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DEFENSE ACQUISITIONS

Key Questions Confront the Army's Ground Force Modernization Initiatives

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Highlights

Highlights of GAO-11-425T, a testimony before the Subcommittee on Tactical Air and Land Forces, Committee on Armed Services, House of Representatives

March 9, 2011

DEFENSE ACQUISITIONS

Key Questions Confront the Army's Ground Force Modernization Initiatives

Why GAO Did This Study

From 2003 through 2009, the Future Combat Systems program was at the center of the Army's efforts to modernize. But in 2009, DOD canceled the program and instead laid out plans for development of a ground combat vehicle (GCV) program, multiple increments of brigade modernization, and a tactical network.

GCV is intended to modernize the current ground combat vehicle fleet; the early infantry brigade combat team (E-IBCT) to continue previous Future Combat Systems efforts to stage and spin out emerging technologies to current forces; and the tactical information network to provide connectivity, communications, and data for the warfighter. Each of these is in various stages of implementation: GCV is to begin technology development in April 2011; E-IBCT increments have been terminated in early production based on test results; and development of the tactical network is poised to begin.

This testimony focuses on the Army's recent efforts to prepare for a new GCV development program, E-IBCT program test results and decisions, and emerging plans for the tactical network, as well as questions the Army faces as it makes significant decisions in those areas.

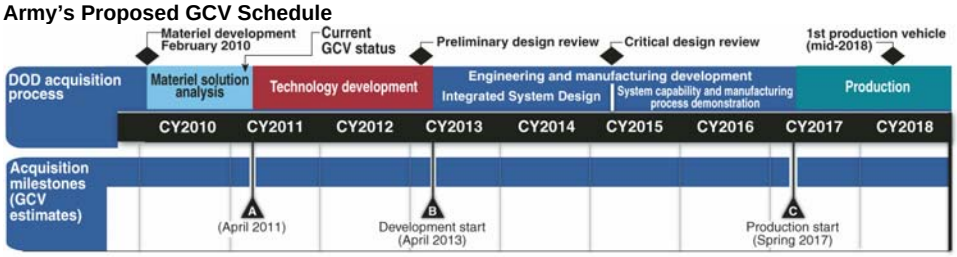
DOD reviewed a draft of this testimony and provided technical comments, which were incorporated as appropriate.

View GAO-11-425T or key components. For more information, contact Michael J.Sullivan at (202) 512-4841 or sullivanm@gao.gov.

What GAO Found

The Army is preparing to start a new GCV acquisition program by evaluating contractor proposals for technology development. The Army appears to be embarking on a more knowledge-based program than previously planned, focusing on costs and technical maturity. Yet, to deliver the first production vehicle in 7 years, the program must complete technology development in 2 years and engineering and manufacturing development in 4 years. Key questions on GCV pertain to how urgently it is needed, robustness of the analysis of alternatives, its cost and affordability, plausibility of its schedule, and whether mature technologies will be used. Addressing such questions is essential to getting a good start on demonstrating the match between GCV requirements and resources by the end of technology development.

Army's Proposed GCV Schedule



Sources: GAO analysis of Army data, the DOD acquisition process, and GAO best practices.

Most of the systems from the first increment of E-IBCT showed little or no military utility in recent tests. Several of the systems have since been terminated but two were approved for additional production. Several questions remain about the future of the remaining development efforts that were once part of the Future Combat Systems program. These questions relate to (1) whether additional procurement of the network integration kit—which includes a radio, computer system, and software—is justified in light of the Army's determination that it is not a viable, affordable, long term solution, and (2) how E-IBCT systems could have met many of their requirements, yet have so little military utility. The Army has also decided not to pursue Increment 2 of E-IBCT. Key questions remain on whether the Army will continue development or terminate other efforts from Future Combat Systems.

The Under Secretary of Defense for Acquisition, Technology, and Logistics recently designated the Army tactical network as a special interest portfolio, signaling a commitment to continued investment in this area, to meet the need for adaptive, evolutionary network approaches. To develop a clear understanding of the network requirements, strategies, and management of a number of disparate acquisitions, the Under Secretary has directed the Army to develop an integrated network architecture and a comprehensive acquisition strategy by this month. Key questions remain on whether the Army has yet clearly defined its internal roles and responsibilities for management of its tactical network, and how it will proceed with development of fundamental parts of the network—the advanced radios and waveforms.

Chairman Bartlett, Ranking Member Reyes, and members of the subcommittee:

I am pleased to be here today to discuss some of the Department of the Army's recent initiatives to modernize its ground forces and begin the development of a new ground combat vehicle (GCV). My statement today is based largely on work we have conducted over the last year in response to a request from this subcommittee. This statement focuses on the Army's recent efforts to initiate a GCV acquisition program, recent developments concerning the first two increments of the Brigade Combat Team modernization systems, and emerging plans for the Army's future tactical network. My statement will include potential issues that the Army is facing as it prepares to make other significant decisions in these areas.

Over much of the past year, we have obtained data and held discussions with Department of Defense (DOD) and Army officials on plans to develop a GCV, make improvements to and test the early infantry brigade combat team (E-IBCT) equipment, and formulate a strategy to develop and demonstrate an information network. To assess the GCV, we reviewed Army and DOD documents, including the Army's draft Analysis of Alternatives Executive Summary, the original GCV request for proposals and the subsequent revision to this document, as well as other documents pertaining to the GCV's development. We also held discussions with GCV program officials. We met with independent test officials to obtain perspectives on the test process and results for the E-IBCT equipment and reviewed the Limited User Test report and the Army's plans for a second increment. We also held discussions with Army officials and reviewed documents related to its network strategy. We also compared all of the Army's plans against best acquisition practices and DOD policy.

This statement is based on work we conducted between June 2010 and March 2011 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

Since it started development in 2003, the Future Combat System (FCS) was at the center of the Army's efforts to modernize into a lighter, more agile, and more capable combat force. The Army expected to develop this equipment in 10 years, procure it over 13 years, and field it to 15 FCS-

unique brigades. The Army had also planned to spin out selected FCS technologies and systems to current Army forces. In June 2009, after 6 years and an estimated $18 billion invested, the Under Secretary of Defense for Acquisition, Technology, and Logistics issued an acquisition decision memorandum that canceled the FCS acquisition program, terminated manned ground vehicle development efforts, and laid out plans for follow-on Army brigade combat team modernization efforts. These initiatives included plans for the development of:

- GCV,
- multiple increments of brigade modernization, and
- an incremental tactical network capability.

The Army's GCV program is intended to modernize the current ground combat vehicle fleet, replacing a portion of the Bradley combat vehicles currently in inventory, at a projected cost to develop and acquire of up to $40 billion. The GCV features are expected to include full spectrum capability, robust survivability, capacity for a nine-man squad, and room for growth. The current plans call for a 7-year schedule from the expected approval of technology development start (Milestone A) in April 2011 to a first production vehicle delivered in 2018.[1] In February 2010, the Army issued a request for proposals before completing an analysis of alternatives, citing schedule urgency. In May 2010, the Army convened a "Red Team" to assess the risk of achieving the GCV schedule. The Red Team issued its report in August 2010, citing major risk areas including schedule, technical maturity, and affordability of the system.

The E-IBCT Increment 1 was a continuation of previous FCS-related efforts to spin out emerging capabilities and technologies to current forces and included:

- Class 1 Unmanned Aerial System,
- Network Integration Kit,
- Non-Line-of-Sight Launch System,[2]
- Small Unmanned Ground Vehicle,
- Tactical-Unattended Ground Sensors, and

[1] Milestone A is the point at which a program enters the technology development phase, Milestone B is entry into the engineering and manufacturing development phase, and Milestone C is entry into the production and deployment phase.

[2] The Non-Line-of-Sight Launch System was canceled in May 2010 due to redundancy with existing precision fires programs.

- Urban-Unattended Ground Sensor.

Significant performance shortfalls, particularly system reliability, were revealed during the September 2009 Limited User Test. The pervasive reliability problems in equipment during testing made it difficult to complete a full assessment of performance and the contribution of these systems to military utility. Although never clearly defined, E-IBCT Increment 2 was anticipated to include upgrades to Increment 1 systems, continued development of other FCS systems such as the Common Controller and larger unmanned ground vehicles, and further development of elements of the FCS information network. Since its termination in 2009, the Army has continued many FCS developments. According to Army program data, between March and December 2010, the Army paid contractors over $912 million for development of Increment 2 systems.

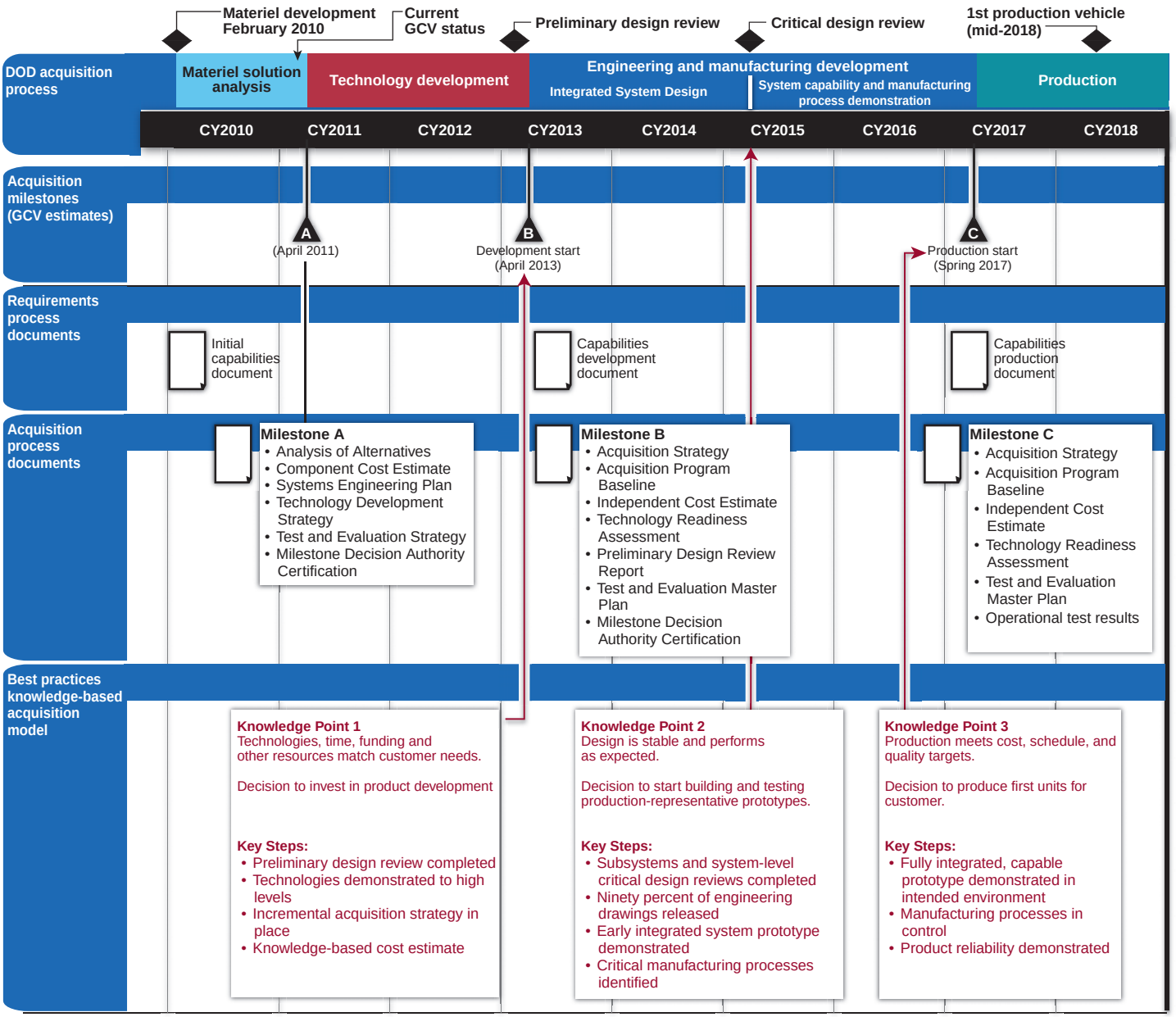
Additionally, the Army has been defining a strategy to develop and field a common tactical information network. Generally, such a system is expected to collect, process, and deliver vast amounts of information, such as imagery and communication while seamlessly linking people and systems. At this time, the Army's strategy is to understand current Army networking capabilities, determine capabilities needed in the 2017-18 time frame, and chart an incremental path to get there. The Army's new network strategy differs from the FCS network strategy primarily due to its incremental nature. The Army is working to document the architecture of the existing communication programs and defining capability gaps. It does not plan to have a single network development program but instead, it plans to rely on numerous programs of record to provide a variety of network capabilities that are expected to be fielded in 2-year incremental packages. It has also proposed a common operating environment which defines the standards and interfaces whereby new network capabilities can be integrated. The Army plans regular demonstrations as the network grows and improves in capability.

Key GCV Questions Must Be Addressed As the Army Approaches the Start of the Technology Development Phase in April and the Engineering and Manufacturing Development Phase in 2 Years

The Army is currently evaluating contractor proposals for the GCV technology development phase and preparing for a Milestone A review in April. In August 2010, the initial request for proposals for GCV was rescinded because of concerns that the program was pursuing a high-risk strategy, with questionable requirements and little concern for costs. In response, the Army issued a revised request for proposals in November 2010 that shifted the focus to more mature technologies to achieve the desired 7-year schedule. This strategy eliminated or reduced many of the requirements cited as unstable or not well understood. The Army has now prioritized the GCV requirements into three groups—a "must have" category, a second group of requirements where the Army intends to be flexible in what it accepts, and a third group deferrable to later increments.

Currently, the Army is evaluating proposals from multiple contractor teams and plans to award up to three fixed price incentive fee contracts for the 24-month GCV technology development phase. During this phase, the requirements will be further refined and subsystem prototypes will be demonstrated. The Army plans to conduct the preliminary design review in advance of the spring 2013 Milestone B review, followed by a 4-year engineering and manufacturing development phase. An initial production decision is expected in the spring of 2017, with the first production vehicle delivered sometime the following year. Figure 1 below illustrates (1) where the program is in the process, (2) the key requirements and acquisition documents needed at each milestone, and (3) the knowledge needed at each milestone per the best practices acquisition model.

Figure 1: GCV Events in the DOD Acquisition Process



Sources: GAO analysis of Army data, the DOD acquisition process, and GAO best practices.

The Army appears to be embarking on a more knowledge-based, incremental acquisition program, focusing on costs and technical maturity. Key questions remain about the urgency of the need for the GCV, the

robustness of the analysis of alternatives, the feasibility of a 7-year delivery schedule, and whether it will use only mature technologies. Resolving these questions could go a long way to informing a knowledge-based decision at the Milestone A review. That, in turn, would be a good starting point for the Army as it proceeds toward the Milestone B decision, now anticipated in spring 2013. At that point, knowledge-based acquisition calls for the Army to clearly demonstrate the match between GCV requirements and the resources available.

Has the Army demonstrated an urgent need for GCV within 7 years?

Questions remain about the urgency of the need for the GCV. In its August 2010 report, the Red Team that was convened by the Army questioned the urgency of the need for the GCV within 7 years. The report concluded that the funds that have migrated from the FCS program were driving the events and activities of the program, versus a true capabilities gap. Further, the team reported that the Army had not provided the analysis supporting the need to rapidly replace the Bradley vehicle. The Army is currently conducting portfolio reviews across many of its missions.[3] The results of the combat vehicle portfolio review should be available soon and should be able to answer questions about urgent need, related questions about the capability needs the GCV is intended to fulfill, and establish the vehicle's priority relative to other weapons systems being reviewed. Decision makers will have to decide if the Army has made a convincing case for the GCV before allowing it to proceed into the technology development phase.

Was the Army's final assessment of the reduced GCV requirements during its analysis of alternatives sufficiently robust?

The initial analysis of alternatives for the GCV considered a broad set of alternatives and did a robust evaluation of requirements and the resources needed to achieve them. The initial GCV design concept was found to be more advantageous than the alternatives considered; however, the analysis team determined that the manufacturing unit cost for a vehicle with these capabilities would be around $18 million—too expensive to meet the Army's affordability goals. The Army then did a series of analyses, trading off various capabilities to eliminate the immediate need for exotic and immature technologies. The analysis of alternatives team performed a quick turn-around analysis of the potential unit cost reductions resulting

[3] A Capability Portfolio Review is an Army process to holistically examine, validate, modify, or make recommendations to terminate requirements driving capability development, acquisition, and sustainment across a series of portfolios defined by the Army but roughly aligned with those defined by DOD.

from those trade-offs. It found that the agreed upon set of trade-offs may reduce the costs enough to achieve the Army's manufacturing unit cost target of $9.5 to $10.5 million and the corresponding reductions in requirements would only modestly degrade vehicle survivability and force protection, while offering as good or better mobility. This analysis of the reduced GCV requirements does not appear to have been as robust and relies on qualitative analysis from subject-matter experts for most of the design trade-offs, instead of the more rigorous quantitative methods used in the initial analysis of alternatives. The analysis also did not compare the capabilities of the new GCV design concept with the wider range of alternatives in the original assessment—such as the Bradley upgrade and some foreign or current vehicles—but only against the current force Bradley vehicles (without upgrades). The merits of the GCV design concept versus the other alternatives should be addressed as part of the upcoming Milestone A review.

Can the Army define GCV requirements that can be met within a 7-year schedule?

While it may be possible for the Army to meet its GCV program requirements on a 7-year schedule, both the Red Team and the Army's analysis of alternatives team found risk with this schedule. The Red Team reported that the risk the GCV would not achieve its requirements within the 7-year schedule constraint was very high, given the available resources, expertise, and recent investments. It reported that it would be possible to moderately improve an existing vehicle within 7 years that could address the most pressing needs, such as survivability and mobility. However, the team estimated that developing the next generation combat vehicle—a new and very different vehicle from what is currently in the force—would take 10 to 12 years. The analysis of alternatives also found that there was a moderate risk in this schedule, particularly in view of an acquisitions environment in which development time has the potential to be longer than expected and, historically, time lines for major defense acquisition programs are longer than this. However, these estimates and predictions were made before the Army both reduced its requirements and urged the use of mature technologies at the start of technology development. Nevertheless, a 4-year engineering and manufacturing phase for an entirely new combat vehicle appears to be ambitious. Therefore, in considering the Army's plans for GCV, decision makers should be careful to apply knowledge-based acquisition principles and not be artificially constrained by the pre-determined fixed schedule.

Will the Army be able to achieve needed capabilities using only mature technologies for GCV?

In response to concerns raised by the Red Team and others, the Army revised its GCV strategy to require that contractors use mature technologies or demonstrate there is a clear path forward to achieve technical maturity. In its analysis of the original request for proposals, the Red Team observed many unstable requirements; low technology readiness levels (TRL) of the proposed armor; and size, weight, and power issues associated with a vehicle that may weigh up to 70 tons.[4] While the analysis of alternatives reported that the combat vehicle technologies were of low or moderate concern, in fact the advanced armor was found to be at a very low level of maturity (TRL 3) and the Active Protection System, which is intended to offer 360-degree protection against rocket-propelled grenades, was not expected to be sufficiently mature (at TRL 5) by 2012. In response, the Army revised the request for proposals, reducing the number of requirements and urging contractors to propose only TRL 6 technologies for the technology development phase or have a clear path forward as to how to achieve this level of maturity. It is not known yet what technologies the contractors have included in their proposals but the two-year technology development phase will limit the range of technologies that will be mature within that period of time. The program's success will require the DOD and the Army to remain disciplined by maintaining a focus on the achievable and to avoid the requirements creep that has been so common in other programs.

[4] Technology readiness levels are measures pioneered by NASA and adopted by DOD to determine whether technologies were sufficiently mature to be incorporated into a weapon system. Our prior work has found TRLs to be a valuable decision-making tool because they can presage the likely consequences of incorporating a technology at a given level of maturity into a product development. The maturity level of a technology can range from paper studies (TRL 1), to prototypes that can be tested in a realistic environment (TRL 7), to an actual system that has proven itself in mission operations (TRL 9). According to DOD acquisition policy, a technology should have been demonstrated in a relevant environment (TRL 6) or, preferably, in an operational environment (TRL 7) to be considered mature enough to use for product development. Best practices of leading commercial firms and successful DOD programs have shown that critical technologies should be mature to at least a TRL 7 before the start of product development.

What are the key tasks required for the Army to demonstrate a match between GCV requirements and costs at Milestone B?

By Milestone B, the Army should be able to use the knowledge gained during the technology development phase to complete its capability development document, which should outline an affordable increment of militarily useful, logistically supportable, and technically mature capability. Significant systems engineering analysis and knowledge will be required to confirm that the technologies are mature enough for system integration; that, through a thorough and disciplined system-level preliminary design review, the design is sound enough to move into integration; and that a cost estimate based on adequate systems engineering knowledge is available to show that development and production will be affordable and the system will meet the requirements. The cost and affordability of the program must be confirmed through rigorous, independent cost estimates and an assessment made of whether the program is affordable in light of budget constraints. An independent technology assessment should confirm the maturity of the technology as the capability development document confirms the requirements. Finally, the feasibility and risks in the acquisition strategy and schedule should be assessed by independent specialists. The Army has also stated it will consider all contract vehicle types, including fixed price, for the engineering and manufacturing development phase. The strategy should also feature a timely and thorough critical design review and include plans for robust demonstrations of GCV prototypes as early as possible. Particular attention should be given to GCV's schedule-driven acquisition.

Most E-IBCT Increment 1 Systems Demonstrated Little Military Utility in User Tests and the Army Does Not Plan To Pursue E-IBCT Increment 2

Recent limited user tests conducted by the Army and assessed by the Director, Operational Test and Evaluation that were performed during fiscal year 2010 yielded startling results—most Increment 1 systems showed little or no military utility. In response, the Army has terminated several systems and only two were approved for additional procurement—the small unmanned ground vehicle and the network integration kit. These events have raised questions about the Army's process for establishing requirements. And while the small unmanned ground vehicle performed well in tests, the military utility of the costly network integration kit remains in doubt, and the Army has stated that the kit is not a viable, affordable, long term solution. For us, that raises questions about the desirability of continued procurement of the kit. Because Increment 1 systems have been deemed to provide little military utility, the Army and DOD decided to cancel the entire E-IBCT program, which effectively put an end to both increments. Nevertheless, the Army continues to assess whether additional investments are warranted in the remaining systems and capabilities from the FCS program. To avoid unnecessary expenditures, the Army needs to expedite this process. As indicated on

table 1, the user tests provided information on the systems' ability to meet their performance and reliability requirements as well as provided determinations on military utility.

Table 1: E-IBCT Increment 1 2010 Limited User Test demonstrated performance and reliability requirements, and military utility assessments

	Demonstrated performance requirements	Reliability requirements	Military utility effectiveness assessment	Military utility suitability assessment	Military utility survivability assessment
Network Integration Kit	Majority but not all	Met	None or limited	None	Limited
Urban Unattended Ground Sensor	Majority but not all	Met	None	None	None
Class 1 Unmanned Aerial System	Majority but not all	Not met	Limited	None	Limited
Tactical Unattended Ground Sensor	Majority but not all	Met	Limited	None	None
Small Unmanned Ground Vehicle	Majority but not all	Met	Effective	Effective	Limited

Source: Army Test and Evaluation Command's Operational Test Agency Milestone C Assessment Report.

During the Limited User Test, the systems displayed improved reliability, relative to previous testing, and demonstrated a majority of their performance requirements. However, with the exception of the small unmanned ground vehicle, the systems provided little or no military utility. Relative to the other systems, the small unmanned ground vehicle performed well in these tests—it met most of its requirements and was assessed well on military utility. As a result, in February 2011, the Under Secretary of Defense for Acquisition, Technology, and Logistics (1) concurred with an earlier Army decision to end development efforts for all of the elements of Increment 1; (2) approved production of two sets of small unmanned vehicles and directed the Army to consider further vehicle production under a separate program; and, (3) responding to the Army's desire to keep network demonstration efforts active, approved procurement of one additional brigade set of network integration kits despite disappointing performance in the user tests. The decision made potential fielding of the kits—radios, waveforms, integrated computer system, and software—contingent on user testing that successfully demonstrates that it can improve current force capabilities.[5] Additionally,

[5] A waveform is the representation of a signal that includes the frequency, modulation type, message format, and/or transmission system.

the decision recognized the need for addressing a number of known kit deficiencies, such as the ability to effectively communicate while moving and with current Army radio formats.

Is additional procurement beyond what is needed for network integration kit testing justified?

The Army now plans to perform additional testing this spring and summer to determine whether (1) a brigade would be better equipped with a network integration kit than without it, (2) fielding is warranted, or (3) further program modifications are needed. The Army maintains that the kit is needed to capitalize on waveform, radio, and integrated computer system efforts to deliver the networking capabilities for company and platoon use. However, for a program currently in production, a number of critical technologies key to the kit's performance remain immature. The Army and the Director, Defense Research and Engineering have both assessed a critical technology key to the kit's performance—the Wideband Networking Waveform—at a maturity level well below what would be expected of a program in the production stage of development.[6] The Director also indicated that there is a high risk that the technology will not mature as expected and also considers the technology to be potentially flawed. Additionally, the Director has assessed another key critical technology for the kit—the Soldier Radio Waveform—at a technology maturity level well below what would be expected of a program in production.

Furthermore, each kit is estimated to cost almost $800,000 with 81 already in production and with up to 100 more to be produced and purchased by the Army. The Army has not yet finalized its plans for fielding the additional units if the known deficiencies of the kits are corrected and additional testing is successful. While continued development and testing of the kit may be appropriate, procurement of up to 181 units seems far beyond what may be needed for testing. By comparison, about 15 kits were used in the 2010 E-IBCT limited user testing. If the kit is not a viable, affordable, long term solution as the Army has stated, we question why it is procuring kits for fielding.

[6] The Director, Defense Research and Engineering is now known as the Assistant Secretary of Defense for Research and Engineering.

How could E-IBCT Increment 1 systems have met many of their performance requirements in testing but be found to lack sufficient military utility?

Army officials have expressed their concerns to us about how the E-IBCT systems could have met many performance requirements yet be found to offer little or no military utility during recent testing. The capabilities demonstrated by the E-IBCT systems were often overshadowed by the unanticipated burdens, such as the network integration kit's extensive start-up procedures or the lengthy and extensive emplacement times for the tactical unattended ground sensor.

The Army is planning to conduct a review of its processes for setting requirements and provide its own assessment of this situation. One possible explanation may be the supporting rationale for the E-IBCT systems. As we have stated previously, the E-IBCT Increment 1 systems were a continuation of previous FCS-related efforts to spin out emerging capabilities and technologies to current forces. FCS was to be a synergistic system-of-systems. The Army conducted a single analysis of alternatives for the program and concluded that an FCS-equipped brigade would be more effective than other Army combat brigades. When the FCS program was terminated, the Army restructured the program into the E-IBCT Modernization, which aimed to field subsets of former FCS systems to the current force. However, this decision was not informed by analyses of alternatives for the individual systems. Such analyses would have informed decision makers about the systems' individual ability to satisfy a mission need outside of the earlier FCS fighting construct, which may have provided insights into their potential military utility.

What rationale will the Army use in deciding which of the remaining FCS systems or capabilities to terminate or continue in development?

Despite the decision to cancel the E-IBCT program, the Army has not entirely ruled out additional development for some of these systems. Prior to its cancellation decision, the Army transferred program management responsibility for the systems from its Program Executive Office for Integration to other, separate program executive offices. According to an Army official, the Army has been working for almost 2 years to draft analyses of alternatives for each of these systems to determine whether to continue investing in their development as separate programs. Those analyses should provide insights about the potential benefits of the systems.

The Army is also considering whether to continue development activities for other systems or capabilities that were being developed within the FCS program. For example, within FCS, the Army was working on a larger unmanned ground vehicle being designed to provide transport of equipment and/or supplies for the dismounted soldier. The Army is now considering system development for what it calls a Squad Mission

Equipment Transport, which appears similar to what the Army was attempting to achieve with the larger FCS unmanned ground vehicle. The Army was also developing another FCS unmanned system which would provide a remote reconnaissance, sensing, and direct-fire capability. The development of this system was previously under the purview of Program Executive Office for Integration and was mentioned as a potential E-IBCT Increment 2 system. The management responsibility for that system has been transitioned to Program Executive Office for Ground Combat Systems, which is also responsible for the Squad Mission Equipment Transport. It appears the Army is preparing capability description documents for these two new systems, but plans for their further development are unclear. The Common Controller is another system that emerged from the FCS program. It was designed to provide a single unit for controlling sensors and multiple unmanned platforms, like the Class I unmanned aerial system and the small unmanned ground vehicle. The fate of the Common Controller is unclear at this point.

Finally, the Army still has plans for a common operating environment, which is software designed to connect command and control systems to the software applications, and the work that was begun under FCS has been transitioned to a government laboratory for further development and incorporation into its longer-term networking initiatives. Another network-related FCS initiative the Army may continue to develop is the Warfighter-Machine Interface. This was the primary soldier computer system that would display the common operating picture and allow soldiers access to most of the software services.

Army Tactical Information Network Designated As Special Interest Portfolio

The Under Secretary of Defense for Acquisition, Technology, and Logistics has recently designated the Army tactical network as a special interest portfolio and instructed the Army to develop an integrated network architecture and a comprehensive acquisition strategy. The Under Secretary stated that lessons learned from recent testing highlight the need for adaptive, evolutionary network approaches. The first step, in his view, is establishing a clear understanding of the network requirements, strategies, and management of a number of disparate communications and command and control acquisitions. He instructed the Army to develop an integrated network architecture and a comprehensive acquisition strategy by March 2011. To that end, the Army has developed a network demonstration strategy and the Army Chief of Staff has ordered it be expeditiously implemented. A key aspect of its implementation will be aligning the schedules of the separate programs of record with the Army's plans to conduct periodic demonstrations of the overall information

network. A major network test and evaluation is being planned for June 2011. Two issues deserve additional attention: (1) whether the Army has clearly defined its internal roles and responsibilities for management of its tactical network, and (2) how recent developments have impacted the Army's radio and waveform plans.

Has the Army clearly defined its internal roles and responsibilities for management of its tactical network?

The Army does not plan to have a single network development program, but instead will rely on numerous programs to provide a variety of network capabilities. This proved to be a challenge under FCS. The Army planned to use complementary systems to provide a portion of the FCS's anticipated capabilities. These were systems that were managed and developed under separate program offices, much like what the Army is considering with this proposed networking approach. The Army discovered that the programmatic challenges associated with those separate developments complicated plans to utilize them in FCS. Relying on separate development programs to provide needed capabilities for the FCS program proved more challenging than expected. To date, Army officials have told us that two separate Army groups could be involved but details about the specific role and authority of these organizations for coordinating the Army network strategy are not yet well defined. As the Army continues to define and implement its network strategy, we would expect to see more clarity on its internal management roles and responsibilities.

How have recent developments impacted the Army's radio and waveform plans?

The Network Integration Kit was expected to be a fundamental part of the Army's information network. The Army has tentatively decided to complete development of the Joint Tactical Radio System ground mobile radio but it does not plan to procure large quantities of these particular radios for any network integration kits. Army officials say that, in the future, they intend to purchase comparable radios, but they intend to pursue them in a competitive environment and not be restricted to a single vendor. It is not yet clear how and when the Army intends to implement this plan.

According to an Army official, the Army plans for the future tactical network will include the wideband networking and soldier radio waveforms, which have been under development for use on the Joint Tactical Radio System family of radios. However, the Army has had trouble maturing these waveforms for several years and they are still not at acceptable levels of maturity. For example, a March 2010 independent DOD assessment indicated that the technologies are more akin to low-

fidelity prototypes that lack functionality rather than high-fidelity prototypes with full functionality. The Army believes it has made progress in recent waveform testing. However, the technical maturity of these waveforms may still be in question and that needs to be considered as the Army proceeds with implementation of its network strategy.

Concluding Remarks

The Army has had to make many difficult modernization decisions over the last decade, such as the termination of Armed Reconnaissance Helicopter, termination of FCS, and truncating E-IBCT Increment 1. E-IBCT, the Army's initial post-FCS modernization effort, has not worked out very well. The recent cancellation of the E-IBCT Modernization program signals another step away from the FCS, but it also presents questions the Army must address. When I appeared before this committee this time last year, I testified that none of these systems have been designated as an urgent need, and that it is not helpful to provide early capability to the warfighter if those capabilities are not technically mature or reliable. We cautioned that if the Army moved forward too fast with immature designs that it could cause additional delays as the Army and its contractors concurrently address technology, design, and production issues. The Army needs to look ahead and base its acquisition decisions on well thought-out requirements and knowledge-based acquisition principles.

After the rough start with the GCV effort, the Army has shown a willingness to rethink its original approach that other experts believed was flawed. By retracting the original request for proposals and addressing some of the concerns raised by independent evaluators, the Army was able to introduce improvements. However, as the Army continues toward the GCV's technology development phase, it must address several questions in order to position the program for successful execution. While the Army has done much to put it on a better path, the GCV acquisition strategy is still very ambitious, with a 2-year technology development phase and a 4-year engineering and manufacturing development phase. Now is the time for DOD and the Army to determine whether the proposed timeframes are sufficient for the program's scope. If the necessary acquisition knowledge cannot be developed within those time frames, additional time and resources may need to be added. The Army also has to retain both the flexibility and resolve to ensure that the right work gets done in the technology development phase—robust system engineering, technology development, cost estimating, and requirements definition—to make for success in the remainder of the program. GCV, if done right, could be a breakthrough in Army acquisition. However, if the Army does not adhere

to acquisition policy and best practices on GCV, it could end up in the same failed position that it found itself in with FCS and other programs.

Moreover, DOD and Army decisions on when and how the GCV program enters the acquisition process will help to define how recent acquisition legislation and policy will actually be implemented. The decisions made on the program will be symbolic from that standpoint. If GCV does not measure up to the standards in law and in policy, yet is approved and wins funding, it will be a setback to acquisition reform. The Congress and DOD have enacted acquisition reforms in legislation and policy, now is the time to enable and enforce those reforms at the service, DOD and congressional levels.

Chairman Bartlett, Ranking Member Reyes, and members of the subcommittee, this concludes my prepared statement. I would be happy to answer any questions you or members of the subcommittee may have.

Contacts and Staff Acknowledgments

For future questions about this statement, please contact me on (202) 512-4841 or sullivanm@gao.gov. Individuals making key contributions to this statement include William R. Graveline, Assistant Director; William C. Allbritton; Noah B. Bleicher; Beverly A. Breen; Marcus C. Ferguson; and Robert S. Swierczek.

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