



U.S. GOVERNMENT PRINTING OFFICE  
OFFICE OF INSPECTOR GENERAL

**ASSESSMENT REPORT**  
**10-08**

---

**FEDERAL DIGITAL SYSTEM (FDSYS)  
INDEPENDENT VERIFICATION AND VALIDATION –  
TWELFTH QUARTER REPORT ON RISK MANAGEMENT,  
ISSUES, AND TRACEABILITY**

**September 16, 2010**

---

**Date**

September 16, 2010

**To**

Chief Information Officer

**From**

Assistant Inspector General for Audits and Inspections

**Subject****Federal Digital System (FDsys) Independent Verification and Validation (IV&V) – Twelfth Quarter Report on Risk Management, Issues, and Traceability  
Report Number 10-08**

The Government Printing Office (GPO) Office of Inspector General (OIG) is conducting independent verification and validation (IV&V) of GPO's Federal Digital System (FDsys)<sup>1</sup> implementation. The OIG contracted with American Systems<sup>2</sup> to conduct IV&V for the public release of FDsys.<sup>3</sup> As part of its contract with the OIG, American Systems is assessing the state of program management, technical and testing plans and other efforts. American Systems is required by the contract to issue to the OIG a quarterly Risk Management, Issues, and Traceability Report, providing observations and recommendations on the program's technical, schedule, and cost risks as well as requirements traceability of those risks and the effectiveness of the program management processes in controlling risk avoidance. Additionally, at the end of each FDsys release phase, American Systems is required to issue a release phase summary program management report that addresses delivery of the technical baseline per the FDsys Master Program Schedule and the risks that affect the schedule's critical path to the next phase.

---

<sup>1</sup>The FDsys program is a multimillion dollar effort that GPO is funding and managing to modernize the GPO information collection, processing, and dissemination capabilities it performs for the three branches of the Federal Government.

<sup>2</sup>American Systems, located in Chantilly, Virginia, is a large information technology company with significant experience in the realm of IV&V for Federal civilian and Defense agencies, including the Department of State, the Navy, and the U.S. Agency for International Development.

<sup>3</sup>American Systems IV&V methodology is referenced to the framework established by the Institute of Electrical and Electronic Engineers (IEEE) Standard 1012-2004, the IEEE Standard for Software Verification and Validation.

The enclosed report is American Systems' quarterly report for the period April 7, 2010 to July 30, 2010. The period covered by this report was extended from June 30 to July 30 in order to include responses from the FDsys Program Management Office (PMO) to the OIG's request for information related to the first public FDsys Program Review. During this period, IV&V did not identify any new technical, cost, or schedule risks. As a result, we did not make any new recommendations and therefore, did not request a response to the report from the FDsys PMO. This report does discuss several issues worth noting as the PMO implements the remaining efforts to complete Release 1.

The final report distribution is in Appendix A.

If you have questions concerning this report or the IV&V process, please contact Mr. Brent Melson, Deputy Assistant Inspector General for Audits and Inspections at (202) 512-2037, or me at (202) 512-2009.

A handwritten signature in black ink that reads "Kevin J. Carson". The signature is written in a cursive style with a long, sweeping underline.

Kevin J. Carson  
Assistant Inspector General for Audits and Inspections

Enclosure

cc:  
Deputy Public Printer  
Chief Acquisition Officer  
Acting Chief Management Officer  
Chief Technology Officer

<b>IV&amp;V RISK MANAGEMENT, ISSUES, AND TRACEABILITY REPORT</b>	
<b>TO:</b>	Brent Melson
<b>FROM:</b>	David Harold
<b>IV&amp;V OF:</b>	Quarterly Report (Final - Document Number 02-014)
<b>SUBJECT:</b>	April 07, 2010 - July 30, 2010 Quarterly Report
<b>DATE:</b>	August 17, 2010
<b>CC:</b>	Dan Rose, Jon Valett, John Best, Shawn O'Rourke

***Background:***

This report presents the critical technical, schedule, and cost risks identified for the Government Printing Office (GPO) Federal Digital System (FDsys) Program. Specifically, it provides a high-level overview of the key risks and issues that Independent Verification & Validation (IV&V) has identified during the quarter ending June 30, 2010.

This is the twelfth IV&V quarterly report and covers the period from April 7, 2010 to July 30, 2010. In agreement with the Office of the Inspector General (OIG), the period covered by this quarterly report was extended from June 30 to July 30 in order to include responses from the FDsys Program Management Office (PMO) to the OIG's request for information related to the first public FDsys Program Review.

During this reporting period, the FDsys PMO completed the deployment of several post-Release 1 production builds and prepared/updated FDsys technical documentation. The production builds are summarized below along with the other events that occurred during the third quarter of Fiscal Year (FY) 2010.

***References:***

- a. FDsys Program Review, April 7, 2010 (Document available on the FDsys Website)*
- b. Discussion of Release 1 & 2 Functionality, Information provided at the Spring Federal Depository Library Council (FDLC) Meeting, Buffalo, New York, April 26, 2010*

## ***Summary:***

### **Release 1.9.0.395:**

The deployment of Production build 1.9.0.395 occurred on July 28, 2010. This build resolved a total of seventy-one (71) Program Tracking Reports (PTRs) and included the following three (3) Collections that were migrated from GPO Access to FDsys: Educational Resources Information Center Reports (ERIC), Privacy Act Issuances (PAI), and House Journal (HJ). This is the first of three (3) Production builds scheduled for deployment in order to complete FDsys Release 1.

### **Release 1.8.2.392:**

The deployment of Production build 1.8.2.392 occurred May 18, 2010. This build resolved a total of fifteen (15) PTR fixes, e.g., XME (Premis support) and SiteMaps features.

### **Release 1.8.1.390:**

The deployment of Production build 1.8.1.390 occurred on April 16, 2010. Following the actual deployment, the PMO made a number of updates that occurred from April 21 to May 15, 2010. These updates did not affect, i.e., change, the actual Release Number.

- May 09-15, 2010: Several upgrades were required. These upgrades were to the production database and the content server to Service Pack 3 (PTR #436).
- April 28, 2010: Included the installation of ASM (PTR #432)
- April 21, 2010: The FAST Index needed to be resized (PTR #2962)
- April 16, 2010: Included a fix to a Severity 1 Program Tracking Report (PTR) #2945 regarding the XME granule level corruption with digital objects that was resulting in a potential loss of data as well as data integrity.

### **Release 1.8.0.389:**

The deployment of Production build 1.8.0.389 occurred on April 12, 2010. This build included the deployment of six (6) new collections: United States Code, Senate Manual, House Rules and Manual, United States Statutes at Large, Commerce Business Daily (bulk data only), and Supreme Court Decisions (bulk data only). Support for the GPO Federal Publications collection was also included. Build 1.8.0.389 resolved a total of ninety-nine (99) PTRs that have been written to document various software deficiencies, as well as, enhancements needed for FDsys. Included in this PTR total was the resolution of seven (7) Severity 1 (i.e., Critical) problems. This build also contained the new XME Metadata Editor Tool, which is applicable to all the deployed Collections. The previous Metadata Editor Tool was removed from FDsys via this build.

### **First Public FDsys Program Review:**

On April 7, 2010, the Public Printer convened a public meeting to review the status of GPO's FDsys Program (*Reference a*). The objective of the meeting was to receive a program status update and to discuss program successes, issues, and opportunities with key stakeholders including GPO's Library Services and Content Management (LSCM) business unit, the Office of the Federal Register (OFR), and representatives from the Federal Depository Library Council. The meeting was also attended by observers from GPO, the House Administration Committee, and the House Committee on Appropriations.

The Program Review focused on the following items:

- Release 1 Goals and Status
- Release 2 Goals
- Cost and Summary Analysis
- Program Risks
- Lessons Learned

During this meeting, the PMO discussed the near term completion of Release 1, the transition from GPO Access to FDsys as the GPO electronic "system of record", and the initial plans for the development of Release 2. The key information and milestones presented at the Program Review include the following:

- A total of forty (40) collections will be migrated to FDsys. To date, the migration of twenty-nine (29) of these collections has been completed. The PMO will complete the remaining collections by June 30, 2010.
- The Continuity of Access (COA) site will be operational by August 2010, and the full system failover capability (i.e., the Continuity of Operations (COOP)) will be operational in December 2010.
- The transition from GPO Access to FDsys as the GPO's electronic "system of record" will be complete by the end of Fiscal Year (FY) 2010 (i.e., by September 30, 2010). Sunset of GPO Access is planned by the end of the FY.
- FDsys Release 2 will include external content submission. A plan is being developed for prototype content submission functionality by the end of FY 2010. The full content submission component is scheduled to be complete by October 2011 based on an \$8 million level of funding requested for FY 2011 for Release 2 to complete the core system.
- GPO is working with stakeholders to review remaining features and requirements. New features will continue to be added to the FDsys roadmap as needs are identified by stakeholders.

- The PMO planned and executed a re-organization of the FDsys Program in late 2007. As a result, the estimated cost to complete Release 1 was reduced from \$62 million to \$42 million.

### **PMO Completion Plan**

In late March 2010, the PMO produced an FDsys Release 1 Completion Plan. During the second quarter of 2010, this Plan was updated to include the major tasks required to finish Release 1 by the end of FY 2010. Additionally, the PMO maintained the status of these tasks on a periodic (e.g., weekly) basis. As of July 30, 2010, the Plan indicated that Release 1 Completion stands at 58%. Major tasks completed or near completion include the following:

- Migration of remaining Collections/data from GPO Access to FDsys
- Deployment of Production Build 1.9.0.395
- Stand-up and initial testing of the COA configuration

Significant efforts that must still be accomplished include the following:

- Deployment of Sunset Release 1
- Deployment of the Sunset Final Release
- Completion of System Testing (including Performance, Load, and 508 Compliance)
- Transition to Support Documentation and Activities (including Training and User Manual Updates)
- Preparation for GPO Access Shutdown (including final Authority to Operate (ATO))
- Implementation of COOP

All these efforts, excluding the COOP implementation, are targeted for completion by the end of September 2010. The completion date for COOP is targeted for January 19, 2011.

### **Key IV&V Efforts:**

- IV&V did not participate in the FDsys Program Review meeting held on April 7, 2010. However, IV&V did review the public document (*Reference a*) that describes this meeting. Based on this review, IV&V prepared a list of questions related to the information provided during the Program Review. The OIG submitted these questions to the PMO on May 11. The PMO responded to the OIG on May 28. These responses included the following key information:
  - FDsys Release 1 will include 40 Collections encompassing the original fifty-five (55) Collections targeted for migration from GPO Access.
  - FDsys Release 2 will include the key new component of external content submission. Additional features delivered in Release 2 will be determined by stakeholder need. These features, which were discussed at the Spring

Federal Depository Library Council (FDLC) Meeting (*Reference b.*), include Automatic Scope Determination, ILS Integration, Persistent Name Resolution, and eight other capabilities.

- The plan to implement a prototype content submission capability will be completed by the end of June 2010.
- A features workshop will be scheduled to review and prioritize the existing features identified for FDsys. These features will be implemented based on the prioritization.
- Assuming that no new mandated changes and/or other influences outside GPO's control impact the Program, the FY 2011 funding request for Release 2 will be sufficient to implement the FDsys "core system". This system consists of Search, Content Management System (CMS), Preservation Repository, and Submission.

After evaluating the PMO responses, IV&V prepared a set of follow-up questions in order to obtain more specific information regarding these responses. The OIG submitted the follow-up questions to the PMO on July 2, 2010. The PMO provided their responses on July 30, 2010. In order to properly review and evaluate the information provided by the PMO, these responses will be addressed, as appropriate, in the next IV&V Quarterly Report.

- IV&V met with the FDsys PMO on May 3, 2010 to discuss open OIG recommendations from IV&V Quarterly Reports. The focus of the meeting was to reiterate the process for closing open OIG recommendations.

## **1. Technical Risks Identified**

Since April 2010, the PMO has concentrated its efforts on the deployment of the FDsys Releases summarized above and the performance of tasks that are required for Release 1 completion. IV&V has not identified any new technical risks; however, there are several issues worth noting as the PMO implements the remaining efforts to complete Release 1.

- As of July 28, 2010, the PMO has identified a total of one-hundred-fifty-five (155) PTRs (i.e., "Prioritized Sunset (Critical) PTRs") that must be resolved to complete Release 1 and sunset GPO Access. The most recent Production build (1.9.0.395) includes fixes to sixty-six (66) of these PTRs. Resolutions to the remaining eighty-nine (89) PTRs must be implemented in Sunset Release 1 and the Sunset Final Release. Assuming this will be accomplished, at least five-hundred-sixty-five (565) PTRs will remain "Open" in various states (e.g., Submitted, In Analysis, In Work) when FDsys replaces GPO Access as GPO's electronic "system of record". Moving forward, the PMO should evaluate and prioritize these PTRs as soon as possible.

Those that must be fixed will utilize time and resources. Development of the required fixes may impact the PMO's ability (e.g., reduce the available resources) to implement new features in Release 2 and/or in subsequent Releases.

- Based on the most recent FDsys Master Requirements List (dated June 30, 2010), seventy-four (74) system requirements (i.e., RDs) that are "Not Implemented" have been assigned the status "Need for Release 1 Completion". Twenty-six (26) of the 74 RDs have associated PTRs. Eighteen (18) of the 26 RDs appear to have been implemented by virtue of the fact that their associated PTRs have been resolved. The other eight (8) RDs in this group (RD-750, RD-751, RD-752, RD-2963, RD-3564, RD-3576, RD-3963, and RD-4197) are linked to PTRs 1943, 2712, 2968, and 3003. These PTRs are not included in 28 July list of "Critical" PTRs that must be fixed to sunset GPO Access. Thus, it is not clear whether or not the PMO intends to resolve these 8 PTRs as part of the FDsys Release 1 product targeted for the end of FY 2010.
- The other forty-eight (48) RDs that are "Not Implemented" with a status of "Need for Release 1 Completion" have not been assigned to PTRs. Since the Release 1 Completion schedule does not contain a specific task to resolve them, it is unknown if their fixes have already been or will be implemented in the Release 1 timeframe.
- To date, the PMO has made substantial progress towards the completion of Release 1. The schedule, which is being maintained on a weekly basis, indicates that the Release 1 effort is 58% complete. However, the schedule also indicates that significant efforts, specifically those related to the final verification of the system, remain to be done. The 508 Compliance review and the Performance and Capacity Testing tasks have not begun (i.e., 0% complete). System Testing is scheduled for late September (i.e., 9/20 – 9/29); and, final COA testing (i.e., Failover/Failback with Laurel Submission) is targeted for October 1. Submission for the final ATO is scheduled to occur in early August, with receipt expected by the end of August. If these efforts identify problems (i.e., PTRs) that must be corrected immediately, the implementation of the required fixes may jeopardize the completion of Release 1 and the sunset of GPO Access by the end of FY 2010.

## **2. Schedule Risks Identified**

For this reporting period, no new schedule risks have been identified.

## **3. Cost Risks Identified**

IV&V identified no new cost risks during this reporting period.

## **4. Recommendations**

This Quarterly Report does not contain new recommendations. The issues and concerns discussed herein are already encompassed by open recommendations provided to the PMO via previous IV&V Quarterly Reports.

## **Appendix A. Report Distribution**

---

Deputy Public Printer  
Chief Acquisition Officer  
Chief Information Officer  
Acting Chief Management Officer  
Chief Technology Officer