



U.S. GOVERNMENT PRINTING OFFICE
OFFICE OF INSPECTOR GENERAL

**ASSESSMENT REPORT
REPORT NUMBER 12-05**

**FEDERAL DIGITAL SYSTEM
INDEPENDENT VERIFICATION AND VALIDATION
SEVENTEENTH QUARTER REPORT**

January 27, 2012

**Date**

January 27, 2012

To

Chief Technology Officer

From

Inspector General

Subject

Federal Digital System (FDsys) Seventeenth Quarter Independent Verification & Validation (IV&V) Report
Report Number 12-05

Attached is the seventeenth quarter IV&V Report on the U.S. Government Printing Office's (GPO) development and implementation of FDsys. The Office of Inspector General (OIG) contracted with American Systems to conduct an IV&V in accordance with methodology established by the Institute of Electrical and Electronic Engineers (IEEE) Standard 1012-2004, the IEEE Standard for Software Verification and Validation.

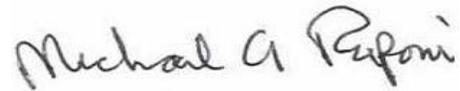
American Systems provides quarterly observations and recommendations on technical, schedule, and cost risks. Additionally, at the end of each FDsys release phase, American Systems provides a summary program management report.

The enclosed report is American Systems' quarterly report for the period October 1, 2011 to December 31, 2011. American Systems is responsible for the attached IV&V report and the conclusions expressed in the report. However, in connection with the contract, we reviewed American Systems' report and related documentation and inquired of its representatives. Our review disclosed no instances where American Systems did not comply, in all material respects, with contract requirements.

The report contains no recommendations. Therefore, no further response to the OIG regarding this report is required.

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If you have any questions or comments about this report, please do not hesitate to contact me at (202) 512-0039.

A handwritten signature in black ink that reads "Michael A. Raponi". The signature is written in a cursive style with a large initial "M".

Michael A. Raponi
Inspector General

Attachment

cc:

Deputy Public Printer
Assistant Public Printer, Superintendent of Documents
Assistant public Printer, Operations
General Counsel
Chief Financial Officer
Chief Information Officer
Acquisitions Director

IV&V RISK MANAGEMENT, ISSUES, AND TRACEABILITY REPORT	
TO:	Michael A. Raponi
FROM:	David Harold
IV&V OF:	Quarterly Report
SUBJECT:	October 1, 2011 – December 31, 2011 Quarterly Report
DATE:	January 24, 2012
CC:	Dan Rose, Margaret Brown

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 December 31, 2011.

This is the seventeenth (17th) IV&V Quarterly Report and covers the period from October 1, 2011 to December 31, 2011.

During this reporting period, the FDsys PMO completed the deployment of three (3) Release 2 production builds, and prepared/updated FDsys technical documentation. The production releases are summarized below along with the other events that occurred during the first quarter of Fiscal Year (FY) 2012.

References:

- a. *Master Schedule2*, December 9,, 2011, (in SharePoint)
- b. *Concepts of Operations Document for Submission Capabilities for FDsys*, version 1.0, April 7, 2011
- c. *Submission Requirements*, version 5, Release 2 scope, September 13, 2011
- d. *FDsys FY2012 Development Activities list* (provided by PMO October 26, 2011)
- e. *IV&V Quarterly Risk Report for September 2011*, Draft, #02-036, January 20, 2012)
- f. *Independent Verification and Validation Plan (IVVP)*, version 3.1, #02-037, October 7, 2011

FDsys Program Management Office (PMO) Summary:

PMO Completion Plan Summary

The tasks and activities that are required for the design and development of FDsys Release 2 have been incorporated into a ***Release 2 (R2) Master Schedule*** that is maintained by the FDsys Program Director. Release 2 has been split into six (6) Groups (i.e., Groups A-F); each Group having been allocated desired features and capabilities. The ***Release 2 Master Schedule*** currently contains the tasks and activities through Group D. Group D is currently in testing and the Program is currently developing the Schedule for Group E activities and tasks.

During the past quarter the FDsys Program worked on the design, development, and deployment of Release 2 Group D. The main tasking for this effort was the:

- Release of a Beta collection for the USCOURTS;
- Release and introduction of a new Mobile Web Application for House and Senate members;
- Release of the Content Delivery Module. Content Delivery Networks (CDNs) consist of a system of computers where copies of content is made available to users at the edge, i.e., at the farthest reaches of the nodes on a network;
- Documentum Search Engine upgrade; and
- Program Tracking Reports (PTR)/bug fixes.

The FDsys PMO has also developed an initial ***Submission Requirements*** document and ***Concepts of Operations Document for Submission Capabilities for FDsys*** document. These documents, while developed initially in April 2011, were not available in SharePoint and just recently provided to IV&V from the PMO.

FDsys Project Schedule:

The FDsys Program still does not maintain the ***Master Schedule*** on a consistent basis. There are activities and tasks in the ***Master Schedule*** (December 9, 2011 version) which have Past Due Dates, some of which had Completion Dates in September 2011. These have not changed, are not one hundred percent (100%) complete, yet these do not seem to have an effect on the overall scheduled completion of the Group D activities. One reason for the lack of maintenance is that the resource dedicated to this task unexpectedly decided to retire prior to Calendar Year's end. Note that the Program is attempting to develop a schedule for Release E which has a tentative April 2012 deployment date into the Production FDsys.

Submission Concepts of Operations Document:

IV&V reviewed the ***Concepts of Operations (ConOps) Document for Submission Capabilities for FDsys*** document during the reporting period. The document was well written and described the current plans for development of the submission capability; especially submission of large amounts of content directly from end users. As cited therein, the current FDsys capability that

has been developed is a basic interface used primarily for the submission of GPO Access publications; however, the submission requirements and capabilities *once envisioned* were significantly greater. The *ConOps* document provides explanation of the functionality once envisioned compared to the current effort. The *ConOps* document will be used to assist in the elicitation of submission requirements including the examination of previous submission requirements. These requirements subsequently will be used to design and develop this capability beyond what is currently available, but again, less than previously envisioned. To design and develop to that end will require a separate and more detailed *ConOps* document.

Current Release Summary:

During the past quarter the FDsys Program has worked on the design, development, and deployment of Release 2 Group D. As reported in the *GPO's Federal Digital System Program Review*, "Release 2 is going to be implemented over four (4) major releases" with functionality mapped to Groups A through D. Since the initial planning, two (2) additional Groups have been added, i.e., Groups E and F. In addition to working on the new Collections, the FDsys PMO has been fixing Program Tracking Reports (PTRs) that were assigned to each Group. Currently as of the end of the reporting period there are five hundred fifty-six (556) Software PTRs that remain open.

Release 2.6.0.16

The deployment of Release 2.6.0.16 occurred on November 30, 2011. This Production release contained the Content Delivery Module. The build also included fixes to twenty-nine (29) PTRs.

Release 2.5.0.15

The deployment of Release 2.5.0.15 occurred on November 8, 2011. This Production release consisted of the deployment of the new Mobile Application (Guide to the House and Senate Members).

Release 2.4.0.14:

The deployment of Release 2.4.0.14 occurred on October 11, 2011. This build was consisted of the Beta Release for the USCOURTS Collection.

Future Work:

A list of FDsys development activities for 2012 that was provided by the FDsys Program Director was included in the *IV&V Quarterly Risk Report* (for September 2011). An update on some of those activities is provided below.

FY12 FDsys Development Priorities

1. GPO Access Archive/Sunset

- a. Archive in November 2011 – Status: Occurred as scheduled

- b. Sunset targeted for December 2011/January 2012
- 2. Mobile Apps Development**
 - a. Congressional Pictorial Directory in October 2011- Status: Occurred as scheduled
 - b. GPO Virtual Exhibit in December 2011
- 3. Administrative Office of the US Courts Pilot**
 - a. Launch with data from three (3) courts in October 2011 – Status: Beta Release of this new Collection occurred as scheduled
 - b. Add additional 28 courts through February 2012 (based on availability of content from AOC)

IV&V Activity Summary:

Key IV&V Efforts:

IV&V continues to meet on a bi-weekly basis with the FDsys PMO Program Director in an exchange of technical and programmatic information. These meetings provide insight into the FDsys Release activities and tasks that can't always be found on a Schedule/Plan. The meetings also provide the IV&V group an opportunity to express ideas and request programmatic and technical documentation that may be available and, will enable IV&V to complete its' own plan/schedule; activities and tasks coinciding with those in the FDsys *IV&V Plan*.

Office of the Inspector General (OIG) Open Recommendations:

During the period, IV&V reviewed and evaluated management's response (i.e., Chief Technology Officer) to the open recommendations stemming from IV&V's fifteenth (15th) Quarterly Report as requested by the Office of the Inspector General (OIG). Many of the responses concurred or partially concurred with the IV&V recommendations and offered a resolution. These resolutions, once implemented and verified by IV&V will enable the OIG to close the open recommendations. The OIG requested clarity on a few of the overall resolutions that were provided.

Also during the past quarter IV&V submitted a Preliminary version of IV&V's sixteenth (16th) Quarterly Report to the OIG. Comments from the OIG (Mr. Melson) were just recently provided and have been incorporated by IV&V. This report was submitted to the new Inspector General (Mr. Raponi) for review (January 19, 2012). There are a number of new IV&V recommendations that will be added to the current list of open recommendations pending review of responses (to those recommendations) that will be provided by the GPO Chief Technical Officer (CTO).

IV&V Reports:

IV&V did not submit any new reports for inclusion in this Quarterly Report. However, IV&V does have a number of reports that are currently in progress and will be provided in the next Quarterly Report, i.e., March 2012. These tasks reports will evaluate the:

- FDsys Training Materials and Documentation, and Training Processes; and
- FDsys Evaluate Detailed Design Documentation.

1. Technical Risks Identified

Since October 2011, the PMO has concentrated its efforts on the development and subsequent deployment of Release 2 Group C which primarily included activities and tasks related to developing new of the new USCOURTS Collection, design and development of the Mobile application for the Congressional Pictorial Directory for the House and Senate members), development and refinement of the Submission Concept of Operations document to include elicitation of requirements, PTR fixes, and archiving of GPO Access.

The USCOURTS collection and Mobile Web Application was not part of the original functionality for Release 2; based on the information provided in the *GPO's Federal Digital System Program Review*. Rather, this development work was the result of requests made by other Government agencies. As previously reported by IV&V, the FDsys Program and ultimately the GPO as an agency risks cost overruns and schedule slips while responding to outside agency requests. Functionality once envisioned, e.g., based on the *Concepts of Operations (ConOps) Document for Submission Capabilities for FDsys*, is a further indictment that the original system once defined by the original requirements set and delineated in the capabilities and functionalities document will not be accomplished. Given current funding levels for FDsys this does not bode well for expanding FDsys capabilities for stakeholders and users alike. IV&V believes that this is an agency-level issue that needs to be reviewed and resolved.

According to FDsys Configuration Management, there are five hundred forty-seven (547) PTRs currently with an Open status in ClearQuest which is a decrease of four (4) from the previous reporting period. Of those, four hundred forty-six (446) are defects which is a decrease of thirteen (13) from the four hundred fifty nine (459) defects that were open at the end of the quarter ended September 30, 2011. Defects are found during testing and other activities. There are one hundred one (101) non-defect PTRs which is up nine (9) from the ninety-two (92) previously reported. The number of open PTRs has consistently hovered in the 400 – 500 hundred range for many months. While a number of PTRs are often allocated to the various Release 2 Groups, there appears to be no significant progress and concerted effort to significantly reduce the number of open PTRs. The breakdown of those open PTRs by Severity Code¹ is:

¹ As defined in the FDsys Master Test Plan: **Severity 1:** Problem causes a complete system outage at an operations' level and/or is greatly detrimental to the program execution (such as loss of ingested data or loss of functionality with no work around); **Severity 2:** Problem adversely affects the accomplishment of an operational or mission-essential capability specified by baseline requirements. It degrades system performance and/or causes risk to program execution; **Severity 3:** A work around is available to allow accomplishment of an operational or mission essential capability specified by baseline requirements; **Severity 4:** An issue that is an end user inconvenience or annoyance that does not affect a required operational or mission-essential capability. **Non-defect:** Non-operational defect, e.g., documentation update.

- Severity 1 (Critical): zero (0) PTRs;
- Severity 2 (Adverse): one hundred sixty-six (164); (previous quarter - 166)
- Severity 3 (Alternative): two hundred thirty-three (233); (previous quarter - 241)
- Severity 4 (Low Impact): forty-nine (49); (previous quarter - 52) and
- Non-defect: one hundred one (101) (previous quarter - 92).

2. Schedule Risks Identified

The FDsys Program continues to work on outside government agency requests for new Collections resulting in the delay of design and development of FDsys based on documented requirements. The re-prioritization to accomplish this additional tasking continues to push the schedule out resulting in delayed functionality not only to FDsys but the stakeholder community. In addition to these schedule risks, the Government Printing Office (GPO) risks the alienation of a once supportive stakeholder community due to the continued delay of anticipated and promised functionality.

Also note that problems continue to be found with the deployed FDsys; identified since the initial Beta deployment in March 2009. The open PTRs (446 defects, 101 non-defect PTRs) referenced in Section 1 above are actively being worked; however, even with reduction of PTRs due to the completion of Release 2 Group C and those allocated to Group D, over five hundred (500) PTRs will still be open. These problems require the PMO to divert resources away from Release 2 tasks and activities resulting in schedule delays.

3. Cost Risks Identified

There are cost risks inherent with the technical issues identified during the October to December 2011 timeframe. While the FDsys Program continues to make progress with the design and development of Release 2, the Program still suffers from not using proven earned value analysis to track schedule and cost. This is especially critical because significant effort has been diverted away from performing actual FDsys design and development work based on the FDsys requirements. Instead, the FDsys Program often seems required to respond to requests from other government agencies for new Collections; thus, diverting resources once allocated to the completion of FDsys. These additional requests force the FDsys Program to incur additional costs for completion of the design, development, testing, and implementation of the FDsys.

4. Recommendations

There are no new recommendations to report at this time. Note however that there are a number of prior recommendations that still remain open.