U.S. Department of Energy

# Information Resources Management Strategic Plan

FY 2009 - 2011





















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## MESSAGE FROM THE CHIEF INFORMATION OFFICER

I am pleased to present the Department's FY 2009 - 2011 Information Resources Management (IRM) Strategic Plan. This plan represents a vision for utilizing information management resources to effectively meet the Nation's Energy and National Security challenges.

One of the greatest IRM challenges over the near-term horizon is the rapidly evolving threats to the Department's computing and information resources. The Department of Energy (DOE) has taken significant steps to improve its current cyber security posture by establishing and maintaining robust yet flexible cyber security policies and procedures that identify and rapidly adapt to ever changing threats. The Office of the Chief Information Officer has developed a Cyber Security Revitalization Plan to position the Department to meet both current and future threats to the security of our critical information assets. Cyber security priorities include certification and accreditation of information technology (IT) systems; improved planning, testing, and remediation of system security controls; automated asset inventory and management; appropriate network segmentation; and enhanced cyber security awareness by all employees. By implementing risk-based cyber security policies, the Department can securely protect IT assets while advancing the Department's energy priorities.

This IRM Strategic Plan outlines DOE's IT strategic goals, outcomes, priorities, and the means for accomplishing programmatic goals over the next three years. The IRM Strategic Plan communicates the linkage of IT strategies to the overall Departmental Strategic Plan and, thereby, ensures proper guidance and technological support to accomplish DOE's mission-critical requirements. Through employing risk-based cyber security policies, e-business technologies, enterprise architecture principles, effective portfolio management, and strategic human capital practices, the Department is better positioned to implement effective information resources management processes and address future IT challenges. DOE recognizes the importance of hiring and retaining a skilled workforce and has emphasized the importance of strengthening our human capital assets as a driver for effective organizational change.

This IRM Strategic Plan also continues efforts on the Department's Strategic Priorities for DOE OCIO IT Most Efficient Organization (MEO), IT Functional Accountability, Enterprise Licensing Agreement Programs, and supporting government-wide initiatives documented in the E-Government Strategies and Homeland Security Strategies. By working collaboratively, the Department can both meet its internal program needs and support government-wide goals for improved IT services to citizens.

I believe the vision, goals, priorities, and strategies documented in this IRM Strategic Plan will define the path forward for the IT community to support improved service delivery to stakeholders and make significant contributions to the accomplishment of DOE missions. By effectively utilizing our IT assets to create organizational change, the Department can transform its operations to meet future energy, scientific discovery, and national security goals.

## 1.0 INTRODUCTION

The Chief Information Officer (CIO) at DOE has primary responsibility to ensure that IT is acquired and information resources are managed in a manner consistent with statutory, regulatory, and Departmental requirements and priorities. With this responsibility, the CIO provides information resources management advice and assistance to the Secretary of Energy and to other senior managers. The CIO also coordinates and articulates a shared vision and corporate perspective among the Department's information activities, which permits the CIO to champion Departmental initiatives that effectively manage information and provide for value-added corporate systems. It is in this capacity that the CIO has prepared and now presents the Department's IRM Strategic Plan for FY 2009 - 2011.

Strategic planning is the process by which the Department and the Office of the Chief Information Officer (OCIO) determine its future direction, identifies the resources and transformational agenda needed to meet that direction and establishes an accountability system by which to manage progress towards that direction. The goal of the IRM Strategic Plan is to improve the operation of the Department's missions and programs. The Department's IRM Strategic Plan will shape the redesign of work processes and guide the development and maintenance of the Department's enterprise architecture (EA) and capital planning and investment control processes (CPIC). In this regard, the IRM Strategic Plan builds on operational and tactical plans of each OCIO element ranging from IT human resources to E-Government. The IRM Strategic Plan describes what will be done over the next three years, while the tactical and operational plans execute the strategy and describe how these goals will be accomplished. Together, the OCIO can use these plans to ensure that Departmental efforts are meeting the strategic goals, objectives, and outcomes, necessary to support the DOE mission and functions.

In addition to this internal focus, DOE recognizes the need to integrate external policy directions as defined by Congress and the Administration into its IT initiatives. The DOE IRM Strategic Plan responds to the Government Performance Results Act of 1993, the E-Government Act of 2002, the Federal Information Security Management Act (FISMA) of 2002, and other Departmental and legislative requirements.

The scope of the IRM Strategic Plan addresses information resource functions to include, but not limited to: Business and Information Management, IT Human Resource Management, EA, CPIC, Cyber Security, IT Support Services and E-Government. The scope also includes all DOE locations: Federal sites, laboratories, and management and operational facilities.

The OCIO recognizes that the success of an organization goes beyond just identifying an IT strategy. The strategy must be envisioned, accepted, aligned, communicated and governed in such a manner that it supports the mission and strategic themes of the Department. A strategy-focused organization links IT strategy to the overall DOE strategic themes and internal processes delivering value to the organization. The following sections of this Strategic Plan identify the primary IT strategic goals and objectives for the Department and the means for achieving these goals.

## 2.0 IT STRATEGY OVERVIEW

### 2.1 Department of Energy Mission

The Department of Energy's overarching mission is "Discovering the solutions to power and secure America's future." The Department has five strategic themes which serve as a roadmap to help achieve its mission:

- Energy Security: Promoting America's energy security through reliable, clean, and affordable energy
- Nuclear Security: Ensuring America's nuclear security
- Scientific Discovery and Innovation: Strengthening U.S. scientific discovery, economic competitiveness, and improving quality of life through innovations in science and technology
- Environmental Responsibility: Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production

- Management Excellence: Enabling the mission through sound management

## 2.2 Department of Energy Information Technology Vision

DOE's IT Vision is to "enable improved DOE mission accomplishment through effective use of information technology, at lowest cost, while strengthening the protection of systems and data."

DOE continues to promote effective Departmental operations by encouraging performance-based management and where appropriate, facilitates the restructuring of mission and business related processes before making significant IT investments to improve the performance and cost-effectiveness of the Department's information management activities. In addition, the CIO's Office of Cyber Security is implementing and maintaining a comprehensive cyber security program that is effective across its diverse missions and large array of interdependent networks and information systems.

## 2.3 Strategic Goals Overview

DOE views Information Resource Management as a critical component in achieving the Department's Mission and Strategic Themes, E-Government strategies, and Homeland Security strategies. The OCIO has carefully selected IRM Strategic Goals and Objectives that drive achievement in these areas.

**Figure 1 — Information Resources Management Strategic Goals**

| | |
|---|---|
| **Strategic Goal 1: Revitalize Cyber Security across the Department of Energy** | |
| Objective 1: | Update Cyber Security Technical and Management Requirements for Departmental Elements that improve the baseline for securing the Department's systems and data |
| Objective 2: | Improve Compliance with FISMA |
| Objective 3: | Deploy an automated system to support standard approaches to certification and accreditation and to maintain an up to date inventory of IT assets |
| **Strategic Goal 2: Use Information Technology to improve mission accomplishment, at lowest cost.** | |
| Objective 1: | Create an environment that enables the Department to use technology to continuously improve its processes |
| Objective 2: | Support the President's E-Government initiatives |
| Objective 3: | Implement the Most Efficient Organization and create Enterprise Licensing Agreements to consolidate services and save the Department and taxpayer money |
| Objective 4: | Develop and maintain an Enterprise Architecture and Capital Planning process that allows the Department's Senior Leaders to make informed decisions when managing Information Technology |
| Objective 5: | Recruit, develop, and retain the best and brightest people for the Department's Information Technology workforce while ensuring effective management of IT Projects to successfully maximize the government's investment. |

In accordance with OMB Circular A-130, DOE's IRM Strategic Plan supports the Department's strategic goals and direction. The Information Resources Management activities enable the Department's mission and ensure that IRM decisions are integrated with organizational planning, budget, procurement, financial management, human resources management, and program management.

Information technology is key to the Department's success in meeting these strategic goals. It is a vital organizational asset that must be strategically deployed and utilized and an integral part of mission accomplishment.

In FY 2007, the Department developed a new Strategic Plan to meet the Nation's Energy and National Security challenges into the future. The DOE Strategic Plan provides direction for the next 25 years by "discovering the solutions to power and secure America's future." The Department has further integrated the Strategic Plan's long-term and intermediate goals into the annual performance budget. This performance structure establishes a concrete link between the Strategic Plan's themes and the Department's annual budget, performance metrics, and performance reporting. Table 1 below illustrates the strategic themes for each of the five business lines to which the performance structure ultimately aligns.

**Table 1 — Alignment of DOE Business Lines and Strategic Goals**

| DOE Strategic Themes | |
|---|---|
| Energy Security | Promoting America's energy security through reliable, clean, and affordable energy |
| Nuclear Security | Ensuring America's nuclear security |
| Scientific Discovery and Innovation | Strengthening U.S. scientific discovery, economic competitiveness, and improving quality of life through innovations in science and technology |
| Environmental Responsibility | Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production |
| Management Excellence | Enabling the mission through sound management |

Table 2 below displays the alignment of the IRM Strategic goals to the Departments five strategic themes. The IRM goals are either directly or indirectly aligned to each strategic theme. A direct alignment is based on a clear linkage between the contribution of IRM goals to the accomplishment of a mission, and an indirect alignment (noted as crosscutting) reflects linkages where IRM goals create the technological or information sharing environment within which a strategic mission or goal is accomplished.

**Table 2 — DOE IRM Strategic Goals to DOE's Strategic Themes**

| IRM Strategic Goal | DOE Business Line Strategic Themes | | | | |
|---|---|---|---|---|---|
| | Energy Security | Nuclear Security | Scientific Discovery and Innovation | Environmental Responsibility | Management Excellence |
| Revitalize Cyber Security across the Department of Energy | Direct | Direct | Direct | Direct | Direct |
| Use Information Technology to improve DOE mission accomplishment, at lowest cost | Direct/ Crosscutting | Direct/ Crosscutting | Direct/ Crosscutting | Direct/ Crosscutting | Direct |

### 2.4 Strategic IT Priorities

This section provides a detailed list of the OCIO's Strategic Priorities that improve IT management and serve as a sound basis to build upon while aligning with the overall mission, strategies and goals.

- Improve DOE cyber security, including issuance of a new Departmental Order, a new Manual for Classified Cyber Security, new cyber security guidance/requirements documents covering at least ten technical areas, development of a new cyber security architecture, completing the cyber security inventory of DOE systems, improving the DOE-wide cyber incident handling process, and completing improvement of the quality of certification and accreditation processes DOE-wide
- Implement the DOE IT MEO in a way that best supports its goals, e.g. reduce costs
- Implement IT functional accountability in a way that makes sense
- Fully implement the Department-wide software enterprise licensing agreement program
- Move ahead with HSPD-12 implementation in a way that creates a solid basis for future benefits
- Improve DOE E-Government management, moving ahead with DOE goals while being a government-wide team player
- Further improve the DOE IT capital investment control process, including management of I-MANAGE and other large projects

## 3.0 IRM OUTLOOK

This section provides a detailed background on how DOE utilizes the IRM Strategic Plan to ensure its IRM decisions, management responsibilities, and accountability are positioned to meet the Department's present and future needs.

### 3.1 Identify Target Opportunities

As a supplement to IRM strategic planning, DOE developed an Enterprise Architecture (EA) framework that identifies opportunities for management to leverage both strategic and operational IRM planning activities. Through utilization of its EA, DOE can identify and analyze "points of entry" (e.g., number of investments supporting a business line/sub function) that can result in recommendations for achieving long-term savings and increased efficiency. Moreover, the EA is aligned with the annual budget cycle and provides for updates to further define the baseline and target architectures based on decisions made in the IT investment portfolio selection process (part of IT CPIC). The framework operates to reduce performance gaps in the overall portfolio by retiring obsolete systems, developing E-Government solutions that incorporate greater quality and access, and supporting the development of reusable application components.

The Department's EA and IRM strategic planning guide operational activities and decision making through baseline and target oversight; performance measurement tracking; and the integration with other Departmental processes. As the section below illustrates, these parallel and integrated processes enable the Department to best select, align, and maximize its IT portfolio to fulfill its mission.

### 3.2 IT Investment Portfolio

IRM strategic planning and the establishment of EA targets precedes the selection of IT investments to ensure that annual investments and operations fully support organizational goals and missions. The annual selection of IT investments is completed in coordination with the budget-formulation process under the direction of the CIO and the Chief Financial Officer (CFO) to ensure that IT investment needs and requests are fully integrated into DOE's annual budget request.

Each year, the Department selects IT investments that meet mission needs, close performance gaps, align with EA targets, and align with external drivers such as Government-wide E-Government initiatives. Figure 2 and Table 3 show the breakout of DOE's BY 2010 IT portfolio based on DOE strategic themes. In addition, Appendix A highlights some specific CIO priorities and strategic initiatives.

**Figure 2 — DOE's BY 2010 IT Portfolio Breakout by Strategic Themes**

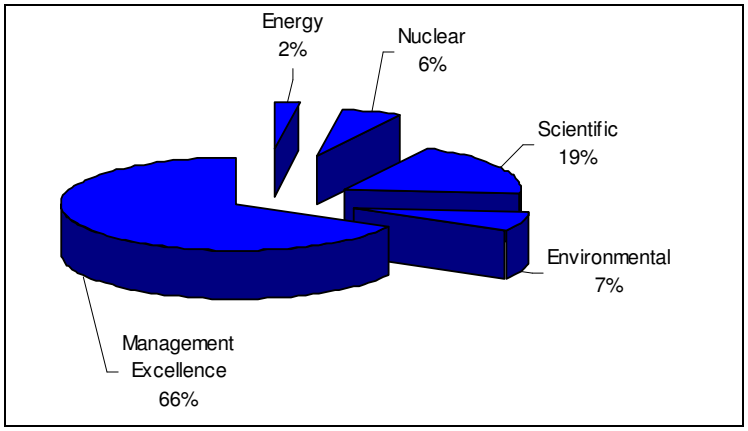



**Table 3 — DOE Total IT Investments BY 2010 (in Millions)**

| Strategic Theme | Total Portfolio | |
|---|---|---|
| | Dollars | Percentage |
| **Energy** | $49.116 | 2% |
| **Nuclear** | $121.053 | 6% |
| **Scientific** | $413.758 | 19% |
| **Environmental** | $143.120 | 7% |
| **Management Excellence** | $1463.126 | 66% |
| Total: | $2,190.173 | |

*Derived from the Department's initial BY 2010 OMB Exhibit 53 submission, September 2008

As indicated in Table 3, 100 percent of DOE's BY 2010 total Portfolio can be directly attributed to the five strategic themes. The DOE IT Portfolio breakdown demonstrates the Agencies ability to meet the needs of individual strategic goals while leveraging opportunities across DOE to increase efficiency and lower costs.

DOE's IT Portfolio is characterized by a wide array of initiatives ranging in size and sophistication, all of which are aimed at improving public service, operational efficiency, and mission accomplishment. The success of an IT initiative and the Department's portfolio depends on end-to-end management that ensures that DOE accomplishes its mission and goals while actively pursuing the Federal Government's strategic agenda.

### 3.3 Organization of the Department

The mission of the Department is accomplished through 21 laboratories and technology centers, 4 Power Marketing Administrations, 8 Program Offices, 12 Staff Offices, operations and field organizations located in 13 locations across the United States, the Energy Information Administration, and the National Nuclear Security Administration. Supporting these entities are over 100,000 federal and contractor employees.

DOE's organizational structure is decentralized and aligned with its multiple missions. Department senior management provides strategic plans, IRM strategic plans, EA targets, and standards to Program Offices to guide program planning, decision making, and investing. Program Officials are responsible for acquiring and implementing approved programs and investments to achieve performance goals. In this way, the

Department ensures that within the decentralized organizational structure, all decisions and activities continue to support the overall strategic goals of the organization.

The CIO's role is to provide advice and assistance to the Secretary of Energy and other senior managers to ensure that IT is acquired and information resources are managed in a manner that implements the policies and procedures of relevant legislation. Within the structure, the Department has established a strategic plan which guides program, mission and activities. The CIO has established this companion document, the IRM Strategic Plan, to guide IT acquisition, operations and management. As a result, IT is fully aligned to support program, missions, and activities.

The IRM Strategic Plan also details a vision of how DOE will use IT to ensure the effective management and delivery of high-quality information to be used and shared in a secure and cost-effective manner. The strategy includes goals, objectives, and outcomes to support mission accomplishment, close performance gaps, and establish a solid infrastructure foundation for the Department. The following sections detail the IRM strategy for the Department.

## 4.0 IRM STRATEGIC GOALS

### 4.1 Goal 1: Revitalize cyber security across the Department of Energy

The Department has taken significant steps to improve the current state of Cyber Security within the enterprise. The first step in this effort involved developing a plan for the revitalization of the Department's cyber security program. This plan was signed by the Deputy Secretary on February, 2006, and establishes a federated approach to implementing cyber security where the Department's Under Secretaries are responsible for the implementation of cyber security in their organizations under the leadership of the Department Chief Information Officer. The Plan created a foundation to more comprehensively fulfill the requirements of law in a risk-based, cost-effective, and mission enabling way. The plan described a maturing program based on past lessons learned and recognition that certain specific issues have a higher and more immediate impact on the security posture of the Department. The Program is composed of several components, including planning, policy, management and technology, services, and performance management, as described below. These components are annually reviewed and updated as needed to respond to changes in information technologies and the evolution of the cyber threats.

*Objective 1: Update Cyber Security Technical and Management Requirements for Departmental Elements that improve the baseline for securing the Department's systems and data*

DOE is focusing on high-priority activities that will have a significant impact over the next fiscal year such as certification and accreditation.

**Outcomes:**

- Improved continuity/contingency planning, testing and remediation
- Continuous compliance reviews and testing of system security controls
- A common approach to operating system and application software configuration controls through an integrated asset management program
- Standards for cyber security enterprise architecture
- Cyber security early warning and incident response, recovery and reconstitution of services support
- Improved identification, categorization and prioritization of critical infrastructure assets and other responsibilities assigned by HSPD 7
- Implementation and validation of interconnection agreements
- Built-in security and privacy in 100% of IT investments
- Certification and Accreditation (C&A) of all operational systems
    - Continue, as well as improve, the monitoring of all C&A processes to ensure full compliance that systems are evaluated and meet the minimal security-control requirements for their established level of sensitivity and risk

**Performance Measures:**

- Develop and issue requirements based on updated National Institute of Standards and Technology (NIST) Special Publications
- Conduct Compliance Reviews of all Under Secretary cyber security programs to validate proper implementation of DOE cyber security policies and guidance

*Objective 2: Improve Compliance with FISMA*

The OCIO will continue to provide Department-wide cyber security guidance and outreach to promote a higher level understanding and acceptance of requirements and to assist Senior DOE Management in program implementation.

**Outcomes:**

- Provide a comprehensive set of cyber security performance metrics across the Department
- Enable Program Offices and contractor-run facilities to improve their FISMA annual grades
  - Increased oversight and monitoring of FISMA compliance requirements within DOE
- Standardized cyber security performance requirements that incorporate government requirements and industry best practices
- Institute a review cycle for statutory and regulatory requirements for new polices and guidance to ensure continual update to address changing requirements.
- Identify and proliferate common cyber security controls and measures
  - Rules of behavior
  - Awareness and Training program
  - Risk-management-based certification and accreditation
  - Contingency planning, testing, and updates
  - System categorization (sensitivity and criticality)

**Performance Measures:**

- Update and issue Departmental Threat Statement and Risk Assessment as the foundations for the Department's cyber security program
- Expanded and improved formal Awareness and Training program to create higher level end-user awareness across the broader DOE community. The program will include measures for verifying the effectiveness of education related to social engineering and common threats targeted at DOE personnel

*Objective 3: Deploy an automated system to support standard approaches to certification and accreditation and to maintain an up to date inventory of IT assets*

DOE continues to improve its situational awareness through continuous monitoring and incident management. The automated system will provide near-real time inventory and enable automated generation and monitoring of certification and accreditation packages.

**Outcomes:**

- Establish and implement minimum baseline security configuration standards
  - Develop platform-specific security configuration standards to ensure implementation of appropriate security controls prior to systems being placed in production
  - Ensure implementation of security controls to protect DOE information commensurate with the risk and magnitude of loss from unauthorized activities
- Perform periodic vulnerability assessments to continuously monitor production environments
  - Establish a vulnerability assessment program to effectively monitor DOE information technology systems to detect known, unpatched vulnerabilities

  - Measure effectiveness of the vulnerability remediation activities through ongoing analysis of vulnerability metrics, including the ratio of vulnerabilities to the number of systems scanned
- Formulate vulnerability remediation and tracking efforts to ensure mitigation of identified vulnerabilities
  - Institute mandates for remediation of identified vulnerabilities within specified timeframes, dependent upon the risk and magnitude of harm from compromise
  - Track remediation of vulnerabilities, and take appropriate action for systems found to be out of compliance with remediation requirements

**Performance Measures:**

The Department will implement the second phase of the automated tools for identifying and monitoring information system assets and network boundaries to ensure the agency has a demonstrable process for maintaining a 100 percent information systems inventory.

### 4.2 Goal 2: Use information technology to improve DOE mission accomplishment, at lowest cost

The overarching mission of DOE is "discovering the solutions to power and secure America's future." Within this context this IRM strategic goal becomes an enabler to achieving DOE's mission. The Department will successfully realize this goal primarily through leveraging E-Government opportunities and by development of the Department's E-Government Strategy. DOE's E-Government Strategy directly supports the Federal Lines of Business initiative and the Department's core mission requirements by evaluating and applying new information technologies and simplifying access to energy-related Government information and services.

Information Technology is also a key supporting element in accomplishing DOE goals. As such, it must be acquired, managed, and used in a way that maximizes its efficiency and effectiveness in supporting missions. To achieve this, the OCIO has established an IT governance structure and process that enables improved mission accomplishment at lowest cost, through the use of Information Technology. This governance structure includes a Departmental IT capital planning and investment control process, EA program, IT project and asset management processes, and IT acquisition framework to achieve efficiency. Descriptions of objectives, strategies, and outcomes for the IT governance program are described below.

*Objective 1: Create an environment that enables the Department to use technology to continuously improve its process*

DOE strives to use information technology as a key enabling mission service for clear and consistent information describing Department-wide IT policy objectives and cross-Departmental initiatives, such as mission program focus, E-Government and Line of Business (LoB) initiatives.

**Outcomes:**

- Provide support for Department-wide integration initiatives
  - Improve cross-collaboration among Department integration efforts including the Office of Science, NNSA, and other Program/Staff Offices
  - Improve business performance from integrating with cross-Department efforts, such as Functional Accountability and Cyber Security Revitalization
  - Improve decision-making by providing comprehensive view of current and future capabilities

**Performance Measures:**

- Information products and services are in line with the core mission priorities through the strategic portfolio review process
- Department-wide collaboration initiatives are linked to the DOE transition plan using the DOE EA Framework

*Objective 2: Support the President's E-Government Initiatives*

DOE continues to support the President's E-Government Initiatives. DOE is an active participant in 19 of 24 of these initiatives and is involved in the nine Federal Lines of Business (LoB) initiatives. DOE is developing an enterprise IT acquisition framework that will govern Department IT acquisitions in accordance with the government-wide SmartBUY program. DOE recognizes that active partnership in these important government-wide initiatives will result in government cost reductions, improved services to citizens, business-process and technology standardization, and elimination of duplicative systems.

Through the LoB initiatives, partner agencies will use EA based principles and best practices, proven through the E-Government initiatives and Federal Enterprise Architecture (FEA), to implement common solutions. The standardization and consolidation of each agency's systems will decrease redundancy while driving cost savings through reduced full-time equivalent requirements, system development and operation cost reductions, and process standardization. The end result of the LoB efforts will be to save taxpayer dollars, reduce administrative burdens, and significantly improve information management services across the government.

**Outcomes:**

- Reduced cost of government operations
  - Continue active partnership in the E-Government, Line of Business, and SmartBUY initiatives in order to effectuate cost reductions across the government
  - Identify existing DOE investments that align to government-wide initiatives and implement migration and alignment plans
- Streamlined delivery of services and products to the customer
  - Work with customers and federal agency partners to identify ways to more efficiently provide services and information
- Standardized business processes across Agencies
  - Collaborate with similar mission agencies to develop joint efforts and promote best practices across the Federal Government
  - Continue to transition to Internet Protocol Version 6 (IPv6) capable technology

**Performance Measures:**

- Deliver effective project management and cost saving controls for DOE E-Government initiatives

*Objective 3: Implement the Most Efficient Organization and create Enterprise Licensing Agreements to consolidate services and save the Department and taxpayer money*

DOE continues to experience significant success with its internal E-Government initiatives. In a continual effort to become more effective and efficient, the Department has integrated E-Government efforts with the Department's EA effort. The EA program will institutionalize semi-annual strategic portfolio reviews to ensure that the Department's information technology investments are in line with its strategic goals and missions.

As part of an overall IT acquisition framework, DOE seeks to leverage cost efficiencies achievable through consolidation of like requirements and by leveraging economies of scale from enterprise-wide licensing agreements. Department-wide acquisition for widely used commercial software across the enterprise, otherwise known as enterprise licensing, consolidates IT Commercial Off the Shelf (COTS) software

contracts. Integrating and building on existing capabilities within the Department, the Enterprise License Agreement (ELA) program will allow the Department to develop and enforce policies and procedures supporting the identification, acquisition, oversight and compliance of enterprise software agreements. The ELA program supports and complies with the Energy-Wide Strategic Sourcing (EWSS) program, Federal SmartBUY initiative, Clinger-Cohen, and other legislative and DOE policies.

DOE achieves contract administration efficiencies by reducing multiple contracts to one. DOE negotiates a better price by leveraging the Department's total buying power thereby reducing total cost of ownership and cost for each individual user. By implementing these buying practices, acquisitions and support costs will be reduced, leading to the increase use of standards-compliant software.

**Outcomes:**

- Realize the operational efficiencies and process improvements by leveraging new technologies
- Maximize buying power and reduce total cost of IT ownership by attaining optimal pricing through the aggregation of software requirements
- Streamline Acquisition to increase IT contract administration efficiencies through consolidation opportunities of legacy IT contracts into enterprise license agreements and single contract vehicles

**Performance Measures:**

- Establish a Change Control function to provide the catalyst for E-Government change reviews and configuration changes
- Comply with the Government Paperwork Elimination Act (GPEA) by making data collections and disseminations enabled electronically
- Develop policy and guidance defining an enterprise license inventory process enabling DOE to track software licenses and optimize license utilization across the enterprise
- Develop and implement a formal policy through the Integrated Project Team (IPT) to ensure that software purchases are coordinated between Headquarters and field sites, to include SmartBuy and enterprise license agreements with vendors
- Establishment of a central source of information to allow sites and programs to identify the best available contracts or agreements
- Establish an ELA IPT that includes members of the program offices, the Integrated Contractor Purchasing Team (ICPT) and members of other groups (e.g., IT Council)

*Objective 4: Develop and maintain an integrated Enterprise Architecture and Capital Planning process that allows the Department's Senior Leaders to make informed decisions when managing Information Technology*

The Department views CPIC and IT portfolio management as a key tool in ensuring IT funding has the maximum impact on DOE mission accomplishment. Implementing a comprehensive CPIC process ensures that the Department's portfolio of IT investments fully address DOE's business needs and strategies. A strong portfolio management process enables DOE to achieve the expected benefits in accordance with accurate and complete cost, schedule, technical, and performance baselines. Ensuring that DOE has the right mix of IT investments, that those investments are delivering real results for mission support, and that the portfolio is regularly reviewed for currency further enhances the OCIO's ability to deliver maximum value to the DOE mission. Monitoring operational investment performance is as important to ensure success as selecting the right portfolio of projects or investments. Investments are monitored over time and resources are shifted to investments that perform best, keeping in mind the established investment rules and parameters with regard to risks and returns. DOE recognizes that effective IT portfolio management practices result in significant savings of Departmental annual IT budgets, enhanced efficiency, and increased mission alignment.

To date, the Department has made significant progress in enhancing the CPIC process through the use of scorecards at the investment portfolio level and at the Program level. In addition, improved linkages

between EA and IT investments and the annual budget process have been implemented in partnership with the Office of the CFO. To further leverage these accomplishments, DOE is continuing to review its IT processes in an effort to identify additional opportunities for alignment and integration. The Department envisions a CPIC process that provides decision-making bodies with the appropriate information to ensure that optimal decisions are made with regard to the selection and maintenance of the Department's IT portfolio.

The architecture has been developed in a manner that allows each completed phase to build momentum for successive efforts, heralding architecture as a business transformation and IT modernization process to garner support for the EA practice. DOE continues to develop and mature its EA through an updated EA Concept of Operations, EA Program Plan, and an EA Work Plan. Additionally, the DOE EA extends to the programs' core mission areas through the integration of Cross Cutting Segment Architectures. These efforts will add value to the core mission areas and accelerate adoption of cross agency initiatives for shared services across common mission functions, such as Geospatial, IT Infrastructure, and Financial Services. These EA products serve as a framework for managing investments and developing recommendations for improving DOE's IT investment portfolio across the enterprise.

The Chief Architect chairs a Department-wide Architecture Review Board (ARB) and Enterprise Architecture Working Group (EAWG) to facilitate collaboration across the Department and to collectively define and pursue an EA direction that provides value to all stakeholders at the Department of Energy.

**Outcomes:**

- Every major IT investment is delivering mission-support results by documenting closure of performance gaps facilitated by IT
- DOE has the right mix of IT investments, with each major investment directly supporting one or more of the Department's missions
  - Review IT portfolio against DOE strategic goals; analyze Business Reference Model (BRM) mappings against DOE strategic goals
  - Implement IRM Strategic Plan with "line-of-sight" linkages to DOE Strategic Plan
  - Ensure IT Investment funding is appropriately aligned to DOE strategic goals and priorities
  - Ensure that all major IT investments are reviewed and that data relevant to annual IT selection is provided to the Corporate Review Budget (CRB) Board
- The portfolio is regularly reviewed for opportunities to improve performance, reduce costs, eliminate redundancies, and/or enhance collaboration
  - Conduct operational analysis on all Operations and Maintenance (O&M) investments and Earned Value on Development Modernization and Enhancement
  - Analyze results against the current Modernization Blueprint
  - Work with the Program Offices and the CFO to identify opportunities to increase value and performance by retiring and replacing aging systems
  - Work in partnership with Program Offices and the CFO to identify, align, and redirect funding for investments targeted for migration to corporate or Government-wide E-Government initiatives
- Support for Department-wide integration initiatives
  - Collaborate with the Cyber Security Revitalization efforts to ensure DOE security priorities are in sync with the architecture
  - Improve cross-collaboration among Department integration efforts including the Office of Science, National Nuclear Security Administration (NNSA), and other Program/Staff Offices
  - Improve business performance by integrating with cross-Department EA efforts
  - Demonstrate cost savings by eliminating or consolidating duplicative systems and reusing services
- Enhance investment decision making
  - Utilize EA planning documents and strategic framework to guide IT investments decision-making and develop recommendations for improving the IT investment portfolio for the Department
  - Improve the CPIC select, control and evaluate process with EA data (stakeholder information)
  - Enhance EA governance processes and improve EA integration with IT investment management
  - Accelerate the adoption to the target state of the enterprise

- Improve mission performance
  - Implement Department-wide EA framework to accelerate the adoption of cross agency initiatives
  - Improve performance of services to mission specific areas and those cross cutting the enterprise and the federal government
  - Align resources improving business performance and agency core mission achievement
  - Clearly define information items; their hierarchies and relationships, outputs, and technology inputs

**Performance Measures:**

- All major IT investments support a documented performance gap, and are set to deliver results towards closing that gap
- Actual results are within 10 percent of planned improvement
- Incorporate architecture-based decision making at the business-level to ensure that systems and infrastructure constantly evolve to exploit appropriate technology advances to best meet mission needs
- Maintain a "green" rating from OMB during the annual EA assessment
- Support Investment Business cases through the EA and demonstrate its use in portfolio formulation and approval

*Objective 5: Recruit, develop and retain the best and brightest people for the Department's Information Technology workforce while ensuring effective management of IT Projects to successfully maximize the government's investment*

DOE recognizes the strategic management challenge required to hire and retain a highly skilled IT workforce and is working to address the criticality of strengthening human capital as a driver for organizational effectiveness. The OMB has identified a specific human-capital initiative that is directed toward aligning a professional workforce in support of a Department's mission, goals, and strategies. DOE has developed recruitment requirements to focus efforts on identifying qualified candidates who are easily able to adapt to changes brought about by new technologies. In addition, initiatives have been implemented that focus on maximizing employee performance by instituting development programs and enrichment opportunities that motivate and inspire employees. DOE has already made significant progress in the area of human capital with the implementation of the Corporate Human Resource Information System (CHRIS) and the integration of the DOE Jobs Online application process with the Office of Personnel Management's USAJOBS website.

DOE will continuously strive to maintain a high-performing workforce through enrichment opportunities, comprehensive training programs, leadership development, and an open culture that promotes the sharing of intellectual capital and demonstrates high standards of integrity for employees. Because of competitive sourcing and constantly emerging technologies, a workforce must be maintained that is both easily adaptable and highly skilled in mission critical competencies.

Technology investments provide DOE with the necessary means to achieve its five strategic goals. However, as with any type of investment, the success of IT investments requires thorough planning and effective management throughout the investment life cycle. Currently, the Department evaluates the business cases on their baseline goals each year to ensure that milestones and costs are accurately planned and documented. Subsequent to the evaluation of planned baseline goals, DOE has implemented a quarterly review process that evaluates investments on their ability to achieve the planned cost, schedule, and performance goals that were established in the business cases. This review process is facilitated by the OCIO, and the Department's IT Council is responsible for the final investment evaluations each quarter.

DOE will continue to mature its methodologies for ensuring effective IT project performance by implementing standardized processes for developing and evaluating baseline goals for investments, as well as enhancing the quarterly review process for assessing the achievement of those goals. This effort will provide more stringent reporting requirements and evaluation criteria to ensure that each Program Office is accurately reporting their baseline goals and performing regular reviews of their investments.

**Outcomes:**

- Adherence to cost, schedule, and performance targets
  - Validate that cost and schedule reporting requirements are met during the business-case reviews that are conducted in support of the annual budget submission process
  - Institutionalize requirements for reporting monthly cost and schedule variances
  - Certify the Earned Value Management (EVM) activities and systems used by major IT investments that meet DOE internal E-Government criteria
- Timely decisions on projects in remediation
  - Provide performance-review data to DOE's senior leaders when investments show continued performance issues for two or more quarters
  - Ensure timely decisions on projects in remediation
  - Verify the validity and the accuracy of EVM data
- Align workforce skills with DOE missions and priorities
  - Implement a new performance-management system to better recognize and reward superior performance ensuring a high-performing and accountable workforce
  - Implement a performance framework for accountability at the employee level

**Performance Measures:**

- Regularly measure cost and schedule actual results and report them to senior management
- Track corrective action strategies into the quarterly review process for IT investments that have demonstrated negative performance trends for two quarters or more.
- Increase investments in human capital development processes like learning & training on new technologies
- Achieve incremental improvements in employee satisfaction and human capital development practices through increased business performance

## APPENDIX A: STRATEGIC IT INITIATIVES

### Consolidated Infrastructure, Office Automation, and Telecommunications (IOA&T) Program

Consolidating Infrastructure, Office Automation and Telecommunications provides the underpinnings required for DOE to perform its most basic business functions. Neither business activities nor the mission functions can operate effectively without efficient and cost effective infrastructure, office automation, and telecommunications. The goal of the DOE Consolidated Infrastructure Program is to successfully implement and manage all of its underlying projects and contribute to the overall achievement of the Department's mission goals.

**Planned Outcomes**

- Coordinate the management of IOA&T through a Department-wide process.
- Minimize the costs of operations and allow program offices to spend more time focused on mission.
- Meet the needs of end users while minimizing support and maintenance costs.
- Improve cyber security by enabling unified security patches and virus protection through the standardization of platforms and applications.
- Reduce trouble resolution time through use of automated tools (remote control, software distribution, management of desktops and infrastructure).

DOE's Consolidated Infrastructure Program has been historically defined by six service lines: telecommunications and networks; application and data hosting/housing; office automation; telephony; enterprise collaboration service; and cyber security. Current FY 2008 guidance from OMB's IT Infrastructure Line of Business further consolidates these service lines into three areas: The service lines provide the necessary foundation across all the Business Lines to facilitate the achievement of the Department's mission goals and objectives. Consolidating relevant IT investments will create a consistent network infrastructure supporting collaboration across the DOE sites. The sharing of resources across sites allows for more efficient use of human capital and more effective sharing of resources across the enterprise.

### Geospatial Science Program

DOE has chartered a Geospatial Science Program (GSP), Tri-Chaired by the Office of Science, Office of Environmental Management, and the National Nuclear Security Administration to "coordinate and optimize [DOE's] investments in Geospatial Science and technology as they support the core missions of the Department". The Office of the CIO provides technical, operational, and administrative support to the GSP to implement the priority activities as directed by the Tri-Chair members.

The GSP developed a Geospatial Segment Architecture as part of the Department's Enterprise Architecture submission to OMB. The Segment provided a baseline assessment and road-map to the 'To-Be' Geospatial Architecture for DOE. The submission provided the framework for the six architectural layers (e.g. Business, Performance, Data, Application, Technology and Governance) that comprise the Geospatial Science Program at the Department of Energy.

**Priority Initiatives**

- Identification of geospatial services and business processes performed across the Department.
- Define business requirements for standardized geospatial facility / real property data.
- Establish DOE National Laboratories as "*Geospatial Centers of Excellence*".
- Assess technical requirements to store, distribute, and archive geospatial facility / real property data.
- Assess technical requirements to provide centrally managed redundant data access.
- Contribute to the OMB Geospatial Line of Business and Federal Geographic Data Committee for inter-agency collaboration.

The DOE Geospatial Science Program has been instrumental in contributing to the OMB Geospatial Line of Business (GLoB) initiative which is intended to, "establish a more coordinated approach to producing, maintaining, and using geospatial data and services." The Department will continue to work with OMB and the Federal Geographic Data Committee (FGDC) to implement the Geospatial Common Solution and Technical Architecture as a result of the GLoB.

## Homeland Security Presidential Directive 12

This investment brings the Department in compliance with Homeland Security Presidential Directive 12. The initiative provides an enterprise standards-based authentication and authorization infrastructure that offers secure, seamless business transactions and information exchange within DOE and across many disparate agencies and organizations. The objective is to improve DOE's business processes using products that enable DOE to create a solid basis for future benefits.

The program will reduce existing logical and physical security vulnerabilities and mitigate risks to establish the prerequisite level of security for critical enterprise business functions. Both the technology solutions and ongoing support provided by the initiative will enable DOE to ensure that system users are who they claim to be (authentication), allow effective use of digital signatures (data integrity and accountability), and restrict access to appropriately authorized users (access control).

**Planned Outcomes**

- Provide a standardized DOE ID Card, compliant with HSPD 12 and capable of supporting physical and logical access requirements such as cryptographic storage of digital credentials, integrated standards-based building proximity support, and a printed format that complies with federal ID card requirements.
- Enhance a public key infrastructure solution that complies with federal standards, and supports DOE requirements for confidentiality, integrity and authenticity.
- Implement an Identity and Access Management solution that serves as the basis of a common security infrastructure that can support diverse systems.

## Spectrum Management

Continued support of the President's Spectrum Policy Initiative (SPI) has provided the Department with a solid foundation for continuing to enhance its spectrum management processes. Responding to the November 30, 2004, Presidential Determination, the latest step in the SPI, ensures that DOE continues to evaluate and improve its methods of efficiently and effectively managing the way the Department uses spectrum. DOE also recognizes the importance of contributions to the SPI, which will culminate in a national spectrum plan that will facilitate national and homeland security, foster economic growth, and effectively support vital U.S. spectrum needs.

In response to the Presidential Determination, DOE is evaluating its current spectrum management processes and developing the Department's Spectrum Management vision, mission, and goals. These strategic planning elements will enable DOE to address future spectrum requirements for future technologies or services; the planned uses of new technologies or expanded services requiring spectrum; and suggested spectrum efficient approaches to meet identified spectrum requirements. Examining the planned uses for new and future technologies allows DOE to incorporate spectrum resources into the EA, further enhancing that framework. The identification of DOE spectrum requirements will be organized around DOE's LOB structure to provide a more organized and holistic approach to the spectrum management process regarding resource allocation and future investments.

**Planned Outcomes**

- Respond to the Presidential Determination and support the President's Spectrum Policy initiative.
- Improve spectrum management processes.
  - Develop Vision, Mission and Goals.
  - Identify Future Requirements.

## APPENDIX B: DOE E-GOVERNMENT PARTICIPATION

*DOE Participation in Inter-Agency Initiatives and Federal Lines of Business*

| Inter-Agency Initiatives |
|---|
| GovBenefits.gov |
| Business Gateway |
| e-Rulemaking |
| Grants.gov |
| e-Travel |
| e-Training |
| Enterprise HR Integration |
| Integrated Acquisition Environment (IAE) |
| IAE-Loans and Grants |
| USA Jobs (formerly Recruitment One Stop) |
| e-Authentication |

| Lines of Business Initiatives |
|---|
| Financial Management |
| Grants Management |
| Human Resources Management |
| Budget Formulation & Evaluation |
| Geospatial |
| IT Infrastructure |

*Ongoing Internal DOE E-Government Initiatives*

| Innovative Department of Energy E-Government Applications (IDEA) |
|---|
| e-Assessment of FOCI Companies |
| e-PMA (Electronic Proposal Management Application) |
| E-Government Department Integrated Security System |
| I-MANAGE |
| DOE COE (Department of Energy Common Operating Environment) |

## APPENDIX C: LIST OF ACRONYMS

| | |
|---|---|
| ARB | Architecture Review Board |
| BRM | Business Reference Model |
| CAM | Corporate Asset Management |
| C&A | Certification and Accreditation |
| CFO | Chief Financial Officer |
| CIO | Chief Information Officer |
| CHRIS | Corporate Human Resource Information System |
| COTS | Commercial Off the Shelf |
| CPIC | Capital Planning and Investment Control |
| CRB | Corporate Review Budget |
| DOE | Department of Energy |
| EA | Enterprise Architecture |
| EATP | Enterprise Architecture Transition Plan |
| EAWG | Enterprise Architecture Working Group |
| ELA | Enterprise License Agreement |
| EVM | Earned Value Management |
| EWSS | Energy-Wide Strategic Sourcing |
| FEA | Federal Enterprise Architecture |
| FGDC | Federal Geographic Data Committee |
| FISMA | Federal Information Security Management Act |
| GLoB | Geospatial Line of Business |
| GPEA | Government Paperwork Elimination Act |
| GSA | General Services Administration |
| GSP | Geospatial Science Program |
| HSPD | Homeland Security Presidential Directive |
| IDEA | Innovative Department of Energy E-Government Applications |
| IOA&T | Infrastructure Office Automation and Telecommunications |
| ICPT | Integrated Contractor Purchasing Team |
| I-MANAGE | Integrated Management Navigation System |
| IPT | Integrated Project Team |
| IPv6 | Internet Protocol Version 6 |
| IRM | Information Resources Management |
| IT | Information Technology |
| LOB | Line of Business |
| NIST | National Institute of Standards and Technology |
| NNSA | National Nuclear Security Administration |
| OCIO | Office of the Chief Information Officer |
| OMB | Office of Management and Budget |
| O&M | Operations and Maintenance |
| POA&M | Plan of Action and Milestones |
| SPI | Spectrum Policy Initiative |
| SSP | Shared Service Provider |