

Systems Services Blueprint

Table of Contents

Systems Service Blueprint.....	1
Introduction	1
Systems Services	2
Systems Management and Required Non-Systems Management Processes	4
Systems Service Blueprint Element	6
Element Description	6
Constructing the Systems Services Blueprint	7
Collection	8
Blueprint Process Functions	8
Organization Functional Review	8
Schedule and Duration.....	8
Tool Availability	8
Construction Cost and Scope	8
Blueprint Byproducts	9
Blueprint Rules.....	9
Confirmed Principles and Rules.....	9
Services Infrastructure	9
Service Level Management	9
Availability	9
Query Capability.....	9
Appendix A – Systems Management Processes and their Interaction	11
Appendix B – Information Technology Principles (A Generic Presentation)	12
Introduction	12
What Are Principles.....	12
General Principles.....	13
Organization and Management Principles.....	14
User Interface Principles	15
Application Principles	16
Data Principles	18
Network Principles	20
IT Process Management Principles	21
Technology Principles	26

Systems Services Blueprint

Systems Service Blueprint

Introduction

The Systems Service Blueprint is a systematic approach at looking at the operations of a Client-Server and/or distributed environment from a Systems Management process viewpoint correlated to the technical environment. This correlation can be labor intensive, but the results are of a nature that allows tight management and accountability of both human and technical resources.

Some consulting firms base a whole study on a similar (but less organized) framework. It tends to be expensive and the results may be placed on a shelf with no further use.

This approach is based on the organization of the blueprint with known factors to the operational (or Infrastructure) environment. The Blueprint will allow an organization to discover:

- ♦ **In its Definition Stage:**
 - Required Principles and Policies that do not exist or need refinement (recommended Principles in their generic form are contained in [Appendix B](#)).



- The components of the enterprise IT Architecture and any omissions or duplication.
- Technical components that is redundant and/or not required.
- Technical components that are missing or require an upgrade.
- Procedures that is missing or inadequate.
- The ability to prioritize systems management processes, workflow groups or workflows (by identifying critical technology that are not managed by process or workflow of at least a defined level of maturity).
- The ability to identify details of organizational (Group, Team and Individual) responsibilities for specific technical products and their management procedures.

- ♦ **At Completion:**
 - The identity of all technical components and/or products into services and service offerings.
 - The information to plan a migration from one technical product to another (identify all affected processes and hardware).
 - Persons responsible for both the procedures and service at its juncture.
 - The ability to tie multiple procedures to workflows and services.
 - Identify those processes that do not support a specific service.
 - The ability to tie a service to multiple procedures (processes, workflows and activities) and responsible individuals, teams and groups.
 - The components to realign organizational components if necessary.
 - The ability to verify operational staffing levels to execute procedures, activities, workflows or processes to individual or groups of services.
 - Determine the cost of supporting each technical component or service by identifying the duration of each support element.
 - Redundant tools and technology to support services.

The Systems Services Blueprint is comprised of the following components:

- ♦ **Systems Services** – Along the y-axis are the services components normally associated with supporting an IT and business environment. The Blueprint categories are loosely based of an Open-System Framework.
- ♦ **Systems Management and Required Non-Systems Management Processes** – Along the x-axis of the Blueprint matrix are all Systems and Non-Systems Management Processes through workflows, activities and procedures. See [Appendix A](#) for a high-level view of the process and their integration.
- ♦ **System Service Blueprint Element** – At the junction of each process component and systems service component is the element that contains management information for that element. The information is normally contained in a database so that information may be correlated.

Systems Services Blueprint

The element normally contains the following information:

- **Service** – The System Service managed. This can be at a product or generic service.
- **Platform** – If necessary for the definition of the service, the hardware and vendor on which the service is located.
- **What** – Process, Workflow Group, Workflow or Procedure that manages the service.
- **Where** – The location of the service if it is contained in multiple locations.
- **Where Done** – The location that the managing Process, Workflow Group, Workflow or Procedure is supported.
- **When** – If the procedure is scheduled (as in a backup), the start day, time and scheduled frequency.
- **Duration** – The duration in hours to execute the procedure.
- **Who** – Who is responsible for the procedure – the individual (preferably title), team and group.
- **Skill** – What skill is required to execute the procedure on a service and its level.

It should be noted that a procedure, activity, workflow or a whole process, depending on the service might manage a service. Further, a process or its components may manage a group of services. Some processes, however, may not manage any services.

Each component is discussed in detail in the following sections.

Systems Services

The Systems Services definition has been organized into the logical components used to provide technology to an enterprise and IT organization. Similar in nature to an open systems blueprint, the systems services contain only those levels that accommodate specific products, be it software or hardware. The Open Systems Blueprint is intended as a guideline for all components to construct a technical architecture. The Systems Services Blueprint considers that a technical architecture is in place. Several of the pure technologies, such as CORBA, Transaction Managers, etc., are not contained in the model. These components may be already contained in a product that has been implemented. See Figure 1 for the model of the Systems Services Blueprint.

The System Services Blueprint contains the following Services.

♦ Applications

- **Applications** – the business applications of an enterprise such as PeopleSoft.
- **Shared Applications** – applications, usually in a desktop environment, installed across the board for day-to-day usage. These may include Microsoft Office 97, Adobe Acrobat, Norton AntiVirus, etc.
- **Development Tools** – Tools used to develop applications such as Visual C++, Shared or Java.
- **Utilities** – products used to enhance the automation of an operations or application environment. These tools can include TME, TSC, Remedy, etc.

♦ Application Enabling Services

- **Presentation Services** – These services contain products that present applications information to the user. Some Presentation Services may be included within an

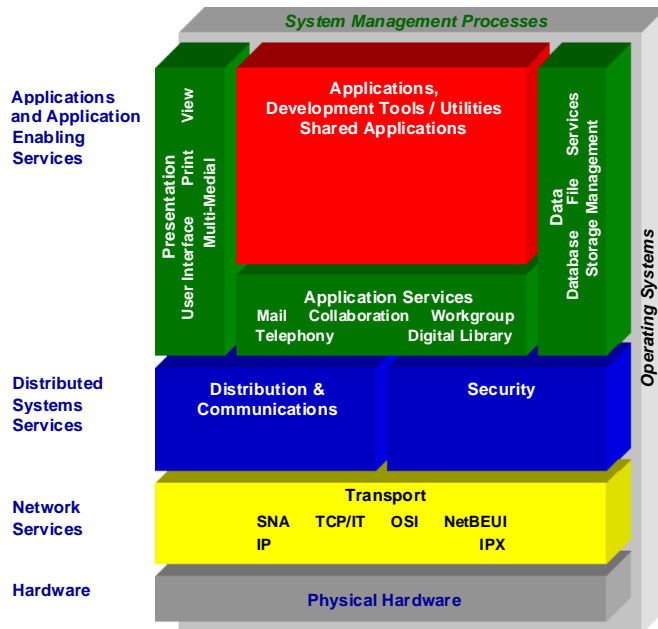


Figure 1 - System Services

- **With What** – What tool is necessary to execute the procedure? The tool may be manual (as in a Word Document) or automated as in a backup utility.

Systems Services Blueprint

operating system that would be duplicated here as processes to enhance support of a user view may have different procedures.

- **User Interface** – these services are those that present application information to the user and may include Windows, Internet Explorer and Application specific (or developed) presentation material.
 - **Print Services** – All products that present information to the user in printed format.
 - **View** – Presentation Services that are generally used to view information not presented in the user interface. Common to the view service is teleconference technology.
 - **Multi-media** – A technology highly used in today's environment, multi-media technology may present application information in graphic (visual) or audio technology. Flash may be considered a multi-media technology.
- **Application Services** – These services are normally those products that are off-the-shelf that enhance applications and also may be used as an application in itself.
 - **Mail** – Email is a service common to many enterprises and is critical to communication. Additionally, email may enhance an application as a notification medium of an event generated by an application. Lotus Notes is one such product.
 - **Collaboration** – Several suites of products can enhance collaboration among individuals, units, groups or divisions. With the ability to receive application information or shared application information, these products enhance the communication of information.
 - **Workgroup** – Products available to inform specific users of an event that action must be taken. Not used in many organizations, these products, however, provide the user with a prioritized to-list of action items either manually entered by another user or generated by an application. An example is event-driven trading where notification of scheduling of electricity may be sent by an action generated by a trade.
 - **Telephony** – This service is included here as new technology can cause a question-response via a telephone inquiry such as requesting a credit card balance.
 - **Digital Library** – Many applications support the retrieval of digitally stored documents such as lease agreements, Counter-party Agreements or Claims.
- **Data Services** – All services requiring data to be presented to applications, updated by applications or received from applications is contained in Data Services.
 - **Database Services** – These are the database products used to contain data for an application, utility or shared application. Typical products are Oracle, Adabase, DB2, Sybase and SQL. This service may be decomposed further, if required, into Relational, Hierarchical or OO Databases depending on the required specialty of support.
 - **File Services** – The service of supplying “flat” file information to or from an application. Most operating systems provide this service, however, others such as NT's File Service (NFS) may be contained in this service.
 - **Storage Management Services** – The service that manages data and its location. Services included in this category are the ESM software (for management) and ADSM (for backup).
 - ♦ **Distributed Systems Services** – Provides the Communication Services and Distribution Services needed by higher-level resource managers to enable the commonly used models of client-to-server and server-to-server distribution.
 - **Distributed Services** - To achieve a seamless, single-system image across a heterogeneous collection of systems, a consistent approach to naming must be established across all resources of the distributed system.
 - **Communication Services** – The Communication Services support three common distribution models. Each service describes how distributed parts of applications or resource managers communicate with one another. They are:

Systems Services Blueprint

- Conversational
- Remote Procedure Call
- Messaging and Queuing

Products normally considered in these services to support distributed systems and communications are normally:

- **ATM (or "fast packet")** – Asynchronous Transfer Mode
- **Dynamic Host Configuration Protocol (DHCP)**
- **Domain Name System (DNS)**
- **Frame Relay**
- **Network Directory Services (NDS)**

- **Security** – Services used to obtain the credentials of the originating user and augment those with credentials for the target server and administer that security. Products normally used with this services are operating systems such as Window NT and NetWare and utilities such as SAAA (Security Authentication, Authorization, and Accounting), Firewall, etc.

- ♦ **Transport Services** – Contains a variety of network protocols for transporting information over both wide area and local area networks. These include:

- **Transmission Control Protocol/Internet Protocol (TCP/IP)** – TCP/IP was developed by DARPA for internetworking and encompasses both network layer and transport layer protocols.
- **Open Systems Interconnection (OSI)** - A model of network architecture and a suite of protocols (a protocol stack) to implement it, developed by ISO in 1978 as a framework for international standards in heterogeneous computer network architecture.
- **NetBIOS Extended User Interface (NetBEUI)** – The network transport protocol used by all of Microsoft's network systems and IBM's LAN Server based systems. NetBEUI is often confused with NetBIOS. NetBIOS is the applications programming interface and NetBEUI is the transport protocol.
- **Internet Packet Exchange (IPX)** – A network layer protocol initially developed at XEROX Corporation and made popular by Novell, Inc. as the basic protocol in its NetWare file server operating system.

- ♦ **Operating Systems** – These services are contained separately as they may require separate support (as a whole) from other services. Obviously, the Operating systems are the backbone of delivering all other services. The Operating Systems are categorized into Server and Desktop.

- **Server Operating Systems** – This category contains all operating systems requiring support on servers. These OS may be:
 - Novell's NetWare
 - NT Terminal Server
 - Hewlett Packard's HP-UX
 - IBM's AIX
 - Sun's Solaris

- **Desktop Operating Systems** – Common to desktop operating systems is Windows NT, Windows 2000 or Linux. These operating systems are listed separately as they may require separate support and procedures.

- ♦ **Hardware** – Hardware is categorized separately as it is obvious of the differing support required. The categories listed below would contain all the differing hardware by vendor for the categories.

- **Distributed Hardware** – Contains both Servers and Desktop Workstations.
- **Network Hardware** - Includes Switches, Routers, Hubs, and the LAN, WAN and Channel (if required) supported hardware.
- **Printers** – Contains the various networked and desktop printers by vendor.

The above detail contains all known categories of services supported by an infrastructure organization. These services, once attached to the support procedures (as defined by Processes, Workflow Groups, Workflows and Actives) are the basis for determining the normalized technical architecture for an enterprise. Along with the support (defined by processes), a consistent cost by service or categories of service may be determined.

Systems Management and Required Non-Systems Management Processes

The following is a list of processes (including their workflow groups and workflows) that are considered critical to the support of the Systems Services. Several of the process definitions are contained in the Principles of Operations for an IT operating environment discussed in [Appendix B](#).

Systems Services Blueprint

Other process definitions are contained in the document "Systems Management and IT Management Process Flow and Interaction" by the author and is currently under construction. The Whitepaper, "[Process Management For an e-Business Environment](#)" contains valuable information on the vision and mechanics of Process Management.

The processes contained in the Systems Services Blueprint to manage Systems Services are as follows:

- **Systems Management Processes** – Are critical to the reliability, stability and streamlining support for a high performance organization. It should be noted that Change Control, Help Desk and Problem Management are Kernel processes to Systems Management. The following processes are listed in alphabetical order. The prioritizing of process improvement is a function of the required service by the business.
 - **Asset Management**
 - Define Requirements
 - Create Asset Information
 - Administer License/Lease
 - **Availability Management**
 - Define Requirements
 - Track Availability
 - Report Availability
 - Improvement Requirements
 - **Backup and Recovery**
 - Define Requirements
 - Perform Backups
 - Perform Recovery
 - Report Performance
 - **Change Control**
 - Plan Change
 - Request Change
 - Business Assessment
 - Technical Assessment
 - Approval & Scheduling
 - Release Management
 - Special Handling
 - Manage Change Control
 - Implement Change
 - Build and Test Change
 - Distribute Release
 - Synchronize and Install Change
 - Backout Change & Recover
 - Close Change & Report
 - **Configuration Management (Versioning)**
 - Define Requirements
 - Create Capability
 - Capture Configuration Information
 - Report Information
 - Analyze and Report
 - **Disaster Recovery Planning**
 - Create and Maintain Plan
 - Create and Maintain Hot-Site
 - Test Plan
 - Implement Plan
 - Move Operations to Hot-Site
 - Transition Operations to Hot-Site
 - **Help Desk/User Support**
 - Receive Request
 - Process Request
 - Manage Request
 - Close Request
 - Monitor Request Process
 - **Performance and Capacity Planning**
 - Define Requirements
 - Collect Performance and Capacity Data
 - Evaluate Usage
 - Recommend Corrective Action
 - Evaluate Planned Implementations
 - Recommend Alternatives
 - Report Performance and Capacity
 - **Platform Operations**
 - Messaging Administration
 - Email Administration
 - Workgroup Administration
 - Intranet Administration
 - Internet Administration
 - Desktop Operations
 - OS Administration
 - Application Administration
 - Hardware Support
 - Server Operations
 - OS Administration
 - Process/Utility Administration
 - Application Administration
 - Print Administration
 - Hardware Support
 - Database Operations
 - Database Administration
 - Performance Monitoring
 - Performance Tuning
 - Data Operations
 - File Administration
 - Migration Administration
 - Disk Administration
 - On-line Storage Administration
 - Network Operations
 - LAN Administration
 - WAN Administration
 - Remote Access Administration
 - Event Monitor Administration
 - Hardware Support
 - **Problem Management**

Systems Services Blueprint

- Critical Problem Detection and Management
- Problem Detection and Analysis
- Interim Fix
- Problem Analysis
- Permanent Fix
- Root Cause Analysis
- Monitor Problem Process
- **Security Management**
 - Analyze Security and Risk
 - Define Security Practices
 - Implement Security
 - Administer Practices
 - Audit Security
- ♦ **Non-Systems Management Processes** – Are those processes that are integral to the management of the organization and project planning? Included in these processes is the process to develop new services. It is not considered part of Systems Management, as the Services must be in a steady state and in a production environment to provide a stable, reliable service. The Non-Systems Management Processes are:
 - **Design and Implement Services**
 - Develop Requirements
 - Define Scope and Requirements
 - Business Analysis
 - Technical Analysis
 - Define Current Environment
 - Define New Environment
 - Requirements Acceptance
 - Design Solution
 - Use Case Model
 - Nonfunctional Requirements
 - Prioritized Requirements
 - Technical Design
 - Engineering Design
 - Acceptance Plan
 - Design Acceptance
 - Construct and Integrate Solution
 - Construct Solution
 - Integrate Solution
 - Package Solution
 - Confirm Integration
 - Test Solution
 - Establish Test Environment
 - Establish Test Plans
 - Unit Test
 - Integration Test
 - Regression Test
 - Stress Test
 - Analyze Test Results
 - Test Problem Management
 - Customer Certification
 - Establish Test Environment
 - Establish Acceptance Test Plan
 - Conduct Acceptance Test
 - Obtain Customer Acceptance
 - **Program Management (Catalyst Defined)**
 - Server Commissioning
 - Prepare Project Start-up
 - Project Definition (SOW Not Required)
 - Project SOW (SOW Required)
 - Project Planning
 - Develop Macro Project Plan
 - Complete Master Plan
 - Complete Macro Dependencies
 - Perform Detailed Project Plan
 - Project Control
 - Collect & Review Data
 - Post Actuals
 - Compute Variances
 - Evaluate Project Status
 - Address Problems
 - Report Status
 - Control Issues & Changes
 - Manage Deliverables
 - Update Plan
 - Project Completion
 - Obtain Project Acceptance
 - Project Closedown
 - Performance Statistics
 - Lessons Learned
 - Risk Management
 - Identify Risks
 - Analyze Risks
 - Mitigation Plan
 - **Resource Management**
 - Roles and Responsibilities
 - Maintain Skill Level
 - Allocate Resources
 - **Service Level Management**
 - Define Service Level Standards
 - Establish Service Level Definition
 - Monitor Service Levels
 - Assess/Report Service Level Attainment

Systems Service Blueprint Element

Element Description

The critical component of the Systems Services Blueprint, the Element contains detailed information of the juncture between Systems Services and the Managing Processes.

Systems Services Blueprint

The element descriptions should be captured in a database so queries concerning all aspects of delivering Systems Services and their support may be obtained. The data elements contained in the Element are:

- **Service** – The System Service managed. This can be at a product or generic service.
- **Platform** – If necessary for the definition of the service, the hardware and vendor on which the service is located.
- **What** – Process, Workflow Group, Workflow or Procedure that manages the service.
- **Where** – The location of the service if it is contained in multiple locations.
- **Where Done** – The location that the managing Process, Workflow Group, Workflow or Procedure is supported.
- **When** – If the procedure is scheduled (as in a backup), the start day, time and scheduled frequency.
- **Duration** – The duration in hours to execute the procedure.
- **Who** – Who is responsible for the procedure – the individual (preferably title), team and group.
- **Skill** – What skill is required to execute the procedure on a service and its level.
- **With What** – What tool is necessary to execute the procedure? The tool may be manual (as in a Word Document) or automated as in a backup utility.

Depending on the needs of the organization, an Element may contain several Systems Services connected to a procedure. Another scenario may be that a single Systems Service may be connected to a workflow or series of workflows. Two examples are:

- ♦ **Backup** – The backup of a critical Oracle database in a financial application that requires a daily backup may be constructed as follows:
 - **Service** – PeopleSoft Oracle Database
 - **Platform** – HP Server PS0201
 - **What** – Oracle Backup Procedure
 - **Where** – Dynegy Corporate
 - **Where Done** – Dynegy Corporate
 - **When** – Weekly, Saturday, 2:00 AM
 - **Duration** – 1.5 Hours.
 - **Who** –
 - Backup Technical Specialist
 - Data & ES Management
 - Technology Infrastructure
 - **Skill** – Backup Technical Specialist 2

- **With What** – ADSM
- ♦ **Problem Support** – To determine the support or plane for Level 3 support of all services, a series of Elements would be created to define the support. These Elements would contain:
 - **Service** – Each service requiring Level 3 support.
 - **Platform** – All Platforms
 - **What** –
 - Procedure – As Needed
 - Activity – Create Permanent Fix
 - Workflow – Permanent Fix
 - Process – Problem Management
 - **Where** – Dynegy Corporate
 - **Where Done** – Dynegy Corporate
 - **When** – As Needed
 - **Duration** – 5 Hours Average (Defined with each Service)
 - **Who** – Defined with each Service
 - Level 3 Support Technician
 - Defined with each Service
 - Defined with each Service
 - **Skill** – Defined with each Service
 - **With What** – Defined with each Service

There are many combinations that may be constructed. The advantage of the Systems Services Blueprint matrix is that each service and process breakdown is defined and priorities can be set accordingly. In an ideal situation, as processes, workflows, activities and procedures are defined, the elements for the predefined services are constructed.

The juncture of critical business services and their support needs can prioritize the procedures, activities, workflows and processes. As stated previously, there are several Kernel processes that are necessary to manage services. These are the Help Desk (or Customer Services), Problem Management and Change Control. Server Commissioning, although critical to the changing environment, is not critical to stable, reliable and consistent support unless the commissioning does not cumulate with the Change Control Process.

Constructing the Systems Services Blueprint

There are several phases to constructing the Systems Services Blueprint Elements. These phases are discussed below.

Systems Services Blueprint

Collection

There may be fewer unique definitions of functionality and performance responsibility than there are services / process combinations (the Element). To minimize unnecessary work, access every opportunity to reduce the number of Elements. This can occur as the matrix is being filled in as duplications occur and it is also done when the matrix is completed. This offers a "concentrated" view of the information gathered.

Combining rows or columns into clusters or nodes at a higher level where common **Whats** and **Services** exist is common. For example, if the hardware, software and application elements for a workstation are the same for a process step, they can be combined into one row, i.e. Workstation. Next columns can be reduced when the neighboring processes are the same. Also, cells that are unnecessary can be combined where they are common. The result is a consolidated matrix that is easier to work with.

Blueprint Process Functions

This phase involves pulling the consolidated functions together to further define the processes, a summary of the **Whats**. This produces an overall statement of process functionality. This helps to define the bounds (or limits) of the process. This also provides a services-wide view of the systems management processes.

The result of this phase is a narrative description of the functions of each process.

Through the combination of the Service and Process matrix to define the Elements, the lack or presence of procedures for that Element is discovered. The procedures are written or collected as needed. A procedure documentation and storage standard is necessary to be able to review for improvement and retrieve as necessary.

Organization Functional Review

In this phase a summary of the Individual, Team and Group (**Who**) is created. It can identify areas with overlapping responsibility, areas where no performers exist and areas where responsibilities are spread across multiple organizational boundaries. One way to represent the information is to develop a matrix with the processes as the rows and the organizational units as the columns. Within

each cell, rate the ability to perform the process by symbols or colors that signify:

- No support available
- Support available but not adequate
- Support in place

This phase can be highly valuable to combine or separate technical functions if they are split or redundant.

Schedule and Duration

As the elements are created, it is valuable to collect the schedule (day, frequency and start time) and duration (average hours a procedure, activity or workflow) an individual or team must adhere to. This information is valuable for several purposes:

- To show the number of hours per week an individual or team spends supporting a service.
- To derive the cost of the service.
- To show excess or deficiency of staff to support a service or group of services.

The ability to quantify this information is very valuable to level resource assignments as well as to accurately predict future resource needs.

Tool Availability

Collecting tool information for each Element provides useful data of the nature of tool utilization within the Infrastructure. This information can be used to:

- Qualify effectiveness of existing tools to support a service.
- Discover duplicate or redundant tools.
- Provide for the definition of the need for a tool (where a manual procedure may be automated).
- Provide for the qualifications of a tool once it is recognized a tool is ineffective or one is needed.

Construction Cost and Scope

The construction of the Blueprint must be based on an assessment of its cost in relation to its expected benefits. The costs, benefits and expected levels of effort for implementing the Blueprint are verified after a selected portion is piloted.

Systems Services Blueprint

The following information is collected during a pilot to assist with the assessment:

- Costs
- Development effort
- Technical Infrastructure
- Implementation
- Operation
- Benefits
- Managed Change

Non-conformance cost savings (amount saved over not implementing solution) is an important factor to the decision to complete the Blueprint. The effect of the following must be considered.

- Service quality
- Service reliability
- Service availability
- Service costs
- Feasibility of achieving results without a Blueprint

It is obvious that a database containing the Elements of the Blueprint is most effective. It not only aid in the collection of the data, it can be a clear mechanism for normalizing the Service / Process matrix. Additionally, it can produce reports to aid in the construction of the matrix as shown above. An important capability is to query the database to obtain support management information.

Blueprint Byproducts

Blueprint Rules

The Blueprint Rules is the explicit attributes of manageability that the Blueprint must exhibit to satisfy the service delivery criteria. The rules are based on Guiding Principles (Examples are shown in [Appendix B](#)). It is necessary to refine the Guiding Principles and establish more specific policies that support must follow to deliver the required service. Developing this set of policies involves reviewing the information and knowledge gathered about the Services and forming manageability objectives that are consistent with the Guiding Principles. Examples of rules are:

- Every Help Desk agent must have the same workstation and application access as the users they support
- There must be common management for all customer focused support roles

- All changes to the production environment (hardware, software, database administration) must follow the Change Control Process.
- All changes will be made on a regularly scheduled basis (Release Management)

Confirmed Principles and Rules

Once the manageability rules are established, review to resolve any inconsistencies and ensure that important principles are covered.

Services Infrastructure

Upon collecting the product and Service information for the Systems Services, the technical infrastructure can be confirmed. This confirmation will show where redundant products are used to deliver a service as well as the “holes” where a Service cannot be delivered. In addition, it may be recognized that a series of products cannot be integrated or may cause conflicts in a particular environment. In most organizations, this is left to an ad-hoc recognition of problems as they occur. This byproduct provides a proactive approach to improving the technical infrastructure.

Service Level Management

Service Level Management is enhanced (once the Service Level Agreement Process is in place) by comparing Services and groups of Services to the Agreements. If Agreements are not in place, the Blueprint can aid in the definition of Services or groups of Services that may be part of an Agreement.

Availability

Availability management of critical resources may be aggregated with the delivery of specific Services and Processes. This approach is valuable in prioritizing the Services and Processes required to deliver critical system availability.

Query Capability

Once the Elements are constructed, many query capabilities are available. There are several examples that follow:

- ♦ **Nucleus Availability** – What processes and who are responsible for the availability of the Nucleus application?

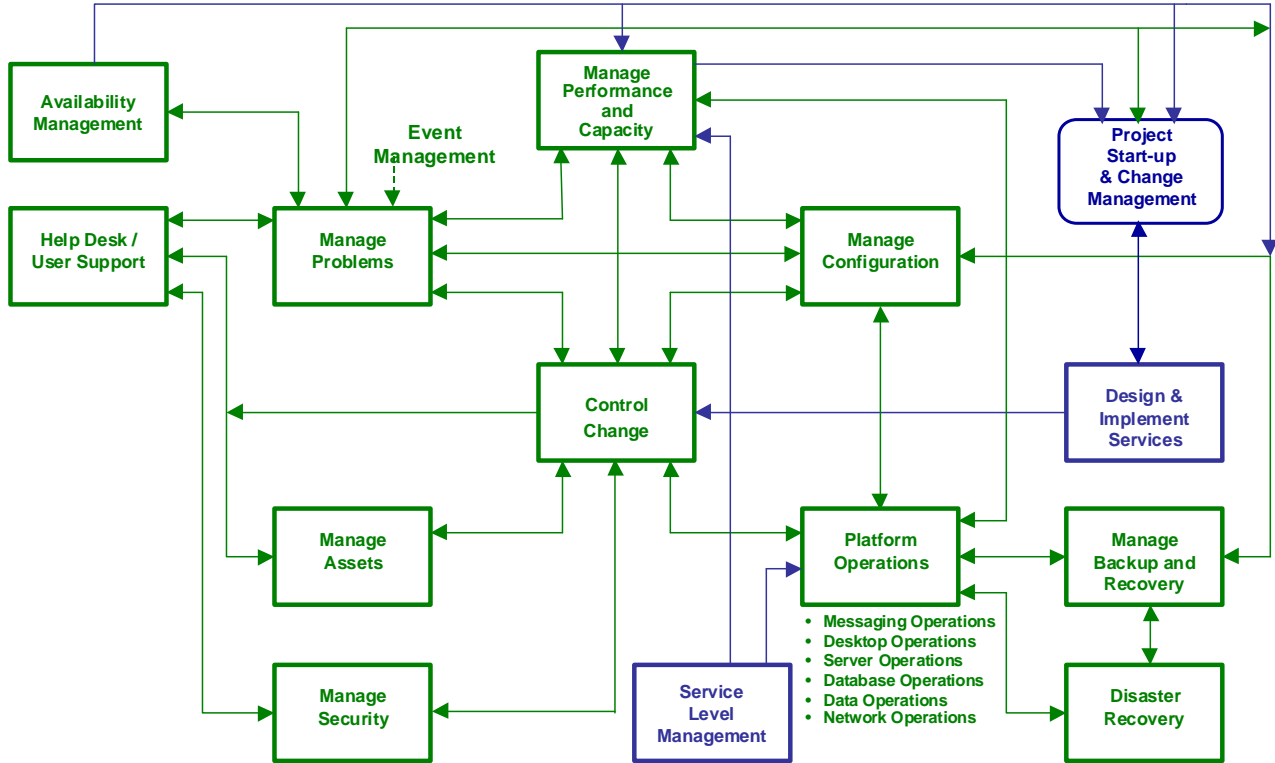
Systems Services Blueprint

- **Staffing** – What is the staffing required for Network Hardware support (hours per week for those procedures within the LAN Administration, WAN Administration Remote Access Administration, Event Monitor Administration Hardware Support activities for all Network Services.
- **Problem Resolution** – Who is responsible for Level 3 Support (Create Permanent Fix) for the 48th floor hub?

Using the data within the elements, most operational support information can be derived. In addition, specific metrics can be associated with each Element to determine Operational Level Availability (a combination of service and process metrics).

Systems Services Blueprint

Appendix A – Systems Management Processes and their Interaction



Systems Services Blueprint

Appendix B – Information Technology Principles (A Generic Presentation)

Introduction

Information Technology (IT) principles are statements of intent or purpose related to the use of IT within a corporation. They reflect a vision of improved ways to use technology to benefit the business. They describe preferred practices to be followed when implementing new or upgraded systems. They provide the foundation upon which an IT organization and architecture model is built. Principles should be based on the needs of the business and on a vision of an improved Information Technology environment within which to develop and operate systems to help meet those business needs.

IT principles relate business and Information Technology requirements in language all managers can understand. Each Principle is supported by documentation of the reason (**Explanation**) for it being included and the effect (**Results**) it will have on future technology or support decisions.

Discussions of principles tend to verge on philosophy. Most people are not too keen on philosophy, and prefer to get on with their duties without worrying too much about universal truths.

However, if you are reading this, you are at the stage of having to define something else which is deserving of the title “principles” i.e. goes beyond simple lists of preferred products, techniques, and other architectures (such as NT, Solaris, or whatever). There needs to be some common threads which help to explain why the environment is the way it is defined and provide a definition for those who enter the environment at a later date. The common threads also provide a basis for modification when necessary. This “something else”, these “common threads”, are the principles.

What Are Principles

The principles are the *underlying general rules* that hold true across the environment. In a certain sense principles define the *spirit* of the environment to be managed in that they are an attempt to capture the thinking behind it. When management systems are built upon a coherent set of principles, they have a *continuity* that they otherwise would not have.

Once established the principles should always be consulted to determine whether proposed changes are consistent with the original principles. If they are not, you might want to consider whether the new material is appropriate. If you are sure it is, you will need to think about what changes are necessary to the principles in order to retain its coherence.

♦ A Good Principle:

- Principle has wide applicability,
- Is durable,
- Has relevance to the systems under development,
- Is not purely a financial or subjective rule,
- Has objective reasons for advancing it

♦ A Poor Principle:

- “Because I say so” - in other words, a “principle” which has no objective justification, or appears to be a purely subjective or irrational choice. Such a principle is poor because it will not command respect and may thus be flaunted. Worse, it may tend to bring the entire set of principles into disrepute.
- One that has little or no general applicability.
- At too low a level, may not be durable.

Systems Services Blueprint

General Principles

Architecture Compliance

All deployment of IT components and processes will conform to the Corporate's IT Architecture.

Architecture Maintenance

The architecture is a living document that should be reviewed periodically and modified as necessary to accommodate changes in business and technology.

Business Needs

Information systems exist to support the needs of the business. The architecture must support the corporate's vision and business and IT strategies and plans.

Business Process Review

A business process improvement review should accompany major automation efforts.

• Explanation

- Maximizes return on automation investment.
- Streamline business processes, reducing cost and cycle time.
- Ensures automation projects will support the new business process rather than merely automating an old process or enabling an ineffective process.

• Results

- Added time and effort required for business process improvement.
- New development techniques, such as rapid application development (RAD) should be evaluated and employed as appropriate to prototype business process enablement to demonstrate technology and business synchronization of expectations.

Leverage Existing Technology and Resources

Business units will utilize Corporate, other business units and vendors in the selection, deployment, and support of information technology. Corporate resources (e.g. WAN) will be preferred when they meet business requirements.

• Explanation

- Leverage existing information technology resources.
- Reduce costs of implementation and support.
- Provide more standard solutions to common problems.
- Corporate IT must demonstrate ability to provide appropriate support to the Business Unit.

• Results

- Roles and responsibilities must be defined.
- Skills must be available.
- Joint planning is required.
- Service level agreements must be developed and managed.

Systems Services Blueprint

Make vs. Buy Decisions

Adequate consideration should be given to hardware and software products available from vendors before a decision is made to build a solution in-house. Factors such as the following should be evaluated:

- Conformance to the architecture
- Functional suitability
- Pertinent legislation
- Applicability across the corporation
- Usability
- Performance
- Reliability
- Installability
- Maintainability
- Extensibility/scalability, e.g., work well across a wide range of system sizes
- Configurations, usage/load
- Documentation quality
- Training
- Price (both purchase and maintenance)

Where a product does not conform to the architecture or otherwise meet these factors, it might be rejected, might be accepted for use only in certain specified locations or systems, or might be accepted but not maintained by the IT organization. The business unit who purchased the non-standard product will support it.

Role of Architecture

The architecture will guide the design, implementation, and management of information technology assets. It will make pragmatic use of proven and IT approved technology and build on existing investments where practical.

Single Corporate Image

IT will facilitate the achievement of the ability to respond as a single corporation in service to each customer.

Transition Management

Transition Management (Organizational Change Management) will be planned into all major application and architecture upgrades as well as acquisition mergers. Transition Management will include business as well as IT personnel as applicable to the upgrade and/or merger.

Use of Standards

To provide the most interoperability among heterogeneous and homogeneous systems that will be used, international, industry and corporation standards will be adopted.

Organization and Management Principles

Business - IT Partnership

A partnership will be cultivated between the various business areas and IT in order to work in concert toward the attainment of the corporation's strategic goals. This will mean building joint team of subject matter experts between the business units and IT organizations for specific projects and resolving specific issues. A Business Sponsor will be assigned to ensure business objectives of projects and/or IT issues are met.

IT vs. Business Unit Responsibility

The IT vision, strategies, and architecture will be aligned with business objectives and strategies, and developed in partnership with the business units as an integral part of the ongoing planning process.

Systems Services Blueprint

- The business units are responsible for clearly defining requirements, prioritizing projects and realizing the anticipated benefits of IT enablement.
- The IT organization is responsible for implementing IT processes and technology to enable IT solutions that meet business defined and prioritized requirements.
- The IT organization will manage the introduction of new technology in reasonable phases, meeting user defined criteria for value delivered and risk assumed. In general, bleeding edge technology will be avoided.

Risk Management

The risks associated with IT will be managed to a level acceptable to the individual business units, through the combined use of selected risk management techniques. The IT organization will define the process by which risk will be avoided.

Skilled IT Staff

A highly trained IT work force, capable of meeting the corporation's strategic demands for IT services, will be owned by the corporation.

Training Responsibility

Those who use, operate, develop, and maintain IT systems will be appropriately trained. Training requirements will be jointly developed at the corporate level and business unit IT and administered appropriately.

User Interface Principles

Consistent, Easy Access

The user interface will provide users with consistent, easy access to all IT applications, data, and services relevant to the business process through a single entry point. In addition, there will be a consistent appearance of all presentation to the user.

♦ Explanation

- Bring the corporation together.
- Reduce operational costs.
- Share resources and staff more effectively.
- Simplify access to business systems (e.g., eliminate duplication, multi-system operations).

♦ Results

- Applications will need to be changed or new applications written to provide each user access to the appropriate data and services.
- Data will need to be restructured and shared to a greater extent.
- User workstations must be capable of supporting the required access through a consistent interface.
- The network must provide access to all relevant systems.

Interface Development Considerations

The major considerations in setting user interface rules will be:

- Standardization to give consistency across applications, thus minimizing training and improving productivity and movement of users between systems.
- Usability, including hiding the complexities of the underlying technology.
- Graphical, Object-oriented.
- Common User Access (CUA), Windows.
- Intuitive and consistent with user's conceptual model.

Systems Services Blueprint

- Flexibility.
- Technology exploiting.

Application Principles

Application Development

All new applications will use the standard, defined methodology and products, including application development languages, compilers and tools. When it is decided that an application is to be developed in-house, the following factors will be considered:

- Conformance to architecture.
- Associated business processes and work flow.
- Structure, e.g., client/server, cooperative processing, distributed processing.
- Communication models, e.g., conversational, remote procedure call, message/queueing.
- Access common data.
- Use of common services.
- Integration with related applications.
- Independence from unrelated applications and from underlying technology.
- Modularization.
- Reusability.
- Portability.
- Flexibility.

Application Ownership

Each application will have a single, documented functional business owner (e.g. the corporate Chief Financial Officer will own the General Ledger). The owner of the application will be responsible for defining and enforcing its security and currency and for working with the owners of the data used by the application and with the users of the application. The owner of the application will also be responsible for defining business requirements (e.g., access, functionality, etc.).

♦ Explanation

- Applications will more closely meet the needs and priorities of business users.
- Provide a focal point for business decisions regarding application functionality, access, and security.

♦ Results

- Application owners will need to be identified and their responsibilities defined and communicated.

Component Reuse

To maximize the potential re-use, application solutions will be assembled from structural components. The preferred method for obtaining application components is to reuse existing application components, to purchase new application components, or to build application components.

♦ Explanation

- Reduce implementation time.
- Reduce cost to employ newer or less costly technology.
- Enhance application quality while reducing development time.
- Reduce the impact of changes in the applications.
- Enhanced adaptability.
- Enable the cost-free sharing of enhancements in standard functional components.

♦ Results

Systems Services Blueprint

- Applications that are considered for purchase need to support data integration and other principles of this architecture.
- Procedures for evaluating applications may need to be updated to ensure key architecture principles are not compromised.
- Ensuring that purchased applications adhere to the architecture may impact the buy versus build economics and limit the number of qualifying applications.
- While life cycle costs will be lower, development costs may be higher.
- Program structure and modularity standards and evaluation criteria need to be developed.
- Some form of repository for housing shareable components will have to be built or purchased.
- An easy means of exploiting existing functional components will have to be purchased or built.
- The application development process may have to be updated.
- Changes to re-used application components will have a broader impact.

Ease of Use

Applications will meet business owner defined requirements for ease of learning, use, and acceptance testing.

♦ Explanation

- Increase user productivity.
- Reduce IT support costs for problem resolution.
- Decrease user-training costs.
- Reduce IT support skill requirements.

♦ Results

- Usability standards and measurement practices will need to be defined.
- User involvement is required during development or acquisition to ensure usability.
- While life cycle costs will be lower, development costs will be higher.
- Guidelines need to be provided to evaluate the quality of applications.
- Standardized end user support and administration capabilities and procedures must be developed and followed.

Modular Components

Application programs, whether purchased or developed internally, will be architected to separate business logic from application logic and provide modular, reusable functionality.

♦ Explanation

- Reduce cost to employ newer or less costly technology.
- Enhance application quality while reducing development time.
- Reduce information technology support costs.
- Reduce the impact of changes in the application.

♦ Results

- Program structure and modularity standards and evaluation criteria need to be developed.
- Standards for consistency must be developed.

Use of Standards

New applications will use the corporate standard interfaces and protocols for data, network, and systems.

♦ Explanation

Systems Services Blueprint

- Minimize the risk introduced by new applications.
- Enable changes in data, network and system interfaces without negatively impacting applications.
- Simplify creating external interfaces, e.g. alliance partners.

♦ Results

- Standard interfaces and protocols covering data, network, and systems need to be selected or defined.
- Future applications, whether purchased or developed, will need to conform.
- As external interface standards are developed, they will need to conform to/consider industry standards.

Data Principles

Data Access

Data will conform to defined data models and common data formats and will be accessed using standard data base and file management facilities.

Data as Corporate Asset

Data is recognized as a key business asset and will be organized and managed to ensure it is available to meet business requirements.

Data Availability

Within sensible cost and performance constraints, the most up-to-date version of data will be made available to users at all times.

Data Capture

All primary data should be captured once at the point of creation, and stored and managed to enable appropriate levels of sharing across the corporation.

♦ Explanation

- Improve data accuracy and integrity.
- Reduce duplication of data and related storage costs.
- Increase workforce effectiveness through reduced re-keying of data.
- Increase staff productivity and morale.
- Increase quality and consistency of business information.
- Reduce data management costs.

♦ Results

- Business rules and processes need to be developed to provide for single point of capture and appropriate data sharing.
- Data will need to be restructured.
- In cases where primary data cannot be consolidated, applications will be required to provide the integrated view.
- Standard interfaces will need to be specified and used to access data.
- Applications may need to be modified.
- New applications will need to use standard data access and management interface.
- Business rules must be developed to identify primary data sources.
- Interfaces may need to be developed to provide access to primary data.

Systems Services Blueprint

Data Security

Customer information will be kept strictly confidential within the policy set by regulatory agencies and Corporate Headquarters.

- ♦ **Explanation**
 - Protection of data as a corporate asset.
 - Ensure compliance with regulatory agencies.
- ♦ **Results**
 - Confidentiality must be preserved as the accessibility for data increased.
 - Training will be necessary for users to maintain their awareness of this principle.

Data Ownership

All primary data will have a single documented owner, who will be responsible for defining rules for its usage and protection.

- ♦ **Explanation**
 - Reduce data redundancy.
 - Increase data accessibility and shareability.
 - Increase data integrity.
 - Reduce data conversion or duplication costs, as new uses are required.
- ♦ **Results**
 - The data administration function will need to more rigorously coordinate data definition and usage across all application development.
 - Primary data will need to be restructured by subject.
 - Business owners of the data will have to be defined and their responsibilities determined.

Data Sharing

Information is a corporate asset and should be captured, stored and managed in a way that will allow appropriate levels of sharing across the corporation.

- ♦ **Explanation**
 - Identify a customer's total relationships within the corporation.
 - Ensure consistent reporting to customers.
 - Improve the relationship among business units and between business units and corporate.
 - Enable multiple business users to access data from a single source.
- ♦ **Results**
 - Valuable data must be identified and rules for its usage and sharing must be established.
 - Regulatory issues with the sharing of data must be considered.
 - Corporate standards for data sharing must be established and adhered to.
 - Decisions on what information is a corporate asset vs. a business unit asset must be made.
 - Upper management awareness of information importance.
 - Funding is an issue, e.g. maintaining business unit customer data in a Corporate Customer Database.
 - Need to establish common methods and practices for data management.

Systems Services Blueprint

Decision Support Access Tools

Timely, accurate, and complete decision support information will be made available to authorized users through standard access tools.

♦ Explanation

- Enable easier customized report development by users.
- Improve profitability and competitiveness through better decision making.
- Empower authorized users through enhanced data access and manipulation capability.
- Increase user support through use of standard access tools

♦ Results

- Business rules must be defined for data access.
- Data must be stored, named, and described in a consistent and user meaningful form.
- Standards for data access will be determined and communicated.
- Standard data access tools will need to be selected and implemented.
- Will require decisions on what volumes of historical data are needed and how to make it available.

Single Source of Operational Data

There will be a single copy of all data (subject databases) used by multiple applications, to simplify maintenance and growth and to improve integrity. New systems will use the common subject databases rather than maintaining their own copies of data. Replication of data is allowed only when it is necessary for performance or other such considerations. If data is replicated, it must be managed.

Network Principles

External Connectivity

The network will facilitate connectivity to external clients and carriers.

♦ Explanation

- Reduce complexity of external clients and carriers interfacing with our systems.
- Reduce implementation time required for client and carrier start up.

♦ Results

- The network must be able to support many external interfaces.
- Problem determination and resolution standards will need to be developed.
- Broad access by external systems will require more stringent security guidelines and rigorous security administration.
- Standards for system interface will need to be identified and communicated to internal and external users.
- Industry standards for connectivity will need to be monitored and incorporated as appropriate into the interface standards.

Open Standards

Open system standards will be used for communication both within the corporation and with suppliers and clients specifically TCP/IP with Ethernet internal Local Area Networks, the Internet, Intranet and an Extranet.

♦ Explanation

- Reduced support and maintenance.
- Improved client satisfaction with service provided.

Systems Services Blueprint

- Increased flexibility for connecting a wide variety of technologies.

♦ Results

- Standards will need to be developed and adhered to.
- Training and documentation will be required, both internal and external.

Single Logical Network

There will be a single logical, production network that provides access to applications and data for connected systems.

♦ Explanation

- Improve availability of services.
- Reduce implementation time required for new products and services.
- Allow application functionality to be leveraged without regard to location.
- Reduce implementation time required for new products and services.
- Improve availability of services.
- Reduce implementation time required for new products and services.

♦ Results

- The network must be able to provide the performance needed to support all the applications and data.
- Problem determination and resolution standards will need to be developed.
- Existing network equipment will need to be evaluated for compliance with the architecture.

Third Party Network Providers

Third party network services providers will be considered for network services (e.g., E-Mail, EDI for eligibility, etc.) using ITs evaluation criteria (e.g., cost effective, security, etc.).

♦ Explanation

- Improve availability and flexibility of the network.
- Reduce implementation time required for new products and services.
- Increase cost effectiveness of network services.
- Ease of connectivity for external clients and carriers.
- Allow IT to expend less resource on network issues.

♦ Results

- Confidentiality may effect the evaluation of what type of network third party vendors provide services.
- Less direct control over network.
- Potential elimination of some existing internal networks.

IT Process Management Principles

Asset Management

The purpose of this process is to ensure that the corporation knows where all its IT assets are physically located and their financial status is (for example, what has been depreciated and to what extent). The importance of this process is that it helps the corporation make the most of its investment in IT. This process maintains all pertinent information (including location) on all information technology assets including leased and purchased assets, licenses, and inventory - from the time an asset is received until the time that asset is retired. This process supports the maintenance of adequate hardware and software inventory to support delivery of IT services to customers. Asset Management shall contain the following components:

Systems Services Blueprint

- Defining IT inventory and asset practices for managing IT assets throughout their life cycle, from both physical and informational standpoints.
 - Maintaining warehouse inventory - for example, receiving inventory inquiries and requisitions and initiating procurement requests if not available or otherwise triggered.
 - Creating and maintaining inventory information in support of the processes
 - Maintaining asset information - for example, addressing those activities that ensure proper capitalization of a corporation's assets.
 - Administering licenses or lease - for example, tracking the contract arrangements for the asset to ensure compliance with terms and conditions.
- ♦ **Explanation**
 - Provide accurate information regarding capital investment by a corporation - including the physical tracking of all assets.
 - Avoid legal exposures.
 - Maximize return on investment in IT.
 - Minimize expense.
 - ♦ **Results**
 - A mechanism for monitoring and capturing asset data will need to be developed.
 - Staff will need to be trained in these processes.
 - Asset data will have to be collected and analyzed on an on-going basis.

Backup and Recovery Management

The purpose of this process is to ensure that the appropriate procedures and necessary data are in place and available to reestablish IT services in the event of a failure. The importance of this process is that it provides for minimal disruption should some resource failure occur. This process is responsible for planning, establishing, testing, and implementing the backup and recovery procedures required to restore service. Backup and Recovery Management shall contain the following components:

- To provide recovery capabilities to meet business objectives.
 - To ensure the integrity of vital corporate data and availability for day-to-day operation and in the event of a technical catastrophe.
 - To be prepared for the eventuality that a failure might occur.
 - To influence design to improve future recovery.
- ♦ **Explanation**
 - Identifying backup/recovery requirements for hardware, software and applications.
 - Establishing backup/recovery plans and procedures and testing them.
 - Performing backups on a specified basis for recovery and continuity purposes.
 - Performing recovery to support day-to-day occurrences of loss of data, bug discovery, hardware failure, etc.
 - Monitoring and reporting backup/recovery performance and providing a feedback loop for improvements.
 - ♦ **Results**
 - A mechanism for monitoring backup and recovery plans and data will need to be developed.
 - Staff will need to be trained in these processes.

Systems Services Blueprint

Change Control

Change Control will be implemented to track and ensure all changes to systems; network, applications and hardware are implemented with minimum disruption to the users and customers. Change Control shall contain the following components:

- Establish Change Policies.
 - Define Change Procedures.
 - Analyze and Measure Implemented Changes.
 - Plan Change Deployment.
 - Evaluate Change Requests.
 - Determine Deployment Activities and Phases.
 - Assess Change Impact (Business and Technical).
 - Assign Deployment Personnel.
 - Schedule Change (to be implemented on a regularly scheduled and predictable basis).
 - Manage Change.
 - Build Consolidated Change Schedule.
 - Maintain Change Information and Status.
 - Communicate Change Information and Status (particularly to the Help Desk and Platform Services).
 - Implement Change.
 - Distribute Change.
 - Install Change.
 - Synchronize and Activate Change.
 - Verify Successful Change Implementation.
- ♦ **Explanation**
 - Improve the availability of service to users and clients.
 - Optimize performance of users.
 - Track and ensure the successful implementation of change.
 - ♦ **Results**
 - Change management applies to all IT changes - application, network, software and hardware.
 - A mechanism for planning and monitoring change data will need to be developed.
 - Staff will need to be trained in these processes.
 - Change data will have to be collected and analyzed on an on-going basis.
 - An application development life cycle requires definition to implement application change.
 - Service levels will need to be defined and agreed to.

Disaster Recovery Management

The purpose of this process is to ensure that the appropriate procedures and necessary data are in place and available to reestablish IT services and business services in the event of a physical disaster. The importance of this process is that it provides for minimal disruption should some Act of God (fire, tornado, etc.) occur. This process (a joint effort of the business and IT organizations) is responsible for planning, establishing, testing, and implementing the disaster recovery procedures required to restore service. Disaster Recovery Management shall contain the following components:

- To provide recovery capabilities to meet business objectives.
 - To ensure the integrity of vital corporate data and availability for day-to-day operation and in the event of a physical catastrophe.
 - To be prepared for the eventuality that a disaster might occur.
 - To influence design to improve future recovery.
- ♦ **Explanation**

Systems Services Blueprint

- Identifying disaster recovery requirements for hardware, software, people, data, business functions, and applications.
- Establishing disaster recovery plans and procedures and testing them.
- Performing backups on a specified basis for recovery and continuity purposes.
- Monitoring and reporting disaster recovery performance and providing a feedback loop for improvements.

♦ Results

- A mechanism for monitoring disaster recovery plans and data will need to be developed.
- Staff will need to be trained in these processes.

Help Desk

A help desk will be provided with a single source of contact for all customers to aid in resolving problems with connectivity, availability and application usage.

♦ Explanation

- Improve the quality of service to users and clients.
- Optimize performance of users.
- Track and ensure the resolution of all problems.

♦ Results

- A mechanism for monitoring and capturing problem data will need to be developed.
- Staff will need to be trained in these processes.
- Call and problem data will have to be collected and analyzed on an on-going basis.
- Service levels will need to be defined and agreed to.

Performance and Capacity Planning Management

Systems will be designed to provide responsiveness, utilization, throughput, and capacity performance measurements.

♦ Explanation

- Improve the quality of service to users and clients.
- Optimize performance of systems.

♦ Results

- A mechanism for monitoring and analyzing the data will need to be developed.
- Staff will need to be trained in these processes.
- Data will have to be collected and analyzed on an on-going basis.
- Service levels will need to be defined and agreed to.

Project Management

Project Management will be implemented to track and ensure projects are completed on time, within budgets and ensure business requirements are implemented. Project Management shall contain the following components:

- Project Management Phases
 - Planning and Feasibility
 - Business Requirements
 - Technical Requirements
 - Design

Systems Services Blueprint

- Development
 - Implementation
 - Post Implementation Review
 - Identify Project Sponsor(s)
 - Project Control and Tracking
 - Manage Issue Resolution
 - Project Status, Communication and Trends
- ♦ **Explanation**
 - Improve the availability of service and resources to users and clients.
 - Optimize performance of IT and project staff.
 - Track and ensure the successful implementation of change.
 - ♦ **Results**
 - A mechanism for planning and monitoring projects will need to be developed.
 - Staff will need to be trained in these processes.
 - Project management information will have to be collected and analyzed on an on-going basis.
 - Standards will have to be defined and agreed to.

Problem Management

Problem Management will be implemented to track and ensure all problems in systems, network, applications and hardware are tracked, corrected and analyzed for root cause. Problem Management shall contain the following components:

- Define Problem Management Practices
 - Identify Problem from Help Desk or Level 1 Support
 - Bypass Problem
 - Analyze Problem
 - Manage Problem Resolution
 - Manage an On-call Procedure for Problem Resolution
 - Ensure Escalation of Problems on a Defined Basis
 - Report Problem Status and Trends
- ♦ **Explanation**
 - Improve the availability of service to users and clients.
 - Optimize performance of users.
 - Track and ensure the successful implementation of change.
 - ♦ **Results**
 - A mechanism for planning and monitoring problem data will need to be developed.
 - Staff will need to be trained in these processes.
 - Problem data will have to be collected and analyzed on an on-going basis.
 - Service levels will need to be defined and agreed to.

Security Management

Security must be comprehensive but not interfere with employees' ability to perform their job functions. The architecture will enable the corporation to protect its assets from deliberate or accidental misuse.

- ♦ **Explanation**

Systems Services Blueprint

- Ensure corporate assets are protected.
- Increase productivity of users.
- Ensure client comfort with level of security.
- Continue to maintain product licenses.
- Employee safety.

♦ Results

- Security standards need to be developed and enforced.

Systems Availability Management

Hardware and software components will be selected, configured and managed to meet the systems availability levels specified by the Service Level Objectives (ideally, a signed Service Level Agreement) for the part of the system in which they operate, generally 99.5% availability 24 hours per day / seven days per week. This will apply to applications, data, support, software and system management facilities.

Technology Evaluation

The provider of information technology has the solutions and offerings that are appropriate for the corporation. This process is a tactical and strategic planning function to validate current offerings and infrastructure and to justify new offerings and infrastructure. In other words, this process provides a context in which to decide whether to invest or de-invest in particular offerings of technologies. The importance of this process is that it assists the corporation in its effort to make the most of its investment in—and use of—information technology, while helping the corporation avoid investing in inappropriate technologies. The process encompasses the review of existing offerings so that those that are no longer applicable may be phased out and resources can be freed up for newer offerings that add value.

♦ Explanation

- Establish the best fit of offerings with customer needs.
- Eliminate unnecessary offerings.
- Upgrade highly effective offerings that are not used to capacity.
- Ensure that the infrastructure is positioned to take advantage of—and derive value from—new technology initiatives.

♦ Results

- A mechanism for planning and monitoring technology evaluation will need to be developed.
- Staff will need to be trained in these processes.
- Technology evaluation information will have to be collected and analyzed on an on-going basis.
- Standards will have to be defined and agreed to.

Technology Principles

Infrastructure Ownership

The IT Infrastructure will be owned by the corporation, established to enable timely execution of business strategies, continually upgraded and maintained, and managed to leverage commonalities in IT strategy execution.

Integrated Workstation Delivery

Application systems will be delivered to users through a single workstation on their desktop.

♦ Explanation

- Increase user productivity and morale.

Systems Services Blueprint

- Reduce user training and support cost.
- ♦ Results
 - May require use of intelligent workstations or application integration efforts.
 - Will require replacement of some existing equipment including workstations, cabling, and network equipment.

Leverage of PC/LAN Technology

The future delivery of applications and productivity tools will leverage the capabilities of interconnected PC/LANs.

- ♦ Explanation
 - Provide a means for delivering common capabilities such as eMail, electronic forms, etc.
 - Increase user productivity through common tools and applications solutions.
 - Results
 - Standards will need to be developed and implemented which provide a consistent workstation environment for which tools and applications can be developed and implemented.
 - Systems management processes are needed to protect LAN and PC based information.

Product Selection

Primary considerations for selecting hardware and software products as implementations of the Technical Architecture will be:

- ♦ Explanation
 - Conformance to Technical Architecture standards.
 - Functional suitability.
 - Reliability.
 - Maintainability.
 - Documentation quality.
 - Performance.
 - Price (purchase and maintenance).
 - Quality of the end-user interface.

Technology Acquisition

Technology acquisition decisions will be made following established architectural evaluation criteria.

- ♦ Explanation
 - Reduce IT expenditures and support costs through more consistent technology decisions.
 - Decrease cycle time for technology acquisitions.
 - Improve quality of technology decisions.
- ♦ Results
 - Evaluation criteria for technology acquisitions will need to be developed, communicated, and enforced.
 - A management process for maintaining and enforcing the criteria will need to be developed.
 - Existing technology will need to be evaluated for compliance with the architecture