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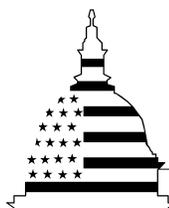
Report to the Subcommittee on Interior  
and Related Agencies, Committee on  
Appropriations, House of  
Representatives

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September 2003

# BUREAU OF LAND MANAGEMENT

## Plan Needed to Sustain Progress in Establishing IT Investment Management Capabilities



G A O

Accountability \* Integrity \* Reliability

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BUREAU OF LAND MANAGEMENT

Plan Needed to Sustain Progress in Establishing IT Investment Management Capabilities

Highlights of GAO-03-1025, a report to the Subcommittee on Interior and Related Agencies, Committee on Appropriations, House of Representatives

Why GAO Did This Study

The mission of the Department of the Interior's Bureau of Land Management (BLM) is to maintain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. BLM employs about 11,000 people, with information technology (IT) playing a critical role in helping BLM perform its responsibilities. The bureau estimates that it will spend about \$146 million on IT initiatives in fiscal year 2003.

GAO was asked to evaluate BLM's IT investment management (ITIM) capabilities and determine the bureau's plans for improving these capabilities. GAO's evaluation was based on applying its ITIM maturity framework, which identifies critical processes for successful IT investment management.

What GAO Recommends

GAO recommends that the Secretary of the Interior direct BLM's Director to develop and implement a plan for making ITIM improvements that is based on GAO's ITIM stage 2 and 3 critical processes; specifies measurable goals, outcomes, and needed resources; and assigns clear responsibility for tasks. Progress should be measured and reported periodically to Interior. BLM agreed with our findings and recommendations and noted that it had begun developing a plan for making ITIM improvements in accordance with our recommendations.

[www.gao.gov/cgi-bin/getrpt?GAO-03-1025](http://www.gao.gov/cgi-bin/getrpt?GAO-03-1025).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Linda D. Koontz at (202) 512-6240 or [koontzl@gao.gov](mailto:koontzl@gao.gov).

What GAO Found

BLM has made progress in establishing its ITIM capabilities. Specifically,

- BLM has established most of the key practices associated with building an investment foundation (see table). For example, the bureau has established a board for managing IT investments, implemented processes to ensure that IT projects support business needs and meet users' requirements, and established a process for selecting IT proposals. In addition, the bureau has efforts under way to address the key practices it has not yet established.
- BLM has also initiated efforts to manage its investments as a portfolio. For example, it has established a council to support portfolio management activities and begun defining portfolio selection criteria. BLM has also begun performing postimplementation reviews to learn lessons that will help define and implement an IT investment evaluation process. However BLM's progress to date in defining practices for managing its investments as a portfolio has been limited because, according to its officials, its investment board first focused its resources on establishing the processes associated with building the IT investment management foundation.

Although BLM has made progress in developing its IT investment process, it has not yet developed a plan to guide its efforts in this area and, as a result, may not be able to successfully establish more mature ITIM processes. According to the chief information officer, this is because BLM wanted to develop an ITIM plan that is integrated with improvement plans for other IT management areas, and the results of the comprehensive assessment that were to be used as the basis for such a plan were obtained only in June 2003. BLM officials agree that this plan is necessary for guiding improvement efforts and stated their intention to develop one. Developing such a plan will help BLM sustain progress made to date.

Summary of Results for Investment Foundation Critical Processes and Key Practices

Critical process	Purpose	Percentage of key practices executed
IT investment board operation	To define and establish the governing board(s) responsible for selecting, controlling, and evaluating IT investments.	100%
IT project and system identification	To create and maintain an IT project inventory to assist in managerial decision making.	42%
IT project oversight	To regularly determine each IT project's progress toward cost and schedule milestones using established criteria and take corrective actions when milestones are not achieved.	91%
Business needs identification	To ensure that each IT project supports the organization's business needs and meets users' needs.	100%
Proposal selection	To ensure that an established, structured process is used to select new IT proposals.	83%
<b>Total</b>		<b>84%</b>

Source: GAO.

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**Abbreviations**

BLM	Bureau of Land Management
CIO	chief information officer
IT	information technology
ITIB	Information Technology Investment Board
ITIM	information technology investment management

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

September 12, 2003

The Honorable Charles H. Taylor  
Chairman  
The Honorable Norman D. Dicks  
Ranking Minority Member  
Subcommittee on Interior  
and Related Agencies  
Committee on Appropriations  
House of Representatives

The mission of the Department of the Interior's Bureau of Land Management (BLM) is to maintain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations. To carry out the functions involved in managing the public lands, BLM employs a workforce of about 11,000 employees located in headquarters in Washington, D.C., state offices, field offices, and national centers specializing in training, fire management support, science and technology, human resources management, information resources management, and business services. Information technology (IT) plays a critical role in helping BLM carry out its responsibilities. The bureau estimates that it will spend about \$146 million on IT initiatives in fiscal year 2003.

This report is one of two in response to your request to evaluate the Department of the Interior's IT investment management process.<sup>1</sup> As agreed, the objectives of our review were to (1) evaluate BLM's IT investment management capabilities against the key practices defined in our IT investment management assessment framework<sup>2</sup> and (2) determine the agency's plans for improving these capabilities. We performed our work in accordance with generally accepted government accounting standards. Details on our objectives, scope, and methodology are contained in appendix I.

<sup>1</sup>The second report, U.S. General Accounting Office, *Information Technology Departmental Leadership Crucial to Success of Investment Reforms at Interior*, [GAO-03-1028](#) (Washington, D.C.: Sept. 12, 2003) addresses (1) the Department of the Interior's capabilities for managing the agency's IT investments, including its ability to effectively oversee bureau processes, and (2) the department's actions and plans to improve these capabilities.

<sup>2</sup>U.S. General Accounting Office, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity* (Exposure Draft), [GAO/AIMD-10.1.23](#) (Washington, D.C.: May 2000).

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## Results in Brief

BLM has made progress in establishing key practices for effectively managing its IT investments, including the foundational practices for selecting and controlling IT investments, which provide assurance that projects selected meet organizational needs and will be completed on time and within budget, and the practices for managing investments as a portfolio. Specifically,

- BLM has established most of the key practices (about 85 percent) associated with building the investment foundation. For example, BLM has defined and established an investment board for managing IT investments, implemented processes to ensure that projects support business needs and meet users' requirements, and established a process for selecting proposals. Although the agency has not yet, for example, defined policies and procedures for collecting information into its project and system inventory to make informed investment management decisions or fully defined criteria for analyzing and prioritizing new proposals, it recognizes the importance of resolving these issues and has efforts under way to address them.
- BLM has also initiated efforts to manage its investments as a portfolio—that is, as a set of competing IT investments—and has begun to address the evaluation of projects and systems after development using postimplementation reviews,<sup>3</sup> a critical process associated with the most capable organizations. For example, BLM has established a council to support portfolio management activities and begun defining portfolio selection criteria. BLM has also performed postimplementation reviews on a limited basis to learn lessons that will help define and implement a robust IT investment evaluation process.

Although BLM is clearly committed to further developing its IT investment process, it has not developed a plan to guide its efforts to do so, and, as a result, may not be able to successfully establish mature IT investment management processes. According to the chief information officer (CIO), this is because BLM wanted to develop a plan that is integrated with improvement plans for other IT management areas, and the results of the comprehensive assessment that were to be used as the basis for such a plan were obtained only in June 2003. BLM officials stated their intention to

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<sup>3</sup>BLM refers to postimplementation reviews as postdeployment reviews.

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develop a plan to guide improvement efforts. By developing such a plan, BLM would be able to sustain progress made to date.

To strengthen BLM's investment management capability, we are recommending that BLM develop and implement a plan aimed at addressing the weaknesses identified in this report. In written comments on a draft of this report (reprinted in app. II), BLM's Director agreed with our findings and recommendations and stated that they represented a fair and accurate evaluation of the bureau's status and progress towards IT investment management maturity. BLM also provided additional technical comments, which we have incorporated into the report as appropriate.

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## Background

BLM, an agency of the U.S. Department of the Interior, manages 261 million surface acres and an additional 700 million acres of subsurface mineral estate throughout the nation. The agency's mission is to maintain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations. To carry out this mission, BLM employs a workforce of about 11,000 employees located in headquarters in Washington, D.C., 12 state offices, 130 field offices, and national centers specializing in training, fire management support, science and technology, human resources management, information resources management, and business services.

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## BLM's Use of IT

BLM collects, analyzes, and records a tremendous amount of business information about the public lands and resources, ranging from land title to recreational usage to wildlife habitat. These data are mainly geographic in character and are best understood when displayed and analyzed in spatial form using automated geographic information systems. Numerous parties—including public land users; educational institutions; public interest groups; other federal, state, tribal, and local agencies; and the scientific community—use these data or information to make thousands of business decisions each year.

The central focus of BLM's IT strategy is to develop integrated systems that help BLM meet national and local needs in managing the lands and natural resources, while supporting the mission and goals outlined in BLM's Strategic Plan. For example, BLM uses its Automated Fluid Minerals Support System to support its Oil and Gas Program. The system helps match mineral estate information to information on existing wells,

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facilities, permits, and inspections and provides an automated system for granting permits to BLM customers and creating reports. Currently, BLM issues approximately 41,000 permits and reports and conducts about 19,000 inspections per year. BLM also uses its Management Information System, which provides a Web-enabled, business information, budgetary, financial, and program performance system so that simple data analysis can be performed benefiting the entire bureau. This system provides managers with up-to-date business data to make cost effective decisions concerning the management of BLM's people, resources, and natural resources for several of Interior's mission goals. BLM's estimated IT expenditures are \$146.45 million for fiscal year 2003.

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## Prior Weaknesses in BLM's IT Investment Management Process

Between 1995 and 2001, we conducted reviews and issued several reports on problems and risks that threatened the successful development and deployment of BLM's modernization of its Automated Land and Mineral Record System. In a recent report addressing this issue, we noted, among other things, that after 15 years and about \$411 million obligated, the project was terminated because the Initial Operating Capability module—a major component of the system—did not meet BLM's business needs and therefore could not be deployed.<sup>4</sup> We also reported that the absence of adequate investment management processes and practices at BLM was a significant factor contributing to the failure of the system. Accordingly, we recommended that the Secretary of the Interior direct BLM to take certain actions to help it strengthen its investment management process. BLM has been working on improving its process since that time.

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## BLM's Approach to Investment Management

BLM has assigned several individuals and groups with responsibilities for managing national IT investments, that is investments which, among other things, are considered major applications or general support systems; have a life-cycle value of greater than \$500,000; or will affect multiple states, centers, or business areas.<sup>5</sup> These individuals and groups and their roles are described below.

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<sup>4</sup>U.S. General Accounting Office, *Land Management Systems: Status of BLM's Actions to Improve Information Technology Management*, [GAO/AIMD-00-67](#) (Washington, D.C.: Feb. 27, 2000).

<sup>5</sup>Other criteria for national investments include investments between \$50,000 and \$500,000 for which a state or center does not have its own ITIB, and operations and maintenance investments that are not included in program base funding.

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- *National Information Technology Investment Board (ITIB)*—Chaired by BLM’s Deputy Director of Operations, this board is responsible for selecting, controlling, and evaluating all national IT investments. Members include the CIO, Chief Financial Officer, Assistant Directors from the business units, two State Directors, an Associate State Director, the CIO Council Chair, the Bureau Architecture Chair, a Fire and Aviation Portfolio Representative, and several ex officio members including Interior’s CIO, the bureau Architect, and managers from the System Coordination Office and the Investment Management Group.
  - *System Coordination Office*—Created in June 2000 to support a number of IT management functions, the System Coordination Office, among other things, is responsible for coordinating the screening of all IT investments and projects to ensure that they are in line with the bureau’s selection, control, and evaluation criteria, and monitors project performance (scope, schedule, and budget). The office is also responsible for coordinating the development of a project management curriculum and mentoring and developing a cadre of trained and experienced project managers.
  - *Investment Management Group*—Responsibilities of this group include coordinating the development and maintenance of the bureau’s IT investment portfolio, ensuring that all investments fit within budget constraints, and providing investment updates and forecasting as needed.
  - *Information Technology Portfolio Management Council*—Chartered in June 2003, but established about a year ago, this council serves as an advisory council to the ITIB and is responsible, among other things, for applying business-related rating and ranking criteria to BLM’s portfolio, performing trade-off analyses, and working with the Investment Management Group to develop funding strategies. The council is also responsible for ensuring that investments are clearly tied to the mission and strategic plans (both business and information resources management) of the bureau and selected by a consistent, repeatable,

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objective process. Members include national IT portfolio managers<sup>6</sup> for each of the directorates, representatives from the state portfolios and the Bureau Enterprise Architecture Team, and members from the System Coordination Office and the Investment Management Group.

- *Bureau Enterprise Architecture Team*—Responsible for ensuring that investment proposals and business cases are aligned with the bureau enterprise architecture’s business processes, data, applications, and technology components.<sup>7</sup>
- *Project proponent*—Responsible, among other things, for leading the development of the investment proposal, coordinating and championing the development of the business case, and working with the project manager throughout the life cycle of the project.
- *Project sponsor*—A field, center, or Washington office manager who authorizes the development of a business case. The project sponsor shifts roles to become the system owner when the project moves into operations and maintenance. The project sponsor is responsible for selecting a project manager, approving all project documentation, and participating in a management oversight role throughout the planning, design, development, testing, acceptance, and deployment of the project.
- *Project manager*—Responsible for developing the project plan and leading and managing the project. The project manager reports directly to the project sponsor. Ultimately, it is the project managers who

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<sup>6</sup>Portfolio managers are responsible for ensuring that all IT investment proposals, national systems, and externally directed systems are planned, developed, maintained, and distributed according to the bureau’s ITIM process and configuration management, and are in conformance with established bureau hardware and software standards, as well as the bureau’s architecture and technical reference model; summarizing all operations and maintenance costs associated with existing and proposed systems; ensuring that all new project proposals address the discontinuance of existing systems as a cost saving measure; and working directly with each state or center that proposes moving a state, center, or local application to a national system.

<sup>7</sup>An enterprise architecture is an investment blueprint that defines, both in logical terms (including business functions and applications) and in technical terms (including hardware, software, data communications, and security), how an organization operates today (current architecture), how it intends to operate tomorrow (target architecture), and a road map for making the transition from today to tomorrow.

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are responsible for successfully managing and completing one or more projects approved by the ITIB.

The bureau has also defined a three-phase IT investment management process which involves selecting proposed IT projects (select phase), controlling ongoing projects through development (control phase), and evaluating projects that have been deployed (evaluate phase). Each phase comprises multiple stages that have entrance and exit criteria defined in the *IT Investment Management Process* guide that must be satisfied before a project can move from one stage to the next stage or phase in the process. The System Coordination Office tracks projects' progress through the various stages, ensuring that they comply with the processes defined in the guide. The national ITIB stays abreast of projects' performance through quarterly report reviews. The board is also directly involved in key milestone (i.e., stage) reviews.

#### Select Phase

The purpose of the phase is to ensure that BLM chooses the IT projects that best support its mission and align with the bureau's architecture. During this phase, the project proponent and portfolio manager are expected to collaborate to develop an investment proposal.

The System Coordination Office is responsible for reviewing the proposal and ensuring that issues are identified and resolved. Finally, the ITIB is to review the proposal and either approve it, approve it with stipulations, return it for further analysis, or reject it. If the ITIB approves the proposal, the project manager and project proponent are to work to develop a more elaborate business case. The System Coordination Office reviews the business case and coordinates the reviews performed by other groups (e.g., the Bureau Enterprise Architecture Team). The Office then makes recommendations for approval to the ITIB on the basis of these reviews.

At the end of the select phase, a project plan is to be developed that defines the strategies for managing the project. According to BLM officials, to date the ITIB has placed more emphasis on this phase than on the other two.

#### Control Phase

Once selected for inclusion in the bureau's IT portfolio, each project is to be managed by a trained or experienced IT project manager and monitored by the System Coordination Office and ITIB on a quarterly basis throughout its life cycle.

Included within the project's plan, which is developed at the end of the select phase, are milestones for architecture, technical, and project

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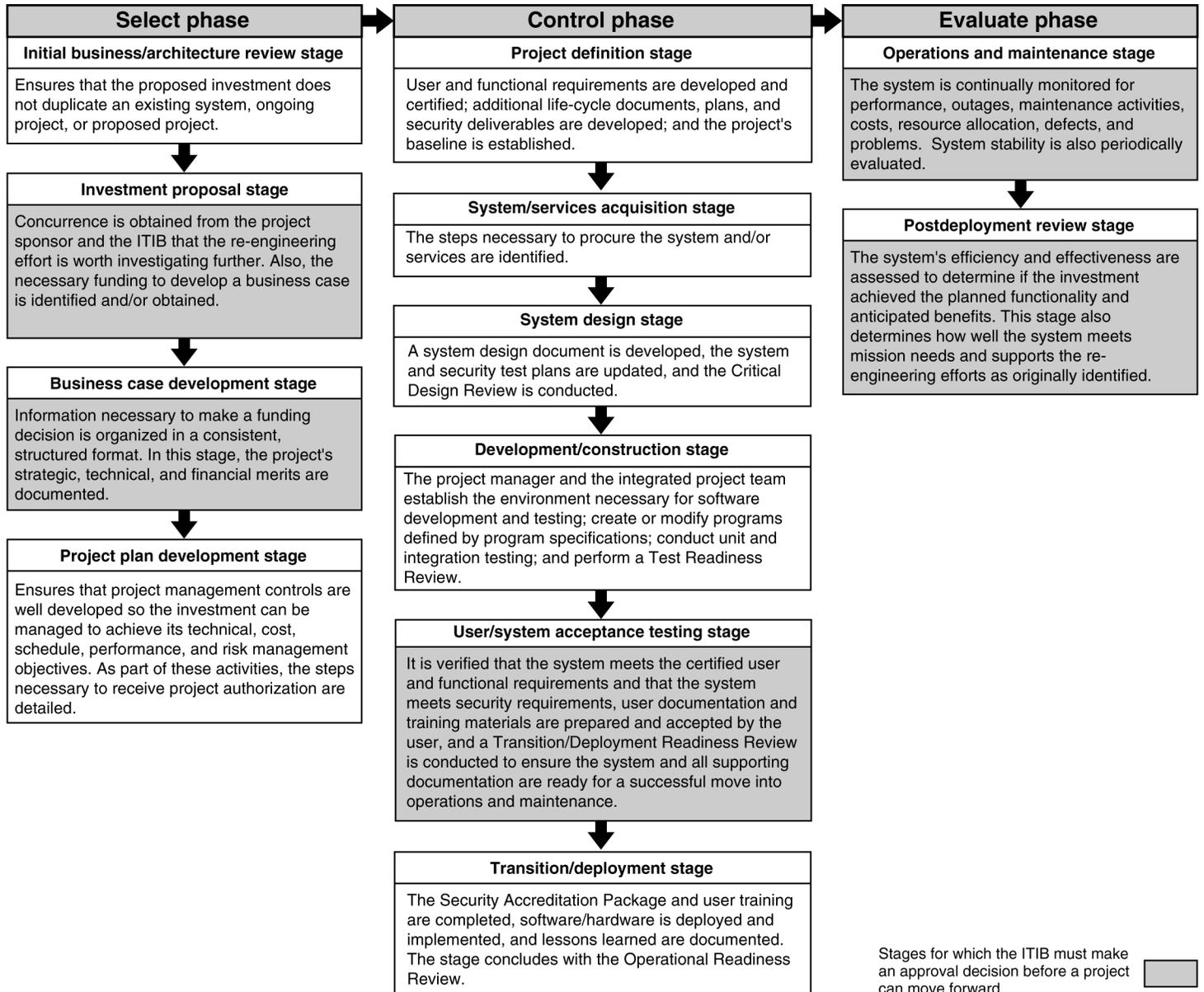
management reviews. Factors such as project risk, complexity, and cost determine the scope and frequency of each of these milestone reviews. Projects that fall short of meeting their predetermined budget, schedule, or scope requirements are to be reviewed by the ITIB, who works with the project managers to develop an appropriate course of action. If this issue arises, the ITIB must decide whether to continue the project; rebaseline the scope, schedule, or budget; or to terminate the project. Ultimately, all decisions that are carried out are a result of the ITIB voting process.

## Evaluate Phase

Once a project has been fully implemented and accepted by the users and system owner, the System Coordination Office and ITIB are responsible for monitoring its schedule and budget quarterly. BLM has also, on a limited basis, begun performing postimplementation reviews—BLM refers to these as postdeployment reviews—in which a project’s actual results are to be evaluated against expected results to compare realized to estimated benefits and assess the project’s impact on mission performance. Necessary changes or modifications to the project are to be identified, and technical compliance with the bureau enterprise architecture is also to be assessed. The main objective of the postimplementation review is to derive lessons learned, which may lead to investment management process improvements and opportunities for improving business processes (which in turn provide input into the select phase). To date, BLM has performed postimplementation reviews for two systems.

Figure 1 illustrates BLM’s IT investment management process phases and stages. The highlighted stages represent those for which the ITIB must make an approval decision before a project can move forward.

**Figure 1: BLM's IT Investment Management Process**



Source: BLM documents.

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## ITIM Maturity Framework

On the basis of research into the IT investment management practices of leading private- and public-sector organizations, we have developed an information technology investment management (ITIM) maturity framework.<sup>8</sup> This framework identifies critical processes for successful IT investments organized into a framework of five increasingly mature stages. The ITIM is intended to be used as both a management tool for implementing these processes incrementally and an evaluation tool for determining an organization's current level of maturity. The overriding purpose of the framework is to encourage investment processes that increase business value and mission performance, reduce risk, and increase accountability and transparency in the decision process. This framework has been used in several GAO evaluations<sup>9</sup> and adopted by a number of agencies. These agencies have used ITIM for purposes ranging from self-assessment to redesign of their IT investment management processes.

ITIM is a hierarchical model comprising five "maturity stages." These maturity stages represent steps toward achieving stable and mature processes for managing IT investments. Each stage builds upon the lower stages; the successful achievement of each stage leads to improvement in the organization's ability to manage its investments. With the exception of the first stage, each maturity stage is composed of "critical processes" that must be implemented and institutionalized for the organization to achieve that stage. These critical processes are further broken down into key practices that describe the types of activities that an organization should be performing to successfully implement each critical process. An organization may be performing key practices from more than one maturity stage at one time. This is not unusual, but efforts to improve investment management capabilities should focus on becoming compliant with lower stage practices before addressing higher stage practices.

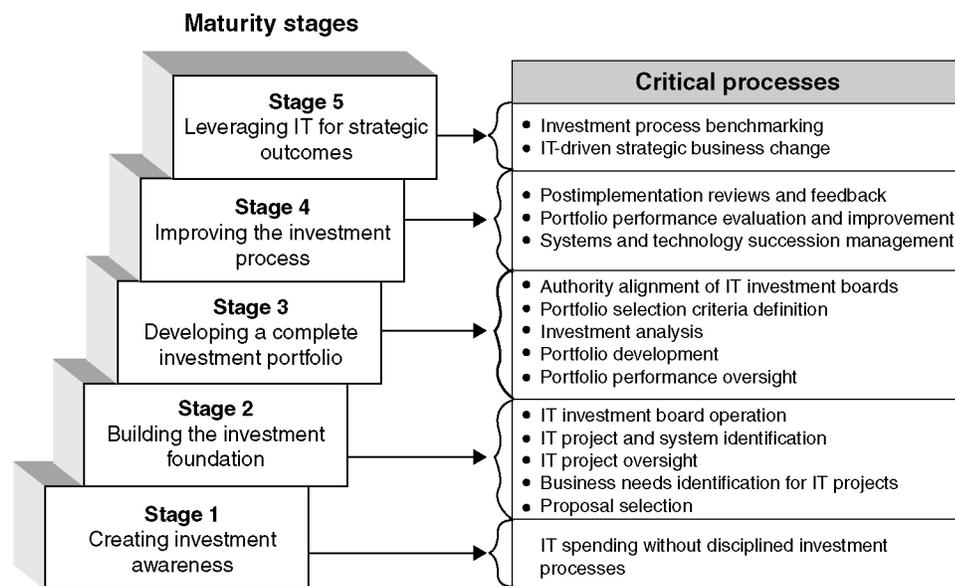
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<sup>8</sup>GAO/AIMD-10.1.23.

<sup>9</sup>U.S. General Accounting Office, *Information Technology: INS Needs to Strengthen Its Investment Management Capability*, GAO-01-146 (Washington, D.C.: Dec. 29, 2000); *Information Technology Management: Social Security Administration Practices Can Be Improved*, GAO-01-961 (Washington, D.C.: Aug. 21, 2001); *Information Technology: DLA Needs to Strengthen Its Investment Management Capability*, GAO-02-314 (Washington, D.C.: Mar. 15, 2002); *United States Postal Service: Opportunities to Strengthen IT Investment Management Capabilities*, GAO-03-3 (Washington D.C.: Oct. 15, 2002); *Information Technology: Executive Office for U.S. Attorneys Needs to Institutionalize Key IT Management Disciplines*, GAO-03-751 (Washington, D.C.: July 25, 2003).

Stage 2 in the ITIM framework encompasses building a sound investment management process—by developing the capability to control projects so that they finish predictably within established cost and schedule expectations—and establishing basic capabilities for selecting new IT projects. Stage 3 requires that an organization continually assess proposed and ongoing projects as parts of a complete investment portfolio: an integrated and competing set of investment options. This approach enables the organization to consider the relative costs, benefits, and risks of newly proposed investments along with those previously funded and to identify the optimal mix of IT investments to meet its mission, strategies, and goals. Stages 4 and 5 require the use of evaluation techniques to continuously improve both the investment portfolio and investment processes to better achieve strategic outcomes. Figure 2 shows the five maturity stages and the associated critical processes.

**Figure 2: The Five Stages of Maturity with Critical Processes**



Source: GAO.

As defined by the model, each critical process consists of “key practices” that must be executed to implement the critical process.

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## BLM Has Established Many of the Key Practices for Effective Investment Management

In order to have the capabilities to effectively manage IT investments, an agency should (1) have basic, project-level control and selection practices in place (stage 2 capabilities) and (2) manage its projects as a portfolio of investments, treating them as an integrated package of competing investment options and pursuing those that best meet the strategic goals, objectives, and mission of the agency (stage 3 capabilities). In addition, an agency would be well served by implementing capabilities for improving its investment management process (stage 4 capabilities).

BLM has executed the majority of the project-level control and selection practices. The bureau has also initiated efforts to manage its projects as a portfolio and performed two postimplementation reviews to learn lessons to improve its investment management process. When BLM implements all critical processes associated with building an investment foundation and managing its projects as a portfolio, the bureau will have greater confidence that it has selected the mix of projects that best supports its strategic goals and that the projects will be managed to successful completion.

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## BLM Has Implemented Most of the Key Practices Required to Establish an IT Investment Foundation

At ITIM stage 2 maturity, an organization has attained repeatable, successful IT project-level investment control processes and basic selection processes. Through these processes, the organization can identify expectation gaps early and take appropriate steps to address them. According to ITIM, critical processes at stage 2 include (1) defining investment review board<sup>10</sup> operations, (2) collecting information about existing investments, (3) developing project-level investment control processes, (4) identifying the business needs for each IT project, and (5) developing a basic process for selecting new IT proposals. Table 1 discusses the purpose for each of the stage 2 critical processes.

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<sup>10</sup>An investment review board is a decision-making body made up of senior program, financial, and information managers that is responsible for making decisions about investments or projects.

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**Table 1: Stage 2 Critical Processes—Building the Investment Foundation**

<b>Critical process</b>	<b>Purpose</b>
IT investment board operation	To define and establish the governing board(s) responsible for selecting, controlling, and evaluating IT investments.
IT project and system identification	To create and maintain an IT project inventory to assist in managerial decision making.
IT project oversight	To regularly determine each IT project's progress toward cost and schedule milestones using established criteria and take corrective actions when milestones are not achieved.
Business needs identification for IT projects	To ensure that each IT project supports the organization's business needs and meets users' needs.
Proposal selection	To ensure that an established, structured process is used to select new IT proposals.

Source: GAO.

To its credit, BLM has put in place about 85 percent of the key practices associated with stage 2 critical processes.<sup>11</sup> The bureau has satisfied all the key practices associated with establishing the governing boards responsible for managing IT investments and ensuring that IT projects support organizational needs and meet users' needs. It has satisfied a majority of the key practices associated with proposal selection and IT project oversight and is working on incorporating the use of an IT project and system inventory into its IT investment management process. Table 2 summarizes the status of BLM's critical processes for stage 2, showing how many associated key practices it has executed.

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<sup>11</sup>BLM hired a contractor to perform an independent assessment of its ITIM stage 2 capabilities, which was completed in January 2003. The assessment, which indicated that BLM had established the majority of key practices for four out of five critical processes, provided an important source of data for our evaluation.

**Table 2: Summary of Results for Stage 2 Critical Processes and Key Practices**

Critical process	Key practices executed	Total required by critical process	Percentage of key practices executed
IT investment board operation	6	6	100%
IT project and system identification	3	7	42%
IT project oversight	10	11	91%
Business needs identification	8	8	100%
Proposal selection	5	6	83%
<b>Total</b>	<b>32</b>	<b>38</b>	<b>84%</b>

Source: GAO.

**BLM Has Established an Investment Board for Managing IT Investments**

The creation of decision-making bodies or boards is central to the IT investment management process. At the stage 2 level of maturity, organizations define one or more boards, provide resources to support their operations, and appoint members who have expertise in both operational and technical aspects of proposed investments. Resources provided to support the operations of IT investment boards typically include top management’s participation in creating the board(s) and defining their scope and formal evidence acknowledging management’s support for board decisions. The boards operate according to a written IT investment process guide tailored to the organization’s unique characteristics, thus ensuring that consistent and effective management practices are implemented across the organization. Once board members are selected, the organization ensures that they are knowledgeable about policies and procedures for managing investments. Organizations at the stage 2 level of maturity also take steps to ensure that executives and line managers support and carry out the decisions of the IT investment board. According to ITIM, an IT investment management process guide should be a key authoritative document that the organization uses to initiate and manage IT investment processes and should provide a comprehensive foundation for policies and procedures developed for all other related processes. (The complete list of key practices is provided in table 3.)

BLM has executed all the key practices for this critical process. For example, in 1998, the bureau established an IT Investment Board (the ITIB) to manage national investments. With the development of the *IT Investment Management Process* guide in 2001, BLM provided the board and all involved parties (i.e., project managers and sponsors, portfolio

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managers, investment management group) with specifics concerning responsibilities and procedures.<sup>12</sup> This guide is centered on a project's life cycle and requisite decision points (phases and stages) in the investment process from the submission of a proposal to a postimplementation review.

The board is also adequately resourced, with the main support being provided by the System Coordination Office, whose responsibilities include developing and modifying the bureau's criteria for selecting, controlling, and evaluating potential and existing IT investments and documenting, recording, and transmitting decisions made by the board. Experienced senior-level officials from both business and IT areas are members of the board and exhibit the core competencies required by the investment management process. Finally, all actions by the board are well documented using meeting minutes and records of decision. In June 2003, an action-item tracking matrix was introduced. This matrix is used to identify and track ITIB-approved decisions and assigned responsibilities to ensure that the board's decisions are carried out. By executing all key practices associated with creating and defining investment board operations, BLM has greater assurance that the ITIB will effectively carry out its responsibilities.

Table 3 shows the rating for each key practice required to implement the critical process for establishing IT investment board operation at the stage 2 level of maturity. Each of the "Executed" ratings shown below represents instances where, based on the evidence provided by BLM officials, we concluded that the specific key practices were executed by the organization.

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<sup>12</sup>According to BLM "Instruction Memorandum 2001-222," this policy expired on September 30, 2002. BLM still continues to use this version to guide IT investment management efforts. A newer version is currently in draft, but no expected release date was identified.

**Table 3: IT Investment Board Operation**

Type of practice	Key practice	Rating	Summary of evidence
Organizational commitments	1. An organization-specific IT investment process guide is created to direct each board's operations.	Executed	BLM's <i>IT Investment Management Process</i> guide and associated memo issued in September of 2001 direct the national ITIB's operations. The IT investment board's charter updated in April 2003 also defines operating procedures for the board.
	2. Organization executives and line managers support and carry out IT investment board decisions.	Executed	BLM established the System Coordination Office to, among other things, support the investment management process. The office's responsibilities include ensuring that the ITIB's decisions are carried out by documenting and communicating these decisions and tracking actions to support them. The ITIB recently adopted an action-item tracking matrix to better track decisions made, assigned responsibilities, and established time frames related to board decisions.
Prerequisites	1. Adequate resources are provided for operating each IT investment board.	Executed	A number of resources support the ITIB's operations. They include the System Coordination Office which, among other things, screens IT investment proposals and monitors project performance; the Investment Management Group, which helps ensure that IT investments fit within BLM's budget plan; and an IT Portfolio Management Council that is responsible for providing the board with an enterprise view of the bureau's various portfolios. The BLM intranet also features an "ITIB Membership Guide Book" site that contains links to information on the ITIM process and related resources.
	2. Board members understand the investment board's policies and procedures and exhibit core competencies in using the IT investment approach via training, education, or experience.	Executed	Board members understand the investment board's policies and procedures and have experience in making investment management decisions. High-level training has been provided to members during past board meetings on an informal basis. In addition, BLM plans to provide more formal training that addresses the core competencies that members should have in order to more effectively contribute to the ITIM process. This first formal training session is expected to be conducted in November 2003.
Activities	1. Each IT investment board is created and defined with board membership integrating both IT and business knowledge.	Executed	The ITIB membership includes both IT and business knowledge. It includes the CIO (also the Vice Chair); and representatives from the System Coordination Office; state, center, and field offices; Bureau Enterprise Architecture Team; and budget areas.
	2. Each IT investment board operates according to written policies and procedures in the organization-specific IT investment process guide.	Executed	ITIB operations are guided by BLM's <i>IT Investment Management Process guide</i> , its associated instruction memo, and the ITIB charter. The guide specifies procedures for selecting, controlling, and evaluating investments, while the ITIB charter contains specific operating procedures.

Source: GAO.

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**BLM Has Not Defined Policies and Procedures for Collecting Information into the Budget Planning System to Make Informed Investment Management Decisions**

An IT project and system inventory provides information to investment decision makers to help evaluate the impacts and opportunities created by proposed or continuing investments. This inventory (which can take many forms) should, at a minimum, identify the organization's IT projects (including new and existing systems) and a defined set of relevant investment management information about them (e.g., purpose, owner, life-cycle stage, budget cost, physical location, and interfaces with other systems). Information from the IT project and system inventory can, for example, help identify systems across the organization that provide similar functions and help avoid the commitment of additional funds for redundant systems and processes. It can also help determine more precise development and enhancement costs by informing decision makers and other managers of interdependencies among systems and how potential changes in one system can affect the performance of other systems. According to ITIM, effectively managing an IT project and system inventory requires, among other things, (1) identifying projects and systems, collecting relevant information about them, and capturing this information in a repository; (2) assigning responsibility for managing the inventory process and ensuring that the inventory meets the needs of the investment management process; (3) developing written policies and procedures for maintaining the project and system inventory; (4) making information from the inventory available to staff and managers throughout the organization so they can use it, for example, to build business cases and support activities to select and control projects; and (5) maintaining the inventory and its information records to contribute to future investment selections and assessments. (The full list of key practices is provided in table 4.)

BLM has executed three out of seven of the key practices for IT project and system identification. For example, the bureau is using its target application architecture and Budget Planning System<sup>13</sup> to collect information on its IT projects and systems to make informed IT investment management decisions; according to CIO officials, the architecture is used for the information it contains on BLM's business processes and supporting data, applications, and technology, while the Budget Planning System is used for the financial information on the investments. Resources have been assigned to support activities related to identifying IT projects and systems, including the Bureau Enterprise Architecture Team and the Budget

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<sup>13</sup>The Budget Planning System is part of BLM's larger Financial Management System. It contains financial data on individual investments. These data can be directly tied to annual budget submissions.

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Planning System system owners. According to BLM, all national projects and systems are in both the target application architecture and Budget Planning System (although BLM officials told us that they have planned a meeting to determine whether additional requirements are needed for the Budget Planning System to effectively serve as an inventory for investment management purposes).

Despite these strengths, policies and procedures for collecting project and system information in the Budget Planning System for investment management purposes have not yet been defined. However, the CIO has directed teams composed of the System Coordination Office, portfolio managers, the Investment Management Group, and system owners of the Budget Planning System to “identify the ownership of each process associated with the IT project and system inventory.” This step would form the basis for policies and procedures relating to the collection (and use) of information in the inventory. Until BLM defines these policies and procedures, it cannot adequately ensure that its inventory can be relied upon as an effective tool to assist in investment decision making. Table 4 shows the rating for each key practice required to implement the critical process for IT project and system identification at the stage 2 level of maturity and summarizes the evidence that supports these ratings.

**Table 4: IT Project and System Identification**

Type of practice	Key practice	Rating	Summary of evidence
Organizational commitments	1. The organization has written policies and procedures for identifying its IT projects and systems and collecting, in an inventory, information about the IT projects and systems that is relevant to the investment management process.	Not executed	BLM is using its enterprise architecture and Budget Planning System to collect information about its IT projects and systems. However, the bureau has not yet defined the policies and procedures associated with collecting information in the Budget Planning System for investment management purposes.
	2. An official is assigned responsibility for managing the IT project and system identification process and ensuring that the inventory meets the needs of the investment management process.	Executed	According to the ITIB charter, it is the ITIB's responsibility to manage the IT project and system identification process and ensure that the inventory meets the needs of the investment management process. According to BLM's self-assessment, in practice, this responsibility has been delegated to the Bureau Enterprise Architecture Team for the architecture and to the System Coordination Office for the Budget Planning System.
Prerequisite	1. Adequate resources are provided for identifying IT projects and systems and collecting relevant information into an inventory.	Executed	Resources for IT project and system identification activities include contractor support for the enterprise architecture and the Budget Planning System system owners.
Activities	1. The organization's IT projects and systems are identified, and specific information about them is collected in an inventory.	Executed	According to BLM officials, all national projects and systems are in the enterprise architecture's target application component and in the Budget Planning System.
	2. Changes to IT projects and systems are identified, and change information is maintained in the inventory.	Not executed	According to BLM, changes to projects and systems are not reliably being maintained in the inventory.
	3. Information from the inventory is available on demand to decision makers and other affected parties.	Not executed	Information from the enterprise architecture and the Budget Planning System is available to decision makers and other affected parties through BLM's intranet site. However, this information is not reliable because, according to BLM, it is not being maintained in a consistent manner (see activity 2).
	4. The IT project and system inventory and its information records are maintained to contribute to future investment selections and assessments.	Not executed	According to BLM, changes to projects and systems are not reliably being maintained in the inventory.

Source: GAO.

**Projects' Progress Toward Cost and Schedule Milestones Is Regularly Determined**

Investment boards should effectively oversee IT projects throughout all life-cycle phases (concept, design, testing, implementation, and operations/maintenance). At the stage 2 level of maturity, investment boards should review each project's progress toward predefined cost and

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schedule expectations, using established criteria and performance measures, and take corrective actions to address cost and milestone variances. According to ITIM, effective project oversight requires, among other things, (1) having written policies and procedures for project management; (2) developing and maintaining an approved management plan for each IT project; (3) making up-to-date cost and schedule data for each project available to the oversight boards; (4) reviewing each project's performance by regularly comparing actual cost and schedule data with expectations; (5) ensuring that corrective actions for each underperforming project are documented, agreed to, implemented, and tracked until the desired outcome is achieved; and (6) having written policies and procedures for oversight of IT projects. (The complete list of key practices is provided in table 5.)

BLM has in place all but one of the key practices associated with effective project oversight. Project management policies and high-level procedures are defined in the *IT Investment Management Process* guide, associated memoranda, and in best practices guidance. In addition, project oversight policies and procedures are defined in the guide and associated memoranda, which, among other things, require the involvement and approval of the board at key stages in a project's life cycle. For example, according to the guide, the ITIB must review and approve investment proposals before they can be developed into business cases. Further, once a project has been approved, the ITIB reviews up-to-date cost, schedule, and scope information quarterly and analyzes this information against predetermined performance expectations. The board also determines corrective actions for projects that have not met performance expectations.

We verified that cost, schedule, and scope information was submitted to the ITIB quarterly and analyzed against expectations and, when significant variances occurred, corrective actions were determined for the three projects we reviewed.<sup>14</sup> This involved rebaselining the project plan based on schedule slippages or increased costs. In all cases, the ITIB was responsible for this decision.

Notwithstanding these strengths, as discussed in the previous section, BLM's IT project and systems inventory has not yet been developed to the

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<sup>14</sup>The three projects we reviewed—PayCheck, National Integrated Land System, and Antivirus—are described in appendix I.

point where information is consistently collected and maintained to make informed investment management decisions. This increases the risk that the ITIB will not have at its disposal reliable information for supporting project and portfolio investment decisions and oversight.

Table 5 shows the rating for each key practice required to implement the critical process for project oversight at the stage 2 level of maturity and summarizes the evidence that supports these ratings.

**Table 5: IT Project Oversight**

Type of practice	Key practice	Rating	Summary of evidence
Organizational commitments	1. The organization has written policies and procedures for project management.	Executed	BLM's policy and procedures for managing IT investments are defined in the <i>IT Investment Management Process</i> guide and its associated instruction memo.
	2. The organization has written policies and procedures for management oversight of IT projects.	Executed	The ITIB charter and <i>IT Investment Management Process</i> guide specify that the board shall perform IT project oversight by regularly analyzing each IT investment's planned progress toward cost and schedule milestones against actual progress/performance. Instruction memos define procedures for submitting up-to-date project information to the ITIB quarterly. In addition, specific procedures for determining corrective actions for projects that have not met predetermined performance standards were approved and adopted by the ITIB in June 2003.
Prerequisites	1. Adequate resources are provided to assist the board(s) in overseeing IT projects.	Executed	Adequate resources are provided to assist the board in overseeing IT projects. Specifically, the System Coordination Office has the primary responsibility of maintaining an integrated project schedule and conducting IT project oversight on all investments as they move through the ITIB decision process.
	2. Each IT project has and maintains an approved project management plan that includes cost and schedule controls.	Executed	The <i>IT Investment Management Process</i> guide requires that the project management plan be developed so that investments can be managed to achieve technical cost, schedule, performance, and risk management objectives. The three projects we reviewed have project management plans. In addition, we verified that the ITIB and System Coordination Office applied cost and schedule controls in their quarterly reviews of these projects.
	3. An IT investment board is operating.	Executed	BLM's board has been in operation since 1998. It is responsible for selecting, controlling, and evaluating all national IT investments.
	4. Information from the IT project and system inventory is used by the IT investment board as applicable.	Not executed	Information from the IT project and system inventory is available to the ITIB. However, according to BLM, this information is not being maintained reliably.

(Continued From Previous Page)

Type of practice	Key practice	Rating	Summary of evidence
Activities	1. Each project's up-to-date cost and schedule data are provided to the appropriate IT investment board.	Executed	BLM has a policy memo requiring project managers to submit up-to-date cost, schedule, and scope information to the System Coordination Office quarterly, and this information is provided to the ITIB. We verified that this was the case for the three projects that we reviewed.
	2. Using established criteria, the IT investment board regularly oversees each IT project's performance by comparing actual cost and schedule data to expectations.	Executed	The ITIB oversees each IT project's performance by comparing actual cost, schedule, and scope data to expectations quarterly. Quarterly project status reports indicate whether reported data fall within an acceptable range when compared to expected cost and schedule (red/yellow/green). We verified that this was the case for the three projects that we reviewed.
	3. The IT investment board performs special reviews of projects that have not met predetermined performance standards.	Executed	Special reviews were conducted for the three projects we reviewed when they did not meet predetermined performance standards.
	4. Appropriate corrective actions for each under-performing project are defined, documented, and agreed to by the IT investment board and the project manager.	Executed	For each of the projects we reviewed, there are ITIB decision papers documenting the corrective actions that have been agreed upon by the ITIB and project manager. These actions include rebaselining the project plan to account for schedule slippage or increased costs.
	5. Corrective actions are implemented and tracked until the desired outcome is achieved.	Executed	The board recently approved an action-item tracking matrix that tracks board decisions, parties responsible, and associated time frames. According to project documentation, corrective actions were tracked until implemented for the three projects we reviewed.

Source: GAO.

### Processes Ensure That IT Projects Support Business Needs and Meet Users' Needs

Defining business needs for each IT project helps ensure that projects support the organization's mission goals and meet users' needs. This critical process creates the link between the organization's business objectives and its IT management strategy. According to ITIM, effectively identifying business needs requires, among other things, (1) defining the organization's business needs or stated mission goals, (2) identifying users for each project who will participate in the project's development and implementation, (3) training IT staff adequately in identifying business needs, and (4) defining business needs for each project. (The complete list of key practices is provided in table 6.)

BLM has executed all the key practices for this critical process. The bureau's *IT Investment Management Process* guide requires that business needs and associated users of each IT project be identified in the investment proposal and business case stages of the select phase. BLM also has detailed procedures for developing these two documents that call for

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identifying business needs and associated users. Resources for identifying business needs and associated users include the project sponsor, project proponent, and the System Coordination Office and detailed procedures and associated templates for developing investment proposals and business cases. Bureau specific business needs are defined in the *Bureau of Land Management's Strategic Plan* for fiscal years 2000–2005, and projects are also often linked to the Department of the Interior's strategic goals and goals of the *President's Management Agenda*.<sup>15</sup> In addition, individuals responsible for managing projects at BLM can adequately identify business needs; according to BLM, the bureau's practice is to select staff from business units as project managers (instead of staff from the IT unit). Finally, according to BLM officials, all national applications are in the Budget Planning System and target enterprise architecture, which are repositories of investment information that BLM is planning on using to make informed investment management decisions. For the three projects we reviewed, business needs and associated users were identified in business case or project planning documents, and users were involved in project management throughout the life cycle of the project through, for example, chartered user-group meetings, structured walk-throughs, prerelease workshops, and conference calls. Because it is executing all key practices associated with business needs identification, BLM can have greater assurance that its projects will support business needs and meet users' needs.

Table 6 shows the rating for each key practice required to implement the critical process for business needs identification at the stage 2 level of maturity and summarizes the evidence that supports these ratings.

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<sup>15</sup>The *President's Management Agenda* is a strategy for improving the management and performance of the federal government. The Agenda contains five governmentwide and nine agency-specific goals to improve federal management and deliver results that matter to the American people.

**Table 6: Business Needs Identification**

Type of practice	Key practice	Rating	Summary of evidence
Organizational commitment	1. The organization has written policies and procedures for identifying the business needs (and the associated users) of each IT project.	Executed	BLM has guidance for developing investment proposals and business cases that calls for identifying the business needs (and the associated users) of each IT project.
Prerequisites	1. Adequate resources are provided for identifying business needs and associated users.	Executed	BLM has adequate resources for identifying business needs and associated users. They include the project managers, portfolio managers, and the System Coordination Office.
	2. The organization has defined business needs or stated mission goals.	Executed	The <i>Bureau of Land Management's Strategic Plan</i> for fiscal years 2000–2005 defines the agency's mission goals.
	3. IT staff are trained in business needs identification.	Executed	According to BLM officials, individuals responsible for managing projects at BLM generally come from the business/program areas. Therefore, they can adequately identify business needs.
	4. IT projects and systems are identified in the IT project and system inventory.	Executed	According to BLM officials, all national IT investments and most state and center IT investments are in the enterprise architecture and Budget Planning System, which together represent the IT project and system inventory.
Activities	1. The business needs for each IT project are clearly identified and defined.	Executed	BLM requires that business needs for each IT project be identified in investment proposals and business cases. We verified that the business needs for the three projects we reviewed were clearly identified and defined.
	2. Specific users are identified for each IT project.	Executed	BLM requires that specific users be identified for each IT project in investment proposals and business cases. We verified that specific users were identified for the three projects we reviewed.
	3. Identified users participate in project management throughout a project's life cycle.	Executed	According to BLM officials, users are involved in project management throughout a project's life cycle. For the three projects we reviewed, users were involved in project management through various types of meetings.

Source: GAO.

**Proposal Selection Process Is Established, but Criteria for Analyzing and Prioritizing Investments Have Not Been Fully Defined**

Selecting new IT proposals requires an established and structured process to ensure informed decision making and infuse management accountability. According to ITIM, this critical process requires, among other things, (1) making funding decisions for new IT proposals according to an established process; (2) providing adequate resources to proposal selection activities; (3) using an established proposal selection process; (4) analyzing and ranking new IT proposals according to established selection criteria, including cost and schedule criteria; and (5) designating an official to manage the proposal selection process. (The complete list of key practices is provided in table 7.)

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BLM has executed five of the six key practices associated with proposal selection. For example, the *IT Investment Management Process* guide defines a multistage selection process (the select phase), including developing a business case and project plan that executives and project proponents follow. Resources for proposal selection activities include project proponents and the System Coordination Office. As previously noted, detailed procedures and a template have been defined for developing new IT proposals. In addition, according to BLM officials, funding decisions are made through the budget process, which BLM is working on to better integrate with the investment management process.

Despite these strengths, the key practice associated with analyzing and prioritizing new proposals according to established criteria has not yet been executed because the various criteria for doing so have not yet been fully defined. The Bureau Enterprise Architecture Team has defined criteria it uses to determine projects' compliance with the bureau enterprise architecture's business processes, data, applications, and technology components. Another set of criteria is being developed to assess proposals for their business value. These criteria are intended to be used by the IT Portfolio Management Council to screen proposals before they are reviewed by the ITIB. The ITIB members believe that these criteria are key to analyzing new proposals and have charged the IT Portfolio Management Council with developing draft criteria. The council intends to finalize the criteria in time for their use in the spring of 2004 to evaluate proposals for the fiscal year 2006 budget. Until BLM finalizes its proposal selection criteria and uses them to analyze and prioritize proposals, the bureau will not be adequately assured that it is consistently and objectively selecting proposals that best meet the needs and priorities of the agency.

Table 7 shows the rating for each key practice required to implement the critical process for proposal selection at the stage 2 level of maturity and summarizes the evidence that supports these ratings.

**Table 7: Proposal Selection**

Type of practice	Key practice	Rating	Summary of evidence
Organizational commitments	1. Executives and managers follow an established selection process.	Executed	BLM's <i>IT Investment Management Process</i> guide defines a selection process that executives and project proponents follow.
	2. An official is designated to manage the proposal selection process.	Executed	The <i>IT Investment Management Process</i> guide and the ITIB charter assign this responsibility to the ITIB.
Prerequisite	1. Adequate resources are provided for proposal selection activities.	Executed	Adequate resources are provided for proposal selection activities. They include the project proponents and portfolio managers who develop investment proposals and business cases and the System Coordination Office who supports them in these activities.
Activities	1. The organization uses a structured process to develop new IT proposals.	Executed	BLM has defined procedures for developing new IT proposals.
	2. Executives analyze and prioritize new IT proposals according to established selection criteria.	Not executed	Executives analyze and prioritize new IT proposals; however, according to BLM officials, prioritization is not based on established criteria.
	3. Executives make funding decisions for new IT proposals according to an established process.	Executed	According to BLM officials, executives make funding decisions for new IT proposals through BLM's budget process.

Source: GAO.

## BLM Has Initiated Efforts to Manage Its Investments as a Portfolio and Improve Its Investment Management Process

Once an agency has attained stage 2 maturity, it needs to establish capabilities for managing its investments as a portfolio (stage 3). Such capabilities enable the agency to consider its investments comprehensively so that the collective investments optimally address its mission, strategic goals, and objectives. Stage 3 capabilities include (1) defining portfolio selection criteria, (2) engaging in project-level investment analysis, and (3) aligning the authority of IT investment boards. In addition, establishing higher level stage capabilities—for example performing postimplementation reviews—can help an agency improve its investment management process.

BLM has initiated efforts to manage its investments as a portfolio. BLM has defined procedures for aligning the national ITIB with subordinate boards.<sup>16</sup> Portfolio categories have been defined that correspond to BLM's organizational units (e.g., Minerals, Realty, and Resource Protection; Information Resource Management). Moreover, the board revised its charter in April 2003 to include portfolio management responsibilities (i.e.,

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stage 3) and established an IT Portfolio Management Council to support it in carrying out these responsibilities.<sup>17</sup> At a higher level stage, BLM has begun to address postimplementation reviews, a critical process associated with the most capable organizations. BLM has begun performing postimplementation reviews on a limited basis to learn lessons for improving both project management and investment management processes. To date, the bureau has conducted two such reviews.

Compared with the progress at stage 2, BLM's progress to date in defining practices for higher level maturity stages has been limited because, according to its officials, the ITIB first focused its resources on establishing the processes associated with building the IT investment management foundation. Full implementation of the critical processes associated with portfolio management will provide BLM with the capability to determine whether it is selecting the mix of products that best meet the bureau's mission needs. Implementing critical processes at higher level stages will equip BLM with the capabilities it needs to improve its investment management processes.

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## BLM Does Not Have a Plan to Guide IT Investment Management Improvement Efforts

We have previously reported that to effectively implement ITIM processes, agencies need to be guided by a plan that (1) is based on an assessment of strengths and weaknesses; (2) specifies measurable goals, objectives, and milestones; (3) specifies needed resources; and (4) assigns clear responsibility and accountability for accomplishing well-defined tasks. In addition, these plans should be approved by senior management.<sup>18</sup>

Although a plan was developed a few years ago to establish the practices currently in place, BLM does not have a plan to guide further improvement of its investment management process. An independent assessment of BLM's ITIM process relative to stage 2 of our IT investment management framework was completed in January 2003, but BLM has not yet used the results of this assessment to develop an improvement plan. According to the CIO, this is because BLM intends to develop a plan integrating

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<sup>16</sup>Most state and center offices have their own boards for managing IT investments that fall below the thresholds of the national IT investments' criteria.

<sup>17</sup>The Portfolio Management Council was formed in July 2002 and has met several times since. The council's charter was approved in June 2003.

<sup>18</sup>GAO-02-314, GAO-03-3, GAO-03-751.

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improvements for IT investment management and other IT management areas, and the results of the comprehensive assessment to be used as a basis for this integrated plan were not received until June 2003. BLM officials recognize the importance of having a plan to guide their improvement efforts, however, and stated their commitment to developing one, although they do not have a specific time frame for doing so. Until BLM develops this plan, the bureau risks losing the momentum it has gained in implementing its ITIM process.

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## Conclusions

BLM has made good progress in defining and establishing its investment management process in the 2 years since we reported that the lack of such a process had largely contributed to the failure of a key program. By establishing most of the key practices associated with building the investment foundation, the bureau has strengthened its basic capabilities for selecting and controlling projects and positioned itself to develop the processes for managing its investments as a portfolio. Critical to BLM's success going forward will be the development of an implementation plan—preferably integrated with implementation plans for improving other IT management areas—to (1) guide and establish accountability for executing the stage 2 key practices that we noted needed to be addressed and (2) proceeding with efforts to define and implement stage 3 key practices. Without this plan, BLM risks not being able to sustain the progress made to date in establishing its investment management process.

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## Recommendations for Executive Action

To strengthen BLM's IT investment management capability and address the weaknesses discussed in this report, we recommend that the Secretary of the Department of the Interior direct the BLM Director to develop and implement a plan for improving its IT investment management process that is based on GAO's ITIM stage 2 and 3 critical processes. The plan should, at a minimum, provide for accomplishing the following:

- implementing the recently approved procedures for determining corrective actions for projects that have not met performance expectations;
- defining and implementing policies and procedures for collecting project and system information in the Budget Planning System for investment management purposes;

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- fully defining criteria for analyzing and prioritizing new IT proposals; and
  - proceeding with plans to define and implement all stage 3 critical processes, which are necessary for portfolio management.

In *developing* the plan, the BLM Director should ensure that it (1) is based on the results of the bureau's recent assessment of ITIM stage 2 capabilities; (2) specifies measurable goals, objectives, milestones, and outcomes; (3) specifies needed resources; and (4) assigns clear responsibility and accountability for accomplishing well-defined tasks. In *implementing* the plan, the Director should ensure that the needed resources are provided and that progress is measured and reported periodically to the Secretary of the Interior.

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## Agency Comments and Our Evaluation

In written comments on a draft of this report (reprinted in app. II), BLM's Director agreed with our findings and recommendations and stated that they represented a fair and accurate evaluation of the bureau's status and progress towards IT investment management maturity. The Director also noted that BLM has begun developing a plan, in accordance with our recommendations, to (1) complete the key practices for reaching GAO's ITIM stage 2 maturity and (2) identify the goals, time frames, outcomes, and resources needed to reach stage 3 maturity. BLM provided additional technical comments, which we have incorporated into the report as appropriate.

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We are sending copies of this report to interested congressional committees. We are also sending copies to the Director of the Office of Management and Budget, the Secretary of the Interior, and BLM's Director and CIO. We also will make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at [www.gao.gov](http://www.gao.gov).

Should you or your offices have questions on matters discussed in this report, please contact me at (202) 512-6240, or Lester P. Diamond, Assistant

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Director, at (202) 512-7957. We can also be reached by E-mail at [koontzl@gao.gov](mailto:koontzl@gao.gov), or [diamondl@gao.gov](mailto:diamondl@gao.gov), respectively. Key contributors to this assignment were Jamey A. Collins, Sabine R. Paul, and Sophia Harrison.

A handwritten signature in black ink that reads "Linda D. Koontz". The signature is written in a cursive style with a large initial 'L' and 'K'.

Linda D. Koontz  
Director, Information Management Issues

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# Objectives, Scope, and Methodology

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The objectives of our review were to (1) evaluate the Bureau of Land Management's (BLM) IT investment management capabilities against the key practices defined in GAO's IT investment management assessment framework and (2) determine the agency's plans for improving these capabilities.

To address our first objective, we assessed the extent to which BLM satisfied the five critical processes identified in stage 2 of GAO's Information Technology Investment Management (ITIM) framework.<sup>1</sup> We applied the framework as it is described in the exposure draft, except that we used a revised version of the IT Asset Inventory critical process, called IT Project and System Identification, after discussions with departmental officials at the beginning of this engagement. This revised critical process has been used in our evaluations since June 2001. We did not formally assess BLM's progress in establishing capabilities found in stages 3, 4, and 5 because BLM acknowledged that it had so far primarily focused on stage 2 and had not executed many key practices in higher maturity stages. In addition, we limited our review to BLM's management of its national investments because they represent the investments of greater cost and impact to the organization.

To determine whether BLM had implemented the critical processes associated with stage 2, we reviewed the results of a self-assessment of stage 2 practices using GAO's ITIM framework and validated and updated the results of the self-assessment through document reviews and interviews with officials. We reviewed written policies, procedures, and guidance and other documentation providing evidence of executed practices, including BLM's *IT Investment Management Process* guide, various board/council charters, and instruction memorandums. We also reviewed national Information Technology Investment Board (ITIB) meeting materials, including quarterly status reports, meeting minutes, records of decision, and matrices tracking action items through completion. We interviewed several BLM officials, including system coordination office officials, portfolio managers, and ITIB members. We also attended a 2-day national ITIB meeting in March 2003.

As part of our analysis, we selected three IT projects as case studies to verify application of the critical processes and practices. We selected projects that (1) supported different BLM functional areas (directorates),

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<sup>1</sup>[GAO/AIMD-10.1.23](#).

(2) were in different life-cycle phases, and (3) required various levels of funding. The three projects are the following:

- **PayCheck**—The objective of PayCheck, currently in the evaluate phase, is to allow employees to input their time and attendance data using an automated system. Previously, the employee developed a hard-copy time sheet, and then a timekeeper keyed the same information into the payroll system. By allowing the employees to enter their own data, PayCheck changed the business process and eliminated the duplication of manual effort. This project, with an estimated life-cycle cost of \$1,681,000, is the responsibility of the National Human Resources Management Center, which supports BLM’s human resources function.
- **National Integrated Land System**—The objective of this system, which is currently in a mixed life cycle,<sup>2</sup> is to provide a process to collect, maintain, and store survey- and parcel-based land information that meets the common, shared business needs of land title and land resource management. This system will provide agencies, BLM’s partners, and the public with business solutions for the management of cadastral records and land parcel information in a Geographic Information System environment, accessible via the Internet. This project, which has an estimated life-cycle cost of \$31.3 million, is under the Minerals, Realty, and Resource Protection directorate. This directorate is responsible for managing commercial energy and mineral production from the public lands.
- **Antivirus**—The objective of Antivirus, currently in the control phase, is to renew or replace BLM’s existing antivirus contract that is expiring to provide antivirus coverage to all simple mail transfer protocol gateways, mail servers, other servers, desktops, and laptops. In addition, BLM is seeking to provide improved enterprise management and reporting capabilities, as well as a more automated methodology for deploying virus update files across the bureau. This project is being carried out by the Information Resources Management directorate, which provides IT services to BLM states, centers, and partners in support of the bureau’s mission. The estimated life cycle cost for Antivirus is \$800,600.

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<sup>2</sup>The National Integrated Land System has four different modules. Three of these modules are in the “control” phase and the fourth is in the “evaluate” phase.

For these projects, we reviewed project management documentation, such as business cases, project plans, and quarterly reports. We also reviewed user-group meeting minutes and analyzed national ITIB decision documents related to each of the projects. We also interviewed the project managers for these projects.

We compared the evidence collected from our document reviews and interviews to the key practices in ITIM. We rated the key practices as “executed” on the basis of whether the agency demonstrated (by providing evidence of performance) that it had met the criteria of the key practice. A key practice was rated as “not executed” when we found insufficient evidence of a practice during the review, or when we determined that there were significant weaknesses in BLM’s execution of the key practice.

To address our second objective, we interviewed officials from the System Coordination Office, whose main responsibility it is to oversee and ensure that BLM’s IT investment management process is implemented and followed; the chief information officer; and other national ITIB members to determine efforts undertaken to improve IT investment management processes. We also reviewed an improvement plan developed about 3 years ago based on strengths and weaknesses of BLM’s IT investment management process at that time, and the results of the comprehensive IT management assessment BLM officials stated they plan to use as a basis for an integrated plan for improving IT investment management and other IT management areas.

We conducted our work at BLM Headquarters in Washington, D.C., from March through July 2003, in accordance with generally accepted government auditing standards.

# Comments from the Bureau of Land Management



## United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
Washington, D.C. 20240  
<http://www.blm.gov>

In Reply Refer To:  
1280 (500)

**AUG 28 2003**

Mr. Lester Diamond  
Assistant Director  
Information Technology Team  
U.S. General Accounting Office  
441 G Street, NW, Room 4048  
Washington, D.C. 20548

Dear Mr. Diamond:

By cover letter dated, August 15, 2003, the General Accounting Office (GAO) submitted a draft report entitled "Bureau of Land Management – Plan Needed to Sustain Progress in Establishing IT Investment Management Capabilities (GAO-03-1025)" to the Secretary of the Department of Interior (DOI). The draft report was provided with a request for its review and comment prior to it being issued in final. The Secretary has asked me to respond.

Overall, we are pleased with the report. Its findings and recommendations are a fair and accurate evaluation of the Bureau of Land Management's (BLM) status and progress towards Information Technology (IT) investment management maturity. The BLM has made a concerted effort over the last two years to improve our IT investment and project management capabilities. The BLM is currently preparing a plan to complete the key practices for reaching GAO's ITIM Stage 2. The plan will also identify the specific goals, timeframes, outcomes and needed resources to reach Stage 3.

The BLM's minor edits to report captions, definitions, and narrative clarifications do not affect GAO's overall findings and recommendations. The edits have been submitted under separate cover.

Thank you for the opportunity to review and comment on the draft report.

Sincerely,



Kathleen Clarke  
Director

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