

February 2005

# DOD SYSTEMS MODERNIZATION

## Management of Integrated Military Human Capital Program Needs Additional Improvements



G A O

Accountability \* Integrity \* Reliability



Highlights of [GAO-05-189](#), a report to the Secretary of Defense

## Why GAO Did This Study

The Department of Defense (DOD) has long-standing problems with its information technology (IT) systems supporting military personnel and pay. To address these problems, DOD initiated the Defense Integrated Military Human Resources System (DIMHRS) program, which is to provide a joint, integrated, standardized military personnel and pay system across all military components. In November 2004, DOD accepted the design for the first of three phases, DIMHRS (Personnel/Pay). GAO reviewed DOD's management of the requirements definition for the system as well as the program's management structure.

## What GAO Recommends

To assist DOD and increase its chances of successfully delivering DIMHRS (Personnel/Pay), GAO is making recommendations to the Secretary of Defense to strengthen DOD's requirements-management processes and adopt an integrated approach to program management. In commenting on a draft of this report, DOD agreed or partially agreed with three of GAO's recommendations and partially disagreed with the remaining three. The department added that it agreed with the general thrust of all the recommendations but believed that it was already performing some. GAO supports DOD's commitment to follow the management principles that the recommendations espouse.

[www.gao.gov/cgi-bin/getrpt?GAO-05-189](http://www.gao.gov/cgi-bin/getrpt?GAO-05-189).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Randolph C. Hite at 202 512-3439 or [hiter@gao.gov](mailto:hiter@gao.gov).

# DOD SYSTEMS MODERNIZATION

## Management of Integrated Military Human Capital Program Needs Additional Improvements

### What GAO Found

DOD faces significant management challenges with DIMHRS, a major system acquisition program that is expected to lead to major changes in the processing of military personnel and pay. To its credit, DOD has begun taking steps to ensure that the requirements and the design for the first phase of the program are consistent with each other by tracing backward and forward between the detailed requirements and the system design, and it did obtain formal user acceptance of the DIMHRS (Personnel/Pay) high-level requirements. However, it has not obtained user acceptance of the detailed requirements. Furthermore, it has not ensured that the detailed requirements are complete and understandable. For example, requirements for the interfaces between DIMHRS (Personnel/Pay) and existing systems have not yet been fully defined because DOD has not yet determined how many legacy systems will be partially replaced and thus require modification. Furthermore, DOD is still determining whether the data requirements provided to the contractor for system design are complete. Finally, an estimated 77 percent of the detailed requirements are difficult to understand, based on GAO's review of a random sample of the requirements documentation. These challenges increase the risk that the delivered system capabilities will not fully meet the users' needs.

Moreover, although DIMHRS (Personnel/Pay) is to be an integrated system, its development is not being governed by integrated tools and approaches, such as an integrated program management structure, enterprise architecture, and master schedule. Furthermore, while DOD is appropriately attempting to maximize the use of commercial, off-the shelf (COTS) products in building the new system, it has not adequately followed some important best practices associated with COTS-based system acquisitions. For example, DOD's program plan/schedule does not adequately recognize the needs of end-user organizations for the time and resources to integrate DIMHRS (Personnel/Pay) with their respective legacy systems and to prepare their workforces for the organizational changes that the system will introduce.

DOD's requirements definition challenges and shortcomings in program governance can be attributed to a number of causes, including the program's overly schedule-driven approach and DOD's difficulty in overcoming its long-standing cultural resistance to departmentwide solutions. Unless these challenges are addressed, the risk is increased that the system will not provide expected capabilities and benefits on time and within budget. Given the limitations in some DOD components' ability to accurately pay military personnel, it is vital that these risks be addressed swiftly and effectively.

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## Abbreviations

BEA	Business Enterprise Architecture
CMM	Capability Maturity Model
COTS	commercial, off-the-shelf
DFAS	Defense Finance and Accounting Service
DIMHRS	Defense Integrated Military Human Resources System
DOD	Department of Defense
GAO	Government Accountability Office
IEEE	Institute of Electrical and Electronics Engineers
IT	information technology
JFMIP	Joint Financial Management Improvement Program
JPMO	Joint Program Management Office
JR&IO	Joint Requirements and Integration Office
NII	Networks and Information Integration
ORD	Operational Requirements Document
P&R	Personnel and Readiness
PEO-IT	Program Executive Office, Information Technology
PMO	Program Management Office
PSA	Principal Staff Assistant
SEI	Software Engineering Institute

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United States Government Accountability Office  
Washington, DC 20548

February 11, 2005

The Honorable Donald H. Rumsfeld  
The Secretary of Defense

Dear Mr. Secretary:

As we first reported in 1993, the Department of Defense (DOD) has had serious problems with military personnel and pay systems, including shortcomings in its ability to properly pay military personnel and to monitor and track them to, from, and within their duty stations.<sup>1</sup> We recently reported that such problems continue today, particularly for Army Reserve and National Guard troops serving in Iraq and Afghanistan.<sup>2</sup> These long-standing problems can be attributed, in part, to

- hundreds of supporting information technology (IT) systems, many of which perform the same tasks and store duplicate data;
- the need for manual data reconciliation, correction, and entry across these nonintegrated systems; and
- the large number of data translations and system interfaces.

To address these problems, DOD initiated the Defense Integrated Military Human Resources System (DIMHRS) program, which is to provide a joint, integrated system that is standardized across all military components. The system is to be Web-based and maximize the use of commercial, off-the-shelf (COTS) software. DOD plans to acquire and deploy DIMHRS in three phases:

- DIMHRS (Personnel/Pay)—military personnel hiring, promotion, retirement, etc., and pay;

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<sup>1</sup> GAO, *Financial Management: Defense's System for Army Military Payroll Is Unreliable*, [GAO-93-32](#) (Washington, D.C.: Sept. 30, 1993).

<sup>2</sup> GAO, *Military Pay: Army Reserve Soldiers Mobilized to Active Duty Experienced Significant Pay Problems*, [GAO-04-911](#) (Washington, D.C.: Aug. 20, 2004), and *Military Pay: Army National Guard Personnel Mobilized to Active Duty Experienced Significant Pay Problems*, [GAO-04-89](#) (Washington, D.C.: Nov. 13, 2003).

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- DIMHRS (Manpower)—workforce planning, analysis, utilization, etc.; and
  - DIMHRS (Training).

DOD accepted the design of the first system phase—DIMHRS (Personnel/Pay)—in November 2004 and is now proceeding with development of the system. Deployment to the Army and the Defense Finance and Accounting Service (DFAS) is to begin in the second quarter of fiscal year 2006, followed by deployment to the Air Force, Navy, and Marine Corps.

The first phase, DIMHRS (Personnel/Pay), is intended to focus particularly on

- providing joint-theater commanders with accurate and timely human capital information;
- providing active service members, reservists, and National Guard members with timely and accurate pay and benefits, including those performing in theaters of operation or combat; and
- providing an integrated military personnel and payroll system that uses standard data definitions across all services and service components, thereby reducing multiple data entries, system maintenance, pay discrepancies, and reconciliations of personnel and pay information.

The system design for DIMHRS (Personnel/Pay) is based on requirements defined to reflect a new, joint approach to processing military personnel and pay; this new approach is expected to result in major changes to current business processes.

Given the importance of DIMHRS (Personnel/Pay) to DOD's ability to manage military personnel and pay, we initiated a review, under the authority of the Comptroller General, of the management of the DIMHRS (Personnel/Pay) acquisition. Our objectives were to determine

- whether DOD has effective processes in place for managing the definition of the requirements for DIMHRS (Personnel/Pay) and
- whether DOD has established an integrated program management structure for DIMHRS (Personnel/Pay) and is following effective processes for acquiring a system based on commercial software components.

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On November 30, 2004, we briefed officials from DOD's Joint Requirements and Integration Office, the Navy Program Executive Office (IT), and DOD's Joint Program Management Office on the results of our review. This report transmits the briefing. The full briefing, including our scope and methodology, is reprinted as appendix I. We performed our work from January through November 2004, in accordance with generally accepted government auditing standards.

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## DOD's Management of the DIMHRS (Personnel/Pay) Requirements Definition Has Recently Improved, but Key Aspects of Requirements Definition Remain a Challenge

DOD has not effectively managed important aspects of the requirements for DIMHRS (Personnel/Pay) to ensure that they are complete, correct, and unambiguous. Requirements are the foundation for designing, developing, and testing a system. Incorrect or incomplete requirements have been commonly identified as a cause of systems that do not meet their cost, schedule, or performance goals. Disciplined processes and controls for the definition and management of requirements are defined in published models and guides, such as the Capability Maturity Models developed by Carnegie Mellon University's Software Engineering Institute and standards developed by the Institute of Electrical and Electronics Engineers.

DOD's management of DIMHRS (Personnel/Pay) requirements had several shortcomings:

- First, DOD did not initially ensure that the system requirements and system design were aligned. DOD required the contractor to base the system design only on high-level (more general) requirements, providing detailed requirements to the contractor for information only. However, according to the program office, the system design should be based on the detailed requirements, and following our inquiries, the program office began tracing backward and forward between the detailed requirements and the system design to ensure consistency. Among other things, DOD is analyzing financial system standards to ensure that all applicable standards are included in the requirements and design for DIMHRS (Personnel/Pay). Without consistency between requirements and design, the risk is increased that the developed and deployed system will not fully satisfy financial system standards and users' needs.
- Second, DOD did not ensure that the detailed requirements include important content and that they are clear and unambiguous. The requirements for the interfaces between DIMHRS (Personnel/Pay) and existing systems are not yet complete because DOD has not yet determined the extent to which legacy systems will be replaced and thus

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require modification in order to interact with the new system.

Furthermore, DOD is still determining whether the data requirements provided to the contractor for system design are complete. Finally, about 77 percent of the detailed requirements are difficult to understand, based on our review of a random sample of the requirements documentation.<sup>3</sup>

Our review showed that this documentation did not consistently provide a clear explanation of the relationships among the parts of each requirement (business rules; information requirements; and references to regulations, laws, standards, and so on) or adequately identify the sources of data required for computations. If requirements are not complete and clear, their implementation in the system is not likely to meet users' needs.

- Third, DOD has not obtained user acceptance of the detailed requirements. As we have pointed out, when business process changes are planned, users' needs and expectations must be addressed, or users may not accept change, which can jeopardize the effort.<sup>4</sup> One way to ensure and demonstrate user acceptance of requirements is to obtain sign-off on the requirements by end-user representatives. However, although the DIMHRS (Personnel/Pay) program obtained the user organizations' formal acceptance of the high-level requirements, the process used to define the detailed requirements has not resulted in such acknowledgment of agreement on the requirements. Program officials stated that gaining formal agreement from some of the user organizations would delay the program and be impractical because of end users' reluctance to accept a set of joint requirements that requires end users to make major changes in their current ways of processing military personnel and pay actions. We have previously observed this challenge<sup>5</sup> and have stated that DOD's organizational structure and embedded culture work against efforts to modernize business processes and implement corporate information systems such as DIMHRS (Personnel/Pay) across component lines. Nevertheless, not attempting to obtain agreement on DIMHRS (Personnel/Pay) requirements increases the risk that users will not accept and use the developed and deployed system, and that later system rework will be required to make it function as intended DOD-wide and achieve stated military human capital management outcomes.

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<sup>3</sup> The 95 percent confidence interval for this estimate is from 60 to 89 percent. (For more details of the results of the review and the scope and methodology, see slides 34 and 74 of appendix I.)

<sup>4</sup> GAO, *Business Process Reengineering Assessment Guide Version 3*, [GAO/AIMD-10.1.15](#) (Washington, D.C.: May 1997).

<sup>5</sup> GAO, *Defense IRM: Poor Implementation of Management Controls Has Put Migration Strategy at Risk*, [GAO/AIMD-98-5](#) (Washington, D.C.: Oct. 20, 1997).



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According to DIMHRS (Personnel/Pay) officials, a number of actions have been taken to reduce the risk that users will not accept the system, including conducting numerous focus groups, workshops, demonstrations, and presentations explaining how the DIMHRS (Personnel/Pay) software product could address DOD's existing personnel/pay problems.

However, DIMHRS (Personnel/Pay) officials stated that support for the system by the services' executives is mixed. For example, the officials said that (1) Army executives are committed to implementing and using the DIMHRS (Personnel/Pay) system because they believe it will address many problems that the Army currently faces; (2) Air Force officials generally support the system but say they do not yet know whether the system will meet all their needs; and (3) Navy and Marine Corps executives are not as supportive because they are not fully convinced that DIMHRS (Personnel/Pay) will be an improvement over their existing systems.

The shortcomings in DOD's efforts to effectively manage DIMHRS (Personnel/Pay) requirements are attributable to a number of causes, including the program's overly schedule-driven approach and the difficulty of overcoming DOD's long-standing cultural resistance to departmentwide solutions. These shortcomings leave DOD without adequate assurance that the requirements will accurately reflect the end users' needs and that the resulting system design is reflective of validated requirements that will fully meet DOD's needs.

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## DOD Does Not Have a Well-Integrated Management Structure for DIMHRS (Personnel/Pay) and Is Not Following All Relevant Supporting Acquisition Management Processes

DOD does not have a well-integrated structure for managing DIMHRS (Personnel/Pay), which DOD has described as an integrated program, and it is not following some key supporting processes for acquiring COTS-based business systems.

- Program responsibility, accountability, and authority are diffused. Leading organizations ensure that programs are structured to ensure that a single entity has clear authority, responsibility, and accountability for the program. For DIMHRS (Personnel/Pay), these are spread among three key stakeholder groups whose respective chains of command do not meet at any point below the Secretary and Deputy Secretary of Defense levels. Responsibility for requirements definition rests with a joint requirements development office, which is accountable through one chain of command. Responsibility for system acquisition rests with the program office, which is accountable through another chain of command. Responsibility for preparing for transition to the new system rests with the end-user organizations—11 major DOD components reporting through five different chains of command. This is consistent with our earlier observation that DOD’s organizational structure and embedded culture have not adequately accommodated an integrated, departmentwide approach to joint systems.<sup>6</sup> Without a DOD-wide integrated governance structure for a joint, integrated program like DIMHRS (Personnel/Pay), the risk is increased that the program will not produce an integrated set of outcomes.
- The system has not been defined and designed according to a DOD-wide integrated enterprise architecture.<sup>7</sup> In accordance with the National Defense Authorization Act for Fiscal Year 2003,<sup>8</sup> DOD has been developing a departmentwide Business Enterprise Architecture (BEA), and it has been reviewing some programs, such as DIMHRS (Personnel/Pay) with proposed obligations of funds greater than \$1 million, for consistency with

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<sup>6</sup> [GAO/AIMD-98-5](#).

<sup>7</sup> An enterprise architecture is a blueprint for guiding and constraining the definition and implementation of programs in a way that supports strategic plans and promotes integration, interoperability, and optimization of mission performance. This blueprint serves as the common frame of reference to inform program operational and technological decision making relative to, for example, what functions will be performed where, by whom, and using what information. For more information, see GAO, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management (Version 1.1)*, Executive Guide, [GAO-03-584G](#) (Washington, D.C.: April 2003).

<sup>8</sup> Bob Stump National Defense Authorization Act for Fiscal Year 2003, Pub. L. No. 107-314, § 1004, 116 Stat. 2458, 2629-2631 (Dec. 2, 2002).

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the BEA. In April 2003, the DOD Comptroller certified DIMHRS (Personnel/Pay) to be consistent with the BEA on the basis of the program manager's commitment that the yet-to-be-developed system would be designed to be consistent with the yet-to-be-developed architecture. To follow through on this commitment, DOD included a requirement in the DIMHRS (Personnel/Pay) contract that the systems specification be compatible with the emerging BEA.

DIMHRS (Personnel/Pay) officials recognize that the April 2003 architectural certification is preliminary and stated that DIMHRS (Personnel/Pay) will undergo another certification before the system deployment decision. By that time, however, lengthy and costly design and development work will have been completed. The real value in having and using an architecture is knowing during system definition, design, and development what the larger blueprint for the enterprise is, so that these can be guided and constrained by this frame of reference. Aligning to the architecture after the system is designed would require expensive system rework to address any inconsistencies with the architecture.

- Program stakeholders' activities have not been managed according to a DIMHRS (Personnel/Pay)-integrated master plan/schedule. An effective master plan/schedule should allow for the proper scheduling and sequencing of activities and tasks, allocation of resources, preparation of budgets, assignment of personnel, and criteria for measuring progress. However, the DIMHRS (Personnel/Pay) program plan/schedule is based on the contractor's and program office's activities and does not include all the activities that end-user organizations must perform to prepare for DIMHRS (Personnel/Pay), such as the redesign of legacy systems and interfaces, business process reengineering, and workforce change management. Without a true master plan/schedule of activities that includes all DOD program stakeholders, the risk increases that key and dependent events, activities, and tasks will not be performed as needed, which in turn increases the risk of schedule slippage and program goal shortfalls.
- Some, but not all, best practices associated with acquiring COTS-based business systems are being followed. An example of a best practice that DOD is following is to discourage the modification of commercial software components without thorough justification; DOD's contract includes award fees that give the contractor incentives to, among other things, minimize the customization of the COTS software. An example of a best practice that DOD is not following is to ensure that plans and schedules explicitly provide for preparing users for the new business processes associated with the commercial components. DOD does not have an integrated program plan/schedule that provides for end-user organization

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activities that are associated with preparing users for the changes that the system will introduce. Because it is not following all best practices associated with acquiring COTS-based systems, DOD is increasing the risk that DIMHRS (Personnel/Pay) will not be successfully implemented and effectively used.

DOD's efforts to employ an integrated program management approach have not been effective for a number of reasons, including DOD's long-standing cultural resistance to departmentwide solutions. Without an integrated approach and effective processes for managing a program that is intended to be an integrated solution that maximizes the use of commercially available software products, DOD increases the risk that the program will not meet cost, schedule, capability, and outcome goals.

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## Conclusions

The importance of DIMHRS (Personnel/Pay) to DOD's ability to manage military personnel and pay services demands that the department employ effective processes and governance structures in defining, designing, developing, and deploying the system to maximize its chances of success. For DIMHRS (Personnel/Pay), however, DOD did not initially perform important requirements-development steps, and the detailed system requirements are missing important content. DOD has begun to remedy these omissions by taking actions such as tracing among requirements documents and system design documents to ensure alignment, but user organizations' acceptance of requirements has not occurred. Moreover, although DIMHRS (Personnel/Pay) is to be an integrated system, it is not being governed by integrated tools and approaches, such as an integrated program management structure, integrated DOD business enterprise architecture, and an integrated master plan/schedule.

Furthermore, while DOD is appropriately attempting to maximize the use of COTS products in building DIMHRS (Personnel/Pay) and is following some best practices for developing COTS-based systems, others are not being followed.

The absence of the full complement of effective processes and structures related to each of these areas can be attributed to a number of causes, including the program's overly schedule-driven approach and the difficulty of overcoming DOD's long-standing cultural resistance to departmentwide solutions. Effectively addressing these shortcomings is essential because they introduce unnecessary risks that reduce the chances of accomplishing DIMHRS (Personnel/Pay) goals on time and within budget.

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It is critical that DOD carefully consider the risks caused by each of these areas of concern and that it appropriately strengthen its management processes, structures, and plans to effectively minimize these risks. To do less undermines the chances of timely and successful completion of the program.

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## Recommendations for Executive Action

To assist DOD in strengthening its program management processes, structures, and plans and thereby increase its chances of successfully delivering DIMHRS (Personnel/Pay), we recommend that you direct the Assistant Secretary (Networks and Information Integration), the Under Secretary (Personnel and Readiness), and the Under Secretary (Comptroller), in collaboration with the leadership of the military services and DFAS, to take the following six actions to jointly ensure an integrated, coordinated, and risk-based approach to all DIMHRS (Personnel/Pay) definition, design, development, and deployment activities. At a minimum, this should include

- ensuring that joint system requirements are complete and correct, and that they are acceptable to user organizations;
- establishing a DOD-wide integrated governance structure for DIMHRS (Personnel/Pay) (1) that vests an executive-level organization or entity representing the interests of all program stakeholders—including the Joint Requirements and Integration Office, the Joint Program Management Office, the services, and DFAS—with responsibility, accountability, and authority for the entire DIMHRS (Personnel/Pay) program and (2) that ensures that all stakeholder interests and positions are appropriately heard and considered during program reviews and before key program decisions;
- ensuring that the degree of consistency between DIMHRS (Personnel/Pay) and the evolving DOD-wide business enterprise architecture is continuously analyzed and that material inconsistencies between the two, both potential and actual, are disclosed at all program reviews and decision points and in program budget submissions, along with any associated system risks and steps to mitigate these risks;
- developing and implementing a DOD-wide, integrated master plan/schedule of activities that extends to all DOD program stakeholders;
- ensuring that all relevant acquisition management best practices associated with COTS-based systems are appropriately followed; and

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- ensuring that an event-driven, risk-based approach that adequately considers factors other than the contract schedule continues to be used in managing DIMHRS (Personnel/Pay).

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## Agency Comments and Our Evaluation

In written comments on a draft of this report (reprinted in app. II), the Under Secretary of Defense for Personnel and Readiness stated that DOD largely agrees with the thrust of our recommendations, and that it is already following, to the extent practicable, the kind of acquisition best practices embodied in them. The department also made two overall comments about the report and provided a number of detailed comments pertaining to five of our six recommendations.

The first overall comment was that our espousal of certain system acquisition management best practices resulted in incongruity among our recommendations. In particular, DOD indicated that our recognition that DOD is appropriately limiting modification of COTS products (a best practice) is incongruous with our recommendation that requirements be acceptable to user organizations (another best practice). It further stated that if it acted on all comments that it received on requirements from all sources, as it suggested we were recommending, then this would result in excessive modification to the COTS product. We do not agree with DOD's points; we suggest that a careful reading of our recommendations would show that the department has not correctly interpreted and characterized those recommendations that pertain to this overall comment. Specifically, our report does not recommend that DOD act on all comments obtained from all sources, regardless of the impact and consequences of doing so. Rather, the report contains complementary recommendations for ensuring that the system requirements are acceptable to user organizations and discouraging changes to the COTS product unless the life-cycle costs and benefits justify making them. In short, our recommendations concerning system requirements are intended to provide DOD with the principles and rules that it should apply in executing a requirements-acceptance process that permits all stakeholder interests and positions to be heard, considered, and resolved in the context of what makes economic sense. While DOD's comments note that a process was followed to screen out user inputs that, for example, necessitated changes to the COTS product, this process did not provide for the effective resolution of such inputs, as shown in our report by certain user organizations' comments: specifically, that their involvement in defining detailed requirements was limited, that their comments on these requirements were not fully resolved, and that they were not willing to sign off on the requirements as sufficient to meet their needs. This lack of resolution is important because not attempting to

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obtain some level of stakeholder acceptance of requirements increases the risk that the system will not adequately meet users' needs, that users will not adopt the system, and that later system rework will be required to rectify this situation.

The second overall comment was that the department was already employing acquisition management best practices, to the extent practicable, and that the management process for the program is innovative and groundbreaking for DOD, going far beyond what is required by the department's regulations. For example, the department commented that the system-requirements documentation far exceeds that which has been available for any other system effort. We do not dispute DOD's comment about efforts on this system relative to other system acquisitions, because our review's objectives and approach did not extend to comparing DIMHRS (Personnel/Pay) with other DOD acquisitions. However, our review did address DOD's use of key acquisition management best practices on DIMHRS (Personnel/Pay), and in this regard we support the department's recognition of the importance of these practices. In our report, we have provided a balanced message by recognizing instances where best practices were being followed, such as when DOD began tracing detailed system requirements to the system design following inquiries that we made during the course of our review. However, we do not agree that at the time we concluded our work DOD was following all relevant and practicable best practices; examples of these practices are cited in our report and discussed below in our response to DOD's detailed comments on our individual recommendations.

In its comments specific to our six recommendations, the department agreed without further comment with one recommendation (to develop and implement a DOD-wide, integrated master plan/schedule of activities that extends to all DOD program stakeholders). In addition, it either partially agreed or partially disagreed with our other five recommendations, and it provided detailed comments on each. Generally, DOD's areas of disagreement relate to its view that it is already performing the activities that we recommend.

- DOD partially concurred with our recommendation to ensure that joint system requirements are complete and correct and acceptable to user organizations. In this regard, DOD stated that it has already taken great pains to ensure that the requirements are complete and correct, although its comments stated that this assurance has occurred "to the extent that any documentation [of requirements] this massive can be correct." It also

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stated that the requirements are fully traceable to the system design, and that the high-level requirements were validated in accordance with DOD regulations. It added that it has taken various steps to gain users' acceptance of the system, including a change management process, briefings, and prototype demonstrations.

We do not disagree that DOD has taken important steps to meet the goals of requirements completeness and correctness. Likewise, we do not disagree that since receiving our draft report for comment, the department might have completed the important requirements-to-design traceability steps that it began in response to our inquiries, which we describe in our report. However, DOD's comments contain no evidence to show that it has addressed the limitations in the requirements' completeness and correctness that we cite in the report, such as those relating to the interface and data requirements, and they do not address the understandability issues we found relative to 77 percent of the detailed requirements. Moreover, DOD stated in its comments that its latest program review revealed 606 business process comments and 17 interface comments that it deemed noncritical, although it noted that they were still being analyzed.

We also do not disagree that DOD has taken steps to gain user acceptance of the system. However, they did not gain acceptance of the detailed requirements that the system is to be designed to meet, which is the focus of our recommendation. As we point out in the report, not attempting to obtain agreement on the detailed requirements increases the risk that users will not adopt the system as developed and deployed, and that later system rework will be needed to address this.

- DOD partially concurred with our recommendation that it continuously analyze the degree of consistency between DIMHRS (Personnel/Pay) and the evolving DOD-wide BEA so that the risks of material inconsistencies are understood and addressed. In doing so, DOD stated that the DIMHRS (Personnel/Pay) requirements comprise the military personnel and pay portion of the architecture and that as one of the first major systems developed using all the principles of this architecture, DIMHRS (Personnel/Pay) is and will remain fully consistent with it. We do not agree with DOD's comments that the system is consistent with the BEA. As we state in our report, DOD could not provide us with documented, verifiable analysis demonstrating this consistency and forming the basis for the DOD Comptroller's April 2003 certification of this consistency. Rather, we were told that this certification was based on the DIMHRS (Personnel/Pay) program manager's stated commitment to be consistent at some future



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point. However, as we note in our report, the real value of an architecture is that it provides the necessary context for guiding and constraining system investments in a way that promotes interoperability and minimizes overlap and duplication. Without it, expensive system rework is likely to be needed to achieve these outcomes. As we also note in our report, the absence of verifiable analysis of DIMHRS (Personnel/Pay) architectural compliance was in part due to the state of the BEA, which we have reported as not being well-defined and missing important content.<sup>9</sup> Recognizing this, as well as the pressing need for DIMHRS's (Personnel/Pay) promised capabilities, our recommendation calls for ongoing analysis of DIMHRS (Personnel/Pay) and the BEA to understand the risks of designing and developing the system outside the context of a well-defined architecture.

- DOD partially disagreed with our recommendation that it establish a DOD-wide governance structure in which responsibility, accountability, and authority for the entire program are vested in an executive-level organization or entity representing the interests of all program stakeholders. In doing so, the department described the roles, responsibilities, and authorities for various program stakeholders; however, it did not explain its reason for not agreeing with the recommendation, and only one of its comments bears relevance to our recommendation. Specifically, it commented that the Under Secretary of Defense (Personnel and Readiness) has full responsibility and accountability for the program. We do not agree. As we state in our report, DIMHRS (Personnel/Pay) is a DOD-wide program involving three distinct stakeholder groups whose respective chains of command do not meet at any point below the Secretary and Deputy Secretary of Defense levels. Thus, we concluded that responsibility, accountability, and authority for the program are diffused, with responsibility for developing functional requirements resting with the Joint Requirements and Integration Office, responsibility for system acquisition resting with the Joint Program Management Office, and responsibility for preparing for the transition to DIMHRS (Personnel/Pay) resting with 11 major end-user organizations. Under this structure, only the Joint Requirements and Integration Office is accountable to the Under Secretary, and the two distinct other stakeholder groups are not accountable to the Under Secretary.

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<sup>9</sup> GAO, *DOD Business Systems Modernization: Limited Progress in Development of Business Enterprise Architecture and Oversight of Information Technology Investments*, [GAO-04-731R](#) (Washington, D.C.: May 17, 2004).

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This means, as we state in the report, that no single DOD entity is positioned to exercise continuous leadership and direction over the entire program.

- The department also partially disagreed with our recommendation to follow all relevant acquisition management best practices associated with COTS-based systems. According to DOD's comments, all of these best practices are currently being followed, including the three that we cite in our report as not being followed: (1) ensuring that plans explicitly provide for preparing users for the impact that the business processes embedded in the commercial components will have on their respective roles and responsibilities, (2) proactively managing the introduction and adoption of changes to how users will be expected to use the system to execute their jobs, and (3) ensuring that project plans explicitly provide for the necessary time and resources for integrating commercial components with legacy systems. In this regard, the department stated that the DIMHRS (Personnel/Pay) program had documented every change in current practices and policies that will be required for the military services, as well as future practices and policies, and that these were fully vetted through the functional user community. It also described a number of activities that it has undertaken to prepare and train users in the COTS product and other aspects of DIMHRS (Personnel/Pay).

We do not dispute whether DOD has performed activities intended to facilitate the implementation of DIMHRS (Personnel/Pay). However, the best practices that we identified as not being followed, which form the basis of our recommendation, are focused on effectively planning for the full complement of activities that are needed to prepare an organization for the institutional and individual changes that COTS-based system solutions introduce. Such planning is intended to ensure, among other things, that key change management activities, including the dependencies among these activities, are defined and agreed to by stakeholders, including ensuring that adequate resources and realistic time frames are established to accomplish them. In this regard, DOD agreed in its comments that it does not have an integrated master plan/schedule for the program, which is an essential tool for capturing the results of the proactive change management planning that the best practices and our recommendation advocate. Both published research and our experience in evaluating the acquisition and implementation of COTS-based system solutions show that the absence of well-planned, proactive organizational and individual change management efforts can cause these system efforts to fail.

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- The department partially disagreed with our last recommendation to adopt a more event-driven, risk-based approach to managing DIMHRS (Personnel/Pay) that adequately considers factors other than the contract schedule, stating that it is currently using an event-driven, risk-based approach and revising the schedule when necessary. We support DOD's comment, as it indicates that DOD has decided to begin following such an approach. However, during the course of our work this was not the case. For example, we observed at that time that the DIMHRS (Personnel/Pay) program intended to accelerate its deployment schedule to meet an externally imposed deadline and that it was not until we raised concerns about the associated risks of doing so, as well as the absence of effective strategies to mitigate these risks, in an earlier draft of the briefing included in this report, that the department changed its plans. Also during the course of our work, we observed that program activities were truncated or performed concurrently in order to meet established deadlines. For example, as we describe in our report, data requirements (which are derived from higher-level information needs) were provided to the contractor before information needs were fully defined because the contractor needed these data requirements to complete the system design on schedule. It was this kind of focus on schedule that led to our recommendation to adopt a more event-driven, risk-based approach. However, in light of DOD's comment that it intends to do so, we have slightly modified our recommendation to recognize this decision.

All our recommendations are aimed at reducing the risk of failure on this important program, which we and DOD agree is critical to the department's ability to effectively manage military personnel and pay. Furthermore, DOD's comments show that it agrees with us on the importance of taking an approach to the program that is based on the kinds of management processes and structures that we recommend, and the department appears committed to following such an approach. Following our recommendations will help the department to do so and thereby avoid unnecessary risks. As we state in the report, careful consideration of the areas of concern that we raise is critical to improving the chances of timely and successful completion of the program.

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We are sending copies of this report to the House and Senate Armed Services and Appropriations Committees; the House Committee on Government Reform; the Senate Committee on Governmental Affairs; and the Director, Office of Management and Budget. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

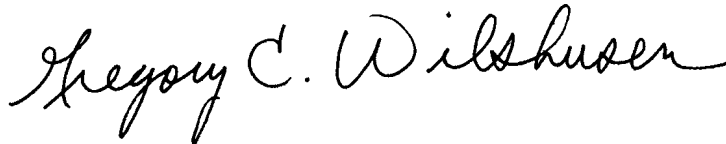
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Should you or your offices have any questions on the matters discussed in this report, please contact Randolph Hite at (202) 512-3439 or Gregory C. Wilshusen at (202) 512-3317; we can also be reached by e-mail at [hiter@gao.gov](mailto:hiter@gao.gov) or [wilshuseng@gao.gov](mailto:wilshuseng@gao.gov). Other contacts and key contributors to this report are listed in appendix III.

Sincerely yours,



Randolph C. Hite  
Director, Information Technology  
Architecture and Systems Issues



Gregory C. Wilshusen  
Acting Director, Defense Capabilities and  
Management Issues

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# Appendix I: Briefing to Department of Defense Officials, November 30, 2004

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## DOD Systems Modernization: Management of Integrated Military Human Capital Program Needs Additional Improvements

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Briefing to Department of Defense Officials  
November 30, 2004



## Overview

Introduction

Objectives

Results in Brief

Background

Findings:

- Requirements Management
- Program Management Structure and Processes

Conclusions

Recommendations

Attachment I: Objectives, Scope, and Methodology



## Introduction

As we have previously reported, the Department of Defense (DOD) faces serious military personnel and payroll-processing problems, dating back to the early 1990s.<sup>1</sup> According to DOD, these problems affect its ability to properly pay military personnel and to monitor and track them to, from, and within their duty stations. We recently reported that these problems continue today, particularly for Army Reserve and National Guard troops serving in Iraq and Afghanistan.<sup>2</sup>

These problems can be traced, in part, to such causes as

- hundreds of supporting information technology (IT) systems, many of which perform the same tasks and store duplicate data;
- the need for manual data reconciliation, correction, and entry across these nonintegrated systems; and
- the large number of data translations and system interfaces.

<sup>1</sup>GAO, *Financial Management: Defense's System for Army Military Payroll Is Unreliable*, GAO/AIMD-93-32 (Washington, D.C.: Sept. 30, 1993).

<sup>2</sup>GAO, *Military Pay: Army Reserve Soldiers Mobilized to Active Duty Experienced Significant Pay Problems*, GAO-04-911 (Washington, D.C.: Aug. 20, 2004), and *Military Pay: Army National Guard Personnel Mobilized to Active Duty Experienced Significant Pay Problems*, GAO-04-89 (Washington, D.C.: Nov. 13, 2003).



The Defense Integrated Military Human Resources System (DIMHRS (Personnel/Pay)) is intended to address these problems, with particular focus on

- providing joint-theater commanders with accurate and timely human capital information;
- providing active service members, reservists, and National Guard members with timely and accurate pay and benefits, especially when they are performing in theaters of operation or combat; and
- providing an integrated military personnel and payroll system that uses standard data definitions across all services and service components, thereby reducing multiple data entries, system maintenance, pay discrepancies, and reconciliations of personnel and pay information.

Among other things, the new system is also intended to support DOD's efforts to produce accurate and complete financial statements.





DOD plans to acquire and deploy DIMHRS in three phases:

- DIMHRS (Personnel/Pay)—military personnel hiring, promotion, retirement, etc., and pay;
- DIMHRS (Manpower)—workforce planning, analysis, utilization, etc.; and
- DIMHRS (Training).

DOD accepted the design of the first system phase—DIMHRS (Personnel/Pay)—in November 2004 and is now proceeding with development of this system phase. Deployment to the Army and the Defense Finance and Accounting Service (DFAS) is to begin in the second quarter of fiscal year 2006, followed by deployment to the Air Force, Navy, and Marine Corps.



## Objectives

In view of the significance of the DIMHRS program to DOD's ability to manage military personnel and pay services, we initiated a review under the authority of the Comptroller General. Our objectives were to determine

1. whether DOD has effective processes in place for managing the definition of the requirements for DIMHRS (Personnel/Pay) and
2. whether DOD has established an integrated program management structure for DIMHRS (Personnel/Pay) and is following effective processes for acquiring a system based on commercial software components.

To accomplish our objectives, we interviewed officials from relevant organizations, analyzed program management documentation and activities, and reviewed relevant DOD analyses. Further details on our scope and methodology are given in attachment I to this appendix.

Our work was performed from January through November 2004, in accordance with generally accepted government auditing standards.



Results in Brief: Objective 1  
**Requirements Management**

DOD's management of the DIMHRS (Personnel/Pay) requirements definition has recently improved, but key aspects of requirements definition remain a challenge. In particular, DOD has begun taking steps to ensure that the system requirements and the system design are consistent with each other. However, DOD

- has not ensured that the detailed requirements are complete and understandable and
- has not obtained user acceptance of the detailed requirements.

The requirements definition challenges are attributable to a number of causes including the program's overly schedule-driven approach and the difficulty of overcoming DOD's long-standing cultural resistance to departmentwide solutions. These challenges increase the risk that the delivered system's capabilities will not fully meet DOD's needs.



Results in Brief: Objective 2  
**Management Structure and Processes**

DOD does not have a well-integrated management structure for DIMHRS (Personnel/Pay) and is not following all relevant supporting acquisition management processes. In particular,

- program responsibility, accountability, and authority are diffused;
- the system has not been defined and designed according to a DOD-wide integrated enterprise architecture;
- program stakeholders' activities have not been managed according to a master plan/schedule that integrates all stakeholder activities; and
- the program is following some, but not all, best practices associated with acquiring business systems based on commercially available software.

Without an integrated approach and effective processes for managing a program that is intended to be an integrated solution, DOD has increased the risk that the program will not meet cost, schedule, capability, and outcome goals.



Results in Brief:  
**Recommendations**

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To assist DOD in effectively managing DIMHRS (Personnel/Pay), we are making six recommendations to the Secretary of Defense aimed at ensuring that DOD follows an integrated, coordinated, and risk-based program approach and thereby increases its chances of successfully delivering DIMHRS (Personnel/Pay).



## Background

### Program Chronology

*June 1996.* Defense Science Board Task Force on Military Personnel Information Management recommended that DOD “move to a single, all-service and all-component, fully integrated personnel and pay system with common core software.”

*July 1997.* Deputy Secretary of Defense established the Joint Requirements and Integration Office (JR&IO) and assigned it responsibility for functional oversight of DIMHRS and appointed the Navy as the “acquisition agent.”

*February 1998.* The Under Secretary of Defense for Personnel and Readiness (P&R) and the Assistant Secretary of Defense for Networks and Information Integration (NII)<sup>3</sup> approved the DIMHRS (Personnel/Pay) program to proceed into the concept refinement phase (i.e., alternatives analysis).

*May 1999.* DOD’s Institute for Defense Analysis analyzed alternative systems solutions, reaffirmed the decision to base DIMHRS (Personnel/Pay) on commercial, off-the-shelf (COTS) software, and made a number of suggestions, including the need to favor the use of COTS “out of the box” to hold down costs.

<sup>3</sup> At that time, this executive’s title was Assistant Secretary of Defense for Command, Control, Communications, and Intelligence.



## Background

*October 2000.* Assistant Secretary of Defense (NII) approved the program to proceed into the technology development phase (i.e., requirements definition).

*March 2001.* The Navy selected a commercial software product to serve as the foundation for DIMHRS (Personnel/Pay) application software.

*May 2002.* The Navy issued a request for proposals for development and integration of DIMHRS (Personnel/Pay).

*June 2002.* DOD responded to congressional questions about the DIMHRS (Personnel/Pay) program management structure and requests for DIMHRS (Personnel/Pay) funding from multiple DOD organizations.

*September 2002.* The Navy awarded five contracts and began a competitive acquisition process to select one of the five to develop and integrate DIMHRS (Personnel/Pay).

*December 2002.* The five contractors submitted final proposals.

*May 2003.* Assistant Secretary of Defense (NII) approved the program to proceed into the system development and demonstration phase (i.e., software development, integration, testing, etc.).



## Background

*September 2003.* The Navy awarded the development and integration contract.

*March 2004.* DOD established a baseline version of the detailed requirements for DIMHRS (Personnel/Pay) and provided it to the development and integration contractor for use in designing DIMHRS (Personnel/Pay).

*November 2004.* DOD accepted the contractor's design of DIMHRS (Personnel/Pay) and authorized the contractor to proceed with development of the system.





### **DIMHRS (Personnel/Pay) Description**

The DIMHRS (Personnel/Pay) system is to be Web based and maximize the use of COTS software. The contract includes award fees that give the contractor incentives to, among other things, meet the contract schedule and minimize customization of the COTS software.

DIMHRS (Personnel/Pay) was designed in four parts. DOD has accepted all four parts and authorized the contractor to develop the system in accordance with the accepted design.

According to DOD officials, DIMHRS (Personnel/Pay) will be the largest personnel system in the world in terms of the number of people it serves and transactions it processes.



## Roles and Responsibilities of DIMHRS (Personnel/Pay) Stakeholders

Stakeholder	Roles and responsibilities
Joint Requirements and Integration Office	Developing DOD integrated user requirements; providing expertise related to personnel/pay functional area.
Joint Program Management Office (JPMO)	Acquiring the system, including managing the system development contractor, accepting the design; and testing and deploying the system.
End users <sup>a</sup>	Assisting JR&IO in developing integrated requirements; assisting JPMO in addressing technical issues; taking other actions necessary for transition.
DIMHRS management offices for 4 services and DFAS	Assisting JR&IO and JPMO in developing DIMHRS (Personnel/Pay); managing transition activities for own chain of command, including modifying existing systems and interfaces.
Under Sec. of Defense (P&R)	Overseeing personnel/pay functional area; resolving issues that cannot be resolved by the Executive Steering Committee.
Executive Steering Committee	Monitoring the program, resolving issues, and advising the Under Secretary (this is a stakeholder executive-level committee).
Joint Integration Group	Monitoring the program and resolving issues (this is a group of user representatives).
Assist. Sec. of Defense (NII)	Designated Milestone Decision Authority.
Assist. Sec. Navy (Research, Development, and Acquisition)	Establishing acquisition policies and procedures in accordance with DOD directives and guidelines and for chartering the Program Executive Office, Information Technology (PEO-IT).
PEO-IT	Providing programmatic and technical direction to JPMO.

Sources: GAO and DOD.

<sup>a</sup> End users come from 11 organizations: 4 services, 4 reserve units, 2 National Guard components (Air Force and Army), and DFAS.



## Costs

DOD does not currently have a total life-cycle cost estimate for DIMHRS (Personnel/Pay). According to JPMO officials, JPMO's costs through fiscal year 2003 and projected through fiscal year 2009 are about \$601 million:

- \$244.7 million obligated during fiscal years 1998 through 2003 and
- \$356.6 million required for fiscal years 2004 through 2009.

However, JR&IO and JPMO officials stated that these amounts do not include user organization costs; JPMO originally estimated these costs to be about \$350 million, but it is now reevaluating these and other cost estimates as part of its efforts to update the program's economic analysis.

Additionally, the officials stated that the \$601 million does not include JR&IO's actual and estimated costs of \$153 million through fiscal year 2009 for requirements definition activities, business process reengineering planning, enterprise architecture development, and other activities pertaining to management and analysis of the human resources domain. According to JR&IO officials, this \$153 million consists of \$72.5 million obligated during fiscal years 1998 through 2003 and \$80.4 million required for fiscal years 2004 through 2009.



## Benefits

DOD estimated that after DIMHRS (Personnel/Pay) is fully operational, including implementation of associated business process improvements and termination of legacy systems, the system will address DOD's long-standing military personnel and payroll processing problems and result in productivity improvements and reduced IT operating and maintenance costs.<sup>4</sup>

<sup>4</sup> According to DOD, mission performance improvements, not cost savings, are the rationale for DIMHRS (Personnel/Pay).



## Objective 1: Requirements Management

**DOD's management of the DIMHRS (Personnel/Pay) requirements definition has recently improved, but key aspects of requirements definition remain a challenge.** Requirements are the foundation for designing, developing, and testing a system. Our experience indicates that incorrect or incomplete requirements are a common cause of systems not meeting their cost, schedule, or performance goals. Disciplined processes and controls for defining and managing requirements are defined in published models and guides, such as the Capability Maturity Models developed by Carnegie Mellon University's Software Engineering Institute (SEI), and standards developed by the Institute of Electrical and Electronics Engineers (IEEE).

In managing DIMHRS (Personnel/Pay) requirements, DOD has begun taking steps to ensure that the system requirements and the system design are consistent with each other. However, DOD

- has not ensured that the detailed requirements are complete and understandable and
- has not obtained user acceptance of the detailed requirements.

These challenges increase the risk that the delivered system's capabilities will not fully meet DOD's needs.



## Objective 1: Requirements Management Traceability

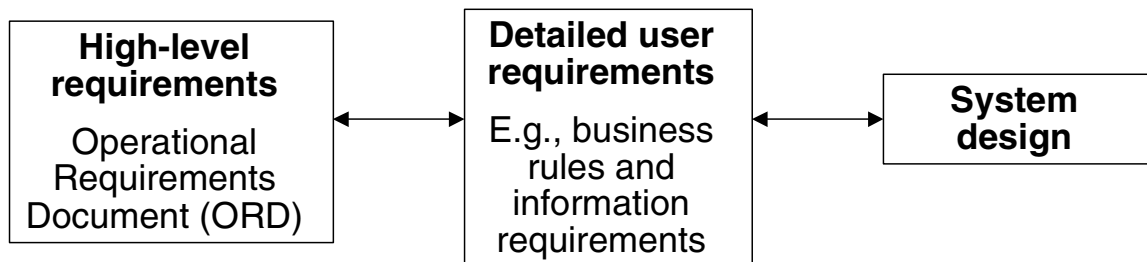
*DOD has recently begun performing important steps to better ensure alignment among high-level requirements, detailed requirements, and the system design. According to SEI guidance, requirements should be completely and correctly incorporated into the system design. As we and others have previously reported, addressing requirements issues during requirements definition and system design is considerably less expensive and quicker than fixing problems during and after development.*<sup>5</sup>

<sup>5</sup>See, for example, Karl E. Wiegers, *Software Requirements* (1999), p.15, and GAO, *DOD Business Systems Modernization: Billions Continue to Be Invested with Inadequate Management Oversight and Accountability*, GAO-04-615 (Washington, D.C.: May 27, 2004).



## Objective 1: Requirements Management Traceability

An accepted way of ensuring the complete and accurate incorporation of requirements is to trace between levels of requirements and design documentation:



In system development, traceability is the degree to which a relationship is established between two or more products of the system development process. Traceability allows the user to follow the life of the requirement both forward and backward through system documentation from origin through implementation. Traceability is critical to understanding the parentage, interconnections, and dependencies among the individual requirements. This information in turn is critical to understanding the impact when a requirement is changed or deleted.



## Objective 1: Requirements Management Traceability

The DIMHRS (Personnel/Pay) ORD defines the high-level capabilities for satisfying DOD's mission needs.

- The ORD lists the functional processes, information needs, and performance parameters that the system is to support; an example of a functional process is “promote enlisted member personnel.”

The detailed requirements include “use cases,” which are detailed descriptions of the activities that the system and the end users must perform and data needed to accomplish these activities.

- For example, the functional process “promote enlisted personnel” includes multiple use cases, such as “record enlisted member’s eligibility for promotion.” Each use case includes (1) business rules describing the processing steps for accomplishing the use case, such as steps for determining which members meet the time in grade/time in service requirement for promotion; (2) references to the applicable statutes, policies, guidance, or regulations that govern the use case; and (3) a list of the information needed to perform the use case, such as each person’s rank, occupation code, and promotion recommendation.

In addition, the use cases incorporate process improvements that are to introduce efficiencies and to standardize personnel and pay processing DOD-wide.





Objective 1: Requirements Management  
Traceability

However, when DOD accepted the first two parts of the system design, it had not traced between the detailed requirements and the design. Rather, DOD required the contractor to base the system design only on the high-level requirements defined in the ORD, and DOD provided detailed requirements for information only purposes.

According to JPMO officials, the contract was written in this way to provide the contractor with maximum flexibility to design the system according to the capabilities of the COTS product and thereby reduce system development and maintenance costs. Nonetheless, JR&IO officials also stated that the detailed requirements for DIMHRS (Personnel/Pay) should be the basis of the system design.



## Objective 1: Requirements Management Traceability

In addition, DOD did not, until recently, trace between ORD requirements and detailed requirements. As a consequence, we told DOD during the course of our review that relevant financial and accounting standards were missing from the detailed requirements, even though they had been included in the ORD.

According to the ORD, the system will comply with requirements for personnel and payroll feeder systems contained in the Federal Financial Management Improvement Act of 1996, the Chief Financial Officers Act of 1990, the Federal Managers' Financial Integrity Act of 1982, and the most current Joint Financial Management Improvement Program (JFMIP) Program Management Office (PMO) requirements.<sup>6</sup> The details that correspond to these statutory and regulatory requirements are found in the JFMIP PMO standard for human resources and payroll financial systems.<sup>7</sup>

<sup>6</sup>JFMIP is a cooperative undertaking of the Treasury Department, Office of Management and Budget, Office of Personnel Management, GAO, and others to improve financial management practices in government. The PMO, managed by the Executive Director of the JFMIP, using funds provided by the Chief Financial Officers Council agencies, is responsible for the testing and certification of COTS core financial systems for use by federal agencies and coordinating the development and publication of functional requirements for financial management systems.

<sup>7</sup>JFMIP, *JFMIP Human Resources & Payroll Systems Requirements*, JFMIP SR-99-5 (April 1999).



## Objective 1: Requirements Management Traceability

- The JFMIP PMO standard is important because it contains requirements associated with producing accurate and complete payroll data for the financial statements, which is relevant to DOD's efforts to obtain "clean," or "unqualified," audit opinions on its financial statements.<sup>8</sup>
- An example of the JFMIP PMO requirements is functionality to process prior period, current, and future period pay actions, on the basis of effective dates.

<sup>8</sup>A clean, or unqualified, opinion is given when an auditor deems the financial statements to be accurate and complete, with no qualifying statements.



## Objective 1: Requirements Management Traceability

- After we told DOD of the missing requirements, JR&IO officials undertook an analysis of the 196 JFMIP PMO human resources and payroll requirements<sup>9</sup> and have stated that this analysis has allowed them to ensure that DIMHRS (Personnel/Pay) will meet 170 of the 196 requirements and that the remaining requirements are not applicable to military human resource and payroll systems. They also stated that all applicable requirements are now documented in the DIMHRS (Personnel/Pay) detailed requirements database.

<sup>9</sup>JFMIP SR-99-5. According to the JFMIP PMO, these requirements are not applicable to noncivilian human resources and payroll systems, such as military personnel and foreign national systems. However, DOD administratively requires compliance with these JFMIP PMO requirements in DFAS's *Guide to Federal Requirements for Financial Management Systems*, DFAS 7900.4-G Version 4.1.1 (December 2002). The DFAS Guide also states that "Users must exercise their own knowledge and judgment of the differences between military and civilian personnel/payroll systems in applying these requirements to the different systems."



## Objective 1: Requirements Management Traceability

- According to JPMO officials, tracing the detailed financial requirements to the design was not done sooner because the COTS software product being used is certified as JFMIP PMO compliant. However, JFMIP PMO certification extends only to the core financial module of this software (i.e., general ledger, funds control, accounts receivable, accounts payable, cost management, and reporting); it does not include the two modules used for DIMHRS (Personnel/Pay)—human resources and payroll.



## Objective 1: Requirements Management Traceability

- In addition, as we have reported, even if JFMIP PMO had certified the human resources and payroll modules of the COTS software product, certification by itself does not ensure that systems based on this software will be compliant with the goals of the Federal Financial Management Improvement Act, as JFMIP has made clear, and does not ensure that systems based on this software will provide reliable, useful, and timely data for day-to-day management.<sup>10</sup> Other important factors affecting compliance with federal financial management system requirements and the effectiveness of an implemented COTS system include how the software package has been configured to work in the agency's environment, whether any customization is made to the software, the success of converting data from legacy systems to new systems, and the quality of transaction data in the feeder systems.

<sup>10</sup>GAO, *Financial Management: Improved Financial Systems Are Key to FFMA Compliance*, GAO-05-20 (Washington, D.C.: Oct. 1, 2004), and *Business Modernization: NASA's Integrated Financial Management Program Does Not Fully Address Agency's External Reporting Issues*, GAO-04-151 (Washington, D.C.: Nov. 21, 2003).



Objective 1: Requirements Management  
Traceability

To their credit, JR&IO and JPMO officials have begun tracing between the detailed requirements and the design, including the financial standards. As of late November 2004, they told us that this tracing had identified about 630 discrepancies that may require modification to the detailed requirements or the design. They stated that they plan to complete this tracing by the end of February 2005.

Until DOD completes tracing both backward (from the design back to the detailed requirements and the ORD) and forward (from the ORD forward to the detailed requirements and the design), the risk is increased that the requirements and design are not complete and correct.



Objective 1: Requirements Management  
**Content of Requirements**

*Detailed requirements are missing important content and are difficult to understand.* According to SEI, requirements should be complete, correct, clear, and understandable; IEEE standards state that requirements should be communicated in a structured manner to ensure that the customers (i.e., end users) and the system's developers reach a common understanding of them.

For DIMHRS (Personnel/Pay), certain requirements are missing from the detailed requirements. Specifically, the interface requirements remain incomplete, and questions exist as to the completeness of the data requirements. Finally, some of the use cases that provide the detailed requirements are unclear and ambiguous, making them difficult to understand. Each of these three areas is discussed in greater detail below.

If requirements are not complete and clear, their implementation in the system design may not meet users' needs, and it will be unnecessarily difficult for DOD to test the system effectively and determine whether system requirements have been met.





## Objective 1: Requirements Management Content of Requirements

First, the requirements for the interfaces between DIMHRS (Personnel/Pay) and existing systems are not yet complete. According to SEI, requirements for internal and external interfaces should be sufficiently defined to permit these interfaces to be designed and interfacing systems to be modified.

For example, DIMHRS (Personnel/Pay) will be required to interface with DOD's accounting systems and other systems, such as DOD's travel system, either by providing DIMHRS (Personnel/Pay) data for these systems or by receiving accounting data from them. DIMHRS (Personnel/Pay) interfaces must also be designed to ensure compliance with applicable JFMIP PMO financial system requirements and applicable federal accounting standards. These interface requirements must be completed before the DIMHRS (Personnel/Pay) system can be fully deployed.

To complete the interface requirements, officials representing JPMO and the user organizations' DIMHRS offices told us that they must identify which of the legacy systems will be partially replaced, and thus will require modification in order to interface with the new system. JPMO officials stated that although DOD accepted the system design in November 2004, a significant amount of work remained to fully address DIMHRS (Personnel/Pay) interface issues by the user organizations.



## Objective 1: Requirements Management Content of Requirements

Second, the data requirements initially provided to the contractor for the system design had not been aligned with the users' information needs that were included in the detailed requirements. According to SEI, the data required to meet users' information needs must be defined so that the system can be properly designed and developed. However, JR&IO officials told us that they had not fully defined information needs when users were asked to identify the data requirements, along with the legacy systems that are the best sources of the required data. The contractor needed these data requirements to complete the system design on schedule.

- DOD recently began comparing the data requirements provided to the contractor with the users' information needs developed by JR&IO. JR&IO officials stated that they expect to complete this work in February 2005. Until this task is completed, DOD will not know whether revisions will be needed to the system design to ensure that users' information needs are met and that the correct data are later migrated to the new system.
- JPMO officials also stated that when DOD accepted the system design in November 2004, a significant amount of work remained for the user organizations to fully address DIMHRS (Personnel/Pay) data issues.



## Objective 1: Requirements Management Content of Requirements

Third, some of the detailed requirements are unclear and ambiguous, making them difficult to understand. According to SEI, requirements should be clear and understandable. When requirements are ambiguous, their meaning is open to varying interpretations, which increases the risk that the implementation of the requirements will not meet users' needs.

- We reviewed a random sample of the documentation for 40 of 424 use cases (detailed requirements): 20 of 284 pay use cases and 20 of 140 personnel use cases. Our review showed that this documentation did not consistently provide a clear explanation of the relationships among the parts of each requirement (business rules, information requirements, and references) or adequately identify the sources of data required for computations.



## Objective 1: Requirements Management Content of Requirements

- Based on our sample, an estimated 22 percent of use cases cite “P&R guidance” (that is, guidance from the Office of the Under Secretary for P&R) as a reference to support the need for a business rule, either alone or along with references to DOD policies.<sup>11</sup> According to JR&IO officials, this note indicates that the business rule includes steps not currently required by DOD’s policies, which have been added either to take advantage of “out-of-the-box” COTS capabilities or to implement a best practice. However, when P&R guidance is cited, the use cases do not explain whether an out-of-the-box capability or best practice is intended.

<sup>11</sup> This estimate is a weighted average of the sample results for the two categories of use cases shown in the table on slide 34. A weighted average is used because the population of pay use cases was sampled at a rate different from the population of personnel use cases.



## Objective 1: Requirements Management Content of Requirements

- In addition, when both P&R guidance and existing policies are cited, the use case does not explain which rules are based on P&R guidance and which are based on existing policies. These ambiguities make it difficult for stakeholders to understand the business rule and its rationale. (This point is further discussed in the following section on end users' acceptance of requirements.) According to JR&IO officials, such ambiguity was resolved via communication between JR&IO and JPMO officials followed by JPMO officials' communicating with the contractor.
- Estimates of the extent of use case problems and associated confidence intervals are summarized on the next slide.



Objective 1: Requirements Management  
Content of Requirements

**Extent of Problems with Use Cases**

Problem description	Use cases with problems			
	Number	Pay Personnel	Estimated percentage	95% confidence intervals <sup>a</sup>
Information requirements are provided, but the business rules do not provide enough detail to determine what information requirement is to be used for each business rule.	8	20	60%	44–74%
Business rule contains a computation but does not include a source for the data needed for making the computation.	8	4	33%	19–51%
Reference to “P&R guidance” does not clearly explain the rationale behind the business rule.	0	13	22%	15–29%
Use cases that had one or more of the above problems	13	20	77%	60–89%

Source: GAO.

<sup>a</sup> Ninety five percent confidence interval of the percentage of total use cases exhibiting the indicated problem.



## Objective 1: Requirements Management Content of Requirements

JR&IO officials agreed that the clarity of the use cases could be improved but stated that the use cases provide a greater level of detail than DOD normally provides for a COTS-based system. JR&IO officials added that they developed the use cases to support the design and development of the system rather than to communicate the detailed requirements to the user organizations. In this regard, officials representing the DIMHRS (Personnel/Pay) development and integration contractor stated that the use cases are providing useful information for designing the DIMHRS (Personnel/Pay) system.



## Objective 1: Requirements Management End User Acceptance

*DOD has not obtained user acceptance of detailed requirements. According to SEI, users' needs and expectations must be used in defining requirements. Furthermore, according to our guidance, when business process changes are planned, users' needs and expectations must be addressed, or users may not accept change, which can jeopardize the effort.<sup>12</sup> One way to ensure and demonstrate user acceptance of requirements is to obtain sign-off on the requirements by authorized end-user representatives.*

To its credit, JR&IO obtained the user organizations' formal acceptance of the ORD. However, the process used to define the detailed requirements (specifically, the use cases) has not resulted in user acceptance.

- End-user representatives stated that their involvement in the definition of the use cases was limited.
- End users' comments on the use cases were not fully resolved.
- End users are not being asked to approve the detailed requirements.

Each of these three issues is discussed in greater detail below.

<sup>12</sup> GAO, *Business Process Reengineering Assessment Guide Version 3*, GAO/AIMD-10.1.15 (Washington, D.C.: May 1997).





Objective 1: Requirements Management  
End User Acceptance

First, JR&IO developed the use cases with the help of contractors and representative end users (personnel and payroll specialists) from the end-users' stakeholder organizations. However, according to these representatives, their role in defining the use cases was limited. They stated that they principally performed research, identified references, and explained how their legacy environments currently process personnel and pay transactions and that they had limited influence in deciding the content of the use cases.

In response, JR&IO officials stated that many of the user representatives were lower-level personnel who were not empowered to represent their components in making decisions about requirements.



## Objective 1: Requirements Management End User Acceptance

Second, to obtain users' comments on the use cases, JR&IO provided the end-users' organizations with the use cases and other documentation for comment, but this process did not resolve all of the comments.

- An initial set of use cases was reviewed by hundreds of individual end users (personnel and payroll specialists), resulting in thousands of comments.
- Around October 2003, JR&IO provided a second set of use cases to the end users (as well as to the development and integration contractor), including modifications to reflect changes suggested by users based on their first set of comments. The end users provided about 7,000 comments on the second set of use cases.



## Objective 1: Requirements Management End User Acceptance

- In March 2004, JR&IO established a baseline version of the use cases and provided this version to the development and integration contractor in order to meet the contractor's schedule. At that time, JR&IO had concurred with about 400 of the 7,000 comments and modified the use cases in response, but it had not completed its analysis of all 7,000 comments.
- JR&IO then established a change control process for making further modifications to the baseline use cases. According to JR&IO officials, as of the end of October 2004, 703 change requests had been submitted: 163 had been approved, 48 had been disapproved, and the remaining 492 were still under review.



## Objective 1: Requirements Management End User Acceptance

- According to end-user representatives from each of the services, the use cases were difficult to understand because they were shared in a piecemeal fashion and did not include sufficient detail. Furthermore, they said that JR&IO responses to comments were generally brief and often did not provide sufficient explanation—for example, “The Business Rule captures this requirement. Action: No change required...” and “The comment is out of scope. Action: No action required.” As a result, the end-user representatives stated that they often did not understand the reasoning behind the decisions.
- JR&IO officials stated that users might have had difficulty with understanding the use cases because they were defined in terms of *what* processes the system would perform as opposed to *how* the processes would be performed. This approach is consistent with best practices (as discussed later in this briefing) and with JR&IO’s stated intention to discourage the definition of processes in terms of existing systems and processes, as well as to allow the development of reengineered joint processes using the native capabilities of the COTS software to the maximum extent. However, best practices also require that explanations of business rules and their rationale be complete and understandable by end users.



Objective 1: Requirements Management  
End User Acceptance

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- JR&IO officials further stated that many of the end users' comments were not substantive (e.g., a minor change needed in the citation of a regulation); many were duplicative, and some addressed issues outside of personnel/pay functionality, such as training and manpower. In addition, most were not prioritized.



## Objective 1: Requirements Management End User Acceptance

Third, JR&IO does not intend to gain formal agreement on the detailed requirements from the end-users' organizations, although it did obtain such agreement on the ORD. JR&IO officials stated that gaining formal agreement from some of the users' organizations would delay the program and be impractical because of some user organizations allegiance to their legacy systems and processes.

- We observed this challenge in a previous review, where we stated that DOD's organizational structure and embedded culture work against efforts to modernize business processes and implement corporate information systems such as DIMHRS (Personnel/Pay) across component lines.<sup>13</sup>
- Our prior work has also shown that proactively preparing end users for the business process and role changes embedded in COTS products is an acquisition management best practice.<sup>14</sup>

<sup>13</sup> GAO, *Defense IRM: Poor Implementation of Management Controls Has Put Migration Strategy at Risk*, GAO/AIMD-98-5 (Washington, D.C.: Oct. 20, 1997).

<sup>14</sup> GAO, *Information Technology: DOD's Acquisition Policies and Guidance Need to Incorporate Additional Best Practices and Controls*, GAO-04-722 (Washington, D.C.: July 30, 2004).



## Objective 1: Requirements Management End User Acceptance

- Nevertheless, not attempting to obtain agreement on DIMHRS (Personnel/Pay) requirements increases the risk that users will not accept and use the developed and deployed system, and that later system rework will be required to make it function as intended and achieve stated military human capital management outcomes.

Officials representing the DIMHRS offices are not in full agreement with JR&IO officials on the state of the requirements, as the following slides show.



Objective 1: Requirements Management  
End User Acceptance

Officials representing each of the DIMHRS management offices (Army, Air Force, Navy, Marine Corps, and DFAS) stated that their organizations are not currently willing to sign off on the DIMHRS (Personnel/Pay) detailed requirements as being sufficient to meet their organizations' military personnel and pay needs. These officials stated that they do not yet know what the gaps are between the functionality provided by their current systems and the functionality to be provided by DIMHRS (Personnel/Pay).

- Officials representing the Army's DIMHRS office stated that they do not yet know whether the requirements are adequate to enable the Army to replace a number of its existing systems with DIMHRS (Personnel/Pay).
- Officials representing the Air Force's DIMHRS office stated that the requirements are defined at a very high level and are subject to interpretation, and as a result, they are unable to determine whether DIMHRS (Personnel/Pay) will meet all the Air Force's requirements.





## Objective 1: Requirements Management End User Acceptance

- Officials representing the Navy's DIMHRS office stated that their concerns about the adequacy of the detailed requirements relate principally to the issue of not knowing which of the functions provided by the Navy's legacy systems will not be provided by DIMHRS (Personnel/Pay).
- Officials representing the Marine Corps' DIMHRS office stated that they do not believe that the requirements adequately address service specificity or the automation of manual processes. These officials stated that the Marine Corps has not been able to determine what functionality the system contains versus the functionality contained in its legacy systems. They stated that this information is needed to enable them to modify legacy systems to ensure that needed functions continue to be provided to service members until these functions are incorporated into DIMHRS (Personnel/Pay).
- Officials representing DFAS's DIMHRS office stated that they do not believe the requirements adequately address a number of pay, accounting, and personnel issues.



## Objective 1: Requirements Management End User Acceptance

According to JR&IO officials:

- DIMHRS (Personnel/Pay) will provide all the functionality provided by the services' and DFAS' legacy personnel and pay systems. JR&IO stated that the defined requirements provide enough information to determine *what* the system will do but acknowledged that understanding exactly *how* the system would perform its functions was not possible until the system was fully designed.
- Owners of end users' legacy systems are generally not supportive of DIMHRS (Personnel/Pay) because they want to preserve their autonomy in the development and control of their own systems.
- Support for the system by the services' executives is mixed. For example, JR&IO said that (1) Army executives are committed to implementing and using the DIMHRS (Personnel/Pay) system because they believe it will address many problems that the Army currently faces, (2) Air Force officials are generally supportive of the system but say they do not yet know whether the system will meet all their needs, and (3) Navy and Marine Corps executives are not as supportive because they are not fully convinced that DIMHRS (Personnel/Pay) will be an improvement over their existing systems.



Objective 1: Requirements Management  
End User Acceptance

- A number of actions have been taken to reduce the risk that users will not accept the system, including conducting numerous focus groups, workshops, demonstrations, and presentations explaining how the DIMHRS (Personnel/Pay) system could address DOD's existing personnel/pay problems.

Although JPMO officials told us that a consensus of the users' organizations agreed with the decision to accept the contractor's design of DIMHRS (Personnel/Pay) in November 2004, they submitted 391 comments and issues on the design. JPMO officials stated that they expect to resolve these comments and issues by the end of February 2005.



## Objective 2: Program Management Structure and Processes

**DOD does not have a well-integrated management structure for DIMHRS (Personnel/Pay) and is not following all relevant supporting acquisition management processes.** In particular,

- program responsibility, accountability, and authority are diffused;
- the system has not been defined and designed according to a DOD-wide integrated enterprise architecture;<sup>15</sup>
- program stakeholders' activities have not been managed according to a master plan/schedule that integrates all stakeholder activities; and
- the program is following some, but not all, best practices associated with acquiring business systems based on commercially available software.

Without a well-integrated approach and effective processes for managing a program that is intended to be an integrated solution, DOD has increased the risk that the program will not meet cost, schedule, capability, and outcome goals.

<sup>15</sup> JPMO officials stated that the system has not been defined and designed according to a DOD-wide integrated enterprise architecture because the enterprise architecture is not complete.



## Objective 2: Program Management Structure and Processes Governance

*Program responsibility, accountability, and authority are diffused.* Research shows that leading organizations ensure that programs are structured to ensure that assigned authorities, responsibilities, and accountabilities are clear and aligned under the continuous leadership and direction of a single entity. For DIMHRS (Personnel/Pay), these areas are spread among three key stakeholder groups whose respective chains of command do not meet at any point below the Secretary and Deputy Secretary of Defense level.

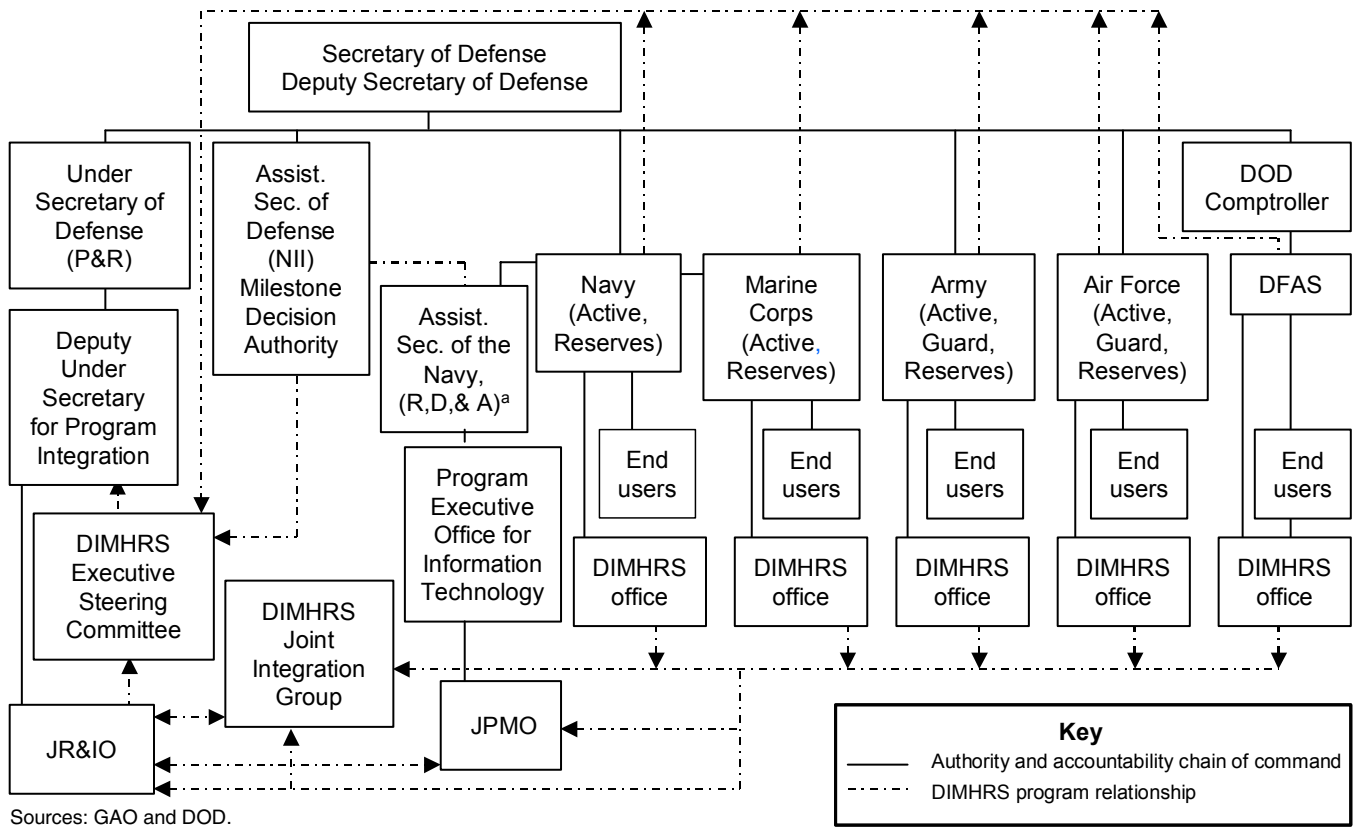
- Responsibility for requirements definition rests with JR&IO, which is accountable through one chain of command.
- Responsibility for system acquisition rests with JPMO, which is accountable through another chain of command.
- Responsibility for preparing for transition to DIMHRS (Personnel/Pay) rests with the end users' organizations—11 major DOD components reporting through five different chains of command.

The organization chart on the next slide shows the chain of command and the coordination relationships among the primary DIMHRS (Personnel/Pay) stakeholder groups.



**GAO**

Objective 2: Program Management Structure and Processes Governance



Sources: GAO and DOD.

<sup>a</sup>Research, Development, and Acquisition.



## Objective 2: Program Management Structure and Processes Governance

As the chart also shows, the services and DFAS have DIMHRS (Personnel/Pay) management offices to assist JR&IO and JPMO and to represent their respective end-user communities (the pay and personnel specialists). In addition, various coordination and advisory bodies have been established.

The three primary stakeholder groups (JR&IO, JPMO, and the end users) are accountable to three different groups of executives.

- JR&IO is ultimately accountable to the Under Secretary for P&R, who is the department's Principal Staff Assistant (PSA)<sup>16</sup> for personnel and compensation and is responsible for oversight of the DIMHRS (Personnel/Pay) program from a functional perspective.
- JPMO is ultimately accountable to the Assistant Secretary of Defense (NII), who is the DIMHRS (Personnel/Pay) program's Milestone Decision Authority (i.e., responsible for authorizing the program to move from one acquisition phase into the next) and is responsible for the program from an acquisition perspective.<sup>17</sup>

<sup>16</sup> The PSA is the executive-level manager responsible for the management of defined functions within DOD.

<sup>17</sup> According to JR&IO officials, the separation of the functional and acquisition lines of authority is a normal DOD practice.



## Objective 2: Program Management Structure and Processes Governance

- The end users are ultimately accountable to the Offices of the Secretaries of the Army, Air Force, and Navy (in coordination with the Commandant of the Marine Corps) and the DOD Comptroller, who have ultimate responsibility for implementing and using DIMHRS (Personnel/Pay).

Under this management structure, no single DOD entity is positioned to exercise continuous program leadership and direction (i.e., has responsibility, accountability, and authority (including budget authority) over the entire DIMHRS (Personnel/Pay) program). This is consistent with our observation in a previous review that DOD's organizational structure and embedded culture have not adequately accommodated an integrated, departmentwide approach to joint systems.<sup>18</sup>

<sup>18</sup>See, for example, GAO/AIMD-98-5.





## Objective 2: Program Management Structure and Processes Governance

Although no stakeholder organization has continuous programwide oversight purview and visibility, the DIMHRS (Personnel/Pay) Executive Steering Committee is made up of representatives of each of the entities that has ultimate responsibility for the program.

According to DOD, the committee monitors the program, resolves issues that are brought before it, and advises the Under Secretary (P&R).<sup>19</sup> It meets quarterly or when assembled by the chair—the Deputy Under Secretary of Defense for Program Integration—who reports to the Under Secretary (P&R).

<sup>19</sup>*DIMHRS (Pers/Pay) Report to Congress* (June 2002).



## Objective 2: Program Management Structure and Processes Governance

According to JR&IO officials, the diffusion of program accountability, responsibility, and authority will be reduced in fiscal year 2005, when funding for both JR&IO and JPMO will be consolidated and centrally managed by JR&IO.<sup>20</sup> However, the end-user organizations will continue to separately control their respective funds.

- For example, officials at the Army's DIMHRS (Personnel/Pay) management office estimated that the Army's DIMHRS (Personnel/Pay) funding needs will range from \$27 million to \$43 million a year, but they said that the Army is unlikely to fund the program at that level because of other priorities.

Without a DOD-wide integrated governance structure that vests an executive-level organization or entity representing the interests of all program stakeholders with responsibility, accountability, and authority for a joint or integrated program like DIMHRS (Personnel/Pay), DOD runs the risk that the program will not produce an integrated set of outcomes.

<sup>20</sup> According to JR&IO officials, DOD requested consolidated JR&IO and JPMO funding for DIMHRS (Personnel/Pay) for fiscal year 2005.



## Objective 2: Program Management Structure and Processes **Enterprise Architecture**

*The DIMHRS (Personnel/Pay) system has not been aligned with a DOD-wide integrated enterprise architecture. An enterprise architecture is a blueprint for guiding and constraining the definition and implementation of programs in a way that supports strategic plans and promotes integration, interoperability, and optimization of mission performance. This blueprint serves as the common frame of reference to inform program operational and technological decisionmaking relative to, for example, what functions will be performed where, by whom, and using what information.<sup>21</sup> Successful organizations have used architectures to effectively transform business operations and supporting systems. Moreover, the National Defense Authorization Act for Fiscal Year 2003 directed DOD to develop and implement a departmentwide Business Enterprise Architecture (BEA) to guide and constrain its business modernization efforts.<sup>22</sup>*

<sup>21</sup> GAO, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management (Version 1.1)*, Executive Guide, GAO-03-584G (Washington, D.C.: April 2003).

<sup>22</sup> Bob Stump National Defense Authorization Act for Fiscal Year 2003, Pub. L. No. 107-314, section 1004, 116 Stat. 2458, 2629–2631 (Dec. 2, 2002).



## Objective 2: Program Management Structure and Processes Enterprise Architecture

Acquiring and implementing DIMHRS (Personnel/Pay) without an enterprise architecture increases the risk that DOD will make a substantial investment in system solutions that will not be consistent with its eventual blueprint for business operational and technological change.

Recognizing this, the Deputy Secretary of Defense issued a memorandum in March 2004 requiring the development and implementation of architectures for each of DOD's six business domains, including the human resources domain. These business domains, according to the department's modernization program, are delegated the "authority, responsibility, and accountability ... for their respective business areas" for implementing business transformation,<sup>23</sup> including the following:

- "Leading the business transformation within the Domain."
- "Managing its respective [system investment] portfolio to ensure implementation of and compliance with the Business Enterprise Architecture (BEA) and transition plan."
- "Assisting in the extension of the [departmentwide] BEA" for the domain.

<sup>23</sup> DOD Business Management Modernization Program, Governance Approach.  
[http://www.dod.mil/comptroller/bmmp/pages/govern\\_dod.html](http://www.dod.mil/comptroller/bmmp/pages/govern_dod.html).



## Objective 2: Program Management Structure and Processes Enterprise Architecture

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The Under Secretary (P&R), who is the domain owner for the human resources domain, assigned JR&IO the responsibility for extending the BEA for the human resources domain. According to JR&IO officials, the development of the human resources portion of the BEA is being done concurrently with the acquisition and deployment of DIMHRS (Personnel/Pay).



## Objective 2: Program Management Structure and Processes Enterprise Architecture

Recognizing the importance of managing the concurrency of such activities and ensuring that DOD's ongoing investments are pursued within the context of its evolving BEA, the National Defense Authorization Act for Fiscal Year 2003 also required that system improvements with proposed obligations of funds greater than \$1 million be reviewed to determine if they are consistent with the BEA.

To satisfy this requirement, JPMO officials presented the DOD Office of the Comptroller, which is developing the BEA, with information on DIMHRS (Personnel/Pay) compliance with version 1.0 of the BEA in April 2003. However, according to our review of the information used by JPMO in April 2003 to obtain an architectural compliance determination, this information did not include a documented, verifiable analysis demonstrating such compliance. In the absence of such analysis, the JPMO program manager instead made commitments that DIMHRS (Personnel/Pay) would be consistent with the architecture. On the basis of this commitment, the DOD Comptroller certified in April 2003 that DIMHRS (Personnel/Pay) is consistent with the BEA. Later, JPMO included in the DIMHRS (Personnel/Pay) contract a requirement that the systems specification be compatible with the emerging BEA.



Objective 2: Program Management Structure and Processes  
Enterprise Architecture

According to JR&IO officials, the April 2003 architectural certification is preliminary, and further certification is needed. They stated that DIMHRS (Personnel/Pay) will undergo another certification before the system deployment decision.

By this time, however, lengthy and costly DIMHRS (Personnel/Pay) design and development work will be completed. The real value in having and using an architecture is knowing, at the time that extensive system definition, design, and development are occurring, what the larger blueprint for the enterprise is, so that definition, design, and development can be guided and constrained by this frame of reference. Aligning to the architecture after the system is designed could also require expensive system rework to address any inconsistencies with the architecture.



## Objective 2: Program Management Structure and Processes Enterprise Architecture

The absence of verifiable analysis of compliance was in part due to the state of completeness of BEA version 1.0. As we reported in September 2003, this version was missing key content, including sufficient depth and detail to effectively guide and constrain system investments.<sup>24</sup> Since then, DOD has issued other versions of the BEA. However, we reported in May 2004 that version 2.0 of the BEA still did not include many of the key elements of a well-defined architecture.<sup>25</sup> For example, the “to be” environment did not provide sufficient descriptive content related to future business operations and supporting technology to permit effective acquisition and implementation of system solutions and associated operational change. DOD since issued versions 2.2 and 2.2.1 in July and August 2004, respectively.

<sup>24</sup> GAO, *DOD Business Systems Modernization: Important Progress Made to Develop Business Enterprise Architecture, but Much Work Remains*, GAO-03-1018 (Washington, D.C.: Sept. 19, 2003).

<sup>25</sup> GAO, *DOD Business Systems Modernization: Limited Progress in Development of Business Enterprise Architecture and Oversight of Information Technology Investments*, GAO-04-731R (Washington, D.C., May 17, 2004).





## Objective 2: Program Management Structure and Processes **Integrated Master Plan/Schedule**

*DIMHRS (Personnel/Pay) program stakeholder activities are not being managed according to an integrated master plan/schedule.* IEEE standards state that a master plan/schedule should be prepared and updated throughout the system's life cycle to establish key events, activities, and tasks across the program, including dependencies and relationships among them. A properly designed master plan/schedule should allow for the proper scheduling and sequencing of activities and tasks, allocation of resources, preparation of budgets, assignment of personnel, and criteria for measuring progress.

In contrast, the DIMHRS (Personnel/Pay) program plan/schedule is based on the contractor's and JPMO's activities and does not include all the activities that end-user organizations must perform to prepare for DIMHRS (Personnel/Pay), such as

- cleaning legacy data, preparing legacy systems for interfacing, and acquiring and installing the necessary infrastructure;
- making organizational changes and business process improvements associated with DIMHRS (Personnel/Pay), such as revising the duties that are now performed by pay specialists and personnel specialists; and



## Objective 2: Program Management Structure and Processes Integrated Master Plan/Schedule

- making revisions to their regulations to ensure consistency with the reengineered business rules designed into DIMHRS (Personnel/Pay) that differ from existing DOD or service rules and policies (e.g., those noted earlier in this briefing as being in accordance with “P&R guidance” in the use cases).

With a plan/schedule that focuses on the contractor’s and JPMO’s activities and does not extend to all DOD program stakeholders’ activities, the risk increases that key and dependent events, activities, and tasks will not be performed as needed, which in turn increases the risk of schedule slippage and program goal shortfalls.



## Objective 2: Program Management Structure and Processes Policies and Guidance

*Some, but not all, key practices associated with acquiring COTS-based business systems are being followed.* According to SEI, the quality of the processes and practices followed in acquiring software-intensive systems greatly influences the quality of the systems produced. Moreover, acquiring custom-developed system solutions is sufficiently different from acquiring COTS-based systems that adherence to certain practices unique to the latter is key to their success. We recently reported on key acquisition management best practices associated with COTS-based systems,<sup>26</sup> including

- discouraging the modification of commercial components and allowing it only if justified by a thorough analysis of the life-cycle costs and benefits,
- explicitly evaluating systems integration contractors on their ability to implement commercial components,
- centrally controlling modification or upgrades to deployed versions of system components and precluding users from making unilateral changes to releases,

<sup>26</sup>GAO-04-722.



## Objective 2: Program Management Structure and Processes Policies and Guidance

- ensuring that plans explicitly provide for preparing users for the impact that the business processes embedded in the commercial components will have on their respective roles and responsibilities,
- proactively managing the introduction and adoption of changes to how users will be expected to use the system to execute their jobs, and
- ensuring that project plans explicitly provide for the necessary time and resources for integrating commercial components with legacy systems.

To its credit, DOD is following the first three of these practices for DIMHRS (Personnel/Pay), but it is not following the last three. For example, program officials told us that they expected the contractor to base the system design on the high-level requirements defined in the ORD as a way to maximize the contractor's ability to leverage the COTS product. Furthermore, the contract includes award fees that give the contractor incentives to, among other things, minimize customization of the COTS software.



## Objective 2: Program Management Structure and Processes Policies and Guidance

However, DOD does not have an integrated program plan/schedule that provides for end-user organization activities that are associated with preparing users for the operational and role-based changes that the system will introduce, such as the need to revise the duties that are now performed by pay specialists and personnel specialists. Furthermore, DOD's program plans do not recognize the end-user organizations' time and resource needs associated with integrating DIMHRS with their respective legacy systems, and JPMO is not actively managing these end-user operational changes. Although JR&IO officials told us that some planning has occurred to position end users for DIMHRS (Personnel/Pay) changes, officials representing the DIMHRS offices in the services and DFAS stated that these plans do not adequately address the above areas.



Objective 2: Program Management Structure and Processes  
Policies and Guidance

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By not following all relevant best practices associated with acquiring COTS-based systems, DOD is increasing the risk that DIMHRS (Personnel/Pay) will not be successfully implemented and effectively used.



## Conclusions

The importance of DIMHRS (Personnel/Pay) to DOD's ability to manage military personnel and pay services demands that the department employ effective processes and structures in defining, designing, developing, and deploying the system to maximize its chances of success. For DIMHRS (Personnel/Pay), however, DOD did not initially perform important requirements development steps, and the detailed system requirements are missing important content. DOD has begun to remedy these omissions by taking actions such as tracing among requirements documents and system design documents to ensure alignment, but user organizations' acceptance of requirements has not occurred. Moreover, although DIMHRS (Personnel/Pay) is to be an integrated system, it is not being governed by integrated tools and approaches, such as an integrated program management structure, integrated DOD business enterprise architecture, and an integrated master plan/schedule.



## Conclusions

Furthermore, while DOD is appropriately attempting to maximize the use of COTS products in building DIMHRS (Personnel/Pay) and is following some best practices for developing COTS-based systems, others are not being followed.

The absence of the full complement of effective processes and structures related to each of these areas can be attributed to a number of causes, including the program's overly schedule-driven approach and the difficulty of overcoming DOD's long-standing cultural resistance to departmentwide solutions. Effectively addressing these shortcomings is essential because they introduce unnecessary risks that reduce the chances of accomplishing DIMHRS (Personnel/Pay) goals on time and within budget.

It is critical that DOD carefully consider the risks caused by each of these areas of concern and that it appropriately strengthen its management processes, structures, and plans to effectively minimize these risks. To do less undermines the program's chances of timely and successful completion.





## Recommendations

To assist DOD in strengthening its program management processes, structures, and plans and thereby increase its chances of successfully delivering DIMHRS (Personnel/Pay), we recommend that the Secretary of Defense direct the Assistant Secretary (NII), the Under Secretary (P&R), and the Under Secretary (Comptroller), in collaboration with the leadership of the military services and DFAS, to jointly ensure an integrated, coordinated, and risk-based approach to all DIMHRS (Personnel/Pay) definition, design, development, and deployment activities. At a minimum, this should include

- ensuring that joint system requirements are complete and correct and are acceptable to users' organizations;



## Recommendations

- establishing a DOD-wide integrated governance structure for DIMHRS that vests an executive-level organization or entity representing the interests of all program stakeholders, including JR&IO, JPMO, the services, and DFAS, with responsibility, accountability, and authority for the entire DIMHRS (Personnel/Pay) program, and ensuring that all stakeholder interests and positions are appropriately heard and considered during program reviews and before key program decisions;
- ensuring that the degree of consistency between DIMHRS and the evolving DOD-wide business enterprise architecture is continuously analyzed, and that material inconsistencies between the two, both potential and actual, are disclosed at all program reviews and decision points and in budget submissions for the program, along with any associated system risks and steps to mitigate these risks;
- developing and implementing a DOD-wide, integrated master plan/schedule of activities that extends to all DOD program stakeholders;



## Recommendations

- ensuring that all relevant acquisition management best practices associated with COTS-based systems are appropriately followed; and
- adopting a more event-driven, risk-based approach to managing DIMHRS that adequately considers factors other than the contract schedule.



## Attachment I: Objectives, Scope, and Methodology

Our objectives were to determine

1. whether the Department of Defense (DOD) has effective management processes in place for managing the definition of the requirements for the Defense Integrated Military Human Resources System (DIMHRS (Personnel/Pay)) and
2. whether DOD has established an integrated program management structure for DIMHRS (Personnel/Pay) and is following effective processes for acquiring a system based on commercial software components.

To determine industry and government best practices and regulations for effective requirements definition and management, we evaluated criteria from the Capability Maturity Models (CMM) developed by Carnegie Mellon University's Software Engineering Institute and standards developed by the Institute of Electrical and Electronics Engineers (IEEE), as well as the DOD 5000 series and other applicable DOD policies and regulations, federal accounting standards, and prior GAO reports and best practices guidance.



Attachment I:  
Objectives, Scope, and Methodology

To evaluate requirements management efforts, we

- interviewed officials with the Joint Requirements and Integration Office (JR&IO), which is responsible for requirements definition; officials from the Joint Program Management Office (JPMO), which is responsible for system acquisition and deployment; officials in each of the DIMHRS offices for each of the four services (Army, Air Force, Navy, and Marine Corps) and the Defense Finance and Accounting Service (DFAS); officials in DOD's Business Management Modernization Program, which is responsible for Business Enterprise Architecture oversight; and officials from supporting contractors;
- attended requirements definition, review, and change meetings, including meetings of the Joint Integration Group and the Functional Requirements Review Board, as well as a critical design review;
- obtained written responses to questions from these various offices and other entities;
- reviewed DIMHRS (Personnel/Pay) planning documentation, milestone review materials, requirements and design documentation, contracts, and briefings;



Attachment I:  
Objectives, Scope, and Methodology

- discussed the use cases with selected personnel and pay specialists and reviewed end users' written comments to JR&IO on the use cases;
- estimated the extent of several problems by evaluating the clarity and understandability of use cases in a probability sample<sup>27</sup> of 20 of 284 pay use cases and 20 of 140 personnel use cases; and
- compared requirements management activities with relevant industry and government guidance and requirements, including CMM and IEEE, and the DOD 5000 series and Joint Chiefs of Staff regulations.

<sup>27</sup>A different probability sample of use cases could produce different estimates. In this briefing, we present estimates along with the 95 percent confidence intervals for these estimates. This means that there is a 95 percent probability that the actual value for the entire population is within the range defined by the confidence interval. In other words, if 100 different samples were taken, in 95 of those 100 samples, the actual value for the entire population would be within the range defined by the confidence interval, and in 5 of those 100 samples, the value would be either higher or lower than the range defined by the confidence interval.



Attachment I:  
Objectives, Scope, and Methodology

To evaluate program management structures and processes, we

- interviewed officials from JR&IO, JPMO, and the DIMHRS offices for each of the services and DFAS;
- analyzed DOD and DIMHRS (Personnel/Pay) program management and process management documentation and activities, including charters, process descriptions, budgets, and program plans, etc.; and
- reviewed relevant analysis supporting program decisions, such as economic justification and architectural alignment.



Attachment I:  
Objectives, Scope, and Methodology

We determined that the data used in this report are generally reliable for the purposes for which we used them. For DOD-provided data, we have made appropriate attribution to indicate the data's source.

We performed our work at DOD headquarters; JR&IO, in the Washington, D.C., area; JPMO in New Orleans, Louisiana; the Army's, Navy's, Air Force's, and Marine Corps' DIMHRS offices; and DFAS's offices in the Washington, D.C., area.

This work was performed from January through November 2004 in accordance with generally accepted government auditing standards.



# Appendix II: Comments from the Department of Defense

Note: GAO's comments supplementing those in the report's text appear at the end of this appendix.



PERSONNEL AND  
READINESS

UNDER SECRETARY OF DEFENSE  
4000 DEFENSE PENTAGON  
WASHINGTON, D. C. 20301-4000



JAN 25 2005

Mr. Randolph C. Hite  
Director  
Information Technology Architecture and Systems Issues  
U.S. Government Accountability Office  
Washington, DC 20548

Dear Mr. Hite:

This is the Department of Defense (DoD) response to the GAO draft report, GAO-05-189, "DOD SYSTEMS MODERNIZATION: Additional Improvements Needed to Management of Integrated Military Human Capital Program," December 14, 2004 (GAO Code 350623). A complete response to each point of the recommendations is enclosed.

It is my understanding that the GAO team was tasked to compare the process we are using for documentation of requirements with industry standards for best practices rather than to compare the process with other DoD or Federal practices. While I fully understand the interest in using these standards, this has led to some incongruity in the recommendations.

- The draft report notes that best practices require that we discourage modification of commercial components. It also notes that any modifications should be justified by thorough analysis of the life-cycle costs and benefits and by centrally controlling modifications of upgrades. We fully agree and have put in place a process that does just that, allowing modifications to the Commercial-Off-The-Shelf (COTS) products only if they are mission essential or cost beneficial.
- The draft report also concludes that we have not done enough to ensure that all stakeholders have had full input to the requirements. In fact, as described in the enclosure, the process has allowed all of the requirements to be fully vetted throughout the Department. However, acting on all comments from all sources would have resulted in excessive modification of the COTS product (in violation of best practices as described in the draft report), so we carefully put a process in place that would allow us to accept comments and inputs that did not violate our principles (use of common business rules and data and no modification to COTS unless essential) while screening out those that did.

We also have in place a robust issue resolution process that ensures that all issues and views will be heard. More discussion of these and other points is included in the enclosure.



See comment 1.

See comment 2.

See comment 3.

See comment 4.

See comment 5.

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**Appendix II: Comments from the Department  
of Defense**

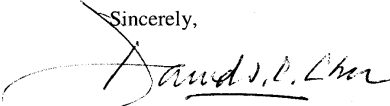
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See comment 6.  
See comment 7.

The DoD partially non-concurs with the recommendations in the draft report. For the most part, we agree with the thrust of the recommendations, but maintain that we are already following best practices to the extent that they are practicable in the Department. The process used for this program is innovative and ground-breaking for the Department. The coordination process went far beyond what is required by DoD regulations and the resulting set of requirements documentation far exceeds what has been available for any other system development effort. The design of the system is fully traceable to each element of the detailed requirements and all aspects of the system will be maintained using this same process to ensure that the system remains well-documented and future changes to policy and requirements can be easily incorporated.

We appreciate the opportunity to respond to the draft report. My point of contact is Ms. Norma St. Claire. She may be reached by email: [norma.stclair@osd.pentagon.mil](mailto:norma.stclair@osd.pentagon.mil) or by telephone at (703) 696-8710.

Sincerely,



David S. C. Chu

Enclosure:  
As Stated

GAO CODE 350623/GAO-05-189

**“DOD SYSTEMS MODERNIZATION: ADDITIONAL IMPROVEMENTS  
NEEDED TO MANAGEMENT OF INTEGRATED  
MILITARY HUMAN CAPITAL PROGRAM”**

**DEPARTMENT OF DEFENSE COMMENTS  
TO THE RECOMMENDATIONS**

**RECOMMENDATIONS:** The GAO recommended that the Secretary of Defense direct the Assistant Secretary (NII), the Under Secretary (P&R), and the Under Secretary (Comptroller), in collaboration with the leadership of the Military Services and DFAS, to jointly ensure an integrated, coordinated, and risk-based approach to all DIMHRS (Personnel/Pay)\* definition, design, development, and deployment activities. At minimum, this should include

- ensuring that joint system requirements are complete and correct and are acceptable to user organizations;
- establishing a DoD-wide integrated governance structure for DIMHRS that vests an executive-level organization or entity representing the interests of all program stakeholders, including JR&IO, JPMO, the Services, and DFAS, with responsibility, accountability, and authority for the entire DIMHRS (Personnel/Pay) program, and ensuring that all stakeholder interests and positions are appropriately heard and considered during program reviews and before key program decisions;
- ensuring that the degree of consistency between DIMHRS and the evolving DoD-wide business enterprise architecture is continuously analyzed, and that material inconsistencies between the two, both potential and actual, are disclosed at all program reviews and decision points and in program budget submissions, along with any associated system risks and steps to mitigate these risks;
- developing and implementing a DoD-wide, integrated master plan/schedule of activities that extends to all DoD program stakeholders;
- ensuring that all relevant acquisition management best practices associated with COTS-based systems are appropriately followed; and
- adopting a more evidence-driven, risk-based approach to managing DIMHRS that adequately considers factors other than the contract schedule.

\*DIMHRS (Personnel/Pay) is the Defense Integrated Military Human Resources System for Personnel and Pay. It is often referred to throughout the GAO report and this response as DIMHRS.

**DOD RESPONSE:**

A summary of the DOD responses to the recommendation points is as follows:

1 – To the recommendation of: ensuring that joint system requirements are complete and correct and are acceptable to user organizations.

**DOD RESPONSE: Partially Concur with Comment. The DIMHRS (Pers/Pay) requirements are complete and correct to the extent that any documentation this massive can be correct. The design is fully traceable to the requirements, including the applicable financial system and accounting requirements. The Joint Requirements Oversight Council (JROC) validation of the Operational Requirements Document (ORD) is all that is required by DoD regulation. The rest of the documentation of requirements for DIMHRS was an innovative and unprecedented effort to ensure full traceability from documentation of requirements through design, development, deployment, and maintenance.**

The Department has taken great pains to ensure that the system requirements are complete and correct and acceptable to user organizations.

- The functional community had over a year to provide two rounds of comments on the detailed documentation before it was baselined.
- All comments and responses were fully documented tracked, analyzed, and maintained.
- All issues were vetted.
- There are forums for the discussion and resolution of any issues. The Functional Requirements Review Board (FRRB) meets monthly to review system requirements change requests. If there is disagreement on the disposition of any request, that becomes an issue in a robust issue resolution process.
- All issues are fully documented and vetted through the issue resolution process. Final decisions are made by the Executive Steering Committee (with appeal to the Under Secretary of Defense (Personnel & Readiness) if anyone disagrees - - that has not happened yet).
- The detailed design for DIMHRS (Pers/Pay) was presented in four incremental Critical Design Reviews: CDR 1- 3 and Program CDR (PCDR). Representatives from the Services, the Defense Finance and Accounting Service (DFAS) and other stakeholder organizations were invited to participate and submit comments on the system design. Because the stakeholders had many questions on out-of-the-box PeopleSoft capabilities during CDR 1 - 3, PCDR was expanded to include a PeopleSoft “fit” demonstration that showed 37 life cycle scenarios from enlistment to separation.
- Representatives from the Services, DFAS, and other DOD offices were active participants in all CDR reviews and were encouraged to submit comments or questions to the Joint Program Management Office (JPMO) and the Joint Requirements and Integration Office (JR&IO) for review. A number of issues were identified during CDR 3, which led to the establishment of the Design to Requirements Traceability (DRT) process with JR&IO.
- During PCDR, participants were able to submit questions during the presentation via comment cards as well as on comment resolution matrices against design deliverables. 606 business process comments (a combination of design and requirements comments) and 17 interface comments were received and are currently being analyzed. None were critical.

See comment 8.

See comment 9.

See comment 10.

See comment 11.

See comment 12.

See comment 13.

See comment 14.

See comment 15.

See comment 16.

See comment 17.

See comment 18.

The GAO report notes ambiguities that they found in their review of the detailed requirements. The detailed requirements were originally to have been documented after the award of the Developer/Implementer contract, to ensure that they were not worded in such a way as to inadvertently cause modification of the COTS product. The award of the contract was delayed, so the review with the Developer/Implementer took place after the development of the full set of detailed documentation. The review is now complete and all questions and ambiguities with the documentation have been fully resolved. The purpose of the detailed documentation was to ensure that the design of the program would be fully traceable to the requirements. They are not considered the vehicle for gaining user acceptance for the system. The Department has an extensive change management process in place for user acceptance. That process is already working with prototype demonstrations and briefings on the new system. As the system is developed, actual system modules will be incorporated into the demonstrations to ensure a wide understanding of the new system and new processes.

2 – To the recommendation of: establishing a DoD-wide integrated governance structure for DIMHRS that vests an executive-level organization or entity representing the interests of all program stakeholders, including JR&IO, JPMO, the Services, and DFAS, with responsibility, accountability, and authority for the entire DIMHRS (Personnel/Pay) program, and ensuring that all stakeholder interests and positions are appropriately heard and considered during program reviews and before key program decisions.

**DOD RESPONSE: Partially Non Concur with Comment. The roles and responsibilities for the Executive Steering Committee are well-defined in documentation signed by the Deputy Secretary. All stakeholder interests are heard and there is a robust issue resolution process and a forum for all program reviews and key program decisions. A committee cannot have responsibility, accountability, or authority for a program. Additionally, there is already a single functional focal point for the program. The Joint Requirements and Integration Office (JR&IO) is the single source for all functional requirements. Representatives from all of the military components and from the Defense Finance and Accounting Service (DFAS) are assigned to JR&IO to support requirements definition and maintenance. The Under Secretary of Defense (Personnel and Readiness) has full responsibility and accountability for the program.**

On charts 63 through 66, GAO outlines those best practices and notes that the Department is following some of them. Two of the best practices are:

- Discouraging modification of commercial components and allowing it only if justified by thorough analysis of the life-cycle costs and benefits; and
- Centrally controlling modification of upgrades to deployed versions of system components and precluding users from making unilateral changes to releases.

The Services and other stakeholders had over a year to review and comment on the detailed documentation of the requirements. For the most part, the Service comments on the detailed requirements did not address critical issues in the management of personnel and pay. They primarily focused on the AS-IS processes that, in some cases, are a reflection of the limitations of legacy systems. The Department has proven many times over the years that replicating the AS-IS processes will not solve the critical problems in military personnel and pay management and that they will result in over modification of the COTS products. Providing stakeholders with veto power over requirements definition will result in extensive delays and extensive modification of the software.

See comment 19.

3 – To the recommendation for: ensuring that the degree of consistency between DIMHRS and the evolving DoD-wide business enterprise architecture is continuously analyzed, and that material inconsistencies between the two, both potential and actual, are disclosed at all program reviews and decision points and in program budget submissions, along with any associated system risks and steps to mitigate these risks.

**DOD RESPONSE: Partially Concur with Comment. The DIMHRS requirements comprise the Business Enterprise Architecture (BEA) for military personnel and pay. The Business Enterprise Architecture is fully incorporating all of the DIMHRS processes and interfaces. The Director of JR&IO, the primary functional executive for DIMHRS, is also the Human Resources Management Domain manager. DIMHRS is now, and will remain, fully consistent with the BEA as one of the first major systems developed using all of the principles of the BEA and the DoD transformation effort.**

4 – To the recommendation for: developing and implementing a DoD-wide, integrated master plan/schedule of activities that extends to all DoD program stakeholders.

**DOD RESPONSE: Concur.**

5 – To the recommendation for: ensuring that all relevant acquisition management best practices associated with COTS-based systems are appropriately followed.

See comment 20.

**DOD RESPONSE: Partially Non Concur with Comment. All relevant acquisition management best practices associated with COTS-based systems are being appropriately followed. See detailed discussions below.**

GAO Charts 63 – 64 list the key best practices:

See comment 21.

- Discouraging modification of commercial components and allowing it only if justified by a thorough analysis of the life-cycle costs and benefits;
- Explicitly evaluating systems integration contractors on their ability to implement commercial components;
- Centrally controlling modification or upgrades to deployed versions of system components and precluding users from making unilateral changes to releases;
- Ensuring that plans explicitly provide for preparing users for the impact that the business processes embedded in the commercial components will have on their respective roles and responsibilities;
- Proactively managing the introduction and adoption of changes to how users will be expected to use the system to execute their jobs; and
- Ensuring that project plans explicitly provide for the necessary time and resources for integrating commercial components with legacy systems

GAO acknowledges that the DIMHRS program is following the first three of these. It also states that the program is not following the last three. In fact, the Department is also following all of the last three.

See comment 22.

In defining requirements for DIMHRS (Pers/Pay), the Department documented every change that will be required for the Services in terms of current practices and policies and the future practices and

Appendix II: Comments from the Department of Defense

See comment 23.

policies. Every change was documented as an issue, with a full description of the AS-IS and the recommended TO-BE, including identification of any relevant regulations or laws. All of these changes were fully vetted through the functional community with all comments and final disposition fully documented. Although it is possible that additional things will come to light as design and development proceed, the program remains fully committed to continue to define, document, coordinate and resolve all of these issues.

See comment 24.

The Department has put in place a proactive change management process to introduce and promote adoption of changes in process. The process was initiated in August of 2002 with Service Analysis Sessions. These were a series of two-week sessions with each Service, DFAS and others where the program provided one week of PeopleSoft training and one week of follow-on work using PeopleSoft out-of-the-box to address a wide range of military personnel and pay functions. The sessions were extremely successful and were followed up with numerous training and demonstrations projects since then. There have been numerous workshops with users on roles and responsibilities and the changing roles with the implementation of DIMHRS; the project team has worked with the Services one-on-one and in multi-Service groups on all of these issues; the team has developed the Joint Capabilities Demonstration which is a more sophisticated demonstration of PeopleSoft applied to military personnel and pay functions and activities; and presentations and demonstrations have been provided at numerous conferences and to senior executives throughout the Department. Further, Service members, using the provided tool set, have given demonstrations themselves to large groups of users throughout the Department. Consolidation of functions and duties has been a major topic for several focus groups. As the DIMHRS system is developed, actual DIMHRS modules will be added to the presentations to ensure that the new processes and the new system is promoted early and often.

See comment 25.

The project plans have been confirmed by the Developer/Implementer and reviewed by an independent analyst as sufficient to do the work required to successfully design, develop and implement DIMHRS.

6 – To the recommendation for: adopting a more evidence-driven, risk-based approach to managing DIMHRS that adequately considers factors other than the contract schedule.

See comment 26.  
See comment 27.

**DOD RESPONSE: Partially Non Concur. The Department is using an event-driven, risk-based approach to DIMHRS. The contract is not the driver of the schedule. The Department understands the risks. If the system is not working, it will not be implemented. The schedule is event driven - - the program is not schedule driven. If events do not occur on the anticipated schedule, the schedule will be revised. The schedule reflects the best information available about when events are most likely to occur.**

See comment 28.

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The following are GAO's comments on the Department of Defense's letter dated January 25, 2005.

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## GAO's Comments

1. The Department of Defense's (DOD) characterization of our objectives is not correct. As stated in our report, our objectives were to determine whether DOD had effective processes in place for managing the definition of requirements for the Defense Integrated Military Human Resources System (DIMHRS) (Personnel/Pay) and whether it established an integrated program management structure and followed effective processes for acquiring a system based on commercial software components. Accordingly, we assessed the processes used to manage DIMHRS (Personnel/Pay), and the content of the requirements, against relevant best practices, many of which are embodied in DOD and federal policies and guidance, and against federal guidance, federal accounting standards, and prior GAO reports.
2. We do not believe that our finding that DOD is appropriately limiting modification of commercial, off-the-shelf (COTS) products (a best practice) is incongruous with our recommendation that requirements be acceptable to user organizations (another best practice). Furthermore, our report does not recommend that DOD act on all comments regardless of impact. Our recommendations concerning system requirements are intended to provide DOD with the principles and rules that it should apply in executing a requirements-acceptance process that permits all stakeholder interests and positions to be heard, considered, and resolved in the context of what makes economic sense. Furthermore, our report makes complementary recommendations that discourage changes to COTS products unless fully justified on the basis of life-cycle costs, benefits, and risks. Finally, while we do not dispute whether DOD has followed a process to screen out comments that would have necessitated COTS modification, DIMHRS (Personnel/Pay) users said that this process did not allow for effective resolution of the comments, which is the basis for our recommendation aimed at gaining user acceptance of requirements.
3. We have not concluded that DOD had not done enough to ensure that all stakeholders have had full input to the requirements. Our conclusion was that DOD had not obtained user acceptance of the detailed requirements, and that this choice entails risks.



4. We disagree. Our report neither states nor suggests that DOD act on all comments that it receives on requirements from all sources. Also, see comment 2.
5. See comment 10.
6. We acknowledge DOD's implementation of certain best practices as noted in our report. However, at the time we concluded our work, DOD was not following all relevant and practicable best practices, as we discuss in our report.
7. We do not dispute DOD's comment about efforts on DIMHRS (Personnel/Pay) relative to other system acquisitions because our review's objectives and approach did not extend to comparing the two. See comment 1 for a description of our objectives. Furthermore, while it is correct that DOD's regulations only require stakeholder agreement with the Operational Requirements Document, our evaluation was not limited to whether DOD was meeting its own policy; we also evaluated whether DOD's processes were consistent with industry and government best practices.
8. We do not disagree that DOD has taken important steps to meet the goals of requirements completeness and correctness, and we do not have a basis for commenting on whether the department might have completed important requirements-to-design traceability steps since we completed our work. However, as we state in our report, these tracing steps began in response to the inquiries we made during the course of our review. Furthermore, DOD's comments contain no evidence to show that it has addressed the limitations in the requirements' completeness and correctness that we cite in the report, such as those relating to the interface and data requirements, and they do not address the understandability issues we found relative to an estimated 77 percent of the detailed requirements. Moreover, DOD even stated in its comments that its latest program review revealed 606 business process comments and 17 interface comments that it deemed noncritical, although it noted that they were still being analyzed.
9. We do not dispute DOD's position that the Joint Requirements Oversight Council's validation of the Operational Requirements Document is all that is required by DOD regulation, and we do not have a basis for commenting on whether its documentation of requirements for DIMHRS (Personnel/Pay) was innovative and unprecedented. Our review objective relating to requirements, as stated in our report, was to address whether DOD has effective processes in place for managing the definition of the requirements. To

accomplish this objective, and as also stated in our report, we analyzed DOD's requirements management efforts against recognized best practices.

10. We do not disagree that DOD has taken numerous steps to gain user acceptance of the system. However, as we point out in the report, user organizations still had questions and reservations concerning the requirements. Not adequately resolving these issues, and thereby gaining user acceptance of requirements, increases the risk that a system will be developed that does not meet users' needs, that users will not adopt the developed and deployed system, and that later system rework will be required to rectify this situation.
11. We do not question that DOD has reviewed the detailed requirements since we completed our review. However, we challenge DOD's comment that all questions have been resolved for two reasons. First, DOD's comments contain no evidence to show that it has addressed the limitations in the requirements' completeness and correctness that we cite in the report, such as those relating to the interface and data requirements, or the understandability issues we found relative to an estimated 77 percent of the detailed requirements. Second, in its comments, DOD acknowledges that 606 questions remain regarding requirements and design issues.
12. We agree that the detailed requirements are not the sole vehicle for gaining user acceptance of the system. Rather, they are one vehicle to be used in a continuous process to ensure acceptability of a system to end users. Industry and government best practices advocate users' understanding and acceptance of requirements, and these practices are not limited to high-level requirements descriptions, but rather apply to more detailed requirements descriptions as well.
13. We do not dispute that the roles and responsibilities of the Executive Steering Committee are defined and documented. In fact, we cite the committee's responsibilities in our report.
14. We agree that DOD has forums and processes for communicating stakeholder interests. However, we do not agree that these have provided for effective resolution of concerns and comments, as we describe in our report. Also, see comment 10.
15. We disagree. In our view, any entity, whether it is an individual, office, or committee, can have responsibility, accountability, and authority for managing a program. Moreover, we intentionally worded the recommendation so as not to prescribe what entity should fulfill this

role for DIMHRS (Personnel/Pay). Rather, our intent was to ensure that such an entity was designated and empowered.

16. We disagree. DIMHRS (Personnel/Pay) is a DOD-wide program involving three distinct stakeholder groups whose respective chains of command do not meet at any point below the Secretary and Deputy Secretary of Defense levels. As we state in our report, responsibility, authority, and accountability for DIMHRS (Personnel/Pay) is in fact diffused among three stakeholder groups with responsibility for requirements with the Joint Requirements and Integration Office, responsibility for acquisition with the Joint Program Management Office, and responsibility for transition to DIMHRS (Personnel/Pay) with the 11 end users' organizations. Furthermore, under the current structure, only one of the three stakeholder groups, the Joint Requirements and Integration Office (JR&IO), is accountable to the Under Secretary, and authority over DIMHRS (Personnel/Pay) is spread across the three groups. Accordingly, the intent of our recommendation is for DOD to create an accountability structure that can set expectations for stakeholders and hold them accountable.
17. See comment 2. Furthermore, we agree that the department should not replicate "as is" processes. However, as our report points out, the users' comment process did not provide for effective resolution; therefore, users stated that they were not willing to sign off on the requirements as sufficient to meet their needs. The intent of our recommendation is to ensure that the system's functional acceptability to users is reasonably ensured before the system is developed, thereby minimizing the risk of more expensive system rework to meet users' needs.
18. We do not believe and nowhere in our report do we state or suggest that stakeholders should be granted veto power. Also, see comments 2 and 3.
19. We disagree. As stated in our report, DIMHRS (Personnel/Pay) had a preliminary architectural certification with the Business Enterprise Architecture (BEA) in April 2003. However, DOD could not provide us with documented, verifiable analysis demonstrating this consistency and forming the basis for the certification, in part because the BEA was incomplete. Rather, we were told that this certification was based on the DIMHRS (Personnel/Pay) program manager's stated commitment to be consistent at some future point, and the system is scheduled to undergo another certification before the system deployment decision. Moreover, we had previously reported that the BEA, including the military personnel and pay portions of the

architecture, was not complete, and thus not in place to effectively guide and constrain system investments. As we state in our report, the real value in having an architecture is knowing, at the time when system definition, design, and development are occurring, what the larger blueprint for the enterprise is in order to guide and constrain these activities.

20. We disagree. See comment 21.

21. We disagree. As we state in our report, DOD is not following three relevant best practices. These practices are focused on effectively planning for the full complement of activities that are needed to prepare an organization for the institutional and individual changes that COTS-based system solutions introduce. Such planning is intended to ensure, among other things, that key change management activities, including the dependencies among these activities, are defined and agreed to by stakeholders, including ensuring that adequate resources and realistic time frames are established to accomplish them. In this regard, DOD agreed in its comments that it does not have an integrated master plan/schedule for the program, which is an essential tool for capturing the results of the proactive change management planning that the best practices and our recommendation advocate. Moreover, available plans did not include all activities that end-user organizations will need to make regarding organizational changes and business process improvements associated with the system, such as revising the duties that are now performed by pay specialists and personnel specialists. This concern was stated by representatives of the DIMHRS (Personnel/Pay) offices in the services and DFAS, who stated that current plans do not adequately address the activities, time frames, and resources they will need to complete the transition to DIMHRS (Personnel/Pay). Furthermore, at the time that we completed our review, DOD had yet to identify all the legacy systems that would interface with DIMHRS (Personnel/Pay), and so DOD could not estimate the time and resources that will be needed to develop and implement legacy system interfaces with DIMHRS (Personnel/Pay). Both published research and our experience in evaluating the acquisition and implementation of COTS-based system solutions show that the absence of well-planned, proactive organizational and individual change management efforts can cause these system efforts to fail.

22. See comment 21. Furthermore, among the ambiguities in the detailed requirements that we cite in our report are references that do not clearly state the associated practice or policy.

23. See comments 8 and 22. In addition and as stated in our report, the process used to define detailed requirements has yet to result in user acceptance. Specifically, according to end-user representatives from each of the services, the detailed requirements were difficult to understand because they were shared in a piecemeal fashion and did not include sufficient detail. Furthermore, these representatives stated that they were not willing to sign off on the requirements.
24. We do not dispute that DOD has provided demonstrations of and training on the COTS product. However, as we point out in our report, users still have questions on DIMHRS (Personnel/Pay), which will be based on the COTS product, including how it will be used to perform personnel and pay functions, and how it will change the roles and responsibilities of end users. Moreover, proactive management of the organizational and individual change associated with COTS-based system solutions requires careful planning for the full range of activities needed to facilitate the introduction and adoption of the system, and as we state in the report and DOD agreed in its comments, the department does not have the kind of integrated master plan that would reflect such planning.
25. We do not dispute that existing plans have been reviewed and approved by the contractor and an independent reviewer. However, we disagree that these plans sufficiently incorporate all the change management activities that are needed to position DOD for adoption and use of DIMHRS (Personnel/Pay). In the absence of an integrated master schedule, which the department acknowledges in its comments as yet to be developed, DOD cannot adequately ensure that the full range of organizational and individual change management activities will be effectively performed.
26. We support DOD's stated commitment to follow a more event-driven risk-based approach, and have slightly modified our recommendation to recognize this commitment. Nevertheless, it is important to note that the approach that we found the department taking during the course of our review was schedule driven, meaning that program activities were truncated or performed concurrently in order to meet established deadlines. For example, as we describe in our report, data requirements (which are derived from higher-level information needs) were provided to the contractor before information needs were fully defined because the contractor needed these data requirements to complete the system design on schedule. Also during our review, the program had developed plans for accelerating system deployment in order to meet an externally imposed deadline. After we raised concern

about the risks of accelerating the schedule, and the lack of adequate risk-mitigation strategies, DOD changed its plans.

27. At the time of our review, we observed that the contract was a driver for the schedule. For example and as our report states, in March 2004, JR&IO provided a version of the detailed requirements to the development and integration contractor in order to meet the contractor's schedule, even though it had received thousands of comments on the requirements from users that it had yet to examine and resolve.
28. We support DOD's comment that it will revise the schedule if events do not occur as anticipated because it is consistent with our recommendation.

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# Appendix III: GAO Contact and Staff Acknowledgments

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## GAO Contact

Donald C. Snyder, (202) 512- 7204

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## Acknowledgments

In addition to the person named above, the following persons made key contributions to this report: Nabajyoti Barkakati, Harold J. Brumm, Barbara S. Collier, Nicole L. Collier, George L. Jones, John C. Martin, Kenneth E. Patton, B. Scott Pettis, Mark F. Ramage, Karl W. D. Seifert, Robert W. Wagner, Joseph J. Watkins, and Daniel K. Wexler.

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Penalty for Private Use \$300**

**Address Service Requested**

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**Presorted Standard  
Postage & Fees Paid  
GAO  
Permit No. GI00**

