



## OFFICE OF INSPECTOR GENERAL

### MEMORANDUM

**DATE:** September 29, 2003

**TO:** Inspector General *X*

**THRU:** Thomas Cline *TC*  
Assistant Inspector General for Audits

**FROM:** Walter Opaska *WPO*  
Director, Information System Audits

**SUBJECT:** Survey of Systems Development Life Cycle (SDLC) Implementation

As part of the fiscal year (FY) 2003 audit plan, we have completed a survey on the implementation of the Federal Communications Commission's (FCC's) Systems Development Life Cycle (SDLC). The objective of the survey was to determine the extent of use and compliance with the SDLC at the Commission. The purpose of this survey memorandum is to summarize the results of the survey, document significant observations, and identify areas where additional audit work should be performed.

#### REASON FOR SELECTION

In November 2000, the Commission's Information Technology Center (ITC) adopted a Systems Development Life Cycle (SDLC) and established requirements for Commission project owners to use this approach in systems development. A structured approach provided by an SDLC can be used to plan, develop, acquire, and maintain Commission information systems. Such a methodology can minimize the risk of missing scheduled project completion dates, costs overruns, and user dissatisfaction throughout the information systems life cycle. Proper controls established and followed in planning, developing and implementing information systems can result in increased economy and efficiency for the Commission.

## **OBJECTIVE**

The objective of this survey is to determine the extent of use and compliance with the SDLC at the Commission. Fieldwork on this survey was initiated in September 2002.

## **BACKGROUND**

The Commission's Systems Development Lifecycle was developed as a cooperative effort between representatives from the Office of Inspector General (OIG), Information Technology Center (ITC), and Commission Bureaus and Offices. The development effort began in July 1998 and ended with the implementation of the SDLC during the last quarter of calendar year 2000.

The development team began researching numerous commercial off the shelf (COTS) SDLC packages to determine whether one existed that could be tailored to meet FCC specific standards. Research included reviewing SDLCs within other government agencies. To accomplish this, the team sent a development methodology-specific questionnaire to 50 agencies to determine many factors, including what development approach was used, which COTS packages are used, and the rate of successful development projects.

Numerous planning meetings were held in which a model was developed and the activities, tasks, and roles were narrowed, modified, and tailored to meet the FCC's specific developmental requirements. After the basic framework of the SDLC was developed, the methodology was "piloted" on a series of development efforts to evaluate its usefulness prior to implementation. The FCC SDLC materials (i.e., SDLC phases, checklists, glossary, user guide and policy) can be found at the Commissions SDLC Intranet website.

## **SCOPE OF SURVEY WORK PERFORMED**

This project was conducted as a survey. A survey is preliminary audit work done before an audit and is not an audit conducted in accordance with Government Auditing Standards (i.e., GAO "Yellow Book" standards). The purpose of a survey is to gather general working information on important aspects of an entity, activity, or program, such as the SDLC, and to determine the nature and extent of any subsequent audit effort.

The purpose of this particular survey was to examine the use of the SDLC, report the results to the Inspector General, and recommend the next course of action. To meet this goal, this survey had a series of milestones. The first milestone was to document the SDLC coverage being currently given in the OIG's information system (IS) audits. Particular attention was given to OIG audits that have already surveyed the use of SDLC in the Commission. If the SDLC coverage in OIG audits was deemed adequate, then no further field work would be deemed necessary.

If OIG coverage is not adequate, the next goal would be to analyze SDLC usage at the FCC. If necessary, this will be done using a survey form. If the large majority of projects are using the

SDLC, or acceptable substitutes, then no further field work would be deemed necessary.

The final milestone was to determine if any aspects of the SDLC need further OIG involvement and review. The survey report will recommend what, if any, additional action the OIG should take on the SDLC and SDLC usage.

To accomplish the objectives of this survey, the OIG auditor used the following methodology. An auditor reviewed SLDC information, including documentation policy, practices, roles and responsibilities, templates, checklists, and the user guide. Also, an auditor interviewed employees in other Bureaus and Offices, such as the Office of the Managing Director (OMD). ITC documentation related to the SDLC was analyzed. Other Bureau and Office data, especially copies of systems development checklists, were part of the review. Federal government documents, including Office of Management and Budget (OMB) circulars, were reviewed. Finally, an OIG auditor interviewed contractors involved in reviewing the SDLC during OIG audits.

## **SUMMARY OF OBSERVATIONS**

As part of the survey process, we evaluated the Commission's use of the SDLC to identify areas where weaknesses or inefficiencies exist which may require more comprehensive audit coverage.

### Review of the SDLC

The first step was to review the SDLC itself. The SDLC is a measurable improvement over the prior practices that existed. Previous to the SDLC, some projects did not use rigorous development criteria. This caused project delays and cost overruns.

The FCC's SDLC is a comprehensive set of documents. It includes a user guide, policy and practice manuals, a delineation of roles and responsibilities, a frequently asked questions (FAQs) section, checklists, and templates. The two most important documents are the checklists and the templates. The checklists describe the six phases comprising the SDLC and links to templates for associated deliverables, such as the application's configuration management plan. The templates allow a project manager to keep a record of the SDLC tasks performed.

The SDLC, as promulgated, is sufficient for systems development at the Commission.

### Past SDLC Audit Coverage

The next step was to review coverage of the SDLC in OIG audits. The SDLC audit coverage was extensive. Both financial and information systems (IS) audits covered the SDLC. The audit of the financial statements for Fiscal Year (FY) 2001 reviewed the use of the SDLC on the Revenue Accounting and Management Information System (RAMIS). The financial audit team wrote a finding requesting that the management adopt the FCC's SDLC methodology for IT

systems in the RAMIS project. The FY 2002 financial statement audit also reported an SDLC non-compliance finding.

A number of OIG IS audits reviewed the use of the SDLC by a number of FCC applications. The audit of the Automated Auctions System (AAS) reviewed how the SDLC was used by AAS. The review of Web Accessibility had a recommendation that accessibility be included in the SDLC. The follow-up review on Web Accessibility determined that accessibility was added to the SDLC and closed that matter. It also reviewed remediation efforts on the International Bureau Filing and Reporting System (IBFS) that were done using the SDLC format. Finally, the FY 2002 Report on the Government Information Security Reform Act (GISRA) Evaluation, issued January 6, 2003, audited all applicable FCC applications for compliance to GISRA. The review found three applications were not following the SDLC. They were the Commission Registration System (CORES), E/MTS, and the Cable Operation and Licensing System (COALS).

#### Future SDLC Audit Coverage

The OIG plans to perform a number of IS audits that include SDLC reviews. In FY 2004, the Integrated Spectrum Auctions System (IFAS) is planned to be reviewed. One of the objectives of this review is to monitor and assess compliance of IFAS with the Commission's systems development life cycle (SDLC). Another audit budgeted for in FY 2004 is the COALS application review. This is one of the three systems not using the SDLC.

In FY 2005 two application reviews are budgeted: Universal Licensing System (ULS) and CORES. CORES is one of the three systems not using the SDLC. Both will include SDLC reviews.

#### **CONCLUSION**

Based on the results of this survey, the Office of Inspector General should not perform any additional audit work on the use of the SDLC in the Commission. Instead, the OIG should focus continue performing SDLC work as part of its future IS audits. An audit of the use of the SDLC would just reiterate the findings of a number of audits, only in more detail. Further audit work by the OIG solely on SDLC usage would most likely duplicate the audit work currently being done on IS and financial audits. For example, it would duplicate the work performed during the FY 2002 GISRA review. Also, this duplicative review would be costly, if contracted.

Therefore, we conclude that audit coverage planned in future application reviews will provide sufficient oversight of SDLC implementation.