

OPERATIONS RUN BOOK

The Operations Run Book (ORB) should contain all of the information the Office of Innovation & Technology (OIT) and specifically the Operations staff required to perform day-to-day operations and to respond to emergency situations or any event that effects the application or system. The ORB requires that you provide specific details on hardware and software components of the equipment running the application, contact information, procedural information and scripts and Back-out procedures and Recovery guidelines.

The purpose of this template is to guide the project lead to complete all of the information that will follow the system or application throughout the project lifecycle. When key components and/or information change due to upgrade, department (customer) requirements or any other reason; the ORB must be updated to reflect the new system, application or environment.

The information contained in the ORB also reflects the level of support required by the City's Service Desk. Currently, Tier 1 support is performed by the Service Desk staff and all Tier 2 and 3 support is performed by the field staff. As those roles change more Tier support will be placed on the Service Desk staff. Therefore all information should be completed as both the Service Desk and the field staff must refer to this document for full service support of the City's applications and systems.

Template Version Control:

Modified by:	Date, Modified:	Date Distributed:
Pre-Production Review Board	July 5, 2012	TBD

Do Not include this page with your project submission. This page remains with the template document for version control.

OPERATIONS RUN BOOK

Application/Solution Name:	
Submitted by:	Date:
*Modified by:	Modified Date:

*Only utilize this field post Pre-production approval.

SOLUTION TYPE OVERVIEW

Select all that apply.

	COTS		Internal		Extranet
	Client Server		External		Mobile Web App
	Web App		Web API		

CONTACT INFORMATION

Record detailed information the Operations staff may require in event of an emergency. Specific contact names are required, generic group or department names are not acceptable.

A. Application Custodian (OIT Staff)

1. Contact: Company Name: Address: Phone: Fax: Comments:	2. Contact: Company Name: Address: Phone: Fax: Comments:
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B. Application Owner (End-user, also known as host department responsible for application):

1. Contact: Company Name: Address: Phone:	2. Contact: Company Name: Address: Phone:
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Fax:	Fax:
Comments:	Comments:

C. Department or Agencies interfacing with system and/or application (internal or external):

DEPT/AGCY NAME	CONTACT PERSON	PHONE NUMBER	

Is this solution accessible to Enterprise/Users on the Intranet? Yes or No

Does the public utilize this solution? Yes or No Should 311 be notified? Yes or No

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D. Building Facilities Contact (server location and application host building location):

1. Contact: Wayne Crawford, Project Manager Company Name: OIT Address: 1234 Market St, Data Center Facility Phone: 215-686-8273 Cell: 215-908-3051	2. Contact: Lisa Coleman, Manager Company Name: OIT Address: 1234 Market St, Data Center Facility Phone: 215-686-8240 Cell: 215-834-5349
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E. Project Manager/Lead (Note if the contact is a vendor): Parent applications or solutions that incorporate multiple projects may include multiple project managers or leads. List those individuals and note if they are vendors and not city staff.

Projects	Project ID	Project Owner(Manager)	V or CS

HARDWARE COMPONENTS

Record detailed information regarding each hardware component in the data center:

Server hardware (this section may require a spreadsheet) (Tier 2)

PRODUCTION ENVIRONMENT

Server Name	Server Location	Rack Location	Asset Tag#	Model #	Serial #	Server IP	DNS Name	Virtual	Point of Failure*
1.								(Y or N)	(Y or N)
2.									
3.									

STAGING/Pre-PRODUCTION/UAT ENVIRONMENT (Staging is often used here as pre-production or UAT test environment. This should be moved up after the production environment.

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Server Name	Server Location	Rack Location	Asset Tag#	Model #	Serial #	Server IP	DNS Name	Virtual	Point of Failure*
1.								(Y or N)	(Y or N)
2.									
3.									

SYSTEM TEST ENVIRONMENT

Server Name	Server Location	Rack Location	Asset Tag#	Model #	Serial #	Server IP	DNS Name	Virtual	Point of Failure*
1.								(Y or N)	(Y or N)
2.									
3.									

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DEVELOPMENT/INTEGRATION ENVIRONMENT

Server Name	Server Location	Rack Location	Asset Tag#	Model #	Serial #	Server IP	DNS Name	Virtual	Point of Failure*
1.								(Y or N)	(Y or N)
2.									
3.									

OTHER ENVIRONMENT

Server Name	Server Location	Rack Location	Asset Tag	Model #	Serial #	Server IP	DNS Name	Virtual	Point of Failure*
1.								(Y or N)	(Y or N)
2.									
3.									

Points of Failure (A SPOF (single point of failure) is classified for OIT as an occurrence that will stop the entire system or major system component from working. Any system or solution that relies on high availability or reliability requires that the SPOF is documented to meet pre-production requirements.

What components of Solution have a point of failure?	Risk description
1.	
2.	
3.	
4.	

*Note that the design documents should note the points of failure.

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STORAGE INFORMATION

Local storage information must be identified on the architecture diagram.

If not connected to the existing SAN, the following information is required:

Disk Arrays (Server Direct-attached storage)

1. Vendor and Model:
2. Type, size, and number of drives, including cache if any, and controller to which the disk is connected:
3. Logical disk configuration:
4. RAID level:
5. Number of controllers and number of channels:
6. Disk controller information (including write cache settings):
7. Dates and versions of firmware for drives and controllers:

SOFTWARE COMPONENTS (required data)

- A. Record detailed information about each software component on the server(s). (Operating system and standard enterprise applications should be excluded)

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Software name	Server name	Serial #*	License key	Version	Term	Vendor Name	Vendor Phone #
1.							
2.							
3.							
4.							

Provide any additional details associated with licensing information since the current license inventory process is decentralized.

*if applicable

B. Is there any software information and documentation stored off-site with a vendor? __ Yes __ No

C. What is the operating system (Supply the version of the operating system) :

__ Windows	Version ____	__ LINUX/UNIX	Version ____	__ Other (explain)	Version ____
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D. Source Code

COTS (Customized Off The Shelf) source code is not required and will assume not available.

1) Is the Source Code in the City's possession and provided with this document? __ Yes __ No

If yes, what is the specific location?

2) Does the City have access to the Source Code at the on and/or off-site location? __ Yes __ No

If yes, then provide details for accessing the source code repository.

If no, leave the following statement within the document:

The vendor, (VENDOR NAME) WILL NOT provide the source code.

E. List the names and locations of client tools installed to connect to remote database connections and necessary configuration and connection information. Ex. SQL Mgr give more examples.

Client Tool Name	Location	Vendor	Version
1.			

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2.			
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F. Databases

What databases are utilized for this application or system? (List all and their locations)

*The current standard is Oracle.

Database Name	Application Service Account	DB Type (Oracle, SQL, etc.)	Version	Server Name	Server Location	Rack Location
1.						
2.						
3.						
4.						

E. Additional features or dependencies of the application.

1) List additional features in use and relevant configuration information, such as XML support for Internet Information Services, Active Directory service, and DSNs.

Additional Features	Comments
1.	
2.	

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F. Interfaces (Enterprise or Department)

The following items (GIS, Web Services and Imaging) are NOT required if the special services are NOT part of this solution.

Select	Service	URLs
	Document Management	
	ePay	
	Imaging	
	Web Services	
	GIS	

GIS (Arc GIS server, Geospatial web services) Please specify.

GIS Service Name (Arc Server, ULRS, etc.)	Data Layers	Application Service Account	IP
1.			
2.			

PROCEDURAL INFORMATION

Provide procedural information and/or documentation for each operational, daily and emergency task performed by the Service Desk and Operations' Staff.

Scripts (List scripts and usage guidelines):

Script Name	Usage Guideline	Exhibit
1.		
2.		
3.		
4.		

Attach all scripts as exhibits to the ORB. [May require a separate template]

A meeting or discussion with the Service Desk Staff member should have taken place to confirm this information meets Service Desk requirements

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OPERATIONAL TASKS

Routine The IT staff performs routine operational tasks. To avoid problems, your staff should perform these tasks by using the same procedures each time.

TASK-Routine	FREQUENCY	PERFORMED BY UNIT	REQD or optl
1. Ex. OS patches			
2.			
3.			
4.			
5.			

If you require more space for your information, attach as an Exhibit.

Monitoring add STATEMENT

TASK-Monitoring	FREQUENCY	PERFORMED BY UNIT	REQD or optl
1. Ex.			
2.			
3.			
4.			
5.			

If you require more space for your information, attach as an Exhibit.

Emergency You should have a planned and tested response to each of the following types of emergencies.

Ex. Tasks in the event of a power, network, database outage. (H/W, S/W or interface failure, system restart.)

Check the following items in the event of an emergency or list the actions needed performed by the Operations and/or Service Desk Unit:

Examples. Is the power on? Check the link light on the NIC. Take NO ACTION, call (record person to be contacted).

NOTE: Delete all examples that do not apply.

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PRODUCTION CONTROL/QUALITY ASSURANCE

List what jobs, if any, are scheduled to run daily.

	Scheduled Tasks (Jobs)	Open Systems	Mainframe	FREQUENCY	Process owner
1.					
2.					
3.					

EXHIBIT 1

Solution Architectural Design

Insert diagram or attach document.

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EXHIBIT 2

Maintenance Solution

EXHIBIT 3

SERVICE DESK SCRIPTS

Schedule a meeting with the Service Desk Supervisor to develop scripts.

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EXHIBIT 4

ERROR MESSAGE LEGEND

Attach documentation if provided by vendor or outline information in this section of the ORB.

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EXHIBIT 4

BACK-UP AND RECOVERY PROCESS

Attach documentation if provided by vendor or outline information in this section of the ORB.



Enterprise Architecture Principles

Revision 2

2/20/2013

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Executive Summary

This document details the highest level set of Architecture Principles to which enterprise IT in the City of Philadelphia adheres.

Purpose

Principles are general rules and guidelines, intended to be enduring and seldom amended, that inform and support the way in which an enterprise sets about fulfilling its mission.

In their turn, principles may be just one element in a structured set of ideas that collectively define and guide the organization, from values through to actions and results.

Scope

These architecture principles apply to all of the organizations that make up the executive branch of government in the City of Philadelphia.

Business Principles

ID	PRN-001
Name	Primacy of Principles
Statement	Principles apply throughout the enterprise and override all other considerations when decisions are made.
Rationale	The only way we can provide a recognized, consistent, and measurable level of operations is if all parts of the enterprise abide by the principles when making decisions.
Implications	<ul style="list-style-type: none">• Without this principle, short-term considerations, supposedly convenient exceptions, and inconsistencies would rapidly undermine the management of information.• Information management initiatives will not be permitted to begin until they are examined for compliance with the principles.• A conflict with a principle will be resolved by changing the conflicting initiative, which could delay or prevent the initiative.

ID	PRN-002
Name	Maximize Benefit to the Enterprise

Statement	Information management decisions are made to provide maximum benefit to the enterprise as a whole.
Rationale	This principle embodies "service above self". Decisions made from an enterprise-wide perspective have greater long-term value than decisions made from any particular organizational perspective. Maximum return on investment requires information management decisions to adhere to enterprise-wide drivers and priorities. No minority group will detract from the benefit of the whole. However, this principle will not preclude any minority group from getting its job done.
Implications	<ul style="list-style-type: none"> • Achieving maximum enterprise-wide benefit will require changes in the way we plan and manage information. Technology alone will not bring about this change. • Some organizations may have to concede their own preferences for the greater benefit of the entire enterprise. • Solution implementation priorities must be established by the enterprise for the entire enterprise. • Solution components and information should be shared across organizational boundaries. • Information management initiatives should be conducted in accordance with the enterprise plan. Individual organizations should pursue information management initiatives which conform to the blueprints and priorities established by the enterprise. We will change the plan as we need to. • As needs arise, priorities must be adjusted. A forum with comprehensive enterprise representation should make these decisions.

ID	PRN-003
Name	Information Management is Everybody's Business
Statement	All organizations in the enterprise participate in information management decisions needed to accomplish business objectives.

Rationale	Information users are the key stakeholders, or customers, in the application of technology to address a business need. In order to ensure information management is aligned with the business, all organizations in the enterprise must be involved in all aspects of the information environment. The business experts from across the enterprise and the technical staff responsible for developing and sustaining the information environment need to come together as a team to jointly define the goals and objectives of IT.
Implications	<ul style="list-style-type: none"> To operate as a team, every stakeholder, or customer, will need to accept responsibility for developing the information environment. Commitment of resources will be required to implement this principle.

ID	PRN-004
Name	Business Continuity
Statement	Enterprise operations are maintained in spite of system interruptions.
Rationale	As system operations become more pervasive, we become more dependent on them; therefore, we must consider the reliability of such systems throughout their design and use. Business premises throughout the enterprise must be provided with the capability to continue their business functions regardless of external events. Hardware failure, natural disasters, and data corruption should not be allowed to disrupt or stop enterprise activities. The enterprise business functions must be capable of operating on alternative information delivery mechanisms.



Implications	<ul style="list-style-type: none">• Dependency on shared system applications mandates that the risks of business interruption must be established in advance and managed. Management includes but is not limited to periodic reviews, testing for vulnerability and exposure, or designing mission-critical services to ensure business function continuity through redundant or alternative capabilities.• Recoverability, redundancy, and maintainability should be addressed at the time of design.• Applications must be assessed for criticality and impact on the enterprise mission, in order to determine what level of continuity is required and what corresponding recovery plan is necessary.
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ID	PRN-005
Name	Common Use Solutions
Statement	Development of solutions used across the enterprise is preferred over the development of similar or duplicative solutions which are only provided to a particular organization.
Rationale	Duplicative capability is expensive and proliferates conflicting information.



Implications	<ul style="list-style-type: none">• Organizations which depend on a capability which does not serve the entire enterprise must change over to the replacement enterprise-wide capability. This will require establishment of and adherence to a policy requiring this.• Organizations will not be allowed to develop capabilities for their own use which are similar/duplicative of enterprise-wide capabilities. In this way, expenditures of scarce resources to develop essentially the same capability in marginally different ways will be reduced.• Data and information used to support enterprise decision-making will be standardized to a much greater extent than previously. This is because the smaller, organizational capabilities which produced different data (which was not shared among other organizations) will be replaced by enterprise-wide capabilities. The impetus for adding to the set of enterprise-wide capabilities may well come from an organization making a convincing case for the value of the data/information previously produced by its organizational capability, but the resulting capability will become part of the enterprise-wide system, and the data it produces will be shared across the enterprise.
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ID	PRN-006
Name	Limit Customization
Statement	Leverage solutions that require little or no customization to meet the needs.
Rationale	Limiting customization decreases the risks that a solution will become unsupportable and controls the total cost of ownership.
Implications	<ul style="list-style-type: none">• Leverage solutions that require little or no customization to meet the needs. Customized solutions require more maintenance over time, have a higher risk of becoming unsupportable, and increase the life cycle management which overall increases total cost of ownership,



ID	PRN-007
Name	Service Orientation
Statement	The architecture is based on a design of services which mirror real-world business activities comprising the enterprise (or inter-enterprise) business processes.
Rationale	Service orientation delivers enterprise agility and Boundaryless Information Flow™.
Implications	<ul style="list-style-type: none">• Service representation utilizes business descriptions to provide context (i.e., business process, goal, rule, policy, service interface, and service component) and implements services using services orchestration.• Service orientation places unique requirements on the infrastructure, and implementations should use open standards to realize interoperability and location transparency.• Implementations are environment-specific; they are constrained or enabled by context and must be described within that context.• Strong governance of service representation and implementation is required.• A "Litmus Test", which determines a "good service", is required.

ID	PRN-008
Name	Compliance with Law
Statement	Enterprise information management processes comply with all relevant laws, policies, and regulations.
Rationale	We revere and obey the City's laws. Thus, enterprise policy is to abide by laws, policies, and regulations. This will not preclude business process improvements that lead to changes in policies and regulations.

Implications	<ul style="list-style-type: none"> • The enterprise must be mindful to comply with laws, regulations, and external policies regarding the collection, retention, and management of information. • Education and access to the rules. Efficiency, need, and common sense are not the only drivers. Changes in the law and changes in regulations may drive changes in our processes or solutions.
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ID	PRN-009
Name	IT Responsibility
Statement	The IT organization is responsible for owning and implementing IT processes and infrastructure that enable solutions to meet user-defined requirements for functionality, service levels, cost, and delivery timing.
Rationale	Effectively align expectations with capabilities and costs so that all projects are cost-effective. Efficient and effective solutions have reasonable costs and clear benefits.
Implications	<ul style="list-style-type: none"> • A process must be created to prioritize projects. • The IT function must define processes to manage business unit expectations. • Data, application, and technology models must be created to enable integrated quality solutions and to maximize results.

ID	PRN-010
Name	Enable Productivity
Statement	Employees and agents of the enterprise should have the tools they need to be productive.
Rationale	Applying this principle will improve the productivity of employees and agents of the enterprise.
Implications	<ul style="list-style-type: none"> • There is an implication to improve the efficiency and effectiveness of government and reduce costs.

ID	PRN-011
Name	Availability at Anytime from Anywhere
Statement	The architecture allows for the availability of information and services when and where needed.
Rationale	<p>The enterprise is more effective, efficient, and responsive when:</p> <ul style="list-style-type: none"> • organizations deliver services when and where they are needed or desired • organizations address issues when and where they present themselves
Implications	<ul style="list-style-type: none"> • There is an implication to improve the efficiency and effectiveness of government and reduce costs in the long-term. • There is an implication that enabling services to be available at anytime from anywhere may require significant upfront investment.

Data Principles

ID	PRN-012
Name	Data is an Asset
Statement	Data is an asset that has value to the enterprise and is managed accordingly.
Rationale	<p>Timely access to accurate data is essential to improving the quality and efficiency of enterprise decision-making. It is less costly to maintain timely, accurate data in a single application, and then share it, than it is to maintain duplicative data in multiple applications. The enterprise holds a wealth of data, but it is stored in hundreds of incompatible stovepipe database. The speed of data collection, creation, transfer, and assimilation is driven by the ability of the organization to efficiently share these silos of data across the organization.</p> <p>Shared data will result in improved decisions since we will rely on fewer (ultimately one virtual) sources of more accurate and timely managed data for all of our decision-making. Electronically shared data will result in increased efficiency when existing data entities can be used, without re-keying, to create new entities.</p>



Implications	<ul style="list-style-type: none"> • This is one of three closely-related principles regarding data: data is an asset; data is shared; and data is easily accessible. The implication is that there is an education task to ensure that all organizations within the enterprise understand the relationships between value of data, sharing of data, and accessibility to data. • Stewards must have the authority and means to manage the data for which they are accountable. • We must make the cultural transition from "data ownership" thinking to "data stewardship" thinking. • The role of data steward is critical because obsolete, incorrect, or inconsistent data could be passed to enterprise personnel and adversely affect decisions across the enterprise. • Part of the role of data steward, who manages the data, is to ensure data quality. Procedures must be developed and used to prevent and correct errors in the information and to improve those processes that produce flawed information. Data quality will need to be measured and steps taken to improve data quality – it is probable that policy and procedures will need to be developed for this as well. • A forum with comprehensive enterprise-wide representation should decide on process changes suggested by the steward. • Since data is an asset of value to the enterprise, data stewards accountable for properly managing the data must be assigned at the enterprise level.
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ID	PRN-013
Name	Data is Shared
Statement	Users have access to the data necessary to perform their duties; therefore, data is shared across enterprise functions and organizations.
Rationale	Data is a valuable enterprise resource; it has real, measurable value. In simple terms, the purpose of data is to aid decision-making. Accurate, timely data is critical to accurate, timely decisions. Data is the foundation of our decision-making, so we must also carefully manage data to ensure that we know where it is, can rely upon its accuracy, and can obtain it when and where we need it.



Implications	<ul style="list-style-type: none">• This is one of three closely-related principles regarding data: data is an asset; data is shared; and data is easily accessible. The implication is that there is an education task to ensure that all organizations within the enterprise understand the relationships between value of data, sharing of data, and accessibility to data.• Accessibility involves the ease with which users obtain information.• The way information is accessed and displayed must be sufficiently adaptable to meet a wide range of enterprise users and their corresponding methods of access.• Access to data does not constitute understanding of the data. Personnel should take caution not to misinterpret information.• Access to data does not necessarily grant the user access rights to modify or disclose the data. This will require an education process and a change in the organizational culture, which currently supports a belief in "ownership" of data by functional units.
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ID	PRN-014
Name	Data is Accessible
Statement	Data is accessible for users to perform their functions.
Rationale	Wide access to data leads to efficiency and effectiveness in decision-making, and affords timely response to information requests and service delivery. Using information must be considered from an enterprise perspective to allow access by a wide variety of users. Staff time is saved and consistency of data is improved.



Implications	<ul style="list-style-type: none">• This is one of three closely-related principles regarding data: data is an asset; data is shared; and data is easily accessible. The implication is that there is an education task to ensure that all organizations within the enterprise understand the relationships between value of data, sharing of data, and accessibility to data.• Accessibility involves the ease with which users obtain information.• The way information is accessed and displayed must be sufficiently adaptable to meet a wide range of enterprise users and their corresponding methods of access.• Access to data does not constitute understanding of the data. Personnel should take caution not to misinterpret information.• Access to data does not necessarily grant the user access rights to modify or disclose the data. This will require an education process and a change in the organizational culture, which currently supports a belief in "ownership" of data by functional units.
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ID	PRN-015
Name	Data Trustee
Statement	Each data element has a trustee accountable for data quality.
Rationale	<p>One of the benefits of an architected environment is the ability to share data (e.g., text, video, sound, etc.) across the enterprise. As the degree of data sharing grows and business units rely upon common information, it becomes essential that only the data trustee makes decisions about the content of data. Since data can lose its integrity when it is entered multiple times, the data trustee will have sole responsibility for data entry which eliminates redundant human effort and data storage resources.</p> <p>Note:</p> <p>A trustee is different than a steward – a trustee is responsible for accuracy and currency of the data, while responsibilities of a steward may be broader and include data standardization and definition tasks.</p>



Implications	<ul style="list-style-type: none">• Real trusteeship dissolves the data "ownership" issues and allows the data to be available to meet all users' needs. This implies that a cultural change from data "ownership" to data "trusteeship" may be required.• The data trustee will be responsible for meeting quality requirements levied upon the data for which the trustee is accountable.• It is essential that the trustee has the ability to provide user confidence in the data based upon attributes such as "data source".• It is essential to identify the true source of the data in order that the data authority can be assigned this trustee responsibility. This does not mean that classified sources will be revealed nor does it mean the source will be the trustee.• Information should be captured electronically once and immediately validated as close to the source as possible. Quality control measures must be implemented to ensure the integrity of the data.• As a result of sharing data across the enterprise, the trustee is accountable and responsible for the accuracy and currency of their designated data element(s) and, subsequently, must then recognize the importance of this trusteeship responsibility.
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ID	PRN-016
Name	Common Vocabulary and Data Definitions
Statement	Data is defined consistently throughout the enterprise, and the definitions are understandable and available to all users.
Rationale	The data that will be used in the development of applications must have a common definition throughout the enterprise to enable sharing of data. A common vocabulary will facilitate communications and enable dialog to be effective. In addition, it is required to interface systems and exchange data.



Implications	<ul style="list-style-type: none">• We are lulled into thinking that this issue is adequately addressed because there are people with "data administration" job titles and forums with charters implying responsibility. Significant additional energy and resources must be committed to this task. It is key to the success efforts to improve the information environment. This is separate from but related to the issue of data element definition, which is addressed by a broad community -- this is more like a common vocabulary and definition.• The enterprise must establish the initial common vocabulary for the business. The definitions will be used uniformly throughout the enterprise.• Whenever a new data definition is required, the definition effort will be coordinated and reconciled with the enterprise "glossary" of data descriptions. The enterprise data administrator will provide this coordination.• Ambiguities resulting from multiple parochial definitions of data must give way to accepted enterprise-wide definitions and understanding.• Multiple data standardization initiatives need to be coordinated.• Functional data administration responsibilities must be assigned.
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ID	PRN-017
Name	Data Security
Statement	Data is protected from unauthorized use and disclosure. In addition to the traditional aspects of national security classification, this includes, but is not limited to, protection of pre-decisional, sensitive, and source selection-sensitive information.



Rationale	<p>Open sharing of information and the release of information via relevant legislation must be balanced against the need to restrict the availability of classified and sensitive information.</p> <p>Existing laws and regulations require the safeguarding of national security and the privacy of data, while permitting free and open access. Pre-decisional (work-in-progress, not yet authorized for release) information must be protected to avoid unwarranted speculation, misinterpretation, and inappropriate use.</p>
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Implications

- Aggregation of data, data classified and not, will create a large target requiring review and de-classification procedures to maintain appropriate control. Data owners and/or functional users must determine whether the aggregation results in an increased classification level. We will need appropriate policy and procedures to handle this review and declassification. Access to information based on a need-to-know policy will force regular reviews of the body of information.
- The current practice of having separate systems to contain different classifications needs to be rethought. Is there a software solution to separating classified and unclassified data? The current hardware solution is unwieldy, inefficient, and costly. It is more expensive to manage unclassified data on a classified system. Currently, the only way to combine the two is to place the unclassified data on the classified system, where it must remain.
- In order to adequately provide access to open information while maintaining secure information, security needs must be identified and developed at the data level, not the application level.
- Data security safeguards can be put in place to restrict access to "view only", or "never see". Sensitivity labeling for access to pre-decisional, decisional, classified, or sensitive information must be determined.
- Security must be designed into data elements from the beginning; it cannot be added later. Systems, data, and technologies must be protected from unauthorized access and manipulation. Enterprise information must be safeguarded against inadvertent or unauthorized alteration, sabotage, disaster, or disclosure.
- Need new policies on managing duration of protection for pre-decisional information and other works-in-progress, in consideration of content freshness.

Application Principles

ID	PRN-018
Name	Ease-of-Use
Statement	Applications are easy to use. The underlying technology is transparent to users, so they can concentrate on tasks at hand.
Rationale	<p>The more a user has to understand the underlying technology, the less productive that user is. Ease-of-use is a positive incentive for user of applications. It encourages users to work within the integrated information environment instead of developing isolated systems to accomplish the task outside of the enterprise's integrated information environment. Most of the knowledge required to operate on system will be similar to the others. Training is kept to a minimum and the risk of using a system improperly is low.</p> <p>Using an application should be as intuitive as controlling a new television or driving a different car.</p>
Implications	<ul style="list-style-type: none"> • Applications will be required to have a common "look-and-feel" and support ergonomic requirements. Hence, the common look-and-fell standard must be designed and usability test criteria must be developed. • Guidelines for user interfaces should not be constrained by narrow assumptions about user location, language, systems training, or physical capability. Factors such as linguistics, customer physical infirmities (visual acuity, ability to use keyboard/mouse), and proficiency in the use of technology have broad ramifications in determining the ease-of-use of an application.

ID	PRN-019
Name	Applications Expose Data
Statement	Applications shall provide open standards-based mechanisms and formats to expose and export their data for public and internal consumption.

Rationale	Applications are used to create and manage data that drives and guides the enterprise. Sharing data from its source leads to efficiency and effectiveness in decision-making; affords timely response to information requests and service delivery; and keeps the public informed and engaged in government. Leveraging open standards to expose data will ensure greater accessibility.
Implications	<ul style="list-style-type: none"> • This principle is closely-related to three principles regarding data: data is an asset; data is shared; and data is easily accessible. The implication is that there is an education task to ensure that all organizations within the enterprise understand the relationships between value of data, sharing of data, and accessibility to data. • Applications implement and enforce the enterprise's definitions of data. Data managed and shared through applications provides meaningful information to the enterprise and its constituency. • Open standards are publicly available and, by definition, are not proprietary.

ID	PRN-020
Name	Self-Serve
Statement	Customers should be able to serve themselves through.
Rationale	Applying this principle will improve customer satisfaction, reduce administrative overhead, and potentially improve efficiency.
Implications	<ul style="list-style-type: none"> • There is an implication to improve ease-of-use and minimize training needs; for example, businesses should be able to modify their contact details, etc., and be able to acquire licenses and permits online.

Technology Principles

ID	PRN-021
Name	Requirements-Based Change
Statement	Changes to applications and technology are only in response to business needs.
Rationale	This principle will foster an atmosphere where the information environment changes in response to the needs of the business, rather than having the business change in response to IT changes. This is to ensure that the purpose of the information support – the transaction of business – is the basis for any proposed change. Unintended effects on business due to IT changes will be minimized. A change in technology may provide an opportunity to improve the business process and, hence, change business needs. A change in technology may ensure the maintainability of a service supporting a business function and, hence, support an existing business need.
Implications	<ul style="list-style-type: none"> • This is one of three closely-related principles regarding change: requirements-based change; changes are planned; and responsive change management. These three principles work together to ensure that change is well-managed. The implication is that there is an education task to ensure that all organizations within the enterprise understand the relationships between the need for change, planning changes, and responsiveness of change management. • Changes in implementation will follow full examination of the proposed changes using the enterprise architecture. • We don't fund a technical improvement or system development unless a documented business need exists. • Change management processes will be developed or modified and implemented to conform to this principle. • This principle may bump up against the responsive change principle. We must ensure the requirements documentation process does not hinder responsive change to meet legitimate business needs. The purpose of this principle is to keep us focused on business, not technology needs – responsive change is also a business need.

ID	PRN-022
Name	Changes are Planned
Statement	Changes to the enterprise information environment are planned.
Rationale	Planning changes provides a greater guarantee of successful and stable implementation. When changes are planned, conflicts are avoided and appropriate resources should be made available.
Implications	<ul style="list-style-type: none"> • This is one of three closely-related principles regarding change: requirements-based change; changes are planned; and responsive change management. These three principles work together to ensure that change is well-managed. The implication is that there is an education task to ensure that all organizations within the enterprise understand the relationships between the need for change, planning changes, and responsiveness of change management. • We have to develop processes for managing and implementing change that provide assurance of success. • Organizations will have to be involved in change management. • IT will have to be aware of business plans that require changes to the enterprise information environment.

ID	PRN-023
Name	Responsive Change Management
Statement	Changes to the enterprise information environment are implemented in a timely manner.
Rationale	If organizations are to be expected to work within the enterprise information environment, that information environment must be responsive to their needs.



Implications	<ul style="list-style-type: none">• This is one of three closely-related principles regarding change: requirements-based change; changes are planned; and responsive change management. These three principles work together to ensure that change is well-managed. The implication is that there is an education task to ensure that all organizations within the enterprise understand the relationships between the need for change, planning changes, and responsiveness of change management.• We have to develop processes for managing and implementing change that do not create delays.• A “business expert” must facilitate explanation and implementation when an organization feels a need for change.• If we are going to make changes, we must keep the architectures updated.• Adopting this principle might require additional resources and training.• This will conflict with other principles (e.g., maximum enterprise-wide benefit, enterprise-wide solutions, etc.).
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ID	PRN-024
Name	Control Technical Diversity
Statement	Technological diversity is controlled to minimize the non-trivial cost of maintaining expertise in and connectivity between multiple processing environments.

Rationale	<p>There is a real, non-trivial cost of infrastructure required to support alternative technologies for processing environments. There are further infrastructure costs incurred to keep multiple processor constructs interconnected and maintained.</p> <p>Limiting the number of supported components will simplify maintainability and reduce costs.</p> <p>The business advantages of minimum technical diversity include: standard packaging of components; predictable implementation impact; predictable valuations and returns; redefined testing; utility status; and increased flexibility to accommodate technological advancements. Common technology across the enterprise brings the benefits of economies of scale to the enterprise.</p> <p>Technical administration and support costs are better controlled when limited resources can focus on this shared set of technology.</p>
Implications	<ul style="list-style-type: none"> • Policies, standards, and procedures that govern acquisition of technology must be tied directly to this principle. • Technology choices will be constrained by the choices available within the technology blueprint and roadmap. Procedures for augmenting the acceptable technology set to meet evolving requirements will have to be developed and put in place. • We are not freezing our technology baseline. We welcome technology advances and will change the technology blueprint and roadmap when compatibility with the current infrastructure, improvement in operational efficiency, or a required capability has been demonstrated.

ID	PRN-025
Name	Interoperability
Statement	Software and hardware should conform to defined standards that promote interoperability for data, applications, and technology.



Rationale	Standards help ensure consistency, thus improving the ability to manage systems and improve user satisfaction, and protect existing IT investments, thus maximizing return on investment and reducing costs. Standards for interoperability additionally help ensure support from multiple vendors for their products, and facilitate supply chain integration.
Implications	<ul style="list-style-type: none">• Interoperability standards and industry standards will be followed unless there is a compelling business reason to implement a non-standard solution.• A process for setting standards, reviewing and revising them periodically, and granting exceptions must be established.• The existing IT platforms must be identified and documented.



Products and Technologies Catalog

Enterprise Architecture Technology Catalog

Clinton Johnson, Chief Enterprise Architect Officer

June, 2013



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Executive Summary

The Technology Standards catalog documents the agreed standards for technology across the enterprise covering technologies, and versions, the technology lifecycles, and the refresh cycles for the technology.

This catalog provides a snapshot of the enterprise standard technologies that are or can be deployed, and also helps identify the discrepancies across the enterprise.



Product Support Levels

The follow support levels are used to represent the degree to which a product is supported within the enterprise:

Enterprise Support (E)

This represents a technology that is currently supported across multiple City agency initiatives and for which the City has made and plans to continue to make substantial investments in infrastructure and staff resources.

Limited Support (L)

This represents a technology that meets one or both of the following criteria:

- Currently supported on behalf of at least one City agency initiatives and for which the City has made a limited investment in infrastructure and staff resources.
- Can be supported through a contract vehicle currently in place within the enterprise.

Sunset (S)

This represents a technology that is currently supported on behalf of at least one City agency initiatives and for which the City has made a limited investment in infrastructure and staff resources.

Not Supported (N)

This represents a technology that the City explicitly does not support and for which no new investments are being made.

Product Lifecycle Stages

The follow product lifecycle stages are used to represent the stage in the evolution of applicability of use within the enterprise for a given product or technology:

Emerging (E)

Available for limited use in new implementations.

Mainstream (M)

Strongly recommended for new implementations.

Containment (C)

Installed and still requiring support but not supported for use in new implementations.

Retirement (R)

Installed and still requiring support but not supported for use in new implementations and scheduled for retirement.

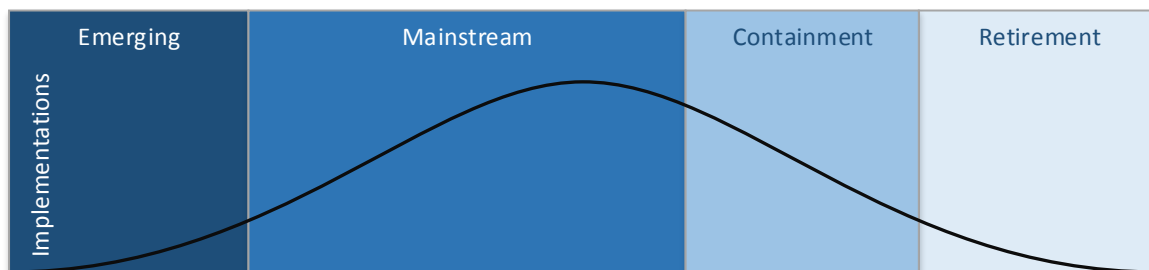


Figure 1 Typical Lifecycle Stage Progression

Products and Technologies by Category

Software

Anti-SPAM

Vendor	Title	Support Level	Life Cycle Stage
Google	Postini	Enterprise Support	Mainstream

Anti-Virus

Vendor	Title	Support Level	Life Cycle Stage
McAfee	McAfee Anti-Virus	Enterprise Support	Mainstream

Application Development

Development Components

Vendor	Title	Support Level	Life Cycle Stage
Autodesk	AutoCAD 2013	Limited Support	Mainstream
Autodesk	AutoCAD Civil 3D 2013	Limited Support	Mainstream
Autodesk	AutoCAD Electrical 2013	Limited Support	Mainstream
Autodesk	Autodesk Infrastructure Map Server 2014 Standard Edition	Limited Support	Emerging
JQuery	JQuery Mobile	Limited Support	Emerging
JQuery	JQuery UI v1.10.2	Limited Support	Emerging
JQuery	JQuery UI v1.9.2	Limited Support	Mainstream
Telerik	DevCraft Ultimate (Formerly Ultimate Collection) 2012.2.X	Limited Support	Emerging
Telerik	Kendo UI 2012.2.X	Limited Support	Emerging
Telerik	Kendo UI 2013.1.X	Limited Support	Emerging
Telerik	RadControls for ASP.NET AJAX 2012.2.X	Limited Support	Mainstream
Telerik	RadControls for ASP.NET AJAX 2013.1.X	Limited Support	Mainstream
Telerik	SharePoint Web Parts for ASP.NET AJAX 2012.3.X	Limited Support	Emerging
Telerik	SharePoint Web Parts for ASP.NET AJAX 2013.1.X	Limited Support	Emerging
Telerik	Telerik Extensions for ASP.NET MVC 2012.2.X	Limited Support	Mainstream
Telerik	Telerik Extensions for ASP.NET MVC 2013.1.X	Limited Support	Emerging

Development Languages

Vendor	Title	Support Level	Life Cycle Stage
	C++	Limited Support	Mainstream
Adobe	Flex/Actionscript	Not Supported	Containment
American National Standards Institute (ANSI)	COBOL	Sunset	Containment
Microsoft	ASP	Sunset	Containment
Microsoft	C#	Enterprise Support	Mainstream
Microsoft	TRANSACT-SQL	Limited Support	Mainstream
Microsoft	VB.NET	Enterprise Support	Mainstream
Microsoft	Visual Basic	Sunset	Containment
Mozilla Foundation	JavaScript	Enterprise Support	Mainstream
Oracle	JAVA	Limited Support	Mainstream
Oracle	Oracle Database 10g PL/SQL	Limited Support	Mainstream
Oracle	Oracle Database 11g PL/SQL	Limited Support	Mainstream
Oracle	Oracle Database 9i PL/SQL (and below)	Sunset	Retirement
Python Software Foundation (PSF)	Python	Limited Support	Mainstream
Software AG	Natural	Sunset	Containment
Sybase	TRANSACT-SQL (SAP - Sybase)	Sunset	Containment
World Wide Web Consortium (W3C)	HTML 4	Enterprise Support	Mainstream
World Wide Web Consortium (W3C)	HTML 5	Limited Support	Emerging
World Wide Web Consortium (W3C)	XML	Enterprise Support	Mainstream

Development Libraries

Vendor	Title	Support Level	Life Cycle Stage
JQuery	JQuery 1.6+	Limited Support	Mainstream
Microsoft	Microsoft Enterprise Library	Limited Support	Mainstream

Integrated Development Environments (IDEs)

Vendor	Title	Support Level	Life Cycle Stage
Adobe	Adobe Dreamweaver CS5	Enterprise Support	Mainstream
Adobe	Adobe Fireworks	Limited Support	Mainstream
Adobe	Adobe Flash	Not Supported	Retirement
Microsoft	Microsoft Visual Studio 2008	Sunset	Containment
Microsoft	Microsoft Visual Studio 2010	Enterprise Support	Mainstream
Microsoft	Microsoft Visual Studio 2012	Enterprise Support	Mainstream
Microsoft	Microsoft Visual Studio Versions Prior to 2008	Sunset	Containment
Powerbuilder	PowerBuilder (SAP - Sybase)	Sunset	Containment

**Platforms
Vendor**

Vendor	Title	Support Level	Life Cycle Stage
Microsoft	.NET 1.0, 1.1	Sunset	Containment
Microsoft	.NET 2.0	Limited Support	Retirement
Microsoft	.NET 3.5	Enterprise Support	Mainstream
Microsoft	.NET 4.0	Enterprise Support	Mainstream
Microsoft	.NET 4.5	Enterprise Support	Mainstream
Microsoft	ASP	Sunset	Retirement
Microsoft	Microsoft Office SharePoint Server 2007	Enterprise Support	Containment
Official Payment Center	ePay - CoBrand	Enterprise Support	Mainstream
Official Payment Center	ePay - My Local Government (MLG)	Not Supported	Retirement

**Source Control
Vendor**

Vendor	Title	Support Level	Life Cycle Stage
Microsoft	Microsoft Team Foundation Server 2008	Sunset	Containment
Microsoft	Microsoft Team Foundation Server 2010	Limited Support	Mainstream
Microsoft	Microsoft Team Foundation Server 2012	Limited Support	Mainstream
Microsoft	Microsoft Visual SourceSafe	Sunset	Retirement

Application Servers

Vendor	Title	Support Level	Life Cycle Stage
Citrix Systems, Inc.	Citrix	Limited Support	Mainstream
Oracle	Oracle Application Server (iAS)	Limited Support	Containment

See Operating Systems Servers for supported Windows Servers

Backup and Recovery

Vendor	Title	Support Level	Life Cycle Stage
CommVault Systems, Inc	CommVault	Enterprise Support	Mainstream
Symantec	Symantec Backup	Limited Support	Mainstream

Business Intelligence (Analysis, Query, & Reporting)

Vendor	Title	Support Level	Life Cycle Stage
IBM	Cognos	Limited Support	Mainstream

Content Management

Document Management

Vendor	Title	Support Level	Life Cycle Stage
Microsoft	Microsoft SharePoint Server 2007	Limited Support	Containment
Microsoft	Microsoft SharePoint Server 2010	Limited Support	Mainstream
Microsoft	Microsoft SharePoint Server 2013	Limited Support	Mainstream

Document Imaging

Vendor	Title	Support Level	Life Cycle Stage
EMC Corporation	Documentum	Limited Support	Mainstream

Web Content Management

Vendor	Title	Support Level	Life Cycle Stage
Serena	Serena Collage	Sunset	Retirement
Microsoft	Microsoft Office SharePoint Server 2007	Enterprise Support	Mainstream

Data Management

Data Modeling

Vendor	Title	Support Level	Life Cycle Stage
Oracle	Oracle Designer	Sunset	Retirement
Microsoft	Visio 2010	Enterprise Support	Mainstream
Microsoft	Visio 2013	Limited Support	Emerging

Database Platforms

Vendor	Title	Support Level	Life Cycle Stage
IBM	IBM DB2	Limited Support	Containment
IBM	IBM IMS	Sunset	Containment
Microsoft	Microsoft SQL Server 2005	Limited Support	Containment
Microsoft	Microsoft SQL Server 2008	Limited Support	Mainstream
Microsoft	Microsoft SQL Server 2012	Limited Support	Mainstream
Oracle	MySQL Classic Edition	Limited Support	Mainstream
Oracle	MySQL Community Edition	Limited Support	Mainstream
Oracle	MySQL Enterprise Edition	Limited Support	Emerging
Oracle	MySQL Standard Edition	Limited Support	Emerging
Oracle	Oracle Database 9i (and below)	Limited Support	Retirement
Oracle	Oracle Database 10g	Enterprise Support	Mainstream
Oracle	Oracle Database 11g	Enterprise Support	Mainstream
Software AG	Adabas	Limited Support	Containment
Sybase	Sybase Database Server	Sunset	Containment

Engineering and Architecture

Vendor	Title	Support Level	Life Cycle Stage
Autodesk	AutoCAD Network 2013	Limited Support	Mainstream
Autodesk	AutoCAD Architecture 2013	Limited Support	Mainstream
Autodesk	AutoCAD LT 2013	Limited Support	Mainstream
Autodesk	AutoCAD Map 3D 2013	Limited Support	Mainstream
Autodesk	Autodesk Infrastructure Map Service 2013 Standard Edition	Limited Support	Mainstream

Geographic Information Systems (GIS)

Vendor	Title	Support Level	Life Cycle Stage
ESRI	ArcGIS for Desktop 9.x	Limited Support	Retirement
ESRI	ArcGIS for Desktop 10.x	Enterprise Support	Mainstream
ESRI	ArcGIS Online	Enterprise Support	Mainstream
ESRI	ArcGIS for Server 9.x	Limited Support	Retirement
ESRI	ArcGIS for Server 10.x	Enterprise Support	Mainstream
ESRI	ArcIMS	Sunset	Retirement
LizardTech	MrSID	Sunset	Retirement

Graphic Design and Audio/Video

Vendor	Title	Support Level	Life Cycle Stage
Adobe	Adobe Creative Suite 5 (CS5)	Limited Support	Mainstream
Adobe	Adobe Creative Suite 6 (CS6)	Limited Support	Mainstream
Adobe	Adobe InDesign 5 (CS5)	Limited Support	Mainstream
Adobe	Adobe InDesign 6 (CS6)	Limited Support	Mainstream
Adobe	Adobe Creative Cloud	Limited Support	Emerging

Identity Management

Directory Services

Vendor	Title	Support Level	Life Cycle Stage
Microsoft	Microsoft Active Directory	Enterprise Support	Mainstream

Integration

Application Integration

Vendor	Title	Support Level	Life Cycle Stage
SoftwareAG	webMethods Integration Server	Limited Support	Mainstream
SoftwareAG	webMethods Broker	Limited Support	Mainstream
SoftwareAG	webMethods Adapters	Limited Support	Mainstream
SoftwareAG	webMethods Optimize for Infrastructure	Limited Support	Mainstream
SoftwareAG	SoftwareAG EntireX	Sunset	Retirement

Mainframe Services

Vendor	Title	Support Level	Life Cycle Stage
IBM	CICS	Enterprise Support	Containment
IBM	VSAM	Sunset	Retirement

Network Methods and Protocols

Application Layer Protocols

Vendor	Title	Support Level	Life Cycle Stage
Internet Engineering Task Force (IETF)	DHCP	Enterprise Support	Mainstream
Internet Engineering Task Force (IETF)	DNS	Enterprise Support	Mainstream
Internet Engineering Task Force (IETF)	HTTP 1.0	Enterprise Support	Mainstream

Cryptographic Protocols

Vendor	Title	Support Level	Life Cycle Stage
Internet Engineering Task Force (IETF)	SSL 1.0	Sunset	Retirement
Internet Engineering Task Force (IETF)	SSL 2.0	Limited Support	Mainstream
Internet Engineering Task Force (IETF)	SSL 3.0	Enterprise Support	Mainstream
Internet Engineering Task Force (IETF)	TLS 1.0	Enterprise Support	Mainstream

Network Methods

Vendor	Title	Support Level	Life Cycle Stage
Internet Engineering Task Force (IETF)	Load Balancing	Enterprise Support	Mainstream
Internet Engineering Task Force (IETF)	NAT	Enterprise Support	Retirement
Internet Engineering Task Force (IETF)	Traffic (Packet) Shaping	Enterprise Support	Mainstream
Internet Engineering Task Force (IETF)	PAT	Enterprise Support	Mainstream
Internet Engineering Task Force (IETF)	Port Mirroring	Enterprise Support	Mainstream
Internet Engineering Task Force (IETF)	VLAN	Enterprise Support	Mainstream
Internet Engineering Task Force (IETF)	VLAN Tagging	Enterprise Support	Mainstream
Internet Engineering Task Force (IETF)	Web Accelerator	Enterprise Support	Mainstream

Operating Systems

End User Devices

Vendor	Title	Support Level	Life Cycle Stage
Apple	iOS 5	Limited Support	Mainstream
Apple	iOS 6	Limited Support	Emerging
Google	Android 4.2	Limited Support	Emerging
Microsoft	Windows 2000	Not Supported	Retirement
Microsoft	Windows 7	Limited Support	Containment
Microsoft	Windows RT (Windows 8)	Limited Support	Mainstream
Microsoft	Windows 8 Pro	Limited Support	Mainstream
Microsoft	Windows 8 Enterprise	Limited Support	Mainstream
Microsoft	Windows Phone 8	Limited Support	Mainstream
Microsoft	Windows XP	Sunset	Retirement
RIM	RIM	Enterprise Support	Mainstream
Nokia	Symbian	Not Supported	Containment

Note: Windows 8 operating systems are most appropriate for devices with touch-enabled screens.

Servers

Vendor	Title	Support Level	Life Cycle Stage
Microsoft	Windows 2000 Server	Not Supported	Containment
Microsoft	Windows 2003 Server	Limited Support	Containment
Microsoft	Windows 2003 Server R2	Enterprise Support	Containment
Microsoft	Windows 2008 Server	Limited Support	Containment
Microsoft	Windows 2008 Server R2	Enterprise Support	Mainstream
Microsoft	Windows 2012 Server	Limited Support	Emerging

Personal Information Manager (PIM)

Vendor	Title	Support Level	Life Cycle Stage
Microsoft	Microsoft Exchange 2010	Enterprise Support	Mainstream
Microsoft	Outlook Web Application (OWA)	Enterprise Support	Mainstream
Microsoft	Outlook (Desktop)	Enterprise Support	Containment

Productivity

Vendor	Title	Support Level	Life Cycle Stage
Adobe	Adobe Acrobat	Enterprise Support	Mainstream
Microsoft	Microsoft Office 2007	Enterprise Support	Containment
Microsoft	Microsoft Office 2010	Enterprise Support	Containment
Microsoft	Microsoft Office 2013	Limited Support	Emerging
Microsoft	Microsoft Office 365	Limited Support	Emerging

Virtualization

Server Virtualization

Vendor	Title	Support Level	Life Cycle Stage
VMWare, Inc.	vCenter	Enterprise Support	Mainstream
VMWare, Inc.	vMotion	Enterprise Support	Mainstream
VMWare, Inc.	vSphere	Enterprise Support	Mainstream
Microsoft	Hyper-V	Not Supported	Containment

Web Servers

Vendor	Title	Support Level	Life Cycle Stage
Microsoft	Internet Information Services (IIS) 5.0	Sunset	Retirement
Microsoft	Internet Information Services (IIS) 6.0	Enterprise Support	Containment
Microsoft	Internet Information Services (IIS) 7.0	Limited Support	Mainstream
Microsoft	Internet Information Services (IIS) 7.5	Limited Support	Mainstream

Hardware

Network Hardware

Vendor	Title	Support Level	Life Cycle Stage
Big-IP	F5 Web Accelerator	Enterprise Support	Mainstream
Blue Coat	PacketShaper 12000	Enterprise Support	Mainstream
Juniper	J6350 Router	Enterprise Support	Mainstream
Juniper	2400 Switch	Enterprise Support	Mainstream
Nortel	400 Series Switches	Sunset	Containment
Nortel	5500 Series Switches	Sunset	Containment
Nortel	8600 Chassis	Enterprise Support	Mainstream
Nortel	AN Router	Not Supported	
Nortel	ARN Router	Not Supported	
Nortel	BCN Router	Sunset	Retirement
Nortel	BPS Switches	Not Supported	
Cisco Systems, Inc.			

Server Hardware

Vendor	Title	Support Level	Life Cycle Stage
Dell		Enterprise Support	Mainstream
HP		Limited Support	Containment



Architecture Compliance Checklists for Business Applications

Tailored for the Business Applications


Version 1.0.2

7/1/2013



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Introduction

The following review checklists have been tailored to address specific areas of concern regarding *Business Applications*. These checklists serve a number of purposes including, including:

- A screening mechanism for determining whether a project request is compliant with the defined Architectures and whether it needs to be reviewed by the ARB
- Documentation of a projects' compliance, either for the Project team or for the ARB if the ARB needs to further review the project to determine Architecture compliance.



Instructions

For All Solutions

Please address the following checklists for all solutions:

- Project Inception Checklist
- Applications Checklists, Business Applications Checklists
- Application Integration Approach Checklist
- Information Management Checklists, Data Values Checklist
- Information Management Checklists, Data Definition Checklist
- Information Management Checklists, Security/Protection Checklist
- Information Management Checklists, Access Method Checklist
- Security Checklists (All)
- System Engineering/Overall Architecture Checklists, Processors/Servers/Clients Checklist

The following checklists must be addressed in addition to the checklists listed above if the solution meets the defined criteria.

For On-Premise Solutions

Please address the following checklists if the solution contains components to be deployed on-premise:

- Information Management Checklists, Hosting, Data Types, and Sharing Checklist
- Information Management Checklists, Common Services Checklist

For Customized On-Premise Solutions

Please address the following checklists if the solution contains components to be deployed on-premise that will be customized or custom developed:

- System Engineering/Overall Architecture Checklists (All)
- System Engineering/Methods & Tools Checklist


For Software-as-a-Service Solutions

Please address the following checklists if the solution will contain Software-as-a-Service (SaaS) components:

- Applications Checklists, Software-as-a-Service (SaaS) Checklist

For Customized Software-as-a-Service Solutions

Please address the following checklists if the solution will contain Software-as-a-Service (SaaS) components that will be customized or custom developed:

- 
- System Engineering/Overall Architecture Checklists, General Checklist
 - System Engineering/Methods & Tools Checklist



Checklists

Project Inception Checklist

1. Environment

- a. Is the project defined to a level of certainty that the architecture compliance can be determined at this time? If yes, fill in the detailed ARB review checklist for review by the Intake team.
- b. Are ALL envisioned hardware and software environments consistent with current standards? Refer to the standard product and technologies list for current standards. Note any potential exceptions at this time.
- c. Have the following architecture frameworks been reviewed? Are there any exceptions or concerns?
 - i. Business Architecture
 - ii. Information Architecture
 - iii. Application Architecture
 - iv. Infrastructure Architecture

2. Principles

- a. Are there any exceptions that would violate the City's EA Principles?



Applications Checklists

Business Applications Checklist

1. Do standard products supporting one or more line-of-business applications provide any of the capabilities required? For example:
 - **Business acquisition applications**
 - Sales and marketing
 - **Engineering applications**
 - Computer-aided design
 - Computer-aided engineering
 - Mathematical and statistics analysis
 - **Supplier management applications**
 - **Supply chain management**
 - Customer relationship management
 - **Manufacturing applications**
 - Enterprise Resource Planning (ERP) applications
 - Manufacturing execution systems
 - Manufacturing quality
 - Manufacturing process engineering
 - Machine and adaptive control
 - **Customer support applications**
 - Airline logistics support
 - Maintenance engineering
 - **Finance applications**
 - **People applications**
 - **Facilities applications**
 - **Information systems applications**
 - Systems engineering
 - Software engineering
 - Web developer tools
 - Integrated development environments
 - Lifecycle categories
 - Functional categories
 - Specialty categories
 - **Computer-aided manufacturing**
 - **e-Business enablement**
 - **Business process engineering**
 - Statistical quality control
2. Describe the process requirements for business application capabilities that are not met by the standard products.



Applications Checklists (cont)

Software-as-a-Service (SaaS) Checklist

1. Describe how the service segregates client data.
2. Do clients own their data?
3. Describe how clients would download their data.
 - a. How frequently can clients download their data?
 - b. In what formats can clients download their data?
 - c. By what means can clients download their data?
4. Describe how the vendor would provide client data to the client.
 - a. How frequently can the vendor provide the data?
 - b. In what formats can the vendor provide the data?
 - c. By what means can the vendor provide the data?
5. Describe the measures that the service provides to secure client data.
 - a. Is client data encrypted?
 - b. Can the service leverage the client's authentication and authorization mechanisms?
 - c. Describe how data is protected during transmission.
 - d. List any certification or accreditation held by the vendor relevant to the protection and management of client data
6. Describe how security audits are performed including but limited to the following details:
 - a. Who performs audits?
 - b. What is audited?
 - c. Where are audits performed?
 - d. How frequently are audits performed?
7. Describe the measures taken to protect client data against software and hardware failures as well as disasters.
 - a. How frequently are backups performed?
 - b. How are clients notified of data restoration efforts?
8. Where are the hosting sites located?
9. Where are backup sites located?
10. Is client data available for use or access by a third party?
11. Detail service level agreements, including but not limited to:
 - a. Methods that clients, their staff and end-users can report problems;
 - b. Specified turnaround times to respond to reports;
 - c. Specified turnaround times to resolve problems;
 - d. Methods and frequency by which client is informed of progress and resolution; and
 - e. Remediation for failure to meet service level agreements.
12. Describe the change and release management processes related to the service.
 - a. How frequently are periodic changes including but not limited to upgrades, and patches performed?
 - b. Are clients able to influence the schedule of changes? If so, how?
 - c. Describe how clients and their end-users are notified of changes?
13. Describe how clients and their end-users are notified of service outages?
14. Describe how clients are able to take advantage of upgrades and feature enhancements.





Applications Checklists (cont)

Application Integration Approach Checklist

1. What integration points (business process/activity, application, data, computing environment) are targeted by this architecture?
 - a. Does the solution require integration between public cloud and on-premise systems?
 - b. Does the solution require integration between public cloud systems?
 - c. Does the solution require integration between on-premise systems?
2. What application integration techniques will be applied (service oriented architecture [SOA], common business objects [ORBs], standard data definitions [STEP, XML, etc], common user interface presentation/desktop)?



Information Management Checklists

Data Values Checklist

1. What are the processes that standardize the management and use of the data?
2. What business process supports the entry and validation of the data? Use of the data?
3. What business actions correspond to the creation and modification of the data?
4. What business actions correspond to the deletion of the data and is it considered part of a business record?
5. What are the data quality requirements required by the business user?
6. What processes are in place to support data referential integrity and/or normalization?

Data Definition Checklist

1. What are the data model, data definitions, structure, and hosting options of purchased applications (COTS)?
2. What are the rules for defining and maintaining the data requirements and designs for all components of the information system?
3. What shareable repository is used to capture the model content and the supporting information for data?
4. What is the physical data model definition (derived from logical data models) used to design the database?
5. What software development and data management tools have been selected?
6. What data owners have been identified to be responsible for common data definitions, eliminating unplanned redundancy, providing consistently reliable, timely, and accurate information, and protecting data from misuse and destruction?

Security/Protection Checklist

1. What are the data entity and attribute access rules that protect the data from unintentional and unauthorized alterations, disclosure, and distribution?
2. What are the data protection mechanisms to protect data from unauthorized external access?
3. What are the data protection mechanisms to control access to data from external sources that temporarily have internal residence within the enterprise?

Hosting, Data Types, and Sharing Checklist

1. What is the discipline for managing sole-authority data as one logical source with defined updating rules for physical data residing on different platforms?
2. What is the discipline for managing replicated data, which is derived from operational sole-authority data?
3. What tier data server has been identified for the storage of high or medium-critical operational data?
4. What tier data server has been identified for the storage of type C operational data?
5. What tier data server has been identified for the storage of decision support data contained in a data warehouse?
6. What Database Management Systems (DBMSs) have been implemented?



Common Services Checklist

1. What are the standardized distributed data management services (e.g., validation, consistency checks, data edits, encryption, and transaction management) and where do they reside?

Information Management Checklists (cont)

Access Method Checklist

1. What are the data access requirements for standard file, message, and data management?
2. What are the access requirements for decision support data?
3. What are the data storage and the application logic locations?
4. What query language is being used?



Security Checklists

Security Awareness Checklist

1. Have you ensured that the City security policies and guidelines to which you are designing are the latest versions?
2. Have you read them?
3. Are you aware of all relevant computing security compliance and risk acceptance processes?

Identification/Authentication Checklist

1. Diagram the process flow of how a user is identified to the application and how the application authenticates that the user is who they claim to be.
2. Provide supporting documentation to the diagram explaining the flow from the user interface to the application/database server(s) and back to the user.
3. Are you compliant with City policies on accounts, passwords, etc.?

Authorization Checklist

1. Provide a process flow from beginning to end showing how a user requests access to the application, indicating the associated security controls and separation of duties. This should include:
 - a. How the request is approved by the appropriate data owner;
 - b. How the user is placed into the appropriate access-level classification profile;
 - c. How the user ID, password, and access is created and provided to the user
 - d. How the user is informed of their responsibilities associated with using the application, given a copy of the access agreement;
 - e. How to change password;
 - f. Who to call for help, etc.

Access Controls Checklist

1. Document how the user IDs, passwords, and access profiles are added, changed, removed, and documented. The documentation should include who is responsible for these processes.

Sensitive Information Protection Checklist

1. Provide documentation that identifies sensitive data requiring additional protection.
2. Identify the data owners responsible for this data and the process to be used to protect storage, transmission, printing, and distribution of this data.
3. Include how the password file/field is protected.
4. How will users be prevented from viewing someone else's sensitive information?
5. Are there agreements with outside parties (partners, suppliers, contractors, etc.) concerning the safeguarding of information? If so, what are the obligations?



Security Checklists (cont)

Audit Trails and Audit Logs Checklist

1. Identify and document group accounts required by the users or application support, including operating system group accounts.
2. Identify and document individual accounts and/or roles that:
 - a. Have superuser type privileges;
 - b. What these privileges are;
 - c. Who has access to these accounts;
 - d. How access to these accounts is controlled, tracked, and logged; and
 - e. How password change and distribution are handled, including operating system accounts.
3. Identify audit logs, including:
 - a. Who can read the audit logs
 - b. Who can modify the audit logs
 - c. Who can delete the audit logs
 - d. How the audit logs are protected and stored
 - e. Is the user ID obscured in the audit trails?

External Access Considerations Checklist

1. Will the application be used internally only? If not, are you compliant with City external access requirements?



System Engineering/Overall Architecture Checklists

General Checklist

1. What other applications and/or systems require integration with yours?
2. Describe the integration level and strategy with each.
3. How geographically distributed is the user base?
4. What is the strategic importance of this system to other user communities inside or outside the enterprise?
5. What computing resources are needed to provide system service to users inside the enterprise? Outside the enterprise and using enterprise computing assets? Outside the enterprise and using their own assets?
6. How can users outside the native delivery environment access your applications and data?
7. What is the life expectancy of this application?
8. Describe the design that accommodates changes in the user base, stored data, and delivery system technology.
9. What is the size of the user base and their expected performance level?
10. What performance and stress test techniques do you use?
11. What is the overall organization of the software and data components?
12. What is the overall service and system configuration?
13. How are software and data configured and mapped to the service and system configuration?
14. What proprietary technology (hardware and software) is needed for this system?
15. Describe how each and every version of the software can be reproduced and re-deployed over time.
16. Describe the current user base and how that base is expected to change over the next three to five years.
17. Describe the current geographic distribution of the user base and how that base is expected to change over the next three to five years.
18. Describe how many current or future users need to use the application in a mobile capacity or who need to work off-line.
19. Describe what the application generally does, the major components of the application, and the major data flows.
20. Describe the instrumentation included in the application that allows for the health and performance of the application to be monitored.
21. Describe the business justification for the system.
22. Describe the rationale for picking the system development language over other options in terms of initial development cost *versus* long-term maintenance cost.
23. Describe the systems analysis process that was used to come up with the system architecture and product selection phase of the system architecture.
24. Who besides the original customer might have a use for or benefit from using this system?
25. What percentage of the users use the system in browse mode *versus* update mode?
26. What is the typical length of requests that are transactional?
27. Do you need guaranteed data delivery or update, or does the system tolerate failure?
28. What are the up-time requirements of the system?
29. Describe where the system architecture adheres or does not adhere to standards.
30. Describe the project planning and analysis approach used on the project.



System Engineering/Overall Architecture Checklists (cont)

Servers/Clients Checklist

1. Describe the client/server Application Architecture.
2. Annotate the pictorial to illustrate where application functionality is executed.

Client Checklist

1. Are functions other than presentation performed on the user device?
2. Describe the data and process help facility being provided.
3. Describe the screen-to-screen navigation technique.
4. Describe how the user navigates between this and other applications.
5. How is this and other applications launched from the user device?
6. Are there any inter-application data and process sharing capabilities? If so, describe what is being shared and by what technique/technology.
7. Describe data volumes being transferred to the client.
8. What are the additional requirements for local data storage to support the application?
9. What are the additional requirements for local software storage/memory to support the application?
10. Are there any known hardware/software conflicts or capacity limitations caused by other application requirements or situations that would affect the application users?
11. Describe how the look-and-feel of your presentation layer compares to the look-and-feel of the other existing applications.
12. Describe to what extent the client needs to support asynchronous and/or synchronous communication.
13. Describe how the presentation layer of the system is separated from other computational or data transfer layers of the system.

Application Server Checklist

1. Can/do the presentation layer and application layers run on separate processors?
2. Can/do the application layer and data access layer run on separate processors?
3. Can this application be placed on an application server independent of all other applications? If not, explain the dependencies.
4. Can additional parallel application servers be easily added? If so, what is the load balancing mechanism?
5. Has the resource demand generated by the application been measured and what is the value? If so, has the capacity of the planned server been confirmed at the application and aggregate levels?

Data Server Checklist

1. Are there other applications that must share the data server? If so, identify them and describe the data and data access requirements.
2. Has the resource demand generated by the application been measured and what is the value? If so, has the capacity of the planned server been confirmed at the application and aggregate levels?



System Engineering/Overall Architecture Checklists (cont)


COTS (where applicable) Checklist

1. Is the vendor substantial and stable?
2. Will the enterprise receive source code upon demise of the vendor?
3. Is this software configured for the enterprise's usage?
4. Is there any peculiar sensitive or confidential data or processes that would impede the use of this software?
 - a. Is this software currently available?
5. Has it been used/demonstrated for volume/availability/service-level requirements similar to those of the enterprise?
 - a. Describe the past financial and market share history of the vendor.



System Engineering/Methods & Tools Checklist

1. Do metrics exist for the current way of doing business?
2. Has the system owner created evaluation criteria that will be used to guide the project? Describe how the evaluation criteria will be used.
3. Has research of existing architectures been done to leverage existing work? Describe the method used to discover and understand. Will the architectures be integrated? If so, explain the method that will be used.
4. Describe the methods that will be used on the project:
 - For defining business strategies
 - For defining areas in need of improvement
 - For defining baseline and target business processes
 - For defining transition processes
 - For managing the project
 - For team communication
 - For knowledge management, change management, and configuration management
 - For software development
 - For referencing standards and statements of direction
 - For quality assurance of deliverables
 - For design reviews and deliverable acceptance
 - For capturing metrics
5. Are the methods documented and distributed to each team member?
6. To what extent are team members familiar with these methods?
7. What processes are in place to ensure compliance with the methods?
8. Describe the infrastructure that is in place to support the use of the methods through the end of the project and anticipated releases.
 - How is consultation and trouble-shooting provided?
 - How is training coordinated?
 - How are changes and enhancements incorporated and cascaded?
 - How are lessons learned captured and communicated?
9. What tools are being used on the project? (Specify versions and platforms). To what extent are team members familiar with these tools?
10. Describe the infrastructure that is in place to support the use of the tools through the end of the project and anticipated releases?
 - How is consultation and trouble-shooting provided?
 - How is training coordinated?
 - How are changes and enhancements incorporated and cascaded?
 - How are lessons learned captured and communicated?
11. Describe how the project will promote the re-use of its deliverables and deliverable content.
12. Will the architecture designs "live" after the project has been implemented? Describe the method that will be used to incorporate changes back into the architecture designs.
13. Were the current processes defined?
14. Were issues documented, rated, and associated to current processes? If not, how do you know you are fixing something that is broken?
15. Were existing/planned process improvement activities identified and associated to current processes? If not, how do you know this activity is not in conflict with or redundant to other Statements of Work?
16. Do you have current metrics? Do you have forecasted metrics? If not, how do you know you are improving something?
17. What processes will you put in place to gather, evaluate, and report metrics?



18. What impacts will the new design have on existing business processes, organizations, and information systems? Have they been documented and shared with the owners?



Architecture Compliance Checklists

The Untailored Set

Clinton Johnson, Chief Enterprise Architect Officer

April, 2013



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Introduction

The following review checklists have not been tailored to address specific areas of concern regarding any particular architecture or implementation. These checklists server a number of purposes including:

- A screening mechanism for determining whether a project request is compliant with the defined Architectures and whether it needs to be reviewed by the ARB
- Documentation of a projects' compliance, either for the Project team or for the ARB if the ARB needs to further review the project to determine Architecture compliance.



Checklists

Project Inception Checklist

1. Environment

- a. Is the project defined to a level of certainty that the architecture compliance can be determined at this time? If yes, fill in the detailed ARB review checklist for review by the Intake team.
- b. Are ALL envisioned hardware and software environments consistent with current standards? Refer to the standard product and technologies list for current standards. Note any potential exceptions at this time.
- c. Have the following architecture frameworks been reviewed? Are there any exceptions or concerns?
 - i. Business Architecture
 - ii. Information Architecture
 - iii. Application Architecture
 - iv. Infrastructure Architecture

2. Principles

- a. Are there any exceptions, which would violate the City's EA Principles?



Hardware and Operating System Checklist

1. Are ALL hardware and platform software on the standards list as Current technologies?
2. What is the project's lifecycle approach?
3. At what stage is the project in its lifecycle?
4. What key issues have been identified or analyzed that the project believes will drive evaluations of hardware and operating systems for networks, servers, and end-user devices?
5. What system capabilities will involve high-volume and/or high-frequency data transfers?
6. How does the system design impact or involve end-user devices?
7. What hardware and operating system choices have been made before functional design of key elements of the system?
8. If hardware and operating system decisions were made outside of the project's control:
 - a. What awareness does the project have of the rationale for those decisions?
 - b. How can the project influence those decisions as system design takes shape?
9. If some non-standards have been chosen:
 - a. What are the essential business and technical requirements for not using City standards?
 - b. Is this supported by a business case?
 - c. Have the assumptions in the business case been subject to scrutiny?
10. What is your process for evaluating full lifecycle costs of hardware and operating systems?
11. How has the City's financial management been engaged in evaluation of lifecycle costs?
12. Do you believe your requirements can be met by only one supplier?



Software Services and Middleware Checklist

1. Describe how error conditions are defined, raised, and propagated between application components.
2. Describe the general pattern of how methods are defined and arranged in various application modules.
3. Describe the general pattern for how method parameters are defined and organized in various application modules. Are [in], [in/out], [out] parameters always specified in the same order? Do Boolean values returned by modules have a consistent outcome?
4. Describe the approach that is used to minimize the number of round-trips between client and server calls, particularly for out-of-process calls, and when complex data structures are involved.
5. Describe the major data structures that are passed between major system components.
6. Describe the major communication protocols that are used between major system components.
7. Describe the marshaling techniques that are used between various system components. Describe any specialized marshaling arrangements that are used.
8. Describe to what extent the system is designed with stateful and stateless components.
9. Describe how and when state is saved for both stateful and stateless components.
10. Describe the extent to which objects are created, used, and destroyed versus re-used through object pooling.
11. Describe the extent to which the system relies on threading or critical section coding.
12. Describe the approach and the internal documentation that is used internally in the system to document the methods, methods arguments, and method functionality.
13. Describe the code review process that was used to build the system.
14. Describe the unit testing that has been used to test the system components.
15. Describe the pre- and post-condition testing that is included in various system modules.
16. Describe the assertion testing that is included with the system.
17. Do components support all the interface types they need to support or are certain assumptions made about what types of components will call other components either in terms of language bindings or other forms of marshaling?
18. Describe the extent to which big-endian or little-endian data format problems need to be handled across different platforms.



Software Services and Middleware Checklist (cont)

19. Describe if numbers or strings need to be handled differently across different platforms.
20. Describe whether the software needs to check for floating-point round-off errors.
21. Describe how time and date functions manage dates so as to avoid improper handling of time and date calculation or display.
22. Describe what tools or processes have been used to test the system for memory leaks, reachability, or general robustness.
23. Describe the layering of the systems services software. Describe the general number of links between major system components. Is the system composed of a lot of point-to-point interfaces or are major messaging backbones used instead?
24. Describe to what extent the system components are either loosely coupled or tightly coupled.
25. What requirements does the system need from the infrastructure in terms of shared libraries, support for communication protocols, load balancing, transaction processing, system monitoring, naming services, or other infrastructure services?
26. Describe how the system and system components are designed for refactoring.
27. Describe how the system or system components rely on common messaging infrastructure versus a unique point-to-point communication structure.



Applications Checklists

Infrastructure Applications Checklist

1. Is there need for capabilities that are not provided through the enterprise's standard infrastructure application products? For example:
 - Collaboration
 - Application sharing
 - Video conferencing
 - Calendaring
 - Email
 - Workflow management
 - Publishing/ word processing applications
 - HTML
 - SGML and XML
 - Portable document format
 - Document processing (proprietary format)
 - Desktop publishing
 - Spreadsheet applications
 - Presentation applications
 - Business presentations
 - Image
 - Animation
 - Video
 - Sound
 - CBT
 - Web browsers
 - Data management applications
 - Database interface
 - Document management
 - Product data management
 - Data warehouses/mart
 - Program management applications
 - Project management
 - Program visibility
2. Describe the business requirements for enterprise infrastructure application capabilities that are not met by the standard products.



Applications Checklists (cont)

Business Applications Checklist

1. Are any of the capabilities required provided by standard products supporting one or more line-of-business applications? For example:
 - Business acquisition applications
 - Sales and marketing
 - Engineering applications
 - Computer-aided design
 - Computer-aided engineering
 - Mathematical and statistics analysis
 - Supplier management applications
 - Supply chain management
 - Customer relationship management
 - Manufacturing applications
 - Enterprise Resource Planning (ERP) applications
 - Manufacturing execution systems
 - Manufacturing quality
 - Manufacturing process engineering
 - Machine and adaptive control
 - Customer support applications
 - Airline logistics support
 - Maintenance engineering
 - Finance applications
 - People applications
 - Facilities applications
 - Information systems applications
 - Systems engineering
 - Software engineering
 - Web developer tools
 - Integrated development environments
 - Lifecycle categories
 - Functional categories
 - Specialty categories
 - Computer-aided manufacturing
 - e-Business enablement
 - Business process engineering
 - Statistical quality control



Applications Checklists (cont)

2. Describe the process requirements for business application capabilities that are not met by the standard products.

Application Integration Approach Checklist

1. What integration points (business process/activity, application, data, computing environment) are targeted by this architecture?
2. What application integration techniques will be applied (service oriented architecture [SOA], common business objects [ORBs], standard data definitions [STEP, XML, etc], common user interface presentation/desktop)?



Information Management Checklists

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3. Identify audit logs, including:
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 - b. Who can modify the audit logs
 - c. Who can delete the audit logs
 - d. How the audit logs are protected and stored
 - e. Is the user ID obscured in the audit trails?

External Access Considerations Checklist

1. Will the application be used internally only? If not, are you compliant with City external access requirements?



System Management Checklist

1. What is the frequency of software changes that must be distributed?
2. Are multiple software and/or data versions allowed in production?
3. What is the user data backup frequency and expected restore time?
4. What is the system license management strategy?
5. What general system administration tools are required?
6. What specific service administration tools are required?
7. Describe tools or instrumentation that are available that monitor the health and performance of the system.
8. Describe what forms of audit logs are in place to capture system history, particularly after a mishap.
9. Describe the capabilities of the system to dispatch its own error messages to service personnel.



System Engineering/Overall Architecture Checklists

General Checklist

1. What other applications and/or systems require integration with yours?
2. Describe the integration level and strategy with each.
3. How geographically distributed is the user base?
4. What is the strategic importance of this system to other user communities inside or outside the enterprise?
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30. Describe the project planning and analysis approach used on the project.

Processors/Servers/Clients Checklist

1. Describe the client/server Application Architecture.
2. Annotate the pictorial to illustrate where application functionality is executed.

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1. Are functions other than presentation performed on the user device?
2. Describe the data and process help facility being provided.
3. Describe the screen-to-screen navigation technique.
4. Describe how the user navigates between this and other applications.
5. How is this and other applications launched from the user device?
6. Are there any inter-application data and process sharing capabilities? If so, describe what is being shared and by what technique/technology.
7. Describe data volumes being transferred to the client.
8. What are the additional requirements for local data storage to support the application?
9. What are the additional requirements for local software storage/memory to support the application?
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11. Describe how the look-and-feel of your presentation layer compares to the look-and-feel of the other existing applications.
12. Describe to what extent the client needs to support asynchronous and/or synchronous communication.
13. Describe how the presentation layer of the system is separated from other computational or data transfer layers of the system.



System Engineering/Overall Architecture Checklists (cont)

Application Server Checklist

1. Can/do the presentation layer and application layers run on separate processors?
2. Can/do the application layer and data access layer run on separate processors?
3. Can this application be placed on an application server independent of all other applications? If not, explain the dependencies.
4. Can additional parallel application servers be easily added? If so, what is the load balancing mechanism?
5. Has the resource demand generated by the application been measured and what is the value? If so, has the capacity of the planned server been confirmed at the application and aggregate levels?

Data Server Checklist

1. Are there other applications, which must share the data server? If so, identify them and describe the data and data access requirements.
2. Has the resource demand generated by the application been measured and what is the value? If so, has the capacity of the planned server been confirmed at the application and aggregate levels?

COTS (where applicable) Checklist

1. Is the vendor substantial and stable?
2. Will the enterprise receive source code upon demise of the vendor?
3. Is this software configured for the enterprise's usage?
4. Is there any peculiar A&D data or processes that would impede the use of this software?
 - a. Is this software currently available?
5. Has it been used/demonstrated for volume/availability/service-level requirements similar to those of the enterprise?
 - a. Describe the past financial and market share history of the vendor.



System Engineering/Methods & Tools Checklist

1. Do metrics exist for the current way of doing business?
2. Has the system owner created evaluation criteria that will be used to guide the project? Describe how the evaluation criteria will be used.
3. Has research of existing architectures been done to leverage existing work? Describe the method used to discover and understand. Will the architectures be integrated? If so, explain the method that will be used.
4. Describe the methods that will be used on the project:
 - For defining business strategies
 - For defining areas in need of improvement
 - For defining baseline and target business processes
 - For defining transition processes
 - For managing the project
 - For team communication
 - For knowledge management, change management, and configuration management
 - For software development
 - For referencing standards and statements of direction
 - For quality assurance of deliverables
 - For design reviews and deliverable acceptance
 - For capturing metrics
5. Are the methods documented and distributed to each team member?
6. To what extent are team members familiar with these methods?
7. What processes are in place to ensure compliance with the methods?
8. Describe the infrastructure that is in place to support the use of the methods through the end of the project and anticipated releases.
 - How is consultation and trouble-shooting provided?
 - How is training coordinated?
 - How are changes and enhancements incorporated and cascaded?
 - How are lessons learned captured and communicated?
9. What tools are being used on the project? (Specify versions and platforms). To what extent are team members familiar with these tools?
10. Describe the infrastructure that is in place to support the use of the tools through the end of the project and anticipated releases?
 - How is consultation and trouble-shooting provided?
 - How is training coordinated?
 - How are changes and enhancements incorporated and cascaded?
 - How are lessons learned captured and communicated?
11. Describe how the project will promote the re-use of its deliverables and deliverable content.
12. Will the architecture designs "live" after the project has been implemented? Describe the method that will be used to incorporate changes back into the architecture designs.



System Engineering/Methods & Tools Checklist (cont)

13. Were the current processes defined?
14. Were issues documented, rated, and associated to current processes? If not, how do you know you are fixing something that is broken?
15. Were existing/planned process improvement activities identified and associated to current processes? If not, how do you know this activity is not in conflict with or redundant to other Statements of Work?
16. Do you have current metrics? Do you have forecasted metrics? If not, how do you know you are improving something?
17. What processes will you put in place to gather, evaluate, and report metrics?
18. What impacts will the new design have on existing business processes, organizations, and information systems? Have they been documented and shared with the owners?



Statements



Statements

Integration

- Integration should be handled using a service oriented architecture (SOA) approach that meets the following criteria:
- Integration is performed via services designed to mirror real-world business activities, including business processes and services.
- Service representation utilizes business descriptions to provide context (i.e., business process, goal, rule, policy, service interface, and service component) and implements services using service orchestration.
- Designed and implemented using open standards
- Designed and developed in accordance with the Enterprise Architecture Principles
- Designed and developed in accordance with enterprise IT's Information Security Standards and Policies

Documentation

- All components of the solution should be documented using The Open Group Architecture Framework (TOGAF) 9.1 Content Metamodel. This includes but is not limited to:
- **Actors:** Any person, organization, or system that is outside the consideration of the architecture model, but interacts with it.
- **Application Components:** Any encapsulation of application functionality that is aligned to implementation structuring.
- **Business Capabilities:** Any ability that an organization, person, or system possesses.
- **Business Services:** Business services support business capabilities through an explicitly defined interface and is explicitly governed by an organization.
- **Data Entities:** Any encapsulation of data that is recognized by a business domain expert as a discrete concept. Data entities can be tied to applications, repositories, and services and may be structured according to implementation considerations.
- **Functions:** Functions deliver business capabilities closely aligned to an organization, but not explicitly governed by the organization.
- **Information System Service:** The automated elements of a business service. An information system service may deliver or support part or all of one or more business services.
- **Organization Units:** Any self-contained unit of resources with goals, objectives, and measures. Organization units may include external parties and business partner organizations.
- **Platform Services:** Any technical capability required to provide enabling infrastructure that supports the delivery of applications.
- **Roles:** An actor assumes a role to perform a task.
- **Technology Components:** Any encapsulation of technology infrastructure that represents a class of technology product or specific technology product.