

The Library of Congress
Office of the Inspector General



Library-wide

*Follow-up Review: Information
Technology Strategic Planning*

Report No. 2011-IT-103
December 2011

FOR PUBLIC RELEASE





UNITED STATES GOVERNMENT

LIBRARY OF CONGRESS

Memorandum

Office of the Inspector General

TO: James H. Billington
Librarian of Congress

December 1, 2011

FROM: Karl W. Schornagel
Inspector General

SUBJECT: Follow-up Review of IT Strategic Planning
Report No. 2011-IT-103

This transmits our final report summarizing the results of the Office of the Inspector General's follow-up review of *Information Technology Strategic Planning*, Report No. 2008-PA-105, March 2009. The executive summary begins on page *i*, and complete findings and recommendations appear on pages 7 to 18.

Based on written comments to the draft report, we consider all of the recommendations resolved except for recommendations 2.C.1, 3.A.1, 3.A.2, and 4.D of Section I and recommendation 2 of Section III, in which management did not provide a response. Please provide, within 30 calendar days, an action plan addressing implementation of the recommendations, including an implementation date, in accordance with LCR 2023-9, *Rights and Responsibilities of Library Employees to the Inspector General*, §6.A.

We appreciate the cooperation and courtesies extended by the Office of Strategic Initiatives and the Office of the Chief Financial Officer.

cc: Chief of Staff
Associate Librarian for Strategic Initiatives
Chief Financial Officer

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▶▶ EXECUTIVE SUMMARY

Using the services of a qualified consulting firm,¹ we reported on the effectiveness of the Library's Information Technology (IT) strategic plan in early 2009.² The report's overall conclusion was that the Library's IT strategic plan was not adequately integrated with its overall strategic plan, and that essential planning components were lacking. The report identified improvements needed in five key areas: strategic planning, IT investment, enterprise architecture, organizational structure, and customer service.

This report provides the results of a follow-up intended to assess the Library's progress in addressing the issues presented in our March 2009 report. Overall, we found that the Library has made progress towards implementing the recommendations of our prior report, but we expected that the Library would have made further progress by now towards implementing the recommendations of our 2009 report. Summaries of findings are as follows:

An Updated OSI Strategic Plan is Needed—The Office of Strategic Initiatives (OSI) should update its strategic plan and ensure that it is in line with the Library's Fiscal Year 2011-2016 strategic plan. Additionally, the Library should continue developing its enterprise architecture (EA)³, with the goal of creating a transformational guide designed to move Library organizations strategically and technologically forward in unison.

Better Data for IT Investments is Needed—Library management must improve the quality of data it maintains for the agency's IT investments. More accurate data on the current state of the Library's technology will enable effective management decision-making as the Library develops its IT portfolio. The data improvement effort should ensure that all IT costs (including computer security costs) are tracked, analyzed when required, and taken into account as part of standard IT budgeting procedures.

¹ A-TECH Systems, Inc., an IT consulting firm in the Washington DC region.

² *Information Technology Strategic Planning: A Well-Developed Framework is Essential to Support the Library's Current and Future IT Needs*, Report No. 2008-PA-105, March 2009.

³ EA provides a high-level snapshot of IT systems and business processes and provides a framework for making IT investment decisions.

The IT Function and OSI Need to be Organizationally

Separate—The organizational placement and structure of the IT function in the Library is limiting effective strategic planning and proper governance for IT. Accordingly, the IT function should be removed from OSI and an Office of the Chief Information Officer should be established to manage the Library's IT function. Moreover, the Enterprise Architect and the EA program should be organizationally moved to the Office of the Librarian, and the Enterprise Architect should report directly to the Chief of Staff.

Increased Oversight of EA Development is Needed—

Management oversight of the early stages of EA development has been too limited. Therefore, the IT Steering Committee should re-energize its relationship with the Architect Review Board (ARB) and increase its oversight of the ARB's EA-development activities. Additionally, all of the Library's EA costs, including development costs, should be budgeted separately.

Customer Service Needs to be Strengthened—The level of dissatisfaction throughout the Library with IT customer service can be further reduced. To do so, the Library should 1) utilize Service Level Agreements to manage service/support unit expectations, 2) require all service/support units to use a standard help desk system, 3) develop a set of metrics to measure ITS' customer service performance over time, and 4) conduct regular surveys to monitor satisfaction with IT customer service.

In FY 2010, the Library obligated \$107 million (37% of its discretionary budget) for IT related expenditures, including services, hardware, software, and maintenance. We believe Library management's continued focus on effective IT management will result in substantial long-term efficiencies.

Management concurred with 17 of our 21 recommendations, disagreed with one, and stated that their response to three of our recommendations was pending further review of the implementation of the information resources management plan issued in December 2010.

▶▶ BACKGROUND

In early 2009, a consulting firm that we engaged⁴ reviewed the effectiveness of the Library of Congress' (LOC) information technology (IT) strategic planning. We presented the results of that review in our March 2009 report titled *Information Technology Strategic Planning: A Well Developed Framework is Essential to Support the Library's Current and Future IT Needs* (Report No. 2008-PA-105).

The consulting firm found that the Library had made many improvements in technology between 2000 and 2008. However, the firm also found that

- the Library's planning process for IT was not adequately integrated with the agency's essential planning components and was not being instituted agency-wide;
- organizational placement and structure of the IT function in the Library was limiting effective strategic planning and proper governance for IT;
- a lack of connection between the Library's IT investment process and its strategic planning process was yielding duplicated efforts and acquisitions; and
- dissatisfaction with the customer service of the Library's Information Technology Services organization (ITS) was frequently causing Library service and support units to obtain solutions for their IT problems from sources outside the Library.

The issues presented in our 2009 report have grown in significance due to the country's growing fiscal crisis. Legislators and agency leaders, facing escalating budget shortfalls, must respond with both innovation and managerial determination. To provide more with less, the Library must identify opportunities to increase productivity and obtain greater return on capital investments. The era of substantial federal budgetary resources has disappeared.

⁴ A-TECH Systems, Incorporated, an IT consulting firm in the Washington DC region.

Workplace productivity, knowledge, and prosperity have exploded over the last 50 years. Virtually every aspect of industrial, commercial, and governmental activity has exponentially increased through the introduction and growth of computer technology. As a result, government and private industry continue to look to their IT to increase productivity and provide strategic and practical solutions.

Best Practices

The Clinger-Cohen Act, enacted in 1996,⁵ is an effort to improve federal agency IT performance activities by requiring executive branch agencies to coordinate their IT procurement and strategic planning processes. The Act's objective is to increase the return on agency IT investments by assuring that agency management links planning, performance, and capital investment activities. The legislation's intent is to promote economies of scale, increase performance accountability, and align IT and agency strategic planning. As part of this process, the Act defines IT architecture, and calls for the appointment of an agency Chief Information Officer (CIO) to be responsible for ensuring that the agency has sound IT architecture.

The Office of Management and Budget (OMB) recently released OMB Memorandum 11-29,⁶ which re-emphasizes many of the concepts set forth in the Clinger-Cohen Act, and re-states a CIO's responsibilities for leading an agency's IT portfolio, driving the planning for IT investment, and eliminating duplication of IT efforts.

The Clinger-Cohen Act served as the foundation for many of the observations and recommendations in our 2009 report. Although the Act is not legally applicable to legislative branch agencies, it is in the Library's best interest to follow the Act's requirements as best practices in the areas of IT investment and architecture development.

⁵ Formerly the Information Technology Management Reform Act of 1996 (P.L. 104-106, Division E).

⁶ OMB Memorandum 11-29, *Chief Information Officer Authorities*, August 8, 2011.

Library's Action Since Our Original Report

In his Management Agenda for 2009-2010, the Librarian of Congress identified critical, Library-wide needs in eight operational areas. Two of those areas addressed issues presented in our 2009 report, including requirements to: 1) develop an information resources management (IRM) plan to establish a governance and investment-management process for the Library's IT work; and 2) create an IT enterprise architecture (EA) to systematically define and complete the Library's current and desired IT environment.

In December 2010, the Library released an IRM plan and an EA implementation plan to respond to IT tasks described in the Management Agenda. The IRM plan provides the foundation for an overall approach to IRM at the Library, and addresses key supporting concepts for connecting strategic planning, EA, and IT investment management. The EA implementation plan describes the relevant roles, responsibilities, and intra- and interdepartmental relationships needed to develop a successful EA at the Library.

The Library has made some progress in implementing an IT governance model and developing an EA since we issued our 2009 report. However, information that we collected during this follow-up audit revealed that management and customer service issues continue to hamper the effectiveness of the Library's IT administration.

Table 1: IT Structures of Other Legislative Branch Agencies				
Agency	CIO Role Exclusive IT Support	IT Support Part of Infrastructure Support	Centralized IT Budgeting	EA Uses FSAM or EAMMF ⁷
AOC	Y	Y	Y	Y
GAO	Y	Y	Y	Y
GPO	Y	Y	Y	Y
LOC	N	N	N	N

Benchmarking information that we collected from other legislative branch agencies revealed that the Architect of the Capitol (AOC), Government Accountability Office (GAO), and Government Printing Office (GPO) manage their IT resources much differently

⁷ Federal Segment Architecture Methodology (FSAM) and Enterprise Architecture Management Maturity Framework (EAMMF) are processes to assist organizations successfully develop, maintain, and use an Enterprise Architecture (EA). The Federal CIO Council developed FSAM and the Government Accountability Office developed EAMMF.

than the Library. Unlike the Library, agency CIOs are primarily responsible for IT support without any programmatic functions. Moreover, agencies follow established GAO and OMB frameworks for EA development. IT resources are also budgeted centrally.

Library-wide information on perceived ITS performance in various customer-service areas, which we collected through a survey, revealed mixed results.⁸ For instance, on a question on the performance of ITS’ help desk since our 2009 audit, 48 percent of responders saw improvement; 41 percent saw no change; and 11 percent believed ITS’ performance had declined. Additionally, on a question on satisfaction with ITS’ services provided for IT project management, investment planning, and security, 33 percent of the responders were satisfied; 30 percent were dissatisfied; and 37 percent had no opinion. Table 2 summarizes results of our survey.

Question	Percent (%)				
	Strongly Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Overall, how satisfied are you with the customer support provided by the ITS help desk?	4	4	19	51	22
Overall, how satisfied are you with services provided by ITS for project management, IT investment, and IT security?	0	30	37	26	7
Have you seen a service level performance improvement in the ITS Help Desk since the audit report was released in 2009?	Improved	Unchanged		Decreased	
	48	41		11	

⁸ We requested survey information from 49 IT liaisons and received 27 responses.

⁹ Results consist of the responses by 27 participants. A statistical conclusion cannot be performed based on the limited respondents to this survey.

►► OBJECTIVES, SCOPE, AND METHODOLOGY

The principal objective of this review was to evaluate the Library's progress in implementing recommendations that we issued in our March 2009 report titled *Information Technology Strategic Planning: A Well Developed Framework is Essential to Support the Library's Current and Future IT Needs* (Report No. 2008-PA-105).

Our scope included evaluating activities associated with the Library's IT strategic planning process, investment process, organizational structure, EA, and customer service. As a result of our follow-up work, we also reviewed compliance with the certification and accreditation process.

Our methodology included discussions with key members of the Library's Office of Strategic Initiatives (OSI) in order to evaluate the application of relevant written policies and procedures. Additionally, it also included reviewing our 2009 report, management's responses to that report, and analyzing IT-related financial records to determine the Library's compliance with requirements for recording IT costs.¹⁰

Our methodology also included benchmarking with several legislative branch agencies similar in size to the Library to compare the authority structure for managing the IT activities of those agencies with the one used by the Library to manage corresponding activities.

Finally, our methodology included conducting a survey to collect and assess information on Library-wide perception of ITS' performance in the areas of IT help desk support, project management, investment planning, and security.

¹⁰ The purpose of the test was to validate recorded IT related transactions. A judgmental sample was used to select and test 51 out of 16,633 (0.3%) non-IT related expenditure transactions (i.e., recorded in the financial system, Momentum, with a non-IT activity code) in FY 2011 as of July 28, 2011. We expected an error rate of 5% but found 38 (74.5%) of the transactions tested were IT related transactions that were incorrectly posted with non-IT activity codes. We used judgmental sampling rather than statistical sampling because this allowed us to select transactions that were more likely to be incorrect. As a result, we are not able to project an error rate across the entire population of transactions.

We conducted this review from May through August 2011, in accordance with generally accepted government auditing standards, and Library of Congress Regulation (LCR) 211-6, *Functions, Authority, and Responsibility of the Inspector General*. Those standards require that we plan and perform the review to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our objectives.

►► FINDINGS AND RECOMMENDATIONS

The findings of our March 2009 report covered five core areas:

- Strategic Planning
- IT Investment Process
- Organizational Structure
- Enterprise Architecture (EA)
- Customer Service

Within those areas, the report made recommendations to help the Library achieve an effective IT strategic planning process. When achieved, such a process will provide the Library with an effective framework for assessing costs and benefits, managing priorities, and planning future needs for IT.

The Library has made progress towards implementing the recommendations of our 2009 report, but additional action is needed.

In section I, we present a summary of the findings and recommendations in the original report, management's most recently-reported actions taken to address the recommendations, our assessment of those actions,¹¹ and additional actions we believe are needed.

In sections II and III, we present additional findings that we identified during this follow-up audit, along with new recommendations.

¹¹ In some instances, we determined that management-reported information indicating complete implementation of a recommendation was inaccurate.

I. Findings as Reported in 2009 Report and Current Status

FINDING 1 – STRATEGIC PLANNING PROCESS		
We found that the strategic planning process was not a unifying force at the Library of Congress, and not incorporated into the organization’s culture. Specifically we found that:		
1. The Library’s Strategic Planning process was not inclusive of all internal stakeholders; 2. The Library’s IT Strategic Plan does not align well with the Library’s Strategic Plan; and 3. The Library’s digitization efforts are scattered and lacking in specific focus.		
Reported Action/Date	Actual Status	Remedial Action Required
<i>1.A–Create a process to ensure that organizational strategic plans align with its strategic plan; specifically, the IT Strategic Plan should align directly with, flow from, and include the same goals as the Library’s Strategic Plan.</i>		
Implemented March 2010	Not implemented–Since March 2009, the Office of Strategic Initiatives (OSI) has not updated its strategic plan. In November 2010, the Library updated its strategic plan to align with the Librarian’s Management Agenda issued in July 2009. As of August 31, 2011, OSI had not released its updated strategic plan to align with the Library’s November 2010 plan.	OSI should ensure that the OSI Strategic Plan for FY 2011-2016 aligns with the Outcome and Result Statements and the Strategies identified in the Library’s FY 2011-2016 Strategic Plan.
<i>1.B–Involve line employees in the strategic planning process by having them participate in service unit and support working groups to develop recommendations for the Library’s Strategic Plan.</i>		
Implemented March 2010	Implemented–Three working groups were formed with the Library of Congress (LOC) staff to update the Library’s FY 2011-2016 Strategic Plan. In addition, Library-wide comment was solicited and received.	None
<i>1.C–Ensure that all initiatives concerning future library technology are shared Library-wide.</i>		
Implemented March 2010	Implemented–Initiatives concerning future library technology are shared Library-wide via LOC Operations emails and the Library newspaper, <i>The Gazette</i> . In addition, various IT collaborative groups serve as a catalyst for distributing IT-related information.	None
<i>1.D–Produce a transformational guide that contains a plan of execution to ensure that the Library moves forward as a total institution with one voice.</i>		
Not implemented	Not implemented–Production of a transformation guide that moves the Library forward with one voice is expected when the Enterprise Architecture (EA) is further developed.	The Library should continue to develop an Enterprise Architecture that will lead to the creation of a transformational guide.
<i>1.E–Form a cohesive, integrated, and centrally managed LC Digital Strategy Plan with all the roles and responsibilities of all relevant service and support units clearly defined.</i>		
Implemented March 2010	Implemented–The Web Governance Board (WGB) serves as the coordinating authority of all of the Library’s Web presence. The Digital Library Content Group reviews and prioritizes service units’ project proposals and presents those with major impact to the WGB for approval.	None

FINDING 2 – IT INVESTMENT PROCESS We found that the IT investment process at the Library is not linked to its strategic plan.		
1. The Library’s IT planning is not linked to an investment process. 2. There is duplication of costs. 3. There is no consistent cost-benefit analysis (analysis of alternatives) done by ITS. 4. The Library does not transparently track IT costs.		
Reported Action/Date	Actual Status	Remedial Action Required
<i>2.A–ITS should inventory and prioritize all existing systems that require upgrade and new IT projects to create an IT portfolio. Ideally, this should also include smaller systems and purchases that fall below the capital threshold.</i>		
Implemented March 2010	Not implemented–Information Technology Services (ITS) maintains an IT registry, but it does not prioritize existing systems that require upgrade, or new projects that are not reviewed by the IT Steering Committee (ITSC). The IT Investment Management Portfolio Office maintains a portfolio of new IT investments reviewed by the ITSC, but this is mainly limited to larger IT projects.	ITS should maintain a collective IT portfolio which lists and prioritizes all IT investments requiring upgrade or implementation. Ideally, the portfolio should not be limited to investments which meet one of the six vetting/ approval criteria of the ITSC threshold policy which are based on project scope, cost, significance, risk, visibility, and innovative nature.
<i>2.B–The Library should develop a plan to review and eliminate duplicative costs including Help Desks, technical liaisons in service units, and coordinate purchases.</i>		
Implemented March 2010	Not implemented–The intent of the recommendation was not to identify specific/exact duplications, but to analyze potential cost savings from consolidating IT support provided by ITS with that of service units which have created fully functional IT support functions. The Chief Financial Officer (CFO) study, which reviewed FY 2009 data, identified \$13 million in duplicative costs; however, service unit replies stated that none of those costs were duplicative. Results of this study are inconclusive.	The CIO, as head of the Library’s IT strategic planning, should develop a structured procedure which continuously identifies and prevents duplicative IT costs throughout the Library by consolidating IT services.
<i>2.C–All IT costs including computer security should be accounted for as part of the IT budgetary process.</i>		
Implemented March 2010	Not implemented–IT-related costs are not centrally accounted and funded Library-wide. Instead, they are part of the service/ support unit’s budget. As a result, service/support units must pay for the costs of performing certification and accreditation (C&A) of systems. This has caused discontent between service/support units and ITS about funding the costs of C&A reviews, especially for legacy systems. Moreover, given the limited funding available; there is no strategic plan on prioritizing which legacy systems should be subject to a C&A review and which will involve accepting the risks involved.	The Library should 1) manage IT resource allocations within the Office of the Librarian, as recommended by the House Committee on Appropriations. Doing so would centralize budgeting, accounting, and funding for all IT-related costs, including costs associated with C&A reviews; and 2) develop procedures to address C&A reviews of legacy systems. This should include a provision to exempt systems and applications that are determined to be low risk.

2.D–The Library should develop a cost-benefit analysis (analysis of alternatives) process for all IT investments and include risk criteria.

<p>Implemented Sept 2009</p>	<p>Not implemented—Although an ITS policy was established in September 2009 which states that a cost benefit analysis (CBA) be developed for all projects with expenditures exceeding \$100,000, this policy only applies to ITS-owned systems. This policy is not enforced throughout the Library because ITS cannot verify whether system owners prepared a cost benefit analysis before purchasing an IT system or application. Moreover, there is not an efficient way to list which systems require a CBA since data on new systems and upgrades principally reside within the service/support units, and are still being gathered as part of the EA development process.</p>	<p>In order to aid management in decision making, the Library should have a centralized policy which requires a documented CBA for all new IT projects which are excepted to exceed \$100,000.</p>
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2.E–The Library should develop a methodology to maintain and track all Library IT expenses.

<p>Implemented March 2010</p>	<p>Not implemented—IT cost analyses have not been performed for tracking IT costs. Beginning in FY 2010, the Office of the Chief Financial Officer (OCFO) and ITS began requiring the use of activity or cost category codes in Momentum (the Library's financial system) for recording IT purchase requisitions. However, no reports have been created to review and analyze IT trends. Our test of 51 judgmentally-selected expenditure transactions, entered into Momentum during FY 2011, disclosed 38 IT- related transactions that did not have IT activity codes.</p>	<p>We recommend that 1) OCFO and ITS continue their effort to create a report which will provide an analysis of Library-wide costs and trends for IT security, investments, and support. It should also provide data to the CIO to identify areas where the Library can benefit from consolidation, synergies, and economies of scale, and 2) OCFO should review compliance with the requirement to use IT-related activity codes to ensure that reliable IT trend data becomes available.</p>
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2.F – The Library should review and plan for moving forward through the stages of the Information Technology Investment Management (ITIM) Model.

<p>Implemented March 2010</p>	<p>Implemented—The Library has established the ITSC that serves as the IT investment board, which provides IT investment oversight. Our March 2009 report stated that the Library was at Stage 1 of maturity in the ITIM. Currently, we believe that the Library is at Stage 3, which involves developing a complete investment portfolio.</p>	<p>None</p>
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FINDING 3 – ORGANIZATIONAL STRUCTURE The organizational structure of the ITS Directorate at the Library does not foster strategic planning and proper IT governance.		
1. OSI combines both IT support and other programmatic functions. 2. There is no centralized IT governance mechanism.		
Reported Action/Date	Actual Status	Remedial Action Required
3.A – <i>Separate the IT support functions from OSI and establish the Office of the Chief Information Officer (OCIO) from the ITS Directorate and other IT support functions of OSI. The CIO will report directly to the Librarian or Chief Operating Officer with duties, responsibilities, and authority consistent with best practices.</i>		
Not implemented	Not implemented–ITS, which is responsible for supporting the Library’s technology requirements, is an organizational component of OSI, a service unit which manages national programs such as the National Digital Information Infrastructure Preservation Program, and the Teaching with Primary Sources Program. The head of OSI–the Associate Librarian for Strategic Initiatives (ALSI)–also serves as the Library’s Chief Information Officer (CIO). Therefore, information resources management is not the ALSI’s primary duty. As a result, the Deputy ALSI serves as the de- facto CIO responsible for day to day IT operations. Five out of seven service unit heads believe the current structure with ITS subordinate to OSI is not the optimum. Also, the Chief Architect of the Library, in charge of developing a Library-wide EA, does not report directly to the Chief of Staff (COS) or the Executive Committee. That officer is part of the Digital Futures program in the staff directory, is a subordinate officer in OSI, and is not shown on OSI’s organizational chart.	We recommend that: 1. ITS be reorganized as an infrastructure support unit by establishing the Office of the Chief Information Officer under the direct report to the COS; and 2. the Enterprise Architect and the EA program move under the Office of the Librarian with a direct report to the COS.
3.B – <i>Endow the CIO with the authority and responsibility for overall IT Strategic Planning, IT Capital Planning, IT Asset Management, Enterprise Architecture, and establish a Customer Advocate role to ensure accountability.</i>		
Implemented March 2010	Implemented–The intent of this recommendation was to give the CIO the authority to enforce IT governance, such as IT security. IT governance is established by the CIO serving on the Executive Committee and chairing the ITSC. The CIO’s authority for EA, digital strategy, and IT investment processes is established in the ITSC Charter, Library of Congress Regulation (LCR) 220-1- <i>Functions and Organization of OSI</i> , and the Information Resource Management (IRM) plan. IT asset management remains the responsibility of Integrated Support Services (ISS) and OCFO. ITS tracks costs (\$100,000 or more) of capitalized property (software and upgrades) and reports them to OCFO. ITS does not track or report on the capitalized property of the Congressional Research Service (CRS). The Library does not agree that a Customer Advocate role is necessary at this time.	None

<p><i>3.C—Endow organizational function such as IT Security with appropriate enforcement authority as well as policy responsibilities.</i></p>		
<p>Implemented March 2010</p>	<p>Implemented—Instead of the Chief of the IT Security Group (CITSG), the Library has decided that the COS has IT security enforcement authority for IT security. Security issues which the CITSG cannot resolve on his own are brought to the attention of the COS. The CITSG finds this reporting structure acceptable.</p>	<p>None</p>
<p>FINDING 4—ENTERPRISE ARCHITECTURE The Library lacks an Enterprise Architecture (EA) program.</p>		
<p>Reported Action/Date</p>	<p>Actual Status</p>	<p>Remedial Action Required</p>
<p><i>4.A—Follow the OMB Federal Segment Architecture Methodology (FSAM) templates as a model for developing the architecture segments to avoid reinventing the wheel and use federal agency best practices for EA and use mainstream tools and processes.</i></p>		
<p>Implemented March 2010</p>	<p>Alternative was implemented—The Chief Architect is developing the Library's EA based on the Federal Enterprise Architecture Framework (FEAF), but has not followed our March 2009 recommendation to use the FSAM, which serves as a best EA practice in the federal agency community. The Architect believes that the FSAM is an obsolete framework, and to impose its use at the Library would be counter-productive. The ITSC approved FEAF as the Library's method to develop an EA.</p>	<p>No further action is necessary because the ITSC approved FEAF, another EA framework best practice.</p>
<p><i>4.B—Evaluate proposed plans for the development of an EA with GAO's Enterprise Architecture Management Maturity Framework (EAMMF) to ensure that the plans are in complete alignment.</i></p>		
<p>Implemented March 2010</p>	<p>Alternative was implemented—The Chief Architect has decided not to evaluate the development of an EA with EAMMF. Similar to recommendation 4.A, he believes that to use an EAMMF to evaluate EA development at the Library would be inappropriate and counter-productive. The ITSC has approved his method to develop an EA.</p>	<p>No further action is necessary because the ITSC approved another EA framework best practice.</p>
<p><i>4.C—Keep the process for developing an EA in line with similar agencies to avoid developing a process that is too complex or out of scope with agencies of similar size.</i></p>		
<p>Implemented March 2010</p>	<p>Implemented—The Chief Architect is developing the EA based on the needs of the Library that he has identified and his experience with various federal agency projects. The ITSC has approved the methodology selected to develop the EA.</p>	<p>None</p>

<p>4.D–Include all EA costs in a single budget line item for the entire Library to avoid creating a burdensome or costly process for system owners.</p>		
<p>Implemented March 2010</p>	<p>Not implemented–EA costs are not included in a single budget line item for the entire Library. Instead, they are commingled with other non-EA costs incurred by IT staff. Additionally, EA costs, such as those for software and hardware purchased to support the development of EA, could be included in a single budget line item, but are not.</p>	<p>OCFO should include all EA development costs expected to be incurred in a single budget line item.</p>
<p>4.E–Involve all service and support unit system/business process owners.</p>		
<p>Implemented March 2010</p>	<p>Implemented–The Chief Architect meets regularly with subject matter experts of all service/support units.</p>	<p>None</p>
<p>FINDING 5–CUSTOMER SERVICE ITS customer service needs improvement.</p> <ol style="list-style-type: none"> 1. The Library has IT customer support issues. 2. ITS does not leverage tools such as Service Level Agreements or Performance Metrics. 		
<p>Reported Action/Date</p>	<p>Actual Status</p>	<p>Remedial Action Required</p>
<p>5.A–Implement Service Level Agreements (SLAs) to manage customer expectations.</p>		
<p>Implemented March 2010</p>	<p>Not implemented–Service level agreements do not exist between ITS and service/support units. Current Memorandums of Understanding (MOUs) or other written agreements are not in place between ITS and responsible service units for most of the Tier 1 and Tier 2 systems which are critical to the Library’s mission. Most MOUs, which do exist, have expired. A Service Level Offering (SLO) template was created by ITS in January 2011 so that MOUs could be replaced, but no SLOs have been created for any service unit-hosted applications. Most service unit heads we contacted favor having a SLA developed, and believe it would establish a clearer understanding of the services and support to be provided by ITS.</p>	<p>ITS should draft SLAs with the service/ support units which provide a clear understanding of the services and support ITS will provide. These SLAs should include metrics which will enable ITS’ performance levels to be measured.</p>
<p>5.B–Review the project management (PM), system development life cycle (SDLC), IT security, and help desk processes and obtain feedback from the service/support units to improve efficiency and effectiveness.</p>		
<p>Implemented March 2010</p>	<p>Implemented–Feedback is received from the service/support units through various IT group meetings.</p>	<p>None</p>

<p><i>5.C–Use best practices for service management from organizations such as the Help Desk Institute, Information Technology Infrastructure Library (ITIL), and other organizations.</i></p>		
<p>Implemented March 2010</p>	<p>Implemented–ITS developed the Best Practices Implementation Plan for the Helpdesk in October 2009. The plan adequately addresses Recommendation 5.C by explaining how ITS plans to use various best practice suites to further develop the ITS help desk. Moreover, the statement of work for ITS help desk support, and the Service Desk Management System both incorporate ITIL best practices.</p>	<p>None</p>
<p><i>5.D–Instead of enhancing the current help desk system, implement a commercial off-the-shelf (COTS) enterprise help desk system that includes capabilities for customer feedback on calls, reporting on the closure rate of calls, types of calls, and other metrics. Since CRS purchased the latest version of Remedy, ITS should use the CRS contract for this or research other COTS options.</i></p>		
<p>Not implemented</p>	<p>Not implemented–Although the Library is planning to replace its current IT help desk system with a COTS system with enhanced metrics, it is not planning to deploy this system Library-wide. Instead, the COTS system will be offered to service/support units either as an interface to an existing system, or as the core system for all work requests for IT services. Service/support units with disparate help desk systems will require an interface with the new system. This could result in increased costs and inefficiencies related to information sharing between different systems.</p>	<p>Rather than offering the new help desk system as an interface, ITS should require all technology offices throughout the Library to use a standard help desk system to take advantage of economies of scale.</p>
<p><i>5.E–Negotiate a new help desk service contract to meet the different service level requirements of all service and support units to eliminate duplicative help desk support services.</i></p>		
<p>Not implemented</p>	<p>Alternative was implemented–A new help desk service contract has not been awarded since our March 2009 report. The Library is in the second option year of a contract with a final option year, which expires in June 2014. The contractor provides help desk services to ITS and for the U. S. Copyright Office’s eCO system. Help Desks of service/support units outside of ITS are primarily staffed by a limited number of full-time staff who are familiar with the unique components of their units’ IT systems, and are better equipped to provide help services than standard help desk contractors.</p>	<p>None. We are closing this recommendation since the Library’s decentralized help desk structure has proven to be effective.</p>

<p><i>5.F—Develop a set of metrics for ongoing use to measure performance. These metrics should change and evolve over time as one area shows improvement; new metrics should be developed for other areas.</i></p>		
<p>Not implemented.</p>	<p>Not implemented—Performance metrics, such as hours of support, call response time, escalation procedures, and customer satisfaction, are not known by ITS because SLAs and end-user surveys are not used. Survey results from 27 IT liaisons showed a mix of responses regarding IT performance.</p>	<p>SLAs and end-user surveys should be developed, provide the means to measure ITS' customer service, and used so that ITS' customer service performance can be determined in specific areas.</p>
<p><i>5.G—Conduct regular customer surveys and open informational meetings.</i></p>		
<p>Implemented Sept 2009</p>	<p>Not implemented—ITS does not obtain feedback on its customer service from all of its end-users. Although it collects some feedback from various IT group meetings, ITS surveys to obtain comments from the end-user community have not been developed.</p>	<p>ITS should explore the use of affordable, online surveys which can be sent to end-users after they interact with the IT help desk.</p>

Management Response

Management concurred with our recommendations except for 4.D, and stated that their responses to recommendations 2.C.1, 3.A.1, and 3.A.2 were pending further review of the implementation of the information resources management plan issued in December 2010 and the internal budget review for IT spending and investments.

Regarding recommendation 4.D, management does not believe that a separate budget line item for Enterprise Development costs is justified. Guidance from GAO, *Organizational Transformation: A Framework for Assessing and Improving Enterprise Architecture Management (Version 2.0)*, suggests that EA should be treated as a capital asset. We believe that at a minimum, all direct EA costs be recorded as a separate budget line item. This will allow the Library to determine the cost of EA at any given time and measure it against expected EA program benefits. The cost and burden to do so are minor, but the information will be available when needed.

II. ITS Needs to Improve Oversight of the C&A Process

Certification and Accreditation (C&A) is a systematic process for testing and evaluating information systems to determine whether they meet specified security requirements.¹² Each

¹² The Certification process identifies weaknesses in operating the application, system, or facility and evaluates the potential vulnerabilities of these

system and application that a Library service or support unit owns—including legacy systems¹³—must undergo a C&A every three years, or whenever a significant change occurs affecting a system or application (e.g., the addition of new security controls, a major application functionality, or a major version update). Service and support units are required to budget for and fund the costs of C&A evaluations for systems that they own.

The Director of ITS issued a memorandum to the Library's IT security program managers in March 2006 which states that all systems, including legacy systems, must be brought to compliance with IT Security Directives, and LCR 1620 – *IT Security Policy of the Library of Congress*. The memorandum also states, "... legacy systems must not be neglected, as they support vital aspects of the Library's mission."

According to the Library's C&A Guidance, "... [l]egacy systems are not exempt from C&A...As part of the service/support unit IT Security Plan, C&A of all systems, including all 'Legacy Systems' will be addressed."

At the time of our fieldwork, 14 legacy systems in the Library did not meet C&A requirements. One of these systems was categorized as a high security system, and eight others were medium.¹⁴ Additionally, the Library had 14 non-legacy systems that were operating without a current Authority to Operate (ATO).¹⁵ We attribute this situation to 1) inadequate planning and coordination between ITS and the service and support units which own the systems involved, and 2) confusion over the interpretation of the Library's C&A guidance for legacy systems. According to ITS, the intent of the guidance was that a legacy system should undergo a C&A

weaknesses. Accreditation is the formal declaration by the Designated Approving Authority that an automated information application, system, or facility is approved to operate in a particular security mode using a prescribed set of safeguards. ITS mandates the C&A process per LCR 1620, *Information Technology Security Policy of the Library of Congress*, and IT Security Directive 01. The C&A process at the Library is based on NIST Special Publication 800-37.

¹³ A legacy system is one that was in production or development prior to August 2004.

¹⁴ Security categories are assigned and based on the level of impact to the Library if a loss of confidentiality, integrity, or availability occurred to a system. Security categories are based on Federal Information Processing Standards Publication 199.

¹⁵ Accreditation results in an ATO. An IT system may not be placed into production without an ATO.

only when it has had a major upgrade or other significant change. As a result, 28 Library systems were operational at the time of our fieldwork that may have been vulnerable to unacceptable security risks.

We recognize that resources for performing C&A evaluations of legacy systems are limited. Nevertheless, it is imperative for ITS to coordinate the performance of those evaluations with service and support units to ensure that appropriate precautions are taken to address security risks of the Library's systems.

Recommendation

We recommend that ITS:

1. Coordinate with service and support units to identify and prioritize the legacy systems/applications that require C&A evaluations, and determine how the required evaluations should be funded.
2. Verify that all Library systems are up-to-date regarding C&A and ATO requirements, and take appropriate action to ensure the systems' compliance with those requirements is maintained in the future.

Management Response

Management concurred with our recommendations.

III. Increased Oversight of EA Needed

According to GAO, "An EA is a systematically derived snapshot—in useful models, diagrams, and narrative—of a given entity's operations (business and systems); including how its operations are performed, what information and technology are used to perform the operations, where the operations are performed, who performs them, and when and why they are performed."

It is critically important that effective oversight be provided for the development of an agency's EA, given the impact it will have on the agency's operations. The Library's effort to develop an EA began in 2006. However, early EA activities were limited to creating documents and raising general EA awareness, which proved to be ineffective for EA development.

Since the issuance of our 2009 report, however, the Library has made progress in developing an EA by hiring an experienced architect and releasing an EA Implementation Plan which formally defines EA, and sets program goals and milestones.

While these recent developments are encouraging, the Library must provide additional oversight and direction for its EA activities to ensure that progress continues in the right direction. Through this follow-up, we determined that interaction between the ITSC, which serves as the oversight board for IT investments, and the ARB, which closely monitors the EA program and reports to the ITSC, has been too limited. The ITSC was provided a presentation of the proposed EA approach by the Chief Architect on January 31, 2011, but beyond that, it has provided little oversight over the ARB's EA-development activities.

The ITSC must become more actively involved in the ARB's EA-development activities. Such ITSC involvement would energize the relationship between the Steering Committee and the ARB, and increase the flow of information.¹⁶

Recommendation

We recommend that ITSC:

1. Increase communication and directional oversight of the Library's ongoing EA development by having the Chief Architect provide updates at each ITSC meeting,
2. Continually review, update, and approve annual objectives and tasks for EA development, and review performance metrics regarding the achievement of those milestones, and
3. Develop an LCR that establishes the responsibilities of the ARB.

Management Response

Management concurred with recommendations 1 and 3 but did not address recommendation 2.

¹⁶ The ARB Charter states that, on a monthly basis, the ARB is to send the ITSC an EA Roadmap, EA Change Recommendations, and reports on the EA program.

» CONCLUSION

Having effective and efficient IT management is vital to achieving the Library's mission. The Library has improved its IT strategic planning process by implementing actions addressing certain recommendations of our March 2009 report. Notwithstanding that improvement, the Library's planning process will become more effective when actions are completed on the report's remaining recommendations. Since many of the 2009 report's recommendations are interrelated, their successful implementation will depend on multiple outcomes.

Increasing oversight for the EA's development and improving the quality of data maintained for IT investments will assist in identifying duplicative IT costs and services throughout the Library. Coupling these actions with an OSI strategic plan, updated and brought into line with the Library's, will help to ensure that the Library's IT service demands will be satisfactorily met – all of which contributes to a successful IT strategic planning process.

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►► APPENDIX A: ACRONYMS USED IN THIS REPORT

ALSI	Associate Librarian for Strategic Initiatives
ARB	Architecture Review Board
ATO	Authority to Operate
C&A	Certification and Accreditation
CBA	Cost Benefit Analysis
CFO	Chief Financial Officer
CIO	Chief Information Officer
CITSG	Chief of Information Technology Security Group
COS	Chief of Staff
COTS	Commercial off the Shelf
CRS	Congressional Research Service
EA	Enterprise Architecture
EAMMF	Enterprise Architecture Management Maturity Framework
FEAF	Federal Enterprise Architecture Framework
FEAPMO	Federal Enterprise Architecture Program Management Office
FSAM	Federal Segment Architecture Methodology
ISS	Integrated Support Services
IT	Information Technology
ITIL	Information Technology Infrastructure Library
ITIMPO	Information Technology Investment Management Portfolio Office
ITS	Information Technology Services
ITSC	Information Technology Steering Committee
LCR	Library of Congress Regulation
LOC or LC	Library of Congress
MOU	Memorandum of Understanding
OCFO	Office of the Chief Financial Officer
OCIO	Office of the Chief Information Officer
OIG	Office of the Inspector General
OMB	Office of Management and Budget
OSI	Office of Strategic Initiatives
PL	Public Law
PM	Project Management
SDLC	System Development Life Cycle
SLA	Service Level Agreement
SLO	Service Level Offering
WGB	Web Governance Board


►► APPENDIX B: MANAGEMENT RESPONSE

 LIBRARY OF CONGRESS
OFFICE OF THE LIBRARIAN

MEMORANDUM

DATE December 8, 2011

TO Karl W. Schornagel
Inspector General

FROM Robert Dizard Jr. 
Chief of Staff

SUBJECT Follow-up Review of IT Strategic Planning
Draft Report No. 2011-IT-103

I am attaching responses to the recommendations contained in the subject report. These responses have been coordinated with the Office of Strategic Initiatives and the Office of the Chief Financial Officer.

Please let me know if you have any questions on the responses.

Page 1 of 1

I. Current Status on 2009 Findings

1. Strategic Planning Process

A. OSI should ensure that the OSI Strategic Plan for FY 2011-2016 aligns with the Outcome and Result Statements and the Strategies identified in the Library's FY 2011-2016 Strategic Plan.

Agree. The Office of Strategic Initiatives (OSI) has revised the OSI Strategic Plan for FY 2011 – 2016 so that it more closely aligns with the Library's FY2011 – 2016 Strategic Plan and has published the revised plan on the OSI website.

D. The Library should continue to develop an Enterprise Architecture that will lead to the creation of a transformational guide.

Agree in principle. Library continues to develop an Enterprise Architecture (EA). The Library's Information Resources Management (IRM) Plan provides the framework for moving the Library forward as a total institution with one voice, as was recommended in the 2009 audit report.

2. IT Investment Process

A. ITS should maintain a collective IT portfolio which lists and prioritizes all IT investments requiring upgrade or implementation. Ideally, the portfolio should not be limited to investments which meet one of the six vetting/ approval criteria of the ITSC threshold policy which are based on project scope, cost, significance, risk, visibility, and innovative nature.

Agree. The ITS Registry, which inventories IT investments which fall both above and below the ITSC vetting/approval criteria, is being enhanced to incorporate project prioritization and ranking.

B. The CIO, as head of the Library's IT strategic planning, should develop a structured procedure which continuously identifies and prevents duplicative IT costs throughout the Library by consolidating IT services.

Agree. Data gathered as a result of several initiatives will be used by the Chief Information Officer (CIO) and the IT Steering Committee (ITSC), to identify and prevent duplicative IT costs. For example, OCFO and ITS will continue efforts to gather and analyze data on Library-wide IT costs and trends. In addition, as the Library's EA reaches higher stages of maturity, it is expected to generate meaningful data on trends in IT investments. There is also a new Library wide policy requiring that service units secure a formal support commitment with ITS prior to making an IT acquisition that will eventually require ITS services. This is expected to help identify if there are duplicative procurements as well as provide

opportunities for consolidation of services. Finally, a Library-wide budget review currently underway may provide insight into potential areas of cost efficiencies and may reveal examples of duplication not previously discovered.

C. The Library should:

1) manage IT resource allocations within the Office of the Librarian, as recommended by the House Committee on Appropriations. Doing so would centralize budgeting, accounting, and funding for all IT-related costs, including costs associated with C&A reviews;

Pending. The Librarian's Office will review the implementation of the IRM Plan that was issued in FY2010 at the same time it undertakes an internal budget review with an initial emphasis on information technology spending and investments. The results of these reviews will determine whether any organizational changes are warranted. These reviews are, in part, a response to the House Appropriations Committee directive.

2) develop procedures to address C&A reviews of legacy systems. This should include a provision to exempt systems and applications that are determined to be low risk.

Agree. A waiver process for low impact systems already exists. However, ITS will revisit LCR 1620 - Information Technology Security Policy of the Library of Congress to clarify the policy governing legacy systems and will include a definition of legacy system.

D. In order to aid management in decision making, the Library should have a centralized policy which requires a documented CBA for all new IT projects which are expected to exceed \$100,000.

Agree. Currently, OSI has a directive that all IT projects that are either OSI sponsored, or require ITS project support, require a CBA. However, working through the Library's Chief of Staff, the CIO will propose a Library-wide policy directive expanding on this existing OSI directive that requires the completion of a cost benefit analysis for all new IT projects that are expected to exceed \$100,000.

E. We recommend that:

1) OCFO and ITS continue their effort to create a report which will provide an analysis of Library-wide costs and trends for IT security, investments, and support. It should also provide data to the CIO to identify areas where the Library can benefit from consolidation, synergies, and economies of scale;

Agree. While OCFO and ITS will continue their efforts to gather and analyze data on Library-wide IT costs and trends, it should be noted that there are several other efforts underway to gather this kind of data for review by the CIO and the ITSC. As the Library's EA reaches higher stages of maturity, it is expected to generate meaningful data on trends in IT investments. Additionally, there is a new Library-wide policy requiring that service units secure a formal support commitment with ITS prior to making an IT acquisition that will eventually require ITS services. This is expected to help prevent duplicative procurements as well as provide opportunities for consolidation of services. Finally, a Library-wide budget review currently underway may provide additional insight into Library IT resource expenditures, including personnel.

2) OCFO should review compliance with the requirement to use IT-related activity codes to ensure that reliable IT trend data becomes available.

Agree. OCFO is reviewing the analysis of IT activity code use that was performed by the IG as part of this audit to assess the extent of the compliance problem and to develop an appropriate and realistic remedial action where necessary.

3. Organizational Structure

A. We recommend that: 1. ITS be reorganized as an infrastructure support unit by establishing the Office of the Chief Information Officer under the direct report to the COS; and 2. the Enterprise Architect and the EA program move under the Office of the Librarian with a direct report to the COS.

Pending. The Librarian's Office will review the implementation of the IRM Plan that was issued in FY2010 at the same time it undertakes an internal budget review with an initial emphasis on information technology spending and investments. The results of these reviews will determine whether any organizational changes are warranted. There reviews are, in part, a response to the House Appropriations Committee directive.

4. Enterprise Architecture

D. OCFO should include all EA development costs expected to be incurred in a single budget line item.

Disagree. We do not believe the cost of the overhead of creating a separate cost center for a single individual, an application he uses and two large screens is justified.

5. Customer Service

A. ITS should draft SLAs with the service/ support units which provide a clear understanding of the services and support ITS will provide. These SLAs should include metrics which will enable ITS' performance levels to be measured.

Agree. When resources permit, ITS will implement SLAs.

D. Rather than offering the new help desk system as an interface, ITS should require all technology offices throughout the Library to use a standard help desk system to take advantage of economies of scale.

Agree. ITS is actively collaborating with IT leaders from across the Library that currently use separate help desk systems on the implementation of Footprints, our new help desk system. ITS believes this collaborative approach will ultimately help us achieve the desired state: one standard system, elimination of the current system inefficiencies, and economies of scale. Several service units are following our implementation closely and have expressed interest. ITS believes this will ultimately occur as funding permits.

F. SLAs and end-user surveys should be developed, provide the means to measure ITS' customer service, and used so that ITS' customer service performance can be determined in specific areas.

Agree regarding end-user surveys. Developing and implementing an appropriate survey instrument is a key objective of the design strategy for Footprints. The process for surveying and reporting customer satisfaction levels will also be defined and approved by LC management prior to implementation. See response to 5.A. regarding SLAs.

G. ITS should explore the use of affordable, online surveys which can be sent to end-users after they interact with the IT help desk.

Agree. Developing and implementing an appropriate survey instrument is a key objective of the design strategy for Footprints. The process for surveying and reporting customer satisfaction levels will also be defined and approved by LC management prior to implementation.

II. ITS Needs to Improve Oversight of the C&A Process

We recommend that ITS:

1. Coordinate with service and support units to identify and prioritize the legacy systems/applications that require C&A evaluations, and determine how the required evaluations should be funded.

Agree. A waiver process for low impact systems already exists. However, ITS will revisit LCR 1620 - Information Technology Security Policy of the Library of Congress to clarify the policy governing legacy systems and will include a definition of legacy system.

2. Verify that all Library systems are up-to-date regarding C&A and ATO requirements, and take appropriate action to ensure the systems' compliance with those requirements is maintained in the future.

Agree. ITS will implement a notification and escalation procedure so that the Designated Approving Authority (DAA) for a system that has lapsed accreditation is formally notified and accepts the risk associated with non-compliance.

III. Increased Oversight of EA Needed

We recommend that ITSC:

1. Increase communication and directional oversight of the Library's ongoing EA development by having the Chief Architect provide updates at each ITSC meeting, 2. Continually review, update, and approve annual objectives and tasks for EA development, and review performance metrics regarding the achievement of those milestones,

Agree. The Chief Architect will be briefing the ITSC at the upcoming meeting, and will attend all future ITSC meetings.

3. Develop an LCR that establishes the responsibilities of the ARB.

Agree. An LCR establishing the responsibilities of the ARB is in the final edit stages.