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# “Information Technology Projects: Best Practices”

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## Introduction

The purpose of this report is to provide City departments and offices guidance and best practices information regarding information technology (IT) projects undertaken to enhance City business operations.

Project life cycle activities addressed include the plan, acquisition, implementation, and post-implementation evaluation phases of IT projects. It is hoped that this information will provide assistance to IT project managers and other key employees responsible for the successful completion of IT projects at the City.

The information provided in this report was obtained from various industry resources as well as from experience gained during implementation of City IT projects, including the Customer Information System. A full bibliography is provided in Appendix A at the end of this report.

## Background

Information technology (IT) involves using computer hardware and software to process information. The City has built an IT infrastructure of computer hardware to support the processing of information through software applications. The IT infrastructure provides the framework for software applications to process information using software applications within City Hall, as well as between other City buildings and even through the Internet.

These software applications are purchased and installed (i.e., implemented) to improve the efficiency and effectiveness of City operations through the processing of necessary information. IT must deliver value and enable business, or it is not needed.<sup>1</sup>

### What defines “Success”?

Overall, success for IT projects can be measured in degrees of how well pre-defined criteria are met. At the beginning of an IT project, management should define the success criteria and the acceptable deviation for each of these criteria. Four common criteria used to measure the level of success for IT projects are:

1. Did the system meet users’ needs and pre-defined requirements? Key departmental users should define business needs at the beginning of the IT project. The quality of an information system is directly related to how well it meets the defined requirements and performs (i.e., speed and accuracy) within expectations.<sup>2</sup>
2. Was the project completed within the planned budget?
3. Was the project completed within the planned schedule?
4. Did the project activities comply with organizational policies and procedures?

At the end of an IT project, after the system has been implemented, it is recommended that management evaluate the IT project and

<sup>1</sup> IT Governance Executive Summary, IT Governance

<sup>2</sup> IS Project Management Handbook

determine the level of success based on the pre-defined criteria.

### **Project Components**

The two major components in an IT project are: (1) people and (2) information systems. While it is important to select the best information system for your business needs, the system will only be as good as the people that plan, design, develop, implement, test the system, and manage the project.

There are many people involved in an IT project to fill the following needed roles.

- *Executive manager* provides strategic direction, is the project sponsor, and is ultimately accountable for the IT project.
- *Project manager* manages the entire IT project and is responsible for managing the budget, schedule, risks, communications, vendor contracts, technical design, the IT technicians, and the overall IT project.
- *Functional leader* manages the functional users and makes the business decisions to ensure that required functionality is achieved.
- *Project Team* consists of functional department users and IT technicians. The functional department users are the business experts that determine what the new application system needs to be able to do so that it supports business processes. The IT technicians help users translate those business requirements into technological functions as well as assess, design, and install the computer infrastructure to support the new information system.

While each of these people plays an important role during various phases of an IT project, the role of project manager is key during every phase of the project. The project manager should have strong organizational and leadership skills, since this person is responsible for conducting sound project management practices on a day-to-day basis to ensure that the project achieves its objectives.

The second major component is the information system, consisting of all necessary computer hardware and software to support the acquired

application(s) in the IT project. The hardware can include servers; workstations; mobile data computers; firewalls; and switches, or other connectivity equipment. Besides the information system purchased, other needed software can include operating systems and databases.

In order to save money and technical resources, project planning should consider the integration of existing hardware and software with the newly acquired information system. When considering what applications will be best for the City, technical staff should also consider security, data transfer, scheduling processes, managing the capacity and performance, required software licenses and versions, backup and recovery needs, database administration, documentation requirements, and managing archived data.

### **Project Life Cycle Phases**

To increase the likelihood of having a successful IT project, specific activities must be performed in certain time frames of a project, called life cycle phases. Below are the standard life cycle phases that every information technology (IT) project follows.

Planning Phase – defining business problems, potential solutions, project scope, system interfaces, systems and software requirements, and resource needs. Other activities include identifying risks, costs and benefits associated with each solution, developing a project plan, and obtaining funding.

Acquisition Phase – developing a request for proposal and evaluation criteria, evaluating proposals, selecting a vendor, and negotiating the contract.

Implementation Phase – managing the vendor contract and project staff, installing software, defining business rules and processes, converting data, planning and performing testing, preparing technical and user documentation, and putting the system into production.

Post-Implementation Evaluation Phase – evaluating to determine the level of success for the IT project.

After an IT project is completed, the information system transitions into an operational phase requiring on-going maintenance.

**Best Practices and Related City Policies and Procedures**

**Best Practices and Activities**

Within each life cycle and throughout the overall project, there are recommended industry-wide best practices for IT projects. Another important way to identify successful project activities is to learn them through experience. Table 1 provides best practices obtained from authoritative

references (identified in Appendix A) as well as from experience gained through our own City IT projects.

The table is organized to provide the best practices and activities for each project life cycle phase. At the end of the table, we also provide the recommended best practices and activities for overall project management that should occur throughout every phase of the project.

**Table 1**

<b>Best Practices and Activities for IT Projects (provided by project phase)</b>	
<b>Project Phase: Planning</b>	
<b>Determine if a New System is Needed.</b>	Users work along with IT staff to identify business requirements and conduct a cost-benefit analysis to determine if your business strategy requires a new information system.
<b>Obtain Conceptual Approvals and Funding.</b>	Executive management approval is needed and funding obtained before the project can become an authorized project.
<b>Develop a Well-Defined Project Scope.</b>	<ul style="list-style-type: none"> <li>⇒ Develop a project charter with a well-defined scope and measurable success criteria. This is necessary so that after the project is completed management can determine the level of success achieved.</li> <li>⇒ Identify staff involved and their responsibility and needed level of commitment.</li> <li>⇒ Ensure agreement in scope with executive managers, ISS project manager, and functional leader.</li> </ul>
<b>Assign the Right Staff to the Project Team.</b>	<ul style="list-style-type: none"> <li>⇒ Assign an adequate number of skilled functional staff to the project team that understand and can communicate the business processes.</li> <li>⇒ Assign an adequate number of skilled IT staff to the project team that understand the technical needs to support the required system and business processes.</li> <li>⇒ Empower project team members to make decisions (or obtain decisions) in a timely manner.</li> </ul>
<b>Plan Realistically.</b>	Set rational time estimates and milestones; establish realistic cost and budgetary estimates; and consider influential outside forces such as procurement and policy change processes.
<b>Plan for New Costs.</b>	There can be additional costs to departments that will not be included in the project budget. Therefore, all additional business related costs resulting from the implementation of a new information system should be identified and addressed. Some examples from prior projects include greater postage cost resulting from a different bill format, increased workload to address system errors, and increased resources needed to maintain and support the systems.

<b>Project Phase: Acquisition</b>
<p><b>Comply with Procurement Policies and Procedures</b>, including:</p> <ul style="list-style-type: none"> <li>⇒ Request for Proposal (RFP) process</li> <li>⇒ Proposal Evaluation process</li> <li>⇒ Approvals at the proper level</li> </ul> <p>Work closely with Procurement staff to ensure that these processes are conducted properly and that the RFP and evaluation process will not be subject to vendor grievances.</p>
<p><b>Issue a Detailed and Clear RFP.</b></p> <p>Write a clear, well-defined RFP detailing the technical and operating environment, desired solution, specific roles and responsibilities of City and vendor, desired functional requirements, and consequences for failure to perform. These will assist vendors in submitting clear and comparable responses. In addition, provide a sample contract for vendors in order for them to understand the City’s contract requirements.</p>
<p><b>Negotiate Well-Defined Contracts.</b></p> <ul style="list-style-type: none"> <li>⇒ Create a negotiation team that is representative of the various interests, including technical, business, legal, and procurement.</li> <li>⇒ Develop a tightly worded statement of work that specifically defines what is to be delivered, by whom, when, and how it is to be accepted.</li> <li>⇒ Encourage the prospective vendors to include quality assurance procedures in their statement of work to monitor the project risks throughout the project life.</li> <li>⇒ Build in language to allow for project termination, if necessary.</li> <li>⇒ Address travel expenses to ensure that reimbursement complies with City policies and procedures.</li> <li>⇒ Ensure that thorough system documentation is included.</li> </ul>
<p><b>Limit Modifications.</b></p> <p>Do not purchase a new information system that will require an undesirable number of modifications. This will negatively impact the implementation process and increase the workload requirements for every fix, patch, and upgrade applied subsequent to implementation.</p>
<p><b>Understand the Security and Audit Features.</b></p> <p>Obtain from the vendor a written understanding of the new system(s) security and audit capabilities to prevent future issues.</p>
<b>Project Phase: Implementation</b>
<p><b>Prepare for Changes in Business Operations.</b></p> <p>Early in the implementation phase, analyze how the system will impact business areas and plan for changing business processes in order to incorporate such changes into new policies and procedures and user training.</p>
<p><b>Closely Manage Vendor Contracts.</b></p> <p>The project manager should closely monitor the contract deliverables and track their status and requirements for payment.</p>

<p><b>Practice Sound Software Change Management.</b></p> <p>A sound change management process should be developed and implemented early in this phase and utilized throughout the remainder of the project. Such a process should address how changes will be approved, designed, tested, and moved into production, and should include proper access controls.</p>
<p><b>Provide Project Team a Good Work Environment.</b></p> <p>Have a dedicated work location for project team members that is separate from their regular work locations.</p>
<p><b>Practice Data Conversion.</b></p> <p>Practice data conversion processes repeatedly so that when the actual data conversion is performed it is just a regular activity.</p>
<p><b>Test, test, test.</b></p> <ul style="list-style-type: none"> <li>⇒ Conduct thorough testing with users throughout the implementation process to identify problems proactively. Intentionally use bad data to ensure the system responds appropriately.</li> <li>⇒ Assign a testing “manager” with strong organizational and leadership skills to manage the testing plan, schedule tasks, and monitor results.</li> <li>⇒ Include performance testing to ensure that the system can support critical needs, including: supporting concurrent users; processing of batch jobs; and processing transactions within an acceptable time frame.</li> </ul>
<p><b>Provide Quality Training.</b></p> <p>Training-related activities (i.e., developing training materials and providing training sessions) should be assigned to staff skilled in training.</p>
<p><b>Plan for Cutover Activities.</b> At go live:</p> <ul style="list-style-type: none"> <li>⇒ Develop and utilize two detailed cutover plans, one for technical staff and one for business staff.</li> <li>⇒ Have help desk support ready to provide users assistance.</li> <li>⇒ Train operators and provide written instructions on how to operate the new system and address problems.</li> </ul>
<p><b>Project Phase: Post-Implementation</b></p>
<p><b>Plan for Added Workloads.</b></p> <p>Expect and plan for additional workloads due to inexperienced users on the new system. Examples include data entry errors and not being able to extract needed data timely.</p>
<p><b>Plan for System Maintenance.</b></p> <p>Plan for resources to maintain the system after implementation, including developing reports and conducting testing for fixes and updates.</p>
<p><b>Continue Software Change Management.</b></p> <p>Ensure that a sound change management process continues after implementation.</p>
<p><b>Utilize a Users Group.</b></p> <p>Designate a users group of system experts to help department users with the new system and to assist in prioritizing and communicating system changes.</p>
<p><b>Provide On-going Training.</b></p> <p>Plan for resources to provide on-going user training for new system users.</p>

<p><b>Evaluate Project Accomplishments.</b>                  Conduct an evaluation to determine level of success and lessons learned to share with project managers working on other projects.</p>
<p><b>Best Practices and Activities that Should Occur Throughout the Project</b></p>
<p><b>Provide Strong Executive Leadership.</b> Executive managers should:</p> <ul style="list-style-type: none"> <li>⇒ Ensure that business needs are driving the IT acquisition.</li> <li>⇒ Ensure that the IT acquisition complements the short and long term IT goals and objectives.</li> <li>⇒ Provide oversight to ensure that the project is staying within scope to meet the organization’s business strategy.</li> <li>⇒ Identify and assign the business owner for the new application system.</li> <li>⇒ Provide approval for major project changes, including scope, functionality, schedule, personnel, etc.</li> <li>⇒ Resolve critical issues that the project manager and project team are unable to resolve.</li> <li>⇒ Ensure that communication flows openly between executive management, project manager, project team members, affected business areas, etc.</li> </ul>
<p><b>Practice Sound Project Management.</b> Project Managers should:</p> <ul style="list-style-type: none"> <li>⇒ Follow the organization’s defined and documented project management process.</li> <li>⇒ Ensure that all key decisions are documented and communicated.</li> <li>⇒ Utilize a detailed project plan identifying and breaking down tasks and milestones into workable units in the required sequence.</li> <li>⇒ Closely manage all vendor contracts to ensure that contract deliverables are acceptable.</li> <li>⇒ Ensure that communication flows openly to and from all levels involved, including executive management, project team, City Commission, department directors, and future users of the system.</li> <li>⇒ Consistently assess, manage, and mitigate risks throughout the IT project.</li> <li>⇒ Ensure compliance with organizational procurement policies and procedures to properly bid, acquire, receive, and record transactions.</li> </ul>
<p><b>Manage the Project Budget.</b>                  The project budget and related decisions should be made in a central manner, i.e., one person managing and being held responsible for all expenditures.</p>
<p><b>Address Issues and Identify Risks.</b>                  Maintain an issues database for all issues encountered during the entire project and provide the ability to designate the activity the issue impacts (i.e., interfaces, planning, designing, testing, training, go live).</p>

**Related City Policies and Procedures**

As these practices and activities occur throughout the project life cycle phases, project managers and team members should comply with all applicable City policies and procedures.

Table 2 on the next page provides the applicable City policies and procedures that should be considered during IT projects.

Table 2

City Policies and Procedures Related to IT Projects
<p><b>General Project Management</b></p> <p><a href="#">City Commission Policy 218CP, “Capital Projects Management”</a> – provides guidance regarding managing capital projects (including IT projects), such as opening and closing a project, processing change order requests (whether it is cost, time, or scope), and control over expenditures.</p> <p><a href="#">Administrative Policy and Procedure (APP) #630, “Internal Control Guidelines”</a> – provides guidelines for an effective system of internal control, including activities related to risk assessment, management control activities, information and communication, and monitoring performance.</p>
<p><b>Specific to Procurement</b></p> <p><a href="#">City Commission Policy #242CP, “Procurement Policy”</a> – provides the City’s basic philosophies upon which the procurement functions must operate.</p> <p>“<a href="#">Procurement Manual</a>” (<a href="#">Draft Procure to Pay Manual</a>) – provides guidance for every aspect of procurement, including:</p> <ul style="list-style-type: none"> <li>• Ethics in procurement practices.</li> <li>• Information maintained by Procurement Services related to vendors, contracts, etc., and procedures for acquiring contracts related to projects.</li> <li>• Guidelines for: developing needs/requirements definitions and RFPs; managing RFP process; evaluating proposals (including evaluation committees); and obtaining and negotiating competitive bids.</li> </ul> <p><a href="#">APP #501, “Prompt Pay Policy”</a> – payments must be made within a pre-defined number of days after the receipt of a proper invoice.</p> <p><a href="#">APP #603, “P-Card”</a> – procedures for the procurement of supplies and services with a City purchase card (P-card).</p> <p><a href="#">APP #662, “Property Control”</a> – procedures for control of property greater than \$750.</p>
<p><b>Specific to IT Systems</b></p> <p><a href="#">APP #802, “IT Acquisition”</a> – provides a standard method for assessment, acquisition, implementation, integration, maintenance, review, and support for information technology.</p> <p><a href="#">APP #402, “Information Systems Services Steering Committee”</a> – provides guidelines for requesting new information systems and IT project oversight.</p> <p><a href="#">Information Systems Services (ISS) Policy #200.010, “Project Management”</a> – specifies the mechanism, methodology, and procedures by which work and resources are organized, prioritized, assigned, scheduled, and tracked.</p> <p><a href="#">ISS Policy #250.010, “Change Management”</a> – change management procedures for IT resources.</p> <p><a href="#">ISS Policy #600.010, Development Process”</a> – provides a development process that uses structured techniques and tools to plan, analyze, design, and produce; and implements the strategic information requirements of customers supported by ISS.</p>

### Summary

We would like to thank ISS Applications Systems managers and the Procurement Services manager for their assistance in the

development of these best practices and hope that this information will provide assistance to IT project managers and other key employees responsible for the successful completion of IT projects at the City.

## APPENDIX A

## BIBLIOGRAPHY

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