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INFORMATION TECHNOLOGY

Defense Information Systems Agency Can Improve Investment Planning and Management Controls

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Highlights

INFORMATION TECHNOLOGY Defense Information Systems Agency Can Improve Investment Planning and Management Controls

Highlights of GAO-02-50, a report to the Senate and House Committees on Armed Services

Why GAO Did This Study

The Defense Information Systems Agency (DISA) spends about $3.5 billion annually providing critical information technology (IT) support to the military services, military commands, and Defense agencies, as well as operating and maintaining crucial command, control, and communications systems. In response to a mandate in the fiscal year 2001 Defense Authorization Act, GAO studied the agency's management of its *500 Day Action Plan*, as well as its efforts to establish important institutional management controls.

What GAO Recommends

To strengthen DISA's operational efficiency and effectiveness, GAO is making specific recommendations aimed at ensuring that DISA makes informed decisions about the many investments described in its *Action Plan*, as well as ensuring that DISA fully establishes the institutional management controls addressed in GAO's study. These recommendations include making establishment of each of these controls an agency imperative. DOD concurred or partially concurred with all of GAO's recommendations and stated that it is in the process of implementing corrective actions.

What GAO Found

In March 2001, DISA issued *A 500 Day Action Plan for Supporting DoD Decision Superiority*, which described 140 actions requiring the investment of resources to improve its customer satisfaction and its performance. A strength of this plan was its focus on satisfying customer needs. However, the plan did not adequately address other important elements, such as providing reasonable assurance that planned actions or investments were cost-effective. In particular, DISA did not adequately define the scope and content of the actions or develop associated high-level cost, schedule, benefit, and risk estimates for each. When decisionmakers are faced with time and resource constraints, such estimates are essential, providing the basis for evaluating and selecting among competing investment options, and establishing baselines against which to measure progress.

To further improve its performance, DISA is also strengthening key institutional management controls. In reviewing selected controls associated with high-performing organizations (see below), GAO found DISA to be taking actions to establish aspects of each control area, but found some to be still in their formative stages, while others had progressed much farther. In IT human capital management, for example, DISA has begun to identify requirements by establishing an inventory of its workforce knowledge and skills; forecasting its strategic workforce needs; and filling the gap between the two. In contrast, in enterprise architecture, DISA has only begun to establish a management foundation and has yet to develop an architecture. Such variability in the maturity of control areas is due to the level of executive attention, priority, and commitment associated with each. Until each control area is fully functioning, DISA will be challenged in maximizing its performance and accountability.

Selected management controls associated with high-performing organizations and the degree to which they are largely under way at DISA.

Management control	Definition	Largely under way?
Strategic planning	Establishing mission and vision, including core values and goals	Yes
IT human capital management	Attracting, retaining, and motivating people having the skills needed by the organization	Yes
Organizational structure management	Aligning operational responsibilities with business and mission goals, and maintaining accountability	Yes
Enterprise architecture management	Developing, maintaining, and using an explicit blueprint for operational and technical change	No
IT investment management	Selecting and controlling investments to maximize benefit and minimize risk	No
Customer relations management	Focusing on satisfying customer needs	Yes
Knowledge management	Capturing, understanding, and using the information and intellect within an organization to achieve objectives	No

This is a test for developing highlights for a GAO report. The full report, including GAO's objectives, scope, methodology, and analysis, is available at *www.gao.gov/cgi-bin/getrpt?GAO-02-50*. For additional information about the report, contact Randolph C. Hite (202-512-3439). To provide comments on this test highlights, contact Keith Fultz (202-512-3200) or E-mail *HighlightsTest@gao.gov*.

Contents

Letter

	1
Results in Brief	3
Background	5
Action Plan Development Was Appropriately Focused on Satisfying Customers, but Not on Other Tenets of Effective Planning	12
DISA Has Taken Steps to Improve Management of Action Plan Implementation, but More Can Be Done	16
DISA Is in the Process of Establishing Important Institutional Management Controls	20
Conclusions	39
Recommendations	40
Agency Comments and Our Evaluation	43

Appendixes

Appendix I:	**Objectives, Scope, and Methodology**	45
Appendix II:	**Status of DISA's Efforts to Benchmark Performance**	49
Appendix III:	**Further Details Regarding DISA's Enterprise Architecture Management and Information Technology Investment Management**	52
Appendix IV:	**Comments from the Department of Defense**	58

Tables

Table 1:	Summary of Extent to Which 57 Actions Have No Established Baselines	15
Table 2:	Status of DISA's Enterprise Architecture (EA) Management Process as of November 30, 2001	53
Table 3:	Status of DISA's IT Investment Management as of November 30, 2001	54

Figures

Figure 1:	DISA's Reporting Structure and Field Units	7
Figure 2:	Relationships Among Management Controls, People, Processes, and Technology	22
Figure 3:	The Five Stages of Maturity Within IT Investment Management	32

Abbreviations

CIO	chief information officer
CRM	customer relations management
DISA	Defense Information Systems Agency
DOD	Department of Defense
EA	enterprise architecture
GPRA	Government Performance and Results Act
IT	information technology
ITIM	information technology investment management
OMB	Office of Management and Budget

G A O
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, D.C. 20548

March 15, 2002

The Honorable Carl Levin
Chairman
The Honorable John Warner
Ranking Minority Member
Committee on Armed Services
United States Senate

The Honorable Bob Stump
Chairman
The Honorable Ike Skelton
Ranking Minority Member
Committee on Armed Services
House of Representatives

The Defense Information Systems Agency (DISA) performs a critical information technology (IT) support mission for the Department of Defense (DOD) and others. On a cost reimbursable basis, DISA provides computing services, telecommunications services, and acquisition services; in fiscal year 2001, DISA's service reimbursements were about $2.5 billion. DISA also operates and maintains joint warfighting and related mission support command, control, and communications systems funded by direct appropriations, which in fiscal year 2001 were about $1 billion. In light of the significance and cost implications of DISA's mission, it is important that the agency cost-effectively invest and manage its limited resources. In March 2001, DISA issued a plan, entitled *A 500 Day Action Plan for Supporting DoD Decision Superiority*, that contains 140 ongoing or planned actions involving the investment of resources. DISA has also recently begun a number of other institutional management improvements.

The fiscal year 2001 Defense Authorization Act directed us to review DISA operational efficiency and effectiveness and to identify opportunities for improvement.[1] As agreed with your offices, our objectives were to determine whether DISA (1) had effectively managed development of its *500 Day Action Plan*, (2) is effectively managing implementation of the plan, and (3) has established certain institutional management controls needed to effectively adjust to shifts in strategic direction. The control areas that we agreed to address are (a) strategic planning, (b) IT human capital management,[2] (c) organizational structure management, (d) enterprise architecture management,[3] (e) IT investment management,[4] (f) customer relations management,[5] and (g) knowledge management.[6] Each of these areas is agencywide in scope and strategically focused; to work effectively, each depends on the proper application of organizational resources—people, processes, and technology.[7] As further agreed, our review of these management controls focused on whether DISA had either established or was in the process of establishing them; it did not include evaluating the effectiveness of established controls. We briefed your offices on the results of our review in January 2002.[8] Details on our objectives, scope, and methodology are in appendix I.

[1]P.L. 106-398, Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001, app. section 918.

[2]IT human capital management is an approach to attracting, retaining, and motivating the people who possess the knowledge, skills, and abilities that enable an organization to accomplish its IT mission.

[3]Enterprise architecture management is an approach to developing, maintaining, and using an explicit blueprint for operational and technological change.

[4]IT investment management is an approach to selecting and controlling IT spending so as to maximize return on investment and minimize risk.

[5]Customer relations management is an approach to focusing an organization's operations on how to best satisfy customer needs.

[6]Knowledge management is an approach to capturing, understanding, and using the collective body of information and intellect within an organization to accomplish its mission.

[7]Other institutional controls not addressed in this report (but equally important) are budget formulation and execution, financial management, acquisition, and security management.

[8]Briefing to the Senate Armed Services Committee on January 31, 2002; briefing to the House Armed Services Committee on January 23, 2002.

Results in Brief

In developing its *500 Day Action Plan*, DISA appropriately focused on understanding and satisfying customer concerns and needs. However, DISA did not adequately address other important elements of effective plan development, such as having reasonable assurance that planned actions (investments) were cost-effective. In particular, DISA did not adequately define the scope and content of the actions or develop associated high-level cost, schedule, benefit, and risk estimates for each. When decisionmakers are faced with time and resource constraints, such estimates provide the requisite basis for evaluating and selecting among competing investment options. Such estimates also provide the baselines against which to measure progress and determine whether the investments improve efficiency and effectiveness and advance strategic goals. According to DISA officials, developing baseline data needed to assess cost-effectiveness and measuring progress and results were not considered during plan development, because at that time they did not view the actions as individual projects to be planned and controlled. DISA has since begun to develop scope, schedule, and cost baselines for some planned actions. However, it has yet to begin developing benefit and risk baselines, and it has not analyzed the cost-effectiveness of its planned actions. As a result, DISA has not adequately ensured that its action plan contains the best mix of investments for improving mission performance and achieving strategic goals.

During our review, DISA took steps intended to better manage implementation of the *500 Day Action Plan*. Specifically, although the agency did not establish baseline commitments[9] in developing its action plan, DISA has since established some, but not all, baselines and is beginning to monitor progress against these commitments. In addition, DISA has established a process to notify customers of changes to baselines, but the process did not include justification of the costs, benefits, and risks of the investment, which would be needed for senior management approval of the changes. Until DISA adequately measures progress in implementing planned actions and manages changes to those actions, DISA cannot determine which, if any, of its planned investments are producing performance improvements and thus warrant further investment.

[9]The baseline commitments would define what an action is intended to provide (in terms of capability and value), by when, at what cost, and with what associated elements of risk. These commitments are the expectations for the action that allow informed decisionmaking on whether to invest in the action and permit measurement of action progress and performance.

DISA's *500 Day Action Plan* is part of a larger set of management actions that the agency has initiated to improve mission performance. These actions address some, but not all, of the institutional management controls that can help an agency effectively adjust to shifts in strategic direction. These controls include (1) strategic planning, (2) IT human capital management, (3) organizational structure management, (4) enterprise architecture management, (5) IT investment management, (6) customer relations management, and (7) knowledge management.[10] DISA has activities under way associated with each of these institutional management controls; although some are in their formative stage, others have progressed much farther. For its IT human capital management effort, for example, DISA has completed, ongoing, and planned steps to identify its IT human capital requirements; establish an inventory of its workforce knowledge, skills, and abilities; forecast its strategic workforce needs; and fill the void between the two through evaluating its progress in training, retention, and hiring initiatives. In contrast, for its enterprise architecture, DISA has only begun to establish elements of the architecture management foundation, and it has yet to develop an architecture; for its knowledge management effort, it does not yet have a defined management approach and structure. Such variability in the maturity of these controls can be attributed to the level of executive attention, priority, and commitment associated with each. Until each control area is fully functioning, DISA will be challenged in responding effectively to changes in its strategic direction and maximizing its performance and accountability.

To strengthen DISA's operational efficiency and effectiveness, we are making recommendations aimed at ensuring that DISA makes informed decisions about investing in its *500 Day Action Plan* initiatives. We are also making recommendations to facilitate DISA's ongoing institutional management efforts by ensuring that DISA fully establishes certain controls.

In written comments on a draft of this report, DOD stated that it concurred or partially concurred with all of our recommendations. DOD also stated that by working closely with us during this review, DISA is either in the process of implementing, or has plans to implement, our recommendations and that doing so will improve support to DISA's customers.

[10]Other institutional controls not included in the scope of our review (but equally important) are budget formulation and execution, financial management, acquisition, and security management.

Background

DISA is a DOD component agency reporting to the assistant secretary of defense for command, control, communications, and intelligence.[11] DISA centrally manages major portions of DOD's common global IT resources, providing services and operating and maintaining systems that support the computing, networking, and information needs of the national command authority, military services, joint military commands, and Defense agencies.

DISA's services include

- providing computing capabilities critical to DOD's global combat support operations;
- providing voice, data, and video telecommunications services to DOD and other customers;
- purchasing telecommunications services on behalf of its customers from commercial vendors and other sources, such as voice services from the General Services Administration's Federal Technology Service contract; and
- purchasing customized IT products and services.

In addition to these services, DISA also operates and maintains a number of systems that perform mission-critical functions. These systems include the following:

- The Defense Information Systems Network, which is used to provide telecommunication services.
- The Global Combat Support System, which integrates joint combat support information from various databases and presents battlefield status information during an engagement.
- The Defense Message System, which interfaces with other U.S. government agencies, allies, and contractors to provide multimedia messaging and directory services for DOD users worldwide.

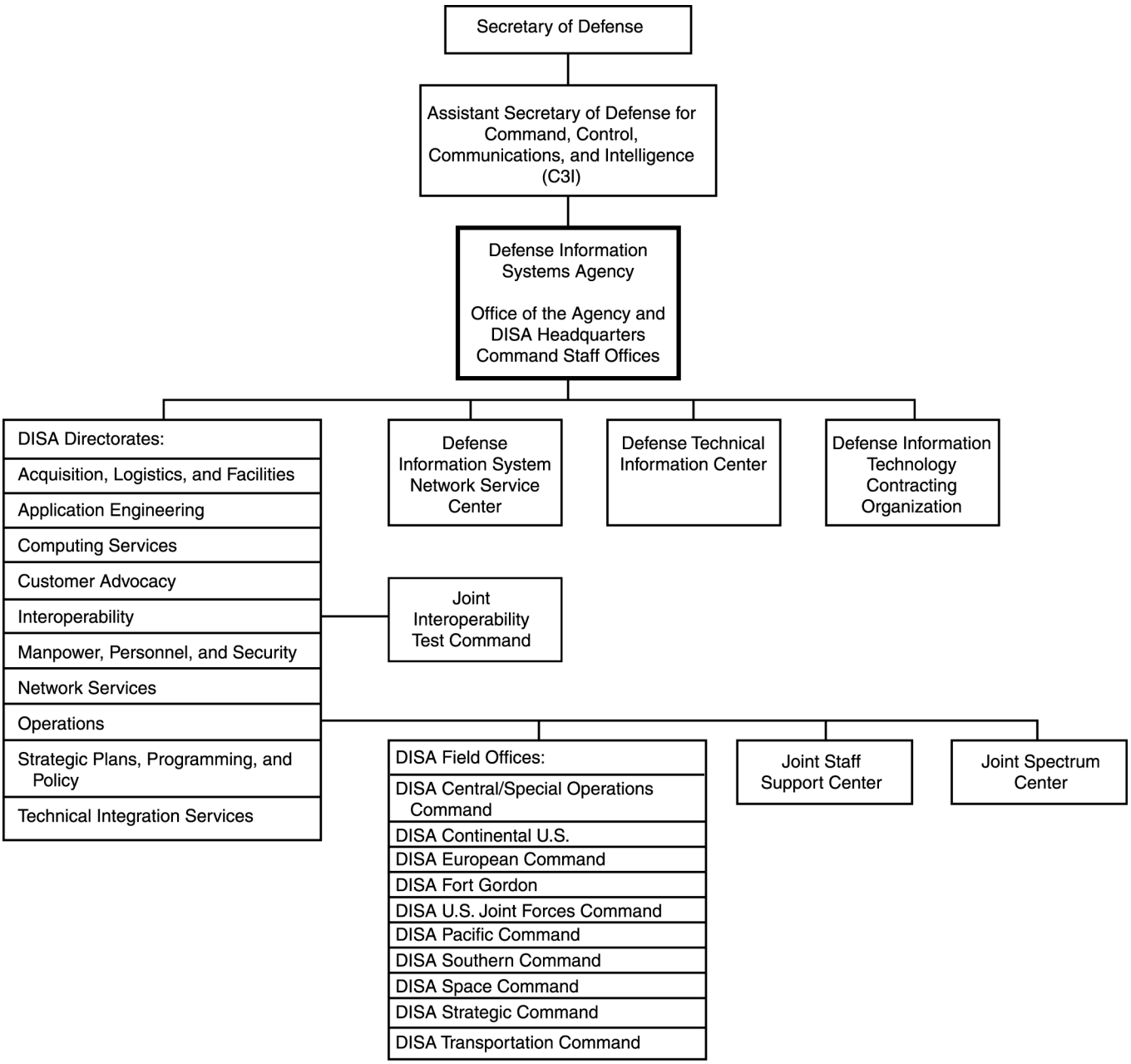
[11]The assistant secretary of defense for command, control, communications, and intelligence also serves as the DOD chief information officer.

- The Global Command and Control System, which provides a range of information needed to conduct joint U.S. and allied military operations, including battlefield information, imagery, planning support, and other intelligence information. The system operates at over 625 networked sites worldwide. Using the Defense Information Systems Network, the Global Command and Control System delivers system applications, such as the Global Combat Support System and messaging systems, used by battlefield commanders to synchronize and coordinate widely dispersed air, land, sea, space, and special operations forces during military operations.

In addition, DISA manages the Information System Security Program, which is to protect DOD telecommunications and IT systems from damage, unauthorized access, or threats to their availability. The agency also provides guidance and support on IT operational and technical issues to DOD components and coordinates DOD planning and policy for integration of systems within the DOD infrastructure, including management of the Joint Technical Architecture.

To accomplish its mission, DISA employs about 8,300 staff, located in its headquarters' Command and 10 directorate offices and at 20 field and line organizations worldwide. Figure 1 depicts DISA's reporting structure within DOD and shows its field units.

Figure 1: DISA's Reporting Structure and Field Units



DISA's operations generally fall into four key areas: (1) computing, (2) telecommunications, (3) acquisition services, and (4) joint combat support and DOD enterprise capabilities. Each of the directorate, field, and line units supports aspects of these areas. For example, the Computing Services directorate is responsible for operating assigned DISA information processing, communications, and network systems, including management, operations, and maintenance of six regional mainframe processing data centers within the United States. The Network Services directorate is responsible for developing network solutions for voice, data, and video transmission services and monitoring the effectiveness of network performance in meeting customer requirements. The responsibilities of DISA's Defense Information Technology Contracting Organization include procuring, accounting, and paying for IT supplies and services required by DISA and other DOD components. The Joint Interoperability Test Command is responsible for performing operational test and evaluation of DISA and other DOD IT acquisitions. DISA also has 10 field offices located at major customer locations, such as the U.S. Space Command, that are responsible for handling on-site customer issues and inquiries with products and services offered.

Prior Reports Have Cited Weaknesses in Measuring Cost-Effectiveness

Recent reports by us and others have pointed out weaknesses in DISA's ability to know whether it is cost-effectively providing services and operating and maintaining systems. For example, in 1998, we reported that in providing IT services, DISA had difficulty setting prices that recovered the full cost of doing business; this difficulty impaired the agency's ability to focus management attention on the full costs of carrying out operations and managing those costs effectively.[12] Specifically, in setting prices for telecommunications services, DISA did not incorporate about $137 million of costs incurred, so that all costs were not reflected in prices charged to customers and thus not recovered. Also, the agency used at least $231 million of its appropriated funding, reserved for use on joint warfighting capabilities, to support IT business activities that should have been fully funded by customer reimbursements for services. As a result, DISA did not have reliable information upon which to measure the cost-effectiveness of its services. We recommended that DISA improve its operations, price-

[12]U.S. General Accounting Office, *DOD Information Services: Improved Pricing and Financial Management Practices Needed for Business Area*, GAO/AIMD-98-182 (Washington, D.C.: Sept. 15, 1998).

setting, and financial management practices by setting prices that included all costs incurred and promptly collecting amounts owed by customers.

Inspector general reports have also found performance weaknesses. In 1999, the DOD inspector general reported that DISA's management of DOD's long-haul telecommunications requirements was fragmented and in need of improvement.[13] In 2000, the DISA inspector general reported that the process for collecting and reporting performance data was also fragmented, procedures were not established, and practices did not ensure results as intended by DISA's performance contract, which was established in fiscal year 2000 between DISA and the deputy secretary of defense.[14] Under this contract, the agency committed to measuring quality, cost-effectiveness, and timeliness of its goods and services, as well as customer satisfaction with these, and to performing benchmarking studies gauging the reasonableness of service cost and quality.[15]

Director Has Initiated a *500 Day Action Plan* to Improve Service

Shortly after the current director assumed command of DISA in June 2000, agency customers reported on problems with slow service, unanswered telephone calls, and inadequate network capacity. A former customer himself, the director responded by launching an initiative to solicit customer input on three core questions: what DISA was doing right, what it could do better, and what future requirements it needed to address. The goal of the initiative was to improve customer satisfaction with the agency's services and resulted in a *500 Day Action Plan* for service improvement. The plan is divided into five main sections:

1. **Strategic goals**. DISA's strategic goals, as stated in the action plan, are

- "Goal 1: Provide a flexible, reliable information infrastructure, capable of supporting the evolving Global Information Grid, required by the

[13]*Management of DoD Long-Haul Telecommunications Requirements*, Report Number 99-140 (Apr. 1999).

[14]*Audit of DISA's Performance Contract*, Final Report 2001-01 (Oct. 2000).

[15]Annual performance contracts were instituted by the November 1997 Defense Reform Initiative as a means to improve the cost-effectiveness and efficiency of DOD's business processes and support infrastructure. Similar to the performance plan required by the Government Performance and Results Act of 1993, the performance contract facilitates efforts to manage resources better and link program results to budget.

warfighter and others to achieve the highest level of effectiveness in joint and combined operations.

- "Goal 2: Easy sharing of high quality information supporting interoperability among U.S. Forces and Allies.
- "Goal 3: Defense information resources are secure.
- "Goal 4: DISA is a sought after employer. Personnel are available, well qualified, and able to improve their professional skills and advancement potential.
- "Goal 5: Information technology in support of business evolution will be used to the maximum advantage to satisfy customers."

This section of the plan also includes statements of mission and vision and descriptions of nine key initiatives that are designated as critical to achieving the above goals: (1) the Defense Information System Network, (2) the Global Command and Control System, (3) the Global Combat Support System, (4) information assurance, (5) the Defense Message System, (6) assured computing, (7) customer account management, (8) electronic commerce/electronic business, and (9) interoperability activities.

2. **Customer-requested activitie**s. The plan includes 109 customer-requested actions, grouped by customer. Each action includes a brief statement of need and importance, designation of the office of primary responsibility, the start date, the completion date, and key terms and conditions related to the action.[16]

3. **Global network actions.** The plan describes 32 actions that assist DISA in providing a flexible, reliable, affordable, integrated information network infrastructure. (Of these 32, 17 are also included among the customer-requested actions.)

4. **Operational improvements**. The plan proposes 16 actions to improve DISA's internal organizational and workforce operations.

[16]We give no specific examples here because DISA's position is that the military sensitivity of the actions makes them unsuitable for public disclosure.

5. **Master schedule.** The plan includes a summary schedule for all 140 actions (109 customer actions, 15 global network actions not included in the 109 customer-requested actions, and 16 actions internal to DISA management), spanning a time frame from before January 2001 to about August 2002.

Each of these 140 actions involves, to varying levels, the investment of IT resources to achieve a specific end result. DISA officials grouped the actions into three types: projects, mission-based services, and processes, as follows.

1. **Projects** were defined as actions to enhance "a capability to meet a customer need" and "subject to intensive oversight and supported by formal documentation and/or a formal oversight process."

2. **Mission-based services** were defined as "human capital being applied to a key, critical problem, [such as establishing] standards, engineering, test and evaluation, or [military command] support."

3. **Processes** were described as "[starting] with a determination about what needs to be improved to reach a goal or end-state, [for which] solutions may be material, nonmaterial, or both [and involve] significant investment amounts."

Of the 140 actions in the *500 Day Action Plan*, DISA categorized 44 as projects, 44 as mission-based services, and 52 as processes.

Effective IT Investment Planning Is Critical to Informed Investment Selection and Decisionmaking

Federal law and guidance[17] and industry best practices recognize IT investment planning as critically important, as it results in an IT investment plan that should be used to implement budget priorities for the year in accordance with strategic goals and the enterprise architecture. Our IT investment management framework, which is based on industry best practices, establishes a systematic process for investment planning and management, including processes for selecting, controlling, and evaluating investment options to maximize the value of the investments and to

[17]40 U.S.C. § 1422; *Management of Federal Information Resources*, Office of Management and Budget (OMB) Circular A-130 (Nov. 28, 2000).

minimize their risks.[18] This process requires the development of life-cycle cost, schedule, benefit, and risk estimates and the use of these estimates in comparing the relative merits of competing investment options. Such a process allows decisionmakers to select those initiatives that best meet the agency's strategic goals and prioritize the selected initiatives for allocation of IT resources. The results of these informed decisions can then be captured in an IT investment plan. This plan, like DISA's *500 Day Action Plan*, is intended to identify those initiatives in which the agency intends to invest time, money, and effort to produce a result with value commensurate with cost.

Action Plan Development Was Appropriately Focused on Satisfying Customers, but Not on Other Tenets of Effective Planning

As described in our IT investment management framework, effective IT investment planning requires, among other things, that organizations provide for satisfaction of customer needs and evaluate competing investment choices in light of each investment's estimated life-cycle costs, schedule, benefits, and risks. The *500 Day Action Plan* appropriately recognized that satisfying customer needs is important to a service provider like DISA. To develop the plan, DISA first solicited extensive customer input. Next, with the direct involvement of its executive leadership, the agency identified and selected near-term initiatives (or actions) in which it would invest IT resources to address customer concerns and increase customer satisfaction with DISA's services. However, DISA did not treat the actions that it selected for inclusion in the plan as investments by defining high-level work scope and establishing high-level cost, schedule, benefit, and risk estimates for each action based on that work scope, so that it could understand the actions' cost-effectiveness and thus make informed investment decisions. DISA has since taken steps to address these planning issues. However, it has not addressed them all. For example, it has not established life-cycle cost, benefit, and risk baselines for all actions. Thus, it cannot be adequately assured that its planned actions are the best mix of investment options to meet strategic performance goals.

[18]U.S. General Accounting Office, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft, GAO/AIMD-10.1.23, version 1 (Washington, D.C.: May 2000).

Action Plan Was Focused on Customer Satisfaction

At its most basic level, DISA's mission requires the agency to cost-effectively meet the requirements of its customers—the national command authority and supporting military commands, military services, and Defense agencies. Customer satisfaction is therefore a critical factor for DISA's mission success, and effective development of its action plan required DISA to solicit and use customer input.

DISA's development of its action plan was based on extensive input from its customers, beginning in July 2000, when the director formally solicited customer input on the three core questions (what DISA was doing right, what it could do better, and what future requirements it needed to address). By September 2000, this solicitation had produced 479 requirements from DISA customers, and the agency began a process to translate these requirements into its *500 Day Action Plan*. According to the DISA director, the goal of the action plan was to capture the high-priority customer requirements that the agency would commit to deliver. To achieve this goal, DISA worked through the 479 requirements by soliciting the views of the DISA organizational component responsible for each requirement, eliminating overlap among requirements, and assessing the feasibility of delivering on the requirement. Out of this process emerged a draft plan containing 111 actions.

The agency's next step was to validate the plan by sharing it with its customers and soliciting their comments, which it did in December 2000. Based on customer comments, DISA deleted 5 actions and added 34, resulting in a total of 140 actions. According to DISA officials, the plan's evolution (from 479 requirements to 111 actions and finally to 140 actions) was achieved through customer interaction and discussion among DISA leadership. DISA issued its final *500 Day Action Plan* in March 2001; it plans to update the plan during fiscal year 2002 by once again soliciting customer input.

Action Plan Is an IT Investment Plan, but Its Development Did Not Consider Cost-Effectiveness

OMB Circular A-130 outlines a disciplined process for selecting, controlling, and evaluating IT investments.[19] DOD directives also emphasize the need to consider the cost-effectiveness of competing IT investment options, such as DISA's planned actions, to assist in investment management (prioritizing investments and allocating IT resources). Such an investment management process is embedded in our IT investment management framework and is considered a best practice, followed by leading government and industry organizations.[20]

A key element of this investment management process is the agency's IT investment plan. The investment plan implements the agency's IT budget priorities for the year, reflecting the agency's strategic goals and its enterprise architecture. It also demonstrates to the agency's investment decisionmaking authority the merits of a project, making the case that the project meets cost-effectiveness criteria and deserves funding. For effective investment planning, agencies need at least preliminary information for each investment option in the following areas: scope of the work to be performed, scheduled milestones, and estimated life-cycle costs, expected benefits, and anticipated risks. Also, for an organization to determine how well its implementation activities achieve the results established by these baseline estimates, it needs results-based performance measures for each investment.

DISA did not evaluate the cost-effectiveness of the 140 actions selected and included in the plan. Specifically, in developing the action plan, DISA did not define in at least general terms the work scope for the planned actions, nor did it establish general milestones, generally estimate the life-cycle cost to complete actions, project the benefits of completing the actions, or assess the risks facing the actions.

[19] *Management of Federal Information Resources*, OMB Circular A-130 (Nov. 28, 2000).

[20] U.S. General Accounting Office, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft, GAO/AIMD-10.1.23, version 1 (Washington, D.C.: May 2000).

In reviewing supporting documentation for 57 of the 140 actions (18 projects, 18 mission-based services, and 21 processes), we found that performance measures, cost/benefit and risk analysis, and cost, schedule, benefit, and risk baselines were largely missing for all types of actions.[21] DISA did not define performance measures for 30 percent (17 of 57) of the actions, and benefit baselines were not established or cost/benefit or risk analyses performed for any of the 57 actions. The agency did not define work scope for 14 percent (8 of 57) of the actions, schedule baselines were not established for 19 percent (11 of 57), and life-cycle cost estimates were missing for 89 percent (51 of 57) of the actions.

Table 1 summarizes the results of our assessment of the 57 actions.

Table 1: Summary of Extent to Which 57 Actions Have No Established Baselines

Attribute reviewed	18 projects	18 mission services	21 processes	57 total
Life-cycle cost baseline not established	17 (94%)	17 (94%)	17 (81%)	**51 (89%)**
Work scope not defined	3 (17%)	3 (17%)	2 (9%)	**8 (14%)**
Schedule baseline not established	4 (23%)	3 (18%)	4 (19%)	**11 (19%)**
Benefit baseline not established	18 (100%)	18 (100%)	21 (100%)	**57 (100%)**
Cost/benefit and risk analysis not performed	18 (100%)	18 (100%)	21 [a] (100%)	**57 (100%)**
Performance measures not defined	7 (39%)	4 (23%)	6 (29%)	**17 (30%)**

[a]According to a DISA official, the actions categorized as processes had not progressed to the point where baselines supported cost/benefit and risk analysis.

Source: GAO analysis of DISA action implementation and management data.

According to DISA officials, they did not define this information for each action or assess its cost-effectiveness during plan development because the actions were viewed as goals to achieve, rather than individual investment projects to be defined, planned, and controlled. Further, DISA officials stated that because the action plan was driven by customer concerns, measuring return on investment was not the real focus of the plan, which was customer satisfaction. In addition, agency officials stated that the extent of baseline information and analysis for each action was a function of the size and complexity of the investment. While we agree with this

[21]DISA did establish cost baselines for 21 of the 57 actions reviewed, but these were only estimates of costs to be incurred in fiscal year 2002, not life-cycle cost estimates. For the 21 actions with cost estimates, the total estimated fiscal year 2002 cost was $171.7 million.

principle, effective investment planning, as previously discussed, nevertheless requires at least a minimal level of information about the investments (such as life-cycle costs, benefits, and risks), so that management can make informed selection decisions and develop an effective investment plan. Moreover, in view of the total 1-year cost ($171.7 million) of the 21 actions for which fiscal year 2002 estimates were made, the investments in the *500 Day Action Plan* are substantial and accordingly warrant the development of baseline information to permit informed decisionmaking.

DISA Has Taken Steps to Improve Management of Action Plan Implementation, but More Can Be Done

Effectively implementing an investment plan such as DISA's *500 Day Action Plan* requires, at a minimum, (1) measuring progress in meeting planned commitments for each investment and (2) controlling changes to these baseline commitments and reporting on such changes. Although DISA has recently begun measuring progress against some baselines for its planned actions and reporting baseline changes to affected customers, it is still not measuring progress against all relevant baselines (such as expected benefits) because it has yet to establish these. Also, it is not controlling changes to baselines to ensure that these changes are justified. Further, although DISA officials told us that the agency is measuring action plan implementation success through its annual benchmarking of agency performance against industry standards, this benchmarking does not compensate for the absence of performance measurements for plan actions, because most actions do not map to benchmarked performance measures. As a result, DISA does not know if its continued investment in actions is economically justified, and it does not know whether changes to actions are warranted.

DISA's Ability to Measure Plan Implementation, While Improved, Is Still Limited

To determine whether an IT investment plan like the *500 Day Action Plan* is being implemented effectively, an organization needs to measure whether investment baselines are being achieved (such as a commitment to deliver defined capabilities and business value by a certain date for a certain cost), so that it can promptly take appropriate corrective actions to address any variances. The Clinger-Cohen Act[22] and OMB guidance[23] require measuring the achievement of such investment commitments. OMB Circular A-130 states that agencies are to implement performance measures that monitor progress toward expected results of IT investments. These expected results are represented by the cost, schedule, risk, and benefit baselines established in selecting an IT investment.

Initially, DISA did not measure the progress of plan implementation by comparing actual results to baseline commitments because these were not established. According to DISA, it was instead measuring implementation of its *500 Day Action Plan* through the annual benchmarking process set up under its performance contract. However, DISA's benchmarking efforts are not an effective or adequate measure of action plan implementation because most of the actions were not covered by the benchmarking reviews. Specifically, a mapping of actions to the performance contract showed that 100 of 140 actions (71 percent) were not aligned. (Additional information on DISA's benchmarking efforts is provided in app. II.)

DISA has begun taking steps to better manage implementation of its action plan. For example, during the course of our review, DISA drafted a process whereby the responsible DISA action officer is to obtain agreement from the customer that the "exit criteria/performance metrics" (that is, close-out criteria and deliverables) for a given action are acceptable. When the action is completed, the action officer is to obtain written concurrence from the customer confirming that the action is completed. Also under this process, the DISA director is to request customer confirmation of completed actions. However, DISA has yet to begin measuring benefits realized or risks mitigated because it has not established baselines for either against which it can measure progress.

[22] 40 U.S.C. § 1422.

[23] *Management of Federal Information Resources*, OMB Circular A-130 (Nov. 28, 2000).

Another example of a step to strengthen plan implementation that DISA began during the course of our review is for its action officers to begin briefing the status of the actions to the DISA director (and other executives) at monthly Corporate Board meetings,[24] using a "stoplight" approach, with rankings of red, yellow, or green. DISA also developed criteria for classifying the status of the action's (1) schedule, (2) funding and staffing, and (3) customer feedback and issues. However, these criteria do not measure progress. Specifically, the funding and staffing criteria do not compare actual costs of work performed (what was actually spent to date) to the budgeted cost of work performed (what should have been spent based on the scope of work completed to date). Instead, it is merely a statement of whether the action was unfunded (red), partially funded (yellow), or fully funded (green).

Despite recent steps to begin measuring progress in implementing actions, DISA officials acknowledge that improvements are needed. According to officials, they will revisit their approach to measuring progress on actions and ensure that performance measures are meaningful. Without adequate performance measures that continuously compare status against expectations, DISA cannot adequately assess its progress toward expected results and detect implementation problems so that prompt corrective action can be taken.

Mechanisms to Control Changes to Baselines Are Under Development

Changes to project baselines can affect the delivery of promised capabilities and benefits on time and within budgets. Accordingly, changes to baselines must be controlled so that only those that are justified on the basis of costs, benefits, and risks are approved and made. At a minimum, such change control involves having an explicit definition of project baselines as a starting point, submitting proposed changes to those baselines (exceeding a specified threshold level) to a designated decisionmaking authority, understanding the impacts of the proposed changes on other project baselines and the customer's needs, and documenting and reporting approved changes.

DISA has begun to introduce elements of effective change control into its management of action plan implementation. Initially, DISA generally tracked (in monthly reports) only schedule baseline changes made by

[24]The board includes high-level personnel from each DISA national capital region organization, empowered to act for their organizations.

action officers. According to agency officials, these officers were supposed to check with customers to ensure that changes still met customer needs; however, since this process and its implementation were not documented, we could not confirm that it was actually practiced. We did confirm, however, that schedule baselines (the primary baselines that existed at that time) were at times changed significantly. For example, an action plan report for April 2001 (1 month after the action plan was issued) showed that the target completion dates changed for seven actions—one from June 2001 to September 2002 (a 15-month change). Also, of 12 actions briefed to DISA's Corporate Board in August 2001, the target completion dates for all 12 had changed (changes ranged from 1 to 18 months). For these changes, however, decisionmaking was left to the discretion of the action officer, and the ramifications of these changes on action costs, benefits, and risks were not addressed. As a result, whether action changes were prudent investment decisions was not known.

During our review, DISA refined its change control approach to require the responsible action officer to obtain customer agreement with proposed completion date changes. Also, officials told us that the DISA director is beginning to hold status meetings with the action officers; to notify customers of significant deviations from recently established cost, scope, and schedule baselines; and to obtain customer concurrence with such changes. However, this refined approach still does not satisfy all tenets of effective change control. Specifically, because DISA does not view the actions as investments to be controlled, it cannot adequately ensure that the implications of changes are understood by decisionmakers so that the changes (1) do not adversely impact other actions, (2) are approved by an authority level commensurate with the significance and risk of the change, and (3) are a cost-effective use of resources.

DISA Is in the Process of Establishing Important Institutional Management Controls

As we have previously reported, an organization's effectiveness in responding to changes in its strategic direction is largely a function of how well the organization is managed.[25] An important measure of an organization's management effectiveness is how certain institutional management functions or controls have been established: that is, the degree to which explicitly defined and rigorously followed organizational rules, policies, procedures, and tools are in place to enable management to best apply and measure the use of resources (people, processes, and technology) to accomplish mission goals and objectives. While the absence of one or more of these controls does not mean that an organization will fail, it does unnecessarily limit the organization's ability to perform its mission and respond to change, increasing the risk that mission performance and accountability will suffer.

Based on our experience in examining a wide range of government programs, we have previously reported on a set of eight institutional management functions that are needed to ensure effective organization management.[26] In this report on DISA, we address five of these eight functions: strategic planning, human capital (specifically, IT human capital), organizational alignment, information management (focusing here on enterprise architecture management and IT investment management), and performance measurement (this function is included as an element of all management areas).[27] We also address two additional management controls—customer relations management and knowledge management—because both are important and DISA identified them as central to its organizational management capability, citing efforts under way to establish both. Specifically, the management controls for DISA addressed in this report are the following:

[25]U.S. General Accounting Office, *Managing in the New Millennium: Shaping a More Efficient and Effective Government for the 21st Century*, GAO/T-OCG-00-9 (Washington, D.C.: Mar. 29, 2000); *GAO: Supporting Congress for the 21st Century*, GAO/T-OCG-00-10 (Washington, D.C.: July 18, 2000); and *Determining Performance and Accountability Challenges and High Risks*, GAO-01-159SP (Washington, D.C.: Nov. 2000).

[26]U.S. General Accounting Office, *Determining Performance and Accountability Challenges and High Risks*, GAO-01-159SP (Washington, D.C.: Nov. 2000).

[27]The other three institutional management controls (not addressed in this report, but equally important) are budget formulation and execution, financial management, and acquisition.

- strategic planning: establishing the agency's mission and vision, including core values, goals, and approaches/strategies for achieving the goals;

- IT human capital management: attracting, retaining, and motivating the people who possess the knowledge, skills, and abilities that enable an IT organization to accomplish its mission;

- organizational structure management: aligning operational responsibilities with business and mission goals and objectives, and maintaining an accountability framework;

- enterprise architecture management: developing, maintaining, and using an explicit blueprint for operational and technological change;

- IT investment management: selecting and controlling investments in IT so as to maximize benefits and minimize risk;

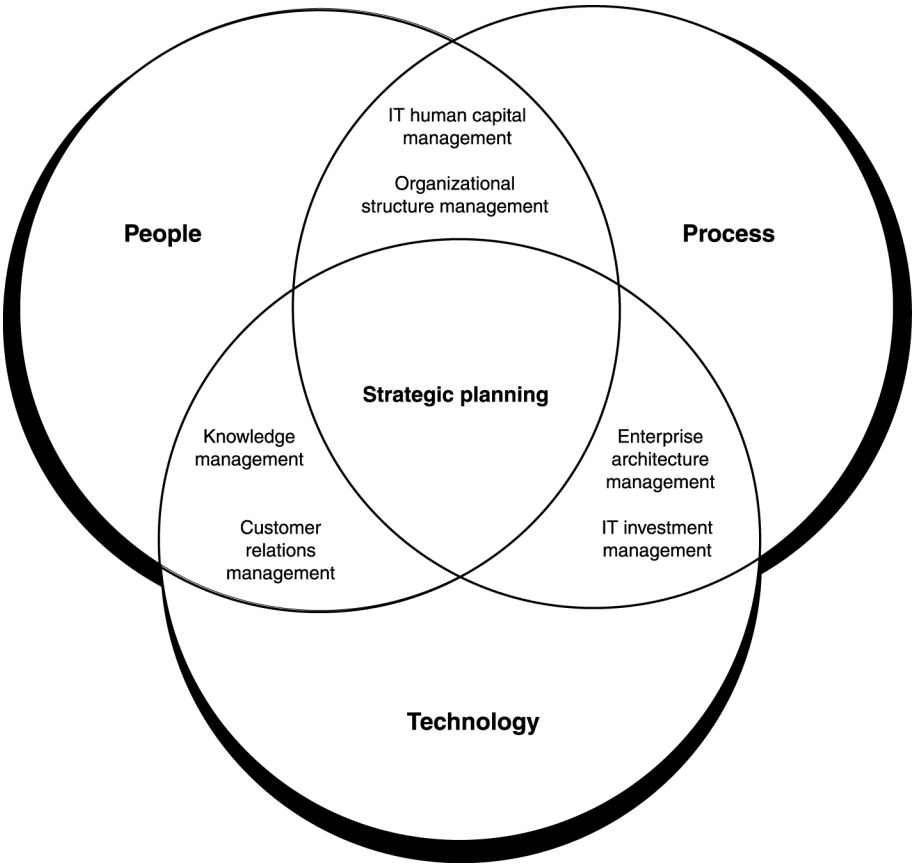
- customer relations management: focusing an organization's operations on how to best satisfy customer needs; and

- knowledge management: capturing, understanding, and using the collective body of information and intellect within an organization to achieve organizational goals and objectives.

All these institutional controls are interrelated and interdependent, collectively providing an organization with a comprehensive understanding both of current business approaches and of efforts (under way or planned) to change these approaches. These controls help an organization determine how it is applying its resources, analyze how to redirect these resources in the face of change, implement such redirections, and measure success. With this decisionmaking capability, the organization is better positioned to (among other things) direct appropriate responses to unexpected changes in its environment.

Figure 2 is one way to represent how these key management controls are related to an organization's basic resources: people, processes, and technology.

Figure 2: Relationships Among Management Controls, People, Processes, and Technology



DISA has performed varying levels of activity in all of these management areas. Much work remains to be accomplished, however, before all can be viewed as mature and institutionalized. Generally, DISA has progressed farthest in the areas that have been given priority and received management focus. Until all the control areas receive appropriate focus and are fully operative, DISA will be challenged both in responding effectively to shifts in its strategic direction and in improving its mission performance and accountability.

DISA Is Performing Important Strategic Planning Activities

Effective strategic planning can be viewed as providing the foundation for each of the other management control areas. Through strategic planning, an organization describes a general vision of what it wants to accomplish—and how it wants to accomplish that vision—by spelling out its mission, core values, goals, and strategies. According to the Government Performance and Results Act[28] (GPRA) and related OMB implementing guidance,[29] effective strategic planning includes the following elements, the first two of which are fundamental to the establishment of the remaining four:

- defining a comprehensive, but brief, agency mission statement defining the basic purpose of the agency and covering the major functions and operations of the agency;
- defining general agency goals and objectives for all major functions and operations within the agency's span of influence;
- describing how the goals and objectives are to be achieved, including (1) operational processes, skills and technology, and the human, capital, information, and other resources (such as reasonable funding and staff projections) required to meet those goals and objectives; (2) steps taken to resolve mission-critical management problems; (3) efforts to provide high quality and efficient training opportunities for staff; and (4) processes for communicating goals and objectives throughout the agency;
- describing how the agency's performance goals are related to the general goals and objectives, including a brief outline of the type, nature, and scope of the performance goals, and the relevance and use of performance goals in determining the achievement of general goals and objectives;
- identifying key factors, external to the agency and beyond its control, that could significantly affect achievement of the general goals and objectives, including indicating their links to a particular goal(s) and

[28]P.L. 103-62, Government Performance and Results Act of 1993.

[29]*Preparation and Submission of Strategic Plans, Annual Performance Plans, and Annual Program Performance Reports*, OMB Circular A-11, Part 2.

describing how achievement of the goal could be directly and significantly affected by these factors; and

- describing the program evaluation(s) used in establishing or revising the general goals and objectives of the strategic plan, and including a schedule for future program evaluations.

DISA is performing important strategic planning activities as described below. However, strategic planning can be strengthened with respect to describing how strategic goals and objectives will be achieved and how program evaluations will be used to establish and revise goals and objectives, as is also described below.

- DISA's strategic plan[30] includes a mission statement that defines the agency's purpose and its primary business areas.

- Its strategic plan and the *500 Day Action Plan* describe general goals and objectives (see background section of this report for examples).

- Its strategic plan does not describe the approaches or strategies to achieve goals and objectives. For example, while DISA addressed its IT resource needs (such as staffing, training, and funding) in its annual Program Operating Memorandum, it did not address the steps to be taken to resolve mission-critical management problems and processes for communicating goals and objectives throughout the agency. Furthermore, although DISA's Director's Planning Guidance addresses "critical initiatives" supporting the mission (such as the Global Command and Control System and the Defense Message System), it did not explicitly link these initiatives to DISA's strategic goals and objectives. If it has not adequately defined the resources and strategies for achieving goals and objectives, an agency reduces its ability to align its activities, core processes, and resources to support achievement of its strategic goals and mission, putting their achievement at risk.

- DISA's strategic planning has addressed the relationship between the general goals and the annual performance goals. Specifically, DISA's annual performance plan is referenced in its strategic plan, and the performance plan links each performance goal/objective with the specific agency strategic goals. Such a linkage is important in ensuring

[30] *Defense Information Systems Agency Strategic Plan*, version 2.0 (May 2000) .

that agency efforts are properly aligned with goals (and thus contribute to their accomplishment), and in assessing progress toward achieving these goals.

- DISA's strategic plan describes key external factors that could affect DISA's strategic direction as defined in its goals and objectives. For example, it describes how customer cooperation in alerting DISA to operational changes (strategic and tactical) are important to DISA's ability to carry out its mission and achieve its goals and objectives.

- DISA's strategic planning does not adequately provide for using program evaluations to establish/revise strategic goals. Although DISA was performing and documenting evaluations of its programs, it could not demonstrate that the findings of these evaluations were used in developing strategic goals. Similarly, evaluation plans did not consistently outline scope, key issues, and schedule: of six program plans that DISA provided, only one outlined the scope and schedule for evaluations. Also, DISA could not demonstrate that results of evaluations were used to improve performance, although officials stated that evaluation results were used in this way.

  Program evaluations are an objective and formal assessment of the results, impact, or effects of a program or policy. If an agency does not establish a process for performing and using such evaluations in considering strategic goals, it loses a critical source of information to help ensure the validity and reasonableness of goals and strategies, as well as to help identify factors likely to affect performance. This information is also helpful in explaining results in the agency's annual GPRA performance reports, especially if goals are not met.

DISA Has Performed Important IT Human Capital Activities

Modern human capital management values people and is aligned with an organization's mission, vision, and strategic goals. Further, it recognizes and invests in employees as critical assets for achieving an organization's strategic business/mission goals and objectives. As we have previously reported,[31] strategic IT human capital centers on viewing people as assets whose value to an organization can be enhanced through investment. As the value of people increases, so does the performance capacity of the

[31]U.S. General Accounting Office, *Human Capital: Attracting and Retaining a High-Quality Information Technology Workforce*, GAO-02-113T (Washington, D.C.: Oct. 4, 2001).

organization. To maintain and enhance the capabilities of IT staff, organizations should, among other things,

- assess knowledge and skills needed to effectively perform IT operations to support agency mission and goals;
- inventory the knowledge and skills of current IT staff;
- identify gaps between requirements and current staffing; and
- develop and implement plans to fill the gaps.

This management control has received considerable focus from DISA. Thus far, the agency has performed activities supporting all four elements of effective IT human capital management, as described below.

- DISA has begun to identify its IT human capital requirements, having issued requests for its offices to identify workforce requirements. However, how these requirements and the plans for meeting them are aligned with DISA's strategic plan has yet to be documented. According to DISA, a comprehensive 5-year workforce plan will be issued in March 2002, which will link to the agency's strategic plan. Until the agency has this plan, it will be challenged in identifying its current and future IT human capital needs (such as the size of the workforce and the appropriate knowledge, skills, and abilities) to pursue its mission.
- DISA has implemented an automated support system to assist it in capturing, assessing, and managing the knowledge and skill set of its workforce. The system is also designed to identify staff training needs by comparing an individual's skills against the requirements for a particular position. This system is a searchable database of staff skills possessed by all DISA staff, and it is intended to permit quick identification of staff with special skills needed to accomplish mission tasks.
- Also, DISA is using this automated support system to identify gaps in staff strengths and developmental needs. DISA plans to use this information to develop workforce plans addressing vacancies, to understand gains and losses of staff by position, and to strengthen staff competencies/skills in specific mission areas. DISA plans to establish a workforce workgroup in January 2002 to develop the workforce plans.

- DISA is taking steps to invest in training and development of its staff to fill identified skills gaps. For example, it plans to introduce individual development planning for all staff. In addition, its course catalog (October 2000) provides for central management of training and development of staff. According to DISA officials, the agency is in the process of evaluating effective solutions for requirements-driven training and training metrics. Once training and development needs are identified, DISA plans to implement enhancements to its training program, beginning in fiscal year 2002. Such investments in training and development are necessary for an agency to ensure that it is building the competencies needed to achieve its shared vision.

DISA Has Recently Realigned Its Organizational Structure

To be responsive to the needs of customers and apply resources to respond to a rapidly changing environment, an organization needs to structure itself in a way that minimizes bureaucracy. In doing so, as we have reported,[32] an agency needs to accomplish, among other things, the following:

- Reduce multiple management layers (team-based matrix management is used to streamline processes; senior executives are empowered).
- Reduce organizational subdivisions (number of divisions is reduced; local, regional, and worldwide offices are consolidated).
- Improve coordination, productivity, and team-building throughout the organization (employee feedback is encouraged, and employee suggestion programs are in place; organization encourages enhanced customer communication and feedback).

DISA implemented a new organizational structure on October 1, 2001, and established the Office of the Chief Transformation Executive to guide the integration of changes in people, processes, structure, policy, and tools to achieve organizational transformation goals. According to DISA officials, this new structure was designed to position the agency to manage change and is aligned with DISA's global support business areas, such as network services, computing services, field operations, and application engineering.

[32]U.S. General Accounting Office, *GAO: Supporting Congress for the 21st Century*, GAO/T-OCG-00-10 (Washington, D.C.: July 18, 2000).

DISA's new organizational structure reduced and consolidated management layers and subdivisions. The new structure reduces the number of field and line organizations from 27 to 20. In the national capital region, which includes DISA headquarters, staff are being consolidated from 15 locations down to 3. In addition, as part of the reorganization, the agency implemented a Corporate Board (composed of senior executives and the DISA director) to facilitate integrated entitywide decisionmaking.

However, establishing this management control area still requires improvements in coordination, productivity, and team-building through establishing methods to encourage enhanced customer communication and feedback. While DISA has introduced internal communications and feedback channels, such as directorate-specific all-hands meetings, external communications and feedback channels are still evolving (see the discussions of customer relations management and knowledge management control areas, later in this section). Without these channels, an organization's ability to get needed information to appropriate decisionmakers can be impaired.

DISA Had Not Focused Efforts on Enterprise Architecture Management

Enterprise architectures (EA) are essential tools for effectively and efficiently engineering business processes and for implementing and evolving supporting systems. These architectures are systematically derived and captured descriptions—in useful models, diagrams, and narrative—of the mode of operation for a given enterprise (e.g., an agency). They describe the agency in both (1) logical terms, such as interrelated business processes and business rules, information needs and flows, and work locations and users; and (2) technical terms, such as hardware, software, data, communications, and security attributes and standards. These architectures provide these perspectives both for the current or "as is" environment and for the target or "to be" environment, as well as a transition plan for sequencing from the "as is" to the "to be" environment. Managed properly, an EA can clarify and help optimize the interdependencies and interrelationships among an agency's business operations and the underlying IT infrastructure and applications that support these operations.

The federal Chief Information Officers (CIO) Council, in collaboration with us, issued guidance on architecture management.[33] This guidance specifies six primary areas of effective EA management:

- initiating the EA program by obtaining executive support, establishing management structure and control, and developing program activities and products;
- defining an architecture process and approach, including defining the intended use and scope of the EA, determining the depth of the EA, and selecting the EA products, framework, and toolset;
- developing the EA, including collecting information used in developing the baseline EA of the organization's current or "as is" state against which future progress can be measured, developing the target EA of the organization's vision of future business operations and supporting technology, developing a sequencing plan that defines the incremental steps for making the transition from the baseline to the target architecture, and approving the EA for use;
- using the EA to facilitate systematic agency change by continuously aligning technology investments and projects with agency needs;
- maintaining the EA through periodic reassessments to ensure its continued alignment with the organization's business practices, funding profiles, technologies, and projects; and
- continuously controlling and overseeing the EA program, including ensuring that controls are in place and functioning and that weaknesses are identified and addressed.

[33]CIO Council, *A Practical Guide to Federal Enterprise Architecture*, version 1.0 (Feb. 2001).

DISA's EA management capability is less established than any other area. Thus far, the agency's efforts have been limited to deciding to base its EA on the DOD architecture framework[34] and stating its intention to use the EA to support the management of its IT investments. As a result, much remains to be accomplished. According to DISA officials, EA management has not been an area of DISA leadership focus and attention. Without this architecture, DISA lacks the operational and technical blueprint for guiding and constraining its investments, such as those in its *500 Day Action Plan*, in a way that optimizes agencywide performance and accountability.

Thus far, the DISA CIO has proposed high-level EA program targets, but has not yet obtained buy-in from the DISA director and senior business executives for these. Such executive commitment provides the CIO with necessary sponsorship to fund development and maintenance of the EA. Also, DISA has taken some steps to establish an EA management structure. For example, a DISA chief architect has been appointed, and a working group responsible for developing an EA has been established. However, dates have not been approved for establishing a program management office or for appointing key personnel necessary for developing and maintaining an EA. Because the EA is a corporate asset requiring investment of agency resources, a formal program management structure is necessary to ensure successful execution of the process.

DISA issued a policy letter on November 21, 2001, governing the implementation of its EA, which states that systems will adhere to DOD's established architecture framework. However, the policy letter did not address other activities associated with this process, such as defining the intended use and scope of the EA, determining its depth, and selecting products and tools. Until the agency fully defines its EA process and approach, it will not have an adequate basis for ensuring that its architecture is properly developed and tailored to the scope and nature of the agency's needs.

[34]The DOD framework (the Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance Architecture Framework) promotes the use of three views in an organization's architecture: systems, operational, and technical. Further, some requirements for the technical view are set forth in the Joint Technical Architecture, which sets minimum technical architecture standards for interoperability that apply to all DOD components.

Without a defined architectural process and approach, DISA cannot accomplish the other areas of effective EA management and thus will continue to lack an EA to guide and direct its investment in new and existing IT assets in a way that promotes effective operational and technological change. As we have reported at other agencies,[35] investing in systems without an EA increases the risk that systems will not meet business needs, will be incompatible, will perform poorly, and will cost more to develop, integrate, and maintain than is warranted.

Appendix III includes a table that provides more details on the state of DISA's EA management control area.

DISA Plans to Build an IT Investment Management Foundation

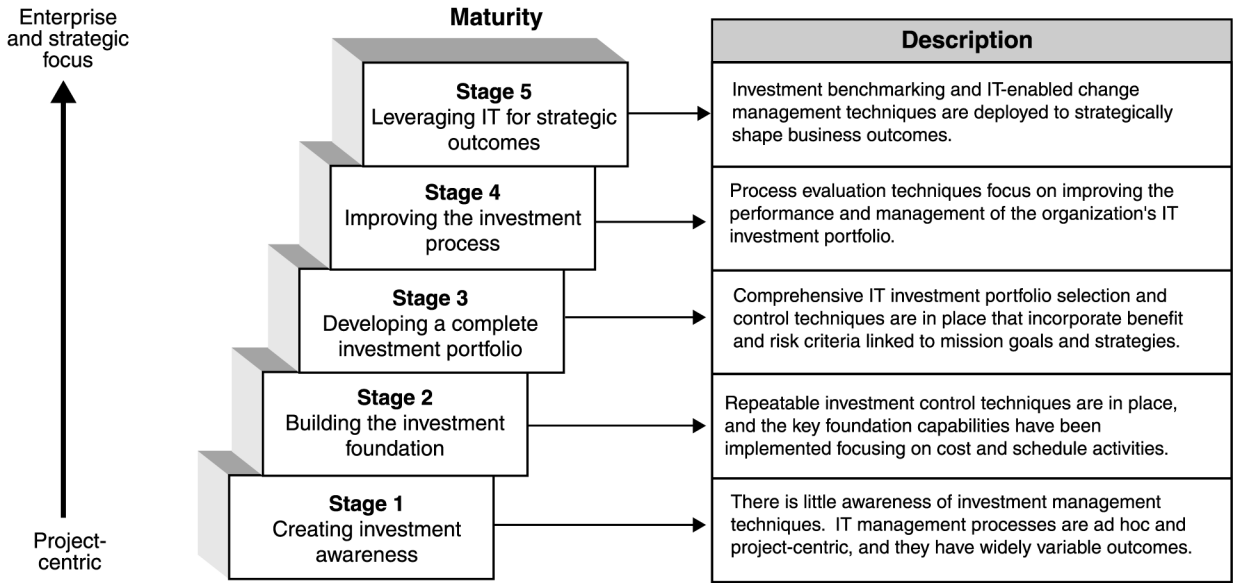
IT investment management is a structured, disciplined approach to selecting, controlling, and evaluating a portfolio of competing investment options. This approach to managing IT investments permits informed and deliberative organizational decisionmaking about how to best expend resources on IT-related initiatives in a manner that maximizes return on investment and minimizes risk. We have issued an information technology investment management (ITIM) framework,[36] which identifies critical processes for successful IT investment and organizes these processes into a framework of increasingly mature stages. The framework supports the fundamental investment management requirements of the Clinger-Cohen Act[37] and provides a tool for implementing those requirements. ITIM has been favorably reviewed by federal CIOs and OMB. A summary of the framework is provided in figure 3, and each of its five stages is described further below.

[35]See, for example, U.S. General Accounting Office, *Customs Service Modernization: Architecture Must Be Complete and Enforced to Effectively Build and Maintain Systems*, GAO/AIMD-98-70 (Washington, D.C.: May 5, 1998); *Information Technology: Architecture Needed to Guide Modernization of DOD's Financial Operations*, GAO-01-525 (Washington, D.C.: May 17, 2001).

[36]U.S. General Accounting Office, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft, GAO/AIMD-10-1.23, version 1 (Washington, D.C.: May 2000).

[37]40 U.S.C. § 1422.

Figure 3: The Five Stages of Maturity Within IT Investment Management



Source: U.S. General Accounting Office, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft, GAO/AIMD-10.1.23, version 1 (Washington, D.C.: May 2000).

Stage 1: Creating investment awareness. In the first stage of IT investment management, the starting point for all organizations, the organization is becoming aware of the need to manage investments. This stage is marked by the existence of ad hoc, unstructured, and unpredictable investment decisions, with little or no relationship between the success or failure of one investment and that of another.

Stage 2: Building the investment foundation. In the second stage of maturity, repeatable investment techniques are in place, and key capabilities have been implemented. To achieve this stage of maturity, an organization must establish five critical processes:

- establishing and operating an IT investment board (or more than one) to make investment decisions;
- performing project oversight, including monitoring projects relative to cost and schedule expectations;

- tracking IT assets, including creating and maintaining an IT inventory and providing tracking data to executive decisionmakers;

- identifying business needs for IT projects, which requires identifying key customers or end users and the near-term business needs that each project will support; and

- selecting proposals systematically by applying defined investment criteria.

Stage 3: Developing a complete investment portfolio. To have effective IT investment management, an organization must be at this stage of the framework or higher. This stage requires the establishment of five critical processes:

- aligning authority of IT investment boards, so that their responsibilities and activities are coordinated (if an organization has more than one such board);

- defining portfolio selection criteria so that decisionmakers can communicate to the organization the criteria used to select and fund investments;

- analyzing investments, including their fundamental cost, benefit, schedule, and risk characteristics, before they are funded and combined with other investments into a portfolio;

- developing an investment portfolio by comparing, selecting, and funding worthwhile investments; and

- overseeing portfolio performance by adding the elements of investment benefit and risk management to the control process activities begun in stage two.

Stage 4: Improving the investment process. When IT investment management is sufficiently mature, organizations are at the stage where they can begin improving the process. At stage four, organizations are focused on using evaluation techniques to improve their IT investment processes and portfolios along with maintaining mature control and selection processes. The three critical processes are

- performing postimplementation reviews and providing feedback,

- evaluating and improving portfolio performance, and

- managing systems and technology succession.

Stage 5: Leveraging IT for strategic outcomes. When its IT investment management is at the highest level of maturity, an organization shapes its strategic outcomes by learning from other organizations and continuously improving the manner in which it uses IT to support and improve business results. The critical processes of stage five are

- performing investment process benchmarking and

- managing IT-driven strategic business change.

Our analysis of DISA against the ITIM framework showed that the agency has fulfilled some elements of both stages 2 and 3 but none in stage 4 or 5. According to a DISA official, the agency sees itself as between stages 1 and 2. Further, DISA plans to first develop a consistent, repeatable process as the foundation for building a portfolio-based approach to IT investment management. This plan is consistent with our staged framework. The status of DISA's efforts in each of the ITIM stages follows.

Stage 2 processes: Of the five elements for maturity stage 2, DISA has focused activities in two elements: establishing an IT investment board and tracking IT assets. In addition, it is performing some activities in the other three elements. Each of these elements is discussed below.

- DISA has established an IT investment board, which was chartered on November 28, 2001. The board operates according to DISA's IT Capital Investment Process Implementation Plan (version 2.0), issued in October 2001.

- DISA is working to perform IT project oversight, including formalizing the review process for the IT investment board and refining a project data collection instrument currently in use. Because these activities are not yet established, however, DISA is not able to routinely provide each project's up-to-date cost and schedule data to the IT investment board.

- Through issuance of the *500 Day Action Plan*, DISA has begun to track its portfolio of IT systems. In addition, DISA uses the Defense IT Management System as a central repository for information on IT assets, such as management, reutilization, and accounting data.

- DISA officials stated that to identify business needs for IT projects, the agency identifies specific users for each IT project throughout its life cycle and includes this information in the project's program plan. However, DISA could not provide any evidence to substantiate these statements.

- DISA officials have drafted guidance for use in systematic selection of proposals. However, until the process is in place and functioning, DISA is not able to develop, analyze, and prioritize proposals in support of funding decisions.

Unless these repeatable basic processes are accomplished for individual project investment selection and management, IT projects are less likely to deliver promised capabilities on time and within budget.

Stage 3 processes: DISA has not established any critical processes associated with stage 3, but it has begun efforts on those stage 3 critical processes that lay the groundwork for establishing other stage 3 processes. Examples of partially established and not established critical processes are as follows.

- DISA has drafted portfolio selection criteria. However, the IT investment board has not approved the selection criteria and the criteria have not been distributed throughout the organization. Currently, DISA's investment board is testing the draft IT portfolio selection criteria.

- DISA is not yet analyzing investments using its selection criteria. DISA is currently testing its draft selection criteria via analysis of a single project.

- DISA has not yet established critical processes for developing and overseeing an investment portfolio.

Without a portfolio-based approach to investment management, an agency will be challenged in its ability to invest in the right mix of projects to best meet mission goals.

Appendix III provides a table summarizing the state of DISA's IT investment management control area. The table also includes descriptions of the elements associated with each stage of maturity within the ITIM framework.

DISA Is Performing Important Customer Relations Management Activities

Private industry leaders have promulgated guidance for establishing an effective customer relations management (CRM) capability.[38] This guidance states that in order to meet customers' needs and expectations, an organization should become externally focused and establish partnerships with its customers. Such a customer-focused organization also aligns its business strategy with technologies, applications, processes, and organizational changes to optimize both the cost-effectiveness of operations and customer satisfaction. As with the other management process areas discussed in this report, establishing a CRM capability begins with the adoption of a strategic vision, supported by senior management, that

- fosters a culture of client focus,
- is committed to CRM strategy,
- establishes CRM goals, and
- defines a strategy to reach CRM goals.

With this commitment, the supporting business process, organizational, and technology infrastructure is then established to collect, analyze, and maintain customer information. More specifically, this means that

- CRM processes are integrated throughout organization,
- customer information is collected,
- customer needs and expectations are identified,
- flexible solutions and enabling technologies are evaluated and implemented to warehouse customer information and maximize client satisfaction, and
- CRM staff is trained and developed.

[38]Best practices have been compiled by the *CRM-Forum*, an independent resource for CRM research conducted by private industry experts and consulting firms, including Deloitte Research and Gartner Group.

Once this infrastructure is established, the CRM operational capability is to be sustained through continuous measurement and improvement, including

- using customer feedback surveys and focus groups and
- using results to improve CRM processes.

Customer relations management has been a priority area for DISA, as evidenced by the focus of its *500 Day Action Plan*. Thus, DISA has performed many CRM activities, including developing a CRM strategy, measuring progress, and using the results of these measurements for continuous improvement. It has also taken steps to build and maintain the necessary supporting infrastructure. Specifically, DISA has established the means to collect customer information and identify customer needs, as demonstrated through development of its *500 Day Action Plan*. However, it is still pilot testing an electronic commerce CRM Web portal as part of its evaluation of solutions and enabling technologies, and this pilot had not been extended and integrated throughout DISA. Moreover, according to DISA's CRM strategy briefing, the pilot depends on DISA's enterprise architecture and knowledge management activities; however, as discussed in this report, neither of these management control areas has yet been established. Further, DISA's CRM training program is planned for fiscal year 2002. Until it has the infrastructure to support and implement its CRM strategy, DISA will be challenged in its ability to effectively manage customer relations.

DISA's Knowledge Management Area Is Under Development

Effective knowledge management captures the collective body of information and intellect within an organization, treats the resultant knowledge base as a valued asset, and makes relevant parts of the knowledge base available to decisionmakers at all levels of the organization. Knowledge management is closely aligned with enterprise architecture management, because both focus on systematically identifying the information needs of the organization and describing the means for sharing this information among those who need it. Guidance issued by the federal CIO Council[39] provides a framework for establishing a knowledge

[39]CIO Council, *Managing Knowledge @ Work: An Overview of Knowledge Management* (Aug. 2001).

management capability. Elements involved in institutionalizing this function include

- deciding with whom (both internally and externally) to share organizational knowledge;
- deciding what knowledge is to be shared, through performing a knowledge audit and creating a knowledge map;
- deciding how the knowledge is to be shared, through creating apprenticeships/mentoring programs and communities of practice for transferring tacit knowledge, identifying best practices and lessons learned, managing knowledge content, and evaluating methods for sharing knowledge; and
- sharing and using organizational knowledge, through obtaining sustained executive commitment, integrating the knowledge management function across the enterprise and embedding it in business models, communicating strategies, and measuring performance and value.

DISA has performed limited activities to establish effective knowledge management. The agency has designated a knowledge management organization that is to report to the DISA Corporate Board and has appointed a knowledge management chief. Also, the DISA vice director signed the knowledge management council charter on August 28, 2001. However, until DISA institutionalizes the knowledge management function throughout its organization, it cannot ensure the availability and continued value of knowledge assets to support strategic goals and objectives.

Described below are areas in which DISA's efforts to develop effective knowledge management are limited.

- DISA had not yet defined with whom to share organizational knowledge. DISA has begun drafting a review and approval process for sharing organizational knowledge, but this draft did not address establishing internal and external parties with whom DISA would share information.
- Similarly, DISA has not determined what knowledge to share. Although DISA has begun drafting a DISA knowledge implementation plan for establishing the activities associated with this process, there were no finalized, approved plans to define the implementation. Further (as

discussed in the section on the agency's enterprise architecture management), DISA has not yet begun to develop its architecture, which would include a related determination of what information (i.e., knowledge) is needed by whom, where and when it is need, and in what form it is needed to perform mission operations.

- DISA has not yet determined how to share its organizational knowledge: that is, how to make knowledge available. DISA's knowledge management chief and knowledge management council have not yet begun to address how DISA will share knowledge. Again, this determination is closely aligned with developing the enterprise architecture, which DISA has yet to do.

The three elements above lay the foundation for DISA to implement an effective knowledge management function throughout DISA. Thus, DISA has not yet progressed to the point of performing the activities associated with implementation, the fourth element of this management control area.

Conclusions

Through development and implementation of its *500 Day Action Plan*, DISA has demonstrated a commitment to improving its customer orientation. However, DISA's action plan development efforts were focused solely on customer satisfaction and did not effectively address whether planned actions would be cost-effective and thus worth pursuing. As a result, DISA cannot be assured that it is pursuing initiatives under the plan that are the most prudent strategic investment choices among competing options. DISA has taken steps to address this planning limitation as part of its efforts to manage implementation of the plan; however, these steps stop short of adequately addressing how to determine the most cost-effective portfolio of action plan initiatives. Unless DISA expands the focus of its planning and performance measurement to include cost-effectiveness considerations, it runs the risk of investing in areas and assets that, while satisfying customer-defined needs, do not produce mission value commensurate with costs. DISA's commitment to improving customer satisfaction is appropriate and laudable, but it must be equally committed to opportunities to reduce its costs of operations and improve its mission performance.

Through its ongoing efforts to implement important institutional management controls, DISA is building the institutional capacity needed to implement its strategic goals and objectives and to respond effectively to changes in its environment. However, this suite of management controls is

largely a work in progress. The key for DISA will be to remain vigilant in completing these controls and in doing so expeditiously. Fortunately, DISA leadership has already taken at least the first steps in developing and implementing all these controls, and its progress thus far indicates an understanding and appreciation of the value and urgency of completing them. Nevertheless, until these controls are in place and functioning, DISA will not have the organizational means to accommodate change and to realize its vision of being the preferred provider of information services across DOD.

Recommendations

To improve DISA's development and execution of its current and future IT investment action plans, we recommend that the secretary of defense direct the DISA director, through the assistant secretary of defense for command, control, communications, and intelligence, to follow a structured and disciplined IT investment management process for selection, control, and evaluation of the initiatives in current and future action plans.

For plan development, we recommend that the DISA director

- define the general scope of actions and establish preliminary life-cycle cost, schedule, benefit, and risk baselines for actions; and
- perform a preliminary, high-level assessment of return on investment for proposed actions to gauge their cost-effectiveness.

For plan implementation, we recommend that the DISA director

- use approved baselines to develop meaningful results-oriented performance metrics;
- implement a formal process (1) to control significant changes to action baselines and closure of actions and (2) to inform stakeholders of significant deviations in the action baselines;
- in monitoring implementation of the planned actions, update scope of work, cost, schedule, benefit, and risk baselines for all actions, as appropriate, to ensure that actions remain cost-effective investment choices; and

- establish a mechanism to track customer feedback to ensure that the customer concerns that led to the actions are resolved.

To improve institutional management controls needed to respond to changes in strategic direction, we recommend that the secretary of defense direct the DISA director, through the assistant secretary of defense for command, control, communications, and intelligence, to make it an agency priority to establish the elements described in this report for each of the following management controls: (1) strategic planning, (2) organizational structure management, (3) enterprise architecture management, (4) IT investment management, (5) customer relations management, and (6) knowledge management. For IT human capital management, we are not making recommendations in light of the fact that DISA has either completed or is close to completing each of the important elements of effective IT human capital management discussed in the report. For the other management controls, we specifically recommend that the agency do the following:

To strengthen the agency's *strategic planning*, we recommend that the DISA director

- fully define approaches or strategies to achieve goals and objectives,

- completely explain the relationship between the general goals and the annual performance goals, and

- fully describe how program evaluations are used to establish and revise strategic goals.

As part of its ongoing *organizational structure management*, we recommend that the DISA director evaluate and implement solutions for advancing coordination, productivity, and team-building.

To strengthen management of DISA's effort to develop, implement, and maintain an *enterprise architecture*, we recommend that the DISA director follow the steps defined in the CIO Council's guide on architecture management,[40] as appropriate, including

[40]CIO Council, *A Practical Guide to Federal Enterprise Architecture*, version 1.0 (Feb. 2001).

- initiating a program;
- defining the architecture process and approach;
- developing the architecture, including the baseline and target architectures, and the plan for sequencing from the baseline to the target;
- using the architecture in making IT investment decisions;
- maintaining the architecture; and
- continuously controlling and overseeing the program.

To establish effective *IT investment management*, we recommend that the DISA director follow the steps detailed in our IT investment management guide,[41] including (1) building a foundation for IT investments, including

- establishing and operating an IT investment board,
- performing IT project oversight,
- tracking IT assets,
- identifying business needs for IT projects, and
- selecting proposals systematically,

and (2) establishing the capability to manage investments as a complete investment portfolio, including

- defining portfolio selection criteria,
- analyzing investments,
- developing an investment portfolio, and

[41]U.S. General Accounting Office, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft, GAO/AIMD-10-1.23, version 1 (Washington, D.C.: May 2000).

- overseeing portfolio performance.

To strengthen *customer relations management*, we recommend that the DISA director build and maintain a supporting customer relations infrastructure that permeates the entire organization.

Finally, to define and implement an organizationally integrated *knowledge management* function, we recommend that the DISA director follow the steps outlined in the CIO Council guide on this subject,[42] including

- deciding with whom to share organizational knowledge,
- deciding what organizational knowledge to share,
- deciding how to share organizational knowledge, and
- institutionalizing and using the knowledge management process.

Agency Comments and Our Evaluation

In written comments on a draft of this report, the assistant secretary of defense, command, control, communications, and intelligence, who is the DOD CIO, stated that our review highlighted many improvements to DISA's management of IT investments (see app. IV), and that it concurred or partially concurred with all our recommendations. DOD also stated that by working closely with us during this review, DISA is either in the process of implementing, or has plans to implement, our recommendations and that doing so will improve support to DISA's customers. Additionally, DOD described DISA's ongoing and planned efforts for each recommendation. We acknowledge DISA's responsiveness and plan to follow up periodically on DISA's progress in fully addressing each recommendation.

For one area of our recommendations, DOD qualified its agreement, stating that it partially concurred. Specifically, regarding our recommendations to improve plan development, DOD agreed that defining the scope of actions and establishing cost, schedule, benefit, and risk baselines and related assessments of cost-effectiveness were required for project actions. However, DOD did not agree that all actions require this level of definition and assessment. We recognize that while all actions involve investment of

[42]CIO Council, *Managing Knowledge @ Work: An Overview of Knowledge Management* (Aug. 2001).

resources, the nature of projects differs, and thus, the level of investment management rigor should be commensurate with the needs of the project. In our opinion, DOD's development of a guideline for defining the scope and establishing baselines for actions is a positive step toward ultimately controlling DISA's *500 Day Action Plan* investments.

We are sending copies of this report to the chairmen and ranking minority members of the Subcommittee on Defense, Senate Committee on Appropriations; the Subcommittee on Readiness and Management Support, Senate Committee on Armed Services; the Subcommittee on Defense, House Committee on Appropriations; and the Subcommittee on Military Readiness, House Committee on Armed Services. We are also sending copies to the secretary of defense; the director, Office of Management and Budget; and the director, Defense Information Systems Agency. Copies will be made available to others upon request.

If you or your staff have any questions on matters discussed in this report, please contact me at (202) 512-3439 or Nancy A. DeFrancesco, Assistant Director, at (202) 512-3225. We can also be reached by E-mail at *hiter@gao.gov* and d*efrancescon@gao.gov*. Other key contributors to this report were Bernard Anderson, Barbara Collier, M. Saad Khan, and B. Scott Pettis.

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

Objectives, Scope, and Methodology

Our objectives were to determine whether DISA (1) had effectively managed development of the *500 Day Action Plan*, (2) is effectively managing execution of the action plan, and (3) has established the institutional management controls needed to effectively adjust to shifts in strategic direction. These controls include (a) strategic planning, (b) IT human capital management, (c) organizational structure management, (d) enterprise architecture management, (e) IT investment management, (f) customer relations management, and (g) knowledge management. As further agreed, our review of these management controls focused on whether DISA had either established them or was in the process of doing so; it did not include evaluating their effectiveness.

To assess DISA's development and execution of the *500 Day Action Plan*, we reviewed documentation of 479 original customer inputs to the plan in September 2000, and customer comments on the draft plan received by DISA in January and February 2001; we compared comments received by DISA to the resulting plan, issued in March 2001. In addition, we interviewed officials of the Office of the Deputy Director for Strategic Plans, Programming, and Policy and compared DISA's practices (both in place and planned) to federal criteria and industry best practices for internal controls, planning, and management of information technology (IT) investments. Specific criteria are contained in the following:

- Office of Management and Budget (OMB) Circular A-11, *Preparing and Submitting Budget Estimates* (July 19, 2000).
- OMB Circular A-130, *Management of Federal Information Resources* (November 28, 2000).
- DOD Directive 5010.38, *Management Control (MC) Program* (August 26, 1996).
- DOD Directive 5105.19, *Defense Information Systems Agency (DISA)* (June 25, 1991).
- DOD Directive 8000.1, *Defense Information Management (IM) Program* (October 27, 1992).
- DISA Circular 400-120-1, *Management and Engineering Plan Guide* (July 1, 1996).

- *DOD Chief Information Officer (CIO) Guidance and Policy Memorandum (G&PM) No. 11-8450, Department of Defense (DOD) Global Information Grid (GIG) Computing* (April 6, 2001).

- *Department of Defense ADP [Automated Data Processing] Internal Control Guideline* (July 1988).

- *A Practical Guide to Federal Enterprise Architecture*, Chief Information Officers Council, version 1.0 (February 2001).

- *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft, GAO/AIMD-10.1.23, version 1 (May 2000).

Using an agency-developed listing that identified the 140 actions as 44 project actions, 44 mission-based service actions, and 52 process actions, we selected a statistical sample of 57 actions (18 project actions, 18 mission service actions, and 21 process actions). This sample size was determined to provide precision (with 95 percent confidence) of ±10 percentage points or better. We examined documentation supporting the development, planning, management, and monitoring of these actions.

We reviewed documentation supporting DISA's efforts to monitor the status of the action plan, including the meeting minutes from the DISA Corporate Board meetings held on August 20 and September 7, 2001. We also interviewed officials in the Office of the Deputy Director for Strategic Plans, Programming, and Policy and examined documentation supporting the closure of seven actions that were completed during our review.

To determine the extent to which DISA measures and monitors its performance, we reviewed documentation on studies of DISA's efficiency and effectiveness. Of 159 such studies identified to us by DISA (including about 130 manpower or budget studies) dating from fiscal years 1995 to 2001, we reviewed documentation supporting 34 of 103 studies conducted or in process for fiscal years 1998 to 2001. We also reviewed DISA's finalized performance contracts for the fiscal years 2000 and 2001, as well as documentation supporting contract status and accomplishment of performance measures for these years. This documentation included reports on the results of customer satisfaction surveys and on methodology used, as well as benchmarking studies that compared the efficiency and effectiveness of DISA's computing and telecommunications services to industry averages. We also reviewed DISA's draft performance contracts

and related guidance for fiscal years 2002 and 2003. To assess alignment of DISA's strategic goals to these performance measures, we reviewed a correlation of the *500 Day Action Plan* with DISA's strategic plan, fiscal year 2002 performance contract, and fiscal year 2002 GPRA performance plan.

To determine whether DISA has the management controls in place to facilitate operational change in response to shifts in DOD strategy, we researched federal criteria and best practices to identify key institutional management controls that enable an organization to accommodate change and transition to a results orientation and increased accountability. These include the following:

- OMB Circular A-11, *Preparing and Submitting Budget Estimates* (July 19, 2000).
- *Determining Performance and Accountability Challenges and High Risks*, GAO-01-159SP (November 2000).
- *Human Capital: Attracting and Retaining a High-Quality Information Technology Workforce*, GAO-02-113T, (October 4, 2001).
- *A Practical Guide to Federal Enterprise Architecture*, Chief Information Officers Council, version 1.0 (February 2001).
- *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft, GAO/AIMD-10.1.23, version 1 (May 2000).
- resources of the *CRM-Forum*, an independent forum for CRM research conducted by private industry experts and consulting firms, including Deloitte Research and Gartner Group.
- *Managing Knowledge @ Work: An Overview of Knowledge Management*, Chief Information Officers Council (August 2001).

To determine DISA's progress in establishing the seven management controls areas identified above, we reviewed documentation pertaining to DISA's transformation and compared DISA's management environment planned and in place to the management areas. We also developed tables providing our assessments of DISA's status in performing EA management and IT investment management control activities, analyzed in terms of

critical processes and *key practice activities*. A critical process is a structured set of key practice activities that, when performed collectively, contributes to attaining intended results. A key practice activity is a process element that occurs over time, has recognizable results, and is necessary to implement a critical process (such as establishing procedures, performing and tracking work, and taking corrective actions). We rated each key practice activity as *established*, *partially established*, or *not established*. An *established* activity was one that was supported by documentation showing that the activity was systematically defined and reflected in DISA policies and procedures. A *partially established* activity was in a proposed or draft state, was not formally documented, or had documentation showing that it did not meet requirements of federal criteria or best practices. A *not established* activity was one that was not addressed in formal or proposed documentation.

DISA's progress for each critical process was determined by the status of the key practice activities associated with that process. For a critical process to be assessed as either established or not established, all the associated activities had to be assessed correspondingly. For a critical process to be rated as partially established, at least one activity had to be either established or partially established.

We also interviewed officials from the following DISA offices assigned organizational responsibility for these areas:

- Office of the Director for Strategic Plans, Programming, and Policy;
- Office of the Director for Manpower, Personnel, and Security;
- Office of the Deputy Director for Joint Requirements Analysis and Integration;
- Office of the Deputy Director for C4I Modeling, Simulation, and Assessment; and
- Office of the Chief Information Officer.

We conducted our work at the DISA offices in Arlington, VA. We performed our work from June through December 2001, in accordance with generally accepted government auditing standards.

Status of DISA's Efforts to Benchmark Performance

As discussed in our IT investment management guide,[43] benchmarking of customer satisfaction provides valuable feedback for improving an organization's products and services. Benchmarking enables an organization to identify and compare its own practices and performance levels to those of peers in industry and government, so that performance and accountability can be improved. Recognizing this, DISA began performing (in fiscal year 2000) benchmarking comparisons for the telecommunications (voice and data) and mainframe computing services that it offers, focusing on (1) customer satisfaction, (2) quality, and (3) cost.

According to DISA, it is measuring implementation of its *500 Day Action Plan* through the annual benchmarking process set up under its fiscal year 2002 performance contract. However, as discussed in the body of this report, few of the measurement activities in DISA's performance contract are aligned with action plan baselines. Thus, DISA's benchmarking efforts are not a useful and meaningful measure of action plan implementation. Specifically, a mapping of the performance contract to the action plan shows that 100 actions (71 percent of the total 140 actions) do not correlate to the two benchmarking categories covered by the performance contract (telecommunications and mainframe computing). Although we cannot provide specific examples of these 100 actions because they are not for public disclosure, the 100 actions that are not addressed within the scope of DISA's benchmarking pertain to joint warfighting capabilities, including the levels of support provided to specific customers and the use of emerging technologies.

Even if benchmarking efforts were aligned with planned actions, DISA has not benchmarked all the services it provides (such as mid-tier computing[44] services), and the results for those services that have been assessed show mixed levels of performance. Specifically, before fiscal year 2000, DISA used customer surveys to assess performance, which were focused on customer satisfaction and did not address cost-effectiveness. The survey

[43]U.S. General Accounting Office, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft, GAO/AIMD-10-1.23, version 1 (Washington, D.C.: May 2000).

[44]Mid-tier computers are those other than mainframe, such as microcomputers and centralized servers for distributed applications. Of the total users at one DISA data center, 6 percent (11,200 out of 196,200) are users of mid-tier services.

conducted in 1999,[45] for example, reported *acceptable*[46] customer satisfaction ratings for computing and telecommunications services. However, aggregating the overall ratings as *acceptable* for each element did not reflect the level of dissatisfaction on a subelement level. For example, aggregate customer satisfaction with voice, video, and data telecommunications products and services was rated high (slightly above 75 percent), even though less than 75 percent of respondents were satisfied with video and data services, and almost 25 percent were in fact dissatisfied with data telecommunications services. In this assessment, DISA did not measure either the rates it charged customers or the quality of service, and it did not benchmark performance against commercial peers.

To DISA's credit, more recent assessments of customer satisfaction with DISA's mainframe computing services show improvement, with average customer satisfaction ratings for fiscal years 2000 and 2001 that are higher than the average for industry peers. However, DISA's benchmarking of the cost-effectiveness of its mainframe computing services had not been completed for fiscal year 2000, according to a DISA official, because of difficulty in identifying commercial industry rates for comparison. Officials told us that the 2000 results have been combined with the 2001 results. DISA issued a summary report of these results on November 28, 2001. In its summary report, DISA stated that it performed better than commercial providers in the areas of central processing unit and direct access storage device acquisition and management; however, it realized higher costs than commercial providers in the areas of staffing and software. The report stated that the proprietary nature of commercial rates impaired DISA's ability to perform an exact rate comparison; however, DISA derived target rates from information available and will use these targets to improve its computing operations. The benchmarking report also stated that DISA had not yet completed its mainframe consolidation, which is intended to reduce

[45]The 1999 DOD survey focused on the biennial review of customer satisfaction with DISA's major business areas of DOD components. For DISA, this review included joint warfighting capabilities, computing services, telecommunications services, and acquisition services. Elements rated by customers included satisfaction with the effectiveness, efficiency, and economy aspects of DISA's products and services; DISA's responsiveness to customers; DISA's coordination with customers; and satisfaction with the quality of DISA's products and services.

[46]For the 1999 survey, survey elements were measured by a *satisfied*, *neutral*, or *dissatisfied* response from customers; an element was *acceptable* if 50 percent or more survey respondents rated the element as *satisfied*. Of the total users at one DISA data center, 6 percent (11,200 out of 196,200) are users of mid-tier services.

costs, and had not yet initiated other cost reducing initiatives planned for 2002 and 2003. The report concluded that these initiatives would enable DISA to become fully competitive with commercial provider prices by 2004.

In the telecommunications area, a 1998 study[47] showed that DISA rates for telecommunications services were competitive with those of commercial industry; however, the study also stated that not all DISA's cost of operations had been accounted for in the rate comparison. Accordingly, the study report concluded that "DISA's unit prices are understated because they do not reflect the true costs of running the business." In December 2000, DISA issued a summary report of the benchmarking (performed by two contractors) of voice, data, and video telecommunications services; the summary report covers 1999 and 2000. On December 10, 2001, DISA issued a similar summary report on benchmarking of voice and data services for 2001 (video services were not included). According to the summary report, in 2001, the average global voice rate was 38 percent lower than the average global commercial voice rate. From 1999 to 2001, improvement was shown in the voice rates between Japan and the continental United States, which decreased over $0.40 per minute (from $0.5873 to $0.1826 per minute). However, 2001 rates for voice and data services among certain European sites and between these sites and the continental United States were about 25 percent and 10 percent higher, respectively, than the average commercial rate, because of a rate freeze in this sector until 2005.

[47]The fiscal year 1998 telecommunications study was a contracted examination of the business process, cost, and methodology of DISA's electronic commerce operations (these included telecommunications, as e-commerce uses telecommunication capabilities for transmission of electronic transactions).

Further Details Regarding DISA's Enterprise Architecture Management and Information Technology Investment Management

We analyzed DISA's progress in maturing its enterprise architecture (EA) management and information technology (IT) investment management (ITIM) areas in terms of the *critical processes* and *key practice activities* that constitute each area (as defined in our guidance and published products, federal guidance, or industry best practices[48]). A critical process is a structured set of key practice activities that, when performed collectively, contributes to attaining the management control area. A key practice activity is a process element that occurs over time, has recognizable results, and is necessary to implement a critical process (such as establishing procedures, performing and tracking work, and taking corrective actions).

We rated each key practice activity as *established*, *partially established*, or *not established*. An *established activity* was one that was supported by documentation showing that the activity was systematically defined and reflected in DISA policies and procedures. A *partially established* activity was in a proposed or draft state, was not formally documented, or had documentation showing that it did not meet requirements of federal criteria or best practices. A *not established* activity did not meet the criteria for either *established* or *partially established*.

DISA's status for each critical process was determined by the status of the key practice activities associated with that process. For a critical process to be assessed as either *established* or *not established*, all the associated activities for that critical process had to be rated in the same way (that is, either all established or none established). For a critical process to be rated as partially established, at least one activity had to be either established or partially established.

Table 2 is a summary of the state of DISA's EA management control area; for each critical process, it provides the associated key practice activities and presents our evaluation of their establishment at DISA.

[48]Chief Information Officers Council, *A Practical Guide to Federal Enterprise Architecture*, version 1.0 (Feb. 2001), and U.S. General Accounting Office, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft, GAO/AIMD-10-1.23, version 1 (Washington, D.C.: May 2000).

Table 2: Status of DISA's Enterprise Architecture (EA) Management Process as of November 30, 2001

	Management control[a] critical processes and key practice activities	Established	Partially established	Not established
1	**Initiate EA program**		**X**	
1a	EA function obtains executive buy-in and support		X (Note 1)	
1b	EA function establishes management structure and control		X (Note 1)	
1c	EA program activities and products are developed		X (Note 1)	
2	**Define an architecture process and approach**		**X**	
2a	Intended use of the EA is defined			X (Note 2)
2b	Scope of EA is defined			X (Note 2)
2c	Depth of EA is determined			X (Note 2)
2d	Appropriate EA products are selected			X (Note 2)
2e	A framework is evaluated and selected	X		
2f	An EA tool set is selected			X (Note 2)
3	**Develop the EA**			**X**
3a	Information is collected			X
3b	Products are generated, and the EA repository populated			X
3c	Sequencing plan is developed			X
3d	The EA products are approved, published, and disseminated			X
4	**Use the EA**			**X**
4a	EA is integrated with capital planning and investment control and system life-cycle processes			X
4b	The integrated process is executed			X
4c	Other uses of the EA are developed			X
5	**Maintain the EA**			**X**
5a	The EA is maintained as it evolves			X
5b	Proposals for EA modifications continue			X
6	**Continuously control and oversee the EA program**			**X**
6a	Necessary EA program management controls are in place and functioning			X
6b	Unmet EA expectations are identified			X
6c	Appropriate action is taken to address deviations			X
6d	Continuous improvement is ensured			X

Note 1: DISA had not completed implementation of proposed activity.

Note 2: DISA-provided documentation did not address all aspects of this activity.

[a]Critical processes for this management control area are derived from *A Practical Guide to Federal Enterprise Architecture*, Chief Information Officers Council, version 1.0 (February 2001).

Source: GAO analysis of data obtained from DISA officials.

Table 3 is a summary of the state of DISA's IT investment management control area. It provides the critical processes associated with each stage of maturity within the ITIM framework. For each critical process, it provides the associated key practice activities and presents our evaluation of their establishment at DISA.

Table 3: Status of DISA's IT Investment Management as of November 30, 2001

	Management control [a] critical processes and key practice activities	Established	Partially established	Not established
Stage 1: Creating Investment Awareness				
1.1	**IT spending occurs without a disciplined investment process**	(This is the starting point for all organizations)		
Stage 2: Building the Investment Foundation				
2.1	**Establish and operate an IT investment board**	**X**		
2.1a	IT investment board is created and defined with board membership integrating both IT and business knowledge	X		
2.1b	IT investment board operates according to written policies and procedures in the organization-specific IT investment process guide	X		
2.2	**Perform IT project oversight**		**X**	
2.2a	Each project's up-to-date cost and schedule data are provided to the IT investment board		X (Note 1)	
2.2b	Using established criteria, the IT investment board oversees individual IT project performance regularly by comparing actual cost and schedule data to expectations		X	
2.2c	The IT investment board performs special reviews of projects that have not met predetermined performance standards		X	
2.2d	Appropriate corrective actions for each underperforming project are defined, documented, and agreed to by the IT investment board and the project manager		X	
2.2e	Corrective actions are implemented and tracked until the desired outcome is achieved		X	
2.3	**Track IT assets**	**X**		
2.3a	The organization's IT asset inventory is developed and maintained according to a written procedure	X		
2.3b	IT asset inventory changes are maintained according to a written procedure	X		
2.3c	Investment information is available on demand to decisionmakers and other affected parties	X		
2.3d	Historical IT asset inventory records are maintained for future selections and assessments	X		
2.4	**Identify business needs for IT projects**		**X**	
2.4a	The business needs for each IT project are clearly identified and defined		X (Note 2)	

	Management control [a] critical processes and key practice activities	Established	Partially established	Not established
2.4b	Specific users are identified for each IT project		X (Note 2)	
2.4c	Identified users participate in project management throughout a project's life cycle		X (Note 2)	
2.5	**Select proposals systematically**		**X**	
2.5a	The organization uses a structured process to develop new IT proposals		X (Note 1)	
2.5b	Executives analyze and prioritize new IT proposals according to established selection criteria		X (Note 1)	
2.5c	Executives make funding decisions for new IT proposals according to an established process		X (Note 1)	
Stage 3: Developing a Complete Investment Portfolio				
3.1	**Align authority of IT investment boards**	(Not applicable—DISA is using a single enterprisewide IT investment board)		
3.2	**Define portfolio selection criteria**		**X**	
3.2a	The enterprisewide IT investment board approves the core IT portfolio selection criteria, including cost, benefit, schedule, and risk (CBSR) criteria, based on the organization's mission, goals, strategies, and priorities		X (Note 1)	
3.2b	The IT portfolio selection criteria are distributed throughout the organization		X (Note 1)	
3.2c	The IT portfolio selection process is reviewed on the basis of cumulative experience and event-driven data and modified, as appropriate		X (Note 1)	
3.3	**Analyze investments**		**X**	
3.3a	The IT investment board ensures that the CBSR and other required data are validated for each investment within its span of control		X (Note 1)	
3.3b	The IT investment board assesses each of its IT investments with respect to the IT portfolio selection criteria		X (Note 1)	
3.3c	The IT investment board prioritizes its full portfolio of IT investments using the portfolio selection criteria		X (Note 1)	
3.4	**Develop an investment portfolio**			**X**
3.4a	The IT investment board assigns investment proposals to a portfolio category			X
3.4b	The IT investment board examines the mix of proposals and investments across the common portfolio categories and makes selections for funding			X
3.4c	The IT investment board approves or modifies the annual CBSR expectations for each of its selected IT investments			X (Note 1)
3.4d	A repository of portfolio development information is established, updated, and maintained			X
3.5	**Oversee portfolio performance**			**X**
3.5a	The IT investment board monitors the performance of each investment in its portfolio by comparing actual CBSR data to expectations			X

	Management control [a] critical processes and key practice activities	Established	Partially established	Not established
3.5b	Using established criteria, the IT investment board identifies IT investments that have not met predetermined CBSR performance expectations			X
3.5c	The IT investment board and the project manager determine the root cause of the poor performance			X
3.5d	The IT investment board and the project manager develop an action plan designed to remedy the identified cause(s) of poor performance			X
3.5e	Corrective actions are initiated and outcomes are tracked			X
Stage 4: Improving the Investment Process				
4.1	**Perform postimplementation reviews (PIRs) and provide feedback**			**X**
4.1a	The IT investment board identifies projects for which a PIR will be conducted, and a PIR is initiated for each investment so identified			X
4.1b	Quantitative and qualitative investment data are collected, evaluated for reliability, and analyzed during the PIRs			X
4.1c	Lessons learned and improvement recommendations about the investment process and individual investments are developed, captured in a written product or knowledge base, and distributed to decisionmakers			X
4.2	**Evaluate and improve portfolio performance**			**X**
4.2a	Comprehensive IT portfolio performance measurement data are defined and collected through agreed upon methods			X
4.2b	Aggregate performance data and trends are analyzed			X
4.2c	Investment process and portfolio improvement recommendations are developed and implemented			X
4.3	**Manage systems and technology succession**			**X**
4.3a	The IT investment board develops criteria for identifying IT investments that may meet succession status			X
4.3b	IT investments are periodically analyzed for succession, and appropriate investments are identified as succession candidates			X
4.3c	The interdependency of each investment with other investments in the IT portfolio is analyzed			X
4.3d	The IT investment board makes a succession decision for each candidate IT investment			X
Stage 5: Leveraging IT for Strategic Outcomes				
5.1	**Perform investment process benchmarking**			**X**
5.1a	Baseline data are collected for the organization's current IT investment management processes			X
5.1b	Comparable external best-in-class IT investment management processes are identified and benchmarked			X
5.1c	Improvements are made to the organization's investment management processes			X

	Management control [a] critical processes and key practice activities	Established	Partially established	Not established
5.2	**Manage IT-driven strategic business change**			**X**
5.2a	The organization creates and maintains a knowledge base of state-of-the-technology IT products and processes			X (Note 3)
5.2b	Information technologies with strategic business-changing capabilities are identified and evaluated			X (Note 3)
5.2c	Strategic changes to the business processes are planned and implemented based on the capabilities of identified information technologies			X

Note 1: DISA had not completed implementation of proposed activity.

Note 2: DISA-provided documentation did not address all aspects of this activity.

Note 3: This activity is dependent upon DISA's implementation of customer relations management and knowledge management functions across DISA.

[a]Critical processes for this management control area are derived from *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity* Exposure Draft, GAO/AIMD-10.1.23, version 1 (May 2000).

Source: GAO analysis of data obtained from DISA officials.

Comments from the Department of Defense

ASSISTANT SECRETARY OF DEFENSE
6000 DEFENSE PENTAGON
WASHINGTON, DC 20301-6000

COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE

February 22, 2002

Mr. Joel C. Willemssen
Managing Director, Information Technology Issues
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Willemssen:

This is the Department of Defense (DoD) response to the GAO Draft Report GAO-02-50, "INFORMATION TECHNOLOGY: Defense Information Systems Agency Can Improve Investment Planning and Management Controls," dated January 10, 2002 (GAO Code 310211).

The Department has reviewed the subject draft report. The audit that your staff and the Defense Information Systems Agency (DISA) worked closely together on highlighted many improvements to DISA's management of information technology (IT) investments. DISA has either implemented or has plans to implement your recommendations. These recommendation and actions will improve support to DISA's customers.

We appreciate the opportunity to comment on the draft report.

Sincerely,

John P. Stenbit

Enclosure

DoD Response to
GAO DRAFT REPORT DATED JANUARY 10, 2002
(GAO CODE 310211)

"INFORMATION TECHNOLOGY: Defense Information Systems Agency Can Improve Investment Planning and Management Controls"

RECOMMENDATION 1: To improve DISA's development and execution of its current and future information technology (IT) investment action plans, the GAO recommended that the Secretary of Defense direct the DISA Director, through the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence, to follow a structured and disciplined IT investment management process for selection, control, and evaluation of the initiatives in current and future action plans.

DOD RESPONSE: Concur. DISA has acknowledged its concurrence with the GAO recommendation to follow a structured and disciplined IT investment management process for selection, control, and evaluation of action plan items that involve IT investment. DISA's responses to the remaining GAO recommendations in the draft report reflect this concurrence. This action is considered complete.

RECOMMENDATION 2: For plan development, the GAO recommended that the DISA Director:

- define the general scope of actions and establish preliminary life-cycle cost, schedule, benefit, and risk baselines for actions; and
- perform a preliminary, high-level assessment of return on investment for proposed actions to gauge their cost-effectiveness.

DOD RESPONSE: Partially concur. DISA concurs that project actions require a baseline definition of scope, identification of costs, schedule, and risks. We do not agree, however, that all actions require the formal process required for projects.

DISA concurs with the GAO recommendation to follow a structured and disciplined IT investment management process for selection, control, and evaluation of action plan items that involve IT investment. However, GAO's assumption that all the actions in DISA's existing *500 Day Action Plan* or future requirements can be characterized as IT investments oversimplifies what is actually a much more complex situation.

By DOD policy DISA is the designated provider for specified computing, communications and joint combat support services across all DOD. As a service provider, DISA exists to support the information processing requirements of the President, Secretary of Defense, military services, joint military commands, Defense agencies and the warfighter. The majority of these services

1

are provided on a cost reimbursable basis under the Defense Working Capital Fund. DISA's customers identify the type of service required, the performance levels required for each service, and budget the necessary funds to pay for the service. DISA is responsible for satisfying its customer's requirements with the best possible service at the lowest possible cost. While DISA does receive appropriated funds for its joint combat support mission, most of the requirements in this area are defined by external bodies such as the Joint Staff, the Military Communications Electronics Board, joint military commands, the Office of the Secretary of Defense, and others.

DISA's role as a service provider has significant implications for the application of the formal IT investment management framework espoused by GAO. First, since DISA does not specify requirements, it frequently lacks both the necessary information and the functional expertise needed to develop the life-cycle costs, benefits, and risk estimates required by the GAO IT investment management framework. Similar to a business, DISA makes investments based on the aggregate of customer requirements, trend information, and products and services requested or emerging in its marketplace. Second, since DISA develops only a few information processing applications but operates many, it frequently lacks the knowledge of timing and functional interdependencies needed to develop implementation schedules for a whole system. Third, since DISA does not establish functional priorities but responds to priorities established by its customers, DISA is not in a good position to select the initiatives that best meet its customer's strategic goals and prioritize the selected initiatives for allocation of IT resources. Finally, and perhaps most importantly, DISA's role as a service provider makes it inappropriate for DISA to assume the role of decision maker in allocating its customer's IT resources.

Mindful of its role as a service provider, DISA grouped the actions selected for inclusion in the *500 Day Action Plan* into three categories: projects, mission-based services, and processes. We concur with the need to follow a structured IT investment management process for selection, control and evaluation of projects. We do not agree that all of the actions identified in the *500 Day Action Plan* constitute projects. Many of the actions are requests to evaluate the feasibility of initiating a project. Many of the actions reflect customer prioritization of services that DISA had already budgeted to perform. Other actions were already formally evaluated through the customer's IT investment processes with DISA selected to deliver the service. When the action requested clearly qualifies as a project, or our preliminary analysis indicates that a project is the best method of satisfying the requested action, then the appropriate approval process for IT investment will be followed.

DISA will continue to document the cost, schedule, benefit, and risk baselines for existing *500 Day Action Plan* actions in the quad chart format that was developed with GAO assistance during the audit. Since the IT investment management process recommended by GAO is directed towards capturing the results of informed decisions in an IT investment plan, DISA will focus its attention on applying the GAO IT investment management framework to the fiscal year 2003 revision of the *500 Day Action Plan*. Guidelines for defining the general scope of actions and establish preliminary life-cycle cost, schedule, benefit, and risk baselines for actions; and performing a preliminary, high-level assessment of return on investment for proposed actions to gauge their cost-effectiveness will be developed by July 2002 for use in developing the fiscal year 2003 plan.

2

RECOMMENDATION 3: For plan implementation, the GAO recommended that the DISA Director:

- use approved baselines to develop meaningful results-oriented performance metrics;
- implement a formal process (1) to control significant changes to action baselines and closure of actions and (2) to inform stakeholders of significant deviations in the action baselines;
- in monitoring implementation of the planned actions, update scope of work, cost, schedule, benefit, and risk baselines for all actions, as appropriate, to ensure that actions remain cost-effective investment choices; and
- establish a mechanism to track customer feedback to ensure that the customer concerns that led to the actions are resolved.

DOD RESPONSE: Concur. DISA had begun the process of documenting the exit criteria, performance metrics, risks, schedule and cost during the GAO study. This action is now complete and the information is used in monthly status reports. As indicated in the GAO report, we began introducing elements of change control into the management and implementation of the action plan. This work continues as we are developing our customer feedback letters addressing the status of actions to date and requesting the customer concurrence in changes (if necessary) in scope and schedule. This action is considered complete.

RECOMMENDATION 4: To improve institutional management controls needed to respond to changes in strategic direction, the GAO recommended that the Secretary of Defense direct the DISA Director, through the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence, to make it an agency priority to establish the elements described in this report for each of the following management controls: (1) strategic planning, (2) organizational structure management, (3) enterprise architecture management, (4) IT investment management, (5) customer relations management, and (6) knowledge management.

DOD RESPONSE: Concur. DISA has acknowledged its intentions to make it an agency priority to establish the elements described in this report for each of the following management controls: (1) strategic planning, (2) organizational structure management, (3) enterprise architecture management, (4) IT investment management, (5) customer relations management, and (6) knowledge management. In its responses to Recommendations 5 through 10, DISA describes the actions it has already taken to implement these management controls and those that are planned for the future. This action is considered complete.

3

RECOMMENDATION 5: To strengthen the agency's strategic planning, the GAO recommended that the DISA Director:

- fully define approaches or strategies to achieve goals and objectives,
- completely explain the relationship between the general goals and the annual performance goals, and
- fully describe how program evaluations are used to establish and revise strategic goals.

DOD RESPONSE: Concur. The management processes that vet programmatic issues in the context of DISA's strategic goals include stand-ups, the Corporate Board process, Senior Leadership Offsites, wall-to-walls (WTW) reviews, in process reviews (IPRs) and the 500 Day Planning process. Any and all of these forums can and are used to test whether programs are helping the agency meet its goals. For example, the Corporate Board uses the New Work Opportunities Process to vet whether new programs can assist us in meeting corporate goals. And, as a result of the IPR, WTW and other processes, we can determine whether new/revised goals and objectives are needed. The goals stated in the 500 Day Plan were validated based on feedback from the other processes. The annual Performance Plan forces us to revisit the goals at least annually. Following is a synopsis of the documents developed as part of DISA's strategic planning process:

DISA Strategic Plan - is GPRA compliant in that it directly relates to DOD and Joint strategic planning. It is the capstone document for all DISA organizations to look to for guidance to ensure resources directly support one or more of the goals and objectives described in the plan. It is a five-year plan that is reviewed annually and updated every three years. DISA's Strategic Plan is structured to address two distinct types of IT assets; first, DOD IT assets managed by DISA, and second, DISA IT assets used to accomplish the DISA mission. It provides the primary framework for the development of implementation plans within mission areas. The body of the plan identifies the DISA mission, vision, and goals. The goals include objectives for performance assessments. The strategic plan is the foundation for the Information Technology Management (ITM) Strategic Plan, POM, Performance Contract, Annual Performance Plan, and Annual Program Plans. Although not directly tasked by the GPRA, DISA developed its Strategic Plan in accordance with a Secretary of Defense, Comptroller Memo, Subject: Government Performance and Results Act Implementation, 16 October 1997.

Director's Planning Guidance - The Director's annual guidance provides the Agency with programming guidance for development of programs/projects that identify manpower and funding resources to satisfy the agency goals and objectives for the future. The Director's Planning Guidance is developed from the Defense Planning Guidance.

DISA 500 Day Action Plan - is the DISA Director's near-term action plan that speaks directly to our customers as well as to the people of DISA. It focuses management efforts, sets specific goals that describes the way ahead, is action oriented, and is squarely focused on customer needs and expectations. It captures high-priority customer requirements DISA has committed to

4

deliver, manifests our intent and will foster accountability. Finally, it provides the baseline against which progress will be reviewed to provide feedback to DISA's customers.

DISA Information Technology Management (ITM) Strategic Plan - is the strategic direction of IT management within DISA focusing on the IT products and services provided to DISA staff to accomplish their missions and functions. The DISA ITM Strategic Plan is subordinate to the DISA Strategic Plan, provides more details in the role of IT management and information technology, addresses strategic goals and objectives for DISA intended IT investments (e.g. DISANET), and links these goals back to the DISA Strategic Plan. Follow on implementation plans for accomplishing the goals and objectives of the ITM Strategic Plan will provide cost, schedule, and performance details.

Program Objective Memoranda (POM) - The Secretary of Defense uses the Planning, Programming and Budget System (PPBS) to set programming priorities for DOD and track those programs through budget execution. It is a systematic structure to develop a defense strategy that is translated into the specific defense programs, and then accurately determines what those programs will cost. The PPBS is a cyclic process containing three distinct, integrated and overlapping phases, Planning, Programming and Budgeting. The planning phase of the PPBS begins with the goals and priorities defined in the Strategic Plan, Future Years Defense Plan (FYDP), and Director's Planning Guidance. Preparing and producing the POM falls into the programming phase. The purpose of this phase is to translate goals and objectives for the next two-to-seven years into a definitive structure expressed in terms of time phased financial resource and manpower requirements. During the budgeting phase the POM and OSD directed Program Decision Memorandums (PDM) are used to generate the Budget Estimate Submission (BES), which covers the prior, current and out year budgets. OSD reviews the BES and issues Program Budget Decisions (PBDs) that serve as a basis for the President's Budget submission. POM and BES data is incorporated into the Performance Contract, and Annual Program Plan. Resources required to accomplish the metrics in the Performance Contract and Performance Plan would be identified in the POM.

Performance Contract - Critical initiatives specified in the Director's Planning Guidance are addressed in the Performance Contract in terms of Business Area performance standards. Both the Performance Contract and Strategic Plan contain a description of the four DISA Business Areas. It is submitted to OSD with the POM covering the POM years with a focus on the first year. The performance measures used in this contract directly support the goals and objectives in the strategic plan and help ensure that DISA uses its resources effectively. It articulates expectations for the POM periods, enumerates deliverables for DISA Business Areas, and identifies quantitative and qualitative measures. These measures are incorporated into the ITM Strategic Plan, the Annual Performance Plan, and Annual Program Plans.

DISA Annual Performance Plan – The Performance Plan articulates the short-term course DISA will use to accomplish multi-year goals and objectives and identifies performance targets for the plan year. Performance management goals and objectives are based on the DISA Strategic Plan, ITM Strategic Plan, and Performance Contract. It integrates, as one process, the reporting requirements of GPRA, Clinger-Cohen, and DISA Performance Contract. It is the key document that consolidates the reporting of DISA strategic goals and objectives and identifies performance

5

measures from the performance contract for a consolidated view of DISA's performance including: a description of the measure, the method of measurement, current baseline, end-of-year target, completion year, and expected outcome.

DISA Performance Report – DISA initiated an annual performance report as part of a comprehensive performance process developed by the agency in recognition of GPRA and guidance in OMB Circular A-11. The report includes an assessment of the agency's performance against the performance goals established for that year; an analysis toward the overall strategic goals; an explanation of deviations or impediments encountered in achieving the goals; and addresses how the impediments will be overcome in future years.

Annual Program Plans – DISA program managers document their execution plans for the upcoming fiscal year in Annual Program Plans. The Annual Program Plan serves as a record of the program manager's plans. In the aggregate, these plans serve as a roadmap for the Agency's fiscal year planned accomplishments. Key elements of this roadmap are an audit trail for the planned accomplishments in the POM and President's Budget and the linkage to the strategic plan goals and performance contract measures. The plan also fulfills an external reporting requirement for DISA's Performance Contract, GPRA, and the Clinger-Cohen Act. After the Annual Program Plans have been presented to the Budget Review Council, the Director or Vice Director will approve the Plan and authorize execution.

DISA must on occasion adjust its plans and planning cycles due to external changes in process. For example, the 2001 Quadrennial Defense Review contains requirements for a Defense Agency Review and a Transformation Roadmap that may influence or substitute for one or more of the documents or processes described above.

This action is considered complete.

RECOMMENDATION 6: As part of its ongoing organizational structure management, the GAO recommended that the DISA Director evaluate and implement solutions for advancing coordination, productivity, and teambuilding.

DOD RESPONSE: Concur. DISA concurs wholeheartedly with the recommendation to evaluate and implement solutions for advancing coordination, productivity and team building.

As noted in the GAO report, DISA established a new organizational element specifically to address transformation and management of change – the Chief Transformation Executive (CTE). CTE is developing a transformation management plan that identifies specific steps and actions toward transforming the agency, including (but not limited to) coordination and communication processes, process re-engineering to improve productivity, and workshops to facilitate more open communication and teaming behaviors. The transformation management plan will be published in conjunction with the DISA Transformation Roadmap in June 2002.

In addition, CTE is taking a leadership role in establishing knowledge communities and conducting facilitated leadership planning sessions to help foster improved coordination and

6

teamwork. CTE is working in conjunction with the DISA Chief Information Officer (CIO) and the DISA Chief of Staff (COS) to gather knowledge sharing requirements and is building the plan for developing and institutionalizing knowledge-enabling processes, structures and systems across DISA (see response to Recommendation 10 on Knowledge Management).

RECOMMENDATION 7: To strengthen management of DISA's effort to develop, implement, and maintain an enterprise architecture, GAO recommended that the DISA Director follow the steps defined in the Chief Information Officers (CIO) Council's guide on architecture management, as appropriate, including

a. initiating a program;

b. defining the architecture process and approach;

c. developing the architecture, including the baseline and target architectures, and the plan for sequencing from the baseline to the target;

d. using the architecture in making IT investment decision;

e. maintaining the architecture; and

f. continuously controlling and overseeing the program.

DOD RESPONSE: Concur. DISA concurs with the recommendation to develop, implement, and maintain an enterprise architecture (EA). DISA has developed an action plan that describes the intended use of the EA, outlines its scope and depth, evaluates and selects an EA framework, and selects an EA toolset. An EA working group has been established to begin the development of EA program activities and products. The development of the EA is scheduled to be completed by December 2002. The following paragraphs provide additional details in regard to DISA's plans for implementing enterprise architecture.

(Recommendation 7a): The Office of the Chief Information Officer (CIO) has met individually with all DISA senior leaders to obtain executive buy-in and support. In January 2002, CIO briefed the Director and Vice Director in order to outline the scope of the DISA Enterprise Architecture (EA) program, goals of the EA program, EA implementation strategy, and milestones. In January 2002, an EA working group was established to begin the development of EA program activities and products.

(Recommendation 7b): The CIO has developed an action plan for establishing an EA program. The action plan describes the intended use of the EA, outlines the scope and depth of the EA, evaluates and selects an EA framework, and selects an EA toolset. The action plan will be finalized in February 2002.

(Recommendation 7c – 7f): The As-Is architecture and To-Be architecture will be completed by December 2002. A transition plan that will provide a roadmap for migrating from the baseline to

7

the target architecture will be developed by March 2003. When the architecture is finalized and the transition plan is complete, the architecture can be used in making IT investment decisions. Maintenance and oversight of the architecture will be carried out annually. By fully implementing the EA program, the DISA CIO will be better able to support DISA's information technology, capital planning process, its strategic planning process, and its customer service.

RECOMMENDATION 8: To establish effective IT investment management, the GAO recommended that the DISA Director follow the steps detailed in GAO's IT investment management guide, including (a) building a foundation for IT investments, including

- establishing and operating an IT investment board,
- performing IT project oversight,
- tracking IT assets,
- identifying business needs for IT projects, and
- selecting proposals systematically,

and (b) establishing the capability to manage investments as a complete investment portfolio, including

- defining portfolio selection criteria,
- analyzing investments,
- developing an investment portfolio, and
- overseeing portfolio performance.

DOD RESPONSE: Concur. DISA concurs with GAO's recommendation to build an effective IT investment process. However, it is important to understand that DISA deals with two different types of IT investments; first, external DOD IT assets managed by DISA, and second, internal DISA IT assets used to accomplish the DISA mission. DISA's external IT investments are vetted through a host of external processes as well as IT project oversight. These external requirements will be aggregated by program within our POM submission. The improved IT investment management process called for by GAO will be integrated with other processes throughout the Agency and within DOD. For each investment, DISA managers will determine return on investment, assess the availability of metrics, show how it supports the strategic plan and meets the other requirements of the Clinger-Cohen Act. Initial answers will be improved as tools provide better information to the managers.

(Recommendation 8a): Regarding building a foundation for IT investments, DISA has been working to build the foundation for an IT Investment Board, which was officially chartered in

8

November 2001 and will have its first meeting in February 2002. This board will be involved with the development, coordination, evaluation, and implementation of DISA's Enterprise Architecture and Capital Investment Plans for IT investments supporting Agency business processes.

We are in the process of ensuring that cost data, established criteria against performance standards, etc. are established. An IT Investment Scoring Model is being developed and will be used to support IT project oversight, identifying business needs and selecting proposals systematically. This part of the process is scheduled to be substantially complete by 30 September 2002.

(Recommendation 8b): Establishing a capability to manage investments as a complete investment portfolio will be the next step. The starting point for DISA's portfolio will be the current investments that today are managed by business areas. The enterprise architecture will describe these business areas and help in building this criteria indicating the "as is" and "to be" views and our transition plan (see response to Recommendation 7 indicating completion of the Enterprise Architecture by December 2002). The combination of the consistent investment process and criteria for the portfolio will fully enable DISA to manage investments as a portfolio. Building this portfolio process will be completed by 30 September 2004.

It should be noted that in the 2001 Quadrennial Defense Review (QDR) DOD has recognized the need to "transform its business processes and infrastructure to both enhance the capabilities and creativity of it employees and free up resources to support warfighting and the transformation of military capabilities." This transformation will depend heavily on leveraging IT capabilities to enhance the accurate, timely flow of information so as to streamline the overhead structure and flatten the DOD organization. It is the elimination of overhead and redundancy that will produce a significant percentage of the resources necessary to carry out the transformation of military capabilities.

Today, the single greatest threat to timely implementation of new IT-based military capabilities is the excessive amount of time it takes to negotiate the complex budgeting, approval and oversight processes. Given the rapid pace of technology, innovative new IT capabilities routinely become obsolete and are replaced in the marketplace before DOD can secure funding and acquire the product. Such delays cannot be tolerated when IT support for new capabilities such as unmanned aerial vehicles and near real-time targeting have a life or death impact on the warfighter on the battlefield.

The QDR notes further that the Planning, Programming and Budgeting System (PBBS) and the acquisition process create a significant amount of the self-imposed institutional work in the Department. Changes have already been instituted in both areas to reduce the complexity of the process with the goal of measurably increasing the tooth to tail ratio over the next few years. Some adjustments may be necessary in our current plans for IT investment management as DOD continues to take action based on the 2001 QDR.

9

RECOMMENDATION 9: To strengthen customer relations management, the GAO recommended that the DISA Director build and maintain a supporting customer relations infrastructure that permeates the entire organization.

DOD RESPONSE: Concur. Effective 1 October 2001, the DISA Director realigned the organization and created the Customer Advocacy Directorate with the goal of fostering and sustaining strong customer relations throughout DISA. This reorganization highlights the importance of the customer and assigns the responsibility for this transformation to a single element. DISA's customer relations management (CRM) program is a multifaceted program that addresses CRM as a process, a culture and a primary objective that can be measured and tracked. A training program has been established for all Customer Advocates that includes self-paced programs, technical training on DISA services and products, and professional CRM training from certified institutions. During fiscal year 2001, DISA's Network Services Directorate conducted professional CRM training designed to reach individuals in their organization. In fiscal year 2002, the program is being expanded to include all members of DISA. Also during fiscal year 2002, a series of processes will be developed in support of the ISO 9001 program that will provide the baseline and framework on how DISA implements CRM. In conjunction with this effort, DISA also created Customer Advocates and Senior Executive Account Managers (SEAM). This group of handpicked leaders within DISA is tasked to ensure the development of close cooperation, support and understanding between DISA and its customer base. Periodic customer focused meetings have and are being scheduled to capture requirements, issues and concerns and bring them to a mutually satisfactory conclusion. The scope of conferences, working sessions, technical meetings and partnership meetings continues to grow. Since October 2001, DISA has had very successful customer meetings with the Air Force, Marine Corps, Defense Logistics Agency, OSD (C3I), Joint Staff, and several DoD organizations.

The Customer Advocacy Directorate (CA) had the lead in developing the CRM infrastructure to support internal change. CA has developed two new Customer Focused Reports and started a Senior Visitor's Program that tailors presentations to the customer's needs and desires. CA participates with the DISA Knowledge Management Council and other DISA Directorates to create/fine-tune DISA processes and systems to better share customer information. An essential objective for fiscal year 2002 is the implementation of a CRM Web portal that fully integrates DISA customer tracking systems and provides customizable outputs via a digital dashboard. CA expects to field a prototype Customer Score Card by March 2002, that will identify status, issues, concerns, and actions to be taken in a recognizable structure designed to present the customer's perspective to senior DISA leadership.

During fiscal year 2002, DISA will revamp its customer conference to focus on those things the customer needs to be done to ensure integrated support to DOD and the war fighter. In conjunction with DISA's Chief Transformation Officer, organizational and process changes will be implemented to improve CRM as a process, infrastructure, technology and way of life. The customer is the focus of DISA, and CA has the responsibility to introduce techniques and facilitate change to make customer focus the center point of how DISA does business.

10

RECOMMENDATION 10: To define and implement an organizationally integrated knowledge management function, the GAO recommended that the DISA Director follow the steps outlined in the CIO Council guide on this subject, including

- deciding with whom to share organizational knowledge,
- deciding what organizational knowledge to share,
- deciding how to share organizational knowledge, and
- institutionalizing and using the knowledge management process.

DOD RESPONSE: Concur. DISA concurs with GAO's recommendation to implement an organizationally integrated knowledge management (KM) function. Since our initial discussions with GAO auditors, DISA has made considerable progress in this management control area, completing the following actions in support of institutionalizing knowledge management at DISA:

- ✓ Defined management structure (Jun 01)
- ✓ Established KM Council (Mar 01, formal charter – Aug 01)
- ✓ Developed implementation plan framework (Jun 01)
- ✓ Developed Speakers Program (Began Sep 01)
- ✓ Completed KM Questionnaire (audit) to baseline organizational KM initiatives/knowledge base requirements (Sep 01)
- ✓ Compiled enterprise database inventory (Oct 01)
- ✓ Started KM Requirements Identification process (July 01)
- ✓ Drafted KM Instruction (Oct 01)
- ✓ Developed initial technical criteria (to assess technical feasibility of initiatives proposed for knowledge base) (Dec 01)
- ✓ Staffed KM team (Nov 01)

We are addressing the first two foundation elements ("Whom do we share with?" and "What do we share?") as part of an on-going KM Requirements Identification process. This process, which began in July 2001, will collect, analyze and prioritize knowledge requirements, and document the process results in a KM Capstone Requirements Document (CRD) by February 2002. DISA senior managers were interviewed to determine what knowledge they and their staffs need to better perform their mission. Authoritative source databases are also being identified. Initially, access questions are being focused internally, however, our Customer Advocacy organization is assessing what information should be shared with our external customers.

Regarding the remaining KM foundation element ("How do we share?"), in February 2002, we will begin piloting two Knowledge Communities, i.e., Communities of Interest/Practice, (one in the Resource Management area and one in the Contract Management area) to facilitate the exchange of tacit knowledge and to help identify effective collaboration methods and support tools. Additionally, we are planning to undertake a Portal Technology Technical Assessment by

11

June 2002, which we expect to lead to an enterprise portal pilot effort in fiscal year 2003. The Agency Technical Criteria Evaluation and the KM Architecture efforts will be developed in concert with the Enterprise Architecture. Current plans call for fully institutionalizing and using the knowledge management process throughout the agency by fiscal year 2005.

It still, however, must be recognized that knowledge management is not a well-defined science and that as experience grows, strategies and levels of investment will change. We expect this and therefore view our plans as exploratory and evolutionary.

12

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