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Report to the Chairman, Committee on Armed Services, House of Representatives

June 2017

ARMY WEAPON SYSTEMS REQUIREMENTS

Need to Address Workforce Shortfalls to Make Necessary Improvements

Accessible Version

GAO-17-568

GAO Highlights

Highlights of GAO-17-568, a report to the Chairman, Committee on Armed Services, House of Representatives

June 2017

ARMY WEAPON SYSTEM REQUIREMENTS

Need to Address Workforce Shortfalls to Make Necessary Improvements

Why GAO Did This Study

Over the past decade, the Army spent over $20 billion annually to develop and acquire weapon systems, yet it canceled many of them due, in part, to the realization that requirements would not be met. In 2011, the Secretary of the Army commissioned a report (called the Decker-Wagner report) to identify why the Army has experienced a poor acquisition track record. One contributing factor identified in the report was poorly developed requirements.

GAO was asked to review the Army's process for developing weapon system requirements. This report (1) identifies what actions the Army has taken to improve its requirements development process since 2011; (2) evaluates the extent to which the Army ensures that requirements are well-informed and feasible: and (3) provides information on the current status of nine major defense programs. GAO reviewed the Decker-Wagner report and actions taken; reviewed Army requirements policy documentation and interviewed officials; assessed the composition of the requirements development workforce; and analyzed a non-generalizable sample of nine case studies of major defense acquisition programs, selected based on their acquisition phase.

What GAO Recommends

GAO recommends that the Secretary of the Army conduct an assessment of the requirements development workforce needed to support the requirements process. The Army concurred with this recommendation.

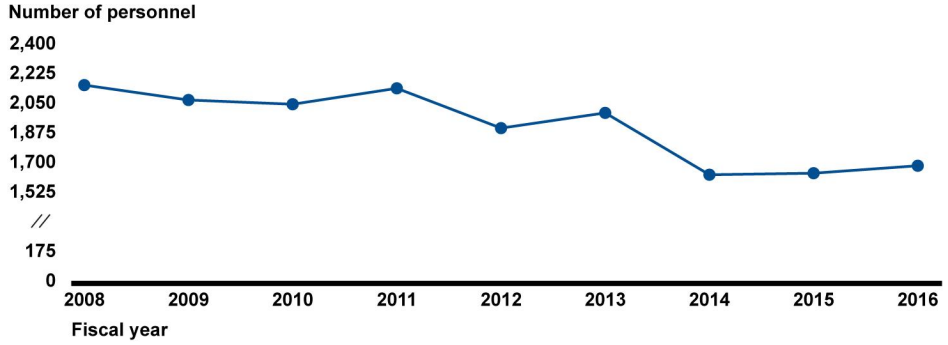
View GAO-17-568. For more information, contact Marie A. Mak at (202) 512-4841 or makm@gao.gov.

What GAO Found

Since 2011, the Army has taken a number of actions to improve its requirements development process for major defense acquisition programs. For example, the Army has established teams of research analysts at its Centers of Excellence—where requirements are generated—to provide greater analytical support. Further, it has instituted knowledge reviews to provide Army leadership the opportunity to make informed decisions early in a major defense acquisition program. Additionally, the Army Chief of Staff, as a result of this review conducted pursuant to section 801 of the National Defense Authorization Act for Fiscal Year 2016, has elevated and modified the role and composition of the Army Requirements Oversight Council. However, the Army is still determining the methodologies and metrics to assess the council's performance and its effectiveness.

Even with these actions, GAO found that the Army is unable to ensure requirements for major defense acquisition programs are well-informed and feasible, as its requirements development workforce is declining. The requirements development workforce has decreased by 22 percent since 2008, with some requirements development centers reporting more significant reductions. The current status of the requirements development workforce is driven in part by the Army's prioritization of readiness amid funding constraints. Federal standards for internal controls state that management should establish the organizational structure necessary to achieve its objectives and periodically evaluate this structure. Until the Army comprehensively assesses the needs of its requirements development workforce—to include research analysts, systems engineers, and others—it will continue to lack the necessary foundation for viable major acquisition programs.

Army Requirements Development Workforce



Source: GAO analysis of TRADOC data. | GAO-17-568

GAO's analysis of nine Army weapon acquisition programs illustrates that the un-executable requirements and negative program outcomes, which a 2011 Army commissioned report described, continue to exist. GAO's best practices work identifies the factor that separates successful from unsuccessful programs as the presence of requirements informed by early, robust systems engineering analyses. Of the nine programs GAO reviewed those that lacked such analyses generally faced developmental challenges.

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Abbreviations

AMPV	Armored Multi-Purpose Vehicle
AROC	Army Requirements Oversight Council
CIRCM	Common Infrared Countermeasure
DOD	Department of Defense
GCV	Ground Combat Vehicle
IFPC Inc. 2-I Block 1	Indirect Fire Protection Capability Increment 2 Intercept Block 1
ITEP	Improved Turbine Engine Program
JAGM	Joint Air-to-Ground Missile
JLTV	Joint Light Tactical Vehicle
LRPF	Long Range Precision Fires
M109A7 FOV	M109A7 Family of Vehicles
TRADOC	Training and Doctrine Command

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U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

June 22, 2017

The Honorable Mac Thornberry
Chairman
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

Over the last decade, the Army has spent over $20 billion a year developing and acquiring weapon systems to execute its mission of defending the nation and protecting vital interests. Fundamental to this mission is having the right equipment to counter existing and emergent threats. Despite the large investment in acquisition programs, the Army canceled a series of new major weapon systems designed to replace aging weaponry due, in large part, to the realization that requirements would not be met.

The Army's problematic record for completing weapon systems was the subject of a panel review chartered by the Secretary of the Army. Its January 2011 report (known as the Decker-Wagner report named for the panel's co-chairs) concluded that one contributing factor was that the Army's requirements development process was "broken."[1] As this report presented, from 2000 to 2009, the Army invested nearly $30 billion in development costs on canceled programs as well as experienced delays in fielding needed warfighter capabilities. Further, the report made a number of recommendations to improve the overall acquisition process, including enhancements to its requirements development process. While the Army took action to implement a majority of the recommendations in the Decker-Wagner report, and other independent actions as well, problems in its requirement development process persist as major acquisition programs continue to experience negative outcomes—such as cost growth, schedule delays, and cancellations.

You asked us to review the effectiveness of the Army's process for developing requirements for major weapon systems. This report (1) identifies what actions the Army has taken to improve its requirements development process since 2011, (2) evaluates to what extent the Army

[1]Office of the Secretary of the Army, *Army Strong: Equipped, Trained and Ready, Final Report of the 2010 Army Acquisition Review* (Washington, D.C.: Jan. 2011).

ensures that requirements are well-informed and feasible to facilitate successful acquisition outcomes, and (3) provides information on the current status of nine major defense programs.

To identify what actions the Army has taken to make improvements to its requirements development process, we reviewed the Army's requirements development and acquisition process. We also reviewed the "Decker-Wagner" report and evaluated actions taken in response to recommendations made in that report. In addition, we also reviewed relevant acquisition statutes, DOD acquisition policy and guidance, and Army regulations. To assess the extent to which the Army ensures that requirements are well-informed and feasible to facilitate successful acquisition outcomes, we assessed the composition of personnel at key requirements development organizations across the Army's capability areas. We also assessed the extent of requirements development that was done to mitigate risk before programs enter system development for nine case study programs. We selected a non-generalizable sample of nine Army major defense acquisition programs which had commenced technology development efforts or system development—or underwent major restructurings—since 2011.[2] We also assessed individual program requirements, cost and schedule documentation, and technology maturity. In addition, we analyzed data from program system engineering reviews and reviewed program acquisition strategies, acquisition program baselines, and selected acquisition reports. By reviewing existing information about the data and interviewing knowledgeable agency officials we determined that the data were sufficiently reliable for the purposes of our reporting objectives. We also reviewed previous GAO reports examining weapon systems acquisitions and best practices for product development.[3] See appendix I for additional information on our objectives, scope, and methodology.

[2]Major defense acquisition programs are those identified by DOD or with a dollar value for all increments estimated to require eventual total expenditure for research, development, test, and evaluation of more than $480 million, or for procurement of more than $2.79 billion, in fiscal year 2014 constant dollars.

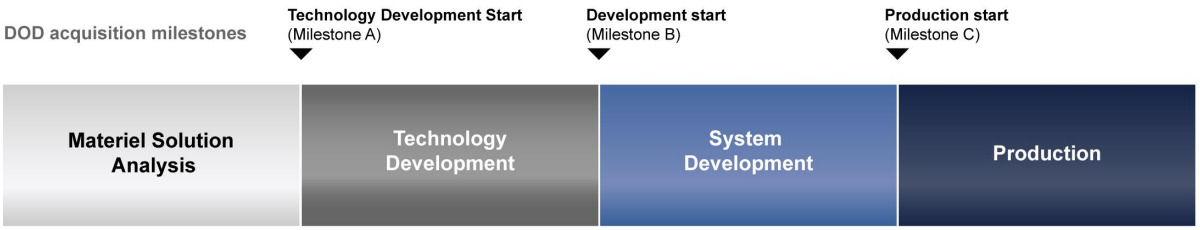
[3]GAO, *Defense Acquisition Process: Military Service Chiefs' Concerns Reflect Need to Better Define Requirements before Programs Start*, GAO-15-469 (Washington, D.C.: June 11, 2015); *Defense Acquisitions: Major Weapon Systems Continue to Experience Cost and Schedule Problems under DOD's Revised Policy*, GAO-06-368 (Washington, D.C.: Apr. 13, 2006); *Best Practices: Capturing Design and Manufacturing Knowledge Early Improves Acquisition Outcomes*. GAO-02-701 (Washington, D.C.: July 15, 2002); and *Best Practices: Better Matching of Needs and Resources Will Lead to Better Weapon System Outcomes*, GAO-01-288 (Washington, D.C.: Mar. 8, 2001).

We conducted this performance audit from March 2016 to June 2017 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

The Army's primary mission is to fight and win the nation's land wars. While the Army is responsible for providing the bulk of the nation's ground combat forces, it has a wide-range of units supporting both combat forces and other major military organizations. The Army's requirement development community separates capabilities into eight areas: aviation, cyber, fires, intelligence, maneuver, maneuver support, mission command and sustainment. As with all major DOD programs, the Army's acquisition process for major defense acquisition programs consists of four phases: the materiel solutions analysis phase, the technology development phase known as Technology Maturation and Risk Reduction, the system development phase, and the production phase. At the end of each of these phases, there is a milestone review to determine if an acquisition program has met all relevant DOD regulations and federal statutes, as shown in figure 1 below.

Figure 1: DOD Acquisition Process



Source: GAO analysis of Department of Defense (DOD) Instruction 5000.02. | GAO-17-568

Each of these four phases is subject to incremental reviews and approvals by senior Army staff leading up to the Chief of Staff of the Army for approval.

Before these phases begin, the Army must establish requirements to guide the acquisition process. Requirements are the operational performance attributes (testable or measurable characteristics) necessary for the acquisition community to design a proposed system and establish

an acquisition program baseline. This includes key performance parameters and key system attributes that guide a program's development, demonstration, and testing.

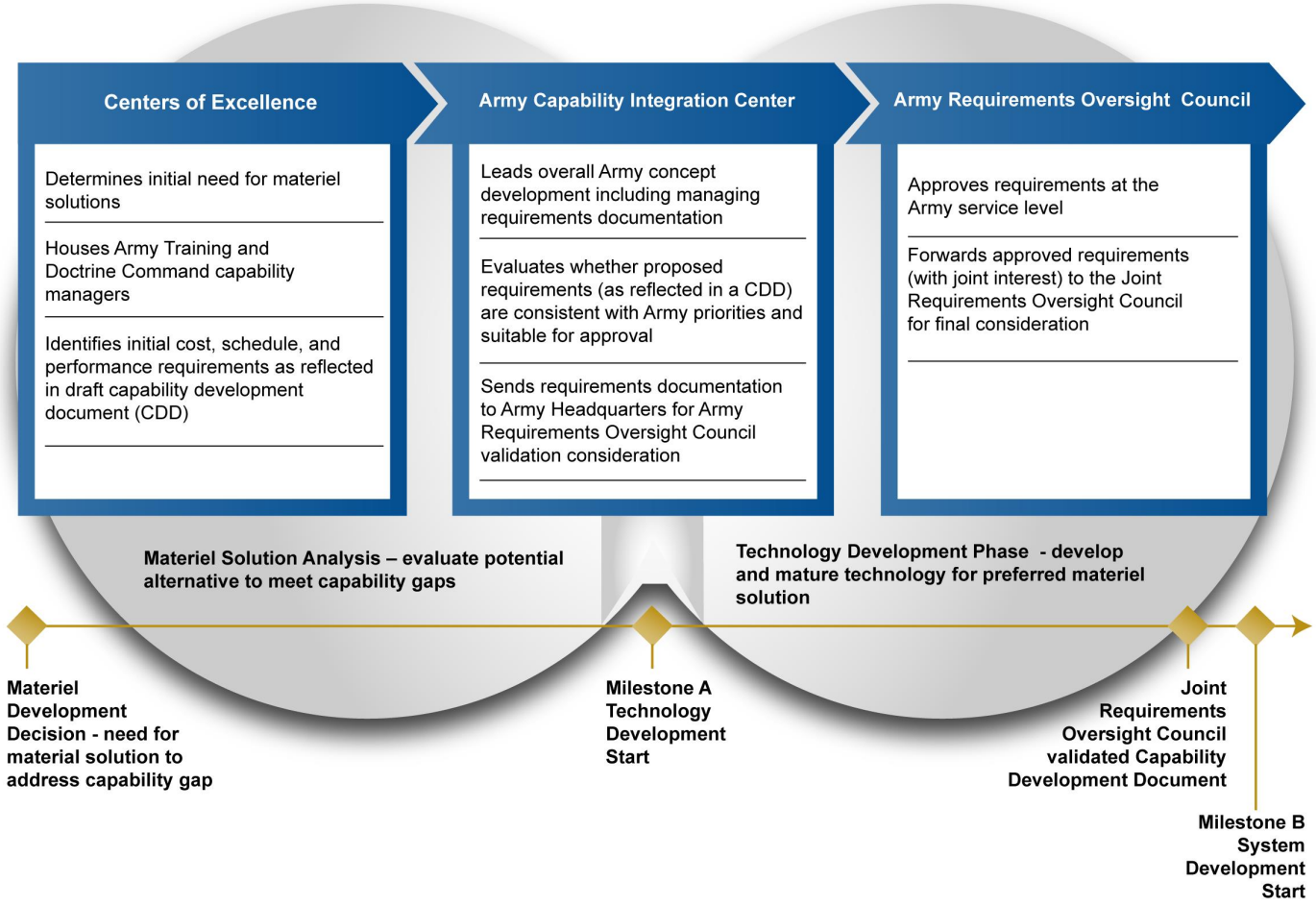
To facilitate the development of requirements, the Army's Training and Doctrine Command (TRADOC) identifies Army warfighting challenges that must be addressed.[4] These challenges provide a framework for guiding efforts to deliver new or improved materiel capabilities to the warfighter. TRADOC submits an initial requirements document—known as an Initial Capabilities Document—to Army Headquarters that identifies a warfighting capability gap; the operational risks associated with the gap; and a recommended solution or preferred set of solutions for filling the gap. Potential solutions are then assessed in an analysis of alternatives, system capabilities are chosen, and top-level requirements are defined in a draft Capability Development Document. This document goes through several stages of service- and DOD-level review before it is finalized by the Joint Requirements Oversight Council. The Council is chaired by the Vice Chairman of the Joint Chiefs of Staff and is comprised of the Vice Chiefs of Staff of each military service and the Combatant Commanders as applicable. After the top-level requirements are defined, they are further refined to identity operational performance characteristics. Throughout this process, decision makers can make informed trades between the requirements and available resources, potentially achieving a match.

Within TRADOC, key organizations—including the Army's Capabilities Integration Center and the Centers of Excellence identify and address capability gaps.[5] As figure 2 indicates, these entities have a key role in shepherding potential requirements through the Army's acquisition process.

[4]TRADOC is part of the Army's institutional forces which support activities such as training that enable operational forces to deploy and fight. It is viewed as the Army's "architect of the future" as it develops future warfighting concepts and doctrine.

[5]The Army's eight Centers of Excellence are arranged by capability areas: Aviation, Cyber, Fires, Intelligence, Maneuver, Maneuver Support, Mission Command, and Sustainment.

Figure 2: Overview of the Army's Key Requirements Organizations and their Relationship to the Acquisition Process



Source: GAO analysis of Army and DOD documentation. | GAO-17-568

To execute their roles and responsibilities, these entities rely on personnel across the Army acquisition requirements and acquisition community:

- Systems engineers provide the technical expertise to determine the technological feasibility of immature technology or, alternatively, the challenges of component integration with existing, mature technologies. The exact training and specialization of a systems engineer will vary by field, but a systems engineer facilitates the Army's understanding of technological possibilities and potentially required resource requirements to meet acquisition program goals.

- Operations research/systems analysts (ORSA) use mathematical and logistical training among other tools, to examine program attributes and make projections as to the cost and risk of a program. Whereas a systems engineer examines the physical and technological aspects of a particular capability, an ORSA provides insight on broader tactical, operational, and strategic considerations and analyzes the risk of program deviations from budgeted cost, schedule, and performance.
- TRADOC capability managers write requirements for major defense acquisition programs and serve as the warfighter's representative for a capability area. These officials are based in one of eight Centers of Excellence, which execute core functions for TRADOC including requirements determination.
- Program Executive Officers are responsible for overseeing a related group of major system acquisition programs once they enter system development. Program managers—who typically report to the Program Executive Officers—lead the development and delivery of these weapon systems. They are responsible for all programmatic decisions related to cost, schedule, performance, and sustainment.

The Army's process for requirements development and weapon acquisition was the subject of a review chartered by the Secretary of the Army. Its January 2011 report (known as the "Decker-Wagner" report) stated that the "Army's track record of too many cancellations, schedule slippages, cost overruns and failures to deliver timely solutions to the warfighters' requirements was unacceptable and that the Army cannot afford to continue acquiring materiel the way it had in the last two decades." The report concluded that one contributing factor to acquisition failures was "unconstrained weapon system requirements" and made a number of recommendations to improve the overall acquisition process, including enhancements to its requirements development process by increasing requirements analysis earlier in the acquisition process.[6]

Our previous work in weapon system requirements and best practices also supports the need for early analysis, as we found that conducting detailed requirements and systems engineering analysis before starting

[6]Office of the Secretary of the Army, *Army Strong: Equipped, Trained and Ready, Final Report of the 2010 Army Acquisition Review.*

development contributes to understanding the requirements' challenges and identifying and mitigating associated risks.[7]

The Army Has Taken Actions to Improve Its Processes for Requirements Development

The Army has recognized the need for improving its process for developing and validating acquisition requirements and taken action to facilitate better outcomes since 2011. The 2011 Decker-Wagner report identified many contributing factors, including unconstrained requirements, and made 76 recommendations to facilitate better acquisition outcomes.[8] In response to this report, as well as other studies and larger DOD acquisition initiatives, the Army made organizational and policy oriented changes. Key changes made by the Army since 2011 include the following:

- *Establishment of operations research/systems analyst units at Centers of Excellence.* A finding in the Decker-Wagner report noted that the requirements and acquisition workforce was "under-resourced and undervalued." Further, the report noted a lack of sufficient analytical workforce resources despite funding increases, which contributed to un-executable requirements and negative program outcomes. In response, the TRADOC Deputy Commanding General directed Army Centers of Excellence to establish teams of ORSAs to provide requirements developers with additional analytical support. TRADOC officials noted that these ORSA staff positions were not funded as new positions but rather taken from other staff slots within the Centers.
- *Implementation of guidance to facilitate early knowledge-based decisions at key milestones.* In 2014 and 2015, the Army formally

[7] GAO, *Weapon System Requirements: Detailed Systems Engineering Prior to Product Development Positions Programs for Success.* GAO-17-77 (Washington, D.C.: Nov. 17, 2016); *Best Practices: Increased Focus on Requirements and Oversight Needed to Improve DOD's Acquisition Environment and Weapon System Quality.* GAO-08-294 (Feb. 1, 2008); and *Best Practices: Better Support of Weapon System Program Managers Needed to Improve Outcomes.* GAO-06-110 (Nov. 30, 2005).

[8] In July 2011, the Army reported on its plan to implement 63 of the 76 recommendations in a report titled "Implementing Acquisition Reform: The Decker-Wagner Acquisition Review." Our review focused on nearly 20 recommendations which directly tied to the requirements development process.

instituted—through guidance—knowledge-point reviews and affordability constraints at key early acquisition process milestones. The Army implemented this guidance to bring Army policies in line with changes introduced by the Undersecretary of Defense for Acquisition, Technology, and Logistics—as reflected in the DOD 5000.02 acquisition policy.[9] Collectively, this new guidance provided senior Army leadership with the opportunity to make informed requirements-related decisions, such as potential cost and schedule tradeoffs, well before the decision to start system development. These actions are consistent with GAO identified best practices, which emphasize identifying gaps between resources and requirements prior to starting development.[10]

- *Increased senior leader involvement in requirements approval process.* As a result of the review conducted pursuant to section 801 of the National Defense Authorization Act for Fiscal Year 2016, the Army Chief of Staff enhanced his role on, and changed the composition of, the Army Requirements Oversight Council (AROC) to increase the input of senior Army military leadership in validating requirements. In a report issued to Congress in March 2016, the Chief of Staff noted his intent to "reinvigorate" the AROC and use it as his main vehicle to personally weigh in on critical early requirements and acquisition decisions. To provide an increased operational perspective, the Chief also added the heads of Army Commands to the council.[11] As part of this series of changes, the Chief merged requirements development and resourcing elements into a single entity at Army headquarters which should streamline decision-making and allow the Chief more direct access to pertinent information.

  The modified AROC approach, if consistently implemented, has the potential to provide early top-level insight into programs during requirements development and the early phases of acquisition. The process can provide senior leadership the opportunity to holistically consider how a proposed materiel solution fits into larger force modernization plans across Army commands. However, officials within the resourcing and capabilities development organizations

[9]DOD Instruction 5000.02, Operation of the Defense Acquisition System, January 7, 2015. The instruction establishes policy for the management of all DOD acquisition programs.

[10] GAO-02-701, GAO-01-288

[11]The Commanding Generals of the Army's Cyber Command, Forces Command, Research, Development and Engineering Command, Test and Evaluation Command and Training and Doctrine Command were placed as advisors.

raised concerns about the long-term viability of this arrangement. The stated intent is for the Chief or Vice Chief of Staff of the Army to personally chair each AROC review and validate all proposed requirements regardless of a program's acquisition category level.[12] According to Army officials, this is logistically challenging considering competing demands. For example, officials noted there would need to be nearly 100 reviews annually to address all decisions in a year. Realistically, officials indicated that approximately half of these reviews would likely be conducted due to other senior leadership responsibilities. The Army plans to assess the performance and effectiveness of AROC modifications and related changes late in fiscal year 2017. The extent to which this assessment will provide insight on the AROCs ability to meet its mission—to ensure the warfighter receives timely, militarily useful capabilities—is uncertain at this time. This is because, according to Army officials, the methodology for this assessment is being determined and the metrics that will be used to evaluate the AROC's execution have not yet been established.

- *Increased coordination with other services.* In addition to organizational and policy changes within the service, the Army increased structured coordination with the Marine Corps and U.S. Special Operations Command to capitalize on effects of scale and reduce redundancies and facilitate requirements development for cross service capability areas. Collaboration occurs within a broader formal arrangement through the Army-Marine Corps Board—a high-level forum for the Army and Marine Corps that was reinvigorated in May 2016 to identify, develop, and solve issues with joint requirements—and in regular interaction on individual programs according to service officials. This results in both increased synchronization of views on acquisition needs and in greater efficiency and utilization of development contracts. While coordination with Special Operations Command has been focused on lower cost programs, Special Operations Command and Army officials stated that the services have been able to find synergies on requirements development. Going forward, the Army, Marine Corps, and Special Operations Command are actively coordinating for key future development initiatives such as Joint Future Vertical Lift, which is intended to replace rotary wing aircraft across the military.

[12]Defense acquisition programs are classified into acquisition categories (ACAT) based on the value and type of the acquisition. These categories range from ACAT I, the highest cost, to ACAT III, the lowest cost. Major defense acquisition programs are considered ACAT I programs. The level of oversight for acquisition programs varies based on the assigned ACAT level.

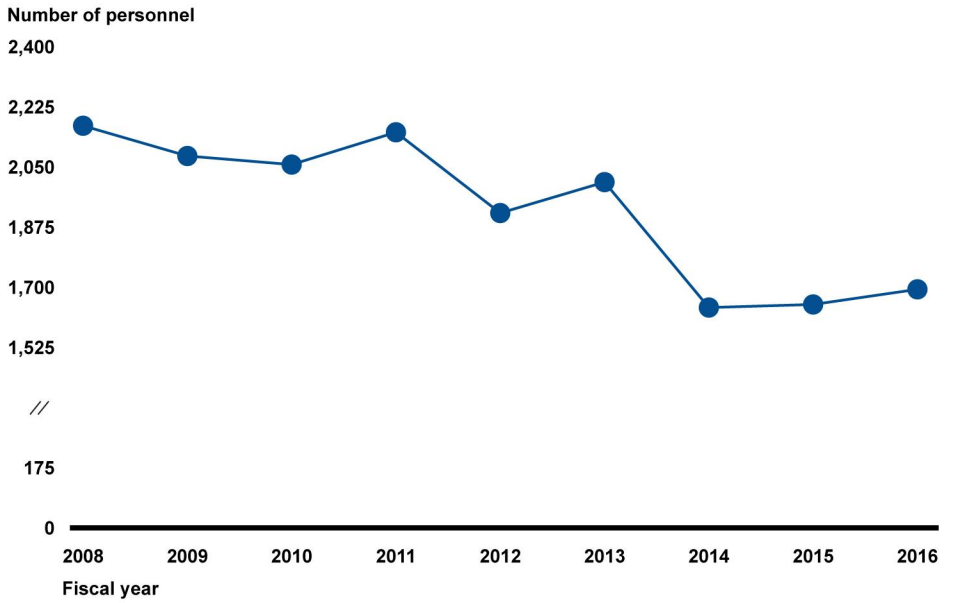
Early Requirements Development Limited by Workforce Shortfalls

The Army has acknowledged the importance of knowledge based, informed requirements development consistent with our previously identified best practices. However, workforce shortfalls limit the extent to which requirements are well informed and feasible. Army leadership has prioritized combat readiness amid relatively tight funding constraints and, in doing so, acknowledged the risk to other areas, such as requirements development. Resource shortfalls at the Centers of Excellence, driven in part by this priority, have decreased the personnel available for requirements development and resulted in ORSAs performing other functions. This shortfall is occurring at a time when the demands placed on the requirements development workforce have increased. As noted by the Decker-Wagner report, the lack of a sufficient analytical workforce contributed to un-executable requirements and negative outcomes for programs in the past.

Workforce Shortfalls and Other Army Priorities Detract from Early Requirements Development

Across the requirements development enterprise, the workforce associated with developing requirements has declined substantially. The Decker-Wagner report noted that even though the Army's development budget had increased between fiscal years 1994 and 2009, the military acquisition workforce had declined. Further, the report noted that TRADOC capability managers were inadequately resourced to be proper complements to their acquisition counterparts, program managers. This condition continues to exist today and is inconsistent with the Army's acknowledged value of early program knowledge and the importance of early requirements development. As figure 3 illustrates, the requirements development workforce across the Centers of Excellence has declined by 22 percent since 2008 despite the creation of ORSA units as recommended by the Decker-Wagner report.

Figure 3: Army Requirements Workforce



Source: GAO analysis of TRADOC data. | GAO-17-568

The requirements development workforce decline is associated with both the 22 percent decrease in the Army's development budget since 2011 and larger Army headquarters-wide funding reductions. Requirements development funding for the Army Capabilities Integration Center—which leads overall requirements development within TRADOC—has been reduced by 26 percent since 2010. Further, the Capabilities Integration Center projects an additional 19 percent funding reduction in the near term. According to TRADOC officials, this decline will be problematic, as the requirements development workload has increased and is expected to continue to do so in the near future as the Army seeks to acquire new, and more complex, capabilities.

Requirements developers we interviewed at three of the four selected Army Centers of Excellence (Aviation, Cyber, Maneuver, and Fires) said that they lacked sufficient resources to develop requirements and associated documentation. For example:

- At one Center—which generates requirements for an estimated 450 programs—officials stated they are constrained to the point that they can no longer effectively do their job as responsibilities continue to grow and resources diminish. Specifically, they were operating with approximately 50 percent of the staff needed for requirements

development and were expecting a further 25 percent budget reduction in fiscal year 2018.

- At another Center, officials reported a 65 percent cut in the workforce over the past several years and told us that, as a result, the Center does not have the capacity and capability to perform sufficient requirements development.
- Officials at a third Center indicated that numbers for staff associated with requirements development are now down to less than 10 percent of previous staffing levels. This downsizing has reduced both their capacity and capability to effectively develop requirements.
- In contrast to these Centers, officials at a fourth Center reported that their analytical capability—as reflected by ORSA personnel—has consistently been maintained despite a 25 percent overall workforce reduction. Officials noted that TRADOC leadership maintained these staff to focus efforts on this Center's specific capability area.

In implementing the Decker-Wagner report's recommendation to establish ORSA cells at each of the Centers of Excellence, TRADOC performed analysis to determine appropriate staffing levels for these cells. TRADOC directed the Centers to fill these positions by reallocating from existing resources. However, since 2011, even with the establishment of dedicated ORSA cells at the Centers as recommended by the Decker-Wagner report, overall ORSA staffing personnel levels were reduced by 10 percent. In addition to the concerns reported by officials from the requirements development community, several acquisition program officials indicated that the Army does not provide its requirement developers with adequate staff early enough in the acquisition process. According to program officials, these staff are needed to help ensure that requirements are realistic and executable within given resources.

Most TRADOC and Centers of Excellence officials we spoke with also reported that competing priorities negatively affect their capacity and capability to conduct sufficient requirements development. ORSAs are often used to support non-requirements evaluations such as warfighting simulation exercises, which provide decision makers with a way to assess new ideas, question existing practices, and develop new operational concepts in a low-risk environment. The output of these analyses is qualitative. While useful for a broader view of requirements and capability needs, these types of exercises cannot be used as a quantitative basis for establishing specific requirement measurements or trade-offs for individual programs.

As previously mentioned, systems engineers facilitate analyses for requirements developers and program management officials throughout the acquisition cycle. In particular, the role of systems engineers in requirements development is critical as their insights into the state of available critical technologies and preliminary designs—can disproportionately affect a program's cost and schedule. Officials across the Army recognize the need for increased systems engineering knowledge early in the requirements development process. However, the Army noted in DOD's annual System Engineering Reports to Congress from fiscal year 2012 to fiscal year 2014 that, historically, systems engineers have been utilized after the start of system development instead of earlier in the requirements development process.[13] This has occurred even though, as the Army acknowledges, decisions made early in an acquisition program have a substantial impact on total lifecycle cost, effectiveness, and timeliness. The Army indicated in these annual reports that the lack of a dedicated systems engineering team during this formative period hinders systems engineers from assisting in requirements development. Specifically, this compromises their ability to evaluate the full range of feasible solutions, develop concepts of operations, and make smart trades between requirements, technologies, cost, and risks on acquisition programs.

While the Decker-Wagner report and DOD's Systems Engineering reports have stated that the composition of the requirements development workforce is not adequate to meet the Army's needs for requirements development, the Army has not performed a service-wide assessment of what the composition of that workforce should be. To be comprehensive such an assessment would include not only an assessment of ORSA personnel at the Centers of Excellence, as previously assessed by TRADOC, but also systems engineering personnel and others across the requirements development enterprise. In the absence of a comprehensive assessment, the current status of the requirements development workforce is driven in part by Army leadership's prioritization of combat readiness amid relatively tight funding constraints. In choosing to re-build force structure, Army officials have acknowledged the risk to other areas,

[13]The Deputy Assistant Secretary of Defense for Systems Engineering provided these reports to Congress in response to 10 U.S.C 139b and section 102(b) of Pub. L. No. 111-23 as amended (set out at 10 U.S.C 2340 note). These reports detailed the systems engineering capabilities of DOD and systems engineering activities relating to the major defense acquisition programs. Within these reports, the services included a self-assessment detailing their systems engineering capabilities.

such as requirements development, but have not taken steps to assess the effect of priority trade-offs. Federal standards for internal controls state that management should establish the organizational structure necessary to achieve its objectives. The standards also state that management should periodically evaluate its structure so that it meets the entity's objectives.[14] Until the Army comprehensively assesses the needs of its requirements development workforce and addresses current shortfalls in the context of the current constrained budget, it will continue to lack the necessary foundation to ensure the viability of its current and future investments in major defense acquisition programs.

Selected Cases Studies Indicate Army Is Still Exeriencing Negative Program Outcomes

As noted by the Decker-Wagner report, too many of the Army's past acquisition programs resulted in negative outcomes due to un-executable requirements. Our previous work in weapon system requirements and best practices has found that conducting detailed requirements and systems engineering analysis before starting development contributes to understanding the requirements' challenges and identifying and mitigating associated risks. In turn, matching requirements and resources prior to committing to development reduces risk and uncertainty and sets the program up for success. Our review of nine selected acquisition programs demonstrate that some Army acquisition programs continue to proceed with ill-informed or un-executable requirements and experience cost increases, schedule delays, and other negative outcomes as a result.[15]

Early, Informed Requirements Development Is a Critical Component of the Technology Development Phase

Ground Combat Vehicle (GCV) The GCV program—intended to replace segments of the Army's combat vehicle inventory—ended in fiscal year 2014 after an investment of $1.4 billion, despite early warnings from systems engineers and others about the feasibility of requirements. In August 2010, a review team convened by Army leadership cited major

[14]GAO, *Standards for Internal Control in the Federal Government*. GAO-14-704G (Washington, D.C.: Sept. 10, 2014).

[15]Additional details on each case study program can be found in appendix III.

concerns about maturity of the technology involving the robustness of the analysis of alternatives, and the plausibility of schedule and cost given the systems engineering challenges. In March 2011, we also identified continued concerns about the GCV program related to many of the same issues first raised in 2010. We noted in particular that requirements analysis of the program following the initial analysis of alternatives was based on less rigorous methodology than previously applied.[16] Despite these concerns, in August 2011, the Under Secretary of Defense for Acquisition, Technology, and Logistics approved the Army's request for GCV's entry into technology development, albeit with an acquisition strategy modified to prioritize requirements. The Army extended the program's technology development phase by 6 months in January 2013. In 2014, the Army determined that the GCV design concepts were not optimized for the future Army and ended the program. According to Army officials, this decision was strictly budgetary and was not due to any particular development problems. However, requirements development challenges in the program—as evidenced by the need to significantly modify the program's acquisition strategy—illustrate the importance of early, robust systems engineering.

Knowledge-Based Acquisition Practices and Systems Engineering Reviews

Knowledge-based acquisition practices recommend that programs hold systems engineering events before the start of system development and production:

- A system requirements review ensures that requirements have been properly identified and that there is a mutual understanding between the government and the contractor.
- A system functional review establishes a baseline for the planned system.
- A preliminary design review establishes that requirements are defined and feasible, and that the proposed design can meet those requirements within cost, schedule, and other system constraints.

Source: GAO, Defense Acquisitions: Assessment of Selected Weapon Program. GAO-17-333SP (Washington, D.C.: March 30,2017)

Joint Air-to-Ground Missile (JAGM) JAGM—an air-launched missile to attack ground targets—began technology development in September 2008 without sufficient analysis of the maturity of its designated technologies, a key factor for the proper understanding of program requirements. Subsequent to the program's preliminary design review in June 2010, an independent technology readiness assessment indicated that at least one technology was not at the level of maturity previously indicated. The program's technology development phase was extended by 2 years to explore evolutionary alternatives to the acquisition strategy, refine requirements, and explore a more affordable solution. According to the best practices we have identified for weapons system acquisition, a solid understanding of available technologies is critical to establishing realistic requirements and ensuring the program meets its cost and schedule goals. JAGM ultimately began system development in July 2015, 3 years later than originally planned.

Improved Turbine Engine Program (ITEP) ITEP—a replacement engine for the Black Hawk and Apache helicopter fleets—is conducting

[16]GAO, *Defense Acquisitions: Key Questions Confront the Army's Ground Force Modernization Initiatives,* GAO-11-425T (Washington, D.C.: Mar. 9, 2011).

system engineering reviews prior to beginning system development, which should better inform requirements development. In August 2016, the program was approved for entry into the technology development phase and is scheduled to enter system development in fiscal year 2018. The program's acquisition strategy appears to facilitate a more informed requirements development process. For example, the Army awarded contracts to two vendors and intends to hold separate preliminary design reviews prior to starting system development. Holding these preliminary design reviews—along with the program's planned system requirements and system functional reviews—prior to the start of system development will help ensure that requirements are defined and feasible and that the potential design can meet requirements within cost, schedule, and other system constraints.

Long Range Precision Fires (LRPF) While requirements changes early in the program added more risk to LRPF, part of a family of missiles designed to attack targets to ranges of 300 kilometers and beyond, this risk has been balanced by adding additional resources in the form of schedule and plans for increased testing. The LRPF was originally scheduled to enter technology development in January 2016 but was delayed until January 2017. According to program officials, this year-long delay followed an Office of the Secretary of Defense review of the analysis of alternatives and an increase to the LRPF range requirement and launch capacity. In response to this increase in requirements and the correlating increase in risk, the Army has taken a number of actions that should contribute to developing and achieving requirements. For example, the program plans to substantively invest in test missiles to evaluate the design and requirements prior to system development, which has been delayed until 2021. In addition, the program awarded contracts for developing LRPF missile designs in time to inform the technology readiness assessment. Currently, the program plans to complete systems engineering reviews—including the system requirements review, system functional review, and preliminary design review—before starting system development, which will facilitate informed requirements development.

Entering System Development Prior to Fully Considering Systems Engineering and Requirements Increases Risk of Negative Outcomes

Armored Multi-Purpose Vehicle (AMPV) AMPV—the replacement for the M113 family of armored personnel carrier vehicles at the Brigade level and below—is a design derived from existing systems which, by nature,

reduces risk. The program also reduced requirements early to ensure no technology development was needed. However, the AMPV's program's decision to enter system development in December 2014 was not informed by sufficient requirements analysis, as the program had not completed any systems engineering reviews. The preliminary design review was conducted in June 2015, 6 months after beginning system development. Program office engineers along with requirements analysts determined that the AMPV preliminary design would be challenged to meet survivability and force protection requirements and identified a need to modify these requirements to match the capabilities that the AMPV was likely to provide. The Office of the Deputy Assistant Secretary of Defense for Systems Engineering concurred with this assessment in its post-preliminary design review evaluation. In response, the program requested and received approval from the AROC to modify the system's survivability requirement as well as several key system attributes. In September 2016, the Joint Requirements Oversight Council validated the survivability requirement change.

Common Infrared Countermeasure (CIRCM) The Army's original plan for CIRCM—a program to provide next generation countermeasures designed to defend aircraft from infrared-guided missiles—bypassed the technology development phase entirely based on industry claims—uninformed by systems engineering reviews—that available technologies existed to address requirements. The program's lack of understanding of available technologies resulted in a mismatch with program requirements—which led to significant program delays. During testing of industry prototypes, the program determined that none of its technologies were sufficiently mature to enter system development. The Army subsequently decided that the program should proceed with a technology development phase that included additional prototyping efforts to further mature technologies. However, as we reported in March 2017, CIRCM technologies have yet to achieve full maturity, which may contribute to additional delays in delivering the capability to the warfighter.[17]

M109A7 Family of Vehicles (FOV) For the M109A7 FOV—which consists of a self-propelled howitzer and a tracked ammunition carrier—poorly defined requirements combined with a lack of sufficient systems engineering analysis early in the program contributed to test failures,

[17]GAO, *Defense Acquisitions: Assessments of Selected Weapon Programs*. GAO-17-333SP (Washington, D.C.: March 30, 2017).

schedule delays, and design changes. The Army began systems engineering and development work on M109A7 FOV in 2007. At that time, the program was a service life extension program for the existing Paladin M109A6, and according to program officials, the platform was expected to have a relatively minor upgrade to the fire control system and power pack. This expectation influenced how requirements were developed and analyzed. For example, according to program officials a key program requirement—the maximum rate of fire—was carried over from its predecessor, the Paladin M109A6, without a full consideration of how this requirement would inform testing or how the platform would be used to address threats. By 2011, the Army made several changes to the program's force protection and survivability requirements with significant design and cost implications. Consequently, the M109A7 FOV began system development as a major defense acquisition program in June 2011, as these changes were significant enough to raise its acquisition category. The program has experienced delays in testing due to the need to refine requirements, particularly to ensure the realism and testability of the rate of fire requirement, and identify and correct design deficiencies.

Entering System Development with Well-Informed Requirements Facilitates Development

Indirect Fire Protection Capability Increment 2 Intercept Block 1 (IFPC Inc. 2-I Block 1) In contrast with the programs above, IFPC Inc. 2-I Block 1 program—designed to defeat various threats including rockets and cruise missiles—conducted a well-informed technology development period which facilitated achievable requirements. The program plans to enter system development with no new or novel technologies, as indicated by a technology readiness assessment completed in May 2016. Furthermore, the program has released all design drawings and considers its design stable ahead of the planned May 2017 critical design review. The program also plans to follow an incremental acquisition approach to deliver increased capability over time with a path towards future capability improvements as needed.[18] Our past work indicates that following this approach—as opposed to achieving all requirements in a single step—provides program managers with more achievable

[18]This approach delivers increased capability over time, recognizing up-front the users need for future capability improvements.

requirements, which, in turn, facilitates shorter acquisition cycle times.[19] While some program risks remain because there is concurrency between testing and production along with potential technology integration challenges—the program has thus far avoided significant disruption due to early, detailed requirements and systems engineering analysis.

Joint Light Tactical Vehicle (JLTV) At the start of product development for the JLTV—a family of tactical wheeled vehicles designed to replace the High Mobility Multipurpose Wheeled Vehicle (HMMWV)—in 2012, the Army, Marine Corps, and the JLTV prime contractors had performed detailed systems engineering to understand the system's requirements. In response to concerns raised by DOD's acquisition executive regarding technology maturity, shifting requirements on issues such as weight and reliability, and affordability, the Army and Marine Corps worked with three contractors prior to the start of product development to refine requirements. The Army and Marine Corps planned an incremental acquisition approach using mature technology and a design derived from prototypes developed and tested prior to the start of product development. As a result, the current prime contractor was able to provide a mature product based on a demonstrated design that largely met requirements at the start of product development.

Conclusions

The Army's overarching mission remains to deter and defeat potential adversaries as it balances near-term readiness with future potential threats. Successfully executing weapon system development is critical to accomplishing this task. Given the Army's past challenges—a litany of canceled, delayed, or restructured programs over the past 20 years—Army leadership has recognized the need for change in how it develops and informs requirements for weapon systems and has taken actions aimed at facilitating better program outcomes. However, other Army priorities have resulted in personnel shortfalls in the requirements development enterprise that endangers the effectiveness of these actions. While the Army has performed analysis to determine appropriate staffing levels for some personnel associated with requirements development, specifically operations research/systems analysts at the centers of excellence, it has not performed a service-wide assessment of

[19]GAO, *Best Practices: Better Support of Weapon System Program Managers Needed to Improve Outcomes*, GAO-06-110 (Washington, D.C.: Nov. 30, 2005).

what the total composition of that workforce should be. Without a comprehensive assessment of its requirements development workforce—including systems engineers, systems analysts, and others—the Army cannot be certain it has the capabilities to effectively determine program requirements and achieve positive acquisition outcomes.

Recommendation for Executive Action

We recommend that the Secretary of the Army conduct a comprehensive assessment to better understand the resources necessary for the requirements development process and determine the extent to which the shortfalls can be addressed given other funding priorities.

Agency Comments

We provided a draft of this report to DOD and the Army for comment. In its written comments, reproduced in appendix II, the Army concurred with our recommendation. The Army also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the Secretary of Defense, the Secretary of the Army, and the appropriate congressional committees. 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) 512-4841 or makm@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made significant contributions to this report are listed in appendix IV.

Sincerely yours,

Marie A. Mak
Director
Acquisition and Sourcing Management

Appendix I: Objectives, Scope, and Methodology

This report (1) identifies what actions the Army has taken to improve its requirements development process since 2011, (2) evaluates to what extent the Army ensures that requirements are well-informed and feasible to facilitate successful acquisition outcomes, and (3) provides information on the current status of nine major defense programs.

To conduct our work, we analyzed the findings and recommendations of the *Army Strong: Equipped, Trained and Ready–The Final Report of the 2010 Army Acquisition Review* ("Decker-Wagner" report) and identified actions taken in response to recommendations on the requirements process. To better understand the report findings and its recommendations we interviewed a retired senior acquisition policy advisor from the Decker-Wagner report team. To identify what changes have occurred in the Army's requirements development process since the January 2011 publication of the Decker-Wagner report, we reviewed relevant acquisition-related legislation, including the National Defense Authorization Act for Fiscal Year 2016. We also reviewed applicable Department of Defense (DOD) and Army acquisition and requirements development policy documentation (including recent drafts), such as: DOD Instruction 5000.2, the Defense Acquisition Guidebook, 71-9 Force Development: Warfighting Capabilities Determination, Training and Doctrine Command (TRADOC) Regulation 71-20 Force Development: Concept Development, Capabilities Determination, and Capabilities Integration, and 70–1 Research, Development, and Acquisition: Army Acquisition Policy.

To determine how the requirements development process has been implemented in policy, we reviewed guidance documents for the Joint Capabilities Integration and Development System for developing and validating military requirements. To determine how these policies have been implemented in practice by the Army, we analyzed information and established how requirements documents—initial capabilities documents, capability development documents, and capability production documents—are reviewed by senior Army leadership and the Army Requirements Oversight Council. We also compared implementation and execution of these practices with federal standards for internal controls. To determine the effects of changes and the means by which they are implemented we interviewed key officials in the Department of the Army,

such as officials from the Office of the Assistant Secretary of the Army (Acquisition, Logistics and Technology), Office of the Deputy Chief of Staff, G-8, the Army's Training and Doctrine Command Analysis Center, and officials from the Army Audit Agency. We also conducted interviews with Marine Corps and Special Operations Command officials involved in the requirements development process to identify the extent to which coordination occurred between their services and the Army. Also, as part of our review, we interviewed requirements development officials at four Army Centers of Excellence:

- Army Aviation Center of Excellence in Fort Rucker, Alabama;
- Army Cyber Center of Excellence, Fort Gordon, Georgia;
- Army Maneuver Center of Excellence at Fort Benning, Georgia; and
- Army Fires Center of Excellence Fort Sill, Oklahoma

To further understand the extent to which the Army ensures that requirements are well-informed and feasible to facilitate successful acquisition outcomes, we assessed the composition of personnel at key requirements development organizations across the Army's capability areas. We leveraged recently completed and ongoing GAO work on DOD workforce issues and weapons systems acquisition. We analyzed DOD Acquisition Workforce information from the Office of the Under Secretary of Defense for Acquisition Technology and Logistics—Human Capital Initiatives. We also analyzed workforce and funding information provided by officials at the Army's Center for Integration Capabilities and selected Centers of Excellence. In addition, we spoke with Integration Capabilities officials to better understand and clarify the information.

For a more in-depth understanding of how requirements development influences acquisition outcomes, we identified nine Army major defense acquisition programs as case studies.[1] To conduct our case study assessments, we selected a non-generalizable sample of nine current and future major defense acquisition programs, which commenced technology development efforts or system development, including major restructurings, subsequent to the Decker-Wagner report publication date

[1]Major defense acquisition programs are those identified by DOD or with a dollar value for all increments estimated to require eventual total expenditure for research, development, test, and evaluation of more than $480 million, or for procurement of more than $2.79 billion, in fiscal year 2014 constant dollars.

of January 2011. For more detailed information for each case study program see appendix III.

To assess the challenges associated with developing well-informed and feasible program requirements and the extent of early analysis conducted by each of the nine programs, we analyzed the extent of analysis in the development of well-informed and feasible requirements at critical decision points, such as program milestones, and compared the results to DOD acquisition policy and best practices for product development.[2] In addition, we assessed documents and data from systems engineering reviews and program reported technology readiness levels, program acquisition strategies, capability development documents, operational requirements documents, acquisition program baselines, and selected acquisition reports. To assess the relationship between early requirements and systems engineering analysis and program outcomes, we analyzed requirements, cost, and schedule documentation for each of our case study programs. Further, we reviewed Defense Acquisition Executive Summary reports and budget data for the case studies as appropriate. We assessed the reliability of DOD and program data by reviewing existing information about the data and interviewing agency officials knowledgeable about the data. Based on these steps, we determined that the data were sufficiently reliable for the purposes of our reporting objectives.

To obtain additional insights, we spoke with knowledgeable DOD officials including officials from program executive offices, program managers and members of the requirements development enterprise. We also interviewed members of the Army Systems Acquisition Review Council, officials from the Army's Training and Doctrine Command Analysis Center, officials from the Army's Training and Doctrine Command Army Capabilities Integration Center, officials from the Army's Centers of Excellence, officials from the Army Tank Automotive Research Development and Engineering Center, as well as senior leadership from the Army's Research, Development, and Engineering Command and

[2]GAO, *Defense Acquisition Process: Military Service Chiefs' Concerns Reflect Need to Better Define Requirements before Programs Start*, GAO-15-469 (Washington, D.C.: June 11, 2015); *Defense Acquisitions: Major Weapon Systems Continue to Experience Cost and Schedule Problems under DOD's Revised Policy*, GAO-06-368 (Washington, D.C.: Apr. 13, 2006); *Best Practices: Capturing Design and Manufacturing Knowledge Early Improves Acquisition Outcomes*. GAO-02-701 (Washington, D.C.: July 15, 2002); and *Best Practices: Better Matching of Needs and Resources Will Lead to Better Weapon System Outcomes*, GAO-01-288 (Washington, D.C.: Mar. 8, 2001).

Aviation and Missile Research, Development, and Engineering Center. In addition, we relied on past and ongoing GAO engagements.[3]

We conducted this performance audit from March 2016 to June 2017 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]GAO, *Defense Acquisitions: Assessments of Selected Weapon Programs* GAO-17-333SP (Washington, D.C.: Mar. 30, 2017); *Defense Acquisitions: Assessments of Selected Weapon Programs* GAO-16-329SP (Washington, D.C.: Mar. 31, 2016); and *Defense Acquisitions: Assessments of Selected Weapon Programs*, GAO-15-342SP (Washington, D.C.: Mar. 12, 2015).

Appendix II: Comments from the Department of the Army

GAO received the Army's letter on June 14, 2017

DEPARTMENT OF THE ARMY
DEPUTY CHIEF OF STAFF, G8
700 ARMY PENTAGON
WASHINGTON, DC 20310-0201

Ms. Marie Mak,
Director
Acquisition and Sourcing Management
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms Mak:

This is the Department of Defense (DoD) response to the U.S. Government Accountability Office (GAO) Draft Report, GAO-17-568, "ARMY WEAPON SYSTEMS REQUIREMENTS: Need to Address Workforce Shortfalls to Make Necessary Improvements," dated May 17, 2017 (GAO Code 100713).

The DoD concurs with the single recommendation in the GAO report, and will be taking steps to determine the appropriate size and technical expertise needed to ensure a highly effective requirements development workforce. Specifics regarding this initiative are enclosed. The DoD appreciates this opportunity to address the GAO recommendation for improving the process for developing operational requirements for acquisition programs.

Sincerely,

for John M. Murray
Lieutenant General, U.S. Army

Enclosure

GAO DRAFT REPORT DATED MAY 17, 2017
GAO-17-568 (GAO CODE 100713)

"ARMY WEAPON SYSTEMS REQUIREMENTS: NEED TO ADDRESS WORKFORCE SHORTFALLS TO MAKE NECESSARY IMPROVEMENTS"

U.S. ARMY COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION: The U.S. Government Accountability Office (GAO) recommends that the Secretary of the Army conduct a comprehensive assessment to better understand the resources necessary for the requirements development process and determine the extent to which the shortfalls can be addressed given other funding priorities.

ARMY RESPONSE: Concur. The GAO acknowledgement that the Army has multiple critical demands for additional manpower is appreciated. At the direction of the Secretary of the Army, the Assistant Secretary for Manpower and Reserve Affairs will conduct a comprehensive assessment of the requirements workforce. This will enhance the effectiveness of this valuable resource. Assessment recommendations for workforce growth will be available in August 2018 for consideration in the Army's Total Army Analysis process for prioritization with the remainder of the Department's manpower requirements. Approved resource decisions will be implemented at the earliest possible date. The Army will continue to pursue the requirements development and acquisition process improvements noted in the report, in concert with Congressional and Department of Defense acquisition reform initiatives, in order to enhance the effectiveness and efficiency of the requirements development workforce.

2

Appendix III: Selected Major Defense Acquisition Programs

Table 1: Selected Major Defense Acquisition Programs

Program	Acquisition phase	Description
Armored Multi-Purpose Vehicle	System development (2014)	An effort intended to replace the M113 armored personnel carrier in five mission roles: general purpose, medical evacuation, medical treatment, mortar carrier, and mission command.
Common Infrared Countermeasure	System development (2015)	The next generation of advanced threat infrared countermeasures designed to defend aircraft from infrared-guided missiles. The program is developing a laser-based system for use with a missile warning system and countermeasure dispenser that deploys expendables, such as flares and chaff.
Ground Combat Vehicle	Canceled (2014)	An incremental program intended to replace segments of the Army's combat vehicle inventory. Prior to cancellation, the Army expected the GCV to provide a full-spectrum capability to perform offensive, defensive, stability, and support operations; carry a nine-soldier squad; emphasize force protection; and be operational within 7 years of beginning technology development.
Indirect Fire Protection Capability Increment 2 – Intercept Block 1	System development (2017)	A follow-on effort to enhance and extend the range of the first increment fielded in 2004, which provided a short-range capability to counter threats from rockets, artillery, and mortars.
Improved Turbine Engine Program	Technology development (2016)	A replacement engine for the Black Hawk and Apache helicopter fleets. The new engine is designed for increased power, performance, and fuel efficiency; enhanced reliability; increased service life; and a lower maintenance burden than current engines.
Joint Air-to-Ground Missile	System development (2015)	An Army-led program with joint requirements from the Navy and Marine Corps. Designed to be air-launched from helicopters and unmanned aircraft.
Joint Light Tactical Vehicle	Production (2015)	An Army and Marine Corps' family of vehicles developed to replace the High Mobility Multipurpose Wheeled Vehicle for some missions.
Long Range Precision Fires	Technology development (2013)	An effort, as part of a family of ballistic missiles, designed to attack area and point targets to ranges of 300 kilometers and beyond.
M109A7 Family of Vehicles	Production (2013)	A program that consists of two individual platforms, a self-propelled howitzer and a tracked ammunition carrier that provides operational support. The self-propelled howitzer is a tracked, aluminum armored vehicle with a 155 millimeter cannon.

Source: GAO analysis of DOD data.| GAO-17-568

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Marie A. Mak, (202) 512-4841 or makm@gao.gov

Staff Acknowledgments

In addition to the contact named above, J. Kristopher Keener (Assistant Director), Charlie Shivers III (Analyst-in-Charge), William Allbritton, Emily Bond, Tana M. Davis, Lorraine Ettaro, David Payne, Sylvia Schatz, and Robin Wilson made significant contributions to this report.

Appendix V: Accessible Data

Data Tables

Data Table for Highlights figure, Army Requirements Development Workforce

Fiscal Year	Total Workforce
2008	2,170
2009	2,082
2010	2,057
2011	2,151
2012	1,916
2013	2,006
2014	1,641
2015	1,650
2016	1,694

Data Table for Figure 3: Army Requirements Workforce

Fiscal Year	Total Workforce
2008	2,170
2009	2,082

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2010	2,057
2011	2,151
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Agency Comment Letter

Text of Appendix II: Comments from the Department of the Army

Page 1

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Acquisition and Sourcing Management

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

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Sincerely,

Signed by (illegible) for Mr. Murray

John M. Murray

Lieutenant General, U.S. Army

Enclosure

Page 2

U.S. ARMY COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION:

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ARMY RESPONSE: Concur.

The GAO acknowledgement that the Army has multiple critical demands for additional manpower is appreciated. At the direction of the Secretary of the Army, the Assistant Secretary for Manpower and Reserve Affairs will conduct a comprehensive assessment of the requirements workforce. This will enhance the effectiveness of this valuable resource. Assessment recommendations for workforce growth will be available in August 2018 for consideration in the Army's Total Army Analysis process for prioritization with the remainder of the Department's manpower requirements. Approved resource decisions will be implemented at the earliest possible date. The Army will continue to pursue the requirements development and acquisition process improvements noted in the report, in concert with Congressional and Department of Defense acquisition reform initiatives, in order to enhance the effectiveness and efficiency of the requirements development workforce.

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