TECHNOLOGY PROJECTS:
Lack of governance hurts City projects and disaster planning

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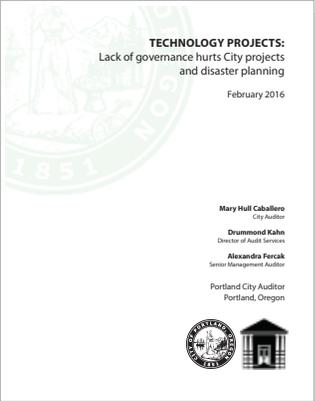
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                Fred Miller, Chief Administrative Officer, Office of Management & Finance
                Jeff Baer, Chief Technology Officer, Bureau of Technology Services

SUBJECT: Audit Report – *Technology Projects: Lack of Governance Hurts City Projects and Disaster Planning* (Report #460B)

The attached report contains the results of our audit of the City's technology governance. The Office of Management & Finance and Bureau of Technology Services responded to the audit recommendations; their response letter is included in the back of the report.

We appreciate the cooperation of the Bureau of Technology Services during the course of the audit. We will follow up in one year with the Mayor and Technology Services for a status report detailing steps taken to address the audit recommendations.

Mary Hull Caballero

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Attachment

TECHNOLOGY PROJECTS:
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and disaster planning

Summary

Information technology governance is important for prioritizing projects, allocating available resources and ensuring that technology decisions are guided by citywide strategic plans. It provides a framework for implementing policies and business processes to effectively support all the services that an IT department provides.

We conducted this audit to determine the condition of the City's IT governance, and found that it lacks an over-arching framework to guide decision-making. The City does not set priorities, which diminishes its ability to effectively allocate available resources or determine whether additional resources are needed. Technology decisions are defensive and reactive to bureaus' needs and requests.

This weak governance adversely affects the City in important ways, especially in citywide technology project management and disaster preparedness.

We recommend that the Mayor direct the Bureau of Technology Services to create a decision making governance body with the authority to align available resources with the citywide IT strategic plan. Technology Services is to execute the IT strategic plan, including the responsibility for funding recommendations. Execution of the strategic plan will require City Council to ensure that funding is available to achieve the approved the plan.

Technology investments not guided by effective governance

Information technology governance is a framework for implementing policies, business processes, and internal controls to effectively support all the services that an IT department provides. Governance seeks to improve the value of operations, rationally prioritize project requests, and measure the IT department's performance. What

contributes to effective IT governance is strategic alignment between bureau needs and technology, and for technology to provide benefits to City bureaus and services. It ensures that technology direction and investments are set through a prioritization process.

The City does not have a complete IT governance framework. The City's information technology decision-making is decentralized, guided by the different Bureaus and their varied and often conflicting technology needs. Without a clear governance framework, the City remains at risk for mismanaging limited resources and not meeting the City's technology needs. The demand for technology services is high, and there are critical technology needs – both at the City and in the community – that must be met. This requires prioritization of available resources. The nature of technology is that it is constantly changing and the City has to keep up with these changes and demands.

There is a difference between technology governance and management. The objective of governance is to evaluate, direct, and monitor. The objective of management is to plan and execute the strategy (see Figure 1).

Figure 1   Key areas in IT governance and management
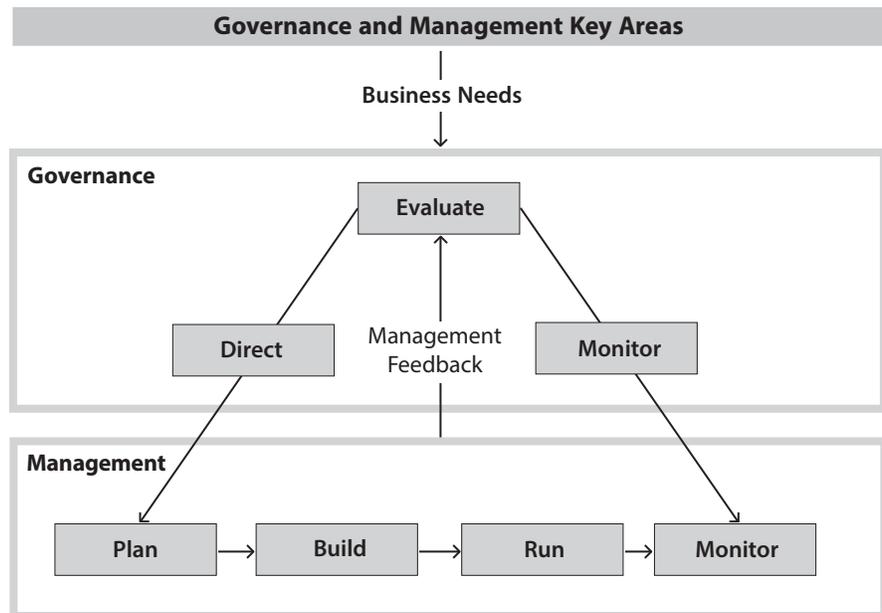
Source: ISACA, Control Objectives for Information and Related Technology (COBIT)

City lacks centralized decision making

Prior audits and consultants' reports have documented significant weaknesses in the City's ability to prioritize and allocate technology resources strategically. Technology Services has implemented some recommendations, but the lack of an over-arching decision-making structure continues to be a problem.

The Bureau of Technology Services is reactive to City's needs

The City's lack of an information technology governance framework, causes the Bureau of Technology Services to function in a reactive mode. The Bureau makes decisions based on the requests coming in from individual bureaus without clearly prioritizing projects and available resources. The Bureau currently has a list of recommendations that are the result of an assessment completed by external consultants. However, without strong governance in place and prioritization of IT expenditures, it may be difficult for the Bureau to implement these recommendations.

Figure 2   Maturity stages of information technology in organizations

Defensive ⟶	Reactive ⟶	Responsive ⟶	Strategy Focused
Costs			
IT expenditures are externally budgeted, often as share of revenue.	Service level agreements and charge back systems are employed.	Unit costs and demand are quantified and managed.	Technology investment decisions are informed by business strategy.
Quality			
Quality focus is exclusively on system availability	Quality focus is on systems availability and response time.	Quality is managed to negotiated service level agreements.	Availability and reliability are no longer an issue.
Agility			
Delivery schedules are constrained by resources and internal priorities.	Resource allocation is driven by politics.	Methods are applied to reduce development cycle time.	Broad focus is on deliverring new technology on time.
Innovation			
Creative budgeting and accounting are used to defend against outsourcing.	Technologies are used in innovative ways to reduce IT costs.	Role of technology in business strategy is considered.	Technology is embedded in the organization's value proposition.

Source: Audit Services' 2005 Audit Report on Information Technology Governance
          http://www.portlandonline.com/auditor/index.cfm?c=37677&a=91780

The City's information technology decision-making is less mature and reactive, falling at the lower end of the scale in Figure 2. The City cannot move to the optimum end of the scale without strong governance.

It is not clear how the City prioritizes among large citywide IT projects or makes decisions when allocating available resources. Resource allocation has to be guided by strong governance, which in turn is guided by strategic planning. Technology Services created an IT strategic plan, but Technology Services does not track and monitor the citywide IT benefits and value that were achieved.

Some progress made, but decision making structure still not clear
Two recent reports from external consultants have recommended
that the City establish a citywide IT governance committee. One con-
sultant said the committee should consist of a cross-section of senior
personnel from throughout the City with responsibility to recom-
mend funding of proposed technology projects based on consistency
with the IT Strategic Plan. The consultant also recommended that the
Technology Services director should head the governance committee
and have ultimate authority and accountability for making funding
recommendations to City bureaus. In addition, the director is to be
given the authority to enforce the City's IT strategic plan, and the
Technology Services Director be held accountable for plan execution.

Governance finding and recommendation by City's consultant:

***The City is missing key components for comprehensive IT
Governance.*** While a project intake process is defined, it is
downstream from IT governance processes. With the implementation
of concepts around Communities of Interest (similar lines of business),
BTS is moving in the right direction to establish cross-functional teams
to assist in decision-making around technology investments. There is
a Technology Oversight Committee (TOC) that provides oversight to
projects, but this is a citizen committee, and it is not involved in the
governance process. Technology governance requires defined citywide
goals, objectives, strategies, priorities, and decision making to guide
technology investments.

Establish a Citywide IT Governance Committee. BTS is moving
in the right direction to establish cross-functional teams to assist
in decision-making around technology investments through the
formation of Communities of Interest (similar lines of business). The
Citywide IT Governance Committee should consist of a representative
cross-section of senior personnel from throughout the City with
responsibility to recommend funding of proposed technology projects
based on consistency with the IT Strategic Plan. The CTO should head
the Committee and have ultimate authority and accountability for
making funding recommendations.

Source: Moss Adams, LLP

Technology Services has organized City bureaus into groups based
on their common interests and service needs. These groups, called
Communities of Interest, were developed to coordinate and priori-
tize technology citywide. Every Bureau is represented in a group.

The goal of this model is to make collaborative decisions, prioritize responsibility, and align technology to support City services. These new communities, based on their common technology needs, are intended to provide strategic and investment recommendations to the City's IT Executive Steering Committee.

Using these new interest groups, Technology Services developed a governance framework to guide technology strategy and investments. Figure 3 shows how the interest groups interact with technology and City leadership and how they provide strategic guidance and project prioritization. The City's IT Executive Steering Committee ensures that technology planning and investment decisions are made collaboratively, with responsibility shared across all City bureaus. Bureau directors are members of the committee, and

Figure 3   City's current IT Governance Model
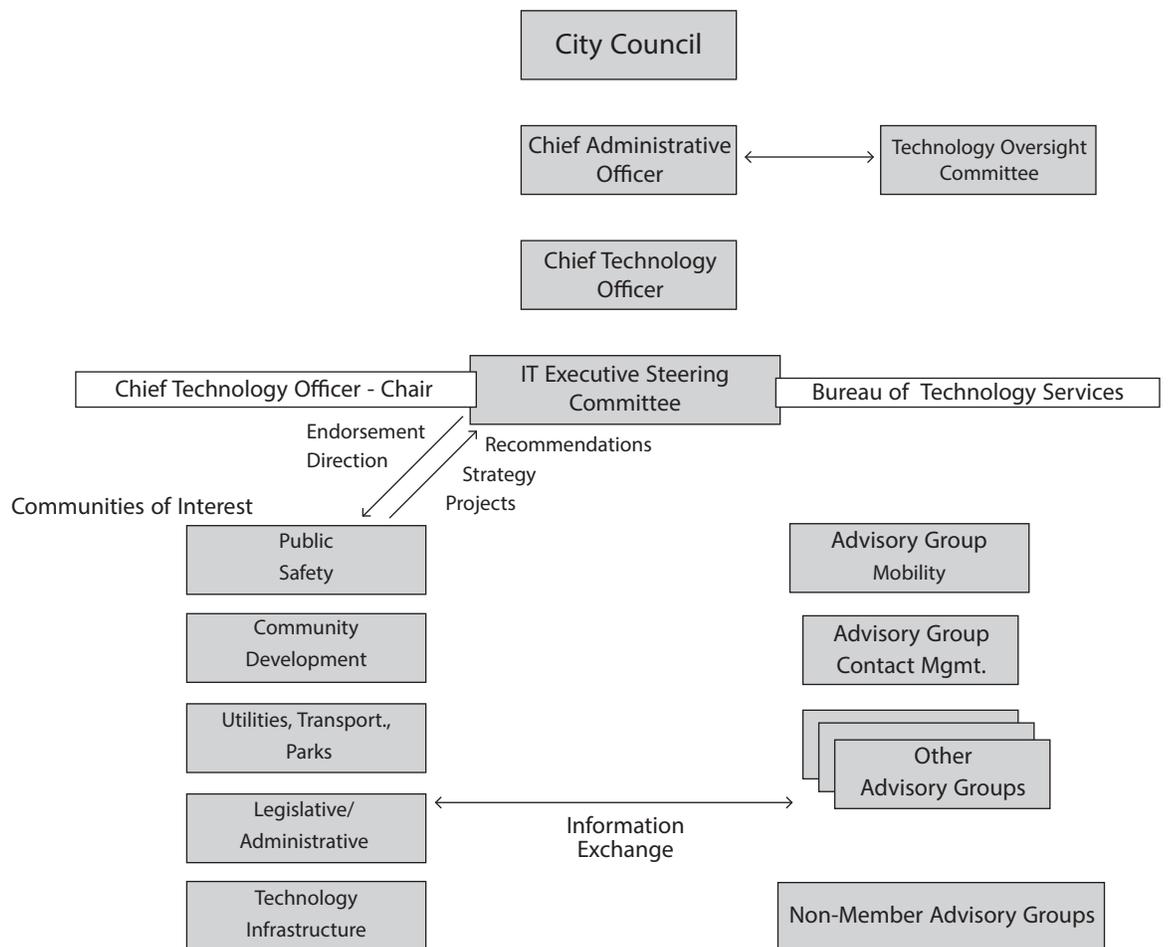
Source: Bureau of Technology Services

the Chief Technology Officer is the chair. The preferred decision making is by consensus. If consensus can't be reached, then each member has a vote.

These are important steps toward a governance framework. However, the Chief Technology Officer does not have sufficient authority to implement the City's technology strategy and the decision-making and accountability structure is still not defined.

Comprehensive IT projects suffer from inconsistent oversight

The lack of governance and decentralized decision making is especially problematic for citywide IT projects. The role of IT governance in citywide project management is to guide the prioritization and allocation of available resources. Strong governance is needed to guide the development of project oversight and decision-making. For example, the implementation of Office 365 software was managed by the Technology Services because it affected all City bureaus.

Recent audits reviewed large IT projects, such as the implementation of the Public Safety Systems Revitalization Program, and the implementation of the Business System Software (SAP), and we found that projects face the following challenges:

- Budget and schedule increases
- Change management program not developed
- Roles and responsibilities not defined and not always followed
- Uncertain authority over projects – many decision makers and advisers

For example, the implementation of the SAP project cost more than triple the original estimate, was completed more than a year late, and did not include expected functions. One of the factors for not achieving project goals, was the City's decentralized organizational structure, which resulted in project decisions being made with the consensus of many participants. There were many layers of project governance with each participating in the decision-making.

Technology Services alone does not have the authority to make decisions on citywide projects. However, it has been working with City bureaus to develop a governance structure which will guide IT strat-

egy, resources allocation and project management. Managing large citywide IT projects with many different stakeholders is challenging in an organization without a strong IT governance structure. For example, BTS has struggled to implement the IT disaster planning and recovery project and the City is still unprepared for a major event.

City's disaster recovery planning is affected by lack of governance
Should there be a natural disaster or other citywide disruptive event, two bureaus critical to lifesaving responses have not provided data recovery information to Technology Services. This is an example of the City's need for high-level prioritization and decision-making, because Technology Services is not authorized to direct bureaus to provide such information.

There is a citywide planning process where the objective is to maintain the continuity of city services and business processes during and after a disaster. Such an event can include data loss due to corrupted, destroyed or breached data servers, or loss of computer operations that would impair city services. Should the event be caused by earthquakes, fires, or floods, rescue operations could be jeopardized by the City's inability to communicate information and effectively deploy police, fire, and emergency medical services. There also could be lags in resuming water and sewer services and clearing debris from streets.

We found that the City lacks coordination and prioritization for the recovery of crucial applications and data systems across City bureaus. Technology Services has not obtained step-by-step recovery procedures from three City bureaus describing services they will need from Technology Services in an emergency. The three Bureaus are Office of Management and Finance, Portland Police Bureau, and Bureau of Emergency Communications, which are critical services when responding to a disaster or disruptive event.

The planning process helps the City identify potential data losses, services disruptions, and costs and damages during and after a disaster. The planning process should identify which systems are the most crucial and take precedent in terms of recovery over other city services. Once the plan is developed, it also must be tested to ensure it works and allow for adjustments where it doesn't.

Technology Services cites lack of funding for disaster recovery as the cause of the delay. In addition, the current information technology governance structure does not enable Technology Services to effectively coordinate the planning for a disaster across all bureaus and to obtain information critical to the plan.

Recommendations

We recommend that the Mayor direct Technology Services to take the following actions:

1. Create a decision making governance body with the authority to align available resources with the citywide IT strategic plan.

2. Execute the IT strategic plan, including the responsibility for making funding recommendations. Successful implementation of this recommendation will also require City Council to ensure that funding is available to achieve the approved plan.

Objective, scope and methodology

The objective of this audit was to review the City's IT project management controls. The audit also includes identifying City obstacles to developing an information technology disaster preparedness and recovery plan. This audit topic was included in the City Auditor's audit schedule for FY 2014-15.

This audit also had an earlier objective to assess City compliance with Payment Card Industry (PCI) standard and test practices. We issued a separate report on Payment Card Industry compliance in November 2014.

To accomplish our audit objective we reviewed Bureau of Technology Services policies and procedures, budgets, strategic plan, and organizational structure. We interviewed Technology Services management, staff, and the City's technology project managers. We also interviewed Bureaus' management and staff, technology services customers, members of the Technology Oversight Committee, and other IT project management stakeholders. We reviewed audits of City's technology projects, assessments by external consultants, and reports by the Technology Oversight Committee and the Project Quality As-

sessment reviewers. We selected large technology projects managed by either the Bureau of Technology Services or another City bureau. We reviewed audit reports by other jurisdictions, and Control Objectives for Information and Related Technology (COBIT) guidance issued by the Information Systems Audit and Control Association.

We conducted this performance audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

APPENDIX

Appendix A

IT Governance Best Practices:

In 2005, we issued a report outlining best practices in Information Technology Governance. See report at: http://www.portlandonline.com/Auditor/index.cfm?a=91780&c=37677.   Here is a summary of the best practices.

The following best practices are divided among five IT Governance "focus" areas:

Strategic IT Alignment
IT alignment ensures that IT services and investments meet business objectives that are outcomes of strategic planning. Information technology is "aligned" when IT management allocates resources and undertakes projects in coordination with the bureaus' strategic plans and business objectives and the City's strategic vision. Strategic IT alignment is only possible when bureaus have strategic plans and specific business objectives in place.

Value Delivery
The IT department demonstrates value to the bureaus when it completes projects as specified, on-time, and within budget. The IT department also delivers value by meeting customer expectations for basic IT services such as e-mail and internet access. To deliver value, IT expenditures and the return on IT investments need to be managed and evaluated.

Risk Management
Internal controls and policies enable the IT department to assess and control the many risks related to IT projects.

Resource Management
The IT department needs to manage its resources to optimize resource value. Staff, customers, vendors, hardware, software and relationships are resources that need to be managed.

Performance Measurement
Performance measurement demonstrates how well the IT department accomplishes its objectives and identifies under-performing areas. Performance measurement allows for continual organizational improvement.

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CITY OF PORTLAND

OFFICE OF MANAGEMENT AND FINANCE

To: Drummond Kahn, Audit Services
           Alexandra Fercak, Audit Services

From: Fred Miller, Chief Administrative Officer
           Jeff Baer, Director of the Bureau of Technology Services

Date: January 29, 2016

Subject: Technology Governance Audit

The gist of the findings in your audit on the City of Portland's technology governance is that the City suffers from not having a Citywide approach to the strategic planning for, and prioritizing and funding of information technology investments. In the Bureau of Technology Services, and in the Office of Management and Finance (OMF) generally, we concur with this assessment.

The audit makes two recommendations both of which require City Council support. OMF agrees these recommendations are appropriately directed to Council because it is Council, and not BTS, that can direct bureaus to comply with a Citywide technology strategic plan, and it is Council, not BTS, that can prioritize funding for technology investments.

With regard to the first recommendation of the audit, OMF agrees with the need to create a decision-making governance body that will be more effective. We have already created a Technology Executive Steering Committee that acts with a City-wide view in guiding the work of BTS and also the Enterprise Business Solutions group. This committee is comprised of six bureau directors and is chaired by the Chief Administrative Officer.

Thank you for your interest in and support for Citywide technology governance.