



City of Seattle

Office of City Auditor
Susan Cohen, City Auditor

MEMORANDUM

DATE: May 1, 2006

TO: Councilmember Jean Godden, Chair
Energy and Technology Committee

Councilmember Richard McIver, Chair
Finance and Budget Committee

FROM: Susan Cohen, City Auditor *Susan Cohen*

RE: Follow-up to response to 2003-2004 biennial budget Statement of Legislative Intent #10 on Quality Assurance for Information Technology (IT)

In July 2004, we issued a memo (attached) to the City Council summarizing our response to the 2003-2004 Statement of Legislative Intent #10 on Quality Assurance (QA) for IT. This memo indicated that our office would follow-up on the implementation of the improvements outlined in the Chief Technology Officer's (CTO's) strategic framework for improving IT project management.

Since 2004, we observed significant improvements in the CTO's monitoring of the progress of expensive and complex City IT projects. The CTO now maintains a complete inventory of departmental IT projects, and monitors the health of major projects. Indicators of project health include budget versus actual costs, scope variance, and schedule changes. We believe that the CTO's close monitoring contributed to six of the eight large IT projects completed in 2004 coming in under-budget, and one project completed at only .2 percent over-budget. We also noted that departmental compliance with the CTO's oversight requirements has risen from 50 percent in 2004 to 100 percent in 2006.

The table below summarizes our original findings, and lists CTO process improvements to date, and an additional audit recommendation.

We note that one 2004 recommendation remains unaddressed. This is the evaluation of system benefits. Once a new City IT system has been implemented, the CTO will still not know whether the system delivers the benefits that were identified in the business case. The CTO has indicated that tracking and ensuring system benefits is the responsibility of the business unit (See attached CTO response letter). While we agree that the business unit will be most closely affected if a new system delivers (or fails to deliver) its promised benefits, we believe that this information should be reported to the City Finance Director and the CTO for decision-making regarding future technology investments. For example, many software products require system upgrades every 18-24 months. Currently, these system upgrades are

proceeding (and City expenses are incurred) without information about how well the system is delivering the benefits as originally anticipated. We therefore recommend that the City Finance Director and the CTO re-consider incorporating a benefits review into the IT project oversight process. We understand that the Seattle Department of Transportation has recently completed an analysis of the realization of benefits from its right of way management program, and this may be a good model for other City projects.

Please contact me at 233-1093 or Claudia Gross Shader, Assistant City Auditor, at 684-8038 if you have any questions regarding this issue.

Finding Area	CTO Process Improvements	Additional Audit Recommendations
Departmental Compliance with QA Requirement	The CTO redesigned the IT investment evaluation process. This process includes four levels of oversight review that may be required for an IT project. Departmental compliance with the oversight requirements has increased from 50 percent in 2003 to 100 percent in 2006.	
Citywide Inventory of IT Projects	The CTO now maintains an "IT Project Portfolio", which includes City IT projects with total expected expenditures of \$100,000 or more over the life of the project; that will develop a public-facing web application; that the resulting product or service will be used by more than one department; or that will utilize resources from more than one department. As of the fourth quarter of 2005, the Citywide IT Project Portfolio contains information on 206 projects.	
Management Attention to QA Recommendations	CTO staff independently review the monthly QA reports and track key project issues through resolution. Projects demonstrating unsatisfactory performance are required to submit an action plan from the project sponsor to the CTO outlining corrective actions. The CTO may elect to escalate issue resolution through discussions with the project's executive sponsor, the department IT manager, and/or the department director.	
Evaluation of System Benefits		The City Finance Director and the CTO should consider incorporating a benefits review into the IT project oversight process.

cc: Bill Schrier, CTO
 Dwight D. Dively, Director, Department of Finance
 Janet Credo, Department of Finance

ATTACHMENT 1

MEMORANDUM

DATE: July 12, 2004

TO: City Councilmember Jim Compton, Chair, Utilities and Technology Committee, and City Councilmember Jan Drago, President, Seattle City Council

FROM: Susan Cohen, City Auditor

RE: Response to 2003-2004 biennial budget Statement of Legislative Intent #10 on Quality Assurance for Information Technology (IT)

I am pleased to share with you an update regarding our ongoing work with the City's Chief Technology Officer and departmental IT managers that has resulted in improvements in the way that City IT projects are selected and managed. We will continue this work with follow up reviews in the fourth quarter of 2004 and in 2005. Please contact me at 233-1093 or Claudia Gross Shader, Assistant City Auditor, at 684-8038 if you have any questions regarding this issue.

Background

The City's tight budget demands prudent management and high accountability over the City's growing investments in information technology. Annual City spending for information technology (IT) totaled approximately \$106 million in 2003. These expenditures included new investments in business, utility, and public safety systems, telecommunications and networks. The City's technology investments directly affect its ability to deliver basic services, capture operational efficiencies, and conduct sound decision-making processes.

Many organizations, including 13 local and state governments that we researched, enforce project management disciplines to help keep IT projects on track. This includes Quality Assurance (QA), an ongoing third party review of project management practices during the implementation of critical IT systems.

In 2003, the City Council asked us to examine City policies, standards, and authority for review of IT projects, and "to identify options for expanded quality assurance programs for City information technology projects."

Recent Improvements to City's QA Processes

Starting in the spring of 2003, we worked with the City's Chief Technology Officer (CTO) to identify best practices in QA in use in other jurisdictions. We also conducted a review of QA practices at the City and shared with the CTO our findings in four areas:

- Departmental compliance with the QA requirement
- Citywide inventory of IT Projects
- Management attention to QA recommendations
- Evaluation of System Benefits

The CTO then developed a strategic framework to address these findings and to improve City processes to ensure that IT projects were selected wisely and completed on-time, on-budget, and with the desired results.

The strategic framework includes the development of:

- A comprehensive inventory of significant City IT projects
- A redesigned IT investment process
- A restructured approach for determining the appropriate level of project oversight
- Active monitoring of projects' progress and risks
- Consultative services for IT project managers and project sponsors.

We are encouraged by the CTO's recent progress in implementing these improvements. For example, to date, the CTO has worked with City departments to complete risk profiles for 17 planned IT projects. These risk profiles will help determine the appropriate level of oversight required for each new City IT project. In addition, the CTO has compiled an inventory of 130 significant IT projects within City departments.

Plan for Audit Follow-Up

To ensure that these improvements continue, the Office of City Auditor will conduct follow-up reviews. Within the next 18 months, we plan to review the progress made in implementing the CTO's revised project oversight strategy, and we plan to conduct a compliance review that examines both the departmental participation in and the effectiveness of the revised project oversight processes.

The table below summarizes the finding areas, CTO process improvements, and the planned audit follow-up:

Finding Area	CTO Process Improvement	Planned Audit Follow-Up
Departmental Compliance with QA Requirement	Use project risk assessments to determine level of oversight and QA.	Conduct compliance reviews in 2004 and 2005.
Citywide Inventory of IT Projects	Develop a comprehensive inventory of IT projects across City departments, updated quarterly.	Review project metrics (percent completed on-time, budget vs. actual, etc.) in 2005.
Management Attention to QA Recommendations	CTO will increase IT project management training and support.	Review issue resolution process for selected projects in 2005.
Evaluation of System Benefits	CTO will require an IT investment evaluation before system upgrades occur.	Conduct compliance reviews in 2005.

cc. Councilmember Richard Conlin
 Councilmember David J. Della
 Councilmember Jean Godden
 Councilmember Nick Licata
 Councilmember Richard McIver
 Councilmember Tom Rasmussen
 Councilmember Peter Steinbrueck
 John Franklin, Chief of Departmental Operations, Mayor's Office
 Bill Schrier, CTO
 Aimee Strasko, Department of Finance

ATTACHMENT 2

Follow-up Response to the 2003-2004 Biennial Budget Statement of Legislative Intent #10 on Quality Assurance for Information Technology (IT)

Since 2001, the Office of the Chief Technology Officer (CTO) -- working with City departments -- has achieved notable progress in implementing its strategic framework for improving IT project management and oversight.

The components of this framework are:

- Ordinance 119504, which creates the Department of Information Technology and assigns duties to the Chief Technology Officer
- Inventorying all significant IT projects, and making them visible to the CTO and IT governance bodies
- A redesigned ITIE process ("ITIE" is Information Technology Investment Evaluation)
- A restructured approach for determining the appropriate level of project oversight
- Active monitoring of projects' progress and risks
- Providing consultative-level services to IT project managers and project sponsors.

Together, these components serve the overarching objective of minimizing project risk while maximizing the likelihood of project success.

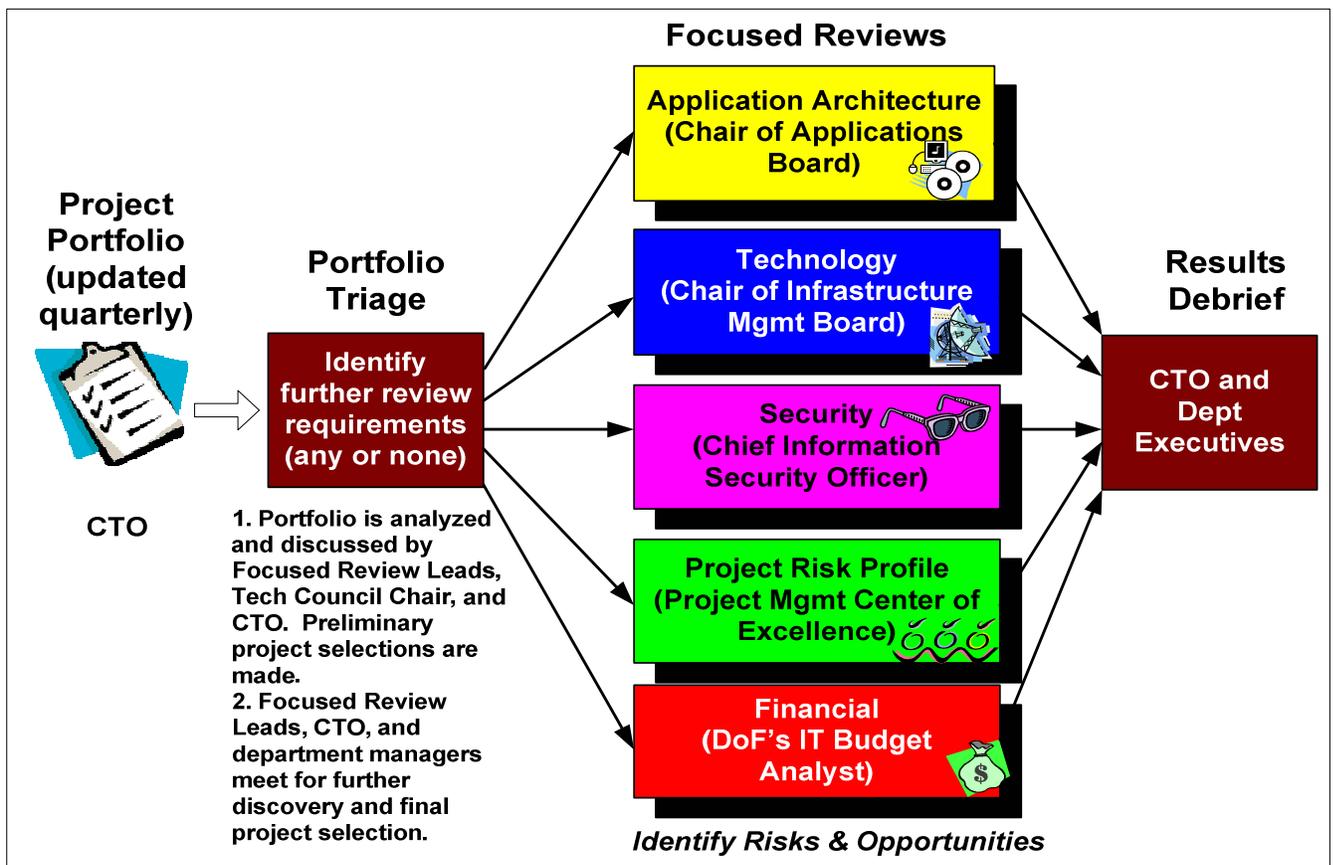
Project Visibility: Maintaining an Inventory

On a quarterly basis, the Office of the CTO systematically collects information on IT projects of any nature (including application/database development or purchase, systems integration, computing platforms, and networking) across all City departments. Criteria for a project's inclusion in this "IT Project Portfolio" are: where total expenditures are expected to be \$100,000 or more over the life of the project; where a project will develop a public-facing web application; where the resulting product or service will be used by more than one department; or where a project will utilize resources from more than one department. Department IT managers are responsible for the timely and accurate submittal of their latest project information to the CTO. As of August 1, 2005, the Citywide IT Project Portfolio contains information on 329 projects.

Re-designed ITIE Process

The ITIE process has been re-designed, re-energized, and re-named to "MITIE" (Municipal IT Investment Evaluation). In the first stage of MITIE, a team consisting of the CTO, Tech Council Chair, and five subject-area leads triage the

Project Portfolio to identify those projects needing further review in specific areas of concern or interest (see chart below). In the second stage of MITIE, the selected projects go through one or more "Focused Reviews". Focused Reviews are intended to ensure that the right choices have been made in the areas of application architecture, technology, security, project practices, and funding and budgeting. Recommendations resulting from Focused Reviews are presented to the CTO for further direction and/or decisions; from there, the recommendations are circulated to the project owners in the departments.

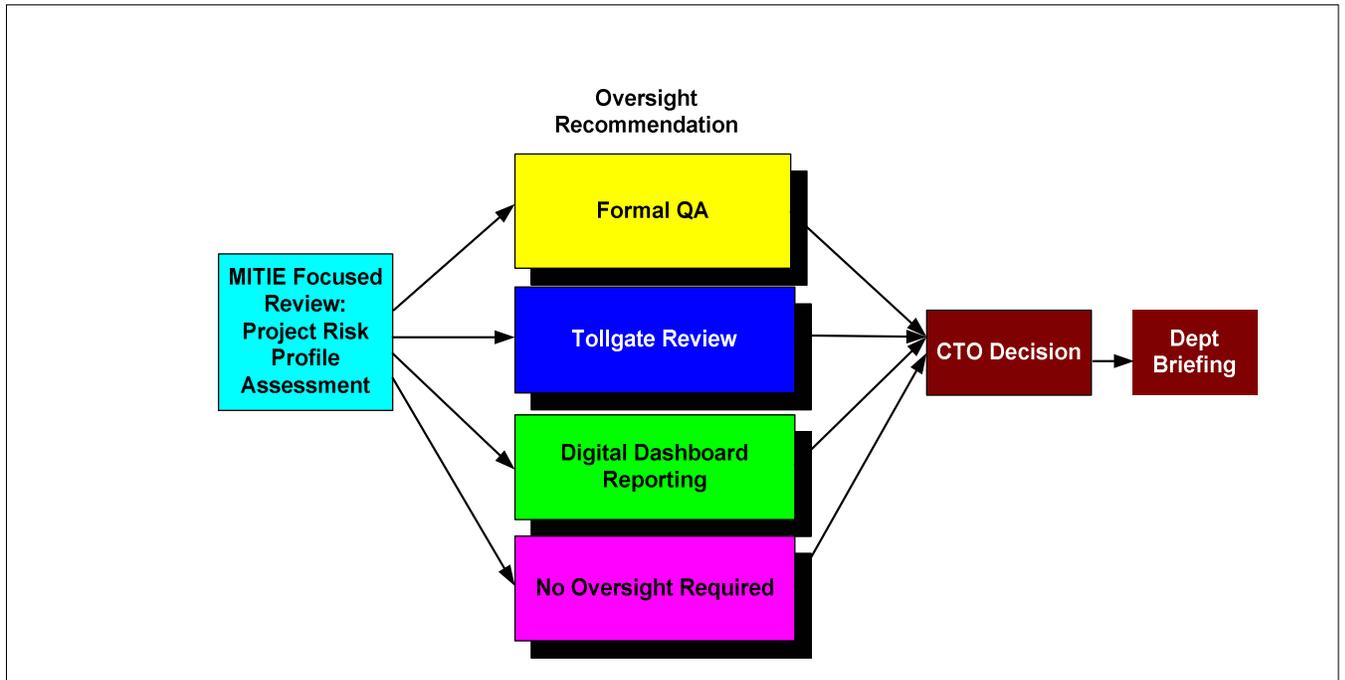


Determining the Level of Project Oversight

One of the five types of Focused Reviews – called Project Risk Profile – is designed to assess the degree of risk associated with a project. The degree of risk, in turn, determines the level of oversight required during the life of the project. Project Risk Profiles, and any subsequent project oversight, are administered by the Project Management Center of Excellence (PMCoE), which reports to the Office of the CTO. The original City IT Quality Assurance (QA) policy, created in 2001, required formal QA for any project with a budget of

more than \$500,000. A restructured approach in the June, 2004, update to this policy alters the QA entrance criteria such that a determination is made on the *overall risk* of a given project. Overall risk considers a number of factors, among them: cost, duration, business and technical complexity, adequate and appropriate project staffing, and application of project best practices. Further, the determination may be one of three [scalable] levels of project oversight. PMCoE's recommendation for oversight, which goes forward to the CTO for final decision, may be one of the following four options:

- ✓ No oversight required
- ✓ Digital Dashboard Reporting
- ✓ Tollgate Reviews
- ✓ Formal QA



Project Oversight: Monitoring Project Progress and Risk

Reporting through the “Digital Dashboard”

At a minimum, projects that undergo a Project Risk Profile assessment will be added to and tracked through the Digital Dashboard¹. Projects on the Dashboard report monthly progress on a set of pre-established “vital signs” which signify the health of the project. These vital signs include planned vs. actual costs to-date, planned vs. actual schedule to-date, success rate in hitting projected milestones, and key project risks and issues. A pattern of unacceptable variances might trigger more in-depth assessments or a move to a higher level of oversight. PMCoE analyzes each Dashboard Report and renders an opinion on the overall health of the project, along with perceived risks and recommended follow-up actions to the CTO. Since the inception of Dashboard Reporting in May, 2004, 398 reports have been submitted and analyzed for 34 unique projects.² Of these 34 projects, eight have been completed. Final project metrics for finished projects are catalogued and tracked, including cost at completion, cost variance at completion, and schedule variance at completion.

Tollgate Reviews

A second level of oversight is Tollgate Reviews. Project managers and sponsors work with PMCoE to establish checkpoints (for example, at the close of each major project lifecycle stage or at certain significant milestones). At each of the checkpoints, the project manager and project sponsor meets with PMCoE to conduct a formal review of project management practices, deliverable progress, schedule and budget performance, project artifacts, project issues, and significant risks. Tollgate Review findings and any recommendations are reviewed with the project manager and project sponsor and reported to the CTO and executive sponsor of the project. The findings may include a recommendation for continuing the current level of oversight, or adjusting the level of oversight. At this writing, two projects – SPU’s Enterprise Project Management System, and Muni Courts’ MCIS Migration – are under Tollgate Review. Three other projects have been recently changed from “Tollgate Review” to “Dashboard Reporting” in recognition of their healthy vital signs, consistent application of project management best practices, and actively engaged sponsors. These projects are: SDOT’s Right of Way Management Program and Street Use Permitting Redesign, and Parks’ Pyramid.

Formal Quality Assurance

Formal QA continues to be initiated on the more complex, higher risk City IT projects. QA stays close to the project to identify potential risks and

¹ Unless the PMCoE and CTO explicitly designate the project as “no oversight required”.

² All projects having oversight are required to submit monthly Dashboard Reports, even if they are also undergoing Formal QA or Tollgate Reviews.

recommended mitigations throughout the project's lifecycle. The QA Analyst focuses on the project management processes applied, and works closely with the project sponsor and executive committee. As of this writing, six active IT projects in the City were determined by PMCoE, and designated by the CTO, as requiring QA. They are: HSD's Safe Harbors, DEA's Summit Upgrade, City Light's CCSS Upgrade and Work Management System (WMS), and SPD's CAD-RMS-Mobile and Message Switch. All six of these projects are compliant in their engagement of QA.³

A number of measures have been implemented to enhance the consistency of QA's application, increase its visibility to project sponsors and the CTO, and ensure that QA findings receive appropriate management attention and follow-through.

- Capacity for QA services has been expanded through the creation of a category on the City's Consultant Roster for QA consultants. All providers approved for this category have been vetted by PMCoE for their relevant experience and a satisfactory oversight methodology. Departments contracting for formal QA services must choose a provider from this list.
- PMCoE reviews the scope of the Statement of Work in each QA services contract. Among the provisions required in the contract's Statement of Work are: reports that present the consultant's observed risks and recommendations, and tracking the progress made on those recommendations over time; timely submission of the consultant's reports to the CTO and PMCoE for review; report review meetings between the QA consultant and PMCoE; and a Lessons Learned report from the consultant at the end of the engagement.
- PMCoE attends project Steering Committee meetings to listen to the monthly QA presentation from the consultant. PMCoE also independently reviews the monthly QA reports, verifies internal consistency with the Dashboard Reports, comments on the health of the project and briefs the CTO, and continues to track key project issues through resolution. Projects demonstrating unsatisfactory performance are required to submit an action plan from the project sponsor to the CTO outlining corrective actions. The CTO may elect to escalate issue resolution through discussions with the project's executive sponsor, the department IT manager, and/or the department director.

Project Management Consultative Services

Enhancing project performance can best be sustained by building and nurturing the project management culture in the City through the education, training, and mentoring of qualified project managers. PMCoE continues its commitment to

³ SPD's CAD-RMS-Mobile and Message Switch projects have been granted CTO approval for temporary QA suspension while the projects complete software procurement and contract negotiations with the chosen vendor(s).

this principle by coaching project managers in the use of 'best practice' project management methodologies; mentoring project sponsors on their roles and responsibilities; and assisting projects in sourcing high-quality project managers. In 2004-2005, PMCoE, in conjunction with Bellevue Community College, sponsored 8 onsite IT project management training courses⁴, reaching a total of 141 Citywide participants.

Evaluation of System Benefits

Benefits realized as a result of implementing a system are usually most evident in the sponsoring line of business. That is, the technology itself is a small portion of the total benefit package that might include targets such as cost reductions and improved service performance. Rather, technology is merely an enabler of cost savings and better services through redesigned and enhanced business processes. In addition, there may be a significant delay between the formal end of a project and the realization of the benefits (even more than a year in some cases). For example, it may take some time for new business processes to become institutionalized or for projected increases in revenue to accrue. This could be long after the project team is disbanded and the project manager is re-assigned. Because of this business orientation toward benefits and the sustaining nature of the owning business unit, it is the project's business sponsor that sets the original goals and objectives through a Business Case⁵, and the business sponsor is later accountable to her/his business unit to ensure promised benefits are actually delivered post-project.

The Office of the CTO, through the MITIE process and PMCoE IT project oversight, monitors a project's performance through the life of the project. This includes all five stages of a project: Initiation and Chartering; Planning; Execution; Control; and Closeout. There are several points at which benefits are considered:

MITIE Process: Financial Focused Review – The Financial Focused Review is conducted by the Department of Finance and occurs at the start of Initiation. Part of this review is an analysis of project cost and benefit projections, and a categorization of benefits as being either "Increased Revenue", "Avoided Cost", or "Improved Service". These projections are generally derived from the Business Case put together by the business unit. A copy of the Financial MITIE form is attached.

Project Oversight: QA or Tollgate – It is customary for a "Benefits Measurement Plan" to be included in the Business Case. Such a plan specifies how and when benefits will be measured. For projects at QA or Tollgate oversight levels, the oversight analyst will look for such an artifact; if it is not present, the analyst will

⁴ Courses included "Principles of Project Management", "Project Management Core Training", "Requirements Modeling", and "Using MS Project to Plan and Execute Your Project".

⁵ The Business Case is developed at the conceptual or "idea" stage, and is the justification for funding a project and authorizing it to begin. This occurs *before* the formal project lifecycle commences.

request the business sponsor to develop a separate Benefits Measurement Plan in the project's Initiation stage.

Project Oversight: Lessons Learned Report – Lessons Learned Reports are required for all projects engaged in any level of oversight, and are completed at project Closeout. Contents include the project's strengths and weaknesses, opportunities missed, recommendations for improving the performance of future projects, and how well the project met key performance metrics for quality, scope (functionality), schedule, costs, and technical objectives. *Business objectives* – including meeting/not meeting projected benefits – are usually not evaluated in this document as it is often too early to state results. However, the Lessons Learned document should indicate when in the future the business objectives are expected to be measured.

At Closeout, final project metrics are catalogued by PMCoE, including cost at completion, cost variance at completion, and schedule variance at completion. As PMCoE's purview is to track IT project performance and risk, this is the point at which oversight officially ends. Accountability for achieving business benefits, and, therefore, responsibility for measuring and reporting on those business benefits, resides within the sponsoring business unit.