BUSINESS SYSTEM SOFTWARE IMPLEMENTATION:
Expensive, late, and incomplete

November 2010

LaVonne Griffin-Valade
City Auditor

Drummond Kahn
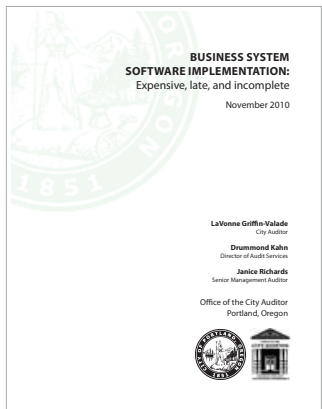Director of Audit Services

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Portland, Oregon

OFFICE OF THE
CITY AUDITOR

ENSURING OPEN AND
ACCOUNTABLE GOVERNMENT

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CITY OF PORTLAND

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OFFICE OF THE
CITY AUDITOR

ENSURING OPEN AND
ACCOUNTABLE GOVERNMENT

November 9, 2010

TO: Mayor Sam Adams
          Commissioner Nick Fish
          Commissioner Amanda Fritz
          Commissioner Randy Leonard
          Commissioner Dan Saltzman
          Ken Rust, Chief Administrative Officer

SUBJECT: Audit Report: *Business System Software Implementation: Expensive, late,*
           and incomplete (Report #392)

The attached report contains the results of our audit of the City's project to select and implement SAP, its new Financial and HR/Payroll system.   We reviewed the City's goals compared to actual results in implementing this significant new system. We examined the areas of project budget, implementation schedule, and functionality. We also reviewed whether the City met its goal to eliminate multiple "shadow systems" in use throughout the City, and to replace those systems with SAP.

Overall, the City did not meet its goals for this project in terms of budget, schedule, functionality implemented, or shadow systems eliminated. This report identifies reasons why the City did not meet these goals. It also notes that the City has documented lessons learned from this project that may benefit the future implementation of new City systems, such as the current project to replace aging public safety information systems that support critical business needs.

We ask the Office of Management and Finance to provide us with a status report in one year, through the office of the Mayor, detailing steps taken to address our recommendations in this report.

We appreciate the cooperation and assistance we received from personnel in the Office of Management and Finance, particularly from the Enterprise Business Solutions Division, as we conducted this audit.

LaVonne Griffin-Valade   Audit Team: Drummond Kahn
City Auditor   Janice Richards

Attachment

Table of Contents

Summary

In 2004, the City of Portland embarked on a $14 million project to select and implement a new Enterprise Resource Planning (ERP) system to replace its aging financial software. During the first phase of the project, the City selected this new business system software and a contractor to help with implementation. In the second phase, the City and the contractor worked to implement the new system within 14 months. The project was designed to improve access to information, reduce duplicate data entry, and standardize City processes. It was also intended to eliminate a number of secondary or "shadow" systems used throughout the City.

Today, the City has achieved its primary goal of replacing its old software with a new system. However, the implementation project cost more than triple the original estimate, was completed more than a year late, and did not include expected functions.

Instead of a $14 million, 14-month implementation as planned, the reported project costs exceeded $47 million and took over 30 months to implement. These significant increases to the originally planned costs and schedule were made worse because some of the planned system functions are not complete and other functions were eliminated as the project developed. In addition, the City's intent to eliminate secondary or "shadow" systems remains incomplete.

Figure 1 provides a summary of the planned and actual cost, schedule, functions implemented, and shadow systems eliminated through June 2009, when the City began using the final component of the new system. It does not include events occurring after that date.

Figure 1   Summary of project results: Planned and Actual

	Planned	**Actual**
Cost (phases 1 & 2):	$14.2 million	$47.4 million
Timeline (phase 2):	14 months	30 months
Number of functions implemented:	10 Financial 9 HR/Payroll	10 Financial 4 HR/Payroll
Number of shadow systems eliminated:	approximately 220	unknown

Source: Audit Services Division analysis

One overall factor that hurt the City's ability to achieve its goals was that the City's project leadership was not as strong as it should have been. The outside firm hired by the City to provide quality assurance services repeatedly warned the City about concerns around project governance and management. In addition, the project's many layers of leadership caused delays in evaluating issues and making decisions. Appendix A shows the numerous layers of the project's organizational structure.

In addition to challenges with project leadership, other factors resulted in budget increases, schedule delays, incomplete functions, and eliminating fewer shadow systems than planned:

- Significant budget increases were caused by increased consulting fees and the City omitting internal costs from the original budget.

- Considerable schedule delays occurred when the City standardized some citywide business processes – but did so inconsistently – and when the City changed the consulting firm that worked on the project.

- The consultant change is also a key reason the City did not implement all planned functions, as the new consultants recommended that the City simplify the project scope and remove non-essential items. This followed the original

2

consultants not always disclosing the full amount of work to implement certain functions.

- In turn, the reduced project scope resulted in having to maintain many shadow systems that the City expected to eliminate.

Moreover, the City did not appear to heed some of the warnings from its experience with prior City projects. As it was beginning the process to select and implement the new system, the City compiled a listing of lessons learned from past City projects. The City also recognized the opportunity to learn from problems experienced during this project and issued a "Lessons Learned" document in April 2010. However, we noted concerns in the April report that were similar to concerns in the previous report.

Despite facing many challenges while implementing the new system, City managers remained committed to ensuring the completion of this project. Additionally, the City received two industry awards to recognize its innovative use of technology with the new system.

Although the implementation project has ended, the City continues to work to improve and add functions to the new system and plans to replace other City systems. As the City moves forward with the new system, we recommend that the City evaluate the project's expected goals against where the project stands today and take appropriate action, ensure the City's support team develops the necessary expertise, and work with the bureaus to identify and respond to employee training needs. As the City begins projects to replace other City systems, we recommend that those project management teams carefully consider the many lessons learned during the City's new business system software implementation project.

Why we conducted this audit

We performed this audit to provide a more complete look at the City's implementation of its new business system software and to highlight the project's successes and shortcomings. The City learned many lessons from this project and can use those lessons as it adds to the new system and implements other new systems.

Chapter 1 **Background**

In 2004, the City of Portland concluded that it needed a new business system software to replace its obsolete financial and payroll software. In July of that year, City managers presented to Council a business case for replacing the old software with a fully integrated financial and payroll system, estimating a project cost of up to $14 million, with an implementation timeline of approximately 18-24 months. Additionally, City managers stated the proposed system would achieve certain benefits, such as being a single source for the City's financial and payroll data, improving access to information through better reporting, and standardizing business processes Citywide. The proposed system's flexible design would also allow the City to add functions in the future. Council approved the project and directed City managers to take the next steps to acquire and implement what is known as an Enterprise Resource Planning (ERP) system.

During phase one of the project, the City researched and studied other governments' implementations of ERP systems, including local jurisdictions, such as Multnomah County and Metro. Prior to selecting SAP for its new ERP software, City managers conducted site visits of four local governments, two that used Oracle and two that used SAP, the two ERP software that City managers determined would best meet the City's needs. Each jurisdiction was rated on several factors, including its similarity to Portland, the functionality provided by the software, and the site's satisfaction with the software vendor.

The City selected SAP as its ERP software, then turned to selecting a contractor for implementation. The City received four proposals and after initial evaluation of each, invited two firms to participate in an onsite presentation and interviews with City project leaders. The

City also checked references provided by each firm. Based upon the evaluation results, the City selected Ariston Consulting and Technologies to implement the ERP system.

Phase two of the project began in early December 2006, when the City and Ariston began the work to implement the new business system.

Chapter 2 **Audit Results**

Reported project costs significantly exceeded expected costs, and do not include most associated City employee costs

The City's project to select and implement its new ERP system cost over $47.4 million – more than triple the original planned cost of $14.2 million. Budget increases occurred because the City had omitted certain costs from the original planned costs, added new functions and features, and increased consulting fees incurred as it extended the project timeline and changed contractors.

Figure 2 **SAP project costs** (millions, estimated)
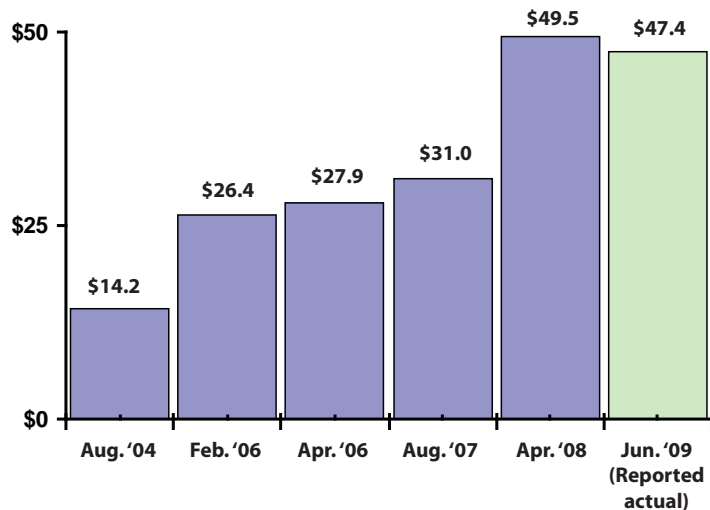
Note: These costs include both phases 1 and 2 (planning and implementation) of the project.

Source: Audit Services Division analysis

In August 2004, Portland City Council approved a budget of $14.2 million for the City to select and implement a new ERP system. Project costs quickly escalated. In November 2005, the City's project

team reviewed costs and recommended a budget increase of over $9 million. This proposed increase was later revised to over $12 million and the project's Executive Steering Committee (ESC) recommended it to Council in February 2006, resulting in a new total project budget of $26.4 million.

Two months after the February 2006 increase, the budget increased to $27.9 million. Costs continued to grow, and in August 2007, the City requested additional funds of $3.1 million, raising the total project budget to $31 million. In April 2008, the City increased the project budget for the final time, to more than $49 million. The City stopped charging costs to the project in June 2009, after going live on the HR/ Payroll component of the new SAP software. Final costs charged to the project were $47.4 million – more than triple the initial budget (Figure 2).

The City increased the project budget multiple times for several reasons. When the project began, City managers based the initial budget of $14.2 million on an independent estimate to procure and implement an ERP system. The City later realized that the estimate did not include certain costs, such as computer hardware needed to support the new software and any City employee costs. However, we noted that the independent estimate clearly stated that it did not include these items. The City also realized that the actual cost to hire a consultant to assist with implementing the system would be higher than noted in the original estimate.

Costs also increased early in the project when the City added functions and features not included in the original plan. When the City began the project, it wanted certain core items to be included in the software. As the project proceeded, the City desired additional functions and features. However, according to one project official, Ariston was not always able to identify standardized ways of incorporating these additional items into the City's SAP software. This resulted in more time needed for development and increased costs. For example, the project team received funding to expand its planned implementation of the Benefits Administration function. Additionally, in October 2007, Council approved an amendment to the Ariston contract that increased project costs by more than $3.1 million following discussions regarding additions to the project scope.

As the project continued and the City extended the project timeline, consulting fees increased as consultants were retained longer than expected. Finally, consulting fees jumped significantly when the City changed contractors. The City paid Ariston a settlement fee and negotiated a new contract with SAP Public Services to complete the implementation.

In accordance with generally accepted accounting principles, the City stopped charging costs to the project in June 2009, when it activated the final component, HR/Payroll.

City employee costs not included

The reported final project costs of $47.4 million do not include all project costs incurred by the City. Reported costs do not include the payroll and benefits costs for many city employees formally assigned to the project full-time and working at the project office. Reported costs also do not include most city personnel working part-time on the project (Figure 3).

Figure 3   SAP project costs - planned vs. actual (millions)
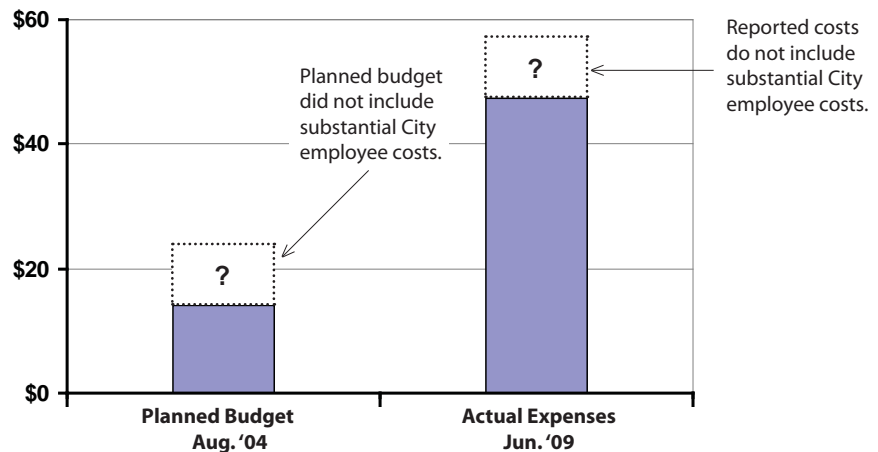
Note: These costs include both phases 1 and 2 of the project.
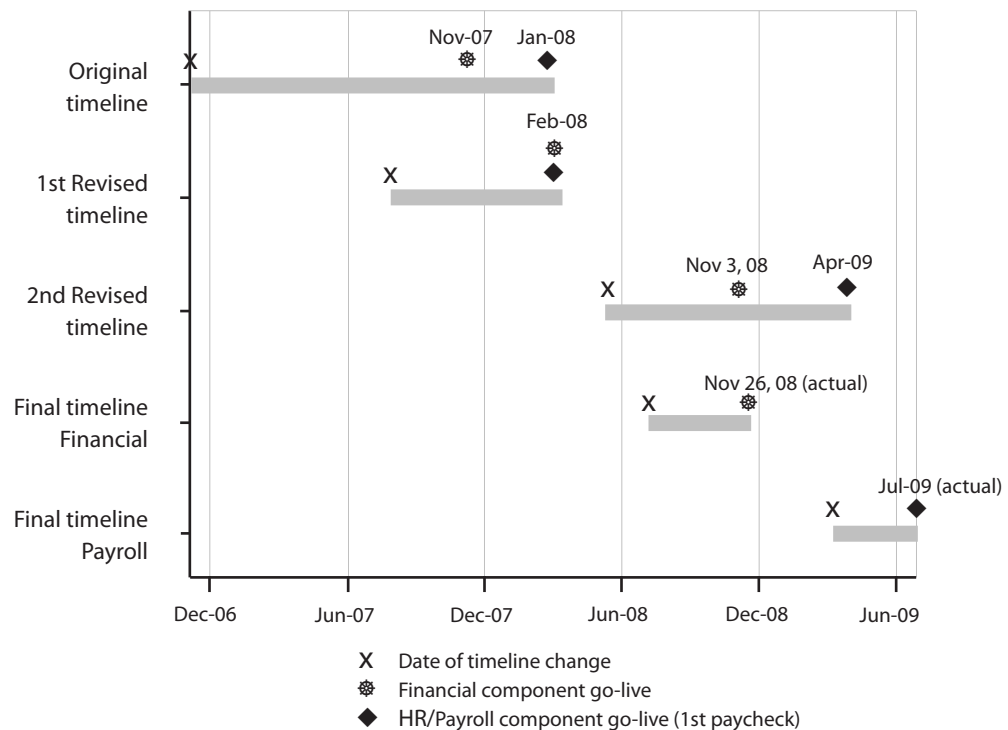
Source: Audit Services Division analysis

The City did not include the employee costs with project costs because it determined that only costs of certain personnel directly assigned to the project team should be charged to the project. City bureaus were expected to absorb the remaining personnel costs, including personnel working on the project full-time at the project site.

The City extended the project schedule multiple times

The City did not meet its original plan to implement the new system in 14 months. After four separate project extensions, the City went live on the Financial component one year later than planned and on the HR/Payroll component 16 months past the original schedule. More time was needed to recover from a slow start, to respond to unexpected challenges, and to ensure that bureaus were ready. Ultimately, the City completed the project, but much later than it originally planned.

Figure 4   Changes in project implementation timeline

Source: Audit Services Division analysis

The City officially began work to replace its old financial software with the SAP software on December 4, 2006. It formally established a 14-month implementation schedule with Ariston and planned for the Financial component to go-live in November 2007, followed by the HR/Payroll component in December 2007.

The City encountered delays very early in the project that ultimately impacted the overall project schedule. In November 2006, one month before the official project kick-off, key Ariston staff had not reported to the project site as expected, and the Quality Assurance team expressed concern that a critical subcontractor would not participate in the project at all. Additionally, Ariston did not complete certain project documents on schedule.

Problems continued as the project moved forward. For example, both the City and Ariston found it difficult to hire qualified project staff, Ariston continued to complete project documents behind schedule, and Ariston changed lead staff for internal reasons or at the City's request. In June 2007, City managers considered extending the schedule and two months later, in August 2007, the City changed the schedule for the first time. The City extended the Financial component go-live date by two months to February 4, 2008, and the HR/Payroll component go-live date by six weeks to January 24, 2008, with the first paychecks to be issued on February 14, 2008.

In early December 2007, four months after the initial date change and one year after the official project kick-off, the City's project team reported limited confidence in meeting the new go-live dates. Less than one week later, the City's Chief Administrative Officer communicated to all City employees that the project timeline had been extended. The City did not establish new dates at this time.

The City continued its work on the project for five months without an established end date. During this time, the City also changed contractors, selecting SAP Public Services to replace Ariston. In May 2008, the City established new go-live dates of November 3, 2008 for the Financial component and April 1, 2009 for the HR/Payroll component. In August 2008 the City again extended the Financial go-live date by 3 weeks to November 26, 2008. The City met this date.

Following the Financial component go-live, the City continued to work on the HR/Payroll component toward its planned go-live of April 1, 2009. However, as April neared, City employees expressed concern about being ready on time. On March 12, 2009, the City extended the date by 3 months to June 18, 2009, with the first paychecks to be generated on July 2, 2009. The City met these dates. Figure 4 shows the City's revisions to the project implementation schedule.

The original schedule may have been too aggressive

According to City project managers, the original 14-month implementation schedule was too aggressive. Advice provided to the City from external sources recommended a longer implementation schedule, ranging from 18 months up to 4 years. Further, rapid installations were described by independent consultants as generally "unrealistic" for large organizations like the City. Despite these recommendations, City managers chose the 14-month schedule recommended by Ariston in order to more quickly return City employees assigned to the project to their regular job duties. They also determined that a shorter schedule would result in lower consulting costs.

Schedule delays were also caused by the City's need to program the rules of the City's multiple labor agreements into the SAP software. Previously, there was inconsistent application of these rules Citywide, resulting in City timekeeping personnel applying the rules differently. In addition to the labor agreements, other City business processes were not well-defined or well-documented. These also had to be standardized and documented before the project team could program them into the new software. Other reasons for delays included:

- The City's overall organizational structure is decentralized, which resulted in project decisions made with the consensus of many participants. As shown in Appendix A, there were many layers of project governance and each participated in decision-making. According to one City project leader, the project's organizational structure caused more time to make a decision than if a single individual had decision-making authority. However, the City's Chief Administrative Officer has indicated that he had single decision-making authority for key issues.

- Ariston did not have sufficient leadership skills, experience in managing a project this size, and resources necessary to ensure a successful project, according to City project officials.

- Developing the system was generally slow under Ariston's guidance and the City did not ensure that Ariston completed work at a pace to meet the proposed 14-month schedule.

- The project included designing a new accounting chart of accounts in order to improve consistency across the City for recording, tracking, and obtaining financial information. In order to convert financial data from the old software into the new SAP software, the City had to develop and program a crosswalk between the two charts of accounts. This process was more complex and time-consuming than expected.

- As City employees became aware of what the SAP software could do, they requested additional features to be included in the software. City project leaders never established a cut-off time for adding features and Ariston never said "no" to the City. One project leader told us that Ariston also tended to downplay the amount of work required to implement the additional functions. Further, City project managers also told us that Ariston had a broader interpretation than the City had of project features that could be added, which would allow more variation across City bureaus.

- When the City changed consultants from Ariston to SAP Public Services, the new consultants reviewed the work already completed and made revisions.

Planned functions in the new software were eliminated or delayed

Today the City conducts operations using the SAP software. However, the software does not contain all of the functions originally planned. City project leaders faced increasing challenges, and as a result, eliminated planned functions to help move the project closer to completion. Functions were also eliminated in response to the changing schedule. As the City extended the planned go-live dates, it also altered priorities and moved to implement some functions after the go-live dates. Other functions were eliminated because the

team did not have enough time to complete them without additional schedule extensions. Consequently, City employees received less functionality than expected in the new software and have had to respond to unforeseen difficulties.

In January 2005, as the City prepared to replace its obsolete financial software with SAP, the minimum functions expected from the new software were identified. This minimum functionality included several Financial and HR/Payroll functions. The City further expanded and refined its expectations as it developed a detailed Statement of Work (SOW) in Fall 2006 during contract negotiations with Ariston. When the SOW was completed, the City had identified several Financial and HR/Payroll functions to include in the new system that would allow it to meet or exceed the minimum functions originally expected.

Additionally, each function contained certain sub-functions that the City included in the project's scope. For example, the scope included various sub-functions within the Accounts Payable function that would allow the City to pay its vendors. The SOW also identified other items that the Project Team needed to develop, such as interfaces to other City and third-party software and custom reports needed to prepare the City's financial statements.

Following the completion of the SOW, the City and Ariston continued to refine the project scope during the next phase of the project – blueprinting. At the end of blueprinting, the final project scope was mostly in place.

After blueprinting, the City still needed to determine the final scope for a few items, including Benefits Administration. The City had not yet determined if it would fully install this function and administer employee benefits internally, or if it would retain its third-party administrator. One month after blueprinting, the City decided to fully implement the Benefits Administration function. The City project team would bring the entire process in-house six months after the City began using the SAP ERP system. The project team received additional funding to pay for this project scope increase.

However, four months after the Benefits Administration decision, the City changed its position and decided not to fully implement the Benefits Administration function. According to Bureau of Human Resources (BHR) management, they learned more about the risks of full implementation after making the initial decision, which led them to choose to continue using the current service.

The new consultants recommended simplifying the project
The City again reduced the project scope when it changed consultants from Ariston to SAP Public Services. The new consultants recommended that the City simplify the scope and to only focus on ensuring that City bureaus could continue to operate when the new software was turned on. City managers evaluated and accepted many of these recommendations, including those to eliminate entire functions from go-live. The City also removed several sub-functions and features from the project's scope.

Figure 5 shows the Financial and HR/Payroll functions the City planned to implement compared to the functions implemented and available for use Citywide at go-live. The City implemented all planned Financial functions, but with some reduced sub-functions. For example, it did not implement all of the reports needed to prepare the City's financial statements.

Additionally, the City did not fully implement and make available to bureaus more than half of the planned HR/Payroll functions. Further, some of the HR/Payroll functions implemented did not contain all planned sub-functions. For example, the Time Management function available at go-live did not contain the sub-function to manage employee Family Medical Leave Act (FMLA) requests. According to City project leaders, the FMLA sub-function was not implemented because the SAP consultants only considered the federal requirements of this law, not the state requirements.

Figure 5   SAP software functions planned compared to actual

	Functions	Approved Final Scope	Available at Go-Live
Financial Management	1. General Ledger	✓	✓
	2. Funds Management	✓	✓
	3. Materials Management	✓	✓
	4. Accounts Payable	✓	✓
	5. Project Accounting	✓	✓
	6. Grants Management	✓	✓
	7. Controlling	✓	✓
	8. Fixed Assets	✓	✓
	9. Accounts Receivable and Billing	✓	✓
	10. Cash Management / Treasury	✓	✓
HR/Payroll	1. Payroll	✓	✓
	2. Time Management	✓	✓
	3. Personnel Development	✓	
	4. Personnel Administration	✓	✓
	5. Organizational Management	✓	✓
	6. Employee Self Service	✓	See note
	7. Manager Self Service	✓	
	8. E-Recruitment and Applicant Tracking	✓	
	9. Benefits Administration	✓	See note

Note: The decision to fully implement the Benefits Administration function occurred after blueprinting. Additionally, the Employee Self Service function was ready for use at go-live, but it was not made available Citywide as originally planned.

Source: Audit Services Division analysis

When the City went live on the new HR/Payroll software in June 2009, it had completed the programming work on the Employee Self Service (ESS) function. The ESS function allows employees to create, view, and change their own data. The City had initially planned for this function to be available Citywide when it turned on the software. Employees would be able to enter their own time each pay period, which was considered more efficient than the old process of having a timekeeper in each bureau input employee time.

However, in early 2009, the City changed how it would roll out the ESS function. Instead of making ESS available Citywide at go-live, it would be available only to approximately 200 City employees as a pilot program. For the City employees outside of the pilot program,

timekeepers would continue to input their time. Further, BHR management told us that it is likely that some City employees will not use ESS.

The City did not fully meet its goal of implementing certain SAP functions for several reasons. Most of the scope reductions occurred when the City changed consultants. Following the recommendations of SAP Public Services to simplify the project scope, the City removed three entire HR/Payroll functions. It also eliminated many other sub-functions and features within the Financial and HR/Payroll components.

The City also removed items as it changed the project schedule. For example, when the City delayed the planned go-live date for the Financial component from February 2008 to November 2008, it decided to postpone work on a sub-function related to 1099 (vendor payment) reporting. With the new November date, there would only be one month of 1099 data in SAP that had to be reported for the 2008 calendar year. The City determined it would be easier to prepare the required report manually using eleven months of data from the old software and one month from the SAP software.

Additionally, the project team did not implement several HR/Payroll sub-functions prior to go-live because it ran out of time. In order to meet new deadlines of the revised project schedule, the City focused on completing high priority items. High priority items were those considered essential to paying City employees correctly. The team worked on low priority items as time permitted, but was unable to complete all of them before go-live. One incomplete item is paying selected employee reimbursements through Payroll.

As a result of not receiving expected SAP functionality, City employees have experienced the following:

- The SAP function to allow the City to more efficiently prepare its annual financial statements remains incomplete. The Accounting Division was unable to complete some of its preliminary work for fiscal year 2009 reporting, which led to increased difficulty in preparing the City's financial statements

that year. This reporting functionality enhancement is expected to be completed in time for fiscal year 2011 reporting.

- Accounting also found it difficult to obtain certain information from SAP during the FY 2009 audit, resulting in delays of delivering the required financial statements and audit schedules to the external financial auditors. These delays, which management told us are not uncommon during an organization's first year of using a new system, resulted in additional audit hours that cost the City nearly $30,000. Ultimately, the CAFR was issued on time and with a clean audit opinion.

- As of June 2010, employees had submitted over 200 requests for changes to existing or new SAP functionality. According to City project managers, most of the initial requests submitted after go-live were invalid because they were for functionality included in the system and employees needed further training to use it, or were duplicate requests. However, we also noted that several of these requests were for functions or sub-functions that were not implemented as originally planned, yet City employees expected them to be available when the City first began using the SAP software.

- The HR/Payroll system does not require electronic manager approval of employee time before issuing a paycheck. The City did not implement the Manager Self Service function, which requires electronic approval of employee time. As a result, bureaus are using various methods to address this gap. The City has not adopted a Citywide policy to ensure consistent documented review.

- The security structure within the Financial component allows SAP users to modify information Citywide that may not be in the area of their responsibility. For example, a City employee authorized to approve accounts payable documents may authorize these documents for any City bureau, instead of only their own. Too much access increases the risk of error and security breaches. The City plans to change the Financial component to appropriately restrict user access.

The City may eventually add back the functions and sub-functions that it did not implement as originally planned. Except for ESS, all of the HR/Payroll functions removed from the project scope are listed in the City's "SAP Functionality Roadmap" of items to be added in the future. Currently, the City is using a phased approach to add bureaus to the ESS function.

City employees found errors and limitations in the new software
In addition to incomplete functionality, several notable errors have occurred since the City began using SAP, as well as City employees finding limitations within the software. As previously reported by the Oregonian, over 1,600 City paychecks issued December 31, 2009 contained errors. These errors included underpayments ranging from less than $1 to over $3,400, and overpayments ranging from less than $1 to over $6,200. Additional errors include:

- Some City bureaus had problems paying their vendors after the Financial component went live. In some instances, this occurred because City employees using SAP did not fully understand how to use the new software. In others, the bureau was not set up properly on SAP to perform all the tasks necessary to pay an invoice. These issues have been resolved.

- Within the Financial component, City employees could make payments on certain purchase orders that were not tied to a contract, in violation of City purchasing rules. This has also been corrected.

City employees could increase their knowledge of the new system to provide proper maintenance and support
When an organization first begins using a new software, especially one as complex as SAP, it is not unusual for problems to occur. During this period, referred to as the "stabilization period", the project team monitors the software for accuracy and helps end-users to adjust to the new software. End-users may find that the software does not operate as expected. This expectation gap does not mean the software does not work; instead, it may be the result of users resisting the software or simply learning how to use it. The stabilization period is

also when the organization's SAP support team continues to increase its knowledge of the software, as it changes its attention from implementation to maintenance and support.

Following the new software "going live", the City project team changed its focus from implementing to maintaining the new SAP software. In this way, the City continued to develop the expertise needed to properly maintain and operate the software.

During implementation, the City looked to the consultants to take a lead role in development. When the City changed consultants, there were some areas where the City was expected to take the lead role. However, as the City extended the project schedule and the new go-live dates approached, the City and SAP consultants agreed to change roles in areas where City project staff did not have sufficient experience. The Quality Assurance consultants noted this as a concern, stating that changing roles reduced the opportunity for the City to learn how to maintain and support the software. It also increased the likelihood that the City would need to rely on outside consultants once the software went live.

As the City increases its knowledge of the system, it has incurred extra costs and errors

As it continues to increase its knowledge of how to operate and maintain the system, the City may incur up to $4.4 million for consultants to provide operating and maintenance services.   Further, the long-term maintenance and support costs of the new software are expected to be higher than the costs of the old software. Because the new SAP software is highly complex, the City anticipates it will need additional staff and training to properly maintain and operate the software. In the City's FY 2010-11 budget, Council approved additional personnel to maintain and operate the SAP software and to support SAP users. These new positions are also expected to help implement additional SAP software functions, some of which were originally planned to be available once the software went live. City bureaus using the new software will pay for these additional costs through increased fees.

Additionally, the December 31, 2009 payroll error occurred because the SAP support team did not fully test a software modification that was meant to assist with year-end payroll reporting requirements. Some paychecks contained errors because of how the support team modified the software. The SAP software HR/Payroll functions are interconnected and operate together to produce payroll. One project official told us that it is sometimes difficult to find breaks (errors) in the interconnection during testing.

Other business needs identified since implementation
In July 2010, the City requested to hire SAP Public Services to help determine how the software could be implemented to meet the City's Risk Management business needs. The project requirements include:

- Determining which SAP functions or components are necessary to meet the City's needs

- Recommending an implementation approach and related timeline

- Estimating required resources to implement the functionality and for post implementation support, and

- Estimating costs to implement and support the new functionality.

The City estimates it will cost $40,000 to complete this work.

Although these impacts of additional costs and errors followed the go-live date, we report their effects to demonstrate the impact of the City not yet having the level of knowledge required to support, maintain, and add to the system. According to management, the City expects that it will need to retain consultants for ongoing assistance to help evaluate and add new functionality that is unfamiliar to City staff.

Fewer shadow systems were eliminated than expected, and some new shadow systems were created

The City expected to eliminate a large number of secondary, or "shadow" systems when it implemented the new software. The City partially met this goal, but project leaders do not know the actual number of shadow systems eliminated. Additionally, some bureaus developed new shadow systems after they began using the SAP software. Bureaus continue to use shadow systems that were expected to be eliminated – or created new shadow systems – because the SAP software does not contain the functions provided by those shadow systems. As a result, the City has not yet fully achieved a key benefit of implementing a new integrated system.

In 2004, as the City developed its business case for a new financial and payroll software, the City compiled an inventory of bureau shadow systems. These systems included spreadsheets, databases, and other computer software that bureaus used to meet financial and payroll needs that could not be met with the City's aging software. Shadow systems range in size and scope, from a worksheet used by a single employee to a large software used by many employees. For example, the Water Bureau's utility billing software is considered a large shadow system.

The shadow system inventory contained nearly 400 shadow systems and showed fragmented activity citywide. With more shadow systems, information is dispersed among separate bureau systems rather than being contained in a single central system that is available citywide. Using many shadow systems may result in duplicate data entry and inefficient processing because City staff must maintain more than one software. The shadow system inventory supported the City's business case for a new ERP system.

Once compiled, the inventory was reviewed several times by outside consultants, City project leaders, and the bureaus themselves. Initially, an independent consultant analyzed each shadow system in the inventory and determined whether or not the standard SAP software could perform the function of the shadow system. Next, after defining the City's SAP project scope, the City project team, with Ariston consultants, reviewed the inventory and assessed whether or not the City's planned SAP implementation could replace the shadow

systems. Bureau personnel also reviewed the inventory and noted their agreement with Ariston's assessment. At the end of this process, each shadow system was marked as being "in" or "out" of the City's project scope. The "in scope" items were also marked as to whether they were expected to be eliminated. When the City completed the shadow system evaluation process, it identified over 200 items that it expected to eliminate, according to one City analysis.

The City partially met its goal of eliminating shadow systems. It eliminated some, but not as many as planned.

City project managers have not yet followed up with the bureaus to determine if shadow systems were eliminated as expected. As a result, we performed our own review. We tested four large bureaus and found that in each of these bureaus, staff continue to use some of the shadow systems expected to be eliminated. For example, we determined that the Bureau of Human Resources eliminated 6 of its 29 shadow systems expected to be eliminated, while the Water Bureau eliminated 23 of 35 (Figure 6).

Figure 6   **Number of shadow systems eliminated in selected bureaus**

	Project team expected to be eliminated	**Audit analysis confirmed eliminated**
Bureau of Human Resources	29	6
Bureau of Financial Services / Accounting	30	21
Police Bureau	21	11
Water Bureau	35	23
Total	**115**	**61**

Source: Audit Services Division analysis

When the City removed functions and sub-functions from the project scope, the project team did not update the shadow system inventory to reflect those changes. When the project scope changed, so did the number of shadow systems that could be eliminated. Bureaus had to maintain some of the shadow systems that were originally expected to be eliminated because that functionality would no longer be available in the new SAP software. For example, the Bureau of Human Resources had several shadow systems that it expected to replace with the SAP eRecruitment function. When that function was removed from the project scope, it was necessary for the Bureau to continue using the shadow systems for that function.

Bureaus also kept some shadow systems because they could not produce needed reports from the SAP software. This situation occurred partly because the project team did not complete certain reporting functions for go-live and partly because City project managers said that they found it difficult to provide City employees sufficient training on how to use the reporting feature without using actual City data. This data was not available in the new system until go-live. For example, the City used shadow systems to prepare sections of the City's fiscal year 2008-09 financial statements because the SAP function to produce the statements was not available. An Accounting employee told us that Accounting was expecting to be able to "push a button" to produce the financial statements. Several other City employees told us that they received limited training on using the SAP reporting function to obtain information from the software.

Finally, some bureaus developed shadow systems or processes to compensate for expected functionality that was not available in the new software. For example:

- Three bureaus – Transportation, Police, and Parks – developed systems to gather and enter employee time. City project managers indicated that these bureaus will not have all of their employees use ESS due to the risks associated with having certain positions from these bureaus enter their own time.

- The Enterprise Business Solutions (EBS) Division within the Office of Management and Finance (OMF) redeveloped the City's previous time entry software into a new software that could be used to capture information needed to record employee time in the SAP software. Several other OMF divisions also used this interim software. The EBS Division is a support organization created after the SAP software was implemented. It is responsible for maintaining and supporting the software.

- The Water Bureau created a new shadow system for financial reporting after the new software went live. Bureau financial managers told us that the new software's available functions to report financial results did not meet their needs.

City managers did not effectively use lessons learned from prior projects or information and updates during this project

The City took steps to learn from past City implementation projects before it began the SAP project. It also hired an independent consulting firm with public sector technology experience to provide quality assurance (QA) services throughout the project. However, the City did not always seem to effectively use the information from its past projects or from QA as it worked on implementing the new software. Throughout the project, QA reported problems and issues that remained outstanding for months. Further, after the project ended, the City issued a report documenting lessons learned from implementing the SAP software. We found that many of those lessons were similar to the lessons learned from past City projects, but did not result in improvements to this project.

Ultimately, problems during the SAP project were identified in the original lessons learned report. Combined with the QA issues that continued each month, these problems impacted the City's ability to deliver the new software on time, within budget, and with full functionality.

In November 2005, as the City prepared to replace its aging financial and payroll software, it organized focus groups to highlight lessons learned from previous City projects to implement new software. The focus groups evaluated three projects and identified the "top ten" collective lessons, such as:

- Clearly define roles, responsibilities, processes, and decision making structures. This includes using Quality Assurance to help identify areas that require attention.

- Provide appropriate resources for training and ensure that staff are trained on all tools of the software, so it gets used to its full potential.

- Identify Citywide business practice standards and provide guidelines for bureaus.

- Manage user expectations; do not promise more than is realistic. The focus groups noted that for one of the past projects, many features were promised, which created high expectations. However, many of these features were not included in the final project partly due to lack of time.

Lessons learned from past projects were also noted as lessons learned from the SAP implementation project

The City did not seem to fully learn from the experiences of its prior software implementation projects. While there were lessons included in the 2005 report that the City successfully used in the SAP implementation project, we identified several lessons in the 2005 report that were similar to lessons learned documented in the City's April 2010 report. For example, both documents refer to managing the project's scope and not meeting user expectations because promised functions were not delivered. Other similarities include making decisions and resolving issues quickly to keep the project moving forward, looking more closely at the consulting firms' experience prior to selecting one to assist with implementation, and creating a project plan with timelines and due dates.

In addition to trying to learn from past projects, throughout the SAP implementation project the project team received monthly Status Reports from the QA consultants. The reports documented QA's independent observations and recommendations on the City's progress in implementing the new ERP system. QA used a scorecard to summarize its assessment (as red, yellow, blue, or green) of the project in key areas. The least favorable rating, "red", meant that the area required the immediate attention of Executive management and the Project Manager. "Green", the most favorable rating, indicated that the project team was making good progress in that area. For each assessment except green, QA provided ways for the City to improve the rating. QA also provided the specific reasons for the rating, as well as the date first reported and any progress made during the current period. QA continued to report an issue each month until the project team took appropriate action to close the item.

The City did not seem to effectively use the QA updates each month. We noted that there were several issues reported repeatedly without the City taking appropriate corrective action for timely resolution. For example, QA assessed the City's project management and governance as "red" for nine consecutive months. The primary reason for this assessment was that the City was slow to identify and assign staff for the project's technical team. QA reported the staffing issue for 12 months, from November 2006 through October 2007, when the issue was finally closed.

Another issue reported many times was that the project team, both Ariston and the City, needed to develop a comprehensive project work plan. QA initially reported this issue in December 2006, noted progress made over the next three months, and rated the category as "blue" (good progress but a QA focus priority). However, in April 2007, after Ariston submitted a project plan that the City found unacceptable, the category rating declined to "red". At this time QA urged the City project managers, with Ariston's guidance, to develop a comprehensive project plan. QA repeated these comments during the next three months. Finally, in August 2007, nine months after first being reported, the City and Ariston prepared a revised project plan and the category rating improved to "yellow".

Chapter 3 **Recommendations**

Although the City's project to implement the new system has ended, the City plans to install several of the functions and sub-functions removed from the initial go-live and expects to add other functions in the future. Additionally, the City is currently in the early stages of another large system implementation project to replace aging public safety information systems that support critical business needs.

As the City adds functions or embarks on new systems, we recommend that the City's SAP project leaders:

1. **Evaluate the overall SAP implementation project as it stands today against the goals the City expected to achieve in the new software.**

   For the goals that remain incomplete, the City should evaluate whether the goals are still valid. The City should then work to achieve the goals that are pertinent.

   For example, one of the City's goals was to reduce "islands" of information by replacing shadow systems with functions included in the SAP software. If the City determines this is a valid goal, the City should follow through on its intent to validate the current status of bureau shadow systems. The validation should also include identifying any shadow systems created post go-live because SAP did not meet user expectations.

   Other goals included increased productivity and resource management, access to real-time transaction data throughout the City, and improved management information and reporting, among others.

2. **Continue to work with the bureaus to identify and respond to SAP training needs.**

   This would include providing the necessary support and training to bureaus that continue to use existing shadow systems or created new ones, although the functionality is available in SAP.

3. **Ensure the City's SAP Support Team develops the expertise needed to properly operate, maintain, and improve the software.**

   This should include taking the lead role on tasks performed jointly with outside consultants, and ensure knowledge transfer occurs from the consultants to City staff.

Moreover, for future implementations of new City systems, we recommend that Project Managers of those projects:

4. **Use the lessons learned from the City's implementation of the SAP software.**

   The City's April 2010 Lessons Learned document divides the SAP project into three time periods and identifies project successes and shortcomings for each period. The report explains why something was a success and also identifies what the City should have done to prevent the problems encountered. It also identifies lessons that can be applied to future City projects.

   The April 2010 report is a valuable tool that addresses all facets of a large software implementation project, from estimating the initial budget, selecting a contractor, and assembling the City project team, to developing a plan and selecting staff for post go-live support. This document may benefit future City implementation projects for years to come.

5. **Carefully evaluate the information obtained from external consultants and question any significant differences.**

The City received information from two outside consultants as it prepared to select and implement a new ERP system. Both of those consultants recommended that the City begin with a smaller scope over a longer timeframe, and to add functions later. However, Ariston and the other consulting firm bidding on the project proposed that they could implement the expanded scope desired by the City in a shorter timeframe. The City accepted Ariston's proposal.

While the proposals to implement more functionality in less time may have been feasible in another circumstance, the City should have questioned the significant differences between the initial recommendations and the bids.

Chapter 4 **Objectives, scope, and methodology**

The primary objective of this audit was to review the City's goals for implementing its new ERP system compared to actual results in the areas of cost, project schedule, functions implemented, and shadow systems eliminated.

A second objective was to determine the timeline of events occurring during the City's SAP implementation, from the initial needs assessment to the date the City turned on the final component of the software.

To accomplish these objectives, we interviewed City leaders responsible for the overall direction of the project and for daily project management activities. These included the Project Sponsor and Project Manager, in addition to the Financial, Payroll, Technology, and Change Management Team leads. We also interviewed City managers that participated on the project as their Bureau's liaison and other City employees that were assigned to the project either full or part-time. We interviewed City employees that did not participate on the project, but were impacted by it as they used the old software and now use the new software.
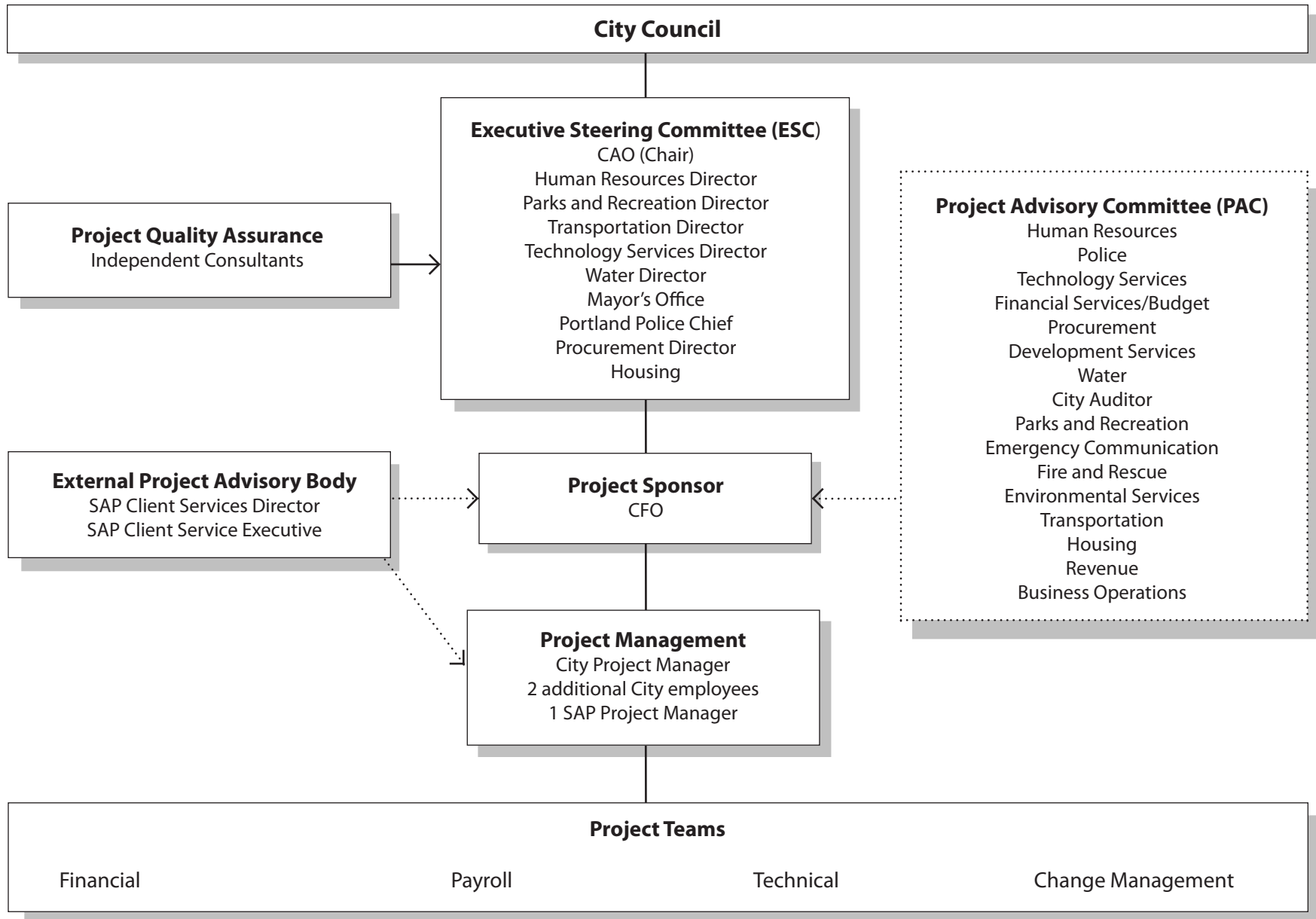
We reviewed project documentation prepared by external consultants and City project team members. External documents reviewed include contracts and amendments, Quality Assurance Status Reports, project schedules, and various contract deliverables, such as scope and blueprint documents. Internal documents reviewed include project charters, financial reports, committee meeting minutes, lessons learned reports, and various project communications, including

project updates provided to Council. We also reviewed professional literature regarding best practices for large ERP system implementations and obtained information regarding other governments' SAP software implementation projects.

We conducted this performance audit in accordance with generally accepted government auditing standards. These standards require us to 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 A
Organizational chart

City of Portland ERP System Governance

City Council

Executive Steering Committee (ESC)
CAO (Chair)
Human Resources Director
Parks and Recreation Director
Transportation Director
Technology Services Director
Water Director
Mayor's Office
Portland Police Chief
Procurement Director
Housing

Project Quality Assurance
Independent Consultants

Project Advisory Committee (PAC)
Human Resources
Police
Technology Services
Financial Services/Budget
Procurement
Development Services
Water
City Auditor
Parks and Recreation
Emergency Communication
Fire and Rescue
Environmental Services
Transportation
Housing
Revenue
Business Operations

External Project Advisory Body
SAP Client Services Director
SAP Client Service Executive

Project Sponsor
CFO

Project Management
City Project Manager
2 additional City employees
1 SAP Project Manager

Project Teams

| Financial | Payroll | Technical | Change Management |

City of Portland
ERP system project chronology

City of Portland
ERP system project chronology

Events leading up to going live on the new SAP software

Aug 18, 2004	City Council approves the project and directs the Office of Management and Finance to proceed with next steps to acquire and implement an ERP system. **Initial approved budget = $14.2 million**
Aug 2004 – Aug 2005	The City assembles the project team and selects a Project Manager, and begins the process to select the ERP system and prepare for implementation.
Feb 2006	**Budget increased from $14.2M to $26.4M.**
2006	City selects the SAP software as its ERP software and signs the agreement in June 2006
Apr 2006	**Budget increased from $26.4M to $27.9M**
May 15, 2006	City requests proposals for a consultant to assist with SAP software implementation
Aug 30, 2006	City selects Ariston as the primary consultant to implement the SAP software and begins contract negotiations.
Nov 1, 2006	City Council approves the Ariston contract • Planned go-live dates are November 4, 2007 (Financial) and December 13, 2007 (HR/Payroll), with the first paychecks to be issued January 4, 2008
Nov 2006	Quality Assurance consultants note problems early and indicate they are "very concerned that the project is getting off to a slow start"
Dec 4, 2006	Official project kick-off date to implement the SAP software
Jan 4, 2007	Blueprint phase begins
Mar 31, 2007	Blueprint phase completed – Financial component
Apr 30, 2007	Blueprint phase completed – HR/Payroll component

Events leading up to going live on the new SAP software (continued)

May 3, 2007	**Benefits Scope Decision:** The Project Management Office recommends to fully implement the Benefits Administration function but to delay activation until 7/1/08. The July date is 6 months after the planned HR/Payroll go-live date of January 2008 (1st paychecks issued). • Project Managers receive approval and funding to implement the Benefits function and to bring the functionality in-house
Aug 2007	**Date reset #1** **Project Timeline extended** • HR/Payroll time entry, from December 13, 2007 to January 24, 2008 • Financial component, from November 4, 2007 to February 4, 2008 • First paychecks, from January 3, 2008 to February 14, 2008 ***Budget increased from $27.9M to $31.0M***
Sep 2007	**Scope reduced:** Benefits Administration function dropped, including plans to bring the full Benefits Administration in-house.
Nov 4, 2007	**Date missed (original timeline)** Initial planned Go-Live for Financial component
Dec 11, 2007	CAO issues Citywide communication: • They will not meet the planned January 2008 go-live date and are unable to set a new date at this time.
Dec 13, 2007	**Date missed (original timeline)** Initial planned go-live for HR/Payroll component time entry Project Manager notifies City employees that SAP training is suspended until further notice
Jan 4, 2008	**Date missed (original timeline)** Initial planned date for 1st paychecks issued on new SAP software
Jan 24, 2008	**Date missed (1st revision)** Revised target date for HR/Payroll time entry
Jan 30, 2008	EBS presentation to Commissioners • Indicates not ready for go-live in January/February and need to reset dates.
Feb 2008	**Date missed (1st revision)** Revised target date for Financial component and 1st paycheck on new software
Feb – May 2008	Consultant change • Transition from Ariston to SAP Public Services as the primary consultant • Negotiate contract with SAP consultants • Terminate Ariston contract

Events leading up to going live on the new SAP software (continued)

Apr 1, 2008	**Scope reduced:** E-Recruitment function is removed from go-live
Apr 4, 2008	Project Management communicates a new implementation approach Citywide: • Will implement in phases; Financial then HR/Payroll • Simplify the project scope and focus on business capabilities that are necessary to run the City's business
Apr 28, 2008	***Budget increased from $31.0M to $49.5M*** • To pay new contract with SAP Public Services for project consulting services • To pay settlement with Ariston
May 1, 2008	**Date reset #2** **Project Timeline extended:** • Financial: November 3, 2008 (was February 4, 2008) • HR/Payroll: April 1, 2009 (was January/February 2008) **Scope reduced:** Vendor 1099 processing and reporting sub-functions moved to post go-live

May 12, 2008 – Aug 2008	**Scope reduced:** SAP consultants review the work previously completed by Ariston and recommend removing several functions and sub-functions from the scope that would be available at go-live. The City deferred several of these items and may implement some of them in the future.
	Functions removed from go-live:
	• Deferred: Manager Self Service (MSS) – entire function
	  * As a result, Employee Leave Requests sub-function within ESS is not available because it is dependent upon MSS
	• Dropped: Personnel Development – entire function
	  * The team had only planned to implement one sub-function within this function.
	Sub-functions and features removed from go-live:
	• Dropped: Invoice routing workflow
	• Dropped: Credit Memo workflow
	• Deferred: Business Intelligence except CAFR reports
	• Deferred: Selected employee reimbursements thru payroll
	• Dropped: FMLA workbench
	• Dropped: Shift Planning
	• Dropped: All HR/Payroll workflows; 24 were planned
	• Dropped: Other features and sub-functions

Jul 24, 2008	The City formally settles with Ariston
Aug 2008	**Date reset #3** **Project Timeline extended:** • Financial: November 26, 2008 (was November 3, 2008)

Events leading up to going live on the new SAP software (continued)

Nov 3, 2008	**Date missed (2nd revision)** Revised target date for Financial go-live
Nov 26, 2008	**Date met (final revision - Financial)** The City begins using the Financial component.
Dec 18, 2008	**Scope reduced:** Several HR/Payroll component features moved to post go-live
Jan 12, 2009	**Scope reduced:** Project Team announces revised plans for Employee self time entry available at go-live: • Employee Self Service (ESS) function will not be made available Citywide at go-live • Timekeepers will be used to input time at all bureaus except for a pilot group of approximately 200 employees in 3 bureaus. These 200 employees will enter their own work time.
Mar 12, 2009	**Date reset #4** **Project Timeline extended:** • HR/Payroll: June 18, 2009; 1st paycheck to be issued July 2, 2009 (previously was April 1, 2009)
Apr 1, 2009	**Date missed (2nd revision)** Revised target date for HR/Payroll go-live
Jun 18, 2009	**Date met (final revision - HR/Payroll)** The City begins using the HR/Payroll component and issues the first paychecks from the new software on July 2, 2009.
Jun 2009	*City determines final actual SAP implementation project costs to be $47.4M*

Events happening *after* the new SAP software went live

Jun/Jul 2009	City enters into six flexible services 3-year contracts for stabilization and post implementation support services. • ***The contracts have a combined maximum amount of $4.2 million, in total***
Dec 31, 2009	Errors occur in the year-end payroll processing. • Caused by a programming error that was not caught during testing.
Jan 2010	Year-end payroll error causes delayed posting of the year-end payroll and the first payroll in 2010. • Not posted until February 2010.
Feb 2010	City Council approves an Amendment to the SAP consultants' contract for continuing post go-live stabilization support. • ***Amendment is $200,000***
Jul 2010	City announces intent to hire SAP consultants to assist with determining how the SAP system could be implemented to meet the City's Risk Management business needs. • ***Estimated project costs are $40,000***

Source: Audit Services Division analysis

Appendix C
Glossary of terms

Glossary of terms

Blueprinting The phase of a new system implementation project that occurs at the beginning, after the contract and Statement of Work (SOW) are in place.

During this phase, the organization determines the detailed requirements of its business processes and how it intends to perform those business processes using the new software.

Business Intelligence An SAP module that allows SAP users to extract SAP data from a repository (warehouse) based on their own report query, rather than through the standard reports available in the software.

Change Request A document containing a call for an adjustment of a software. The document describes the requested change and why it is important.

Software users submit change requests for error corrections, software enhancements, or new functionality.

EBS "Enterprise Business System" or "Enterprise Business Solution" – the name given to the City's project of implementing the SAP software to replace its aging financial and payroll software.

The City initially created the EBS Project with the purpose of acquiring and implementing an ERP system for the City.

When the project was completed, the "EBS Project" became the "EBS Services" division within the Office of Management and Finance. EBS Services is responsible for maintaining and continuously improving the City's new ERP system.

End-user   The person who uses a computer software to complete their job duties, in contrast to someone who developed or maintains the software.

ERP   "Enterprise Resource Planning", an integrated computer system that allows information to flow between all business functions within an organization.

An ERP system allows an organization to:

- Automate and integrate the majority of its business processes
- Share common data and practices across the entire enterprise
- Produce and access information in a real-time environment

Function   A component of the SAP software that covers a specific business activity within an organization. For example:

- The Accounts Payable function within the Financial component of the software allows the City to process and pay vendor invoices and to maintain vendor information.
- The Payroll function within the HR/Payroll component of the software enables the City to process payroll.

ERP software solutions provide several separate, but integrated, functions that can be installed as a package for any organization. In software terms, "functions" are also known as "modules."

Go-Live   Turn-on the SAP software and begin using it.

Project scope   The work that needs to be completed to deliver a product, service, or result with the specified features and functions.

SAP   "Systems, Applications, and Products," the computer software selected by the City as its financial and payroll software. SAP is an ERP software that contains many functions.

Software   The programs and instructions that run a computer.

Software is often compared to a "system," which is a combination of hardware, software, and other data communication devices.

Statement of Work (SOW)   A Statement of Work is a formal document that captures and defines the work activities, deliverables and timeline a vendor will execute against in performance of specified work for a customer. It is determined during contract negotiations and is part of the binding agreement with the contractor.

Workflow   A workflow consists of a sequence of connected steps; an automated workflow within a computer software manages and defines a series of tasks within an organization to produce a final outcome or outcomes.

At each stage in the workflow, one individual or group is responsible for a specific task. Once the task is complete, the workflow software ensures that the individuals responsible for the next task are notified and receive the data they need to perform their stage of the process.

For example, the City installed a workflow within the SAP software to automate for the entire process of procuring goods and services through to vendor payment.

Responses to the Audit

November 3, 2010

LaVonne Griffin-Valade
City Auditor
1221 SW 4th Ave., Room 140
Portland, Oregon 97204

Dear Auditor Griffin-Valade:

Thank you for allowing me the opportunity to respond to Audit Report #392 – Business System Software Implementation.

This project started in August 2004 with a goal to replace the City's antiquated financial system. When I joined City Council in 2005, I monitored the project's Quality Assurance reports and reviewed the Lessons Learned report prepared by project leadership. Additionally, when I took the Mayor's Office in 2009, I directed the project leadership to convene a panel of outside experts to provide feedback.

This audit performs a valuable public service by documenting the challenges the City faced in implementing its new integrated financial and human resources/payroll system. I appreciate the Auditor's examination of this issue and concur with the recommendations contained in the report. I look forward to achieving maximum benefit from our new system.

Best Regards,

Sam Adams
Mayor
City of Portland

CITY OF PORTLAND

OFFICE OF MANAGEMENT AND FINANCE

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MEMORANDUM

TO: Auditor LaVonne Griffin-Valade

FROM: Kenneth L. Rust, Chief Administrative Officer *KLR*

SUBJECT: Business System Software Implementation Audit

DATE: November 3, 2010

Thank you for providing the Office of Management and Finance (OMF) with the opportunity to review Business System Software Implementation, Report #392 (the Audit).

The Enterprise Business Solution (EBS) Project, a citywide initiative managed by OMF, was charged with implementing new software and systems for the City's financial and human resources/payroll functions in order to replace obsolete and fragmented systems whose continued use posed significant business risks to the City. EBS Project leaders were well aware of the challenges faced by both public and private sector entities that have implemented projects similar to this one, and sought to address those challenges early on by following best practices and engaging quality assurance experts for independent review. Even with that preparation and foreknowledge, substantial issues did emerge during implementation. However, with the support of the City Council and the dedicated effort of EBS Project team members and bureau staff throughout the City, a successful and award-winning implementation was achieved.

Throughout the course of the implementation OMF sought to make EBS Project issues and their resolution as transparent as possible. To assist with that transparency EBS Project leaders documented those challenges and recommendations in the EBS Lessons Learned report, published and distributed in April 2010. This report is available on the City's website under the Office of Management and Finance, News, Current and Past Projects, EBS Lessons Learned Report.

Many of the issues documented in the Audit – that the project required a longer period of time, required more resources and required changes in planned scope to manage risk – are also documented in the Lessons Learned report.

Therefore our response to the Audit focuses on three areas:

Shadow systems. The Audit makes the point that the EBS Project team did not eliminate the City's shadow systems as planned. While reducing duplicate systems is a benefit to implementing a new system, the EBS Project team had neither the charge nor the authority to make end-of-life decisions for individual bureau systems. The original inventory of "shadow systems" was based on a need for bureaus to self-identify systems they used that contained personnel or financial data and determine the tasks related to these systems to be completed prior to go-live. These tasks could include building an interface from those systems to the new system, changing social security numbers to personnel numbers, or eliminating a system. Eliminating systems was not part of the scope of services for the implementation and was not tracked as a performance indicator by the Executive Steering Committee, the Project Advisory Committee or the independent Quality Assurance firm. OMF has no objections to the recommendation that the City should determine the status of these systems and OMF's EBS Division will take a leadership role to collect this information.

Changes to project scope. The Audit references changes to what was included in the project scope during various points in the project concluding that the City did not implement system functionality as originally planned. EBS Project leaders feel that this does not fully explain the decision-making process for each individual scope decision. For example, the function for employee self-entry of time and attendance data was planned to be used by a larger number of employees at go-live but EBS Project leaders decided to concur with the consultant's strong recommendation to start with a smaller number of employees. EBS Project leaders weighed the level of effort needed to introduce a large number of users to new terminology and acronyms and the risk of not paying employees correctly or not billing their time correctly. EBS Project leaders opted for a smaller number of employees to start using the function as a way to reduce risk. This strategy did prove successful in support of the planned go-live date and the City is now rolling out this functionality in a manner consistent with the project recommendation.

In another instance, the Audit notes that EBS Project leaders had originally planned to use the new system to track and manage time and attendance data related to protected medical leave. However, the federal law for protected medical leave and the Oregon law for protected medical leave have separate requirements and the City of Portland is required to comply with both. EBS Project leaders weighed the level of effort needed to incorporate the state provisions into the new system alongside the federal provisions and the risk of not applying the statutorily protected leave correctly, and opted instead to not use the software for this function at this time.

Audit scope. Although the title of the Audit is business system software implementation and the scope of the Audit is the project implementation, the Audit references issues and decisions made long after the system went live, including work that is just now being undertaken. The Audit also raises concerns about the need for ongoing consulting support to help support the new system. In the preparation for go-live the EBS Project team was very mindful of the need to transfer as much working knowledge of the new system as possible from project consultants to EBS Project staff. In fact, during final parallel testing of the system prior to actual go-live EBS Project staff took on greater levels of responsibility for actual system operation, a key indicator of readiness and knowledge transfer. However, EBS Project staff also knew that the new system was significantly more complex than the systems it replaced due in large part to the integration of financial and human resource information. This required that the EBS Project

team have access to both on-site and off-site consultants to support ongoing operations. The long-term goal is to build internal staff capacity and expertise to take on greater levels of operation support, system configuration changes, system upgrades and patches while over time reducing outside consultant support. This reduction has already taken place in the financial, technical support and in more than 50 percent of the human resource areas. Nevertheless, given the broad functionality footprint of the new system the EBS Project team expects that it will need to have some level of ongoing consultant support to help in the evaluation and configuration of new functionality that it is unfamiliar with.

In conclusion, the EBS Project represented the most significant technology improvement and the largest change in the City's business services in the City's history. The task of delivering an integrated system and business processes in a highly decentralized city contained an inherent amount of risk – in addition to the risk associated with implementing a major information technology project in general. We asked our employees, our consultants, our managers and our elected leadership to stand together to achieve this goal, and they did. While the EBS Project did have its challenges, at the end of the day the City eliminated a significant business risk that would have been irresponsible to ignore, implemented an integrated business system used by thousands of public and private entities around the world, and now has a modern technology platform that can grow, evolve, and serve the City and its citizens for many years to come.

OMF learned a great deal from this implementation, concurs overall with the Audit's five recommendations and continues to work on a long-term roadmap for the support, use, and expansion of the system that has been implemented. Thank you for providing the opportunity to respond.