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DEFENSE INTELLIGENCE

Comprehensive Plan Needed to Improve Stakeholder Engagement in the Development of New Military Intelligence System

Accessible Version

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Why GAO Did This Study

Foundational military intelligence—all-source intelligence collected by the Intelligence Community (IC) on other countries' militaries—is a critical element in planning for military operations. The DIA legacy system for processing such intelligence is unable to meet current needs, and DIA intends to replace it with MARS. MARS is expected to transform the way the IC approaches and generates foundational military intelligence. However, agencies can face a wide array of issues in developing a new system of this magnitude, including incorporating feedback from a large number of stakeholders.

A committee report accompanying the Intelligence Authorization Act for Fiscal Years 2018, 2019, and 2020 includes a provision for GAO to review MARS development. This report (1) describes the initial risks DIA and stakeholders have identified in the development of MARS and the actions DIA has taken to manage risk and (2) assesses how DIA is engaging potential stakeholders in the development of capabilities for the MARS program.

GAO reviewed related documentation; interviewed DOD and intelligence community officials about the risks to MARS development and how DIA is engaging stakeholders; and attended a stakeholder engagement meeting.

What GAO Recommends

GAO recommends that the Office of the Director of National Intelligence (ODNI), in coordination with the Secretary of Defense, ensure that DIA develops a comprehensive plan for engaging MARS stakeholders. ODNI concurred with GAO's recommendation.

View GAO-21-57. For more information, contact Brian M. Mazanec at (202) 512-5130 or mazanecb@gao.gov.

What GAO Found

The Defense Intelligence Agency (DIA) intends for its new foundational military intelligence system, the Machine-Assisted Analytic Rapid-Repository System (MARS), to have capabilities to collect and synthesize data that significantly exceed those of its legacy system. DIA began developing MARS in 2018. DIA and stakeholders have identified policy, technical, and operational risks facing the program. For example, MARS needs to ingest a significant variety of data types (e.g., signals, text, imagery), which cannot be done using any one data model. DIA's use of Agile development processes helps to manage risk to some degree, because it emphasizes continuously delivering software that addresses users' priority needs and incorporating frequent user feedback to inform development. However, these processes do not address all MARS risks, such as those related to implementing new technologies. To address these and other risks, DIA has begun establishing a risk management process. It will be important for DIA to continue to manage risk throughout MARS's life cycle.

DIA has taken a number of actions to identify the needs of Department of Defense (DOD) and intelligence community organizations that will use MARS—including combatant commands, services, and intelligence agencies—but it lacks a comprehensive plan for engaging with these stakeholders (see fig.).

Machine-Assisted Analytic Rapid-Repository System (MARS) Stakeholder Roles
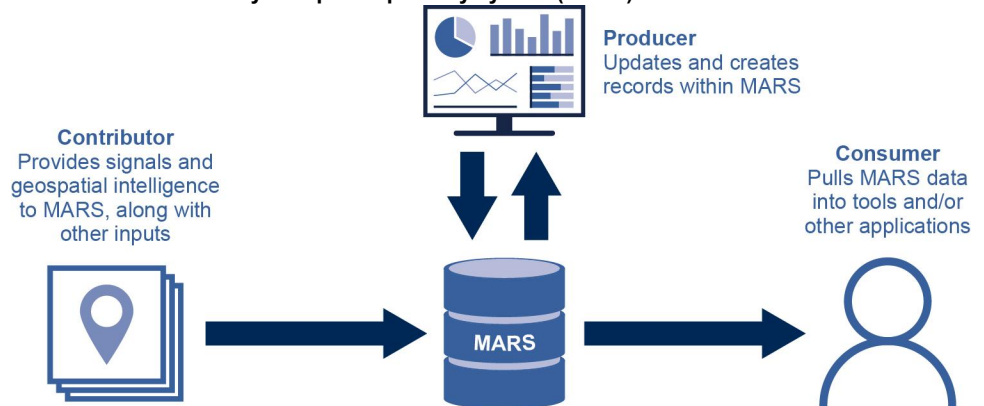
Source: GAO analysis of Department of Defense information. | GAO-21-57

DIA has conducted workshops to identify initial requirements and town halls to disseminate MARS updates. However, stakeholders expressed mixed views on the quality and extent of the program's continual engagement with them, and stakeholders were unsure about how their feedback and input are helping DIA prioritize and select MARS features. Further, DIA's initial stakeholder engagement and test plan lacks key details called for in leading practices for system development and GAO's *Agile Assessment Guide*, such as how stakeholders will be engaged at different times and how their feedback will be compiled to support the prioritization of features. Without a comprehensive plan to guide stakeholder engagement, MARS capabilities could fall short of stakeholder expectations, and DIA could face greater challenges in mitigating risks to MARS.

_____ **United States Government Accountability Office**

Contents

Abbreviations

CCMD	Combatant Command
DIA	Defense Intelligence Agency
DOD	Department of Defense
IC	Intelligence Community
IT	Information Technology
MARS	Machine-Assisted Analytic Rapid-Repository System
MIDB	Modernized Integrated Database
ODNI	Office of the Director of National Intelligence
OUSD(I&S)	Office of the Under Secretary of Defense for Intelligence and Security

November 19, 2020

Congressional Committees

Foundational military intelligence—all-source intelligence collected by the Intelligence Community (IC) on other countries' militaries and infrastructure—is a critical element in the planning for military operations. The Defense Intelligence Agency's (DIA) legacy system, the Modernized Integrated Database (MIDB), which captures such intelligence, is unable to meet current needs, and DIA intends to replace it over the long term with a new system—the Machine-Assisted Analytic Rapid-Repository System (MARS). MARS is expected to transform the way the IC approaches and generates foundational military intelligence. However, agencies can face an array of planning and technical issues in developing new information technology (IT) systems of this magnitude, including maintaining a legacy system while developing a new one and incorporating feedback from a large number of stakeholders; in the case of DIA these stakeholders include combatant commands (CCMDs), the military services, and the services' intelligence centers.[1] Given the importance of foundational military intelligence to the warfighter, it is critical for DIA to meet stakeholder expectations and have sound plans to successfully develop and employ MARS.

The House Permanent Select Committee on Intelligence's report accompanying a bill for the Intelligence Authorization Act for Fiscal Years 2018, 2019, and 2020 includes a provision for us to review MARS development.[2] Our report (1) describes the initial risks DIA and stakeholders have identified in the development of MARS and the actions DIA has taken to manage them and (2) assesses how DIA is engaging potential stakeholders in the development of capabilities for the MARS program.[3] As a result of limitations on government operations in response

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[1]According to Department of Defense (DOD) officials, the sustainment of MIDB until MARS can effectively replace it is crucial for the warfighter, particularly MIDB's provision of intelligence to DOD's targeting capabilities.

[2]H.R. Rep. No. 116-151, at 88-89 (2019).

[3]MARS stakeholders are defined by the roles they play related to MARS, which are discussed later in this report and in appendix I. These roles include consumers, producers, and contributors.

to the Coronavirus Disease 2019, we were not able to analyze classified data related to the cost and schedule of the MARS program. We plan to address these aspects of the mandate at a later date.

For our first objective, we reviewed DIA documentation and spoke with DIA officials about their efforts to identify and document risks. We also interviewed officials from other Department of Defense (DOD) and selected IC elements and reviewed documentation to identify the risks facing MARS development from their perspective.[4] We then spoke with DIA and IC officials and reviewed associated documentation to identify what actions they are taking to address and manage program risks.

For our second objective, we collected documentation and interviewed officials from DIA and other IC elements to assess how well DIA's processes and plans for MARS development adhere to key characteristics of effective user engagement as collectively laid out in the National Defense Authorization Act for Fiscal Year 2010, DOD guidance,[5] and GAO's *Agile Assessment Guide*[6]: (1) early engagement, (2) continual engagement, (3) feedback based on working software, and (4) feedback incorporated into subsequent development. For "early engagement," we reviewed DIA's process for identifying initial user needs, such as whether DIA leveraged workshops or surveys to identify these needs. For "continual engagement," we assessed DIA's ongoing mechanisms to engage stakeholders and any plans for stakeholder communications. For "feedback based on working software" and "feedback incorporated into subsequent development," we spoke with DIA officials to determine whether DIA has established a discrete process to collect user feedback and suggestions as users interact with the system. As part of this effort, we assessed DIA's stakeholder engagement and testing plan against

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[4]Officials and documents used varying terms to describe these risks, including challenges, dependencies, and risks; for clarity and consistency, we refer to them throughout the report only as risks.

[5]Section 804 of the National Defense Authorization Act for Fiscal Year 2010, Pub. L. No. 111-84 (2009), directed the Secretary of Defense to develop and implement a new acquisition process for information technology systems that, to the extent determined appropriate by the Secretary, would include early and continual involvement of the user, among other things. This statute, in addition to DOD's 2010 report to Congress in response to the statute and DOD Instruction 5000.02, *Operation of the Adaptive Acquisition Framework*, (Jan. 23, 2020) identifies the characteristics of effective user engagement for DOD acquisitions.

[6]GAO, *Agile Assessment Guide: Best Practices for Agile Adoption and Implementation*, GAO-20-590G (Washington, D.C.: September 28, 2020).

leading practices for system development, including whether it contained a specific feedback process and engagement-related metrics.[7] For a detailed description of our scope and methodology, see appendix I.

We conducted this performance audit from October 2019 to November 2020 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.

Background

Transition from MIDB to MARS

MARS is intended to eventually replace MIDB, a legacy system that has limited capability to leverage emerging technologies and available intelligence. MIDB is one of the primary systems DIA currently uses to fulfill its core mission of providing foundational military intelligence to warfighters and decision makers. This intelligence consists of information across a wide spectrum, including military capabilities of adversaries and infrastructure in all domains. However, MIDB is over 20 years old and can no longer meet the IC's current demands for information. For example, it does not include information in areas such as cyberspace and space, and it does not have enough capacity to store all the information needed by warfighters. In addition, MIDB relies heavily on manual operation—that is, human involvement to update records—and cannot use new technology such as machine learning and automation. During the multi-year transition period, MARS is intended to work in parallel with MIDB before replacing it. During this time, MIDB is expected to receive only limited software

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[7]For system development, the *Capability Maturity Model® Integration for Development* provides a comprehensive integrated set of guidelines and leading practices for developing products and services, including new software, to meet the needs of customers and end users. Models are developed by product teams with members from industry, government, and the Software Engineering Institute. See the Software Engineering Institute's *CMMI® for Development, Version 1.3* (November 2010).

enhancements to sustain it, but DIA is not planning to provide resources for any significant upgrades or modernization to MIDB.

MIDB currently connects to hundreds of DOD intelligence, planning, and operations-based tools and systems that will eventually need to connect directly to MARS, according to DOD officials. For example, the Joint Targeting Toolbox includes a number of tools and programs that support targeting for the joint force and will need to interoperate with critical MARS data. Based on information from DOD officials, a number of these systems are expected to require significant modernization before they are able to connect to MARS and take full advantage of the increased scale and scope of the data that MARS will offer, which may be costly. For instance, the Distributed Common Ground System, a system with a wide user base that includes the services, is expected to be streamlined to enable it to use MARS data and features. Other stakeholders told us that MARS development may provide an opportunity to evaluate which systems can effectively be replaced by MARS or other new systems.

MARS Stakeholders

According to DIA officials, MARS stakeholders fall into three different roles. DOD components and personnel can perform more than one role.

- **Consumers**. DOD components and individuals who use the foundational military intelligence that will be stored in MARS. Many of these would consume this intelligence through systems connected to MARS. These include the military services, the service intelligence centers, and other components such as the CCMDs.

- **Producers**. DOD components that create authoritative foundational military intelligence records in MIDB and will create and update such records in MARS. These include defense intelligence agencies, service intelligence centers, and CCMDs.

- **Contributors**. DOD or IC components that provide source information or data to support the development of foundational military intelligence and related records that will be stored in MARS. These include the National Geospatial-Intelligence Agency, the National Security Agency, and the CCMDs.

Figure 1 shows the relationships between these stakeholder roles and MARS.

Figure 1: MARS Stakeholder Roles
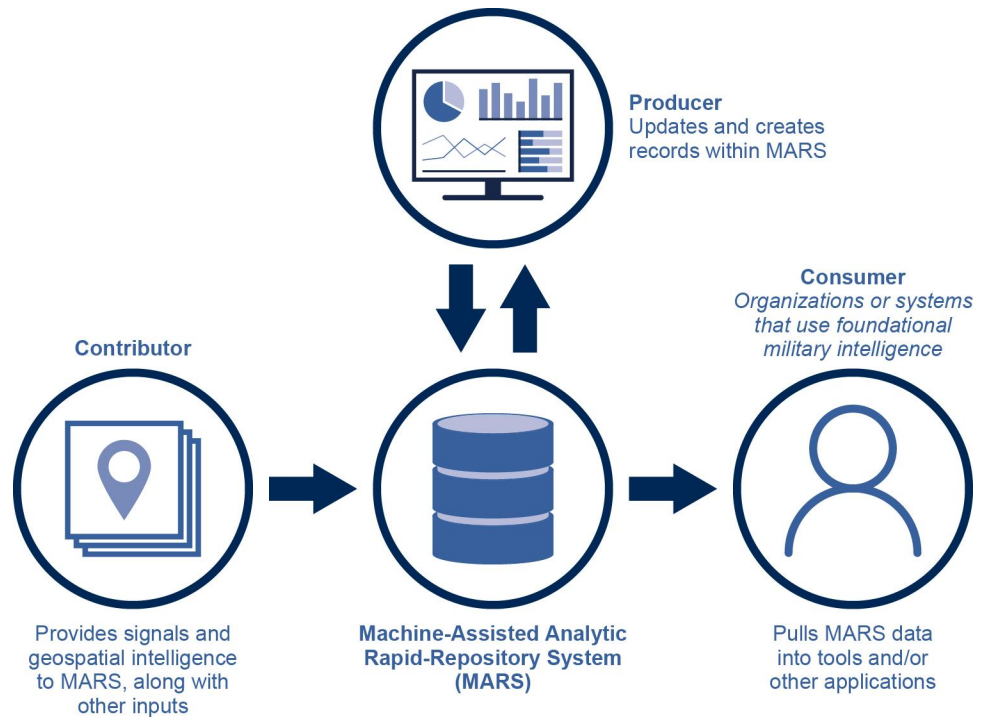
Source: GAO analysis of Department of Defense information. | GAO-21-57

MARS Acquisition

DIA began developing MARS in 2018, and MARS is currently an experimental research demonstration. The National Intelligence Acquisition Board is planning to meet in the late fall of 2020 to determine whether MARS is mature enough to be designated as a program of record.[8] The board is expected to evaluate MARS's progress to date, including the MARS infrastructure module that was released in May

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[8]The board initially planned to meet in September 2020 but was delayed because of the Coronavirus Disease 2019, according to officials in ODNI. The principal forum for executing ODNI's acquisition authorities is the National Intelligence Acquisition Board. Among other things, the board will assess the program's concept of operations, estimated life cycle costs, and its technology development strategy to determine whether MARS is ready to move from the initial concept phase of the acquisition to Concept Refinement and Technological Maturity, or Phase A.

2020.[9] The infrastructure module is the first of five modules that DIA plans to develop. Each module will focus on a specific mission area and will develop analytic functions and capabilities—such as searching for and displaying information and detecting anomalies—for that area. The other four modules are Order of Battle, Intelligence Mission Data, Cyberspace, and Space and Counterspace. As part of MARS development, targeting tools and systems will also link to data provided in all five modules, according to DOD officials. Additionally, DOD officials stated that the Office of the Director of National Intelligence (ODNI) is expected to prepare an independent cost estimate before the board meets, which will estimate the programmatic costs for MARS' lifetime. Figure 2 depicts the general timeline for MARS acquisition.

Figure 2: MARS Acquisition Timeline
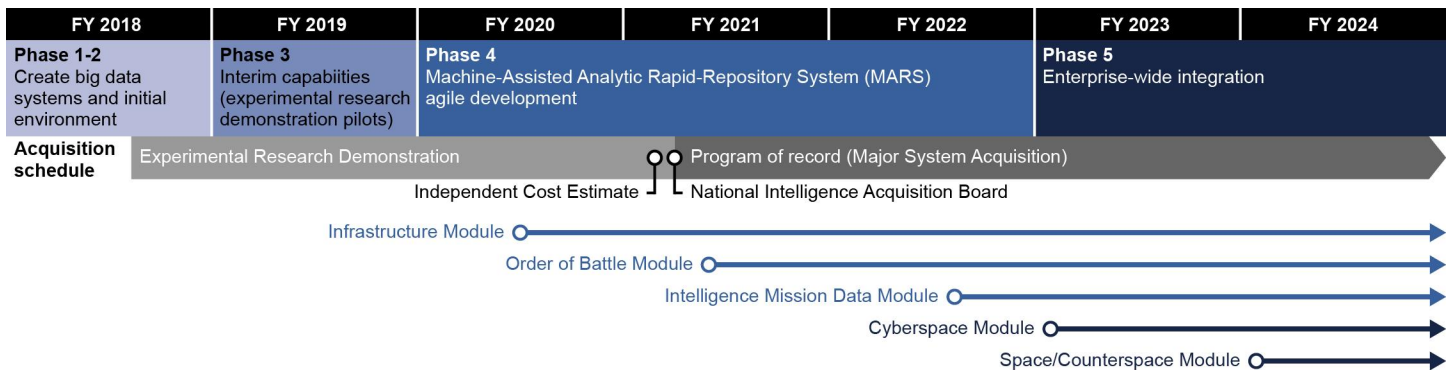
Source: GAO analysis of Department of Defense information. | GAO-21-57

MARS is expected to remedy MIDB's long-standing deficiencies and provide considerably enhanced capabilities. For instance, MIDB requires a significant amount of manual operation to perform tasks, whereas MARS is intended to use automation for many processes, such as data ingestion. MARS is also expected to provide a dynamic way of tracking order of battle information—that is, the organization, command structure, strength, disposition of personnel, and equipment of units and formations of an armed force. Currently, MIDB only offers the ability to track order of battle in a static manner. MARS is intended to track order of battle dynamically—such as tracking the positions of forces as they are on the move—in part by incorporating larger volumes of data that provide real-time updates and higher levels of automation to make these data usable

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[9]According to DOD officials, the infrastructure module released at that time provides basic functionality and is considered to be a minimally viable product. We received a demonstration of this product in August 2020.

for analysts. MARS officials also plan for MARS to include new types of data, such as emergent sources and publicly available information, which are not contained in MIDB.

Agile System Development Approach

As part of MARS development, DIA is planning to use an approach known as Agile, which enables continuous product development and delivery. The Agile approach stresses the delivery of software in short, incremental segments, which allows for greater flexibility and adaptation to meet changing customer needs and requirements. The product owner must routinely interact with stakeholders in order to fully understand how they value each feature and direct developers in the creation of a product that matches stakeholder needs and priorities. During Agile development, the priority is providing a product that maximizes value to the stakeholders. Constant feedback and communication between developer and stakeholder are crucial to achieving this priority. Figure 3 depicts the Agile development process and its emphasis on user feedback.

Figure 3: Agile Development Process
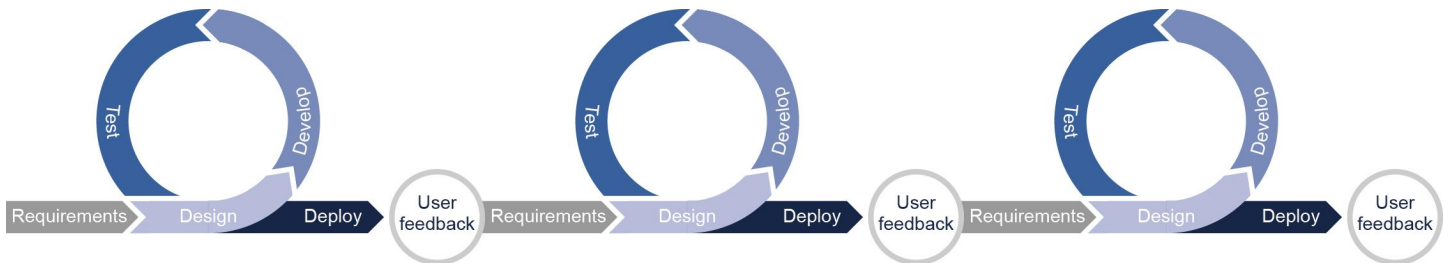
Source: GAO analysis of Department of Defense and industry documentation. | GAO-21-57

Because Agile teams are self-organizing and Agile's iterative process is viewed as a way to mitigate the risk inherent in developing complex software programs, a perception can develop that explicit risk management practices are unnecessary. All programs face risk and uncertainty, whose likelihood and potential impact should be examined. While Agile emphasizes that teams will uncover risk via early and frequent delivery of software, the potential impact of some issues, such as technical debt or team size, should be considered earlier rather than later.

The Agile approach fits within the larger context of system development.[10] System development models offer leading practices for both risk management and stakeholder involvement in the development of IT systems like MARS. For example, according to leading practices for system development, risk management is a continuous, forward-looking process intended to address issues that could endanger achievement of critical objectives before they occur. A continuous risk management approach effectively anticipates and mitigates risks that can have a critical impact on a project. Early and aggressive detection of risk is important because it is typically easier, less costly, and less disruptive to make changes and correct work efforts during the earlier, rather than the later, phases of the project. The risk management process should describe how the program is to identify, analyze, mitigate, and monitor risks. Agile development also manages risk throughout development, however, it does not focus on high level risks—such as programmatic concerns related to affordability or policy constraints that may affect how users are able to operate the system—that face the program as a whole. Additionally, system development models offer practices on how to engage stakeholders, including guidance related to the timing, prioritization, and monitoring of stakeholder input.

DIA and Stakeholders Have Identified Multiple Risks to MARS Development, and DIA Is Establishing a Risk Management Process

DIA and stakeholders have identified multiple risks that MARS will face in achieving its intended capabilities. DIA has taken some initial actions in response, including establishing a process to manage risk.

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[10]Software Engineering Institute, *CMMI® for Development, Version 1.3* (November 2010). For system development, the Capability Maturity Model® Integration for Development provides a comprehensive integrated set of guidelines and leading practices for developing products and services, including new software.

DIA and Stakeholders Have Identified Initial Risks to MARS Development and Begun Exploring Options to Mitigate Some Risks

DIA intends for MARS to have capabilities that significantly exceed the current capabilities of MIDB. These include the capability to ingest large volumes of data, support machine-assisted technologies, and include new intelligence sources such as publicly available information. To achieve these capabilities, DIA and stakeholders have identified many initial risks that must be addressed, including policy, technical, and operational risks.[11]

Policy Risks

There are many DOD and IC policies in place that govern how foundational military intelligence can be created, modified, and shared. In some cases these existing policies could limit the ways in which MARS can operate, according to DOD officials. DIA will need to ensure that such policies support its vision for a significant increase in the amount of data MARS will ingest and the number of new data sources from which it will draw. Table 1 describes in more detail some of the policy risks that DIA and MARS stakeholders have identified.

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[11]Based on information from stakeholders and our own understanding of the types of risks facing MARS, we divided risks into three categories—policy, operational, and technical. Risks were categorized based on the content of the information provided by DOD stakeholders and in coordination with GAO IT experts. We communicated our categorization to MARS officials, who agreed with both the categorization and the description we compiled for each risk. We describe these risks in the report as initial risks, because as the MARS program progresses, DIA and stakeholders may identify new risks.

Table 1: Selected Policy Risks to MARS Program Development Identified by DIA and MARS Stakeholders

Policy Risks	Description of Risks
Classification Policies	Current classification policies make it challenging to share new data streams among Intelligence Community (IC) components and with U.S. allied partners. These underlying policies do not belong to the Defense Intelligence Agency (DIA) but to other IC elements. The Machine-Assisted Analytic Rapid-Repository System (MARS) is expected to include and share significantly more data than the Modernized Integrated Database, which will exacerbate existing challenges.
Quality Assurance Process	Existing policies for the Modernized Integrated Database allow only certain defense components to update and produce records in specific intelligence areas, but DIA's intent is to allow anyone in the defense IC to add or update system records in MARS. It is unclear how DIA will ensure that these records are checked for quality and fully validated in a timely manner.
Data Standards[a]	There is some disagreement among stakeholders on what data standards are needed. Although some stakeholders have noted the need to specify new data standards, DIA has not yet disseminated a data dictionary or detailed information on the data standards it will leverage and does not plan to do so. MARS program officials have highlighted their intent to use a data model that minimizes the need for new data standards, but it is unclear how this model will be implemented.

Source: GAO analysis of Department of Defense information and interviews with Department of Defense officials. | GAO-21-57

[a]According to Department of Defense officials, data standards refer to specific data types, such as geospatial data which will be used in MARS, and how they are to be formatted within systems or for system ingest.

According to DOD officials, in some cases these policies—such as the classification policies or policies focused on data standards—are not owned by DIA. DIA officials told us that, in these instances, they will need to work with stakeholders outside of DIA to modify these policies if MARS is to be able to ingest data and disseminate records as planned. DIA officials stated that for some of these risks, such as classification policies and data standards, they are actively engaging in community forums or otherwise monitoring updates and advocating for policy changes. DIA officials have also stated that they will rely heavily on automation to manage MARS data under existing policies to ensure that the ingestion of data and the creation of new records occur seamlessly and align with existing policies, rather than trying to change policies themselves.

Technical Risks

The projected capabilities for MARS are expected to transform the current data environment, leading to many technical risks as the MARS program attempts to implement new technologies, according to DIA officials. Table 2 describes in more detail some of the technical risks that DIA and MARS stakeholders have identified.

Table 2: Selected Technical Risks to MARS Program Development Identified by DIA and Stakeholders

Technical Risks	Description of Risks
Cross-Domain Solutions	Machine-Assisted Analytic Rapid-Repository System (MARS) data need to be able to move up and down networks at higher and lower classification levels. The Modernized Integrated Database currently has this capability, but it functions in a limited manner, and MARS needs to have an improved capability in part because of the significant increase in data that MARS is expected to ingest.
Integration of Various Data Types	MARS needs to ingest a significant variety of data types (e.g., audio, text, imagery, signals), and this cannot be done using any one data model. MARS will have to use a multi-model data environment that private industry has little experience in managing or integrating.
Technical Interoperability with Other Systems	MARS needs to be interoperable with hundreds of systems used by stakeholders. The significant number of systems and the long lead time that may be needed to modify certain systems could challenge users' ability to fully utilize MARS data.
Automation	Automation of data ingest and data services is intended to be an important feature of MARS. However, MARS may be challenged to accomplish the level of automation DIA intends and to validate the algorithms supporting the automated services in a way that is clear and understandable to the analysts using the data, because the technologies to do this are immature.

Source: GAO analysis of Department of Defense information and interviews with Department of Defense officials. | GAO-21-57

DIA is working to mitigate these technical risks through a number of technology pilots. According to a DIA document, these pilots allow DIA to learn what technology is available, what its limitations are, and how private industry is handling challenges similar to those facing MARS. DOD officials reported that they have completed all of their initially planned technology pilots and that they may repeat some of them in the future to gain more information, because the pilots they have conducted have yielded mixed results. For instance, summaries of the pilots show that one pilot identified a potential cross-domain solution, while another pilot highlighted that attempts to use automation or machine learning for data ingestion may require third party developer support rather than being supportable by DIA developers.[12] Further, according to officials in the Office of the Under Secretary of Defense for Intelligence and Security (OUSD(I&S)), they have identified cross-cutting DOD intelligence systems to test whether MARS can connect and achieve interoperability with key systems. These officials added that this effort is referred to as "pathfinders" and will be used to better understand the interoperability requirements of the systems that need to interact with MARS. MARS program officials have also reported that they are using a thin data model as well as developing general application programming interfaces to help mitigate the challenge of technical interoperability for some systems.[13]

Operational Risks

According to DOD officials, DIA also faces operational risks with MARS, because the program will have to develop procedures to assure that MARS is easily usable by and accessible to stakeholders. Table 3 describes in more detail some of the operational risks that DIA and MARS stakeholders have identified.

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[12]DIA requested that the Army Research Laboratory conduct informal technical assessments of the technology demonstrations. These assessments reviewed the demonstrations and provided some technical feedback on each one. We reviewed four of these assessments.

[13]An application programming interface enables machine-to-machine communication, which can allow users to connect directly with the data set and obtain real-time data updates. This is particularly useful for large, frequently updated, or highly complex datasets. As part of its thin data model, MARS is intended to provide a simplified data model to stakeholders to incentivize ease-of-use and data acceptance that will require roughly 10 data tags for data sets that are shared between MARS and other systems.

Table 3: Selected Operational Risks to MARS Program Development Identified by DIA and Stakeholders

Operational Risks	Description of Risks
Interoperability Costs to Stakeholders	Systems that currently access the Modernized Integrated Database, the legacy system, may have to be modified at some point in order to interact with the Machine-Assisted Analytic Rapid-Repository System (MARS), although the extent of such modifications is currently unknown.[a] One initial cost estimate from Joint Staff cites a cost of $155 million to modernize three targeting systems to take full advantage of all projected MARS capabilities. However, DOD officials said that these modernization costs are beyond what would be required to access the current data available within the Modernized Integrated Database, are not imposed by the MARS program, and are separate from MARS program costs. In addition, there could be costs to stakeholders associated with modifying legacy data for interoperability, which means ensuring that legacy data are formatted in a way that allows MARS to ingest, store, and disseminate the data.
Bandwidth Concerns	MARS is intended to function as a web-based data environment that stores and processes exponentially larger amounts of data than its predecessor. This will result in higher bandwidth requirements for the systems that connect to MARS, which some stakeholders—especially at the tactical level—may not be able to accommodate. Some stakeholders stated that they do not have the capacity to build additional servers, even if it is necessary to utilize MARS. Furthermore, in environments with limited bandwidth capabilities, especially at the tactical level, it may be difficult to utilize a web-based platform such as MARS.
User Adoption	Key users may not transition to MARS if it differs too much from the Modernized Integrated Database or does not meet stakeholder requirements. If MARS and stakeholders do not ensure that users are aware of new MARS functions and know how to use them, they may go unused.

Source: GAO analysis of Department of Defense information and interviews with Department of Defense officials | GAO-21-57

[a]We talked to numerous DOD stakeholders, including combatant commands and services, who stated they have not completed cost estimates to achieve the interoperability of their systems with MARS yet because they have not yet received enough detail from DIA about the technical specifications of MARS to develop an estimate.

DIA officials stated that engagement with stakeholders will mitigate these operational risks. For instance, DIA officials reported that to mitigate the risks of user adoption they are proactively reaching out to stakeholders to demonstrate MARS features and familiarize stakeholders with them. Similarly, for the risk related to interoperability costs, DIA officials told us they will rely on communication with stakeholders to ensure that DIA's proposed technical interoperability solutions effectively solve stakeholder concerns and mitigate expenses as much as possible. Officials in OUSD(I&S) have also stated that they are actively encouraging DIA's communication with key stakeholders through DIA's pathfinder efforts to ensure they will be aware of future costs related to interoperability. Lastly, DIA officials stated that they do not yet have a mitigation strategy in place to resolve bandwidth concerns but that they are actively pursuing a solution.

DIA Is Establishing a Risk Management Process

DIA's use of the Agile approach to develop MARS builds in some risk management activities. The emphasis on early and continuous delivery of working software that addresses the users' highest priority needs, the breakdown of development work into small iterations, and the incorporation of frequent user feedback into future development help reduce risks. However, there can also be risks that would not be fully addressed by the Agile development process. The Defense Agile Acquisition Guide acknowledges that an Agile environment can result in increased complexity that must be mitigated.[14]

A DIA official stated that, accordingly, DIA has begun taking actions and developing key documents to manage risk as the program moves forward. An official reported that, to guide its efforts, DIA is establishing a risk management process as laid out in the *Department of Defense Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs*.[15] The guide outlines processes for identifying and documenting risks; analyzing and prioritizing those risks; and developing risk mitigation plans, risk monitoring, and risk reporting. A DIA official stated that, based on the process laid out in this guide, DIA is also

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[14]The MITRE Corporation, *Defense Agile Acquisition Guide* (March 2014).

[15]DOD, *Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs* (January 2017).

developing standard operating procedures on risk management for MARS. This official stated that the team working on this effort intends for this risk management process and related procedures to be used to address programmatic risks related to cost, technical, scheduling, and external risks that the Agile development process will not address.[16] An official stated that DIA is unsure about the exact timeline for finalizing the risk management process, but noted that DIA will be required by ODNI to brief the National Intelligence Acquisition Board on the status of its risk management efforts before MARS can become a program of record. This briefing is planned for late fall of 2020. Some of these efforts are detailed in a key capabilities document that DIA provided to ODNI in late June, 2020.

OUSD(I&S) officials stated that, in addition to DIA's actions, the Defense Digital Service is conducting an independent assessment of MARS that is expected to be completed in the fall of 2020.[17] Although the exact scope and focus of the review was not yet fully defined as of August 2020, officials from OUSD(I&S) anticipated the review focusing on issues such as the capability of the MARS Program Management Office to develop the product and manage contractor support. They also anticipate a high level examination of whether the program office has a clear vision of what needs to be delivered. The Defense Digital Service may also make recommendations on any efforts needed to improve MARS's chances for success. This assessment may help DIA in its overall evaluation and management of risks.

It is too soon in MARS development to know whether DIA's efforts will sufficiently mitigate the risks that the program faces, but DIA's initial risk management actions are positive. It will be important for DIA to continue to actively manage these risks with mitigations that are integrated into the acquisition and program processes throughout MARS's life cycle.

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[16]We inquired on multiple occasions about DIA's preparation to address risk with DIA, ODNI, and OUSD(I&S). During the early stages of our review, DIA had not established a risk management process. However, in July 2020, DIA provided us with documentation identifying a risk management process. We are encouraged by DIA's progress during our review.

[17]The Defense Digital Service is a technology organization within the Department of Defense that reports directly to the Secretary of Defense. The organization includes technology experts who conduct in-depth assessments of DOD's high-impact projects to evaluate each project's ability to achieve objectives and provide suggestions to improve program processes and efforts, according to DOD officials.

DIA Is Taking Actions to Provide Information to Stakeholders, but the MARS Program Lacks a Comprehensive Stakeholder Engagement Plan

DIA has taken a number of actions to identify the needs of stakeholders and engage them on the development of MARS. For example, DIA has conducted a series of workshops to identify initial requirements and town halls to disseminate MARS updates. However, stakeholders have expressed mixed views on the quality and extent of the MARS program's engagement with them, and stakeholders we spoke with were generally unsure about how their feedback and input are helping DIA prioritize and select MARS features. The MARS program is leveraging Agile development processes, which stress frequent stakeholder feedback, but the program does not have a comprehensive plan for continual engagement with and collection of feedback from stakeholders.

In the National Defense Authorization Act for Fiscal Year 2010, Congress directed the Secretary of Defense to develop and implement a new acquisition process for IT systems that, as he determined appropriate, includes early and continual involvement of the user.[18] This statute, in addition to DOD's 2010 report to Congress in response to the statute, DOD Instruction 5000.02, and GAO's *Agile Assessment Guide*, identifies characteristics of effective user engagement for DOD acquisitions, including the following:[19]

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[18]National Defense Authorization Act for Fiscal Year 2010, Pub. L. No. 111-84, § 804 (2009).

[19]DOD, *A New Approach for Delivering Information Technology Capabilities in the Department of Defense* (November 2010) was DOD's 2010 report to Congress.

- **Early engagement.** Users are involved early during development to ensure that efforts are aligned with user priorities.

- **Continual engagement**. Users are involved on a regular, recurring basis throughout development to stay informed about the system's technical possibilities, limitations, and development challenges.[20]

- **Feedback based on actual working software.** User feedback during development is based on usable software increments to provide early insight into the implementation of the solution and to test whether the design works as intended.

- **Feedback incorporated into subsequent development**. User feedback is incorporated into the next build or increment.

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[20]Section 804's requirement for early and continual involvement of the user is consistent with the recommendations in Chapter 6 of the March 2009 report of the Defense Science Board Task Force, which noted that the success of the proposed model acquisition process depended on early and continual involvement of the user. The proposed model also calls for enhanced stakeholder engagement and analytical rigor throughout the acquisition life cycle. In earlier phases of the acquisition, the program reviews should be quarterly, calendar-based events, while later phases should link such reviews with iterations or delivery of multiple, rapidly-executed increments/releases of capability. See Defense Science Board Task Force, *Department of Defense Policies and Procedures for the Acquisition of Information Technology* (March 2009).

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DIA Has Taken Actions to Engage Stakeholders, but Stakeholders Expressed Mixed Views on the Adequacy of Engagement

DIA has conducted a series of workshops to identify initial requirements and town halls and other forums to disseminate MARS updates. First, prior to beginning system development, DIA held 12 multi-day MARS workshops—including ones on infrastructure and order of battle—with CCMD, service, and Joint Staff participation, to identify stakeholder requirements for MARS, according to a DIA document. For example, the MARS office sponsored a 3-day facilitated order of battle workshop in June 2019 to identify opportunities and learn more about the mission needs of those responsible for characterizing and tracking foreign military forces, according to a workshop summary. The workshop brought together a coalition of stakeholders from three CCMDs, a Service Component Command, four DIA regional centers, and a service intelligence center. From this series of workshops, DIA was able to identify 91 capabilities and develop over 900 functional requirements known as "user stories"—the building blocks of software development. According to a list compiled by MARS program officials, some of the user stories related to the infrastructure mission area, including a requirement to see operating patterns at facilities by periods of time to enable users to understand normal operations. As the MARS program initially engaged stakeholders, including officials from the Joint Staff, six of the nine CCMDs and multiple service intelligence centers, these stakeholders stated that they participated in one or more of DIA's MARS workshops and helped to identify key stakeholder needs and MARS requirements.

Second, DIA has taken a number of actions to continually engage its MARS stakeholders. DIA, CCMD, and service officials reported different forums and tools that MARS program officials use to update and provide information on MARS to its stakeholders, including the following:

- **Town halls.** DIA has held a number of IC-wide town halls to provide high level information on MARS, according to CCMD and service officials.

- **Quarterly Program Reviews.** DIA holds quarterly update meetings on MARS progress for senior leadership in the CCMDs, intelligence agencies, joint staff, services, ODNI, and OUSD(I&S).

- **MARS Program Management Office meetings and site visits.** MARS program officials held individual meetings and visits with a significant number of DOD stakeholders—including CCMDs, services, intelligence agencies, and Joint Staff from January 2018 through January 2020.

- **MARS working groups.** DIA has hosted working groups to develop intelligence workflows related to operational readiness and production for the MARS system, according to CCMD officials.

- **MARS websites.** DIA has established websites with MARS information on the Joint Worldwide Intelligence Communications System and on the Non-Secure Internet Protocol Router Network, according to DOD officials.

However, CCMD stakeholders expressed mixed views on the quality and extent of the MARS program's continual engagement with them. On one hand, officials in six of the nine CCMDs we spoke with reported that they were satisfied with the level of engagement with DIA on MARS development or indicated that they had the opportunity to engage substantively with DIA, including in working group meetings. For example, Central Command officials told us that DIA is very open to communication and engagement on MARS and is actively addressing and communicating with Central Command on any issues that arise; these CCMD officials described their relationship with DIA as very collaborative. On the other hand, officials from three other CCMDs reported dissatisfaction with how the MARS program was engaging with them. For example, officials from Africa Command said they want MARS program officials to give them more input on the use cases they had developed and do a better job of disseminating information on MARS developments.

Service stakeholders also expressed mixed views on the quality and extent of the MARS program's continual engagement with them. Officials from Air Force Air Combat Command highlighted that they were very pleased with the considerable degree of engagement and exchange with

DIA on MARS across a broad range of their command's personnel. Officials from the National Air and Space Intelligence Center similarly reported that the MARS functional requirements team is working closely with them. However, officials from the Navy and Marine Corps expressed concern about their limited involvement in MARS development potentially leading to a lack of alignment between MARS and their services' IT modernization efforts. Air Force Headquarters officials also stated that DIA needed to develop a more systematic method for stakeholder engagement. MARS program officials stated that they always attempt to reach out to all stakeholders affected during key phases of MARS and engage with those who respond. The lead MARS program official for engaging the services explained that many of the services' personnel have heard a limited amount about the MARS program, in part because the services are not large producers of infrastructure analysis. As MARS develops follow-on modules, including ones on the order of battle and targeting, the services are expected to become more involved, because they are larger producers of intelligence in these areas, according to this MARS official.

Further, MARS stakeholders we spoke with generally said it was not clear to them how their feedback and input on the system were helping to prioritize or select the specific features for the initial and subsequent releases of MARS. Such input and prioritization are key to the Agile development methodology the MARS program is using, because shortcomings in user feedback can lead to the delivery of systems that do not meet user needs. For instance, Joint Staff officials said that they had the opportunity to affect the features included in the initial MARS release. However, five CCMDs stated that they either had not provided key input on MARS features or were unsure how the feedback they provided had been incorporated into system development. For example, officials from Central Command, Transportation Command, and Special Operations Command reported that they did not provide any input on the features being developed for the infrastructure module—the initial MARS release. DIA officials highlighted that—in order to get a working product out on deadline—they focused mainly on developing the initial MARS release instead of communicating how stakeholder input affected system development. A senior DIA representative explained that substantive stakeholder engagement to date has focused mainly on those who perform infrastructure analytic work—primarily DIA analysts within DIA

and the CCMDs—to inform the first MARS release.[21] Although we found this explanation to be generally reasonable given the status of the program, it was unclear how DIA planned to fully engage other stakeholders moving forward, as we discuss further below.

MARS's Use of Agile Development Enables Frequent User Engagement and Feedback from Stakeholders, but MARS Lacks a Comprehensive Stakeholder Engagement Plan

The MARS program's use of Agile development processes allows for frequent and iterative user engagement and feedback, based on actual working software, which is then incorporated into subsequent development. For example, Agile development calls for a designated product owner who represents the stakeholder community and has the authority to establish priorities based on stakeholder needs and approve whether the completed software meets their needs. The product owner also is to work daily with the development team to help clarify requirements, make decisions, and maintain the backlog—the primary source for all requirements that is continually updated to reflect changes and stakeholder priorities and is used to select the stakeholders' highest priorities for which capabilities that should be developed next. Agile also calls for actual working software to be demonstrated and released to users on a frequent and iterative basis and for user feedback to be incorporated into subsequent development.

These Agile processes necessitate robust stakeholder involvement, but the MARS program lacks a comprehensive stakeholder engagement plan to guide its interactions with all stakeholders and provide a common understanding to all stakeholders on what to expect. MARS program officials shared a high-level stakeholder engagement and test plan, which we reviewed.[22] The plan included some general information on selecting stakeholders, capturing feedback, and forming test groups. However, we

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[21]According to MARS program officials, for the incremental software updates leading up to the release of the infrastructure module, the MARS program focused on test groups in Central Command, Air Force's Air Combat Command, and Joint Staff as their main providers of feedback on the system, because these components are very significant stakeholders in infrastructure-related intelligence.

[22]DIA officials provided us with a brief document entitled "MARS Stakeholder Engagement/Testing Plan" that provides general information on stakeholder engagement and testing.

found that the plan lacked key details that are called for in leading practices for system development and reinforced in GAO's *Agile Assessment Guide*, such as how

- stakeholders would be engaged at different times during system development, including when specific stakeholders for each MARS module would be engaged with the program and the extent that stakeholders in later modules would have early input to requirements and design decisions that affect them,

- all stakeholder feedback would be compiled to support the prioritization of features,

- stakeholder engagement and feedback would be monitored, and

- user satisfaction would be measured.[23]

First, regarding the timing of stakeholder engagement, the senior MARS program official responsible for stakeholder engagement highlighted the difficulty of trying to engage with such a large number of stakeholders in the system. Officials in OUSD(I&S) who are responsible for MARS oversight also told us that the MARS program office could have a better stakeholder communications plan, including better communicating the MARS program's intent with stakeholders—especially how the pathfinder programs are intended to address stakeholder concerns about system interoperability—and how DIA plans to sequentially engage stakeholders during system development.

Secondly, regarding compiling feedback and linking this feedback to the prioritization of features, MARS program officials explained that, following the release of the infrastructure module, they leveraged a software application—Version One—to capture emails with stakeholder feedback on the MARS release and track the dates of these emails and of the MARS program's responses to them. MARS program officials acknowledged that for the next MARS software release, they will need to communicate better with stakeholders about stakeholder feedback and input related to the MARS features they were developing at DIA and how these features would address system requirements—key elements of Agile development. The stakeholder plan they shared with us did not lay out a clear process moving forward for responding to feedback received

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[23]Software Engineering Institute, *CMMI® for Development, Version 1.3* (November 2010).

after stakeholders interact with the system or how such feedback would help prioritize work on system features.

Lastly, regarding monitoring stakeholder engagement and measuring user satisfaction with software, a senior MARS official acknowledged that the MARS program did not have engagement metrics, which could help ensure that stakeholders stay informed and satisfied, particularly in a program with a large number of stakeholders. According to MARS officials, the program used a test survey on the initial release to collect data from stakeholders on user satisfaction, and the survey served as a primary feedback mechanism. However, MARS program officials stated that they needed to develop more specific engagement and user satisfaction metrics moving forward.

A comprehensive stakeholder engagement plan is especially important for MARS, given the large number of stakeholders and DIA's phased approach for delivering modules to different stakeholders during the program life cycle. Involving stakeholders in early stages and throughout software development allows an organization to detect deficiencies early. Industry studies have shown that the later flaws are found, the more expensive it becomes to correct them.[24] Additionally, according to our previous work, shortcomings in user involvement and feedback in programs can lead to the delivery of systems that do not meet user needs.[25] Without a comprehensive plan to guide engagement with all MARS stakeholders—CCMDs, services, and intelligence agencies—DIA risks that MARS capabilities will not fully meet stakeholder expectations and needs. Further, as previously noted, DIA is relying on engagement with stakeholders to help it mitigate certain risks to MARS development, but absent a more systematic approach to doing so, its efforts could fall short.

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[24]Software Engineering Institute, *Results of SEI Independent Research and Development Projects and Report on Emerging Technologies and Technology Trends*—Technical Report CMU/SEI-2004-TR-018, (Pittsburgh: Oct. 2004); Iosif Alvertis and Sotiris Koussouris, et al, "User Involvement in Software Development Processes," *Procedia Computer Science,* vol. 97 (2016): 73-83; JC Westland, "The Cost Of Errors In Software Development: Evidence from Industry," *The Journal of Systems and Software 62,* (2002) p.1-9*;* and Deloitte, *Agile in Government* (2017).

[25]GAO, *DOD Space Acquisitions: Including Users Early and Often in Software Development Could Benefit Programs,* GAO-19-136 (Washington, D.C.: Mar. 18, 2019).

Conclusions

Foundational military intelligence is crucial in planning military operations, but current systems for managing this intelligence are too slow, outdated, and limited in capacity to adequately support military needs. The successful development of MARS could improve the way DOD plans for and responds to military threats, improving the security of the United States. To achieve this promise of MARS development, DIA will have to address many risks to MARS development. DIA's initial risk management actions are encouraging, but it is still too early in the program's development to know whether its actions will sufficiently mitigate these risks. Further, DIA has not planned adequately for ongoing, robust engagement with all stakeholders. As a result, DIA may not be able to identify and rectify deficiencies in MARS early on in its development cycle and risks deploying a system that does not meet user needs or is underutilized. Developing a comprehensive stakeholder engagement plan could enhance DIA's communications with stakeholders, improve the likelihood that MARS will meet stakeholder needs, and strengthen DIA's efforts to mitigate program risks.

Recommendation for Executive Action

The Director of National Intelligence, in coordination with the Secretary of Defense, should ensure that the Defense Intelligence Agency develops a comprehensive plan that details how it will engage all MARS stakeholders, to include how specific stakeholders will be engaged at different times, how stakeholder feedback will support the prioritization of features, how stakeholder engagement and feedback will be monitored, and how user satisfaction will be measured.

Agency Comments and Our Evaluation

We provided a draft of this report to ODNI and DOD. ODNI provided written comments, in which it concurred with our recommendation. ODNI's written comments are reprinted in their entirety in appendix II. DOD also provided technical comments, which we incorporated into the report where appropriate, and concurred with our recommendation.

We are sending copies of this report to the appropriate congressional committees, the Director of National Intelligence, the Secretary of

Defense, the Under Secretary of Defense for Intelligence and Security, and the Director of the Defense Intelligence Agency. In addition, the report is available at no charge on the GAO website http://www.gao.gov.

If you or members of your staff have any questions regarding this report, please contact me at (202) 512-5130 or mazanecb@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.

Brian M. Mazanec
Director, Defense Capabilities and Management

List of Committees

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

The Honorable Marco Rubio
Acting Chairman
The Honorable Mark Warner
Vice Chairman
Select Committee on Intelligence
United States Senate

The Honorable Richard C. Shelby
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The Honorable Dick Durbin
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

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Committee on Armed Services
House of Representatives

The Honorable Adam Schiff
Chairman
The Honorable Devin Nunes
Ranking Member
Permanent Select Committee on Intelligence
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: Scope and Methodology

To identify key risks facing the Machine-Assisted Analytic Rapid-Repository System (MARS) and Defense Intelligence Agency's (DIA) efforts to mitigate these risks to date, we reviewed documents such as DIA's *Statement of Capabilities-Interim*, technology demonstration assessments, and a technical risk summary. The risk assessment component of internal control—including the organization's identification of, analysis of, and response to risk—was significant to this objective. We assessed DOD's approach to the identification of, analysis of, and response to risks through MARS documentation and interviews with MARS stakeholders. We interviewed stakeholders to understand stakeholder perspectives on initial risks.[1] (See discussion of stakeholders later in this section.) We summarized selected risks identified by program documentation, DIA officials, and stakeholders and categorized each as a policy, operational, or technical risk. Risks included in our summary table were mentioned in multiple DIA documents or referenced by numerous stakeholders. We categorized risks based on the content of the information provided by DOD stakeholders and in coordination with GAO IT experts. We presented this summary document to DIA for validation; DIA officials validated our summary of key risks and described their mitigation efforts for each risk. To describe DIA's risk management efforts, we interviewed officials from the DIA MARS Program Management Office and a variety of stakeholder organizations and reviewed key documents, such as DOD's Technical Risks summary document and Army Research Laboratory technology pilot reviews. We spoke with oversight officials from the Office of the Director of National Intelligence (ODNI) and the Office of the Under Secretary of Defense for Intelligence and Security (OUSD(I&S)) to understand what risk management efforts DIA is expected to make and the expected time line for these efforts. We reviewed documents such as the DOD's *Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs* to understand DIA's intended risk framework.

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[1]Officials and documents used varying terms to describe these risks, including challenges, dependencies, and risks; for clarity and consistency, we refer to them throughout the report only as risks. We describe these risks in the report as initial risks, because as the MARS program progresses, DIA and stakeholders may identify new risks.

To assess how DIA is engaging potential stakeholders in the development of capabilities for the MARS program, we collected documentation and interviewed officials from DIA and other DOD and IC elements to assess how DIA's processes and plans for MARS development adhere to key characteristics of effective user engagement as laid out in the National Defense Authorization Act for Fiscal Year 2010, DOD guidance,[2] and GAO's *Agile Assessment Guide*[3]: (1) early engagement, (2) continual engagement, (3) feedback based on working software, and (4) feedback incorporated into subsequent development.

- For "early engagement," we reviewed DIA's process for identifying initial user needs, such as whether DIA leveraged workshops or surveys to identify these needs. The GAO *Agile Assessment Guide* notes that the process for collecting customer needs and expectations relies in part on surveys and forums, which could include workshops.

- For "continual engagement," we identified DIA's ongoing mechanisms to engage stakeholders and any plans for stakeholder communications. We spoke with DIA officials from the MARS Program Management Office, as well as officials from a wide variety of stakeholder organizations, to identify the forums and tools DIA was using to communicate MARS progress and updates, such as town halls and quarterly program reviews. We interviewed MARS stakeholders—including 9 of 11 Combatant Command (CCMDs) and service headquarters and intelligence center officials—to understand the relative quality of the engagement they were receiving on MARS. For quality of engagement, we asked whether stakeholders were receiving enough technical details on MARS to meet their needs and were generally satisfied with the level of communications from DIA.

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[2]Section 804 of the National Defense Authorization Act for Fiscal Year 2010, Pub. L. No. 111-84 (2009), directed the Secretary of Defense to develop and implement a new acquisition process for information technology systems that, to the extent determined appropriate by the Secretary, would include early and continual involvement of the user. This statute, in addition to DOD's 2010 report to Congress in response to the statute and DOD Instruction 5000.02, *Operation of the Adaptive Acquisition Framework*, (Jan. 23, 2020), identifies the characteristics of effective user engagement for DOD acquisitions.

[3]GAO, *Agile Assessment Guide: Best Practices for Agile Adoption and Implementation*, GAO-20-590G (Washington, D.C.: September 28, 2020). The guide presents best practices to assess Agile adoption, execution, and program monitoring and control that can be used across the federal government for agencies' IT investments that rely on Agile methods.

- For "feedback based on working software" and "feedback incorporated into subsequent development," we interviewed DIA officials to determine whether DIA has established a discrete process to collect user feedback and suggestions as users interact with the system. We interviewed them also to understand whether their stakeholder feedback and input was being used by the MARS development team to determine and prioritize the MARS features in the software releases and affect MARS development. As part of this effort, we assessed DIA's stakeholder engagement and testing plan—a document DIA provided to us—against leading practices in system development, such as whether it included a specific feedback process and engagement-related metrics.[4]

We also attended in person a MARS town hall meeting to observe DIA's stakeholder engagement and observed a demonstration of the MARS infrastructure module to gain an understanding of DIA's progress on the development of MARS.

DOD and Other Organizations with Whom GAO Conducted Interviews

In support of our work, we interviewed officials from the DOD and IC organizations listed here. We selected these organizations based on their involvement in development, testing, outreach, and usage of both MIDB and MARS. In particular, we selected stakeholders based on the roles they will play in MARS, as identified by DOD officials. These roles include the following: (1) consumers, which are DOD components that will use the foundational military intelligence that will be stored in MARS, (2) producers, which are DOD components that will create and update authoritative foundational military intelligence records in MARS, and (3) contributors, which are DOD or IC components that will provide source information or data to support the development of foundational military intelligence and related records that will be stored in MARS. We interviewed the stakeholder organization one time, but the interview included numerous officials from within the organization who will use MARS. The full list of organizations that we interviewed follows:

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[4]For system development, the Capability Maturity Model® Integration for Development provides a comprehensive integrated set of guidelines and leading practices for developing products and services, including new software. *See* Software Engineering Institute, *CMMI® for Development, Version 1.3* (November 2010).

United States Government Organizations

- Defense Intelligence Agency
    - Program Management Office
        - Technical Operations
        - Program Manager
        - Strategic Engagement Chief
    - Chief Intelligence Officer
- Office of the Director of National Intelligence
- Office of the Under Secretary of Defense for Intelligence and Security
- Office of the Principal Cyber Advisor
- Joint Staff
- Combatant Commands
    - Central Command
    - Indo Pacific Command
    - Strategic Command
    - Special Operations Command
    - Africa Command
    - Transportation Command
    - Cyber Command
    - Southern Command
    - European Command
- National Geospatial-Intelligence Agency
- National Reconnaissance Office
- National Security Agency
- U.S. Air Force
    - Headquarters
    - Air Combat Command
    - National Air and Space Intelligence Center

- U.S. Army
  - Headquarters
  - National Ground Intelligence Center
  - Army Intelligence and Security Command
- U.S. Navy
  - Naval Information Warfare Systems Command
  - Naval Intelligence Activity Chief Information Officer
- U.S. Marine Corps
  - Headquarters
  - Marine Corps Intelligence Activity

Other

- United Kingdom Defence Intelligence

We conducted this performance audit from October 2019 to November 2020 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.

Appendix II: Comments from the Office of the Director of National Intelligence

UNCLASSIFIED

OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE
WASHINGTON, DC

OCT 3 0 2020

Brian Mazanec
Acting Director
Defense Capabilities and Management
Government Accountability Office
441 G. St. NW
Washington, DC 20548

Dear Mr. Mazanec:

The Office of the Director of National Intelligence (ODNI) appreciates the opportunity to participate in the Government Accountability Office audit of the Defense Intelligence Agency's (DIA) Machine Assisted Rapid Repository System (MARS) Program. We have reviewed the draft report titled: *Defense Intelligence Comprehensive Plan Needed to Improve Stakeholder engagement in the Development of New Military Intelligence System* (GAO-21-57SU).

ODNI concurs with the findings GAO has expressed in the draft report as they relate to requirements management and the MARS Program Management Office's ability to identify and document technical and programmatic risks within the program and with its recommendation that ODNI, in coordination with the Secretary of Defense, ensure that DIA develops a comprehensive plan for engaging MARS stakeholders.

If you have any questions regarding this matter, you may contact Legislative Affairs, at (703) 275-2474.

Sincerely,

Robert L. Cooper
Acting Assistant Director for
Legislative Affairs

UNCLASSIFIED

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Brian M. Mazanec, (202) 512-5130 or mazanecb@gao.gov.

Staff Acknowledgments

In addition to the contact named above, key contributors to this report were Kasea Hamar, Assistant Director; Tracy Barnes; Robert Breitbeil; Carolyn Demaree; Emile Ettedgui; Joanne Landesman; Jennifer Leotta; and Jeanne Sung.

Appendix IV: Accessible Data

Appendix IV: Accessible Data

Agency Comment Letter

Accessible Text for Appendix II Comments from the Office of the Director of National Intelligence

OCT 30 2020

Brian Mazanec
Acting Director
Defense Capabilities and Management
Government Accountability Office
441 G. St. NW
Washington, DC 20548

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Sincerely,

Page 37   **GAO-21-57 Defense Intelligence**

Robert L. Cooper
Acting Assistant Director for
Legislative Affairs

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Related GAO Products

Agile Assessment Guide: Best Practices for Agile Adoption and Implementation. GAO-20-590G. Washington, D.C.: September 28, 2020.

Intelligence Community: Actions Needed to Enhance Oversight of Business Functions and Systems. GAO-18-584SU. Washington, D.C.: Sep. 21, 2018.

DOD Space Acquisitions: Including Users Early and Often in Software Development Could Benefit Programs. GAO-19-136. Washington, D.C.: Mar. 18, 2019.

Space Command and Control: Comprehensive Planning and Oversight Could Help DOD Acquire Critical Capabilities and Address Challenges. GAO-20-146. Washington, D.C.: Oct. 30, 2019

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