Information Resource Management Strategic Plan

FY 2007 – 2011

February 28, 2006

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Document History

1.0 Introduction

The Chief Information Officer (CIO) at the U.S. Department of Education (ED) has primary responsibility to ensure that Information Technology (IT) is acquired and information resources are managed in a manner consistent with statutory, regulatory, and Departmental requirements and priorities. The CIO provides management advice and assistance to the Secretary of Education and to other senior managers on information resources investment and operations. The CIO also promotes a shared corporate vision about the Department's information activities and provides Departmental services to effectively manage information and to provide value-added enterprise-wide systems and infrastructure.

This Department Information Resource Management (IRM) Strategic Plan for FY 2007 – 2011 describes:

- The relationship between the IT vision and the enterprise business goals and objectives
- The set of value-added IT services delivered or planned to be delivered
- The set of IT management processes and plans for assuring the effective use of IT resources across the Department

While the IRM Strategic Plan serves as the strategic document for the Office of the Chief Information Officer (OCIO), it is built from other more detailed strategic, operational and tactical plans of each information management element through-out the Department ranging from Enterprise Architecture to E-Government. The IRM Strategic Plan describes what will be implemented over the planning horizon, while the other strategic, operational and tactical plans describe how these goals will be accomplished. Together, these plans allow the OCIO to ensure that IT activities are aligned with and supportive of ED's mission and strategic goals.

In addition, ED recognizes the need to integrate external policies and directions as defined by Congress and the Administration into its IRM Strategic Plan. As such, the Department's IRM Strategic Plan responds to the Government Paperwork Elimination Act (GPEA) of 1988, the E-Government Act of 2002, the Clinger-Cohen Act of 1996, the Federal Information Security Management Act (FISMA), Office of Management and Budget (OMB) Circular A-130, The Government Performance Results Act of 1993, the Federal Enterprise Architecture, and the President's Management Agenda (PMA).

This document is the Department's IRM Strategic Plan. OMB Circular A-130 describes the IRM Strategic Plan as a management tool which is "strategic in nature and addresses all information resources management activities of the agency." The CIO is responsible for developing and maintaining the document as required by the Paperwork Reduction Act of 1995 (Public Law 104-13, Chapter 35 of Title 44, U.S. Code). OMB Circular A-11, Section 53, requires that the IRM Strategic Plan be submitted together with the Department's IT budget request.

The IRM Strategic Plan FY2007 – 2011 is being included in the FY2008 IT budget submission. It extends the Department's IT strategy from previous versions of the IRM Strategic Plan in implementing *No Child Left Behind* and, at the same time, captures the recent Organization

Coordinating Structure changes, incorporates the Enterprise Architecture future state vision, and continues to ensure that all current and planned IT investments are clearly aligned to the business mission served.

2.0 IT Strategic Goals

The IRM Strategic Plan describes the three areas of primary IT focus (IT Strategic Goals) for the Department:

- IT Portfolio Alignment – Ensure that the IT investment portfolio supports the Department's business mission objectives.
- IT Shared Services – Orient OCIO as a provider of enterprise common services in addition to basic infrastructure services.
- IT and Information Management – Ensure effectiveness of IT core competencies, fiduciary capabilities and management processes across the Enterprise.

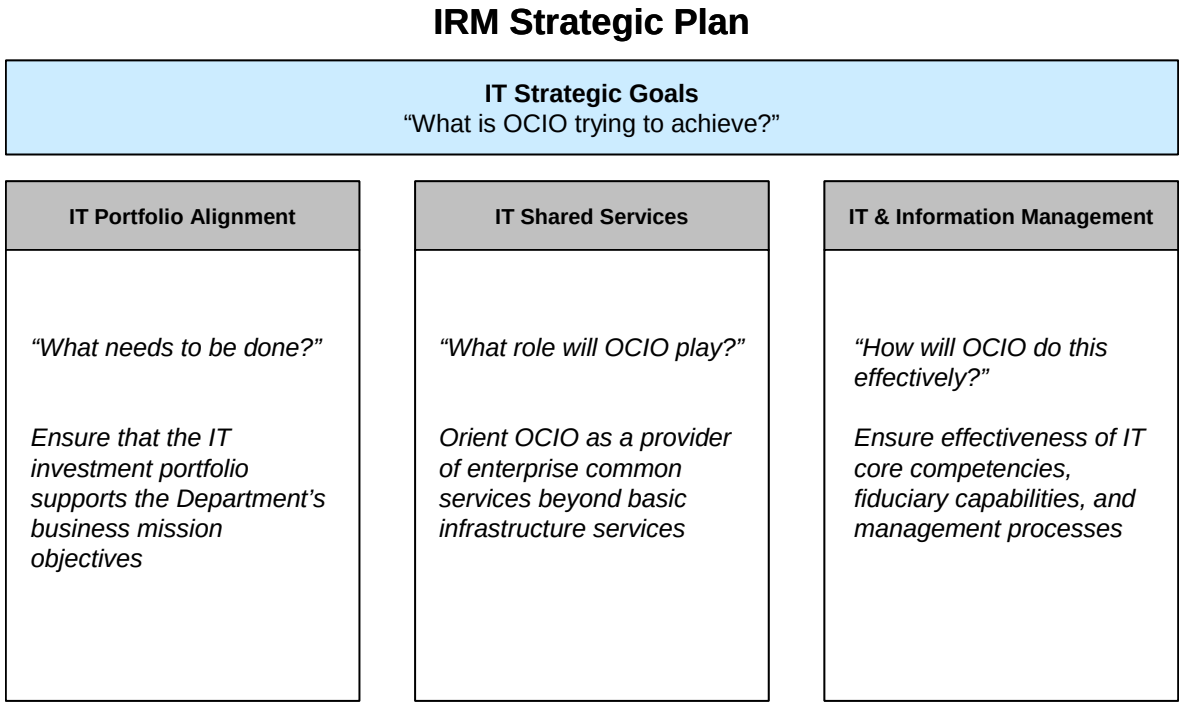


Figure 1. IRM Strategic Plan Articulates the Department's IT Strategic Goals

Section 3 discusses IT Portfolio Alignment. In this section, the top-down and bottom-up alignment between the major IT investment portfolio and the Department's mission Strategic Goals is described using the Fusion Framework to tie together the Department's organizational structure, mission, key programs, business capabilities required, and the Department's 7 Lines of Business.

Section 4 discusses IT Shared Services. In this section, the current and future state of IT Shared Services are described together with the management structure required to expand the OCIO IT Shared Services offering from Technical Infrastructure Services to a broader range of services.

Section 5 discusses IT Management. In this section, the key IT management processes of the Department are described together with a perspective of how these IT management processes are coordinated across the Department.

3.0 Goal 1: IT Portfolio Alignment

The first of the three IRM IT Strategic Goals is to articulate the IT Portfolio Alignment. The purpose of the IT Portfolio Alignment is to clearly align the initiatives in the IT investment portfolio to the business objectives they support. This alignment is depicted using a Fusion Framework.

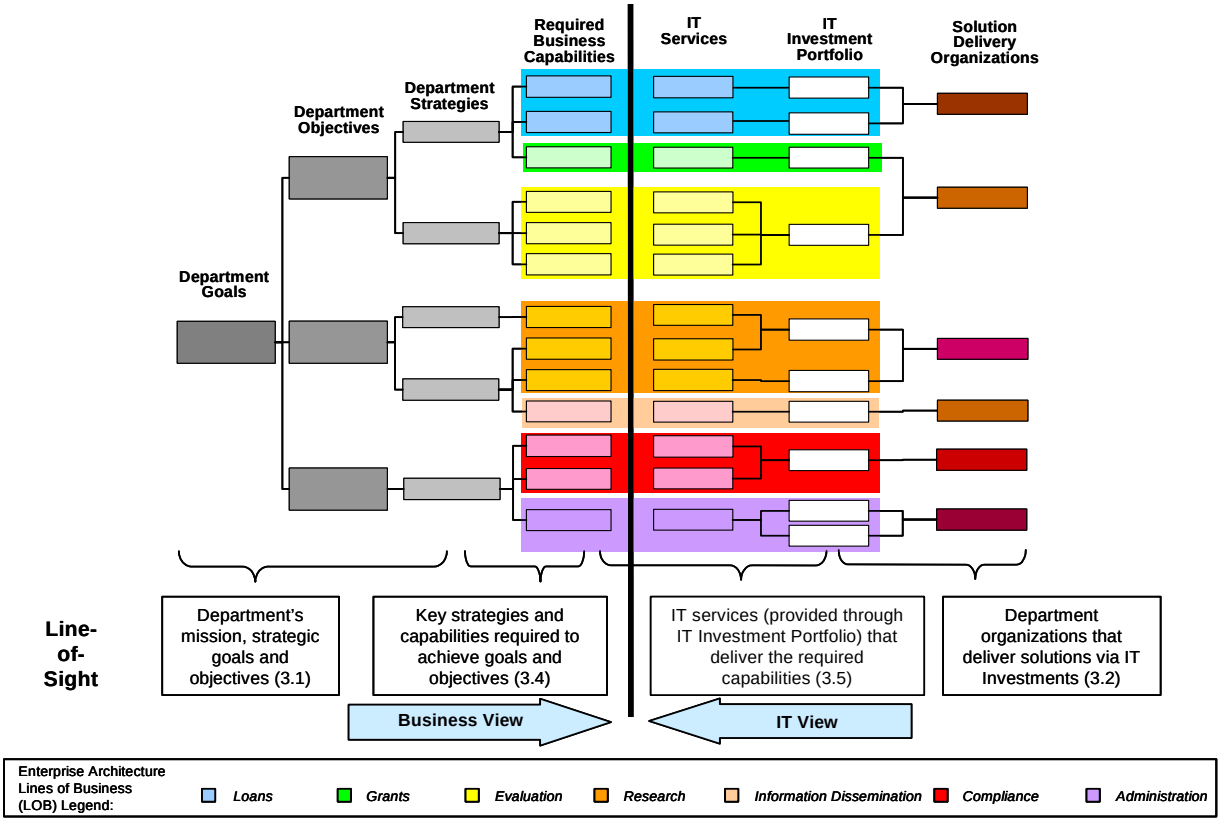
The Fusion Framework establishes the line-of-sight among the following:

- Department's mission, strategic goals and objectives
- Key business capabilities required to achieve the Department's goals and objectives
- Key IT capabilities available or needed to support the business capabilities
- IT investment portfolio that delivers the IT capabilities
- 7 Lines of Business to describe how the IT portfolio provides cross-Program Office functional support
- Department organizational units as customers and providers along the 7 Lines of Businesses

Each aspect of the Fusion Framework is depicted in Figure 2 along with a reference to the subsections within Section 3.0 that provide more detail.

This articulation of the IT Portfolio Alignment allows the Department to link the business objectives to business strategic priorities and requirements. The business requirements needed and the IT systems provided are aligned through system service capabilities. This articulation of the IT Portfolio Alignment provides a line of sight from business goals and objectives through needed service capabilities to the underlying IT initiatives that deliver these capabilities. The value of IT can be assessed in terms of the business results of these underlying IT initiatives as measured by the performance impact of each initiative on the achievement of the corresponding business strategic goals and objectives.

Figure 2. IT Portfolio Alignment – Fusion Framework



3.1 Department's Mission and Strategic Goals

The Department of Education is responsible for fulfilling its mission:

Department of Education Mission

"To ensure equal access to education and to promote education excellence throughout the nation."

The passage of the *No Child Left Behind Act (NCLB)* marks the most significant shift in federal education policy in over 35 years. The Act is a mandate for the transformation of the Department. It demands achievement in return for investments, and it requires a system of performance measures throughout the educational enterprise. This Act, along with other significant legislation in the areas of special education, vocational education, and higher education, are what the Department's Strategic Plan sets out to implement, in partnership with states, local communities, schools, parents, and teachers.

The Department's Strategic Plan 2002-2007[1] embodied Six Department of Education Strategic Goals:

Department of Education Strategic Goals

Goal One: Create a Culture of Achievement
Create a culture of achieve throughout the nation's education system by effectively implementing the president's plan, No Child Left Behind, and by basing all federal education programs on its principles: accountability, flexibility, expanded parental options, and doing what works.

Goal Two: Improve Student Achievement
Improve achievement for all groups of students by putting reading first, expanding high quality mathematics and science teaching, reforming high schools, and boosting teacher and principal quality, thereby closing the achievement gap.

Goal Three: Develop Safe Schools and Strong Characters
Establish safe, disciplined, and drug-free educational environments that foster the development of good character and citizenship.

Goal Four: Transform Education into an Evidence-Based Field
Strengthen the quality of education research

Goal Five: Enhance the Quality of and Access to Postsecondary and Adult Education
Increase opportunities for students and the effectiveness of institutions

Goal Six: Establish Management Excellence
Create a culture of accountability throughout the Department of Education.

Table 1. Department of Education Strategic Goals

[1] U.S. Department of Education Strategic Plan 2002-2007

The Department's Strategic Goals are articulated through Strategic Objectives. The Department's current operating Strategic Objectives, as described in the Department's Strategic Plan document together with its subsequent interim adjustments in 2004[2], are as follows:

Strategic Goals	Strategic Objectives	Strategies (Representative Approaches)
Goal One: Create a Culture of Achievement	1.1 Link federal education funding to accountability for results	NCLB score card, performance-based grants, evaluation informing legislation, …
	1.2 Increase flexibility and local control	Flexibility provision for SEA and LEA
	1.3 Increase information and options for parents	Public school parental choice, charter / magnet school, school report cards, …
	1.4 Encourage the use of scientifically based methods within federal education programs	Scientifically based research, targeted support and outreach, …
Goal Two: Improve Student Achievement	2.1 Ensure that all students read on grade level by 3rd grade	Early cognitive intervention, apply reading research, data-based decision-making, …
	2.2 Improve mathematics and science achievement for all students	High-quality teacher, research-based instructions, data-based decision-making, …
	2.3 Improve the performance of all high school students	High school accountability, research, alternate HS options, high quality teacher supply, …
	2.4 Improve teacher and principal quality	Reduce barriers, research-based professional development, retention, …
	2.5 Improve US students' knowledge of world language and international issues…	International partnerships, international education awareness, foreign languages, …
Goal Three: Develop Safe Schools and Strong Characters	3.1 Ensure that our nation's schools are safe and drug-free and that students are free of alcohol, tobacco, and other drugs	Accountability for results, research-based strategies, information dissemination
	3.2 Promote strong character and citizenship among our nation's youth	Research-based strategies, information dissemination, …
Goal Four: Transform Education into an Evidence-Based Field	4.1 Raise the quality of research funded or conducted by the Department	Rigorous standards for education research, …
	4.2 Increase the relevance of our research in order to meet the needs of our customers	Responsive allocation of resources, systemic stakeholder input, …
Goal Five: Enhance the Quality of and Access to Postsecondary and Adult Education	5.1 Reduce the gaps in college access and completion … while increasing attainment	Rigorous academic preparation, reduce barriers, efficient credit transfer, …
	5.2 Strengthen accountability of postsecondary institutions	Enhance monitoring, improve discretionary grant process, performance management …
	5.3 Establish effective funding mechanisms for postsecondary education	Knowledge management for student aid, student aid award accuracy, …
	5.4 Strengthen HBCU, HIS, and TCU	Technical assistance, fiscal management, public/private partnership, technology, …
	5.5 Enhance the literacy and employment skills of American adults	Accountability for state and local results, research-based strategies, demo projects, …
	5.6 Increase the capacity of US post-2nd institution to teach world languages, area studies, and international issues	Strengthen foreign language, international, and area studies capacity, effective partnership and linkages, …

[2] U.S. Department of Education Revised Fiscal Year 2005 Performance Plan and Interim Adjustments to the Strategic Plan, December 2004

Strategic Goals	Strategic Objectives	Strategies (Representative Approaches)
Goal Six: Establish Management Excellence	6.1 Develop and maintain financial integrity and management and internal controls	Financial system integration, performance-based initiatives, …
	6.2 Improve the strategic management of the Department's human capital	Human capital planning, strategic sourcing, core HR management processes, …
	6.3 Manage IT resources, using e-Gov, to improve services …	Implement EA, secure IT infrastructure, reduce data reporting burden, e-business, …
	6.4 Modernize the FSA programs and reduce their high-risk status	Integrated and efficient processes and delivery system, program integrity, …
	6.5 Achieve budget and performance integration to link funding decisions to results	Aligned budget and planning processes, program effectiveness documentation, …
	6.6 Leverage the contribution of community- and faith-based organizations…	Technical assistance and outreach, full participation in Department programs, …
	6.7 Becoming a high performance, customer-focused organization, earn the PQA	President's Quality Award, …

Source: U.S. Department of Education Strategic Plan 2002-2007; U.S. Department of Education Revised Fiscal Year 2005 Performance Plan and Interim Adjustments to the Strategic Plan, December 2004

Table 2. Department of Education Strategic Goals, Objectives, and Strategies

The Department's IRM Strategic Plan supports the realization of the Department's Strategic Plan. It provides a roadmap to demonstrate how the Department's information resources align to the Education Mission and Strategic Goals.

3.2 Program Offices and Alignment

The Mission and Strategic Goals of the Department are implemented through the Program and Support Offices. The Department is aligned around a coordinating structure[3] that focuses the Department's resources and aligns its leadership on achieving equal access to educational excellence in K-12 and postsecondary areas.

Education portfolios are aligned under the Office of the Deputy Secretary (ODS) and the Office of the Under Secretary (OUS). ODS focuses on K-12 policies and programs in implementing *No Child Left Behind*, the President's High School Initiatives, and Individuals with Disabilities Education Act (IDEA). OUS focuses on higher and adult education policies and programs in implementing postsecondary policy, college aid, and the President's financial aid reforms for the Pell Grant program.

Coordinating through ODS are the Office of Elementary and Secondary Education (OESE), the Office of Innovation and Improvement (OII), the Office of English Language Acquisition (OELA), the Office of Special Education and Rehabilitative Services (OSERS), and the Office of Safe and Drug-Free Schools (OSDFS).

[3] Inside ED, Vol. XIII, No. 3, April 2005, "ED Reorganization to Focus Resources, Streamline Processes, and Integrate Policy Development, Program Implementation and Communication"

Coordinating through OUS are the Office of Postsecondary Education (OPE), the Office of Vocational and Adult Education (OVAE), and the Office of Federal Student Aid (FSA).

The Office of the Secretary (OS) focuses on the planning, evaluation, communications, and management of the Department. Coordinating through OS are the Office of Planning, Evaluation and Policy Development (OPEPD), the Institute of Education Sciences (IES), the Office of Civil Rights, the Office of Communications and Outreach (OCO), the Office of the General Counsel (OGC), the Office of the Inspector General (OIG), the Office of Legislation and Congressional Affairs (OLCA) and the Office of the Chief Financial Officer (OCFO); which in turn, coordinates the Office of the Chief Information Officer (OCIO) and the Office of Management (OM).

The Department's Program Office coordinating structure is depicted in Figure 3.

Figure 4 then shows how these Program and Supporting Offices are mapped to the various legislated programs to realize the Department's Strategic Goals.

Executive Offices	Office	Type	Focus
OS "Policy, Communication & Management"	**IES**	**Program Office**	▪ Research ▪ Evaluation ▪ Statistics
	OIG	**Program Office**	▪ Inspector General
	OCR	**Program Office**	▪ Compliance Program Planning ▪ Complaint Resolution ▪ Technical Assistance
	OPEPD	**Program Office & Support Office**	▪ Budget services (support) ▪ Policy and Program studies ▪ Strategic accountability (support) ▪ Education technology policy (OET)
	OCFO	**Support Office**	▪ Financial management ▪ Procurement ▪ Grants administration
	OM	**Support Office**	▪ Human resources ▪ Facilities
	OCIO	**Support Office**	▪ Information resource management
	OCO	**Support Office**	▪ Public affairs ▪ Internal communications
	OGC	**Support Office**	▪ Legal
	OLCA	**Support Office**	▪ Congressional Liaison
OUS "Higher & Adult Education Portfolio"	**FSA**	**Program Office**	▪ Student financial aid (PBO)
	OPE	**Program Office**	▪ Student aid policy ▪ Post 2nd education improvement ▪ Foreign exchange programs
	OVAE	**Program Office**	▪ Reform HS ▪ Community colleges ▪ Adult education
ODS "K to 12 Education Portfolio"	**OESE**	**Program Office**	▪ K-12 education ▪ SEA & LEA ▪ NCLB
	OII	**Program Office**	▪ K-12 innovations ▪ Charter schools ▪ NCLB (options) ▪ Compliance
	OSERS	**Program Office**	▪ Special Education ▪ Rehabilitation ▪ Research
	OELA	**Program Office**	▪ English learners ▪ NCLB Title III
	OSDFS	**Program Office**	▪ Safe schools ▪ Drug free ▪ Citizenship & character ▪ ED HLS

Figure 3. Department of Education Program Office Alignment

Program / Support Offices		Goal 1: Create a Culture of Achievement	Goal 2: Improve Student Achievement (K to 12)	Goal 3: Develop Safe Schools and Strong Character	Goal 4: Transform Education into an Evidence-Based Field	Goal 5: Enhance the Quality and Access to Post-2nd and Adult Education	Goal 6: Establish Management Excellence
Program Offices	OESE		$21,679M+ (ESEA)			$16M+ (HEA)	
	OII		$1,034M+ (ESEA)	$10M+ (ESEA)			
	OELA		$600M+ (ESEA)				
	OSERS		$11,690M+ (IDEA)		$108M+ (RA)	$3,105M+ (RA)	
	OSDFS		$34M+ (ESEA)	$670M+ (ESEA)		$5M+ (NLA)	
	OFSA					$26,660M+ (HEA)	
	OPE		$68M+ (HEA)			$1,988M+ (HEA)	
	OVAE		$1,290M+ (VTEA)			$591+ (AEFLA)	
	IES		$179M+ (ESEA)		$247M+ (ESRA)		
	OPEPD						
	OCR						
Support Offices	OCO						
	OCFO						
	OM						
	OCIO						
	OLCA						
	OIG						
	OGC						
FY05 Program $s			$36,948M	$838M	$461M	$32,676M	

Source: Department of Education FY2005 and FY2006 Performance Plans; http://intranet/Test_Bed/program2.nsf;
Legend: ( ) indicates the legislation driven the program budget
$ indicates FY2005 Appropriation (grant awards, loans, etc.)

Figure 4. Alignment of Program and Support Offices to Department Strategic Goals

Within the Department, the primary IT delivery organizations are FSA, IES, OCFO, and OCIO. FSA delivers the Loans related mission applications, support applications (FMS), as well as the FSA technical infrastructure (VDC). IES delivers the Research related mission applications operated from ED and vendor facilities. OFCO provides mission and support applications through EDCAPS (a suite of financial management applications), including FMSS, CPSS, GAPS (Grants related mission application) and Travel. OCIO is responsible for the Department's infrastructure services (EDNet, ED Web). In addition, several Program Offices deliver mission applications – e.g., OPEPD contracts EDEN development (the Department's primary Evaluation mission application), and OPE and OESE contract for various grants-related applications support. Finally, the Department also uses IT-related services provided by external government centers of excellences (e.g., human resource management systems) as encouraged by the e-Gov program. The primary IT Delivery Organizations are depicted in Figure 5.

Primary IT Delivery Organizations

- **OFSA**: provides Infrastructure (VDC) as well as mission and support Applications (Loans, FMS)
- **IES**: provides mission Applications (Research)
- **OCFO**: provides mission and support Applications (GAPS, EDCAPS)
- **OCIO**: provides Infrastructure (EDNet, ED Web)
- **POC Contractors**: provides mission Applications (OPEPD, OESE, OPE, …)
- **External**: provides outsourced support Applications (HR)

	(in $M)	Loans	Grants	Evaluation	Research	Information Dissemination	Compliance	Administration
Program Offices	OESE		◔			◕		
	OII					◔		
	OELA							
	OSERS		◔	◔				◔
	OSDFS							
	OFSA	●		◔		◔		●
	OPE	◔	◑	◔				◔
	OVAE			◔		◑		
	IES				◕	◕		
	OPEPD			◕ (1)				
	OCR						◔	◔
Support Offices	OCO					◔		◔
	OCFO		◑					●
	OM							◕
	OCIO		◔			◑		●
	OLCA							
	OIG						◔	◑
	OGC							

Source: Based on IT Portfolio Analysis conducted by EA Program in April 2005 using IAMT data
Note: (1) EDEN

Legend:
- ◔ *< $1M*
- ◑ *$1M to $5M*
- ◕ *$5M to $20M*
- ● *> 20M*

Figure 5. Primary IT Delivery Organizations in the Department of Education

3.3 Department's Lines of Business

The Department's business processes and IT investments are architected to move the Department away from a stove-piped environment, where capabilities are invested to meet single Program Office needs, to a cooperative environment in which common capabilities and services can be employed to meet similar Program Office needs.

The Department's Enterprise Architecture future state business model is established around seven cross-Program Office Lines of Business[4] (LOB). Where relevant, current and future IT investments are managed as a portfolio delivering enabling technical capabilities in support of each LOB's needs, which can span multiple Program Offices. For example, while OESE and OPE serve very different education segments (K-12, post-secondary education), the Line of Business mode of delivery remains the same, i.e., through formula and discretionary grants. The grants modes of delivery of these two offices are very similar in terms of process workflow and system support requirements. Hence by focusing on Grants management capabilities across the Enterprise, the Department reduces the need to develop multiple sub-scale systems within each Program Office. The LOB enterprise view of grants enables the Department to evaluate how the portfolio of multiple grants managed by multiple Program Offices collectively contributes to improving education performance.

The Department's seven Lines of Business are: Loans, Grants, Evaluation and Policy Analysis, Research, Information Dissemination, Compliance, and Administration.

[4] U.S. Department of Education Enterprise Architecture Future State Visions, ver 14, December 2004

Lines of Business	LOB Vision	Description
Loans	Deliver the right aid, to the right people, at the right time	Management and delivery of federally funded or federally guaranteed financial assistance for post-secondary education. Management of financial student aid is provided through the Office of Financial Student Assistance.
Grants	Create agency-wide capability utilizing common tools and processes to speed disbursement and improve effectiveness from funds distributed	Review, award, and disbursement of formula and discretionary grants through the various Program Offices
Evaluation and Policy Analysis	Conduct evidence-based evaluation that informs program and policy decisions while reducing the data collection burden for customers	Assessment of ED's programs and related policies for meeting national education objectives. Evaluation focuses on assessing the impacts and outcomes of the education reform and/or improvement strategies that each program and its related grants support.
Research	Provide greater awareness of and timely access to evidence-based research	Education research and statistical analysis on the condition of education in the U.S. IES performs the majority of education research for the Department. The National Center for Education Statistics (NCES) collects, analyzes and reports statistics on the condition of education in the U.S.
Information Dissemination	Provide ready access of relevant department education information to outside constituencies	Distribution of education information products through multiple channels and formats. Two main types of information dissemination are performed: (1) dissemination of program evaluations and reports and (2) dissemination of information to the education community and the general public.
Compliance	Ensure consistent high quality and efficient compliance services that meet customer needs	Assurance that policies mandated by ED and by Federal law are being carried out. ED ascertains that policies mandated by ED and by Federal law are being carried out as intended by ED staff, grantees, contractors, and other stakeholders.
Administration	Promote and deliver enterprise-wide support to ED program offices	Enterprise-wide support services. These include the following sub-functions: Procurement, General Legal Services, Facilities and Travel Management, Human Resources Management, Financial Management, Information Resources Management, and Planning and Administration

Table 3. Department of Education Lines of Business

Figure 6 shows how each LOB in the ED Future state model cuts across Program Offices to provide common and shared capabilities to serve customers, deliver value, and empower staff.

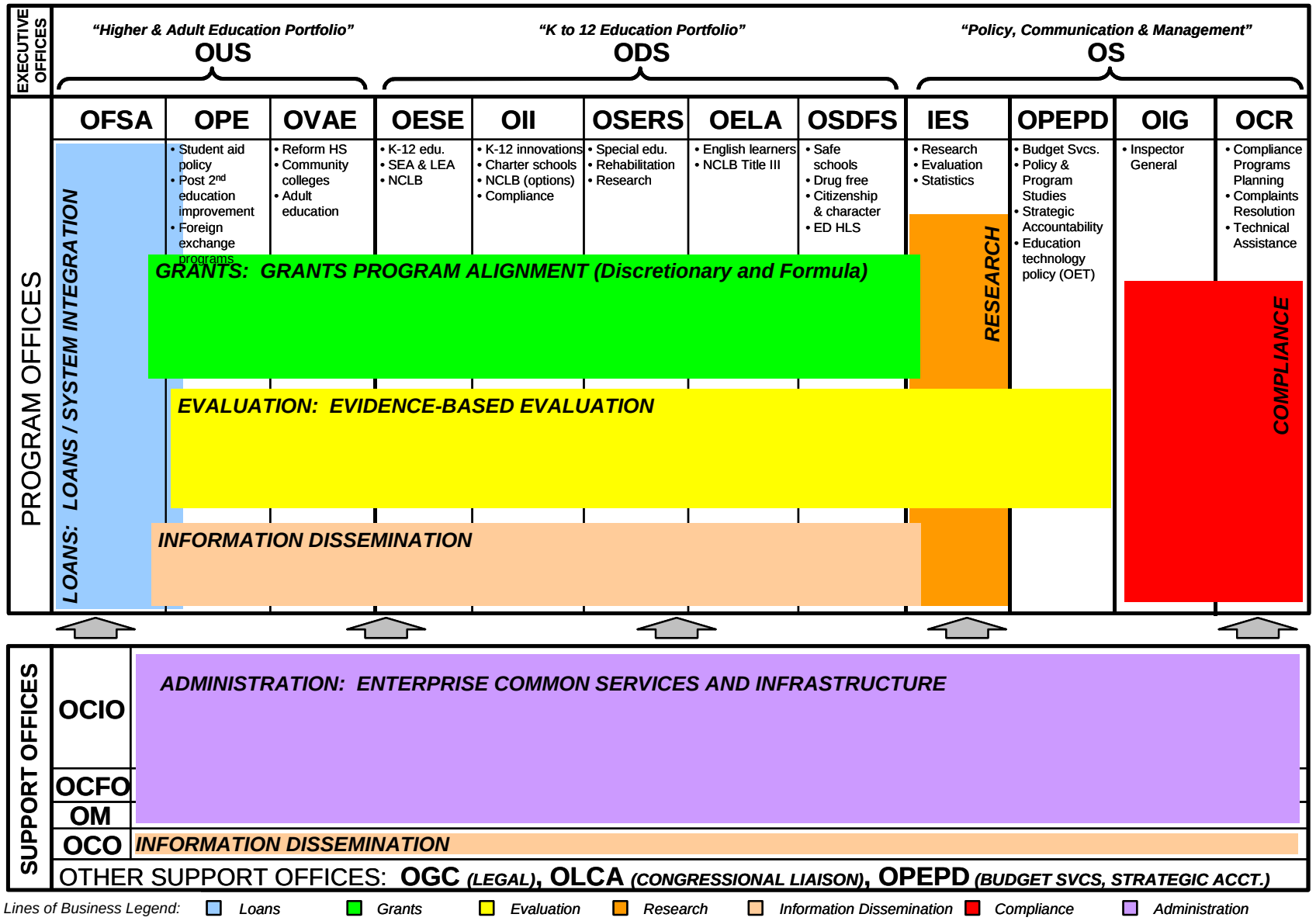


Figure 6. Department Enterprise Architecture 7 Lines of Business

3.4 Key IT Strategic Priorities – Business Capabilities Requirements

Information Technology contributes to the Department's Strategic Goals through the support of a set of Business Capabilities required by the Program Offices to deliver their program responsibilities. These Business Capabilities Requirements define the key business-related IT priorities along each of the seven Lines of Business[5].

LOB	Primary Process Capabilities	Required Business Capabilities
Grants	Workflow-enabled collaborative grants planning	• Electronic access to information • Collaborative planning across the PO • Workflow-enabled grants planning
	On-line application	• "Find" and "Apply" through Grants.gov alignment
	Collaborative review, electronic document storage, workflow tracking, and integrated financial management	• Automation of workflow & review/approval process • Location independent reviews / electronic application review • Electronic archiving & retention of documents & records • Financial record keeping
	Performance monitoring and reporting, risk management, and electronic document/records storage	• Integrated grants administration and payment processing • Grantee performance monitoring and reporting • Electronic archiving and retention of documents & records • Risk management
Evaluation and Policy Analysis	Evidence-based planning	• Performance measure definition / alignment • Collaborative planning across programs
	Consolidated data collection	• Common data standards and definitions • Secure, multi-channel data exchange • Collaborative support to survey participants
	Tool-based analyses	• Analytical tools supporting multi-dimensional data analysis and reporting • Integration of grants administration and performance systems • Knowledge management and best practice sharing
Research	Collaborative research planning	• Research areas aligned to Program and ED strategic goals
	Comprehensive data collection and analysis	• Aggregation and analysis of data through common data standards and definitions • Data exchange between ED and data sources through multiple secure channels • Knowledge management and best practice sharing
	Knowledge management and sharing	• Multi-dimensional data analysis and reporting • Consolidated nation-wide bibliographic database on education research
Information Dissemination	Collaborative research planning	• Multi-channel information requests and distribution methods • Information request tracking • Ad-hoc query, search and reporting • Structured on-line analytic capabilities • Customer-tailored reports • Bibliographic references information dissemination

[5] U.S. Department of Education Enterprise Architecture Future State Visions, ver 14, December 2004

LOB	Primary Process Capabilities	Required Business Capabilities
	Multi-channel information distribution	• Customer segmentation • Coordinated scheduling, planning, and content creation • Consistency in web content development and presentation
	Requestor self-service	• Specialized data capture facilities • Data storage management and network facilities • End user self-help facilities (portal management)
Loans	Aid Awareness, Application, and Delivery	• Integrated front-end system for aid applicants and partners • Shared data repository of key information
	Institution Participation	• Common routing ID • Improved partner security and system access enrollment • Improved fraud detection and error correction in student aid programs
	Servicing	• Clear, accurate and complete responses to customers • Integrated suite of systems • Full Virtual Data Center of programs
Compliance	Advanced analytical capability to identify and prioritize work	• Risk-based analysis and monitoring of compliance trends • Field support – productivity tools • Efficient survey capture • Effective case resolution
	Efficient complaint receipt and intake	• Multi-channel complaint receipt with privacy protection • Field support – productivity tools • Effective case resolution • Reporting and analytical tools to identify and monitor compliant trends
Administration	Financial integration and alignment with Government-wide financial management initiatives	• Financial management • Compliance with financial standards • Financial integration across administrative and programmatic functions • Migration to, or supply of, government-wide solutions
	Alignment with Government-wide HR management policies and practices	• Government-wide HRLOB solutions and tools
	IT-Business alignment, portfolio management, and shared common enabling services	• Business and IT vision alignment • Governance and portfolio management • Common enabling services • Compliance with government-wide technology initiatives
	Integrated asset management	• Efficient, reliable facility services • Safe and secure workplace • Asset tracking

Table 4. Business Capabilities Requirements in Each Lines of Business

The Business Capabilities Requirements are mapped back to the Department's Strategic Goals to demonstrate how they collectively achieve the mission strategic objectives. Figure 7 shows the high level summary mapping.

Lines of Business	LOB Description	Goal 1: Create Culture of Achievement	Goal 2: Improve Student Achievement	Goal 3: Develop Safe Schools and Strong Characters	Goal 4: Transform Education into an Evidence-Based Field	Goal 5: Enhance Quality / Access of Post-2nd / Adult Education	Goal 6: Establish Management Excellence
Loans	Management and delivery of federally funded or federally guaranteed financial assistance for post-secondary education					○	○
Grants	Review, award, and disbursement of formula and discretionary grants through the various Program Offices		●	●	●	●	●
Evaluation and Policy Analysis	Assessment of ED's programs and related policies for meeting national education objectives	●	●	●		●	
Research	Research and statistical analysis on the condition of education in the U.S.	●			●		
Information Dissemination	Distribution of education information products through multiple channels and formats	●			●	●	
Compliance	Assurance that policies mandated by ED and by Federal law are being carried out	●					●
Administration	Enterprise-wide support services						●

Figure 7. Alignment of ED Lines of Business to Department Strategic Goals

3.5 IT Portfolio and Cross-Program Initiatives

The Department's FY 07 IT portfolio consists of 27 major IT investments (requiring OMB Exhibit 300s) and over 200 supportive IT projects[6]. The major IT investments, together with the managing Program Office and the LOB they support are described below:

Major IT Investments	Description	Program Office	Line of Business
ADvance – Aid Delivery	Integrates front-end student financial aid business processes (aid awareness, application processing, eligibility determination, Pell grant and loan origination and disbursement, and customer service)	FSA	Loans
Common Origination and Disbursement (COD)	COD provides a common platform and record for schools to originate and disburse Title IV funds	FSA	Loans
Common Services for Borrowers (CSB)	CSB reengineers and integrates 4 legacy systems: Direct Loan Services System, Debt Management and Collection System, Direct Loan Consolidation System, and Conditional Disability Discharge Tracking System	FSA	Loans
Contracts and Purchasing Support System (CPSS)	CPSS supports the Department's operations for contracts, delivery orders, task orders, interagency agreements, small purchases, and purchase card transactions	OCFO	Administration
Data Strategy (DS) 3.0	Improve data quality, data access, and data sharing throughout FSA	FSA	Loans
Data Warehousing	Enterprise Data Warehouse provides the Department's knowledge workers with integrated data, analytical tools and the infrastructure necessary to access policy, budget, and risk management information	OCIO	Administration
DSX Security System	DSX Security System provides complete access control and alarm monitoring for all of ED physical facilities	OM	Administration
E-Authentication	The Department's participation in the E-Authentication e-Gov initiative. E-Authentication provides infrastructure that supports shared authentication services across multiple applications	FSA/OCFO	Administration
EDNet	Common Departmental IT infrastructure	OCIO	Administration
ED Web	Supports main ED website, www.ed.gov, and hosts sub-sites for all ED offices and programs	OCIO	Information Dissemination
Education Data Exchange Network (EDEN)	Consists of a set of process realignments and IT solutions that support the Department's focus on outcomes and accountability for student education performance (NCLB)	OPEPD	Evaluation and Policy Analysis
Education Resources Information Center (ERIC)	Provides a comprehensive (journals fully indexed), easy-to-use, searchable, Internet-based (www.eric.ed.gov), bibliographic and full-text database of up to date (weekly) education research and information for educators, researchers, and the general public	IES	Information Dissemination
Enterprise Architecture	Continue to develop and maintain the Enterprise Architecture of the Department, including FSA	FSA/OCIO	Administration

[6] U.S. Department of Education eCPIC and U.S. Department of Education IT Portfolio Analysis, April 2005

Major IT Investments	Description	Program Office	Line of Business
Federal Student Aid Financial Management System (FSA FMS)	FSA financial management system that allows the FSA CFO to account for all FSA program transactions, perform fund checking, and perform financial reporting	FSA	Loans
Financial Management Support System (FMSS)	FMSS is the Department's official general ledger and financial management system that performs budget execution, funds control, receipt management, administrative payment management, and reporting	OCFO	Administration
Grants Administration Payment System (GAPS)	GAPS is the Department's enterprise-wide grants management system	OCFO	Grants
G5	Department's Grants Management redesign to create an agency solution with potential government-wide use for end-to-end grants management activities	OCFO	Grants
Information Assurance (IA)	IA ensures the confidentiality/privacy, integrity, and availability (collectively to protect the security) of the Department's information and information resources	OCIO	Administration
Integrated Partner Management (IPM)	System of record for every institutional partner of FSA	FSA	Loans
Integrated Support Service (ISS)	ISS provides the IT integration and support for the Department's financial management components collectively known as EDCAPS	OCFO	Administration
Integrated Technical Architecture / Enterprise Application Integration (ITA/EAI)	The ITA provides a conduit to web-enabled applications through its reusable web services, product specialty support, reusable environments and web construction products. The EAI provides an infrastructure for applications to quickly and efficiently integrate with back-end systems through a messaging infrastructure that guarantees message delivery.	FSA	Administration
Migrant Student Information Exchange (MSIX)	MSIX is an electronic mechanism that assists States to exchange useful, timely and critical information on migrant students who move from school to school and across State boundaries during the school year	OESE	Information Dissemination
National Assessment of Education Progress (NAEP)	NAEP is a survey of students at the elementary and secondary levels to determine "what they know" and "what they can do" in various academic subjects	IES	Research
National Student Loan Data System (NSLDS)	NSLDS helps schools determine eligibility of students for Title IV aid, calculate performance measures of schools related to continuing with Title IV participation, and collect / report on aid recipients	FSA	Loans
Student Aid Internet Gateway (SAIG)	SAIG is a store and forward mailbox application used by FSA's Title IV customers for sending and receiving Title IV Privacy Act data to the Title IV application systems	FSA	Loans
Travel Management System (TMS)	TMS supports the Department's travel requirements (4 major sub-processes: process authorization, arrange travel, travel, and process vouchers). A transition to e-Travel will occur by 10/06.	OCFO	Administration
Virtual Data Center (VDC)	Provides a single computing environment for hosting FSA Title IV application systems	FSA	Loans

Table 5. Department of Education Major IT Investments

As part of its overall IT investment portfolio the Department has identified a set of high priority cross-Program Office opportunities to be "jump-started" using a "Venture Capital"[7] funding approach. These opportunities will help the Department transition to the Future State Enterprise Architecture Vision by providing ways for ED to promote common and shared use of information, tools, and processes to achieve the Department's and individual Program Office's business objectives. The identified high priority opportunities will be funded fully under separate business cases and are as follows:

- **Grants Monitoring** – support more proactive grants monitoring and risk management by providing a more timely and comprehensive way to capture and report on a broad range of financial and non-financial information from a variety of disparate systems (part of Enterprise Data Warehouse business case)
- **Enhanced Evaluation Capabilities** – reduce costs and enhance the quality of evidence-based evaluation by building upon work already underway in EDEN and IES through making common evaluation capabilities available consistently across the Department (part of EDEN and Enterprise Data Warehouse business cases)
- **Knowledge Worker Enabling Infrastructure** – enhance Program Office staff capabilities and productivity by accelerating the selection and deployment of common enterprise-wide knowledge worker enabling tools, such as data warehouse, collaboration, work flow, case management, document management, e-Authentication, web portal, and advanced analytics (part of ED-Net and new dedicated business cases—e.g., Collaboration).
- **Grant Pre-Award Expediting** – expedite the awarding of grants consistent with grants policy by using technology-enabling capabilities to streamline the grants pre-award process (part of G-5 business case).
- **Tailored Information Products and Services** – respond to the needs and access preferences of differing constituencies by promoting the sharing of information dissemination best practices across the Department (part of future business case to be determined).

The initial focus of this cross-Program Office investing is on an enterprise data warehouse capability. Information from existing Departmental transactional systems is extracted into the enterprise data warehouse. Information from these multiple disconnected sources are related and analyzed. Knowledge worker enabling tools are applied to support the decision-making, program evaluation, risk management, and reporting. See Figure 8.

[7] Building a Stronger Department Through Venture Capital Opportunities, February 2005

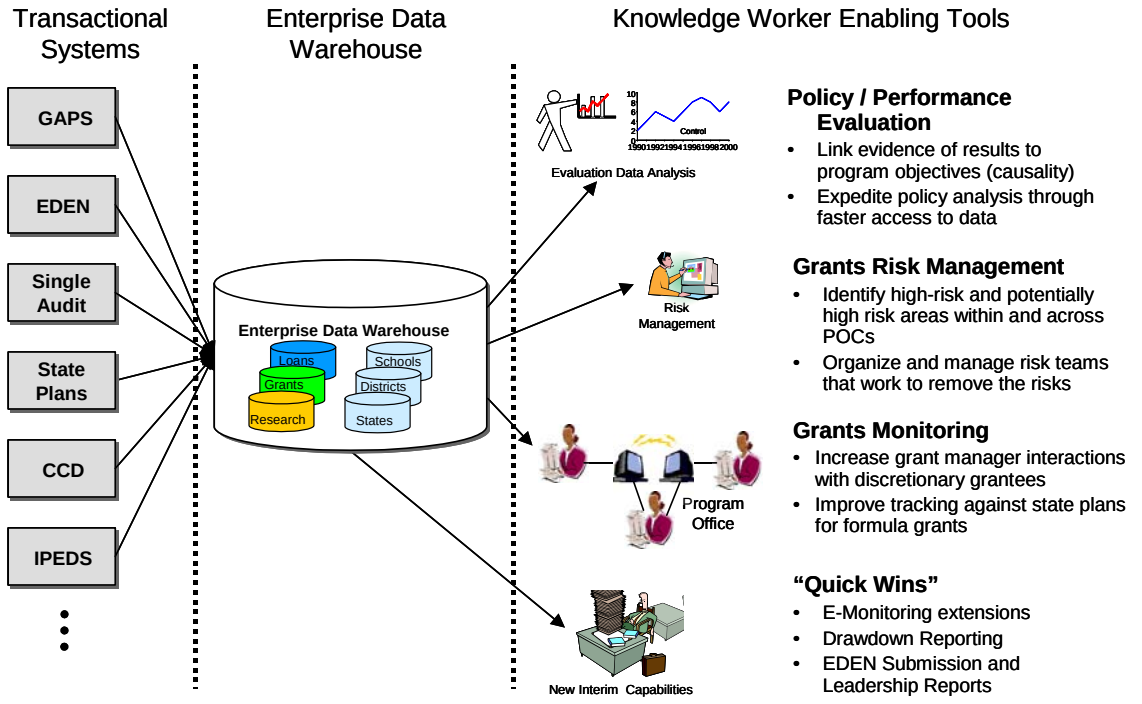


Figure 8. Enterprise Data Warehouse – Initial Vision

3.6 Service Oriented Architecture (SOA)

The Knowledge Worker Enabling Infrastructure consists of tools that are part of a broader collection of shared technical services described in the Enterprise Architecture as Common Enabling Services (see Table 6). These Common Enabling Services, along with Dedicated Services, and Technical Infrastructure Services represent key elements of the Department's Service Oriented Architecture (SOA) approach (see Figure 9).

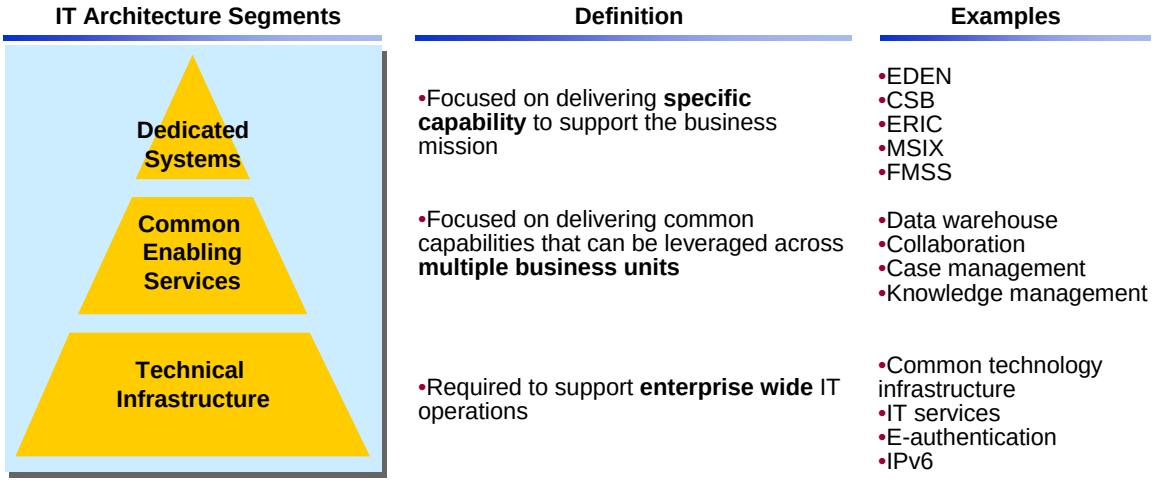


Figure 9. ED's Service Oriented Architecture—Key Architectural Segments

Service Oriented Architecture is an approach in which a new service and/or component is constructed with building blocks of other services and/or components. It is a modular architecture that aims at "re-using" as opposed to "re-creating" existing services and/or components. SOA is where the IT industry is heading and is consistent with the direction set for all federal agencies by OMB. All the major software vendors are building support for SOA into their products by exposing their products' functionalities to be available for use by other software products. This exposure of functionalities is accomplished through a set of XML Web services.

As the Department refreshes its technology, as articulated in the Department's technology standards and roadmaps[8], most of its software will eventually have the ability to expose its functionalities. Many of the Common Enabling Services will likewise be available via XML Web services. All these functionalities will become available as components that can be orchestrated to support more complex requirements in each of the Lines of Business. For example, as part of the Grants LOB, there is a need for Risk Management support for monitoring grantee performance. To the user, it looks like the Risk Management service is provided by some new Risk Management tool. In reality however, through SOA, several "existing" components – Information Analysis, Case Management, Work Management, and Collaboration – are interacting using one another's XML Web services to provide the seamless integrated Risk Management service.

Shared Technical Services	Common Enabling Services
Performance and Productivity Services	• Collaboration Tools • Work Management • Case Management • Performance Management
Knowledge and Data Services	• Document Management • Report Management • Knowledge Management • Data Mart / Data Warehouse Tools
Customer and Interface Services	• Customer Management • Portal Management • Mobility Tools
Research and Statistics Services	• Statistical and Analytical Tools • Survey Design Tools • Survey Management (data collection)
IT Services Infrastructure	• Operations Support • Network, Storage and Computing Platforms • Security & Privacy • SOA-Enabling Platforms[9]

Table 6. Department of Education Common Enabling Services

In order to manage, design, and deploy the Service Oriented Architecture, the Department will require a set of SOA Enabling Platforms. The Service Oriented Architecture will incorporate the

[8] Enterprise Technology Standards and Roadmaps are developed in conjunction with the Department Enterprise Architecture Target Vision and Transition Strategy.

[9] For example, Message-Oriented Middleware, Service Orchestration, Service Discovery (UDDI), Component Management (J2EE, .NET), etc.

necessary security and privacy safeguards (e.g., leveraging e-Authentication capabilities). Several of the key SOA Enabling Platforms are as follows:

- **Directory**. As the number of XML Web Services increases, there is an increasing need for a directory of available services, where developers can go to find services and learn how to connect to them. UDDI is usually the directory of choice in SOA.
- **Orchestration**. As the number of services involved in a given solution increases, there is an increasing need for Service Orchestration tools to model (graphically) the business processes (set of steps) and the connection of these business steps to the corresponding XML Web services. Service Orchestration tools allow sophisticated solutions to be built rapidly and cost effectively.
- **Messaging**. As the number of components that connect to one another increases, so does the data traffic (service messaging) that is exchanged among the XML Web Services. There will be a need to manage the load on the network and computing resources through messaging middleware. At the most fundamental level, the messaging middleware can be constructed to extract data (the simplest service messaging) from ED's transactional systems, exposed through XML Web Services, for off-line analysis.

Figure 10 illustrates how the Department's major IT investments, Venture Capital initiatives, and the Common Enabling Services, in aggregate, are aligned to the 7 Lines of Business in the Enterprise Architecture Future State Vision.

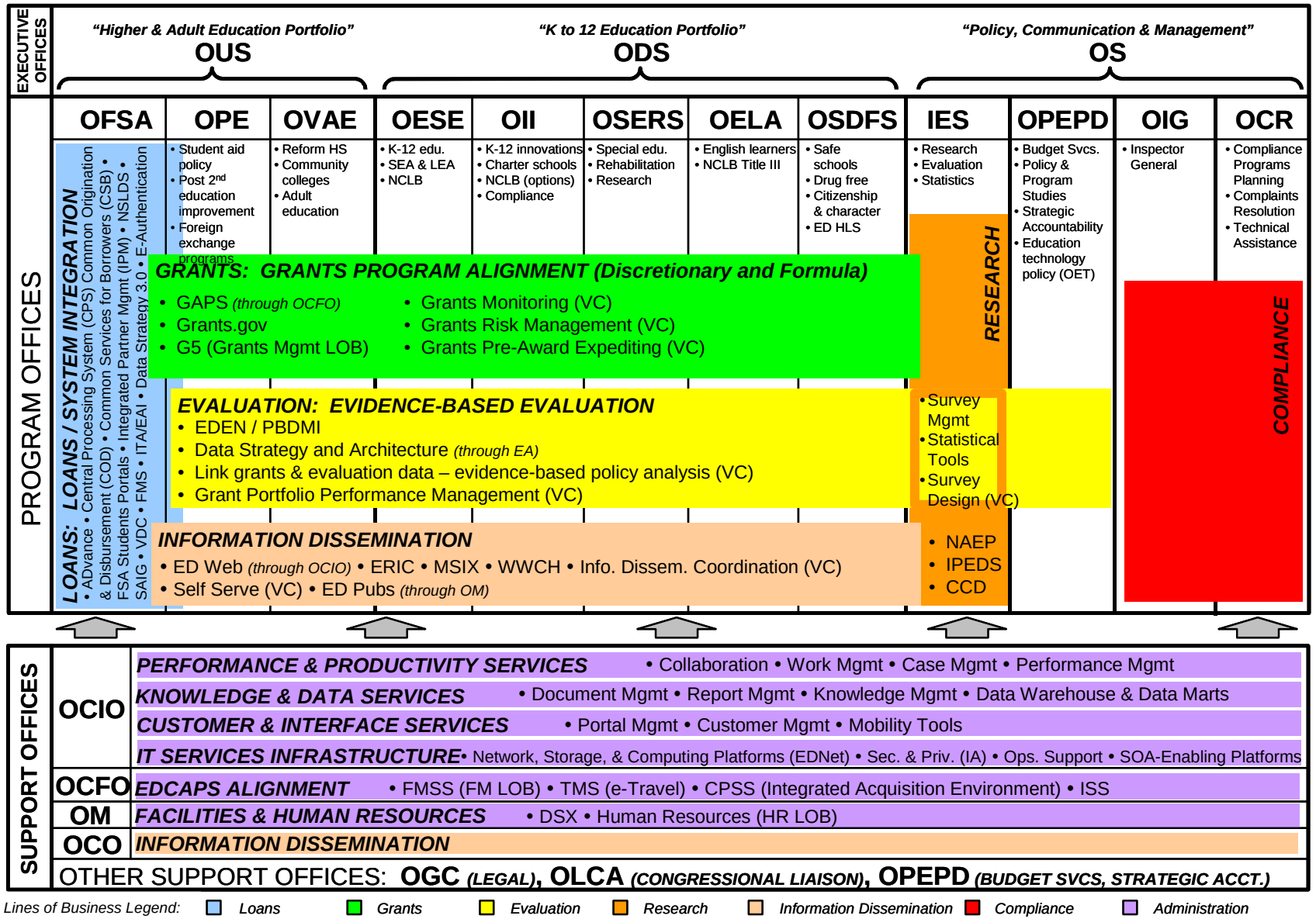


Figure 10. Department of Education Future State Enterprise Architecture Vision

Figure 11 illustrates the alignment and timing of the major IT investments—current, planned, and future--in support of these required business capabilities.

Line of Business	Current IT Investments	Planned New IT Investments (FY07)	Future New IT Investments (FY08 and Beyond)
Grants	GAPS (include e-Monitoring) Grants.gov	G5 / GM LOB Grants Monitoring (through EDW)	Grants Pre-Award Expediting (through G5) Grants Risk Management (through EDW) Electronic Grants Folders (Through G5)
Evaluation and Policy Analysis	EDEN Data Capture CSPR (Through EDW)	ED*Facts* – Evaluation Data Analysis (through EDW)	Link Grants & Evaluation Data in Policy Analysis
Information Dissemination	ED Web ED Pubs ERIC What Works Clearing House	MSIX	ED*Facts* – External Information Service (through EDW) Secure Access (through E-Authentication and External Collaboration)
Loans	FEBI, COD, CSB, IPM, NSLD, SAIG, VDC, FMS, ITA/EAI, Data Strategy	Advance, Data Strategy 3.0	
Research	NAEP IPEDS CCD NCES Web		
Compliance	Case Management (through CAMS)	Risk Management (through EDW)	
Administration	EDNet, IA, FMSS, TMS / E-Travel, CPSS, ISS, DSX, E-Authentication Pilot	IPv6 Implementation Enterprise Collaboration (through EDNet) Enterprise Data Warehouse (EDW) – expand into other business uses	FM LOB Common Enabling Services: • Work Management • Case Management • Document Management • Report Management • Knowledge Management

Figure 11. Alignment and Timing of Major IT Investments--Current, Planned, and Future

3.7 E-Gov Alignment and Other Government-wide Mandates

The Department is actively partnering with and supporting the Presidential Priority E-Gov initiatives and the Federal Government Lines of Business initiatives. The Department recognizes that effective E-Gov partnership results in government cost reduction, services-to-citizens improvements, and business-process standardization.

3.7.1 Presidential Priority E-Gov Initiatives Alignment

The Presidential Priority E-Gov initiatives are organized into 4 portfolios together with E-Authentication as a crosscutting initiative:

- Government to Citizen (G2C)
- Government to Business (G2B)
- Government to Government (G2G)
- Internal Efficiency and Effectiveness (IEE)

The following table summarizes ED's involvement and alignment in the relevant E-Gov initiatives:

Portfolio	E-Gov Initiative	ED's Investment	Alignment Status	Key Next Steps
G2C	GovBenefits	• ADvance – Aid Delivery	In progress	• Establish process to enter and maintain all benefit eligibility programs on GovBenefits.gov (2Q06)
	E-Loans	• ADvance – Aid Delivery	Completed	• Ensure loan programs are accurately reflected on GovLoans Gateway
G2B	E-Rulemaking	• TBD	In Progress	• Convert paper-based docket processing to FDMS (3Q06) • Migrate public comment system to E-Rulemaking (3Q06)
	Federal Asset Sales	• TBD	In Progress	• Consolidate / Migrate personal and real property reuse and disposal process to FAS (4Q06)
	USA Services	• TBD	In Progress	• Identify all Tier 1contact channels (email and toll free) and volume (1Q06)
	Business Gateway	• TBD	In Progress	• Provide report to OMB and Business Gateway identifying rules/regulations and related forms, and plain language guides that are not already contained in an existing on-line business compliance system (2Q06)

Portfolio	E-Gov Initiative	ED's Investment	Alignment Status	Key Next Steps
G2G	Geospatial One-Stop	• Census Mapping	Completed	• NCES continue to participate in the planning activities for posting metadata for all geospatial data acquisitions in the GeoData
	Disaster Management	• EDNet	Completed	• Implement Common Alert Protocol (CAP) (4Q05) • Implement Disaster Management Interoperability Services (DMIS) within all identified Emergency Operations Center (EOC) (4Q05)
	Grants.gov	• Impact Aid System Maintenance • FIPSE Dissemination and Grants Database • GPOS Website	In Progress	• Post 75% of discretionary grant applications packages on Grants.gov, including all discretionary grant programs using only the SF-424 family of forms (4Q06)
IEE	E-Training	• Interactive Job Aid • TLN Technical Support	In Progress	• Migrate agency-specific Learning Management Systems to one of the 3 E-Training service providers (GoLearn, FasTrac, NTIS) (4Q06)
	Recruitment One-Stop	• HR Web Recruiting	Completed	• Create interface to post and to receive information from USAJOBS
	EHRI	• ED current outsource HR shared services to DOI/NBC	In Progress	• Adopt eOPF data standards (4Q07) • Complete interfaces (4Q06) • Complete workforce tools (4Q06) • Provide Payroll Data File to EHRI (3Q06)

Portfolio	E-Gov Initiative	ED's Investment	Alignment Status	Key Next Steps
IEE	E-Travel	• Travel Management System	In Progress	• Integrate ED's Travel Management Center with the eTS vendor (4Q06) • Process all travel vouchers through eTS vendor (4Q06) • Decommission legacy system (2Q07)
	Integrated Acquisition Environment	• Contracts and Purchasing Support System	Completed	• Ongoing monitoring
Cross-Cutting	E-Authentication	• E-Authentication	In Progress	• Implement E-Authentication Services for EDCAPS e-Payments and e-CampusBased applications (1Q06)

Table 7. Department of Education E-Gov Alignment

3.7.2 Federal Government-wide Lines of Business Initiatives Alignment

In addition to the Presidential Priority E-Gov initiatives, the Department participates in several Federal Government-wide Lines of Business initiatives:

- Financial Management
- Human Resources Management
- Grants Management

The following table summarizes ED's involvement and alignment in the relevant government-wide LOB initiatives.

Government-wide LOB	ED's Investment	Alignment Status	Key Next Steps
Financial Management LOB	• Financial Management Support System (FMSS) • Checkfree Fund Expedite • OF/OFA Upgrades for Oracle 11i	In Progress	• Provide an analysis of options for ED's financial management systems including migration to an FM CoE or ED applying to become a CoE (1Q06) • Migrate financial management hosting (and potentially services) to the selected COE (2Q06)
Human Resources LOB	• Federal Personnel and Payroll System • Interactive Job Aid • Education Performance Appraisal System / General Performance and Appraisal System (EDPAS/GPAS) • HR Web Recruitment • Employee Skills Inventory System (ESIS)	In Progress	• Formalize new MOU with DOI/NBC for shared service center support • QuickHire "bolt on" expected to be available in FY07 (HR Web Recruiting) • Continue dialog with DOI/NBC to determine when EDPAS/GPAS functionalities will be available • Establish plan to discontinue ESIS and implement the Competency Plus module under LMS
Grants Management LOB	• Grants Administration Payment System (GAPS) • Peer Review Module • FIPSE Dissemination and Grants Database • GPOS Website	In Progress	• Continue to participate in LOB task force

Table 8. Department of Education Government-wide Line of Business Alignment

3.7.3 Internet Protocol Version 6 (IPv6) Planning

OMB has directed the Department to implement Internet Protocol Version 6 (IPv6) within its network infrastructure by June 2008. IPv6 is an enterprise transformation driven by business, environmental, and technology factors, the scope and impact of which extend well beyond the IT organization.

Implementing IPv6 represents a strategic opportunity for the Department to provide improved services with greater efficiency. IPv6 is an enabling technology that can be used to support a number of the Department's business capability requirements, which in turn are aligned with the Department's Strategic Goals.

The following table summarizes the key features of IPv6 and the Department business capabilities supported by these features:

IPv6 Feature	Supported Business Capabilities Requirements	Description
A larger address space IPv6 provides a virtually limitless address space thereby overcoming limitations of the current IPv4-based infrastructure. ED has the opportunity to network-enable new types of IT assets, such as remote sensors, handheld computing devices, mobile phones, and other devices with individual and unique IP addresses. This will enable direct end-to-end connectivity between IP-enabled devices and systems.	**Information Dissemination LOB** Information Clearinghouse	• Data storage management and network facilities
	Administration LOB IT-business alignment and IT support and governance	• Common enabling services
	Administration LOB Facilities and security services	• Efficient, reliable facility services • Safe and secure workplace • Asset tracking
More robust mechanisms for prioritizing data traffic These mechanisms provide a more reliable infrastructure for bandwidth-intensive applications such as streaming video, voice over IP, near-real time collaboration, and others.	**Grants LOB** Workflow-enabled collaborative grants planning	• Collaborative planning within program offices
	Grants LOB Collaborative review, etc.	• Location independent reviews
	Evaluation LOB Evidence-based planning	• Collaboration across programs to define / reuse performance information
	Evaluation LOB Consolidated data collection	• Collaboration tools to enable survey / data collection support to survey participants
	Administration LOB IT-business alignment and IT support and governance	• Common enabling services

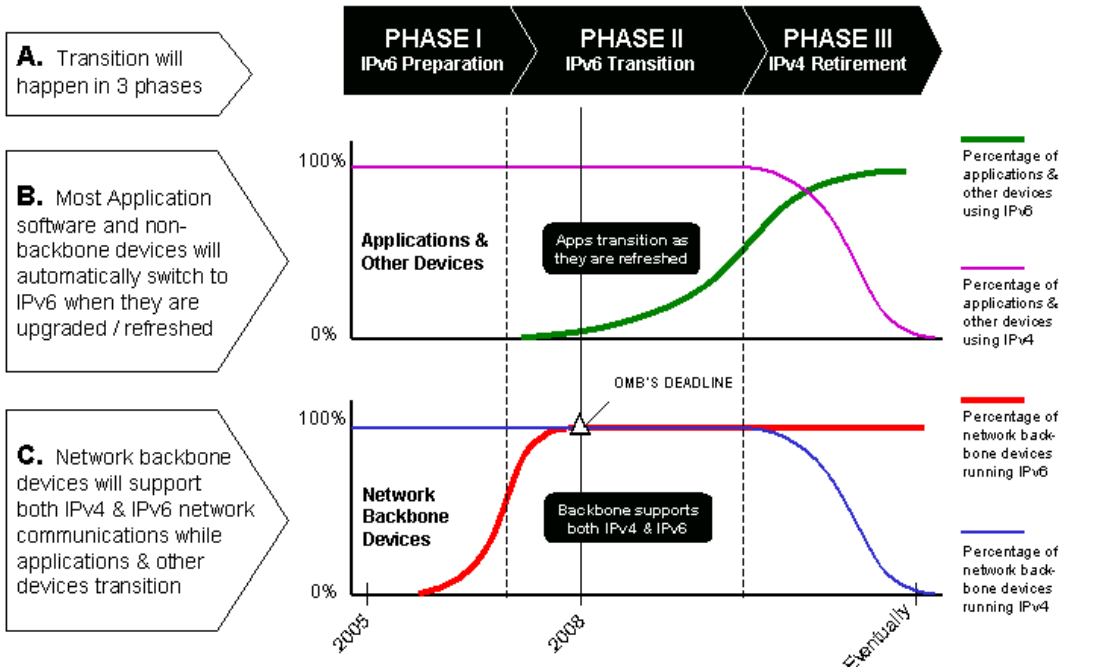
Auto-configuration Allows devices to automatically configure themselves and join networks without requiring centralized servers to manage them. Mobility support built into IPv6 will enable devices to remain connected even while roaming across great physical distances and multiple networks. These capabilities will enable flexible, decentralized, "plug and play" networking that will decrease administration requirements and provide continuous connectivity.	**Compliance LOB** Case management and workflow tracking	• Apply mobile tools and case-worker tools to field audits, inspections and investigation
	Administration LOB IT-business alignment and IT support and governance	• Common enabling services
End-to-end security IPv6 incorporates (and requires) end-to-end security for all IP traffic directly within the network layer, simplifying and strengthening network security.	**Evaluation LOB** Consolidated data collection	• Secure, multi-channel data exchange between ED and data sources (web, paper, etc.)
	Research LOB Comprehensive data collection, sharing and analysis	• Data exchange between ED and data sources through multiple secure channels
	Administration LOB IT-business alignment and IT support and governance	• Common enabling services

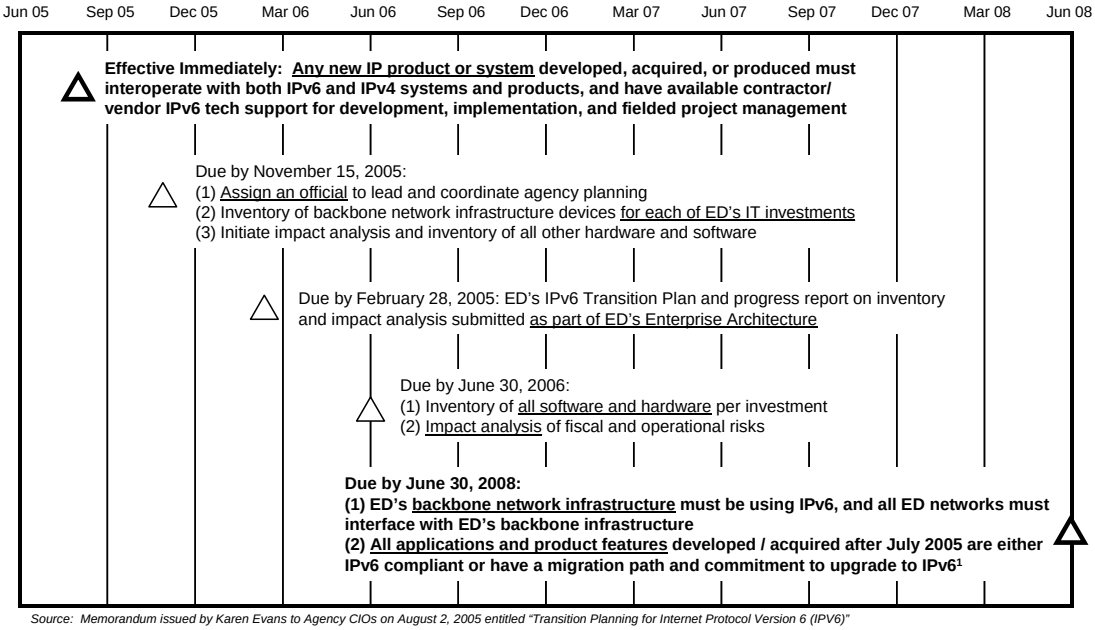
Table 9. IPv6 Features and Supported Business Capabilities Requirements in Each LOB

The impact of the IPv6 transition may be of a similar magnitude to "Y2K". While much of ED's hardware and software already supports both IPv6 and IPv4, IPv6 is not currently in use. In addition, some of ED's legacy systems only support IPv4 and will need to be updated or replaced. If not managed carefully, the introduction of IPv6 could introduce new risks and vulnerabilities that may compromise ED's information security and privacy.

Given that the Internet Protocol is core to the Department's IT infrastructure, beginning in February 2006, OMB will use the Enterprise Architecture Assessment Framework to evaluate the Department's IPv6 transition planning and progress, IP device inventory completeness, and impact analysis thoroughness.

Figure 11 illustrates the Department's high-level IPv6 Transition Strategy.





Source: Memorandum issued by Karen Evans to Agency CIOs on August 2, 2005 entitled "Transition Planning for Internet Protocol Version 6 (IPV6)"

Figure 12. Department's IPv6 Transition Strategy[10]

[10] Source: OMB Memorandum M-05-22 "Transition Planning for Internet Protocol Version 6"

3.7.4 E-Authentication Implementation

As more and more Internet-based online services are being provided to customers, there is increasing proliferation of electronic identity credentials (i.e., user ids and passwords) which results in customer inconvenience (multiple user IDs and passwords), poor security (repeated use of same password), and higher identity management costs (lost password).

E-Authentication provides the capability for the Department's customers to use identity credentials other than those currently provided by the Department of Education, such as those from the top five Identity Providers: (1) banks, (2) universities, (3) internet service providers, (4) merchants, and (5) employers. The federal government is moving towards the idea of sharing credentials across multiple agencies and allowing citizens to use non-government credentials to conduct business with the government online. ED has been a participant in the E-Authentication initiative, part of the President's Management Council's E-Government agenda.

The Department's approach to implementing E-Authentication is to build a solid infrastructure that supports shared authentication services across multiple applications. The first building block is the "Security Architecture" infrastructure that includes identity and access management (IBM Tivoli Access Manager and Identity Manager suite of products). The Security Architecture provides tools, technologies, and protocols for identity and access management across the Department. The goal is to provide consistent access control, authorization and auditing for applications that integrate with this infrastructure. Once the Security Architecture is developed and deployed, the E-Authentication infrastructure can be layered on top of it and deployed to any application already in the Security Architecture.

ED has committed to implement the E-Authentication initiative by signing an E-Authentication Implementation Memorandum of Understanding (MOU) with the General Services Agency (GSA), the managing partner of E-Authentication. In this MOU, the Department has committed to complete the deployment of the Identify and Access Management capability by December 16, 2005, to integrate the e-Payments application (GAPS) with the E-Authentication service by May 31, 2006, and to integrate the eCampus-Based (eCB) application with the E-Authentication service by September 30, 2006.

3.7.5 Department ID and Access Cards Implementation

After 9/11, the Department of Education's former Quality of Work Group/Security Office (now Office of Management, Security Services) entered into an agreement and MOU with the Federal Protective Services (FPS) to conduct past due threat assessment of all Department of Education facilities nationwide. The outcome of the assessments addressed numerous vulnerabilities. The one vulnerability that was consistent across the majority of the ED facilities was Department ID and Access Cards. The Security Office immediately began researching ID Card and Access Control systems based on the level of protection, cost to the Government, and the ability to network and control input from a central location.

The Department has selected DSX security systems based on an alternatives analysis. Currently ED has the DSX security systems (ID Card and Access Control systems) installed in and used by employees and contractors in headquarters and regional locations (including ROB-3, FOB-6, Capital Place, Union Center Plaza, Mary E. Switzer building, Potomac Center Plaza, and the RTSC in Atlanta as well as field locations). All of these systems are presently being networked

together to form one system. DSX Security System provides complete access control and alarm monitoring for sites, including:

- Access Control
- Security
- Point Monitoring
- Elevator Control
- Photo ID Badging
- Guard Tour
- Key Tracking
- Image Recall with Historic and User Accountability Reporting
- Live CCTV display/control
- Interface with Paging, CCTV, Parking, Central Station Automated Alarm Systems, HVAC, and Elevator Control Systems

The Department maintains approximately 36 facilities as either privately leased, GSA owned, or GSA leased facilities, all of which have staggered lease renewal dates. As facility leases expire the determination of whether to relocate or to extend the present lease will be determined. Security systems for these locations must be 100% compatible with the existing systems for proper monitoring and access control. The Department's goal is to convert existing facilities to compatible access control systems and to install compatible equipment into all future facilities as deemed necessary by both the Department's Security Services and the Federal Protective Services by means of threat assessment requirements and recommendations.

On August 27, 2004, the President signed HSPD-12 "Policy for a Common Identification Standard for Federal Employees and Contractors." HSPD-12 will impact DSX as the Department has to implement the mandatory, government-wide standard for secure and reliable forms of identification for Federal employees and contractors. The standard has been issued by the Department of Commerce – the Federal Information Processing Standard 201 (FIPS 201). The guidelines DSX will follow to roll out the mandate include:

Date	Implementation Scope Guidelines
June 27, 2005	Implementation plans submitted to OMB
August 26, 2005	Identify Federally controlled facilities, Federally controlled information systems, and other Federal applications that are important for security and for which use of the FIPS 201standard in circumstances not covered by HSPD-12 directive
October 27, 2005	Comply with FIPS 201, Part 1 • Adopt and accredit a registration process • Initiate the National Agency Check with Written Inquiries (NACI) or other suitable national security investigation prior to credential issuance • Include FIPS 201 implementation language in applicable new contracts • Develop a plan for current employees / contractors and begin the required background investigation
October 27, 2006	Begin compliance with FIPS 201, Part 2 • Deploy products and operational systems to issue and require the use of identify credentials for all new employees and contractors • Implement the technical requirements of the FIPS 201 • Risk based facility access • Use of digital certificates
October 27, 2007	Verify and/or complete background investigation for all current employees and contractors
October 28, 2008	Complete background investigations for all employees employed over 15 years

Table 10. HSPD-12 Implementation Guideline[11]

[11] Source: August 5, 2005 Memo from Joshua B. Bolten "Implementation of Homeland Security Presidential Directive (HSPD) 12"

4.0 Goal 2: IT Shared Service

4.1 Current IT Shared Services – Infrastructure

Most ED IT investments currently support transaction-processing systems for use in Loan or Administrative functions. OCIO's role is to provide a stable technology infrastructure upon which these transaction systems can operate. The current IT services offered by OCIO focus primarily on the deployment, operations, and maintenance of the EDNet technical infrastructure.

Many of ED's business functions and staff are involved in the gathering and analysis of data and related decision-making (referred to as "knowledge worker" activities) to perform:

- Planning and policy making
- Performance evaluation
- Information dissemination
- Compliance
- Research

These activities are mostly supported today by simple desktop tools, such as Microsoft Office, and a variety of individual applications, personal databases and spread sheets. Many Program Offices have sought support from OCIO to provide more comprehensive knowledge worker capabilities. In the past, OCIO was not equipped or funded to provide much beyond Microsoft Office and occasional prototype software, such as e-Rooms for collaboration.

As a result, many Program Offices were forced to "fend for themselves" and sought software packages and tools or custom designed practices to support their knowledge-worker needs. Today there are a very wide variety of software products owned by the Department as a result of Program Office attempts to acquire knowledge worker solutions. This diversity has led to the following problems or challenges:

- Few of these software products are shared widely across the Department. Instead, ED often finds itself with many separate individual products to support the same knowledge worker activity used by individual Program Offices (or their contractors).
- Most products are standalone and do not integrate easily with each other.
- The unique solutions using standalone products results in knowledge islands in each Program Office, thereby inhibiting the sharing of information across Office boundaries.
- Other products remain unused, as priorities or practices have changed since individual Program Offices acquired the specific tools.

Often, an individual office will have established a best practice in performing a knowledge worker function (e.g., statistical analysis) but such best practices are not shared across Program Offices.

4.2 Future Shared Services

OCIO's role will evolve to provide a broader set of common services to the Department. This future direction will position the OCIO to become a provider of enterprise common services beyond basic technical infrastructure support. These common services fall into two areas:

- Enhanced infrastructure services;
- Centrally supported application services.

During FY2006 the Department will address the specifics of this evolution for OCIO. OCIO will develop a clear design for what the enhanced set of service offerings will be, how these new services will be deployed, supported, and governed. What follows is the Department's current thinking around what IT shared services will be offered, based on the business needs, and what are the management challenges that OCIO will need to address during the year in order to provide these services in an effective and efficient manner.

4.2.1 Enhanced Infrastructure Services

In the future, OCIO will be in a better position to support Program Office knowledge worker support needs by developing, deploying, and supporting a set of enhanced infrastructure services that align with the business needs of the Department's knowledge workers. The Enterprise Architecture Program has identified 5 major and 18 subordinate knowledge worker support areas that are relevant in supporting ED's knowledge worker activities:

Shared Technical Services	Common Enabling Services
Performance and Productivity Services	• Collaboration Tools • Work Management • Case Management • Performance Management
Knowledge and Data Services	• Document Management • Report Management • Knowledge Management • Data Mart / Data Warehouse Tools
Customer and Interface Services	• Customer Management • Portal Management • Mobility Tools
Research and Statistics Services	• Statistical and Analytical Tools • Survey Design Tools • Survey Management (data collection)
IT Services Infrastructure	• Operations Support • Network, Storage and Computing Platforms • Security & Privacy • SOA-Enabling Platforms

Table 11. Department of Education Shared Technical Services

Appropriate solutions will be recommended over time to support Program Office needs. These recommended solutions are often owned by one part of the Department and could be shared with others. Preferred solutions would also be interoperable – that is, information gathered and analyzed under one tool would be readily available to all other parts of the knowledge worker tool suite just as tables or pictures produced in Word can be accessed or pasted into other Microsoft Office products, such as Power Point.

Deployment of these enhanced infrastructure services will provide direct benefits to the end-users:

- Improved knowledge worker performance and quality as best practices and related tools are used more widely throughout the Department
- Improved knowledge worker efficiency as interoperable tools reduce staff needs to perform extra work to link data and work products across independent tools or products
- Reduced software license and support costs as redundant tools are replaced over time by common solutions and reduced Program Office burden as staff no longer need to explore, test, select and deploy tools on their own.

This future state architecture emphasizes the delivery of solutions through a combination of sharable components rather than through standalone systems. On a longer-term basis, these solutions will be incorporated into new or enhanced versions of current ED systems as the Department moves to the future state architecture.

The selection and deployment of such enhanced infrastructure services will require OCIO activities in 4 areas:

- Development of detailed plans and product recommendations for the various types of Common Enabling Services
- OCIO support to Program Offices to define relevant knowledge worker requirements and identify the best way to support such needs through available Common Enabling Services
- Acquisition, deployment and operation of hardware and software products on the ED-Net infrastructure to provide Common Enabling Services
- On-going training, configuration support, help desk and related customer service to Program Office users to maintain or adjust usage of Common Enabling Services to meet specific end user needs (e.g., configuration and use of Microsoft Exchange functionality to satisfy common tracking and simple knowledge management business needs).

4.2.2 Centrally Supported Technology Services

Three broad categories of IT services are being considered as additional shared services that OCIO will offer to the business customers across the Department. The three areas include:

- IT Planning and design services
- IT Solution development and deployment services
- End user IT support services.

Each of these is further described in the following paragraphs.

IT Planning and Design services will focus on services that support the Program Offices in effectively aligning their business priorities with enabling IT capabilities to further both the POC and the Department's overall mission. These services could include:

- Program Office IT planning services in support of multi-year IT investment and project plans that provide the maximum benefits of available IT resources to the performance of the POCs. This could include future state IT visions for POCs, future state concept of operations that identify the role of technical capabilities in the processing of the business unit mission, and the development of transition strategies and project portfolios that leverage existing and new IT components.

- Solutions architecture and design services including the definition, description, and high level requirements for discrete IT projects and/or the application of common enabling services (e.g., workflow and collaboration tools) to solve specific business needs.

IT Solution development and deployment services provide a full range of services for applying technical capabilities to solve POC business needs. These services are envisioned to involve custom applications development services, package installation and deployment services, or individual development expertise to POC-acquired development teams (e.g., project management, acquisition guidance/support). These services could include:

- Applications development, enhancement and deployment services (e.g., web applications and decision support applications development)

- Commercial off the shelf (COTS) software package identification, selection, installation, and support

- IT Solutions project management and acquisition support services.

The selection and deployment of these services will require OCIO to engage in the following activities to provide IT Solution development and deployment services:

- Development of detailed plans and product recommendation for various types of Common Enabling Services

- Support to Program Offices to define relevant knowledge work requirements that will be optimally fulfilled by the Common Enabling Services

- Acquisition, deployment, and operations of COTS products on the EDNet infrastructure to provide Common Enabling Services

- Development of common enterprise-wide solutions or custom-developed solutions for individual Program Offices

- On-going training, configuration support, help desk and related customer service to Program Office users to maintain or adjust usage of Common Enabling Services

End-user support services would be provided as a shared service to the Department to fill a key gap in the current IT support model at ED. The future direction for IT at the Department is heavily focused on data access and analytical activities in support of the Department's mission. With the exception of small pockets within certain organizations, the Department has little expertise in supporting its end-users in these areas. As the Department moves towards the application of enterprise-wide data stores, enhanced analytical tools for end-users, and the rollout of common enabling infrastructure tools to its knowledge workers, these same knowledge

workers will require support to effectively apply these new capabilities to their day-to-day efforts. A set of shared services will be provided to deliver this support to the end users and could include the following:

- End-user data access, query and reporting support services, including Executive Dashboard support services, to ensure the users understand the data available to them, how to access that data, and how best to manipulate the data in performing sophisticated analyses
- Technology/solutions training and support services for end-users so the users can effectively use the new capabilities and derive value from these investments
- Enterprise application operations and end-user support services (e.g., EDEN and Enterprise Data Warehouse application support) involve the basic support for shared applications – efficiently delivered as a shared service. Applications that are shared across an organization require support that is also shared.

4.3 Management Structure for IT Shared Services

The Department will focus on three key goals for the implementation of additional IT shared services for FY2006: defining an effective product and service delivery model for the new shared services; defining an effective governance model to provide both technical and business oversight on the evolution of the products/services offered and the service levels associated with the currently supported services, and; development of a funding strategy for the products/services offered by OCIO.

The definition of an effective product and service delivery model for shared services will be based on a set of guiding principles for the OCIO's operating model. These operating model principles include:

- Promote a supplier-customer relationship between IT and the business units to foster a 'customer service' culture in IT while maintaining the fiduciary role of OCIO
- Implement an appropriate funding model for shared services that promotes financial transparency so that customers understand the costs associated with the products/services they consume, and understand the cost levers available to them (e.g., accept a higher level of service for a higher cost to meet special business needs)
- Introduce a 'product-centric' model that integrates multiple disciplines and assures accountability for the products/services offered to the customers. This would include future product strategy, service level options, product refresh plans, etc.
- Separate the product/service planning and development functions (plan/build) from the operations functions to allow each to excel in their own individual disciplines and assure that strategic, tactical, and operational imperatives are met.

The product and service delivery model will address the process and functional relationships both within OCIO and across the Department.

The product / service model will define specific roles, responsibilities, and accountabilities for operating the shared services that include both OCIO functions and the role of the business customers. The management issues / questions will need to be investigated while designing an effective shared services model for these services. Some of the management issues include:

- When should the Department come to OCIO for a service and when should the service be contracted-out?
- What is the role of OCIO in satisfying POC-specific business needs and how does that role differ if the need is enterprise-wide?
- How can OCIO maintain its fiduciary role when another organization/entity delivers the shared service?
- How will the Department decide whether a shared service is to be provided by OCIO or another organization (e.g., CFO, IES)?
- What is the governance model that will addresses investment priorities, funding mechanisms, portfolio effectiveness, service levels for share services, and adherence/compliance actions?
- Are there service-specific governance models that are required, i.e., shared applications require shared support functions and shared governance?
- What are the appropriate organizational and contractual vehicles that are required to deliver shared services?

Specific steps to move toward the shared services operating model during FY2006 include addressing the following:

- Understand and document the needs of the customers for specific products and services that can best be developed, delivered, and supported centrally
- Offer these shared products/services to the business efficiently and at an appropriate level of service and cost
- Install product/service ‘monitoring’ functions to adjust the product/service mix (i.e., specific products, services, new service levels, etc) to reflect changes in the business needs and the demand for these products and services
- Define and adopt a sound management model that allows the organization to effectively address the strategic, tactical, operational, and governance issues simultaneously.

5.0 Goal 3: IT and Information Management

5.1 Enterprise Architecture Management

5.1.1 Purpose

Enterprise Architecture (EA) is a both a *plan* and a *process* for linking an organization's business needs with the best available technology. EA integrates the relevant information resources and the business processes into a cohesive whole. Using an EA increases access to shared data, reduces redundant Information Technology (IT) efforts, and facilitates the use of new technology. EA enables the Department to make better investment, design, and implementation decisions:

- Clarify and transform business activities according to the Line of Business vision
- Integrate existing systems to provide shared services and make use of shared data
- Increase the level of automation for areas that are currently lacking and could substantially benefit from automation
- Improve the effectiveness and efficiency of IT investments to better support the Department's mission

The EA process and work products are integrated to the Department's Strategic Planning, Capital Planning and Investment Control (CPIC), and Performance Management to drive effectiveness and efficiency (i.e., Use and Results)

The IRM Strategic Plan is fully consistent with development and migration towards the future state business and technology model envisioned by the Department and described in the EA Vision.

5.1.2 Scope

The Enterprise Architecture comprehensively and strategically describes the Department's before (Current) and future (Target) state architecture as well as the Transition Strategy to sequence the implementation of the target EA vision.

- From an information technology perspective, the Current ED business model is stove-piped across the Program Offices, with narrowly tailored IT investments and little collaboration
- The Target EA is a new business model that promotes common and shared capabilities to serve the customers, deliver value, and empower staff
- The Transition Strategy describes the close coordination across the Department on the sequencing (timing) and integration (inter-dependencies) of the project initiatives in migrating towards the target EA vision

- EA assists in business and IT strategic planning (cross reference FSA IT Strategic Plan, FSA IT Strategic Planning Process, and Information Resource Management Strategic Plan)
- EA participates in CPIC Select, Control, and Evaluate phases (cross reference Business Case reviews and content, Exhibit 300 reviews and content, Architecture reviews of investments and recommendation for improvements to the CPIC process)
- EA assists in defining program and investment performance measures (cross reference PRM selection, PRM-PART alignment, and recommendation for Enterprise Governance)
- EA improves understanding of and visibility into the performance and fulfillment of business processes by implementing a clear "line of sight" from mission to realized results (cross reference populated EA Repository and Enterprise Analytical Reporting)

5.1.3 Future Direction

The Target EA describes a future business model that shifts from program office-specific focus to a cross-Program Office focus, structured along the seven Lines of Business (LOB) that span multiple Program Offices. The LOB structure represents a paradigm shift for the Department. Implementation of the LOB structure requires a reshaping of the current IT portfolio and potential reallocation of IT funding to align with the new program-office-spanning priorities, IT shared services, and data warehousing to improve data quality, access, and sharing.

5.1.4 Key Short Term Goals

- Improve EA Maturity by increasing use of the architecture to support analysis and justification as a part of IT Strategic Planning
- Pursue major IT investments identified through the EA process and describe in the Transition Strategy
- Enhance, communicate, and promote the use of the application, data, and technology architecture and standards throughout the management and execution of IT investments
- Implement the Data Warehouse common enabling service to enhance end user capabilities for analytical reporting
- Conduct EA reviews and make recommendation on strategic IT investments for FY07/08 as part of the CPIC and IT Acquisition Management processes
- Incorporate EA into the Department's investment Life Cycle Management processes

5.2 Capital Planning & Investment Control (CPIC)

5.2.1 Purpose

The Capital Planning & Investment Control IT Investment Management process is a systematic approach for managing the risks and returns associated with the IT initiatives. It ensures that

only viable initiatives are included in the Department's IT portfolio and that the portfolio supports the Department's mission and strategic goals. By aggregating the investments into a portfolio perspective, CPIC encourages partnerships, eliminates duplicative and stovepipe projects, and balances benefits against costs and risks. CPIC also provides effective oversight of the IT projects' costs, schedules, and performance throughout their life cycle. Finally, CPIC conducts post implementation reviews of completed projects to ensure that projects deliver against expectations and to apply lessons learned to improve future CPIC cycles.

The CPIC process serves as the management control vehicle for integrating long range planning with the budget and acquisition processes as the Department develops and manages its IT investment portfolio against the Future State Vision of the Enterprise Architecture.

5.2.2 Scope

The Department's Capital Planning and Investment Control is implemented through a three phased process cycle: Select Phase, Control Phase, and Evaluate Phase.

- Select Phase systematically screens, scores, and selects major IT investments for funding. The Select Phase procedures have been integrated into standard project management activities via the development of business cases for internal Investment Review Board review as well as OMB Exhibit 300s and Exhibit 53 for external budget submission and review.

- Control Phase measures and monitors the costs, schedule, performance metrics, and risks associated with the major IT investments along the development life cycle. Corrective actions are implemented at the first sign of slippages if and when they occur.

- Evaluate Phase conducts Post Implementation Reviews and Operational Assessments for investments that have exited the system development life cycle into production (steady state). Annually, an IT Portfolio Assessment will be conducted to identify gaps in the Department's IT portfolio in supporting the business mission and implementing the target Enterprise Architecture. The findings will become inputs to the subsequent Select cycle for re-prioritizing of next budget cycle's IT investments and funding allocation.

5.2.3 Future Direction

The Department will institutionalize Information Technology Portfolio Management into the CPIC process. The IT Investment Management (ITIM) program manages the CPIC process and provides executives and managers with accurate, up-to-date information on IT investment status, including life cycle costs, schedules and performance. The Department's project managers of major/significant information technology investments have integrated CPIC procedures into their standard project management activities, through business case development, quarterly control reviews and high-risk project status reports and briefings, and refinement and monthly updating of project cost and schedule data. Project managers for smaller projects now provide annual documentation (Business Case Lights) that encapsulate relevant business objectives, scope, funding and expected benefits for their projects. The combination of detailed information about major/ significant projects and the Business Case Lights provide the input to the overall IT Portfolio Management review session with the Investment Review Board.

5.2.4 Key Short Term Goals

Enhance and improve current efforts to further institutionalize IT investment management practices across the Department's portfolio of "supportive" IT investments (i.e., those categorized as less than "major" or "significant" projects, with development costs of less than $3.5M). Project managers of all IT investments meeting the defined threshold of a supportive investment, as enunciated in OCIO's definition of IT projects subject to the Department's IT investment management process, will be creating supportive business cases as a result of the project scrutiny that resulted when OCIO implemented its IT acquisition review and clearance process beginning FY2005.

5.3 Regulatory Information Management

5.3.1 Purpose

Regulatory and Information Management Services ensures Departmental compliance with governmental information management requirements in the acquisition, release, and maintenance of information. In particular, supports the following activities within the Department: Freedom of Information Act (FOIA), Privacy Act, Records Retention and Management, Information Collection, and E-Gov Initiatives. In addition, RIMS provides instruction to assure that customers are educated and supported in the performance of these efforts

5.3.2 Scope

To accomplish this mission, RIMS is has engaged a support contractor and is working to provide better service to program offices: to respond to FOIA requests; manage records; become more responsive to the OMB clearance process; and establish up-to-date relevant training, guidelines, and directives.

5.3.3 Future Direction

Beginning in late 2004, with support from outside contractors (Booz|Allen|Hamilton), the Strategic Investment Process was used to study the Information Collection Clearance, and Records Management and Retention efforts of the Department. Both initiatives resulted in reports, which define recommendations for the improvement of both activities. During the next few years RIMS focus is to fully implement Strategic Investment Process review recommendations.

5.3.4 Key Short Term Goals

For FY 2006, RIMS will complete the implementation of new business processes for FOIA cases, including FOIAXpress; and develop a user-friendly document management system capability for the Information Collection Clearance process.

5.4 Information Assurance (IA) Services

5.4.1 Purpose

The IA Program is a departmental IT Service that ensures the confidentiality/privacy, integrity, and availability (collectively to protect the security) of the Department's information and information resources. IA is intended to bring the Department into (and to maintain) full compliance with the Federal Information Security Management Act of 2002 (FISMA).

The Department maintains a systems inventory that is revalidated semi-annually. The Department's Information Assurance team works with Computer Security Officers and system staff to complete inventory forms to identify the information sensitivity of the data on the systems. A Critical Infrastructure Protection survey also is completed to determine each system's mission criticality. The mission of the IA Program goes beyond IT security to "Enable the protection and continuity of the Department's mission under all circumstances."

5.4.2 Scope

The IA Program implements its functions through five programmatic elements:

IA Program Management and Governance:

- Direct Department-wide information assurance activities
- Coordinate and interpret security initiatives from OMB, GSA, GAO etc across the Department
- Provide the IA strategic vision and goals and closely coordinate tactical execution of security initiatives

Policies, Standards, and Procedures:

- Coordinate department wide policies regarding authentication and message encryption techniques, network and system security, management, operational and technical controls
- Develop and maintain disaster recovery plan and the OCIO Business Continuity Plan (BCP)

Security Operations:

- Coordinate department wide IT security incident reporting
- Develop corrective action plans to address weaknesses disclosed by FISMA reviews, certification and accreditation activity, IG audits, FMFMIA reviews, etc.
- Provide support for Department-wide technical security solutions

Security Training and Awareness:

- Define IT security curricula, roles and responsibilities
- Provide specialized training and general security awareness orientation

Analysis and Assessment:

- Coordinate activities regarding the Department's Critical Infrastructure Protection (CIP)
- Coordinate activities regarding the certification and accreditation of IT systems and applications
- Conduct annual security reviews, such as incident response exercises and continuity exercises, and evaluate and measure the effectiveness of security policies, procedures and standards

5.4.3 Future Direction

The strategic direction of the IA Program is to align various security services with the Information System Security Line of Business (ISS LoB). The IA Program is intending to become a conduit and service provider of value added security services and solutions to its customers. In the out years the IA Program will begin to provide standardized security services and solutions in areas such as:

- Risk Management
- Access Controls
- Identification and Authentication
- Encryption Solutions
- Public Key Infrastructure (PKI) Technology
- Certification and Accreditation

5.4.4 Key Short Term Goals

The IA Program is focused on solidifying practices and procedures that are the foundation to meet security compliance initiatives driven by FIMSA. IA is moving forward with its Information Assurance Program Management Plan (IA PMP) as the vehicle to meet the requirements under FISMA. Some of the key short-term goals are:

- Establishing a process that ensures consistent secure system design and implementation
- Aligning IA policy, procedures and standards with National Institute of Standards and Technology (NIST) guidance and standards
- Validating the OCIO business continuity plan
- Configuring the certification and accreditation activity to conform to a general support system (GSS) centric model

5.5 Lifecycle Management

5.5.1 Purpose

Lifecycle Management (LCM) is the coordination of activities associated with the implementation of IT systems from conception to disposal, through requirements definition, system design and development, testing, implementation, and operations. The LCM Framework defines the required stages, gate reviews, key activities, and core deliverables along the system development life cycle. It provides a foundation for aligning, reviewing, and enforcing the various existing interrelated program management, investment management, and contracts and acquisition processes.

5.5.2 Scope

The Lifecycle Management is guided by the LCM Framework, which consists of six stages:

Vision Stage:

- Develop a Business Case
- Determine necessary acquisition planning documents for acquiring services and resources
- Determine high-level requirements and assess feasibility costs

Definition Stage:

- Define functional requirements for both business and technical solution
- Produce high level functional design and detailed solution design
- Use design documents to guide work in Construction and Validation Stage

Construction and Validation Stage:

- Build, test, and validate the solution
- Transform specifications from the Definition Stage into an executable solution
- Validate solution functionality to ensure it meets or exceeds business and technical expectations

Implementation Stage:

- Install new or enhanced solution in the production environment
- Train users and convert data as needed
- Transition the solution to the end-user

Support and Improvement Stage:

- Document operational procedures and practices for solution modification and enhancement

- Align operational procedures and practices with Department business and technical standards

Retirement Stage:

- Execute the systematic termination of the system
- Preserve vital information for future access and or reactivation

5.5.3 Future Direction

Ensure that the Administrative Communication System (ACS) Lifecycle Management (LCM) Directive is fully adopted into the development, acquisition, implementation, maintenance, and disposal of IT solutions regardless of cost, complexity, and time constraints.

5.5.4 Key Short Term Goals

- Finalize ACS directive
- Develop LCM implementation plan.
- Communicate LCM framework to project managers and program managers
- Begin to conduct deliverable reviews and gate reviews

5.6 IT Operations and Maintenance

5.6.1 Purpose

Information Technology Operations & Maintenance services support all activities related to network information enterprise, to include network security, network and telecommunications design and operations, end user services, production server hosting services, and ED's intranet and Internet services. It comprises more than 1,000 servers and mainframes; approximately 290 switches and routers; more than 7,000 desktops, laptops, printers; network operating systems; enterprise-wide software; over 16 Principal Office-Specialized Applications and funding to operate and maintain the Department's Disaster Recovery Facility (DRF) located in Kennesaw, Georgia.

5.6.2 Scope

Information Technology Operations & Maintenance services consists of six broad areas of scope:

Production Management. This line of business addresses all production, messaging, and refresh hardware activities associated with the ongoing operation of shared network computer hardware. Contractor support provided under the new EDNet contract offers ED a fixed-price per server cost. Costs increase or decrease based on the number of production servers in the EDNet environment. The Production Management line of business is responsible for:

- Providing the physical infrastructure on which over 100 major and nearly 300 standard network applications reside. ED depends on the reliability and availability of these applications to carry out its mission.
- Integrating new applications into the EDNet production environment.
- Refreshing existing file server hardware including shared servers and new software.
- Retiring file servers and other shared hardware and software that are past their useful life.
- Maintaining maintenance licenses for file servers and other shared hardware and software.
- Managing ED's outside presence to the public via the Internet servers.
- Providing operational production support at the DRF.
- Managing IT/infrastructure portion of ED's BlackBerry devices, which enable ED employees to communicate with one another, other government entities, vendors and the public while away from their offices
- Managing ED's email messaging environment, which includes messaging monitoring, spam filtering, anti-virus scanning, blocking of the messaging systems, messaging systems management, and remote management of customer e-mail accounts.

Network Services. This line of business addresses all activities associated with IT communication between the shared EDNet hardware operated by Production Management Services and the single-user IT desktop equipment maintained by End User Support Services. It also includes technologies supporting communication between ED staff and outside stakeholders. Taken together, this line of business:

- Provides a robust, secure network infrastructure, which unifies the voice, data, and video networks and provides funds for network troubleshooting.
- Manages the Cisco architecture, network, and remote access for 68 routers, 163 switches, IP telephony (IPT) servers, IP television (IP/TV) broadcast servers, access servers for dial in access to EDNet, 6 voice mail servers, 7 network management servers, 24 PIX firewalls, 3 Symantec Enterprise Firewalls, 4 Virtual Private Network (VPN) concentrators, and 3 wireless access points that comprise ED's LAN, MAN, and WAN.
- Provides performance monitoring for EDNet systems.
- Maintains the Telecommunications Automated Tracking System (TATS) application used for the ordering and inventory of all of ED's telecommunications services.
- Continues to support SMARTNet, the maintenance task order that provides Cisco replacement parts and labor necessary to keep network devices in the thirteen buildings in the Washington, DC metropolitan area and eleven Regional offices throughout the country.
- Manages ordering, inventory, and billing for ED's BlackBerry devices.

- Manages ED's telecommunications equipment and services to ensure efficient resource utilization.
- Manages ED's VTC and cable television (TV) equipment to ensure availability and reliability.
- Manages IT cabling plan

Security and Reliability Assurance. This line of business is charged with maintaining appropriate levels of accessibility, integrity, and confidentiality for EDNet applications. The line of business is comprised of three components:

- *Security Operations*. Maintains EDNet's security infrastructure and security tools used to mitigate risks identified within the EDNet infrastructure during proactive internal audits, as well as annual FISMA Program Reviews conducted by OIG. Security Operations also addresses incident responses and ensures conformance to defined security guidelines and configurations as well as overall risk management. In essence, these are the activities required to maintain the Department's existing security capabilities, to respond to security incidents, and to meet mandated reporting and auditing requirements of the program.
- *Configuration Management*. Oversees the change control mechanisms for ED's LCM process, the Change Control Review Board (CCRB), Technical Review Board (TRB) and the Security Review Board (SRB). It creates, manages and maintains a master library of all technical and process documentation and is the main support mechanism for the EDNet C&A program. All changes to the environment are managed via this vehicle, ensuring appropriate EDNet oversight, integration of security considerations, development of integrated processes between the oversight boards, and development of a standardized process for deployment of enhanced products and services. The team also explores industry best practices in these areas.
- *Disaster Recovery Facility*. Supports the Disaster Recovery Program and Continuity of Operations (COOP) Plan that meets ED's need for an alternate disaster recovery site addressing a full range of potential emergencies, survivability, and the continuous operation of its IT capabilities. The DRF provides the capability to restore and sustain critical technology business operations, should the data center currently located in Oxon Hill, MD become unable to fulfill this goal for ED and its customers throughout the U.S. The DRF accomplishes this by:
  - Maintaining and following a current Disaster Recover Plan (DRP) to reconstitute the IT infrastructure needed to support mission-critical functions during a disaster, in accordance with requirements for a Federal Agency General Support System.
  - Operating the DRF; a robust, compatible, secure, and scalable warm backup facility to the primary data center. The DRF interconnects with the HQ and Regional facilities to provide connectivity in the event of a significant disruption of service and as a contingency for other services. The infrastructure in the DRF has been sized for expansion to provide warm backup and disaster recovery services to applications sponsored by other ED Principal Offices, and offers additional expandability for future requirements.

- Maintaining redundant connections to critical ED locations to ensure maximum network availability.
- Researching, developing, and maintaining functions that mitigate security vulnerabilities and improve or sustain ED's IT security stance.
- Acquiring, developing, and maintaining tools for ensuring IT security and reliability.

Development Services Group (DSG). DSG manages the Department's primary websites (ED.gov, the intranet, connectED) and provides expert advice and support for web-based application development activities. In 2003, DSG executed redesigns for both projects that represent the priorities and initiatives of the Department and serve customer needs. Both sites employ templates and workflows that make updates more efficient and consistent. DSG provides technical expertise/support for application development, web graphics, streaming video and listservs. DSG assists project managers in defining their requirements, preparing a statement of work, and identifying potential contract vehicles for web-based applications. DSG manages two contract vehicles to support web activities. DSG also supports eRooms, a web-based collaboration tool.

Assistive Technology. Evaluates and tests software applications and hardware to ensure compatibility with the legislative requirements of Section 508 of the Rehabilitation Act of 1973 and supports this legislation through the provision of technology to disabled employees, allowing them to be more productive. In addition, this line of business supports the provision of access to ED specific information and information systems to all disabled employees and members of the public who would not have such access without the assistive technology, training, and support available through this initiative.

Project Management. Focuses on managing projects to maintain and enhance existing high-quality ED IT support services. Projects include contractor project management support for EDNet technology maintenance refreshes, Productivity Enhancement Projects, Security Upgrade Projects, Regional Moves, the New Data Center and the Switzer Relocation. These projects all have a distinct beginning and end date and will be managed using earned value.
All projects utilize the Department's Technical Review Board (TRB) processes to ensure compliance with operating and security standards.

5.6.3 Future Direction

- Migrate server technology to Windows 2003. Consideration to be taken of leapfrogging 2003 as Microsoft is targeting lifting support in 2008. Consideration for upgrading to Windows Vista Server should be studied for feasibility.
- Migrate desktops to Office XP
- Migrate desktops to Windows XP. Consideration to be taken of leapfrogging XP as Microsoft is targeting lifting support in 2007. Consideration for upgrading to Windows Vista should be studied for feasibility.
- Feasibility study for server consolidation at new data center, including use of blade technology. Resource partitioning software and virtualized components within Windows

should be more mature than they are currently. That being the case, resource consolidation should be a prime focus of the EDNet architecture.

- Wireless on EDNet. Concerns regarding security of the technology continue to be prime for FISMA audits. However, encryption and authentication aspects of Wi-Fi have improved to the point where they are viable for the enterprise. We expect that customer demands will continue. Our challenges will revolve around integrating this technology in a safe, monitor-able and scalable way.
- Annual DR test in DRF
- K Street core infrastructure upgrade
- Discuss with NCES consolidation of their equipment in K Street to new data center
- Pre-FISMA penetration testing on EDNet
- Final Networx transition guide ready for ED senior management along with budget impact assessment
- Work with OM on design and layout for San Francisco and Chicago
- Issue study on how to more effectively use and leverage the Dept's investment in DRF
- Create an emerging threats engineering component in security operations
- Enterprise Conferencing Solution - an online conferencing and collaboration solution is needed to support both: (1) internal conferencing of ED employees with voice, video and data conferencing, and (2) internal-to-external voice/video/data conferencing with ED customers, such as state education agencies and the general public.

5.6.4 Key Short Term Goals

- New data center buildout
- Take possession of new data center and complete "burn-in" of new equipment
- Upgrade our backup capacity in support of application moves to the new data center
- Quarterly EDNet Scans to ensure CSC patch compliance
- Lumeta appliance EDNet scans (every two months)
- Monthly IDS DR cutovers to DRF
- Complete TCO study of what our server technology should be going forward for next 5 years
- Upgrade quality of work performed by CM and PMO with industry standard software products
- Plan and execute usability testing on ED.gov
- Inventory of IP devices for OMB in response to their IPv6 initiative

- Preliminary plan to OMB on making the Department IPv6 compliant by 2008
- FISMA response and associated remediation
- Complete SOW to migrate security functions from EDNet prime and eliminate conflicting duties
- Install performance-monitoring tools on EDNet
- Implement EDNet "dashboard" after performance tools are operational
- Report to OMB on ED.gov compliance with eGov requirements
- Perform bi-annual EDNet effectiveness appraisal for performance year award purposes
- Web based version of eMonitoring
- Refresh of 1/16 of desktops
- Upgrade ConnectED and intranet applications to MX7
- Complete NY and Boston regional office moves
- Upgrade power in FB6 to support new CFO hardware
- Inventory two of ten regions for all telecommunications equipment in support of projected data calls for the GSA Networx transition, which will serve as the primary replacement for the expiring FTS2001 and FTS2001 Crossover contracts and Federal Wireless contracts.
- Transition of the agency's local telecommunications services in the greater Washington DC area from WITS2001 to WITS3 contract.
- Infrastructure Upgrades to FB6 and K Street: These two buildings have core networking devices that are overdue in terms of tech refresh. In addition, in order to upgrade the antiquated architecture in these buildings, power upgrades need to occur.
- FB6 IP Communications Implementation: Continue to comply with the Department's enterprise architecture for voice, video, and integrated data deployment by bringing the Department's Headquarters building in line with the UCP and PCP converged architectures. This will allow for increased productivity, cost savings, and improved network administration
- Emergency Communications: Building on its IP telephony platform, the Department seeks to enhance its COOP basis by deploying additional features to allow for instantaneous and centralized broadcast communication solutions to the desktop. This application will allow users to receive instruction and updates on any and all COOP-related emergencies that the Department's Security Services Team wishes to announce

5.7 IT Acquisition Management

5.7.1 Purpose

The Acquisition Management process ensures that all Department information technology (IT) acquisitions are reviewed for EDNet compatibility, FOIA compliance, and accounted for in the Department's IT Capital Planning and Investment Control (CPIC) portfolio. The process provides review and approval of hardware, software and contracted service acquisitions to ensure alignment with the EDNet Hardware Buying Guide, software compliance standards and licensing agreements, and the Department's IT investment management processes.

5.7.2 Scope

Acquisition Management offers support through out the acquisition life cycle:

- Acquisition Planning Phase – develop acquisition strategy and project plan, identify potential vendor, determine best contract vehicle, develop performance work statement, and create source selection plan.
- SOW review and Clearance Phase – Review of SOWs, independent government cost estimates and other supporting contract documents. Acquisition Management collaborates with ED Principal Offices during the review process to ensure that each IT acquisition is aligned with the Department's network infrastructure, FOIA compliance, policies and standards, and is driven by sound business requirements as defined in an approved business case.
- Contract Formulation Phase – respond to solicitation questions from vendors, evaluate proposals, develop questions for vendors during contract evaluation, and recommend best value award.
- Contract Administration Phase – host kick-off meeting with contractor and perform project manager or Contracting Officer's Representative (COR) duties to assist Contracts and Acquisitions Management (CAM) during contract performance.

5.7.3 Future Direction

Institutionalize the Review and Clearance of performance work statements. Continuous review of the Department's IT acquisitions is a requirement of the Clinger-Cohen Act for federal agencies to ensure the implementation of an effective information technology capital planning and investment control (CPIC) process. The *OCIO Information Technology Acquisition Review and Clearance is* aligned with the Select Phase of the Department's Information Technology Investment Management (ITIM) process.

5.7.4 Key Short Term Goals

Provide guidance across the Department's Principal Offices and ensure implementation of the IT Acquisition Review and Clearance Process. Acquisition Management review and clearance affirms that IT acquisitions are linked to business cases that define business requirements and objectives and take appropriate security, FOIA compliance, and IT operations planning into consideration.