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DEFENSE LOGISTICS

DOD Has Addressed Most Reporting Requirements and Continues to Refine Its Asset Visibility Strategy

GAO-16-88

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GAO Highlights

Highlights of GAO-16-88, a report to congressional committees

Why GAO Did This Study

DOD's 2014 *Strategy* states that to achieve a seamless and effective supply chain, DOD needs to have end-to-end visibility of its assets from acquisition to disposal and all points between. The Fiscal Year 2014 NDAA required DOD to submit to Congress a comprehensive strategy and plans for improving asset tracking and in-transit visibility, including 11 statutory elements that were specified in the mandate. The NDAA also included a provision that GAO assess the extent to which DOD's strategy and accompanying implementation plans include the 11 statutory elements; incorporate industry best practices related to automated information and data-capture technology; effectively execute DOD's IUID policies; and contain initiatives that align with DOD's overarching goals and objectives, and that have been implemented.

This report discusses the extent to which DOD's *Strategy*, plans and other documentation address the items specified by the mandate. GAO assessed DOD's 2014 *Strategy* and accompanying implementation plans submitted to Congress in response to the mandate, interviewed cognizant officials, and reviewed DOD's October 2015 *Strategy*.

What GAO Recommends

GAO made recommendations to DOD in its prior work to strengthen asset visibility. DOD agreed and has taken or is planning on taking action to address them. Consequently, GAO is not making any new recommendations in this report. GAO provided a draft of this report to DOD for advance review and comment. DOD did not provide any comments to include in this report.

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What GAO Found

The Department of Defense's (DOD's) 2014 S*trategy for Improving DOD Asset Visibility* (*Strategy)* and accompanying implementation plans fully address 6 of the 11 statutory elements required by the Fiscal Year 2014 National Defense Authorization Act (NDAA) and partially address the remaining 5. For example, the *Strategy* fully addressed asset visibility goals and objectives, and roles and responsibilities for overseeing its strategy, as required by the mandate. However, the *Strategy* did not fully address elements such as including an estimate of costs associated with executing its asset visibility implementation plans. In October 2015, DOD published its 2015 *Strategy for Improving DOD Asset Visibility* (2015 *Strategy*) in which it more fully addressed 4 of the 5 elements that were partially addressed in the 2014 *Strategy.* For example, the 2015 *Strategy* fully addresses steps DOD is taking to facilitate collaboration with industry to capture best practices, as required by the mandate. However, with the 2015 *Strategy*, DOD has not fully addressed the cost estimates element for three of its 2014 implementation plans as GAO recommended in January 2015. DOD officials said that they did not include the cost estimates for three of the implementation plans because the funding for these plans was embedded within the overall program funding and in these cases components could not isolate detailed cost estimates. DOD officials said they plan to amend their guidance before the next update to the *Strategy,* expected in fall 2016, to instruct the components on how to explain and document such cases.

DOD has also taken other actions as GAO recommended in May 2012 that GAO was required to assess with respect to asset visibility. For example, DOD's 2014 *Strategy* established milestones for implementing Item Unique Identification (IUID) to better track assets. In its 2015 *Strategy*, DOD updated these milestones. However, it is not always clear what progress DOD has made against all of the milestones set in its 2014 *Strategy*. For example, the milestones associated with updating automated information systems in the 2015 *Strategy* do not reflect progress made to date for each of the military services. GAO has previously reported that milestones provide decision makers with the information they need to assess progress and estimate realistic completion dates. If the updates to the *Strategy* do not clarify what progress DOD has made in meeting its previous milestones, the utility of these milestones will be limited. Officials agreed and commented they plan to take further action in the next update to the *Strategy* to ensure that progress that has been made is more easily understood. Finally, DOD's 2014 *Strategy* contains 22 implementation plans, which outline initiatives intended to improve DOD's asset visibility. GAO reported in January 2015 that 6 of those 22 plans had been implemented but that it was not clear how the plans linked to the goals and objectives in the *Strategy*. Since it issued the 2014 *Strategy*, DOD has implemented an additional 10 of its original 22 implementation plans, and has added information to its 2015 *Strategy* linking each of the ongoing plans to the overarching goals and objectives in the 2015 *Strategy*. By creating a clear link between the goals and objectives in the *Strategy* and implementation plans, DOD should be better positioned to monitor progress toward the implementation of its initiatives and achievement of its overarching goals and objectives for asset visibility.

Contents

Abbreviations

AIT	Automatic Identification Technology
CONOPS	Concept of Operations
DLA	Defense Logistics Agency
DOD	Department of Defense
ERP	Enterprise Resource Planning
GCSS-J	Global Combat Support System–Joint
IUID	Item Unique Identification
RDT&E	Research, Development, Test, and Evaluation
RFID	Radio Frequency Identification
SEP	Supporting Execution Plan
Strategy	*Strategy to Improve Asset Tracking and In-Transit Visibility*, implementation plans, and report
U.S. TRANSCOM	United States Transportation Command

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Congressional Committees

One of the most complex and vital tasks facing the Department of Defense (DOD) is managing its supply chain to effectively and efficiently provide spare parts, food, fuel, and other critical supplies in support of U.S. military forces. DOD's goal and challenge are to deliver the right items in the right quantities to the right place at the right time and at the right cost. Supply chain management encompasses the processes and systems for accomplishing this goal. Because of long-standing weaknesses in DOD's supply chain management, we have designated it as a high-risk area.[1] In February 2013, we reported that limitations in asset visibility—including the visibility of assets in transit—make it difficult to obtain timely and accurate information on the assets that are present in the theater of operations.[2] DOD defines asset visibility as the ability to provide timely and accurate information on the location, quantity, condition, movement, and status of items in its inventory, including assets in transit. One of the tools that DOD plans to use to improve asset visibility is a technology called Item Unique Identification (IUID). This technology allows DOD to assign a unique number to an individual item and then use that unique number to manage that item in a variety of logistics processes. In September 2015, the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics issued DOD's updated Instruction on IUID to establish policy and assign responsibilities for the process of uniquely identifying assets to enable asset accountability and life-cycle management.[3] DOD's January 2014 *Strategy for Improving DOD Asset Visibility* states that "to achieve a seamless and effective supply chain, DOD needs to have end-to-end visibility of its

[1]GAO, *High-Risk Series: An Update*, GAO-15-290 (Washington, D.C.: Feb. 11, 2015). In 1990, we began a program to report on government operations that we identified as "high risk." Every 2 years, we call attention to agencies and program areas that are high risk due to their vulnerabilities to fraud, waste, abuse, and mismanagement, or are most in need of transformation.

[2]GAO, *High-Risk Series: An Update*, GAO-13-283 (Washington, D.C.: February 2013).

[3]Department of Defense Instruction 8320.04*, Item Unique Identification (IUID) Standards for Tangible Personal Property* (Sept. 3, 2015).

assets from acquisition to disposal and all points between. Further, maintaining visibility of these assets is critical to ensure that DOD meets its stated goals and provides support to the warfighter."[4]

The Fiscal Year 2014 National Defense Authorization Act (NDAA) required DOD to submit to Congress a comprehensive strategy and implementation plans for improving asset tracking and in-transit visibility, including 11 elements that were specified in the act.[5] For example, the act called for DOD to include in its strategy and plans elements such as goals and objectives for implementing the strategy and milestones and performance measures for gauging results. The NDAA also included a provision that GAO assess the extent to which DOD's strategy and accompanying implementation plans: include the 11 statutory elements; incorporate, as appropriate, industry best practices related to automated information and data-capture technologies for asset tracking and in-transit visibility; effectively execute the department's efforts to implement Item Unique Identification (IUID); and contain initiatives that align to DOD's overarching asset tracking and in-transit visibility goals and objectives and that have been implemented.[6] In October 2014, DOD submitted to Congress its *Report to Congress on the Strategy to Improve Asset Tracking and In-Transit Visibility* in satisfaction of its mandate.[7] DOD's 2014 report incorporated its 2014 *Strategy for Improving DOD Asset Visibility* and accompanying implementation plans, which DOD refers to as Supporting Execution Plans (SEP). We refer to the 2014 strategy document, implementation plans, and 2014 report collectively as the 2014 *Strategy*. DOD subsequently updated its asset visibility strategy and implementation plans in October 2015 (2015 *Strategy*).

To assess the extent to which DOD satisfied its mandate, we reviewed DOD's 2014 *Strategy* against each of the 11 statutory elements. We determined that DOD's 2014 *Strategy* "fully addressed" an element when the documents described the entire element and "partially addressed" an

[4]Department of Defense, *Strategy for Improving DOD Asset Visibility (*January 2014).

[5]National Defense Authorization Act for Fiscal Year 2014, Pub. L. No. 113-66, § 326 (Dec. 26, 2013).

[6]DOD uses Automatic Identification Technology (AIT) capabilities such IUID as a tool for capturing data about location, quantity, and status of its assets.

[7]As discussed later in this report, DOD issued in October 2015 an update to its January 2014 Strategy.

element when the documents described some, but not all, parts of that element. When the documents did not explicitly reflect any part of an element, we determined that the element was "not addressed." As the updated strategy was released during our assessment of the 2014 *Strategy*, we reviewed the 2015 *Strategy* to determine changes made between 2014 and 2015. This report discusses the extent to which DOD's 2014 *Strategy* and implementation plans address the items specified in the mandate. We discussed with officials from the Office of the Deputy Assistant Secretary of Defense for Supply Chain Integration the elements that we determined were partially addressed in the 2014 *Strategy* and reviewed the 2015 *Strategy* to understand any ongoing efforts to address the elements more fully.

To determine what steps DOD has taken to incorporate industry best practices related to automated information and data-capture technologies and to implement Item Unique Identification (IUID), we reviewed DOD's 2014 *Strategy* to identify the information DOD included about industry best practices and IUID. We also reviewed the 2015 *Strategy* and discussed with DOD officials how the department collaborates with industry to identify and incorporate best practices. In September 2015, we attended the annual Automatic Identification Technology (AIT)[8] in DOD Symposium, where DOD officials, government leaders, business executives, and academics within the AIT industry gathered to discuss how industry technology users implement AIT to achieve higher returns on investment and how technology is being used to improve asset visibility.

Finally, to determine what progress DOD has made in implementing its 2014 Strategy's implementation plans and in aligning those plans with its overarching goals and objectives for asset tracking and in-transit visibility, we reviewed DOD's 2014 *Strategy's* plans and discussed with the components the initiatives they had implemented or were implementing to improve asset visibility. We also reviewed updates to those plans that the

[8]DOD defines AIT as a suite of technologies enabling the automatic capture of data, thereby enhancing the ability to identify, track, document, and control assets (e.g., materiel) and deploy and redeploy forces, equipment, personnel, and sustainment cargo.

components had provided to the Asset Visibility Working Group.[9] Additionally, to understand what plans were identified subsequent to the issuance of the 2014 *Strategy*, we reviewed DOD's 2015 *Strategy* and discussed with officials the current status of all of DOD's implementation plans. See appendix I for a complete list of implementation plans appearing in both the 2014 and 2015 Strategies along with their implementation status.

We conducted this performance audit from January 2014 to December 2015 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 objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We provide additional information about our scope and methodology in appendix II.

Background

DOD's supply chain is a global network that provides materiel, services, and equipment to the joint force. DOD has had weaknesses in maintaining visibility of supplies, such as problems with inadequate radio-frequency identification information to track all cargo movements.

We added this area to the High-Risk List in 1990. Since that time, we have reported on various aspects of DOD's supply chain, including asset visibility. Most recently, in our 2015 High Risk update, we reported on progress DOD has made in addressing weaknesses in its asset visibility, including developing its 2014 *Strategy for Improving DOD Asset Visibility*.[10]

DOD's Implementation of IUID

In May 2012, we evaluated DOD's implementation of IUID and found that the department had taken some steps to improve its approach to implementing IUID technology but had not employed best management

[9]The Asset Visibility Working Group, comprising representatives of each of the military services, U.S. Transportation Command (TRANSCOM), Defense Logistics Agency (DLA), and Joint Staff, is responsible for monitoring the execution of the initiatives outlined in the implementation plans. The components report the status of their initiatives to this group on a quarterly basis.

[10]GAO-15-290.

practices, such as goals and interim milestones, for gauging its progress in implementing IUID.[11] Further, we found that DOD's ability to track and share IUID data across components was hampered because the data were not fully integrated into the components' enterprise information systems. DOD had not developed complete, integrated master schedules for integrating IUID DOD-wide and within the components' systems. In 2012, we recommended several actions, including that DOD (1) develop quantifiable goals and milestones for marking its legacy items that would allow it to track progress toward those goals and (2) develop or revise master schedules for integrating IUID technology into the components' Enterprise Resource Planning Systems.[12] DOD concurred with these recommendations and stated that its IUID working group would establish interim milestones to track the progress of marking its legacy assets. Actions DOD has taken to address this recommendation in its 2014 and 2015 strategies are discussed later in this report.

DOD's Draft Strategy for In-Transit Visibility

In February 2013, we reviewed DOD's draft strategy for in-transit visibility and found that it included some, but not all of the elements GAO had previously identified as necessary for a comprehensive strategic plan, including a mission statement; a problem definition, scope, and methodology; goals and objectives; activities, milestones, and performance measures; resources and investments; information about organizational roles, responsibilities, and coordination; and a description of key external factors that could affect the achievement of goals.[13] At that time, we found that the 2013 draft strategy fully included one of the seven elements of a comprehensive strategic plan, partially included four elements, and did not include two elements. For example, we found it included overarching goals and objectives, but it did not include information on DOD's planned resources and investments to achieve those goals or key external factors that could affect the achievement of

[11]GAO, *Defense Logistics: Improvements Needed to Enhance DOD's Management Approach and Implementation of Item Unique Identification Technology*, GAO-12-482 (Washington, D.C.: May 3, 2012).

[12]These automated systems consist of multiple, integrated functional modules that perform a variety of business-related tasks, such as general-ledger accounting, payroll, and supply chain management.

[13]GAO, *Defense Logistics: A Completed Comprehensive Strategy is Needed to Guide DOD's In-Transit Visibility Efforts*, GAO-13-201 (Washington, D.C.: Feb. 28, 2013).

the goals. We recommended that DOD finalize its 2013 draft strategy and ensure that it contained all the key elements of a comprehensive strategic plan, including the elements that were not included in the draft strategy. DOD concurred with our recommendation and developed its 2014 *Strategy for Improving DOD Asset Visibility*. We discuss the extent to which DOD included many of these elements later in this report.

DOD's First *Strategy for Improving DOD Asset Visibility*

In January 2014, DOD issued its *Strategy for Improving DOD Asset Visibility*.[14] The 2014 *Strategy* included 22 implementation plans developed by the components that outlined initiatives intended to improve asset visibility.[15] We reviewed DOD's 2014 *Strategy* and reported in January 2015 that it included five of the seven elements of a comprehensive strategic plan but only partially included the other two elements.[16] For example, 4 of the 22 implementation plans did not include resources, investments, and key external factors.[17] As part of our January 2015 report, we recommended that DOD take four actions to improve its management of asset visibility including that DOD include information in subsequent updates to the *Strategy* and accompanying SEPs about which elements were used in developing cost estimates for resources and investments. DOD again concurred with our recommendations and stated in written comments included in the January 2015 report that it planned to address all four of our recommendations in its forthcoming 2015 *Strategy*. We discuss the status of these recommendations later in this report.

[14]DOD issued its 2014 Strategy in January 2014, and later, in October 2014, issued its Report to Congress, which incorporated its 2014 Strategy.

[15]We use the term components to refer to all of the organizations involved in delivering logistics capabilities to the warfighters, including the Joint Staff, DLA, U.S. Transportation Command (TRANSCOM), and each of the military services.

[16]GAO, *Defense Logistics: DOD Has a Strategy and Has Taken Steps to Improve its Asset Visibility, But Further Actions are Need*ed, GAO-15-148 (Washington, D.C.: Jan. 27, 2015).

[17]Resources and investments are the costs to implement the strategy and the sources and types of resources and investments required to meet the goals and objectives in the strategy. Key external factors are factors external to the organization and beyond its control that could significantly affect the achievement of the long-term goals contained in the strategy.

GAO's High-Risk List

In February 2015, GAO issued its 2015 High-Risk Series Update, which included DOD's Supply Chain Management.[18] For DOD asset visibility, we reported that DOD had demonstrated leadership commitment and had made considerable progress in addressing the remaining four criteria for removal from the High-Risk List (capacity, corrective-action plan, monitoring, and demonstrated progress) through actions like developing its 2014 *Strategy*. We reported that DOD needed to take a number of actions to address the remaining four high-risk criteria that it had partially met. Specifically, DOD needed to include information in updates to the 2014 *Strategy* on the factors it had used in developing cost estimates for resources and investments. We also advised that DOD needed to clearly specify the linkage between the goals and objectives in the 2014 Strategy and the plans intended to implement it. We reported that DOD should assess, and refine as appropriate, existing performance measures to ensure that these measures assess implementation of individual plans as well as progress toward achieving the overarching goals and objectives outlined in the 2014 *Strategy*. Lastly, we reported that DOD needed to continue implementing the plans identified in the 2014 *Strategy*, refining them over time as appropriate, and demonstrating that implementation of these plans results in measurable outcomes and progress toward realizing the goals and objectives in the 2014 *Strategy*. DOD concurred, and the status is discussed later in this report.

DOD's Update to the 2014 *Strategy*

In October 2015, DOD issued its update to the 2014 *Strategy*. Like its predecessor, DOD's 2015 *Strategy* states that it is intended to create a framework whereby the DOD components can work collaboratively to enhance asset visibility in a manner that provides accurate, reliable, and timely data to track assets throughout their life cycle.

[18]GAO-15-290. GAO's high-risk program serves to identify and help resolve serious weaknesses in areas that involve substantial resources and provide critical services to the public. There are five criteria for removal from the list, including leadership commitment, capacity, a corrective-action plan, monitoring, and demonstrated progress. Updates to the High-Risk List are made biennially. The most recent update was in February 2015 and it included DOD Supply Chain Management, which encompasses inventory management, materiel distribution, and asset visibility.

DOD's 2014 *Strategy* Fully Addresses Several of the Statutory Elements, and DOD's 2015 *Strategy* and Implementation Plans Fully Address Most of the Remaining Elements

DOD's 2014 *Strategy* and accompanying implementation plans fully address six and partially address five of the statutory elements set forth in the Fiscal Year 2014 National Defense Authorization Act; and DOD's 2015 *Strategy* and accompanying implementation plans address additional information for most of the statutory elements, including fully addressing four of the five elements that were partially addressed in the 2014 *Strategy*. DOD's 2014 *Strategy* and implementation plans contain limited information on its collaboration efforts with industry to identify and incorporate best practices, but its 2015 *Strategy* provides more information on its efforts to collaborate with industry, including examples where that collaboration has resulted in initiatives intended to improve asset visibility. Additionally, DOD continues to make progress in addressing weaknesses in its implementation of IUID by establishing in its 2014 Strategy milestones for its implementation of IUID. Finally, in its 2014 *Strategy*, DOD identified 22 implementation plans but did not link its plans with the *Strategy's* overarching goals and objectives. DOD has implemented 16 of its original 22 implementation plans and has identified in its 2015 *Strategy* new plans that link to the overarching goals and objectives in the 2015 *Strategy*.

DOD's 2014 *Strategy* and Accompanying Implementation Plans Fully Address Six and Partially Address Five of the Statutory Elements, and its 2015 *Strategy* Fully Addresses Four of the Five Elements Previously Reported as Partially Addressed in the 2014 *Strategy*

We reviewed DOD's 2014 *Strategy* and determined that the documents fully addressed 6 of the 11 statutory elements and partially addressed the remaining 5 (see table 1). Specifically, DOD's 2014 *Strategy* fully addressed the following 6 elements: (1) overarching goals and objectives desired from implementation of the strategy; (2) a description of steps to achieve these goals and objectives, as well as milestones and performance measures to gauge results; (3) a description of the roles and responsibilities for managing and overseeing and implementing the *Strategy*; (4) a detailed description of asset marking requirements and how automated information and data-capture technologies could improve readiness, cost effectiveness, and performance; (5) a defined list of all categories of items that program managers are required to identify for the purposes of asset marking; and (6) a description of steps to improve asset tracking and in-transit visibility for classified programs. For example, we determined that DOD's 2014 *Strategy* and accompanying implementation plans fully addressed roles and responsibilities for managing and overseeing the *Strategy* because they discuss the management structure established to oversee the execution and track progress. The 2014 *Strategy* also assigns roles and responsibilities and discusses several forums or working groups, such as the Asset Visibility Working Group, that provide a forum for discussion and input on improvements to asset visibility.

However, not all of the statutory elements were fully addressed. Specifically, the following 5 elements were partially addressed in the 2014 *Strategy*: (1) an estimate of the costs associated with executing the plan, and the sources and types of resources and investments required to meet the goals and objectives; (2) a description of key factors external to DOD and beyond its control that could significantly affect achievement of the long-term goals contained in the strategy; (3) steps to be undertaken to facilitate collaboration with industry designed to capture best practices, lessons learned, and any relevant technical matters; (4) a description of how improved asset tracking and in-transit visibility could enhance audit readiness, reduce counterfeit risk, enhance logistical processes, and otherwise benefit DOD; and (5) an operational security assessment designed to ensure that all DOD assets are appropriately protected during the execution of the strategy and implementation plan. For example, we determined that an operational security assessment was partially addressed, because while the 2014 *Strategy* provided examples of safeguards that are either in place or planned to ensure the security of DOD assets, it is not clear whether an operational security assessment had been conducted and, if it has, what the results of that assessment were.

Table 1 includes our assessment of the extent to which DOD's 2014 *Strategy* addressed the 11 statutory elements. Additionally, since DOD issued its 2015 *Strategy* during our review, we assessed the 2015 *Strategy* for changes to the strategy from 2014 through 2015.

Table 1: GAO's Assessment of the Extent That the Required Statutory Elements Were Addressed in DOD's 2014 Strategy and Accompanying Implementation Plans

Description of required elements	GAO's assessment[a]	Department of Defense (DOD) actions toward addressing required elements
1. The overarching goals and objectives desired from implementation of the *Strategy*.	●	The overall purpose, as well as the overarching goals and objectives, of the *Strategy* are explicitly stated.
2. A description of steps to achieve those goals and objectives, as well as milestones and performance measures to gauge results.	●	The *Strategy* included implementation plans that build on efforts to-date to improve asset visibility and material visibility. These plans describe the approach for addressing specific process, data and technical improvements, and logistics-related opportunities that would measurably improve asset visibility. The plans included implementation milestones and performance measures.
3. An estimate of the costs associated with executing the plan, and the sources and types of resources and investments, including the skills, technology, human capital, information, and other resources, required to meet the goals and objectives.	◐	The majority of the implementation plans included in the 2014 *Strategy* contains cost estimates but does not show what elements were included in those estimates. Further, three of the 22 plans show that either cost has yet to be determined or cost information is missing.
4. A description of roles and responsibilities for managing and overseeing the implementation of the strategy, including the role of program managers, and the establishment of mechanisms for multiple stakeholders to coordinate their efforts throughout implementation and make necessary adjustments to the strategy based on performance.	●	The 2014 *Strategy* outlines the management structure established to oversee the *Strategy's* execution and to track progress. The *Strategy* also assigns roles and responsibilities and discusses several working groups, such as the Asset Visibility Working Group, that provide a management structure for discussion and input on improvements to asset visibility.
5. A description of key factors external to DOD and beyond its control that could significantly affect achievement of the long-term goals contained in the strategy.	◐	The implementation plans are structured to identify internal and external factors that may inhibit the achievement of plan objectives, but three of the plans in the 2014 *Strategy* do not address key external factors.
6. A detailed description of asset marking requirements and how automated information and data-capture technologies could improve readiness, cost effectiveness, and performance.	●	The 2014 *Strategy* says that this element is covered by multiple sources, including DOD Instruction 8320.04 and DOD Manual 4140.01 (vol. 9), *DOD Supply Chain Materiel Management Procedures: Materiel Programs* (Feb. 10, 2014), and outlines the military standard 130N, *DOD Standard Practice Identification Marking of U.S. Military Property* (Nov. 16, 2012), as providing item marking criteria and methods of identification for military items. It also discusses specific areas where automated identification and information systems can help improve readiness, cost effectiveness, and performance.
7. A defined list of all categories of items that program managers are required to identify for the purposes of asset marking.	●	The target population of items for Item Unique Identification (IUID) marking is included in the 2014 *Strategy*.

Description of required elements	GAO's assessment[a]	Department of Defense (DOD) actions toward addressing required elements
8. A description of steps to improve asset tracking and in-transit visibility for classified programs.	●	DOD's 2014 *Strategy* cites DOD Manual 4140.01 (vol. 11), *DOD Supply Chain Materiel Management Procedures: Management of Critical Safety Items, Controlled Inventory Items Including Nuclear Weapons-Related Materiel* (Feb. 10, 2014), as providing the responsibilities and procedures requiring DOD components to apply the highest level of materiel accountability, control, visibility, protection, and identification to the stewardship of critical safety items and controlled inventory items (classified, sensitive, and pilferable) commensurate with the risk of materiel release.
9. Steps to be undertaken to facilitate collaboration with industry designed to capture best practices, lessons learned, and any relevant technical matters.	◐	The 2014 *Strategy* and plans had some limited information on collaboration with industry and few examples of where that collaboration has resulted in initiatives and improved asset visibility.
10. A description of how improved asset tracking and in-transit visibility could enhance audit readiness, reduce counterfeit risk, enhance logistical processes, and otherwise benefit DOD.	◐	The 2014 *Strategy* had some limited information on how improved asset visibility could enhance audit readiness, reduce counterfeit risk, enhance logistical processes, and otherwise benefit DOD. The 2014 Strategy includes a description of how condition and location information will improve DOD's management of its supplies.
11. An operational security assessment designed to ensure that all DOD assets are appropriately protected during the execution of the strategy and implementation plan.	◐	DOD's 2014 Strategy provides examples of safeguards that are in place or planned to ensure the security of DOD assets. However, it is not clear from this information whether an operational security assessment has been conducted and, if it has, what the results of that assessment were.

Legend:
● Fully Addressed
◐ Partially addressed
○ Not addressed

Source: GAO analysis of DOD data.| GAO-16-88

[a]We determined that the 2014 *Strategy*, which includes DOD's October 2014 *Report to Congress on the Strategy to Improve Asset Tracking and In-Transit Visibility*, and its 2014 *Strategy for Improving DOD Asset Visibility* with accompanying implementation plans "fully addressed" an element when they described the entire element and "partially addressed" an element when they described some, but not all, parts of that element.

In addition to assessing DOD's 2014 *Strategy and accompanying implementation plans* to determine the extent to which DOD satisfied its mandate, we also reviewed DOD's 2015 *Strategy*, which was issued in October 2015, to determine changes that had been made between 2014 and 2015. We found that four of the five elements that were partially addressed in the 2014 *Strategy* are fully addressed in the 2015 *Strategy*. Specifically, in its 2015 *Strategy*, DOD fully addresses

- a description of key factors external to DOD and beyond its control that could significantly affect achievement of the long-term goals

contained in the strategy;

- steps to be undertaken to facilitate collaboration with industry designed to capture best practices, lessons learned, and any relevant technical matters;

- a description of how improved asset tracking and in-transit visibility could enhance audit readiness, reduce counterfeit risk, enhance logistical processes, and otherwise benefit DOD; and

- an operational security assessment designed to ensure that DOD assets are appropriately protected during the execution of the strategy and implementation plan.

For example, DOD has added detailed discussion to its 2015 *Strategy* regarding the steps it is taking to collaborate with industry to capture best practices, lessons learned, and any relevant technical matters, including examples of where that collaboration led it to incorporate commercial automated information and data-capture technologies. The 2015 *Strategy* discusses DOD's migration of active Radio Frequency Identification (RFID)[19] from a proprietary communication standard protocol to an international standard to increase competition and lower costs and its partnership with a satellite tag provider to improve cargo tracking and the security of containerized cargo, to enable advanced cargo tracking. Additionally, DOD's 2015 *Strategy* explains how IUID information will, among other things, support "logistics support decisions," reduce the introduction of counterfeit parts into the supply chain, and support the achievement of clean audit opinions on DOD's financial statements. Further, the 2015 *Strategy* contains criteria to assist DOD in determining the operational risk associated with the loss (damage, pilferage, etc.) of parts and equipment, to include determining which DOD assets require a higher level of security and management using IUID marking.

[19]RFID is a family of technologies enabling hands-off processing of materiel deploying through the Defense Transportation System. Materiel marked with RFID tags may be remotely identified, categorized, and located automatically within relatively short distances. Active RFID tags can hold relatively large amounts of data, are continuously powered, and are normally used when a longer tag read distance is desired. Passive RFID tags temporarily store a small amount of energy received from the tag reader in order to generate a tag response. Passive RFID is used at the item, case, or pallet level.

One statutory element—an estimate of the costs associated with executing the plan, and the sources and types of resources and investments, including skills, technology, human capital, information and other resources, required to meet goals and objectives—remains partially addressed in DOD's 2015 *Strategy*. The 2015 *Strategy* calls for the components to consider items such as manpower, materiel, and sustainment costs when documenting cost estimates for the implementation plans. However, our review of the 2015 *Strategy* showed that three of the implementation plans do not include cost estimates. We recommended in our January 2015 report that DOD include information about which elements were used in developing cost estimates in subsequent updates to the strategy and accompanying implementation plans.[20] Further, we reported in our February 2015 High Risk report that these cost estimates are important to ensure that DOD has the information it needs to make well-informed decisions about asset visibility, including setting budget priorities.[21] Officials from the Office of the Deputy Assistant Secretary of Defense for Supply Chain Integration told us that the components did not include the cost estimates for the three implementation plans, pointing out that the funding for these plans is embedded within the overall program funding and it is impossible for the components to estimate the portion of total program funding associated with the plans. For example, two of the three plans that did not contain cost estimates are intended to enhance the capability of the Global Combat Support System–Joint (GCSS-J) to provide asset visibility and are funded by overall program funding for the GCSS-J rather than funding for the individual asset visibility implementation plans. Component officials argue that it is therefore impossible to isolate the costs associated with these implementation plans. We understand that the components may fund these initiatives from total program funding; and therefore, may not estimate the costs associated with the plan. However, without any idea of the cost associated with these plans, the components may be unable to determine the return on investment associated with them. We continue to believe DOD should follow its direction provided in the 2015 Strategy and require the components to estimate the costs associated with its implementation plans intended to improve asset visibility, as we have previously recommended. In October 2015, officials stated that DOD plans to provide direction in the next annual update to

[20]GAO-15-148.

[21]GAO-15-290.

the *Strategy* on how to explain and document these cases, although they commented that there will be cases where the components may not be able to isolate the costs associated with an implementation plan.

DOD Provided Limited Information in the 2014 *Strategy* on Its Collaboration with Industry but Addressed the Issue More Fully in Its 2015 *Strategy*

As previously mentioned, DOD's 2014 *Strategy* contained limited information on DOD's efforts to collaborate with industry to identify and incorporate best practices. The 2014 *Strategy* includes phrases like "capitalization on better business processes," but provides little explanation of how DOD is incorporating or has incorporated business best practices and lessons learned into its plans for improving asset visibility. DOD's 2014 *Strategy* states that this element will be discussed in DOD's 2015 *Strategy*. The 2014 *Strategy* further comments that DOD has numerous processes to keep abreast of and to evaluate or incorporate emerging technologies that show promise for enhancing DOD business processes, including participation or membership in the various AIT standards bodies, review of trade journals, and participation in trade forums. The 2014 *Strategy* references symposiums, such as DOD's AIT in DOD Summit, where AIT industry leaders and international and DOD standards representatives meet to review AIT lessons learned, among other things.

Our review of DOD's 2015 *Strategy* and implementation plans found that DOD has added information on its collaboration with industry to incorporate best practices, and has provided examples of where this collaboration has resulted in improvements to asset visibility. For example, DOD discusses the processes it utilizes for identifying and evaluating emerging technologies, such as participating in the AIT standards bodies and trade forums and DOD's Research, Development, Test, and Evaluation (RDT&E) program. Additionally, as discussed in DOD's 2015 *Strategy*, DOD worked with commercial partners to incorporate passive RFID to improve the accuracy of its inventory and decrease processing time for new recruits at Lackland Air Force Base.[22] In some cases, the 2015 *Strategy* discusses results achieved from this collaboration in terms of the performance metrics for the initiatives. For example, DOD reported testing the application of passive RFID at Lackland Air Force Base, which it found improved its inventory accuracy

[22]Passive RFID is used to improve the initial process for issuing uniforms to recruits at DOD's basic training facilities.

and reduced the time for processing recruits by over 50 percent. DOD also reported working with a commercial provider to improve cargo tracking and the security of containerized cargo. Specifically, DOD reports that by using an industry-proven process where the logistics provider—industry—owns the tracking system; DOD is able to track cargo in a more affordable way. Key practices for effective collaboration call for agencies to, among other things, develop mechanisms to monitor, evaluate, and report on results of their collaborative efforts.[23] Officials from the Office of the Deputy Assistant Secretary of Defense for Supply Chain Integration agreed that they should continue to discuss more in future updates to the *Strategy* improvements achieved for the initiatives resulting from collaboration with industry and stated that they are continuing to work with the components to assess the results stemming from the initiatives that have been implemented.

DOD Has Established Milestones for IUID Implementation in Its 2014 Strategy, and Has Updated Its IUID Instruction, but Implementation Challenges Remain

DOD's 2014 *Strategy* demonstrates progress in establishing milestones for implementing IUID, and DOD recently updated its instruction for IUID marking. In its 2014 *Strategy*, DOD provides an integrated master schedule for IUID implementation with interim milestones for fiscal years 2013 through 2017. Specifically, DOD provides an integrated master schedule showing, at the department level, issues such as marking legacy items, training, and system updates and hardware that need to be addressed to implement IUID—and the interim milestones associated with each of these issues. In addition, DOD provides a schedule for an IUID automated information system update and an IUID item marking schedule by component. These schedules provide interim milestones for each of the components that are intended to illustrate planned timelines for integrating IUID information into enterprise planning systems and for marking IUID items.

As we found in 2012, DOD faces challenges with the integration of IUID data into the components' enterprise information systems.[24] This problem is not unique to IUID, as evidenced by our March 2014 report on

[23]GAO, *Results-Oriented Government: Practices That Can Help Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005). GAO identified these practices by reviewing its body of work in this area and interviewing experts in the area of collaboration.

[24]GAO-12-482.

ammunition where we found the automated information systems used by the military services to manage and maintain accountability for DOD's ammunition inventory have limitations that affect their ability to facilitate efficient management of conventional ammunition, including that the systems cannot directly exchange ammunition data with each other.[25] Specifically, we found that several of the systems involved in DOD's overarching Enterprise Resource Planning (ERP) system were not being implemented on schedule and on budget.[26] DOD officials have said that successful implementation of ERP, which has not yet occurred, is key to resolving the long-standing weaknesses in the department's business operations in areas such as supply chain management and improving the department's capability to provide DOD management and Congress with accurate and reliable information on the results of its operations. Specifically, DOD's goal is for the components to share IUID data across many of their individual IT systems, and DOD-wide, between components. In order to accomplish enterprise-wide data sharing of this data, DOD officials stated that the components intended to use certain IT systems referred to as ERP systems. Absent successful integration of ERP, DOD is getting limited use from its IUID information, as only a few systems are able to recognize and use IUID data.

On September 3, 2015, DOD issued an update to its Instruction 8320.04, *Item Unique Identification Standards for Tangible Personal Property*. We reviewed the updated DOD Instruction 8320.04, which includes a decision tree that is intended to assist DOD components in determining which items should be IUID marked based on criteria such as whether the item is susceptible to counterfeiting.[27] DOD has reported that the use of IUID could improve the accountability and maintenance of its components' property and equipment. For example, by sharing unique item identification data across the components' IT systems, DOD could follow equipment as it moves between components. In addition, a component could use these data in its IT systems to more quickly identify items that

[25]GAO, *Defense Logistics: Actions Needed to Improve Department-Wide Management of Conventional Ammunition Inventory*, GAO-14-182 (Washington, D.C.: Mar. 31, 2014).

[26]GAO, *DOD Business Transformation: Improved Management Oversight of Business System Modernization Efforts Needed*, GAO-11-53 (Washington, D.C.: Oct. 7, 2010).

[27]According to DOD Instruction 8320.04, unique IUID identifiers are established to enable items to be tracked and traced throughout their life cycle in acquisition and logistics business processes and systems, in an integrated approach across DOD.

require higher amounts of maintenance. DOD's 2015 *Strategy* includes updated milestones for IUID marking and schedules for updating automated information systems by component for fiscal years 2015 through 2019 (the 2014 *Strategy* includes schedules for fiscal years 2013 through 2017). However, it is not always clear what progress DOD has made against the original milestones set in its 2014 *Strategy*. Specifically, while DOD's milestones for IUID marking in the 2015 *Strategy* include goals for percentages of items marked for all of the components, it is not clear what percentage of items have been marked to-date for each of the services. For example, while the Navy shows goals for the percentage of items it would like to have IUID marked by fiscal year 2018 and beyond, it does not show what percentage of items have been marked against that goal. Similarly, the milestones for updating automated information systems do not show progress made to-date. DOD officials agreed that it is not clear what progress has been made in meeting the milestones for fiscal years 2013 and 2014 for updating the military services' automated information systems and have added legends to the milestone charts and language in the *Strategy* to clarify the progress that has been made. However, in comparing the milestones in the 2014 *Strategy* and those in the 2015 *Strategy*, we are still unable to determine which of DOD's milestones for IUID marking and updating automated information systems have been achieved.

We have previously concluded that milestones provide decision makers with the information they need to assess progress and estimate realistic completion dates.[28] In May 2012, we recommended that DOD establish quantifiable interim milestones for IUID marking of legacy items, which would allow DOD to track progress toward its goals for IUID marking.[29] We also recommended that DOD develop or revise integrated master schedules for the integration of IUID technology within the components ERP systems. While DOD's establishment of milestones for its IUID implementation efforts is a positive step, the utility of those milestones will be limited if it is unclear with each update of the *Strategy* what progress DOD has made in achieving its previous milestones and how that is affecting timelines in its 2015 *Strategy*. We discussed the milestones with officials to determine whether further updates were planned to make it more apparent what progress had been made against its 2014 milestones

[28]GAO-12-482.

[29]GAO-12-482.

for IUID marking and automated information system updates, and officials agreed it was not altogether clear what progress had been made against the IUID milestones, particularly those associated with updating automated information systems. In an attempt to add clarity, DOD revised its IUID milestones for automated information system updates in the 2015 *Strategy* to reflect progress made by the Army and Marine Corps in updating their systems to read and share IUID data. The officials stated they are committed to further revising the milestones to provide insight on the progress that has been made in meeting interim milestones for integrating IUID data into DOD's automated systems. DOD officials commented in October 2015 that they will continue to capture IUID progress and plan to update the format for the automated information systems milestones to ensure that progress that has been made is more easily understood.

DOD Continues to Implement Many of the Initiatives Identified in Its 2014 *Strategy*, and Has Identified New Initiatives in Its 2015 *Strategy* While Linking Them to Its Overarching Goals and Objectives

Since issuing its 2014 Strategy, DOD has implemented 16 of its original 22 implementation plans included in its 2014 *Strategy*. However, DOD did not link its implementation plans with the 2014 *Strategy's* overarching goals and objectives. DOD added eight new implementation plans to its 2015 *Strategy* and linked each of these plans to the 2015 *Strategy's* overarching goals and objectives. Aligning agency-wide goals and objectives with strategies to achieve those goals and objectives is a key practice that could increase the effectiveness of DOD's efforts to improve asset visibility.[30] Further, leading practices to promote successful data-driven performance reviews include ensuring alignment between agency goals, program activities, and resources.[31]

DOD identified, in its 2014 *Strategy*, 22 implementation plans, which outline initiatives intended to improve asset visibility. The 2014 *Strategy* states that implementation plans detailing new initiatives identified by the components will be included in future versions of the *Strategy*. The *Strategy* also contains overarching goals and objectives for improving asset visibility. In January 2015, we found that 6 of the 22 implementation

[30]GAO, *Managing for Results: Critical Issues for Improving Federal Agencies' Strategic Plans*, GAO/GGD-97-180 (Washington, D.C.: Sept. 16, 1997).

[31]GAO, *Managing for Results: Data-Driven Performance Reviews Show Promise But Agencies Should Explore How to Involve Other Relevant Agencies*, GAO-13-228 (Washington, D.C.: Feb. 27, 2013).

plans included in DOD's 2014 *Strategy* had been implemented.[32] For example, in 2014, U.S. Transportation Command (TRANSCOM) implemented[33] a plan intended to create an integrated system for asset visibility information that is included in transportation and supply data systems and is now being used to enhance asset visibility. According to DOD, this new integrated system provides users with a single portal for viewing integrated supply and transportation data, making it possible to support virtually any business process with improved asset visibility.

We reported in January 2015 that the 2014 *Strategy* calls for components to identify at least one metric for assessing the implementation of each of its plans that are intended to improve asset visibility. However, the 2014 *Strategy* did not require that metrics developed for the plans link back to the goals or objectives in the 2014 *Strategy*, and we found that it was not clear whether the metrics link to the goals and objectives. Without creating a clear link between the goals and objectives in the 2014 *Strategy* and the plans intended to implement the 2014 *Strategy*, it will be difficult for DOD to assess progress toward realizing its goals and objectives. Therefore, we recommended that DOD ensure that the linkage between the performance measures for the individual plans and the goals and objectives outlined in the 2014 *Strategy* is clear. DOD concurred with our recommendation.

Subsequent to issuance of its 2014 *Strategy*, DOD implemented an additional 10 of the 22 original plans. For example, the U.S. Marine Corps' Blount Island Command has implemented long-range passive RFID for visibility and accountability of items, resulting in improvements including an increased range for "reading" an item—from up to 30 feet to up to 240 feet—and reduced inventory cycle times from 12 days to 10 hours. Additionally, the Joint Staff has implemented its plan to develop in-transit visibility capabilities within the Global Combat Support System-Joint (GCSS-J), a web-based logistics program that was developed to provide logisticians with visibility and decision support tools to effectively plan and execute joint logistics support for current and future operations.

[32]GAO-15-148.

[33]For the purposes of the report, we describe the status of an implementation plan as being either "implemented" or "halted." Implementation plans that have been implemented or halted are then recommended for closure, which is approved by the Asset Visibility Working Group (AVWG).

According to DOD, GCSS-J has dramatically improved functionality over the last several program releases to access and visualize logistics information. Also, after the release of the most recent software version, users graded GCSS-J as having exceeded their expectations with a 96 percent customer satisfaction rating.

While the 2014 *Strategy* introduced 22 implementation plans intended to improve asset visibility, the 2015 *Strategy* introduced additional plans. Specifically, DOD has added eight new implementation plans to its 2015 *Strategy*. For example, the U.S. Air Force's Global Enterprise Tracking initiative uses real-time location system technology to track aircraft and critical assets and is expected to reduce the time required for these assets to get through depots. Additionally, the Non-Nodal In-Transit Visibility plan is expected to improve combat effectiveness by providing near real-time visibility of sustainment cargo and confirmation of delivery of the cargo to tactical units. An overview of the initiatives included in DOD's 2014 and 2015 *Strategies* and implementation plans is included at appendix I of this report.

The 2015 *Strategy* also includes matrices that link each of DOD's ongoing implementation plans[34] to the *Strategy's* overarching goals and objectives. Additionally, measures of performance and effectiveness have been identified for each plan. For example, the measure of performance for the Navy's passive RFID plan for the Littoral Combat Ship is to conduct a technical assessment and one of its measures of effectiveness is to reduce inventory workload by 50 percent. By creating a clear link between the goals and objectives in the *Strategy* and the implementation plans intended to implement the *Strategy*, as well as identifying measures of performance and effectiveness, DOD should be better positioned to monitor progress toward the implementation of its plans and achievement of its overarching goals and objectives for asset visibility.

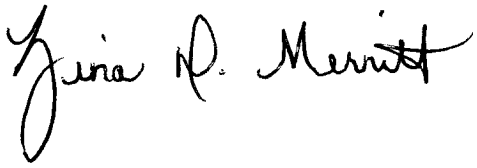
Agency Comments

We are not making recommendations in this report. We provided a draft of this report to DOD for advance review and comment. DOD did not provide any comments to include in this report.

[34]Ongoing implementation plans are those included in the 2014 *Strategy* that are not yet implemented or closed as well as new plans identified in the 2015 *Strategy*.

We are sending copies of this report to the appropriate congressional committees and the Secretary of Defense. In addition, the report is available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-5257 or merrittz@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix III.



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Director
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Appendix I: DOD's Implementation Plans to Improve Asset Visibility

This appendix provides an overview of DOD's implementation plans intended to improve asset visibility and progress in implementing those plans. These implementation plans are described in detail in both DOD's 2014 and 2015 *Strategies for Improving DOD Asset Visibility*.

The implementation plans in table 2 below were included in DOD's 2014 *Strategy for Improving DOD Asset Visibility* and have been implemented, according to DOD.[1]

Table 2: Implementation Plans Included in DOD's 2014 *Strategy* That Have Been Implemented

Implementation plans[a]	Purpose of implementation plan	Date implemented
Enterprise Automatic Identification Technology (AIT)[b] Services (Air Force)	Minimize redundant software design, development, and sustainment costs by developing common AIT capabilities for functions, such as base supply and equipment management.	June 2014
Enhanced Parachute Tracking System (Army)	Provide life-cycle management of parachutes to further enhance safety and force protection for airborne training and operations.	April 2015
Mortuary Affairs Reporting and Tracking System (Army)	A web-based tool used to manage receipt, collection, processing, and shipping of human remains and personal effects.	July 2014
Army Mobility Asset Tracking System (Army)	Track precise location of equipment, using a global positioning system, in near real time to improve accountability and oversight of assets.	May 2015
Defense Logistics Agency (DLA) Energy Bulk Fuel Satellite Tracking (DLA)	Provide visibility of fuel location and status to increase operational efficiencies and decrease fuel transport time and fuel pilferage and loss.	December 2014
DLA Item Level Passive Radio Frequency Identification (RFID)[c] for Clothing and Textiles (DLA)	Improve inventory management and accountability and reduce time and resources expended by streamlining the uniform issue process.	December 2014
Development of In-Transit Visibility Capabilities within the Global Combat Support System–Joint (GCSS-J)[d] (Joint Staff)	Provide centralized visibility and decision support for logistics.	April 2015
Afloat/Ashore Implementation of Navy Ordnance Information System AIT Capability (Navy)	Implement Navy Ordnance Information System AIT within classified domains both afloat and ashore and match existing capabilities at continental United States and unclassified sites.	April 2015

[1]For the purposes of the report, we describe the status of an implementation plan as being either "implemented" or "halted." Implementation plans that have been implemented or halted are then recommended for closure, which is approved by the Asset Visibility Working Group (AVWG).

Implementation plans[a]	Purpose of implementation plan	Date implemented
DOD AIT Concept of Operations (CONOPS)[e] for Supply and Distribution Operations Review (U.S. Transportation Command [TRANSCOM])	Make recommendations for updating the CONOPS.	October 2014
Long-Range Passive RFID (TRANSCOM)	Improve asset tracking of items, from the time they are delivered, through the maintenance cycle (including any intermediate holding areas), to when they are loaded on maritime ships.	June 2015
Asset Visibility Migration into Integrated Data Environment/Global Transportation Network Convergence (TRANSCOM)	Create a single source of integrated asset visibility and in-transit visibility data to logistics decision-making in support of current and future operations.	May 2014
Afghanistan Performance Dashboard (TRANSCOM)	Assess the distribution process supporting Operation Enduring Freedom by collecting and measuring historical and on-hand performance data.	May 2014
Active RFID Port-to-Port Tag Elimination (TRANSCOM)	Proof of Concept to show monetary savings through the reduction of man-hours and a significant reduction in the Air Mobility Command's procurement of active RFID tags by eliminating active RFID on "port-to-port" pallets.	June 2014
Geographic Combatant Command[f] In-Transit Visibility Issuance Template (TRANSCOM)	Design a template to improve the documentation and execution of both enterprise-wide and theater-specific in-transit visibility business processes for the geographic combatant commands.	June 2014
Enterprise Data Collection Layer (Air Force)	Standardize AIT architecture, deployment, and management across the Air Force enterprise.	June 2014
Air Mobility Command/Military Surface Deployment and Distribution Command AIT Implementation Business Case Analysis (TRANSCOM)	Identify quantifiable financial, manpower, resource benefit, or operational enhancements that DOD has realized as a result of using AIT at its ports.	June 2014

Source: GAO analysis of DOD data. | GAO-16-88

[a]The DOD component, the agency responsible for the development and implementation of the plan, is listed after the name of the implementation plan.

[b]DOD defines AIT as a suite of technologies enabling the automatic capture of data, thereby enhancing the ability to identify, track, document, and control assets (e.g., materiel) and to deploy and redeploy forces, equipment, personnel, and sustainment cargo.

[c]RFID is a family of technologies enabling hands-off processing of materiel deploying through the Defense Transportation System. Materiel marked with RFID tags may be remotely identified, categorized and located automatically within relatively short distances. Active RFID tags can hold relatively large amounts of data, are continuously powered, and are normally used when a longer tag read distance is desired. Passive RFID tags temporarily store a small amount of energy received from the tag reader in order to generate a tag response. Passive RFID is used at the item, case or pallet level.

[d]Global Combat Support System–Joint (GCSS-J) is the primary information-technology application to provide logisticians with automation support tools to effectively plan and execute joint logistics support operations.

[e]A concept of operations (CONOPS) is a verbal or graphic statement that clearly and concisely expresses what the joint force commander intends to accomplish and how it will be done using available resources.

[f]To perform its variety of missions around the world, DOD has six geographic combatant commands that provide unity of command over all U.S. forces in an assigned geographic region.

The implementation plans in table 3 below were included in DOD's 2014 *Strategy for Improving DOD Asset Visibility* but were halted for the reasons stated.

Table 3: Implementation Plans Included in DOD's 2014 *Strategy* That Were Halted

Implementation plan	Purpose of initiative	Date and reason halted
Positive Materiel Transfer (Defense Logistics Agency [DLA])	Improve asset tracking with materiel transfer at retail industrial activities in the continental United States and identify underperforming points in the supply chain.	July 2014 Unable to provide meaningful performance metrics
Passive Radio Frequency Identification (RFID) Receiving Validation (DLA)	Validate existing process efficiencies and determine next steps for implementing the process across all of the Department of Defense (DOD).	June 2014 Not meeting performance metrics
Next Generation Wireless Communication (TRANSCOM)	Complete development of a wireless to provide continuous visibility with less work and lower cost than other tagging technologies.	May 2014 Lack of funding

Source: GAO analysis of DOD data. | GAO-16-88

As of July 2015, the implementation plans in table 4 below were in the process of being implemented and were included in both DOD's 2014 and its 2015 *Strategies for Improving DOD Asset Visibility*.

Table 4: Implementation Plans Included in Both DOD's 2014 and 2015 *Strategies* That Are Being Implemented

Implementation plan	Purpose of initiative
Item Unique Identification (IUID)[a] Implementation Plans (DOD)	Enhance asset visibility, property accountability, product life-cycle management, reduction of counterfeit materiel risk, and financial management.
Implement Transportation Tracking Number per Joint Requirements Oversight Council Memorandum 034-09 (TRANSCOM)	Support operational-level command and control by creating unclassified tracking numbers that enable linkage and visibility of force packages without compromising operational security.
Active Radio Frequency Identification (RFID) Migration (TRANSCOM)	Eliminate the risk of having a shortage of active RFID tags or having tags with duplicate identification numbers by migrating from a proprietary standard to an open communication standard.

Source: GAO analysis of DOD data. | GAO-16-88

[a]Unique item identifiers are used globally as the common data key in property accountability and logistics automated information systems to enable asset accountability, valuation, life-cycle management, and counterfeit materiel risk reduction.

The implementation plans in table 5 below were included for the first time in DOD's 2015 *Strategy for Improving DOD Asset Visibility*.

Table 5: Implementation Plans Included in DOD's 2015 *Strategy*

Implementation plan	Purpose of initiative
Non-nodal In-Transit Visibility (U.S. Marine Corps)	Improve combat effectiveness by providing near real-time visibility of sustainment cargo at the tactical level and provide confirmation of delivery of the cargo to forward bases and units.
Enhanced Yard Management (U.S. Marine Corps)	Automate asset identification by enabling inventory control and near real-time asset visibility for infrastructure environments from robust to austere.
Theater Logistics Planning Requirements for the Global Combat Support System – Joint (GCSS-J)(Transportation Command (TRANSCOM))	Develop support capabilities to facilitate combat, security, engagement, relief, and reconstruction activities for the GCSS-J.
Passive Radio Frequency Identification (RFID) Phased-Array Project (Air Force)	Conduct a test employing passive RFID technology in the inventory process at aerial port in-transit cargo storage facilities and measure results.
Littoral Combat Ship Passive RFID Capability (Navy)	Establish an automated information system with automatic identification and data-capture capabilities to improve logistics-related and inventory-management accountability.
Develop Condition Code[a] Visibility in GCSS-J (Joint Staff)	Maximize visibility of condition codes of nonmunitions assets in GCSS-J to support joint logistics planning and execution.
Air Force Global Enterprise Tracking (Air Force)	Provide a solution for tracking Air Force assets to improve cost, schedule, and quality in depot operations.
Active RFID Intrusion Detection Transponder Operational Test (Transportation Command (TRANSCOM))	Test intrusion detection transponder with global positioning system in an operational environment, document shortcomings, and provide a way to correct any deficiencies that are identified.

Source: GAO analysis of DOD data. | GAO-16-88

[a]There are two different and distinct condition codes under the definition of federal condition codes. Supply condition codes are used to classify materiel in terms of readiness for issue and use or to identify action under way to change the status of materiel. Disposal condition codes, which describe the materiel's physical condition, are assigned by the Defense Logistics Agency Disposition Services Field Office based on inspection of materiel at time of receipt.

Appendix II: Scope and Methodology

To assess the extent to which the Department of Defense (DOD) satisfied its mandate to provide Congress a comprehensive strategy for improving asset tracking and in-transit visibility that includes each of the 11 statutory elements, we reviewed DOD's October 2014 *Report to Congress on the Strategy to Improve Asset Tracking and In-Transit Visibility*, which incorporated its January 2014 *Strategy for Improving DOD Asset Visibility* and accompanying implementation plans. We refer to the 2014 strategy document, implementation plans, and 2014 report collectively as the 2014 *Strategy*. We performed a content analysis in which two analysts independently reviewed DOD's 2014 *Strategy* and compared the information in these documents with the 11 statutory elements and assessed the extent to which DOD had addressed each required element. Any initial disagreements in the coding were discussed and reconciled by the analysts. The analysts then tallied the responses to determine the extent to which the reporting elements were addressed. We determined that DOD's 2014 *Strategy* "fully addressed" an element when the documents described the entire element and "partially addressed" an element when the documents described some, but not all, parts of that element. When the documents did not explicitly reflect any part of an element, we determined that the element was "not addressed." We discussed with officials from the Office of the Deputy Assistant Secretary of Defense for Supply Chain Integration any elements that we determined were partially addressed, to understand any efforts under way to address the elements more fully. We also discussed with officials from the Joint Staff, Defense Logistics Agency (DLA), U.S. Transportation Command (TRANSCOM), and each of the military services their roles in the development of DOD's 2014 *Strategy*.[1] DOD subsequently updated its asset visibility strategy and implementation plans in October 2015 (2015 *Strategy*). To understand enhancements made to the 2014 *Strategy*, including any efforts to more fully address those elements that were partially addressed, we reviewed DOD's 2015 *Strategy* and discussed with officials future plans for addressing those items not fully addressed in the 2015 *Strategy*.

To determine what steps DOD has taken to incorporate industry best practices related to automated information and data-capture technologies and to implement Item Unique Identification (IUID), we reviewed DOD's

[1]We use the term components to refer to all the organizations involved in delivering logistics capabilities to warfighters, including the Joint Staff, TRANSCOM, DLA, and each of the military services.

2014 *Strategy* to identify the information DOD included about industry best practices and IUID. We did not identify industry best practices that exist relating to automated information and data-capture technologies, but rather assessed whether or not DOD's 2014 *Strategy* discussed the department's efforts to collaborate with industry and any examples of where this collaboration has resulted in industry involvement in the department's plans to improve asset visibility. We also discussed with DOD officials how the department collaborates with industry to identify best practices and any work DOD has under way to enhance the discussion in the 2015 *Strategy* of its efforts to collaborate with industry. Further, in September 2015, we attended the annual Automatic Identification Technology (AIT) in DOD Symposium, where DOD officials, government leaders, business executives, and academics within the AIT industry gathered to discuss how industry technology users implement AIT to achieve higher returns on investment and how technology is working to improve asset visibility. Additionally, we discussed with officials efforts under way to update the 2014 *Strategy* and Instruction 8320.04 to address weaknesses we had previously identified and reviewed the September 2015 DOD Instruction 8320.04, *Item Unique Identification (IUID) Standards for Tangible Personal Property*, to determine what updates had been made.[2] To understand enhancements being made to the 2014 *Strategy*, including those related to the discussion of collaboration with industry and any results of that collaboration, we reviewed DOD's 2015 *Strategy* and discussed with officials implementation plans resulting from this collaboration and ongoing work to assess the effect of the collaboration on DOD's plans. Further, we also reviewed documentation resulting from agency efforts to address recommendations in our 2015 high-risk asset visibility report.

To determine what progress DOD has made in implementing its 2014 *Strategy's* implementation plans and in aligning the initiatives outlined in those plans with its overarching goals and objectives for asset tracking and in-transit visibility, we reviewed DOD's 2014 *Strategy's* implementation plans and discussed with the components the plans they had implemented or were implementing to improve asset visibility. We also reviewed updates to those implementation plans that the

[2]Prior to issuance of its updated IUID instruction in September 2015, we reviewed the draft instruction and discussed with officials the contents and plans to further refine the instruction before final issuance.

components had provided to the Asset Visibility Working Group.[3] Additionally, to understand what plans were identified subsequent to the issuance of the 2014 *Strategy*, we reviewed DOD's 2015 *Strategy* and discussed with officials the current status of all of DOD's implementation plans. See appendix I for a complete list of implementation plans appearing in both the 2014 and 2015 Strategies along with their implementation status.

We conducted this performance audit from January 2014 to December 2015 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 objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

[3]The Asset Visibility Working Group is responsible for monitoring the execution of the initiatives outlined in the Supporting Execution Plans (SEP). The components report the status of their initiatives to this group on a quarterly basis.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Zina D. Merritt, (202)512-5257 or merrittz@gao.gov

Staff Acknowledgments

In addition to the contact named above, Carleen C. Bennett, Assistant Director; Elizabeth Curda; Nicole Harris; Joanne Landesman; Amie Lesser; Felicia Lopez; Greg Pugnetti; Mike Silver; Sabrina Streagle; Susan Tindall; and Jose Watkins made key contributions to this report.

Related GAO Products

High-Risk Series: An Update. GAO-15-290. Washington, D.C.: February 11, 2015.

Defense Logistics: DOD Has a Strategy and Has Taken Steps to Improve its Asset Visibility, But Further Actions are Needed. GAO-15-148. Washington, D.C.: January, 27, 2015.

Defense Logistics: A Completed Comprehensive Strategy is Needed to Guide DOD's In-Transit Visibility Efforts. GAO-13-201. Washington, D.C.: February 28, 2013.

High-Risk Series: An Update: GAO-13-283. Washington, D.C.: February 14, 2013.

Defense Logistics: Improvements Needed to Enhance DOD's Management Approach and Implementation of Item Unique Identification Technology. GAO-12-482. Washington, D.C.: May 3, 2012.

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