Appendix

ACE Continual Improvement Framework Overview

Step 1: Establish the governance, teams, and responsibilities: Team members include ACE in-the-large governance with portfolio responsibilities and in-the-small teams with specific Interaction improvement responsibilities. Together the teams carry out the following steps.

Step 2: Create ACE Structure and model: Use the enterprise modeling notation and patterns to create represent the as-is ACE structure of the business, related BioS goals, Interactions, and Roles. For each Request-Interaction type, create as-is (work products A-F) with metrics attributes gathered from existing sources (strategic plan, response times, help desk reports, project time cards, and financial reports).

Step 3: Co-Engineering loop:

Plan: Apply Co-engineering principles and analysis to identify the to-be enhancements for Interactions, infrastructure Roles, and the related attributes.

Execute: Develop, deploy, and execute the service improvements.

Monitor: Collect metrics (such as cycle time, throughput, and resource use) and use traceability to synthesize as performance attributes of the ACE Goals. Use ACE to see if the desired Interaction improvements are achieved to impact BioS goals.

Analyze: Define project details to reflect the specifics of the next increment of Interaction improvements. Based on cost and value to the business, prioritize across Interactions to develop a roadmap for achieving to-be BioS goals. Maintain the ACE structure as the traceability and rationale for the portfolio of services and portfolio of the related projects.

CREATING THE ACE STRUCTURE FOR CONTINUOUS IMPROVEMENT

The strategy for service improvement is in context based on the Co-engineering BioS. That is we improve Business through supporting an Information infrastructure that enables Operations to deliver on Strategy. The steps to develop these overall relationships are given next. These steps are based on the questions that follow and the filled templates for each organization and sub-organization.

Develop Organizations' BioS profiles. Fill BioS template by answering questions that document the business, information services, operational services, and service strategy of the customer Organizations. This methodology also allows us to follow the Gartner approach of categorizing the core ingredients of IT strategy under 1) Business, 2) Application, 2) Infrastructure, 4) Architecture, 5) People and 6) Financial when developing a "Common Requirements Vision". Teams (with account managers, in-the-large and in-the-small architects involved) complete the template from existing documents (e.g. using the existing Strategic Plan, Organizational charts, and enterprise documents, etc.). Review the BioS with the organizations.

Develop strategic plan. Develop the ACE structure associating the existing and missing services to the goals with as-is performance attributes as identified in the BioS. Co-engineer to develop the to-be attributes of Interactions and consolidate as needed to develop the Organization's strategy as a portfolio of projects for addressing customer's prioritized request servicing needs.

BUSINESS

Performance:

What measures do you regularly report to the Finance Organization for presentations? How does you and your team internally evaluate the performance of your Organization? Can you provide two or three of your key performance measures? What are your annual performance *improvement* targets? How difficult is it to implement performance measures?

Resources:

In which of your priority services or products do you see resource (budget, human) shortfalls (See Strategy Section below)? How many employees do you have? About how many employees do you plan to need in three years? Five years?

INFORMATION and INFRASTRUCUTRE (Team level questions)

Available and missing systems: (To be filled in before the interview process.)

What systems do you use? What software systems are missing? --What are the three most critical sources or pieces of information needed for your Organization to function? -List features or information that you would like to see put on the City's Website and/or intranet to help you achieve your mission. --Identify useful ways to present information to your customers (like

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GIS). Interoperability needs? --Can you give examples of information-reporting requirements that take time away from focusing on your mission? Who requires this information? --Do you readily have the information to write effective funding proposals or to make the case to extend existing funding? --What three to five pieces of information are you frequently asked to provide on short notice? Who usually requests this information and why? --Do your employees do multiple tasks that require them to use multiple systems or multiple sources of information? What kinds of tasks are these?

Ongoing IT projects: List. **Infrastructure Services:** What other critical infrastructure do you rely on?

IT Feedback: Value of IT?--Has the quality IT services increased, decreased or remained the same over the last, one, three, and five years? -Does the existing Charge-Back Model help you understand what benefits and value you are receiving from IT? How do you interface and plan with ORGANIZATION for upgrades and new initiatives of your Dept.? Name three things that Information Technology is doing well for your Organization? Name three areas in which Information Technology needs to improve?

OPERATIONS (Team level questions)

Requests, Interactions and Priorities: (Some of this can be obtained from the strategy document.) What types of requests do you handle? What are the volumes of each? What resources are dedicated to each type of request? Provide the average time and throughput for each type of request. Identify three highest priority requests. What are the top three information issues in delivering or developing those priority services or products? What do you see as the three to five types of requests that take up the most time in your Organization? Is there any additional information that would significantly help speed up the most time-consuming jobs?

Use of information for process service transactions: What systems do you use to capture the requirements, execute and deliver on each type of request? Is there any additional information that would significantly help you produce or deliver you most critical products or services? Do any of those time-consuming jobs interfere with your ability to produce or deliver your most critical products or services?

STRATEGY (Manager level questions)

Goals: How do you define the mission of your Organization? How does that mission advance the strategic priorities and overall mission of the Organization? What are three specific strategies or priorities and corresponding "strategic activities" for this year for your Organization? How do you view your role? How do you further the goals?

Customers and Products (and Services): Who do you consider your "customers" (citizens, industries and other City Organizations) and what goods or services do you provide for them? What are the three to five services or products that are the priority for your agency at this time? Are these goods or services bundled with, or part of goods and services of any other Organization? Which ones?

Forces – Competition, Substitutes, Compliance: Is there private, public or internal competition for these goods and services? If so, who is it? What environmental (political, legal, economic, regulatory) factors affect the way you operate or do business? Are there any boundaries, regulations, or management constraints or desires on how your Organization operates? What trends do you see in your customer base or environment that are likely to affect your Organization?

Strength, Weakness: How would you characterize your Organization – growing, containing cost, becoming more competitive, transforming etc.? What is your plan to provide more services with fewer resources? How do you intend to become more agile and adaptive to customer needs? What are the three to five internal strengths of your Organization? What are the three to five internal weaknesses of your Organization?

Suppliers: Who do you consider your "suppliers" (all of citizens, industries, other Government agencies, and other City Organizations) and what goods and services do you get from them?

IT Strategy Planning: Do you do a formal justification analysis when requesting funds for continuing or new programs? What information goes into the costs and the performance measures used in this justification? How do you plan for capital needs? What is your process for long term (3-5 year) strategic planning? Is this process documented? **Other:** Please list any additional comments you have.

Organization:. Manager/Director(s): Organization Account Manager: Contributors:		
Business dimension:		
Revenue:		
Budget:		
Resources:		
Performance:		
Other sources:		
Assessment Questions Score* (*1.0 = not started to 5.0 = perfection (Source: Gartner)) 1 People 1 Human Resources: We have the right skills and teams in place? 2 Organization: Our organizational structure is the most appropriate to deliver our services? 3 Client Relationships: A strong relationship of trust and respect exists with IT?		
Information and infrastructure dimension:		**Avail.?**
IT services		
Vendor services:		
Other dept. services:		

Other Facilities and Assets:		

IT Status and Feedback:

Projects on-going:	
Feedback:	

Assessment Questions   Score

2   Financial

   1   IT Governance: We have clarity about who makes decisions?

   2   Performance Metrics: Scorecards measure and report performance against the critical success factors?

   3   Budgets   Quality of budget process and charges for services?

3   1   Information Management: Timely information is available and of the right quality?   _____

4   1   Application Strategy:

   2   Business Application Systems: All major systems support the business strategy explicitly? _____

   3   Personal Productivity: The right tools are in the place to get the job done?   _____

5   Infrastructure

   1   Service Management: Internal IT processes conform to a recognized quality framework - for example, ITIL?   _____

   2   Technology Environment: Reliable and cost-effective? _____

   3   Asset Management: Our IT resources are well managed?   _____

Operations dimension:

Request type (pri-oritized)	Through-put (avg. # per month)	FTE	Requirements using:	Execution using:	Delivery using:
Teams/Sub-units					

6: Innovation: New opportunities identified and implemented?

Strategy dimension:

Goals:	
Customers:	
Products | Services:	

Forces: Competition, Substitutes, Customer and Supplier Trends:	

Assessment Questions   Score*
 	
 6   Business and IT Strategies
 	
     1   Business Strategy: We are clear about the business strategy?   _____
 	
     2 IT Strategy: Our IT strategy is clear to all, and the value contribution is recognized. _____	

Strengths | weakness:	
Compliance:	
IT Strategy Planning:	
Other comments:	
IT Assessment: of Architecture 1 Architecture Framework: We have a well-defined and stable architectural plan. _____ 2 Progress Achieved: We are getting progressively closer to our desired architecture each year? _____ Total Assessment Questions Score:	

The above questionnaire leads to complete interaction detail as follows:

Strategy	Business	Operation		Triage	Infrastructure use			
Request type and goal	Priority and Value to business	Request volume per month	FTE	Assigned to	Require-ments	Execu-tion	Delivery	Missing Roles
Routine: Payment status > satisfaction	Medium	50	1	Accounts payable	Clerk checks		Posted status info	On-line access to status Doc manag'mt.
Non Routine: Obtain/ex-pand water service Hydrant usage > safety	Very high	700	6	Sales office	Staff works from platt drawings supplied by developer			Automatic-permits Request capture And doc manag'mt.

and also leads to the following work products and associations between them:

A: Request strategy catalog consisting of Request types, deliverables, and strategy goals: These identify the business customer-facing items in a service catalog and goals.

C: RED, Roles Sets, and SLs: for each Request type, the as-is/to-be Interaction service levels, the RED metrics, and the Role Sets and Roles needed to achieve the service.

E: Roles and OLs: A catalog of Roles and OLs needed across all REDs.

F: Agents and Skills: These define what is available to fill Roles as resources.

From these individual catalogs we can create the following work products leading to a set of priorities and rules:

B: Request Priorities and Project Portfolio: This defines the relative value of each Request type to the business which is the basis for focusing improvement resources to achieve to-be service levels. The gaps between the to-be and as-is along with the relative value of fixing the Interactions and underlying Agents forms the project portfolio. The project portfolio consolidates across Interactions based on the costs, value, and scope of Agent improvements.

C: Request Triage rules for incoming Request classification and resource assignment.

Request Triage Rules						
Request Classification			**Routing to complete Interactions based on Interaction, Process and Product Characteristics.**			
Request type	**Quantity**	**Configuration**	**PC Install Interaction**	**Site survey Interaction**	**Approval Interaction**	**Assembly & Image Interaction**
Routine	Less than 10	Standard	Required	Known	Not required (i.e. net new)	Standard image
Not routine	Less than 10	Standard	Required	Unknown–Cabling not required	Not required (i.e. net new)	Standard image
Not routine	Less than 10	Standard	Required	Unknown–Cabling required	Required	Standard image
Not routine	More than 10	Not Standard	Required	Unknown–Cabling not required	Required	Standard image

EA DOCUMENTATION

The overall objective of the next EA template is to capture experience and create related knowledge for re-use. The governance processes to facilitate this must be implemented as identified in Chapter 3. As mentioned earlier, this template can apply to a continuum of needs:

*   For the documentation of a *specific project*
*   For the documentation of a *domain-specific case*, that is a specific application of a very generic pattern (e.g. broker) applied to a solve a range of problems in a particular domain (e.g. triage applied to operations).
*   For the documentation of a widely applicable pattern of *problem solving* (e.g. broker pattern).

Template fields for EA Business, Information use, Operations, and Strategy Goals:

Strategy Dimension: Competitive perspective

Example: A real world business challenge demonstrating the existence of the problem and a need for the new service or service enhancement.

Context goals: The business situations and goals to which the service may contribute value. What is the fundamental customer satisfaction goal and competitive reason for this service? What is the primary Interaction that will use this service? What are the other Interactions that could use this service?

Business Dimension: Business growth and sustaining perspective

Problem: The business problem addressed in terms of the impediment to the value contribution of the Interaction. Any other relevant details.

Consequences: The benefits the enhanced service provides and any potential liabilities.

Business Performance goals: Value due to the enhanced service? Cost-benefit discussion (e.g. hardware software, investments versus payback). Have all software licenses been paid for?

Operations Dimension: High-level functional flow

Structure: A conceptual specification of the functional and structural aspects underlying the service Interaction. A typical representation is a high level business process flow or package diagrams (for example in SSL). Does the diagram provide a conceptual overview of the system (or proposed solution)? Are all external entities (systems

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and actors) that interact directly with the system captured in the diagram? Are all the boundaries of the candidate system understood? Does the work product capture the information exchanged between the candidate system and the external entities? Have all relevant interface details been captured? (e.g. input/output, format, frequency) Has the document been reviewed with business users and external system owners (end users and/or domain experts) to verify the system's external Interactions?

Solution: The fundamental solution principles or patterns underlying the service. Were any guiding principles used to arrive at architectural decisions? Examples include identifying a Reference Architecture, Reference Implementation, or Architectural patterns (MVC, n-tier, etc.), design principles, industry standard frameworks/packages.

Analysis: Examples of impact such as side-effects, impact to existing systems, interoperability requirements etc. How did the classic tradeoffs impact the architectural decisions? Examples of classic tradeoffs are: throughput vs. response time, availability vs. backup window, disaster recovery vs. cost.

Operational Performance Goals: Service level requirements such as increased throughput, high availability, reduced resource needs, etc.

Known Uses: Other examples of the underlying pattern in existing systems.

IT Use Dimension: Execution (User/Worker) dimension: Use Cases

Dynamics: Typical scenarios describing the runtime behavior from the business-user perspective. Identify any collaboration and knowledge management use cases. Has the user interface design been documented? For example, with prototype, screen shots, etc. Do the Interaction s between the user and the system meet the users' expectations? Navigation - Have the main flow of navigating between screens/pages/windows/etc. been captured and documented? Window Layouts - Is there a common/consistent "look and feel" from one screen/window/page/etc. to the next? Has the project followed User Interface Guidelines that are applicable to this system? Does the system define types of accessibility, such as Internet, VPN, wireless, PDAs, clients, etc.?

Infrastructure Roles and Goals: *End user goals and metrics:* Usability experience, service-level considerations such as response time.

Role services provided to: All the Roles played by the implemented application/service? What are the services provided by this application/ component (or Agent) to other components that are in deployment? For example, what are the services provided by a directory component and where is it used? For example a SSO might be used in many different ways and in many places. A change to this service Role will impact these.

Services used: Are additional enterprise services used by the proposed application captured? For example, e-mail, authentication, backup and recovery, disaster recovery (DR), system management, security, etc

IT Architecture and Goals: Coding and Testing View: This is what the programmer sees and typically uses design patterns as needed. Are all the key business and sup-

porting classes documented? Are all the static relationships between these key classes identified? For example, relationships such as: association, aggregation, inheritance, etc. Are there test scripts for the major stories and scenarios? Were the test scripts for the major stories and scenarios successfully executed? Are the positive and negative values for each scenario documented? Have you documented the test results? Are separate development, test, and production environments in place?

Has change management software to administer and maintain version control been implemented and is it being used? Is segregation of duties being maintained throughout the change life cycle? For example, source code must be accessible to only the responsible development staff; developers must not have update access to the production environment, including libraries and data; migration of code to production must be the responsibility of non-developer support areas, etc. Is access to source code for internally developed or commercially purchased software limited to those personnel responsible for distribution, maintenance, and management of the software?

Logical View: Document the BB services and relationships, including libraries, application programs, databases, etc. A typical representation is package diagrams. Have all the major architectural components of the system that have or can influence the architecture decisions been captured in the logical architecture? Does the logical architecture capture components such as data repositories used by the system, etc.? Is it possible to trace the major transactional flows in the system using the logical architecture diagram? Are all technology areas and impacted solutions depicted in the logical end-to-end diagram? Does the solution use the enterprise BBs standards such as the directory solution? Are the exceptions recorded?

Data and Integration View: In the logical data model, have all business groupings been identified? (e.g., persons, places, items, concepts and events related to the business needs of the application). Have all the relationships between business groupings been documented? Do the relationships between business groupings show cardinality? Do all the business groupings identified have a name and attributes? Have all the attributes that could serve as unique identifiers been captured? Does the supporting text capture definitions for all business groupings and attributes? Is a standard glossary used where available?

Does the logical architecture capture the mode of information flow between the architecture components and the external systems? Are all the messaging that takes place in order to send or receive information through a common interface been documented? (Bus, data source, XML standards etc…)

Physical View: Aspects of deployment such as servers, routers, workstations, firewalls. Does the diagram representing the physical architecture of the system include the hardware, software and network connectivity, etc.? Does the solution support the TCP / IP standard stack? Are the protocols required by the solution documented? Will the solution use local attached storage; network attached storage, or frame-based storage?

Deployment View: This is how the packaged code will be deployed and managed in operation. This includes a mapping from the logical view to the physical view. A typical

representation is using deployment packages. Is there a documented code migration process? How is a code fix produced? How is code promoted into production? How is code demoted from production? Does it map the standard code migration process or are there any deviations?

Has a Deployment Plan been created? Does the deployment plan contain installation steps for all components? Does the deployment plan contain tests to verify that the installation was successful? Does the deployment plan contain tests to verify that the installed system functions properly? Does the deployment plan indicate a back out procedure (i.e., the full scope of back out such as application code, networks, hardware. software, etc.) to back out the changes both immediately (upon installation) and at a later date (after the system has been in production for a number of hours/days)? Does the System Deployment plan cover installation of all system dependent components including (but not limited to) hardware, operating systems, purchased software (from a software vendor), customization necessary for purchased software, and the application?

Have all the configuration items including software and hardware assets been identified (i.e. hardware/software versions, operating system, applications, middleware, settings, drivers, etc.)? Does this address the non-functional requirements of the system, such as availability, disaster recovery, etc.?

Does the deployment plan include training for Users, Help Desk, Operations, etc.? Does the deployment plan contain the escalation procedures?

Does the deployment model reflect the severs, networks, switches, firewalls, etc., for an end-to-end component view? Are all technology areas and impacted solutions depicted in the logical end-to-end diagram? Are single points of failure documented for the end-to-end solution? Does it include all in-scope components / devices and associated risks and mitigation plans? If the solution has a client requirement, does it support a thin or thick client? Will client software need to be loaded? If the solution uses a Java Runtime environment (JRE) which version will be used? Is this version interoperable with the enterprise infrastructure? Will the solution support the standard operating systems? Will the solution support the approved Security templates for servers?

Concurrency View: When a complex system is deployed onto one or more computational resources, this view is needed to reason about the communication and sharing of data later in the Service Level analysis section that follows. Does the model show all the physical nodes? Nodes can include: application server node, directory node, web server node, database server node, etc. Is there a detailed description of each physical node being built, including geographical location, software components, hardware (capacity, CPU, etc.), etc. Does your model represent connectivity information between nodes (i.e. WAN, LAN, Intranet, ISP's, etc)? Is there detailed information on the connections? Such as: ports, protocols, etc.

Code Management View: Configuration management, release management, backup and recovery procedures. Has a formal change management process for making changes to the application and infrastructure (i.e., operating system upgrades/patches) been implemented?

Are change Requests documented? Are change Requests approved by the user and prioritized? Are change Requests tested (e.g., users, IT application areas)? Are change Requests approved (e.g., users, IT application areas) prior to implementation to production?

Does a complete audit trail exist for changes (i.e., can trace change in production back to each key control in the process)? Have procedures for emergency access by developers to production systems been developed, implemented, and tested?

Security View: A) Authentication, authorization, directory services B) Detect, resist, and mitigate C) Logging. Are user security administration procedures in place? Are the functions of access administration and access approval segregated? Are user access Requests documented and approved by user/systems management? Is a periodic review performed to ensure access remains commensurate with job responsibilities (i.e., terminations and transfers)? Are access violations logged, reviewed, and a follow-up performed? Are Special Case IDs utilized? Were alternatives researched, and was it determined that a Special Case ID is the only viable solution? Is an ID Guardian assigned to each Special Case ID?

Have controls been incorporated into the application to help ensure the integrity of system data? Based on the value and sensitivity of the information being protected, are encryption systems and techniques being used, and do they comply with the enterprise framework? Have appropriate controls been incorporated into the application (and interface processing) to ensure the complete processing of data transferred between systems (batch or real time)? Have controls been implemented to ensure that transactions are not "lost" in transit? Are header/trailer records, or similar file integrity checks, being utilized? Are date checks, date and time stamps, and/or error messages/alerts being used? Have edit checks such as reasonableness checks and field validity, balancing routines, management oversight, etc., been incorporated? Are procedures in place to log and resolve abend/production problem/response time issues in a timely manner? Does an audit trail exist indicating who changed the data, and when (date/time stamp)? Is a periodic comparison and/or verification of the database totals to an independent source being performed to ensure data integrity? Has the application's Systems Recovery Plan, which includes supporting infrastructure components, been documented? Has the Plan been tested and updated (based on the enterprise standards)?

Is there a single authentication process for all users to access the system (there are no back doors to the system)? Is all access to backend systems and databases driven by a well defined authorization schema? Are all attempts to access business sensitive resources logged (audit trail)? Is it possible to easily track all access failures so they can be isolated and investigated?

Are intrusion detection systems in place to monitor system access? If applicable, have all firewall ports and protocols been documented (These must be documented in a secure, highly confidential manner)? Has application/data security been implemented to support user Roles and/or privileges? Have application users been granted only the access they require to perform their job responsibilities? Have infrastructure users

(i.e., operating system support) been granted only the access they require to perform their job responsibilities?

Have administrative users (i.e., system administrators, database administrators, etc.) been granted only the access they require to perform their job responsibilities? Are users assigned unique user ID's for accessing the application, infrastructure, and data? Does the software that is loaded to workstations, servers, and other computing equipment comply with information security configuration resources, where enterprise has provided such a resource (e.g., Security templates - Windows 2000, UNIX, IIS, etc.)?

Is all access to backend systems and databases driven by a well defined authorization schema? Are all attempts to access business sensitive resources logged (audit trail)?

Is it possible to easily track all access failures so they can be isolated and investigated?

Are intrusion detection systems in place to monitor system access? If applicable, have all firewall ports and protocols been documented (These must be documented in a secure, highly confidential manner)?

Template fields for Operations

Operational View: The specific ways in which operational process (e.g. ITIL support processes) will be supported and how. Have incident, problem and change management processes and procedures been documented to support the solution (I.e. ITIL)? Are the key contacts indicated in the deployment plan for questions before the installation, during installation and after installation? Does the deployment plan contain the escalation procedures? Does the deployment plan include training for Users, Customer Service Center, Operations, etc.? If so, have Users, Customer Service Center, Operations, etc., accepted and signed-off on the training plan?

Has a Request for change (RFC) been Requested and approved? Has an Operations Manual been created? If you have updated an existing Operations Manual, are there any deviations? Has all your SLA performance information been documented? Is it documented in the operations manual?

If your application is responsible for a nightly/weekly/monthly flow of information, have you documented all systems, timeframes, implications involved in that flow of information in the operations manual? Have you identified/documented those components that will need to be backed up (including how often and when) in the operations manual? If your processes have procedures for re-run and/or restart capabilities, have they been documented for both manual and automated startup/restart procedures in the operations manual?

What is the system's expected availability window (i.e. how many hours per day/week is the system to be up and available for use)? Has this been documented in the operations manual and communicated? How long will it take to switch from a primary component/system to a backup component/system? Is it documented in the operations manual? Is the tolerable downtime for the system known and considered an acceptable

best practice? Is it documented in the operations manual? Are system components easily upgradeable/ patchable? Have all Roles and responsibilities for vendor, application and infrastructure support areas been documented? Has the impact of failures for one or many application and infrastructure components been analyzed and mitigations documented? Have the data center facilities been documented (I.e. grid locations, power, cooling, etc.)? Has the IP addresses been documented (These must be documented in a secure, highly confidential manner)?

Infrastructure Management View: This includes Administration, Capacity Management, and Disaster Recovery. Are procedures in place for performing application, data, and infrastructure backups with the backup media being retained off-site to facilitate restoration within the recovery windows? Are the backup media rotated off-site to an approved facility? Are errors encountered in the backup process identified and resolved?

Is there a Disaster Recovery Plan (Backup, Recovery, Hot-site, Hardware replacement plan) for the system? If so, please provide the DR plan. Does the Disaster Plan cover installation of all system dependent components including (but not limited to) hardware, operating systems, purchased software (from a software vendor), customization necessary for purchased software, and the application? Does the Disaster Plan cover procedures to restore data and system specific parameters (i.e., passwords and server instance specific variables)? Can this system be installed at a hot site based upon the contents of the Disaster Recovery plan? Has the DR plan been tested? Is there a single authentication process for all users to access the system (there are no back doors to the system)? Does the DR requirements document recoverability expectations between data centers (i.e., RPO, RTO, manual, automated, etc.)? Does the DR option selected map to the Reference Architecture or is it a custom solution? Will standard or custom ITSM processes, such as change, problem, incident, configuration, etc., be used? Does the requirement specify any special requirements beyond basic server/network monitoring, such as processes, transactions, scripts, etc.?

Do the capacity requirements include growth and load for the overall number of users, maximum concurrent users, number/type of transactions, peak transactions, etc.? How does the future capacity compare with current capacity?

Scalability and Performance View: An analysis of peak capacity needed, growth rates, etc. Has the project documented the Non-Functional requirements (the "What" not the "How") of the system? For example, system availability, performance expectations, capacity requirements, disaster recovery, etc. Does the expected availability reflect business hour availability, scheduled maintenance windows, time of day, day of the week, etc.? Do the performance expectations reflect response time for key transactions?

What are the normal quantities of information (traffic) flowing through the system? What level of traffic would be considered abnormal? Have these numbers been documented (i.e. number of concurrent users, number of web site hits, number of batch jobs run, etc.)? Does the failover / redundancy include expectations for components within the data center (i.e., clustering, load balancing, etc.)? Do the scalability requirements describe how the system will handle growth?

Availability Analysis: A definition of availability and the impact on resources. Is system availability monitored to ensure high availability and overall systems availability? If so, what monitoring tools and processes are in place? Are the tools and processes that are in place able to measure system performance to provide an "early warning" of potential failures of the system and it's components? Are all key components within the system monitored and proactive management techniques in place to insure optimum service levels?

Are application errors in key components trapped and corrected automatically when practical? Is the application constructed with the appropriate instrumentation to allow for the monitoring of the performance of each component to measure the End User Response time? Who will be responsible for the repair of system components (including network, software and hardware components)? Has this been documented?

System Management – Monitoring and Analysis: Business continuity, disaster recovery, monitoring, and reporting. Does the system management requirement support the end-to-end solution?

Are impact statements documented for the technology areas used (i.e., server, network, database, web hosting, etc.?

Will the solution require system monitoring capabilities above the standard server and network environments? Are these additional monitoring capabilities documented (i.e. J2EE process monitoring, business transaction monitoring, etc.)? Do the system management tools and alerts support the end-to-end solution? Has a system management structure been documented to include layers to be monitored, tools, and any customization (i.e. network layer, server layer, application layer, etc.)?

Does the documentation describe how storage capacity was derived? Does WAN or LAN network capacity need to be added? Does the documentation describe how the network capacity was derived? Does the solution describe how code/new software will be migrated to production (i.e. test, development, staging, production, system test, unit test, performance test, alpha, beta, etc.)? Has the capacity and performance model been completed? Has the impact to the Customer Service Center and other resources been assessed?

Conformance to Corporate Standards and Guidelines: Document major exceptions from the reference implementations.

Related information

Similar Cases/Patterns: References to patterns that solve similar problems

Related Cases/Patterns: Patterns that help us refine the pattern we are describing.

Variant Cases/Patterns: A brief description of the variants or specializations of the pattern.

Potential Reference Improvements and other Applications: Potential enhancements in the current system or other areas.

Other applicable Best Practice, Standards, Technologies and References: Further information related to the pattern.

Experience: The capture of non-functional tradeoffs related to the above models.