

TxDOT Internal Audit

Information Technology Project Development (1504-1)

Department-wide Report

Introduction

This report has been prepared for the Transportation Commission, TxDOT Administration, and management. TxDOT's Executive Director directed the audit on July 14, 2004 as a result of the State Auditor's audit on the Statewide Traffic Analysis and Reporting System (STARS), report dated May 2004. The objective of the audit was to determine if information technology development projects comply with department policies and procedures.

Scope

Audit team members included Karin Faltynek (Lead Auditor) and Kathy Baca (Staff Auditor), with oversight provided by Donna Roberts (Auditor-in-Charge). The audit work was conducted during the period of August 2004 – April 2005. All work was performed in accordance with the *International Standards for the Professional Practice of Internal Auditing* of The Institute of Internal Auditors. Audit work included analyzing the current TxDOT policies and procedures and examining a sample of ongoing projects. The projects examined include the Licensing, Administration, Consumer Affairs and Enforcement System (LACE), the RTS Point of Sale Sticker Printing project (POSSP), the Traffic Safety Grant Management System (E-Grants) and the Videoconferencing Network Project (VNP). These projects are in various stages of development and utilize a variety of resources, including department and/or contract personnel. The audit examined category 'A' projects only, which are defined in the *Information Technology and Services Manual*, chapter 2, as projects that have an estimated life cycle cost in excess of \$1,000,000.

The audit focused on determining whether quality initiatives, as outlined in the *Quality Management Standards for Information Technology Projects*, were incorporated into the IT development project management process. The quality initiatives examined as part of the audit include:

- Deliverables Management – reviewing and approving deliverables and tracking of project costs.
- Risk Management – identifying, monitoring, and mitigating project risks.
- Change Management – managing and implementing changes to the project's procedures, deliverables, scope, budget, timeline, or personnel.
- Procurement/Contract Management – developing product specifications and/or contract scopes/terms/conditions, executing contracts or purchase orders, amending contract or purchase orders, and authorizing payments.
- Communications Management – conducting project meetings and status reporting.

(It should be noted that the State Auditor's audit of STARS found problems in these five areas.)

Background

All IT development projects are expected to incorporate these quality initiatives (listed above) into their project management process. To accomplish this, the project team or project sponsor of each individual development project is required to prepare a Project Management Plan (PMP). The Project Management Plan establishes the procedures the project team will use to manage the project. Preparation of the PMP usually occurs during the planning phase and is created through the use of a standard template developed by the Information Systems Division. Using the template helps to ensure that the quality standards outlined in the *Quality Management Standards* (QMS) are built into the project management procedures of each individual project while still allowing the project team to tailor specific procedures to the unique needs of the project.

Audit Methodology

The audit's examination of the four selected projects (LACE, POSSP, E-Grants, and VNP) consisted of reviewing each individual Project Management Plan to determine the adequacy of its planned procedures - specifically the procedures for:

- Deliverables management,
- Risk management,
- Change control management,
- Procurement/contract management, and
- Communications management.

We then examined the actual practices of the individual projects to determine whether the procedures established in the PMP were being followed. (Note: The audit did not examine the projects' success at meeting user or technical requirements).

Opinion

Overall, the IT projects examined followed reasonable project management practices. However, controls need strengthening to ensure that individual IT development projects establish and follow effective project management procedures. Specific information is presented in the findings below.

Summary of Findings

No. 1: The individual Project Management Plans of the projects examined did not contain sufficient information to ensure compliance with the *Quality Management Standards*.

No. 2: Independent quality assurance reviews and process compliance reviews are not being conducted.

Detailed Findings and Recommendations

No. 1: The individual Project Management Plans of the projects examined did not contain sufficient information to ensure compliance with the Quality Management Standards. Two projects did not develop sufficient standards for review/approval of deliverables, one project did not develop standards for risk management, one project did not develop standards for change management, three projects did not develop procurement/contracting standards, one project did not develop communication standards, and none of the projects developed written standards for tracking project costs.

The *Quality Management Standards* manual, chapters 3 and 5, discuss various concepts for effective management of IT development projects, including review of project deliverables, project risk analysis and management, and change control management. These concepts are carried forward in the outline of the Project Management Plan template. The PMP template, pg 15, also discusses the importance of preparing communication standards. Additionally, contracting rules governing state procurement activities are documented in Government Code, chapter 2262, “Statewide Contract Management” and the *State of Texas Contract Management Guide*, chapter 7 “Contract Administration”. Rules governing purchases of service are documented in the *TxDOT Purchasing Manual*.

Although the preparation of a Project Management Plan is mandatory, the development of specific procedures is not required and was, therefore overlooked in the projects examined. The PMP template was originally designed to be flexible, in order to tailor to the unique needs of each individual project. However, it is not clear when using the template, which elements are required and which are merely suggestions. For example, the PMP template lists certain ‘subplans’, such as a Risk Management Plan or Communications Plan, but does not state that these plans are required; nor does it provide guidance on what these plans should include. Furthermore, neither the PMP template nor the QMS contain guidance on complying with state contracting or purchasing rules.

Effect: The absence of a solid project management control structure can lead to project delays, unnecessary strain on resources, inaccurate cost reporting, non-compliance with state purchasing rules, development of a contract that is not in the best interest of the state and/or the development of a project that does not meet requirements. A lack of standards for tracking project costs can lead to inaccurate cost reporting – inconsistencies were found in the reporting of salary costs, equipment costs, and travel costs.

Recommendation: Management should update the *Quality Management Standards* to include information on complying with state contracting and purchasing rules.

Management should update the Project Management Plan template to include information on which elements (and/or ‘subplans’) are required and include guidance on how to develop them. Guidance should include a discussion on the business need for quality initiatives such as

deliverables management, risk management, change management, communications management, and procurement management (not currently mentioned in the PMP template). Where possible, the PMP template should reference information presented in other manuals – such as the *Quality Management Standards*.

- Note: Detailed findings and recommendations for each quality initiative area – deliverables management, risk management, change control management, procurement/contract management, and communications management - are included in Appendix A and will be reviewed as part of the audit follow-up.

Management also needs to develop standardized guidelines for tracking project costs for all department category A projects. The standards could be structured after the state's Quality Assurance Team cost tracking requirements in order to promote consistency across all projects. The standards should include information on tracking direct and indirect costs, and establishing procedures for capturing costs through budget object codes. The project cost tracking standards should be a required component of the PMP.

Management Response and Action Plan:

The Information Systems Division (ISD) agrees in concept with this finding and the recommendation. ISD is in the process of developing new project processes and procedures that should address many of the issues documented in the finding and will also implement processes and procedures to address HB 1516 requirements. HB 1516 requires all projects over threshold (Category A) to prepare a detailed business case, project plan and procurement plan which must be signed by the executive director. The ISD Services Guide, which will be finalized and distributed to TxDOT D/D/Os in the September 2005 timeframe, will document these processes and procedures and provide improved guidance for the development and approval of project deliverables. The guide, other updated processes, procedures, and additional project templates and instructions from the Texas Project Delivery Framework should also help improve consistency in project documents.

No. 2: Independent quality assurance reviews and process compliance reviews are not being conducted.

The Information Technology and Services Manual, chapter 2, section 8, "Process and Quality Management (PQM) Branch", states that the PQM Branch of the Information Systems Division (now known as the IT Planning and Project Services Branch) "performs quality assurance reviews and process compliance reviews." The *OPR Roles and Responsibilities* manual, Chapter 5.3.7.1, "Project Office", states that the IT Planning and Project Services Branch "conducts project management compliance assessments".

The lack of review is partially a staff resource issue and partially an issue of organizational structure. The IT Planning and Project Services staff appears to be functioning at capacity in

their role as consultants and has difficulty in both assisting in the preparation of the PMP and then objectively evaluating the quality of and compliance with the PMP.

Effect: Compliance with project standards and procedures documented in the individual Project Management Plans may not occur as intended. One project did not follow their PMP procedures for reviewing/approving deliverables, documenting change requests, and conducting meetings. Two projects had no evidence of risk management activities – such as risk assessment, risk ranking, risk monitoring, or risk reporting.

Recommendation:

- Current staff assignments in the Information Systems Division should be evaluated to determine if some resources can be used to form a Quality Review Group or if a cross functional approach can be developed where an IT Planning and Project Services employee performs quality and compliance reviews on projects they are not involved in.
- Management should develop formal lines of communication so that results of the independent reviews can be reported to the individual Project Boards, the Information Resource Council, and the Information Resource Manager.

Management Response and Action Plan:

ISD agrees that there is a need for independent quality assurance reviews and process compliance reviews for major information technology projects. ISD also agrees with the proposed recommendations; however, the staffing recommendation probably cannot be achieved without additional internal or contract staff.

Observations

- Management should ensure that the *Quality Management Standards*, the Project Management Plan template, and the *OPR Roles and Responsibilities* manuals are aligned with one another.

For example, the OPR manual mentions the role of the OPR Executive, however this role is not mentioned in the *Quality Management Standards* or PMP template. Also, The role of the Project Sponsor needs to be clarified – the OPR manual, chapter 4 seems to allow the OPR Executive and Project Sponsor to be the same person (which means the Sponsor would be able to approve major procurements); and chapter 5.3.7.1 states that the Project Sponsor is also chair of the Project Board (which also usually acts as the Change Control Board). This allows the Sponsor to assume a multitude of possibly conflicting roles, which the State Auditor’s Office identified as problems in the STARS audit. The OPR manual describes the OPR Executive as typically being the DE/DD/OD, however, the QMS describes the Project Sponsor as the DE/DD/OD. The QMS describes the roles of the Information Resource Manager and the Audit Office however these are not mentioned in the OPR manual. Both the QMS and the *Information Technology and Services Manual* need to be updated to address the new process for submitting the Project Charter with the Information

- Resource Request. The manuals should also be included in TxDOT's intranet, online manuals website.
- Management should evaluate the format of the IT project status information currently being provided to the Information Resource Counsel to determine if value could be gained by including information on budget, timeframes, major changes (including personnel changes), and the percent of project completion.

Management Response:

ISD agrees that the above listed documents should be updated and aligned. ISD is currently in the process of accomplishing this through the development of the ISD Services Guide, rewriting the Quality Management Standards document and updating all related project processes, procedures and templates. When completed, all documents will be published on ISD's intranet site and the ISD Services Guide and OPR Roles and Responsibilities will be published on the TxDOT online manuals website.

Closing Comments

The results of this audit were discussed with the Information System Division Director and other members of ISD management on May 25, 2005; and with the Assistant Executive Director for Field Operations and Assistant Executive Director for Support Operations on June 1, 2005. The results of each project examined were also discussed with the Project Sponsor and/or Project Manager. Excellent cooperation was received throughout the audit.