommendations were made in GAO reports issued from 2012 through 2018.

Table 2: U.S. Code Title 10, Section 2222 Requirements and Related GAO Recommendations Made to the Department of Defense That Had Not Been Implemented as of June 2019

Requirement	Related Recommendations
Establish guidance for effectively managing its defense business system investments.	<ul style="list-style-type: none"> Define a specific time frame for finalizing, and ensure the issuance of (1) policy requiring full consideration of sustainability and technological refreshment requirements for its defense business systems investments; and (2) policy requiring that best systems engineering practices are used in the procurement and deployment of commercial systems, modified commercial systems, and defense-unique systems to meet DOD missions. (GAO-18-130)
Develop and maintain a defense business enterprise architecture and information technology (IT) enterprise architecture, in accordance with relevant laws and Office of Management and Budget (OMB) policies and guidance.	<ul style="list-style-type: none"> Ensure that the department's chief management officer (CMO) establish a policy that clarifies the roles, responsibilities, and relationships among the CMO, deputy CMO, DOD and military department chief information officers (CIOs), principal staff assistants, military department CMOs, and the heads of the military departments and defense agencies, associated with the development of a federated business enterprise architecture. Among other things, the policy should address the development and implementation of an overarching taxonomy and associated ontologies to help ensure that each of the respective portions of the architecture will be properly linked and aligned. In addition, the policy should address alignment and coordination of business process areas, military department and defense agency activities associated with developing and implementing each of the various components of the business enterprise architecture, and relationships among these entities. (GAO-12-685) Define by when and how the department plans to develop an architecture that would extend to all defense components and include, among other things, (a) information about the specific business systems that support business enterprise architecture business activities and related system functions; (b) business capabilities for the hire-to-retain and procure-to-pay business processes; and (c) sufficient information about business activities to allow for more effective identification of potential overlap and duplication. (GAO-13-557) Utilize the results of our portfolio manager survey to determine additional actions that can improve the department's management of its business process reengineering and enterprise architecture activities. (GAO-15-627) Ensure that the DOD CIO develops an IT enterprise architecture which includes a transition plan that provides a road map for improving the department's IT and computing infrastructure, including for each of its business processes. (GAO-18-130) Ensure that the DOD CIO and CMO work together to define a specific time frame for when the department plans to integrate its business and IT architectures and ensure that the architectures are integrated. (GAO-18-130)
Use the Defense Business Council to provide advice to the Secretary on developing the business enterprise architecture, reengineering the department's business processes, developing and deploying business systems, and developing requirements for business systems.	None

Letter

Requirement	Related Recommendations
<p>Ensure that covered business systems are reviewed and certified in accordance with U.S. Code Title 10, Section 2222.</p>	<ul style="list-style-type: none"> • Ensure that the functional strategies include all of the critical elements identified in DOD investment management guidance, including performance measures to determine progress toward achieving the goals that incorporate all of the attributes called for in the department's guidance. (GAO-13-557) • Select and control DOD's mix of investments in a manner that best supports mission needs by (a) documenting a process for evaluating portfolio performance that includes the use of actual versus expected performance data and predetermined thresholds; (b) ensuring that portfolio assessments are conducted in key areas identified in our IT investment management framework: benefits attained; current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated, or accepted to date; and (c) ensuring that the documents provided to the Defense Business Council as part of the investment management process include critical information for conducting all assessments. (GAO-13-557) • Implement and use the business enterprise architecture and business process reengineering compliance assessments more effectively to support organizational transformation efforts by (a) disclosing relevant information about known weaknesses, such as business enterprise architecture and business process reengineering compliance weaknesses for systems that were not certified or certified with qualifications in annual reports to Congress; (b) establishing milestones by which selected validations of business enterprise architecture compliance assertions are to be completed; and (c) ensuring that appropriate business process reengineering assertions have been completed on all investments submitted for the fiscal year 2014 certification reviews prior to the certification of funds. (GAO-13-557) • Define a specific time frame for finalizing, and ensure the issuance of guidance for certifying Air Force business systems on the basis of (1) having an acquisition strategy designed to eliminate or reduce the need to tailor commercial off-the-shelf systems to meet unique requirements, incorporate unique requirements, or incorporate unique interfaces to the maximum extent practicable; and (2) being in compliance with DOD's auditability requirements. (GAO-18-130) • Define a specific time frame for finalizing, and ensure the issuance of guidance for certifying the Army's business systems on the basis of (1) being reengineered to be as streamlined and efficient as practicable, and determining that implementation of the system will maximize the elimination of unique software requirements and unique interfaces; (2) being in compliance with the business enterprise architecture; (3) having valid, achievable requirements and a viable plan to implement the requirements; (4) having an acquisition strategy designed to eliminate or reduce the need to tailor commercial off-the-shelf systems to meet unique requirements, incorporate unique requirements, or incorporate unique interfaces to the maximum extent practicable; and (5) being in compliance with DOD's auditability requirements. (GAO-18-130)
<p>Other (human capital)</p>	<ul style="list-style-type: none"> • Develop a skills inventory, needs assessment, gap analysis, and plan to address identified gaps as part of a strategic approach to human capital planning for the Office of the Deputy CMO. (GAO-13-557)^a

Source: GAO analysis. | GAO-20-253

Note: DOD did not have any recommendations related to the requirement associated with the Defense Business Council.

^aIn February 2018, the standalone position of DOD CMO assumed the responsibilities of the DOD CMO from the DOD Deputy Secretary.

DOD Made Progress in Strengthening Its Management of Business Systems, but Had Not Addressed All Recommendations Relating to the Statutory Requirements

DOD took actions toward addressing GAO's recommendations related to business system requirements contained in the U.S. Code. In doing so, the department made progress in strengthening the management of its defense business system investments. Specifically, between June 2019 and November 2019, the department demonstrated that it had implemented four of the 12 remaining recommendations aimed at strengthening business systems management.

As of November 2019, for example, the department had taken actions to implement a recommendation that helped the department comply with the code's requirement to establish guidance for effectively managing its defense business system investments. In this regard, the Office of the CMO demonstrated that DOD had implemented our recommendation to improve the department's policy to require full consideration of sustainability and technological refreshment requirements for its defense business systems investments.²¹ Specifically, the department demonstrated that its *Instruction 5000.75*, *DOD Directive 5000.01*, and *DOD Financial Management Regulation Volume 2B* guidance includes policy requiring consideration of sustainability and technological refreshment. The department also demonstrated that its *DOD Directive 5000.01* guidance includes policy to ensure that best systems engineering practices are used in the procurement and deployment of commercial systems, modified commercial systems, and defense-unique systems.

In addition, with regard to the requirement that DOD ensure that business systems are reviewed and certified in accordance with U.S. Code Title 10, Section 2222, the Army demonstrated that it had implemented our recommendation that the department improve its guidance for certifying

²¹[GAO-18-130](#).

defense business systems.²² Specifically, the Army issued guidance²³ to require that the systems be certified on the basis of (1) having valid, achievable requirements and a viable plan to implement the requirements; (2) having an acquisition strategy designed to eliminate or reduce the need to tailor commercial off-the-shelf systems to meet unique requirements, incorporate unique requirements, or incorporate unique interfaces to the maximum extent practicable; and (3) being in compliance with DOD's auditability requirements.

The Air Force also demonstrated that it had implemented our recommendation that the department improve its guidance for certifying defense business systems.²⁴ Specifically, the Air Force issued guidance to require that systems be certified on the basis of (1) having an acquisition strategy designed to eliminate or reduce the need to tailor commercial off-the-shelf systems to meet unique requirements, incorporate unique requirements, or incorporate unique interfaces to the maximum extent practicable; and (2) being in compliance with DOD's auditability requirements.

Further, with regard to this requirement, the Office of the CMO demonstrated that it had addressed the recommendation to implement and use business enterprise architecture and business process reengineering compliance assessments more effectively.²⁵ Specifically, in September 2019, the Office of the CMO demonstrated that it had reviewed business enterprise architecture and business process reengineering compliance assessments and identified in investment decision memorandums which systems had assessments that required action.

Even with the actions taken, however, more remained to be done to implement eight other recommendations relating to the code's requirements that could help strengthen the department's management of its business systems. Specifically, with regard to the requirement to ensure that business systems are reviewed and certified in accordance

²²[GAO-18-130](#).

²³Office of Business Transformation, Department of the Army, *FY 20 Defense Business System Annual Certification and Portfolio Review Guidance* (August 13, 2019).

²⁴[GAO-18-130](#).

²⁵[GAO-13-557](#).

with the code, the department had not implemented two of our related recommendations. For example, it had not implemented our recommendation to ensure that portfolio assessments are conducted in key areas identified in GAO's IT investment management framework, such as current schedule, project reporting, and risks.²⁶

In addition, with regard to the requirement to develop and maintain a defense business enterprise architecture and IT enterprise architecture, in accordance with relevant laws and Office of Management and Budget policies and guidance, the department had developed a business enterprise architecture. However, it had not implemented our five related recommendations. For example, it had not implemented our recommendation to integrate its business and IT architectures. According to officials in the Office of the CIO, the office plans to finalize the first increment of version 3 of its DOD Information Enterprise Architecture (i.e., IT enterprise architecture) by the end of December 2019, and intends to integrate the business enterprise architecture into the Information Enterprise Architecture as a part of that effort.

Further, with regard to human capital, which supports the other requirements, the department had not implemented our related recommendation to develop a skills inventory, needs assessment, gap analysis, and plan to address identified gaps as part of a strategic approach to human capital planning. In commenting on its status in addressing the recommendation in September 2019, the Office of the CMO stated that it intends to publish a Defense Business Operations Management Workforce Plan by December 31, 2019. According to office officials, the plan is to include skills requirements for both Office of the CMO permanent employees and DOD employees detailed to the Office of the CMO in support of the management and reform of defense business operations management.

²⁶GAO's IT Investment Management framework provides a method for evaluating and assessing how well an agency is selecting and managing its IT resources. The framework, which describes five progressive stages of maturity that an agency can achieve in its investment management capabilities, was developed on the basis of our research into the IT investment management practices of leading private- and public-sector organizations. The framework calls for periodic IT investment and portfolio performance reviews that examine the costs incurred, the benefits attained, the current schedule; the accuracy of project reporting; and the risks that have been mitigated, eliminated, or accepted to date. See GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, [GAO-04-394G](#) (Washington, D.C.: March 2004).

Table **3**
Agency Comments and our Evaluation

summarizes the status of the 12 recommendations, as of November 2019, relative to the requirements established in the code. Further, appendix II provides additional information about the status of the recommendations, as of November 2019.

Table 3: Status of the Department of Defense’s Implementation of GAO Recommendations That Relate to U.S. Code Title 10, Section 2222 Requirements for Strengthening Defense Business Systems Management, as of November 2019

Requirement	Implemented (related GAO recommendations)	Not yet implemented (related GAO recommendations)	Total (related GAO recommendations)
Establish guidance for effectively managing its defense business system investments.	1	0	1
Develop and maintain a defense business enterprise architecture and IT enterprise architecture, in accordance with relevant laws and Office of Management and Budget (OMB) policies and guidance.	0	5	5
Use the Defense Business Council to provide advice to the Secretary on developing the business enterprise architecture, reengineering the department’s business processes, developing and deploying business systems, and developing requirements for business systems.	N/A	N/A	N/A
Ensure that covered business systems are reviewed and certified in accordance with the code’s requirements.	3	2	5
Other (human capital)	0	1	1
Total	4	8	12

Source: GAO analysis of DOD documentation. | GAO-20-253

Note: Regarding the requirement that DOD use the Defense Business Council to provide advice to the Secretary, GAO has not made recommendations related to the requirement associated with the Defense Business Council. In 2018, GAO reported that DOD used the Defense Business Council to provide advice on defense business systems to the Secretary of Defense. See [GAO-18-130](#).

By taking actions to implement four of the 12 remaining recommendations, DOD made important progress in its efforts to comply with the requirements established in the U.S. Code. Nevertheless, taking further actions to implement all of the recommendations is essential to helping the department comply with all of the requirements—and ultimately, to strengthen the management of its defense business system investments and efforts to effectively transform its business operations.

DOD provided written comments on a draft of this report, which are reprinted in appendix III. In its comments, the department stated that it appreciated GAO’s recognition of the progress that DOD has made to

strengthen business systems management. The department agreed that more needs to be done to strengthen the management of investments in DOD business operations and stated that, in the coming months, it plans to execute a reform agenda intended to strengthen oversight and improve business performance.

Further, while this report made no new recommendations, the department concurred with our assessment of the status of seven of the eight open recommendations that DOD has not yet implemented. In addition, the department suggested that we close one recommendation that it perform specific activities as part of a strategic approach to human capital planning for the Office of the CMO, based on the CMO's submission of a human capital analysis report to Congress in early January 2020.

The department subsequently provided us a copy of the CMO's human capital analysis report on February 7, 2020. We plan to assess the report to determine if it meets the intent of our recommendation.

We are sending copies of this report to the appropriate congressional committees, the Director of the Office of Management and Budget, the Secretary of Defense, and other interested parties. This report also is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff members have any questions on matters discussed in this report, please contact me at (202) 512-4456 or harriscc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix IV.



Carol C. Harris
Director
Information Technology Acquisition Management Issues

List of Committees

The Honorable James M. Inhofe
Chairman
The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Richard Shelby
Chairman
The Honorable Richard Durbin
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Adam Smith
Chairman
The Honorable Mac Thornberry
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Pete Visclosky
Chairman
The Honorable Ken Calvert
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

Appendix I: Prior GAO Reports on Department of Defense Business System Modernization

Since 2005, GAO has issued 12 reports in which we assessed DOD's actions to respond to business systems modernization requirements contained in U.S. Code, Title 10, Section 2222. These requirements specify how DOD is to manage its business system investments.¹ The reports are listed below:

Defense Business Systems: DOD Needs to Continue Improving Guidance and Plans for Effectively Managing Investments, [GAO-18-130](#) (Washington, D.C.: April 16, 2018).

DOD Business Systems Modernization: Additional Action Needed to Achieve Intended Outcomes, [GAO-15-627](#) (Washington, D.C.: July 16, 2015).

Defense Business Systems: Further Refinements Needed to Guide the Investment Management Process, [GAO-14-486](#) (Washington, D.C. May 12, 2014).

DOD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, [GAO-13-557](#) (Washington, D.C.: May 17, 2013).

¹U.S. Code Title 10, Section 2222 includes requirements for the Department of Defense associated with establishing guidance for effectively managing its defense business system investments; developing and maintaining a defense business enterprise architecture and information technology enterprise architecture; using the Defense Business Council to provide advice to the Secretary on developing the business enterprise architecture, reengineering the department's business processes, developing and deploying business systems, and developing requirements for business systems; and ensuring that covered business systems are reviewed and certified in accordance with the code's requirements.

DOD Business Systems Modernization: Governance Mechanisms for Implementing Management Controls Need to Be Improved, [GAO-12-685](#) (Washington, D.C.: June 1, 2012).

Department of Defense: Further Actions Needed to Institutionalize Key Business System Modernization Management Controls, [GAO-11-684](#) (Washington, D.C.: June 29, 2011).

Business Systems Modernization: Scope and Content of DOD's Congressional Report and Executive Oversight of Investments Need to Improve, [GAO-10-663](#) (Washington, D.C.: May 24, 2010).

DOD Business Systems Modernization: Recent Slowdown in Institutionalizing Key Management Controls Needs to Be Addressed, [GAO-09-586](#) (Washington, D.C.: May 18, 2009).

DOD Business Systems Modernization: Progress in Establishing Corporate Management Controls Needs to Be Replicated Within Military Departments, [GAO-08-705](#) (Washington, D.C.: May 15, 2008).

DOD Business Systems Modernization: Progress Continues to Be Made in Establishing Corporate Management Controls, but Further Steps Are Needed, [GAO-07-733](#) (Washington, D.C.: May 14, 2007).

Business Systems Modernization: DOD Continues to Improve Institutional Approach, but Further Steps Needed, [GAO-06-658](#) (Washington, D.C.: May 15, 2006).

DOD Business Systems Modernization: Important Progress Made in Establishing Foundational Architecture Products and Investment Management Practices, but Much Work Remains, [GAO-06-219](#) (Washington, D.C.: November 23, 2005).

Appendix II: Status of GAO Recommendations Aimed at Strengthening DOD's Approach to Managing Its Business System Investments, as of November 2019

Table 4 summarizes the status of recommendations made to the Department of Defense (DOD), based on GAO's assessments of DOD's actions to respond to defense business system investment management requirements contained in U.S. Code Title 10, Section 2222. The recommendations, included in GAO reports issued from 2005 through 2018, were aimed at helping the department strengthen its approach to managing its business system investments. As of June 2019 (when GAO began its current review of DOD's actions to address the recommendations), the department had not yet addressed 12 of 29 total recommendations. Subsequently, between June 2019 and November 2019, the department implemented four of the recommendations, but did not implement eight other recommendations.

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

Table 4a: Status of GAO Recommendations That Relate to U.S. Code Title 10, Section 2222 Requirements for Strengthening Defense Business Systems Management, as of November 2019

GAO report and recommendation (GAO-12-685: DOD Business Systems Modernization: Governance Mechanisms for Implementing Management Controls Need to Be Improved, June 1, 2012)	Implemented	Not yet implemented	GAO assessment
<p>1. To ensure that DOD continues to implement the full range of institutional management controls needed to address its business systems modernization high-risk area, the Secretary of Defense should ensure that the department's chief management officer (CMO) establish a policy that clarifies the roles, responsibilities, and relationships among the CMO, deputy CMO, DOD and military department chief information officers (CIOs), principal staff assistants, military department CMOs, and the heads of the military departments and defense agencies, associated with the development of a federated business enterprise architecture. Among other things, the policy should address the development and implementation of an overarching taxonomy and associated ontologies to help ensure that each of the respective portions of the architecture will be properly linked and aligned.^a In addition, the policy should address alignment and coordination of business process areas, military department and defense agency activities associated with developing and implementing each of the various components of the business enterprise architecture, and relationships among these entities.</p>	<p></p>	<p>X</p>	<p>While the Department of Defense (DOD) had taken steps to improve its business enterprise architecture, it had not implemented the recommendation as of November 2019. In August 2013, the department established the Business Enterprise Architecture Configuration Control Board, which is chaired by the business enterprise architecture chief architect (Office of the DOD CMO) and includes representatives from the Defense Business Council member organizations. These organizations include, among others, DOD's CIO and the military department CMOs. According to its charter, the Business Enterprise Architecture Configuration Control Board is the principal body for managing the disposition of proposed architecture requirements and change requests. However, the charter does not discuss roles and responsibilities associated with the development of the business enterprise architecture. Specifically, it does not address alignment and coordination of business process areas or military department and defense agency activities associated with developing and implementing each of the various components of the business enterprise architecture, and the relationships among these entities. In addition, in September 2018, the department stated that it was drafting a business enterprise architecture concept of operations that was to outline roles and responsibilities associated with the development of the architecture. However, as of November 2019, the department had not completed the concept of operations or otherwise demonstrated that it had established roles and responsibilities for the development of the architecture.</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

GAO report and recommendation (GAO-12-685: DOD Business Systems Modernization: Governance Mechanisms for Implementing Management Controls Need to Be Improved, June 1, 2012)	Implemented	Not yet implemented	GAO assessment
			<p>In October 2018, an official from the Office of the CMO described the department's new approach to developing its business enterprise architecture. In addition, the department demonstrated that it had developed a taxonomy for the architecture and was in the process of developing an ontology to help ensure that each of the respective portions of the architecture would be appropriately linked and aligned. In November 2019, the official stated that the ontology had been implemented in the department's new business enterprise architecture tool; however, the department did not demonstrate that it had finished developing the ontology. Specifically, the department's October 2019 ontology document identifies basic concepts, such as "Goal", "Objective", and "LOB" (i.e., line of business) as classes, and the properties and attributes of, and relationships among, classes. However, the document does not include annotations such as for the "description" attribute for an LOB, which would provide information needed to create a specific instance of a class applicability; and had not demonstrated that it had developed ontologies for its business domains, such as acquisition, human resource management, and financial management. Also, the document does not demonstrate if allowed values have been defined for some attributes, such as the options allowed in an "option list" for "status" attributes. Further, the department had not documented general information about the ontology, such as its scope and intended applicability; and had not demonstrated that it had developed ontologies for its business domains, such as acquisition, human resource management, and financial management.</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
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of November 2019**

Table 4b: Status of GAO Recommendations That Relate to U.S. Code Title 10, Section 2222 Requirements for Strengthening Defense Business Systems Management, as of November 2019

GAO report and recommendation (GAO-13-557: DOD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, May 17, 2013)	Implemented	Not yet implemented	GAO assessment
<p>2. Define by when and how the department plans to develop an architecture that would extend to all defense components and include, among other things, (a) information about the specific business systems that support business enterprise architecture business activities and related system functions; (b) business capabilities for the hire-to-rotate and procure-to-pay business processes; and (c) sufficient information about business activities to allow for more effective identification of potential overlap and duplication.</p>		X	<p>DOD has made significant progress addressing the recommendation; however, as of November 2019, more remained to be done. In particular, in 2015, we reported that the department had taken steps to improve the integration of business enterprise architecture information with other existing information, which allows DOD to identify information such as mapping of existing business systems to system functions. More recently, in 2017, the department awarded a contract to improve its business enterprise architecture. According to the department, the objective of the contract was to improve business and system optimization by providing mechanisms to ingest and discover enterprise architecture content from all department components and allow for cross-domain portfolio reviews to include duplication analysis. More specifically, the contract called for developing three major capabilities, including the ability to conduct process and system reviews within and across domains. In October 2019, the Office of the CMO demonstrated that it had completed development of the three planned capabilities and the office said it was working to host the capabilities in a government-approved cloud environment.</p> <p>With regard to including business capabilities for the Hire-to-Rotate and Procure-to-Pay business processes in the business enterprise architecture, the department stated that the new architecture is to identify the business capabilities and processes associated with Lines of Business, which will be defined as a decomposition of the products and services that the business enterprise delivers to the department's components. In September 2019, officials from the Office of the CMO stated that the department plans to review end-to-end processes that comprise the current business enterprise architecture for currency and relevancy. However, the officials did not indicate when they expect to complete this review.</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

GAO report and recommendation (GAO-13-557: DOD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, May 17, 2013)	Implemented	Not yet implemented	GAO assessment
<p>1. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the Deputy CMO^b to ensure that the functional strategies include all of the critical elements identified in DOD investment management guidance, including performance measures to determine progress toward achieving the goals that incorporate all of the attributes called for in the department's guidance.</p>		X	<p>As of November 2019, DOD had not addressed the recommendation. In May 2013, we reported that, for the fiscal year 2013 certification of business systems, functional strategies included many, but not all, of the critical elements required by DOD's guidance. Specifically, not all functional strategies demonstrated linkages to business goals in DOD's strategic management plan, and not all included expected outcomes for all functional area goals. In addition, some, but not all, had performance measures in place for assessing progress toward achieving stated goals. However, none of the functional strategies included performance measures that reflected all of the key attributes identified in DOD's guidance. We also reported that for the 2014 certification cycle, the functional strategies had been improved. However, not all of them had performance measures that included all key attributes called for in the guidance. Specifically, all performance measures did not include baseline and target measures, and provide a rationale for the identified targets.</p> <p>In June 2018, DOD revised the required functional strategy elements in its defense business system investment management guidance. However, as of November 2019, the department had not ensured that its functional strategies include all of the elements identified in the guidance. The guidance still requires that functional strategies include business outcomes that link to goals in DOD's strategic management plan. In addition, while the guidance no longer calls for the key performance measure attributes that we assessed in our 2013 report (i.e., baseline and target measures and a rationale for identified targets), the new guidance requires that business outcomes include measurable targets.</p> <p>However, none of the fiscal year 2019 functional strategies fully addressed most of the required elements. For example, none of the functional strategies demonstrated that business outcomes were clearly linked to the department's strategic management plan goals, as required by the 2018 investment management guidance. In addition, none of the strategies included measurable targets.</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

GAO report and recommendation (GAO-13-557: DOD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, May 17, 2013)	Implemented	Not yet implemented	GAO assessment
<p>2. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the deputy CMO to select and control its mix of investments in a manner that best supports mission needs by (a) documenting a process for evaluating portfolio performance that includes the use of actual versus expected performance data and predetermined thresholds; (b) ensuring that portfolio assessments are conducted in key areas identified in our IT investment management framework: benefits attained; current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated, or accepted to date; and (c) ensuring that the documents provided to the Defense Business Council as part of the investment management process include critical information for conducting all assessments.</p>		X	<p>An official from the office of the CMO demonstrated that the department's Integrated Business Framework–Data Alignment Portal, which is used to record functional strategies, includes business outcomes that are aligned to goals and objectives in the National Defense Business Operations Plan (i.e., the agency strategic plan). The official also demonstrated that most functional strategies link to at least one performance measure from the National Defense Business Operations Plan. However, the official agreed that the published functional strategies did not clearly link outcomes to the department's strategic management plan. Further, officials from the office of the CMO stated in September 2019 that the functional strategies for fiscal year 2019 were not revised for fiscal year 2020.</p> <p>As of November 2019, DOD had not addressed the recommendation. In 2013, we reported that the department's investment management guidance did not specify a process for conducting an assessment or call for the use of actual versus expected performance data and predetermined thresholds for evaluating portfolio performance. In addition, the department did not call for assessments to be conducted in four key areas—benefits attained, current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated or accepted to date. We also reported in 2013, that the department's investment management guidance identified four criteria and specified the associated assessments that were to be conducted when reviewing and evaluating components' organization execution plans in order to make a portfolio-based investment decision. However, the guidance did not call for the department's organizational execution plans to include critical information for conducting assessments associated with three of the four criteria. Specifically, it did not include information for conducting assessments associated with strategic alignment (i.e., information on alignment with the capital planning and investment control practices and Better Buying Power guidance), utility (i.e., interoperability among systems and system scalability to support additional users) and total cost (i.e., cost in relationship to return on investment).</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

GAO report and recommendation (GAO-13-557: DOD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, May 17, 2013)	Implemented	Not yet implemented	GAO assessment
			<p>In September 2019, the department stated that the Office of the CMO's investment management guidance, investment management training materials, and organizational execution plan, addressed elements of the recommendation. However, the documents did not specify a process for evaluating portfolio performance that includes the use of actual versus expected performance data and predetermined thresholds.</p> <p>Regarding ensuring that portfolio assessments are conducted in key areas identified in our IT investment management framework: benefits attained; current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated, or accepted to date, the June 2018 investment management guidance requires organization execution plans to include risks and risk mitigation strategies. In addition, the investment management guidance requires the plans to include information about benefits attained. Specifically, the plans are to include progress against targets for business goals documented in functional strategies. However, the guidance does not address the remaining key areas identified in our IT investment management framework: current schedule; accuracy of project reporting; and risks that have been eliminated or accepted to date. In addition, the guidance does not call for this information to be used as part of portfolio assessments.</p> <p>Regarding ensuring that the documents provided to the Defense Business Council (DBC) as part of the investment management process include critical information for conducting assessments, in September 2019, the department stated in a written response that business system certification decisions are made in accordance with criteria established in 10 U.S. Code Section 2222. However, as of November 2109, the department had not demonstrated that it established guidance that calls for documents to include critical information on alignment with the capital planning and investment control practices and Better Buying Power guidance), utility (i.e., interoperability among systems and system scalability to support additional users) and total cost (i.e., cost in relationship to return on investment), which are criteria it established in its investment management guidance for making certification decisions.</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

GAO report and recommendation (GAO-13-557: DOD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, May 17, 2013)	Implemented	Not yet implemented	GAO assessment
<p>3. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the deputy CMO to implement and use the business enterprise architecture and business process reengineering compliance assessments more effectively to support organizational transformation efforts by (a) disclosing relevant information about known weaknesses, such as business enterprise architecture and business process reengineering compliance weaknesses for systems that were not certified or certified with qualifications in annual reports to Congress; (b) establishing milestones by which selected validations of business enterprise architecture compliance assertions are to be completed; and (c) ensuring that appropriate business process reengineering assertions have been completed on all investments submitted for the fiscal year 2014 certification reviews prior to the certification of funds.</p>	X		<p>DOD demonstrated that it has addressed the intent of the recommendation. In 2015, the department demonstrated that it had disclosed relevant information about known weaknesses in annual reports to Congress. Specifically, the 2015 Congressional Report on Defense Business Operations^c included some information consistent with our recommendation. For example, it contained information about weaknesses for systems that were certified with qualifications. In particular, the report stated that the department conditionally approved 29 military department and 30 defense agency requests pending DBC approval of their problem statements. The report also cited the specific systems that were conditionally approved pending approval of their problem statements.</p> <p>In September 2019, the department demonstrated that it had validated BEA and business process reengineering (BPR) assertions. Specifically, the Office of the CMO demonstrated that it had reviewed BEA and BPR compliance assertions, and identified in investment decision memorandums which systems had BEA and/or BPR assertions that required action. According to the list of systems, programs were required to address the actions (i.e., addressing the missing and invalid data), within 90 days in order for the systems to be certified for funding.</p>
<p>4. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the Deputy CMO to develop a skills inventory, needs assessment, gap analysis, and plan to address identified gaps as part of a strategic approach to human capital planning for the Office of the Deputy CMO.</p>		X	<p>As of November 2019, DOD had not implemented the recommendation. In September 2019, the department stated in a written response that the Office of the CMO planned to publish a Defense Business Operations Management Workforce Plan by December 31, 2019. The department stated that this plan was being developed as directed by House Report 116-120, which accompanies H.R. 2500, the National Defense Authorization Act for Fiscal Year 2020. This report included a provision for the CMO to perform a human capital analysis, as recommended in our 2013 report. According to the department, the plan is to include skills requirements for both the Office of the CMO's permanent employees and DOD employees detailed to the Office of the CMO in support of the management and reform of defense business operations management. We will continue to monitor the department's efforts to implement the recommendation.</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

Table 4c: Status of GAO Recommendations That Relate to U.S. Code Title 10, Section 2222 Requirements for Strengthening Defense Business Systems Management, as of November 2019

GAO report and recommendation (GAO-15-627: DOD Business Systems Modernization: Additional Action Needed to Achieve Intended Outcomes, July 16, 2015)	Implemented	Not yet implemented	GAO assessment
<p>1. To help ensure that the department can better achieve business process reengineering and enterprise architecture outcomes and benefits, the Secretary of Defense should utilize the results of our portfolio manager survey to determine additional actions that can improve the department's management of its business process reengineering and enterprise architecture activities.</p>		X	<p>DOD has made progress implementing the recommendation. Specifically, in January 2017, the department issued a business enterprise architecture improvement plan. The plan was intended to address business enterprise architecture usability and deficiencies in information supporting the investment management process. As part of its planning efforts, the department identified opportunities to address the results of our survey. For example, according to the plan, our survey results were used to identify opportunities for improving management and integration of existing enterprise business processes and investments; assessing duplication early in the analysis phase and finding process and capability reuse across the department; and providing a federated business enterprise architecture information environment and capabilities to discover and exchange information from other sources. The plan included delivering three major capabilities. In October 2019, the office of the CMO demonstrated its new capabilities to GAO. Further, in October 2019, staff within the Office of the CMO were working to move the capabilities to a government-approved host environment, although the office had not yet finalized its plan to do so. As of November 2019, the department had not yet deployed the capabilities.</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
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of November 2019**

Table 4d: Status of GAO Recommendations That Relate to U.S. Code Title 10, Section 2222 Requirements for Strengthening Defense Business Systems Management, as of November 2019

GAO report and recommendation (GAO-18-130: Defense Business Systems: DOD Needs to Continue Improving Guidance and Plans for Effectively Managing Investments, April 16, 2018)	Implemented	Not yet implemented	GAO assessment
<p>1. The Secretary of Defense should define a specific time frame for finalizing, and ensure the issuance of (1) policy requiring full consideration of sustainability and technological refreshment requirements for its defense business system investments; and (2) policy requiring that best systems engineering practices are used in the procurement and deployment of commercial systems, modified commercial systems, and defense-unique systems to meet DOD missions.</p>	<p>X</p>		<p>DOD has implemented this recommendation. In August 2019, the Office of the CMO provided a written response stating that it had verified existing policy for both requirements. Specifically, the Office of the CMO stated that department policy requires full consideration of sustainability and technological refreshment requirements for its defense business systems investments. In addition, the department provided us its <i>DOD Instruction 5000.75</i>, <i>DOD Directive 5000.01</i>, and <i>DOD Financial Management Regulation Volume 2B</i>, which include policy requiring consideration of sustainability and technological refreshment.</p> <p>DOD also stated that department policy requires best systems engineering practices be used in the procurement and deployment of commercial systems, modified commercial systems, and defense-unique systems to meet DOD missions. In addition, the office of the CMO provided us its <i>DOD Directive 5000.01</i>, which includes policy to help ensure that best systems engineering practices are used in the procurement and deployment of commercial systems, modified commercial systems, and defense-unique systems.</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

GAO report and recommendation (GAO-18-130: Defense Business Systems: DOD Needs to Continue Improving Guidance and Plans for Effectively Managing Investments, April 16, 2018)	Implemented	Not yet implemented	GAO assessment
<p>2. The Secretary of the Air Force should define a specific time frame for finalizing, and ensure the issuance of guidance for certifying the department's business systems on the basis of (1) having an acquisition strategy designed to eliminate or reduce the need to tailor commercial off-the-shelf systems to meet unique requirements, incorporate unique requirements, or incorporate unique interfaces to the maximum extent practicable; and (2) being in compliance with DOD's auditability requirements.</p>	X		<p>The Department of the Air Force has implemented this recommendation. The department's April 2018 updated guidance states that the Air Force Deputy CMO has approval authority for any defense business system below \$250 million over the current future-years defense plan, and that the Air Force Deputy CMO will assert compliance with auditability requirements.</p> <p>In addition, the department's May 2019 Air Force guidance memo states that the Deputy CMO or the DOD CMO will certify that a system satisfies the requirements outlined in the memo, which include ensuring that each defense business system developed, deployed, or operated by the Air Force must continue to satisfy the requirement to have an acquisition strategy and utilize an acquisition and sustainment strategy that prioritizes commercial software and business practices. In addition, Air Force's August 2019 OEP guidebook for defense business systems states that each defense business system developed, deployed or operated by the Department of Defense must utilize an acquisition and sustainment strategy that prioritizes commercial software and business practices.</p>

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

GAO report and recommendation (GAO-18-130: Defense Business Systems: DOD Needs to Continue Improving Guidance and Plans for Effectively Managing Investments, April 16, 2018)	Implemented	Not yet implemented	GAO assessment
3. The Secretary of the Army should define a specific time frame for finalizing, and ensure the issuance of guidance for certifying the department's business systems on the basis of (1) being reengineered to be as streamlined and efficient as practicable, and determining that implementation of the system will maximize the elimination of unique software requirements and unique interfaces; (2) being in compliance with the business enterprise architecture; (3) having valid, achievable requirements and a viable plan to implement the requirements; (4) having an acquisition strategy designed to eliminate or reduce the need to tailor commercial off-the-shelf systems to meet unique requirements, incorporate unique requirements, or incorporate unique interfaces to the maximum extent practicable; and (5) being in compliance with DOD's auditability requirements.	X		<p>The Department of the Army has implemented the recommendation. As of 2018, the department's policy addressed two elements of the recommendation but did not address the other three elements. Specifically, it included policy for certifying the department's business systems on the basis of (1) being reengineered to be as streamlined and efficient as practicable, and determining that implementation of the system will maximize the elimination of unique software requirements and unique interfaces; and (2) being in compliance with the business enterprise architecture. However, it did not address certifying the department's business systems on the basis of (1) having valid, achievable requirements and a viable plan to implement the requirements; (2) having an acquisition strategy designed to eliminate or reduce the need to tailor commercial off-the-shelf systems to meet unique requirements, incorporate unique requirements, or incorporate unique interfaces to the maximum extent practicable; and (3) being in compliance with DOD's auditability requirements.</p> <p>In August 2019, Army issued its Fiscal Year 2020 Defense Business Systems Annual Certification and Portfolio Review Guidance. This updated guidance addressed the remaining three elements of the recommendation.</p>
4. The Secretary of Defense should ensure that the DOD CIO develops an IT enterprise architecture which includes a transition plan that provides a road map for improving the department's IT and computing infrastructure, including for each of its business processes.		X	As of November 2019, DOD had not addressed the recommendation. In September 2019, the Office of the CIO provided a written response stating that it planned to address the recommendation by finalizing DOD IT Enterprise Architecture version 3 by December 31, 2019. We will continue to monitor the department's efforts to develop its IT enterprise architecture.
5. The Secretary of Defense should ensure that the DOD CIO and CMO work together to define a specific time frame for when the department plans to integrate its business and IT architectures and ensure that the architectures are integrated.		X	As of November 2019, DOD had not addressed the recommendation. In September 2019, the Office of the CIO provided a written response stating that the office planned to finalize the first increment of version 3 of its DOD Information Enterprise Architecture (i.e., IT enterprise architecture) by the end of December 2019 and would integrate the business enterprise architecture into the Information Enterprise Architecture. We will continue to monitor the department's efforts to integrate the architectures.

Source: GAO analysis of DOD documentation. | GAO-20-253

**Appendix II: Status of GAO Recommendations
Aimed at Strengthening DOD's Approach to
Managing Its Business System Investments, as
of November 2019**

^aA taxonomy is a hierarchical classification/categorization of things (e.g., information, concepts, entities). An ontology refers to a common approach or vocabulary for how to model objects and concepts within a defined area of interest.

^bOn February 1, 2018, the Secretary of Defense eliminated the Deputy CMO position and expanded the role of the CMO, in accordance with the *National Defense Authorization Act for Fiscal Year 2018*.

^cThe *2015 Congressional Report on Defense Business Operations* (March 15, 2015) was submitted in accordance with U.S. Code Title 10, Section 2222, which required that the Secretary of Defense submit to the congressional defense committees an annual report on Department of Defense compliance with the requirements of Section 2222. As required, this report addressed actions taken to meet the requirements to certify obligation of funds for covered defense business systems, cost savings, and improvements in business operations. This report is no longer required by U.S. Code Title 10, Section 2222.

Appendix III: Comments from the Department of Defense

Appendix III: Comments from the Department
of Defense



CHIEF MANAGEMENT OFFICER
9010 DEFENSE PENTAGON
WASHINGTON, DC 20301-9010

JAN 31 2020

Ms. Carol C. Harris
Director, Information Technology Acquisition Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington DC 20548

Dear Ms. Harris,

This is the Department of Defense (DoD) response to the GAO Draft Report GAO-20-253, "BUSINESS SYSTEMS MODERNIZATION: DoD Has Made Progress in Addressing Recommendations to Improve IT Management, but More Action Is Needed," dated December 31, 2019 (GAO Code 103632).

The Department appreciates the opportunity to review this draft report and the recognition of progress made to strengthen defense business systems management. While we understand there are no new recommendations in this report, attached is a summary of the corrective action plans for the previously reported open recommendations. These are planned to be completed in the next 90 days. We agree that more work needs to be done to effectively manage investments within the Department of Defense business operations. In the upcoming months, the CMO will execute a reform agenda to strengthen oversight and improve business performance. We look forward to our continued cooperation and dialogue as we move to our common goal of transforming business operations and effectively managing defense business systems. My point of contact is Ms. Smitha Pillai who can be reached at smitha.pillai.civ@mail.mil and phone 571-372-3230.

A handwritten signature in blue ink, reading "Lisa W. Hershman", is positioned above the printed name.

Lisa W. Hershman

Appendix III: Comments from the Department of Defense

GAO-12-685: DOD Business Systems Modernization: Governance Mechanisms for Implementing Management Controls Need to Be Improved, June 1, 2012

<p>1. To ensure that DOD continues to implement the full range of institutional management controls needed to address its business systems modernization high-risk area, the Secretary of Defense should ensure that the department's Chief Management Officer (CMO) establish a policy that clarifies the roles, responsibilities, and relationships among the CMO, deputy CMO, DOD and military department chief information officers (CIOs), principal staff assistants, military department CMOs, and the heads of the military departments and defense agencies, associated with the development of a federated business enterprise architecture. Among other things, the policy should address the development and implementation of an overarching taxonomy and associated ontologies to help ensure that each of the respective portions of the architecture will be properly linked and aligned.</p> <p>In addition, the policy should address alignment and coordination of business process areas, military department and defense agency activities associated with developing and implementing each of the various components of the business enterprise architecture, and relationships among these entities</p>	<p>While the Department of Defense (DOD) had taken steps to improve its business enterprise architecture, it had not implemented the recommendation as of November 2019. In August 2013, the department established the Business Enterprise Architecture Configuration Control Board, which is chaired by the Business Enterprise Architecture Chief Architect (Office of the DOD CMO) and includes representatives from the Defense Business Council member organizations. These organizations include, among others, DOD's CIO and the military department CMOs. According to its charter, the Business Enterprise Architecture Configuration Control Board is the principal body for managing the disposition of proposed architecture requirements and change requests. However, the charter does not discuss roles and responsibilities associated with the development of the business enterprise architecture. Specifically, it does not address alignment and coordination of business process areas or military department and defense agency activities associated with developing and implementing each of the various components of the business enterprise architecture, and the relationships among these entities. In addition, in September 2018, the department stated that it was drafting a business enterprise architecture concept of operations that was to outline roles and responsibilities associated with the development of the architecture. However, as of November 2019, the department had not completed the concept of operations or otherwise demonstrated that it had established roles and responsibilities for the development of the architecture. In October 2018, an official from the Office of the CMO described the department's new approach to developing its business enterprise architecture. In addition, the department demonstrated that it had developed a taxonomy for the architecture and was in the process of developing an ontology to help ensure that each of the respective portions of the architecture would be appropriately linked and aligned.</p> <p>In November 2019, the official stated that the ontology had been implemented in the department's new business enterprise architecture tool; however, the department did not demonstrate that it had finished developing the ontology. Specifically, the department's October 2019 ontology document identifies basic concepts, such as "Goal", "Objective", and "LOB" (i.e., line of business) as classes, and the properties and attributes of, and relationships among, classes. However, the document does not include annotations such as for the "description" attribute for an LOB, which would provide information needed to create a specific instance of a class. Also, the document does not demonstrate if allowed values have been defined for some attributes, such as the options allowed in an "option list" for "status" attributes. Further, the department had not documented general information about the ontology, such as its scope and intended applicability; and had not demonstrated that it had developed ontologies for its business domains, such as acquisition, human resource management, and financial management.</p>	<p>Concur - The BEA team continues to refine the governance plan, management structure and content framework in parallel with a technical implementation strategy for the BEA. This will be complete by 31 March 2020</p>
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Appendix III: Comments from the Department of Defense

GAO-13-557: DOD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, May 17, 2013

<p>2. Define by when and how the department plans to develop an architecture that would extend to all defense components and include, among other things, (a) information about the specific business systems that support business enterprise architecture business activities and related system functions; (b) business capabilities for the hire-to-retain and procure-to-pay business processes; and (c) sufficient information about business activities to allow for more effective identification of potential overlap and duplication.</p>	<p>DOD has made significant progress addressing the recommendation; however, as of November 2019, more remained to be done. In particular, in 2015, we reported that the department had taken steps to improve the integration of business enterprise architecture information with other existing information, which allows DOD to identify information such as mapping of existing business systems to system functions. More recently, in 2017, the department awarded a contract to improve its business enterprise architecture. According to the department, the objective of the contract was to improve business and system optimization by providing mechanisms to ingest and discover enterprise architecture content from all department components and allow for cross-domain portfolio reviews to include duplication analysis. More specifically, the contract called for developing three major capabilities, including the ability to conduct process and system reviews within and across domains. In October 2019, the Office of the CMO demonstrated that it had completed development of the three planned capabilities and the office said it was working to host the capabilities in a government-approved cloud environment. With regard to including business capabilities for the Hire-to-Retire and Procure-to-Pay business processes in the business enterprise architecture, the department stated that the new architecture is to identify the business capabilities and processes associated with Lines of Business, which will be defined as a decomposition of the products and services that the business enterprise delivers to the department's components. In September 2019, officials from the Office of the CMO stated that the department plans to review end-to-end processes that comprise the current business enterprise architecture for currency and relevancy. However, the officials did not indicate when they expect to complete this review.</p>	<p>Concur - The BEA team continues to refine the governance plan, management structure and content framework in parallel with a technical implementation strategy for the BEA. This will be complete by 31 March 2020. The implementation strategy includes BEA 2020 Content and Management Workshops, scheduled through June 2020 to review all BEA content for currency and relevancy.</p>
<p>3. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the Deputy CMO to ensure that the functional strategies include all of the critical elements identified in DOD investment management guidance, including performance measures to determine progress toward achieving the goals that incorporate all of the attributes called for in the department's guidance.</p>	<p>As of November 2019, DOD had not addressed the recommendation. In May 2013, we reported that, for the fiscal year 2013 certification of business systems, functional strategies included many, but not all, of the critical elements required by DOD's guidance. Specifically, not all functional strategies demonstrated linkages to business goals in DOD's strategic management plan, and not all included expected outcomes for all functional area goals. In addition, some, but not all, had performance measures in place for assessing progress toward achieving stated goals. However, none of the functional strategies included performance measures that reflected all of the key attributes identified in DOD's guidance. We also reported that for the 2014 certification cycle, the functional strategies had been improved. However, not all of them had performance measures that included all key attributes called for in the guidance. Specifically, all performance measures did not include baseline and target measures, and provide a rationale for the identified targets.</p> <p>In June 2018, DOD revised the required functional strategy elements in its defense business system investment management guidance. However, as of November 2019, the department had not ensured that its functional strategies include all of the elements identified in the guidance. The guidance still requires that functional strategies include business outcomes that link to goals in DOD's strategic management plan. In addition, while the guidance no longer calls for the key performance measure attributes that we assessed in our 2013 report (i.e., baseline and target measures and a rationale for identified targets), the new guidance requires that business outcomes include measurable targets. However, none of the fiscal year 2019 functional strategies fully addressed most of the required elements. For example, none of the functional strategies demonstrated that business outcomes were clearly linked to the department's strategic management plan goals, as required by the 2018 investment management guidance. In addition, none of the strategies included measurable targets.</p> <p>An official from the office of the CMO demonstrated that the department's Integrated Business Framework-Data Alignment Portal, which is used to record functional strategies, includes business outcomes that are aligned to goals and objectives in the National Defense Business Operations Plan (i.e., the agency strategic plan). The official also demonstrated that most functional strategies link to at least one performance measure from the National Defense Business Operations Plan. However, the official agreed that the published functional strategies did not clearly link outcomes to the department's strategic management plan. Further, officials from the office of the CMO stated in September 2019 that the functional strategies for fiscal year 2019 were not revised for fiscal year 2020.</p>	<p>Concur - The CMO is reviewing its current process for investment management including alignment to Functional Strategies. These changes will better align to the Department's existing budget process while shifting to a functionally strategic view and increasing the focus on portfolios of DBSs and capabilities, while continuing to provide system level certifications in accordance with 10 USC Sec 2222. Additional guidance on this process will be published by 31 March.</p>

Appendix III: Comments from the Department of Defense

<p>4. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the deputy CMO to select and control its mix of investments in a manner that best supports mission needs by (a) documenting a process for evaluating portfolio performance that includes the use of actual versus expected performance data and predetermined thresholds; (b) ensuring that portfolio assessments are conducted in key areas identified in our IT investment management framework: benefits attained; current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated, or accepted to date; and (c) ensuring that the documents provided to the Defense Business Council as part of the investment management process include critical information for conducting all assessments.</p>	<p>As of November 2019, DOD had not addressed the recommendation. In 2013, we reported that the department's investment management guidance did not specify a process for conducting an assessment or call for the use of actual versus expected performance data and predetermined thresholds for evaluating portfolio performance. In addition, the department did not call for assessments to be conducted in four key areas— benefits attained, current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated or accepted to date. We also reported in 2013, that the department's investment management guidance identified four criteria and specified the associated assessments that were to be conducted when reviewing and evaluating components' organization execution plans in order to make a portfolio-based investment decision. However, the guidance did not call for the department's organizational execution plans to include critical information for conducting assessments associated with three of the four criteria. Specifically, it did not include information for conducting assessments associated with strategic alignment (i.e., information on alignment with the capital planning and investment control practices and Better Buying Power guidance), utility (i.e., interoperability among systems and system scalability to support additional users) and total cost (i.e., cost in relationship to return on investment).</p> <p>In September 2019, the department stated that the Office of the CMO's investment management guidance, investment management training materials, and organizational execution plan, addressed elements of the recommendation. However, the documents did not specify a process for evaluating portfolio performance that includes the use of actual versus expected performance data and predetermined thresholds. Regarding ensuring that portfolio assessments are conducted in key areas identified in our IT investment management framework: benefits attained; current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated, or accepted to date, the June 2018 investment management guidance requires organization execution plans to include risks and risk mitigation strategies.</p> <p>In addition, the investment management guidance requires the plans to include information about benefits attained. Specifically, the plans are to include progress against targets for business goals documented in functional strategies.</p> <p>Regarding ensuring that the documents provided to the Defense Business Council (DBC) as part of the investment management process include critical information for conducting assessments, in September 2019, the department stated in a written response that business system certification decisions are made in accordance with criteria established in 10 U.S. Code Section 2222. However, as of November 2109, the department had not demonstrated that it established guidance that calls for documents to include critical information for conducting assessments associated with other criteria the department has established for conducting assessments. Specifically, it had not demonstrated that it established guidance that calls for information for conducting assessments associated with strategic alignment (i.e., information on alignment with the capital planning and investment control practices and Better Buying Power guidance), utility (i.e., interoperability among systems and system scalability to support additional users) and total cost (i.e., cost in relationship to return on investment), which are criteria it established in its investment management guidance for making certification decisions.</p>	<p>Concur - The Department continues to refine its portfolio management capability. Per the Secretary of Defense memo dated 6 January, the CMO will focus on reforming business processes, overseeing resource planning allocation, and evaluating each Defense Wide organization's performance against business goals. A major component of this reform agenda is to strengthen oversight and improve the business performance of Defense Wide accounts and organizations. As such, the Deputy Secretary of Defense, in a memo dated 24 Jan, directed the CMO in collaboration with USD (Comptroller), D/CAPE, and DoD CIO to evaluate organizational performance against business goals in order to provide leadership visibility to performance and activities. An implementation plan and guidance is planned to be published by 10 Feb 2020</p>
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Appendix III: Comments from the Department of Defense

<p>6. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the Deputy CMO to develop a skills inventory, needs assessment, gap analysis, and plan to address identified gaps as part of a strategic approach to human capital planning for the Office of the Deputy CMO.</p>	<p>As of November 2019, DOD had not implemented the recommendation. In September 2019, the department stated in a written response that the Office of the CMO planned to publish a Defense Business Operations Management Workforce Plan by December 31, 2019. The department stated that this plan was being developed as directed by House Report 116-120, which accompanies H.R. 2500, the <i>National Defense Authorization Act for Fiscal Year 2020</i>. This report included a provision for the CMO to perform a human capital analysis, as recommended in our 2013 report. According to the department, the plan is to include skills requirements for both the Office of the CMO's permanent employees and DOD employees detailed to the Office of the CMO in support of the management and reform of defense business operations management. We will continue to monitor the department's efforts to implement the recommendation.</p>	<p>Recommend closing. HCA Report complete and submitted to Congress in the beginning of January. OCMO will work with WHS and the GAO audit team to close.</p>
<p>GAO-15-627: DOD Business Systems Modernization: Additional Action Needed to Achieve Intended Outcomes, July 16, 2015</p>		
<p>7. To help ensure that the department can better achieve business process reengineering and enterprise architecture outcomes and benefits, the Secretary of Defense should utilize the results of our portfolio manager survey to determine additional actions that can improve the department's management of its business process reengineering and enterprise architecture activities.</p>	<p>DOD has made progress implementing the recommendation. Specifically, in January 2017, the department issued a business enterprise architecture improvement plan. The plan was intended to address business enterprise architecture usability and deficiencies in information supporting the investment management process. As part of its planning efforts, the department identified opportunities to address the results of our survey. For example, according to the plan, our survey results were used to identify opportunities for improving management and integration of existing enterprise business processes and investments; assessing duplication early in the analysis phase and finding process and capability reuse across the department; and providing a federated business enterprise architecture information environment and capabilities to discover and exchange information from other sources. The plan included delivering three major capabilities. In October 2019, the office of the CMO demonstrated its new capabilities to GAO. Further, in October 2019, staff within the Office of the CMO were working to move the capabilities to a government- approved host environment, although the office had not yet finalized its plan to do so. As of November 2019, the department had not yet deployed the capabilities.</p>	<p>Concur - The BEA team continues to refine the governance plan, management structure and content framework in parallel with a technical implementation strategy for the BEA. This will be complete by 31 March 2020</p>
<p>GAO-18-130: Defense Business Systems: DOD Needs to Continue Improving Guidance and Plans for Effectively Managing Investments, April 16, 2018</p>		
<p>11. The Secretary of Defense should ensure that the DOD CIO develops an IT enterprise architecture which includes a transition plan that provides a road map for improving the department's IT and computing infrastructure, including for each of its business processes.</p>	<p>As of November 2019, DOD had not addressed the recommendation. In September 2019, the Office of the CIO provided a written response stating that it planned to address the recommendation by finalizing DOD IT Enterprise Architecture version 3 by December 31, 2019. We will continue to monitor the department's efforts to develop its IT enterprise architecture.</p>	<p>Concur - DoD CIO completed the DoD IT EA v3, and expects it to be signed out by 31 January</p>
<p>12. The Secretary of Defense should ensure that the DOD CIO and CMO work together to define a specific time frame for when the department plans to integrate its business and IT architectures and ensure that the architectures are integrated.</p>	<p>As of November 2019, DOD had not addressed the recommendation. In September 2019, the Office of the CIO provided a written response stating that the office planned to finalize the first increment of version 3 of its DOD Information Enterprise Architecture (i.e., IT enterprise architecture) by the end of December 2019 and would integrate the business enterprise architecture into the Information Enterprise Architecture. We will continue to monitor the department's efforts to integrate the architectures.</p>	<p>Concur - DoD CIO completed the DoD IT EA v3, and expects it to be signed out by 31 January</p>

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Carol C. Harris, 202-512-4456 or HarrisCC@gao.gov

Staff Acknowledgments

In addition to the contact above, individuals who made contributions to this report include Michael Holland (Assistant Director), Tyler Mountjoy (Analyst in Charge), Camille Chaires, Cheryl Dottermusch, William Hutchinson, Monica Perez-Nelson, Priscilla Smith, and Adam Vodraska.

Appendix V: Accessible Data

Data Tables

Accessible Data for Figure 1: Department of Defense (DOD) Fiscal Year 2020 Information Technology Budget by Mission Area (projected)

Enterprise information environment (dollars in billions)	Business (dollars in billions)	Warfighting (dollars in billions)	Intelligence (dollars in billions)
19.9	8.9	7.2	0.1

Accessible Data for Figure 2: Department of Defense (DOD) Information Technology Business Mission Area Fiscal Year 2020 Budget, by Segment (projected)

Category	Dollars in millions
Logistics/Supply Chain Management	2613.7
Human Resource Management	2317.1
Health	1417.9
Financial Management	1046.6
Acquisition	716.1
Real Property Management	349.2
Training and Readiness	229.4
Other Business Services	197.1
Defense Security Enterprise	26.5

Agency Comment Letter

Accessible Text for Appendix III Comments from the Department of Defense

Page 1

JAN 31 2020

Ms. Carol C. Harris

Director, Information Technology Acquisition Management Issues

U.S. Government Accountability Office

441 G Street, NW

Washington DC 20548

Dear Ms. Harris,

This is the Department of Defense (DoD) response to the GAO Draft Report GAO-20-253, "BUSINESS SYSTEMS MODERNIZATION: DoD Has Made Progress in Addressing Recommendations to Improve IT Management, but More Action Is Needed," dated December 31, 2019 (GAO Code 103632).

The Department appreciates the opportunity to review this draft report and the recognition of progress made to strengthen defense business systems management. While we understand there are no new recommendations in this report, attached is a summary of the corrective action plans for the previously reported open recommendations. These are planned to be completed in the next 90 days. We agree that more work needs to be done to effectively manage investments within the Department of Defense business operations. In the upcoming months, the CMO will execute a reform agenda to strengthen oversight and improve business performance. We look forward to our continued cooperation and dialogue as we move to our common goal of transforming business operations and effectively managing defense business systems. My point of contact is Ms. Smitha Pillai who can be reached at smitha.pillai.civ@mail.mil and phone 571-372-3230.

Lisa W. Hershman

Appendix V: Accessible Data

GAO-12-685: DOD Business Systems Modernization: Governance Mechanisms for Implementing Management Controls Need to Be Improved, June 1, 2012

Appendix V: Accessible Data

1. To ensure that DOD continues to implement the full range of institutional management controls needed to address its business systems modernization high- risk area, the Secretary of Defense should ensure that the department's Chief Management Officer (CMO) establish a policy that clarifies the roles, responsibilities, and relationships among the CMO, deputy CMO, DOD and military department chief information officers (CIOs), principal staff assistants, military department CMOs, and the heads of the military departments and defense agencies, associated with the development of a federated business enterprise architecture. Among other things, the policy should address the development and implementation of an overarching taxonomy and associated ontologies to help ensure that each of the respective portions of the architecture will be properly linked and aligned.

In addition, the policy should address alignment and coordination of business process areas, military department and defense agency activities associated with developing and implementing each of the various components of the business enterprise architecture, and relationships among these entities

While the Department of Defense (DOD) had taken steps to improve its business enterprise architecture, it had not implemented the recommendation as of November 2019. In August 2013, the department established the Business Enterprise Architecture Configuration Control Board, which is chaired by the Business Enterprise Architecture Chief Architect (Office of the DOD CMO) and includes representatives from the Defense Business Council member organizations. These organizations include, among others, DOD's CIO and the military department CMOs. According to its charter, the Business Enterprise Architecture Configuration Control Board is the principal body for managing the disposition of proposed architecture requirements and change requests. However, the charter does not discuss roles and responsibilities associated with the development of the business enterprise architecture. Specifically, it does not address alignment and coordination of business process areas or military department and defense agency activities associated with developing and implementing each of the various components of the business enterprise architecture, and the relationships among these entities. In addition, in September 2018, the department stated that it was drafting a business enterprise architecture concept of operations that was to outline roles and responsibilities associated with the development of the architecture.

However, as of November 2019, the department had not completed the concept of operations or otherwise demonstrated that it had established roles and responsibilities for the development of the architecture. In October 2018, an official from the Office of the CMO described the department's new approach to developing its business enterprise architecture. In addition, the department demonstrated that it had developed a taxonomy for the architecture and was in the process of developing an ontology to help ensure that each of the respective portions of the architecture would be appropriately linked and aligned.

In November 2019, the official stated that the ontology had been implemented in the department's new business enterprise architecture tool; however, the department did not demonstrate that it had finished developing the ontology. Specifically, the department's October 2019 ontology document identifies basic concepts, such as "Goal", "Objective", and "LOB" (i.e., line of business) as classes, and the properties and attributes of, and relationships among, classes. However, the document does not include annotations such as for the "description" attribute for an LOB, which would provide information needed to create a specific instance of a class. Also, the document does not demonstrate if allowed values have

Concur - The BEA team continues to refine the governance plan, management structure and content framework in parallel with a technical implementation strategy for the BEA. This will be complete by 31 March 2020

Appendix V: Accessible Data

GAO-12-685: DOD Business Systems Modernization: Governance Mechanisms for Implementing Management Controls Need to Be Improved, June 1, 2012

been defined for some attributes, such as the options allowed in an “option list” for “status” attributes. Further, the department had not documented general information about the ontology, such as its scope and intended applicability; and had not demonstrated that it had developed ontologies for its business domains, such as acquisition, human resource management, and financial management.

Page 3

GAO-13-557: DOD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, May 17, 2013

<p>2. Define by when and how the department plans to develop an architecture that would extend to all defense components and include, among other things, (a) information about the specific business systems that support business enterprise architecture business activities and related system functions; (b) business capabilities for the hire-to-retain and procure-to-pay business processes; and (c) sufficient information about business activities to allow for more effective identification of potential overlap and duplication.</p>	<p>DOD has made significant progress addressing the recommendation; however, as of November 2019, more remained to be done. In particular, in 2015, we reported that the department had taken steps to improve the integration of business enterprise architecture information with other existing information, which allows DOD to identify information such as mapping of existing business systems to system functions. More recently, in 2017, the department awarded a contract to improve its business enterprise architecture. According to the department, the objective of the contract was to improve business and system optimization by providing mechanisms to ingest and discover enterprise architecture content from all department components and allow for cross-domain portfolio reviews to include duplication analysis. More specifically, the contract called for developing three major capabilities, including the ability to conduct process and system reviews within and across domains. In October 2019, the Office of the CMO demonstrated that it had completed development of the three planned capabilities and the office said it was working to host the capabilities in a government-approved cloud environment. With regard to including business capabilities for the Hire-to-Retire and Procure-to-Pay business processes in the business enterprise architecture, the department stated that the new architecture is to identify the business capabilities and processes associated with Lines of Business, which will be defined as a decomposition of the products and services that the business enterprise delivers to the department's components. In September 2019, officials from the Office of the CMO stated that the department plans to review end-to-end processes that comprise the current business enterprise architecture for currency and relevancy. However, the officials did not indicate when they expect to complete this review.</p>	<p>Concur - The BEA team continues to refine the governance plan, management structure and content framework in parallel with a technical implementation strategy for the BEA. This will be complete by 31 March 2020. The implementation strategy includes BEA 2020 Content and Management Workshops, scheduled through June 2020 to review all BEA content for currency and relevancy.</p>
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GAO-13-557: DOD Business Systems Modernization: Further Actions Needed to Address Challenges and Improve Accountability, May 17, 2013

3. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the Deputy CMO to ensure that the functional strategies include all of the critical elements identified in DOD investment management guidance, including performance measures to determine progress toward achieving the goals that incorporate all of the attributes called for in the department's guidance.

As of November 2019, DOD had not addressed the recommendation. In May 2013, we reported that, for the fiscal year 2013 certification of business systems, functional strategies included many, but not all, of the critical elements required by DOD's guidance. Specifically, not all functional strategies demonstrated linkages to business goals in DOD's strategic management plan, and not all included expected outcomes for all functional area goals. In addition, some, but not all, had performance measures in place for assessing progress toward achieving stated goals. However, none of the functional strategies included performance measures that reflected all of the key attributes identified in DOD's guidance. We also reported that for the 2014 certification cycle, the functional strategies had been improved. However, not all of them had performance measures that included all key attributes called for in the guidance. Specifically, all performance measures did not include baseline and target measures, and provide a rationale for the identified targets.

In June 2018, DOD revised the required functional strategy elements in its defense business system investment management guidance. However, as of November 2019, the department had not ensured that its functional strategies include all of the elements identified in the guidance. The guidance still requires that functional strategies include business outcomes that link to goals in DOD's strategic management plan. In addition, while the guidance no longer calls for the key performance measure attributes that we assessed in our 2013 report (i.e., baseline and target measures and a rationale for identified targets), the new guidance requires that business outcomes include measurable targets. However, none of the fiscal year 2019 functional strategies fully addressed most of the required elements. For example, none of the functional strategies demonstrated that business outcomes were clearly linked to the department's strategic management plan goals, as required by the 2018 investment management guidance. In addition, none of the strategies included measurable targets

Concur - The CMO is reviewing its current process for investment management including alignment to Functional Strategies. These changes will better align to the Department's existing budget process while shifting to a functionally strategic view and increasing the focus on portfolios of DBSs and capabilities, while continuing to provide system level certifications in accordance with 10 USC Sec 2222. Additional guidance on this process will be published by 31 March.

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An official from the office of the CMO demonstrated that the department's Integrated Business Framework–Data Alignment Portal, which is used to record functional strategies, includes business outcomes that are aligned to goals and objectives in the National Defense Business Operations Plan (i.e., the agency strategic plan). The official also demonstrated that most functional strategies link to at least one performance measure from the National Defense Business Operations Plan. However, the official agreed that the published functional strategies did not clearly link outcomes to the department's strategic management plan. Further, officials from the office of the CMO stated in September 2019 that the functional strategies for fiscal year 2019 were not revised for fiscal year 2020.

Appendix V: Accessible Data

4. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the deputy CMO to select and control its mix of investments in a manner that best supports mission needs by (a) documenting a process for evaluating portfolio performance that includes the use of actual versus expected performance data and predetermined thresholds; (b) ensuring that portfolio assessments are conducted in key areas identified in our IT investment management framework: benefits attained; current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated, or accepted to date; and (c) ensuring that the documents provided to the Defense Business Council as part of the investment management process include critical information for conducting all assessments.

As of November 2019, DOD had not addressed the recommendation. In 2013, we reported that the department's investment management guidance did not specify a process for conducting an assessment or call for the use of actual versus expected performance data and predetermined thresholds for evaluating portfolio performance. In addition, the department did not call for assessments to be conducted in four key areas— benefits attained, current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated or accepted to date. We also reported in 2013, that the department's investment management guidance identified four criteria and specified the associated assessments that were to be conducted when reviewing and evaluating components' organization execution plans in order to make a portfolio- based investment decision. However, the guidance did not call for the department's organizational execution plans to include critical information for conducting assessments associated with three of the four criteria. Specifically, it did not include information for conducting assessments associated with strategic alignment (i.e., information on alignment with the capital planning and investment control practices and Better Buying Power guidance), utility (i.e., interoperability among systems and system scalability to support additional users) and total cost (i.e., cost in relationship to return on investment).

In September 2019, the department stated that the Office of the CMO's investment management guidance, investment management training materials, and organizational execution plan, addressed elements of the recommendation. However, the documents did not specify a process for evaluating portfolio performance that includes the use of actual versus expected performance data and predetermined thresholds. Regarding ensuring that portfolio assessments are conducted in key areas identified in our IT investment management framework: benefits attained; current schedule; accuracy of project reporting; and risks that have been mitigated, eliminated, or accepted to date, the June 2018 investment management guidance requires organization execution plans to include risks and risk mitigation strategies.

In addition, the investment management guidance requires the plans to include information about benefits attained. Specifically, the plans are to include progress against targets for business goals documented in functional strategies.

Concur - The Department continues to refine its portfolio management capability. Per the Secretary of Defense memo dated 6 January, the CMO will focus on reforming business processes, overseeing resource planning allocation, and evaluating each Defense Wide organization's performance against business goals. A major component of this reform agenda is to strengthen oversight and improve the business performance of Defense Wide accounts and organizations. As such, the Deputy Secretary of Defense, in a memo dated 24 Jan, directed the CMO in collaboration with USD (Comptroller), D/CAPE, and DoD CIO to evaluate organizational

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Regarding ensuring that the documents provided to the Defense Business Council (DBC) as part of the investment management process include critical information for conducting assessments, in September 2019, the department stated in a written response that business system certification decisions are made in accordance with criteria established in 10 U.S. Code Section 2222. However, as of November 2109, the department had not demonstrated that it established guidance that calls for documents to include critical information for conducting assessments associated with other criteria the department has established for conducting assessments. Specifically, it had not demonstrated that it established guidance that calls for information for conducting assessments associated with strategic alignment (i.e., information on alignment with the capital planning and investment control practices and Better Buying Power guidance), utility (i.e., interoperability among systems and system scalability to support additional users) and total cost (i.e., cost in relationship to return on investment), which are criteria it established in its investment management guidance for making certification decisions.

performance against business goals in order to provide leadership visibility to performance and activities. An implementation plan and guidance is planned to be published by 10 Feb 2020

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6. To effectively implement key components of DOD's business systems modernization program, the Secretary of Defense should direct the Deputy CMO to develop a skills inventory, needs assessment, gap analysis, and plan to address identified gaps as part of a strategic approach to human capital planning for the Office of the Deputy CMO.

As of November 2019, DOD had not implemented the recommendation. In September 2019, the department stated in a written response that the Office of the CMO planned to publish a Defense Business Operations Management Workforce Plan by December 31, 2019. The department stated that this plan was being developed as directed by House Report 116-120, which accompanies H.R. 2500, the *National Defense Authorization Act for Fiscal Year 2020*. This report included a provision for the CMO to perform a human capital analysis, as recommended in our 2013 report. According to the department, the plan is to include skills requirements for both the Office of the CMO's permanent employees and DOD employees detailed to the Office of the CMO in support of the management and reform of defense business operations management. We will continue to monitor the department's efforts to implement the recommendation.

Recommend closing. HCA Report complete and submitted to Congress in the beginning of January. OCMO will work with WHS and the GAO audit team to close.

GAO-15-627: DOD Business Systems Modernization: Additional Action Needed to Achieve Intended Outcomes, July 16, 2015

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<p>7. To help ensure that the department can better achieve business process reengineering and enterprise architecture outcomes and benefits, the Secretary of Defense should utilize the results of our portfolio manager survey to determine additional actions that can improve the department's management of its business process reengineering and enterprise architecture activities.</p>	<p>DOD has made progress implementing the recommendation. Specifically, in January 2017, the department issued a business enterprise architecture improvement plan. The plan was intended to address business enterprise architecture usability and deficiencies in information supporting the investment management process. As part of its planning efforts, the department identified opportunities to address the results of our survey. For example, according to the plan, our survey results were used to identify opportunities for improving management and integration of existing enterprise business processes and investments; assessing duplication early in the analysis phase and finding process and capability reuse across the department; and providing a federated business enterprise architecture information environment and capabilities to discover and exchange information from other sources. The plan included delivering three major capabilities. In October 2019, the office of the CMO demonstrated its new capabilities to GAO. Further, in October 2019, staff within the Office of the CMO were working to move the capabilities to a government- approved host environment, although the office had not yet finalized its plan to do so. As of November 2019, the department had not yet deployed the capabilities.</p>	<p>Concur - The BEA team continues to refine the governance plan, management structure and content framework in parallel with a technical implementation strategy for the BEA. This will be complete by 31 March 2020</p>
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GAO-18-130: Defense Business Systems: DOD Needs to Continue Improving Guidance and Plans for Effectively Managing Investments, April 16, 2018

<p>11. The Secretary of Defense should ensure that the DOD CIO develops an IT enterprise architecture which includes a transition plan that provides a road map for improving the department's IT and computing infrastructure, including for each of its business processes.</p>	<p>As of November 2019, DOD had not addressed the recommendation. In September 2019, the Office of the CIO provided a written response stating that it planned to address the recommendation by finalizing DOD IT Enterprise Architecture version 3 by December 31, 2019. We will continue to monitor the department's efforts to develop its IT enterprise architecture.</p>	<p>Concur - DoD CIO completed the DoD IT EA v3, and expects it to be signed out by 31 January</p>
<p>12. The Secretary of Defense should ensure that the DOD CIO and CMO work together to define a specific time frame for when the department plans to integrate its business and IT architectures and ensure that the architectures are integrated.</p>	<p>As of November 2019, DOD had not addressed the recommendation. In September 2019, the Office of the CIO provided a written response stating that the office planned to finalize the first increment of version 3 of its DOD Information Enterprise Architecture (i.e., IT enterprise architecture) by the end of December 2019 and would integrate the business enterprise architecture into the Information Enterprise Architecture. We will continue to monitor the department's efforts to integrate the architectures.</p>	<p>Concur - DoD CIO completed the DoD IT EA v3, and expects it to be signed out by 31 January</p>

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