

Project Requirements Workshop

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Office

Disclaimer

- While the materials in this workshop reflect Project Management experience both within the State of New Mexico and in the corporate world, they do not necessarily represent official state practices.
- Official project templates and project processes must be obtained from the State of New Mexico OCIO.



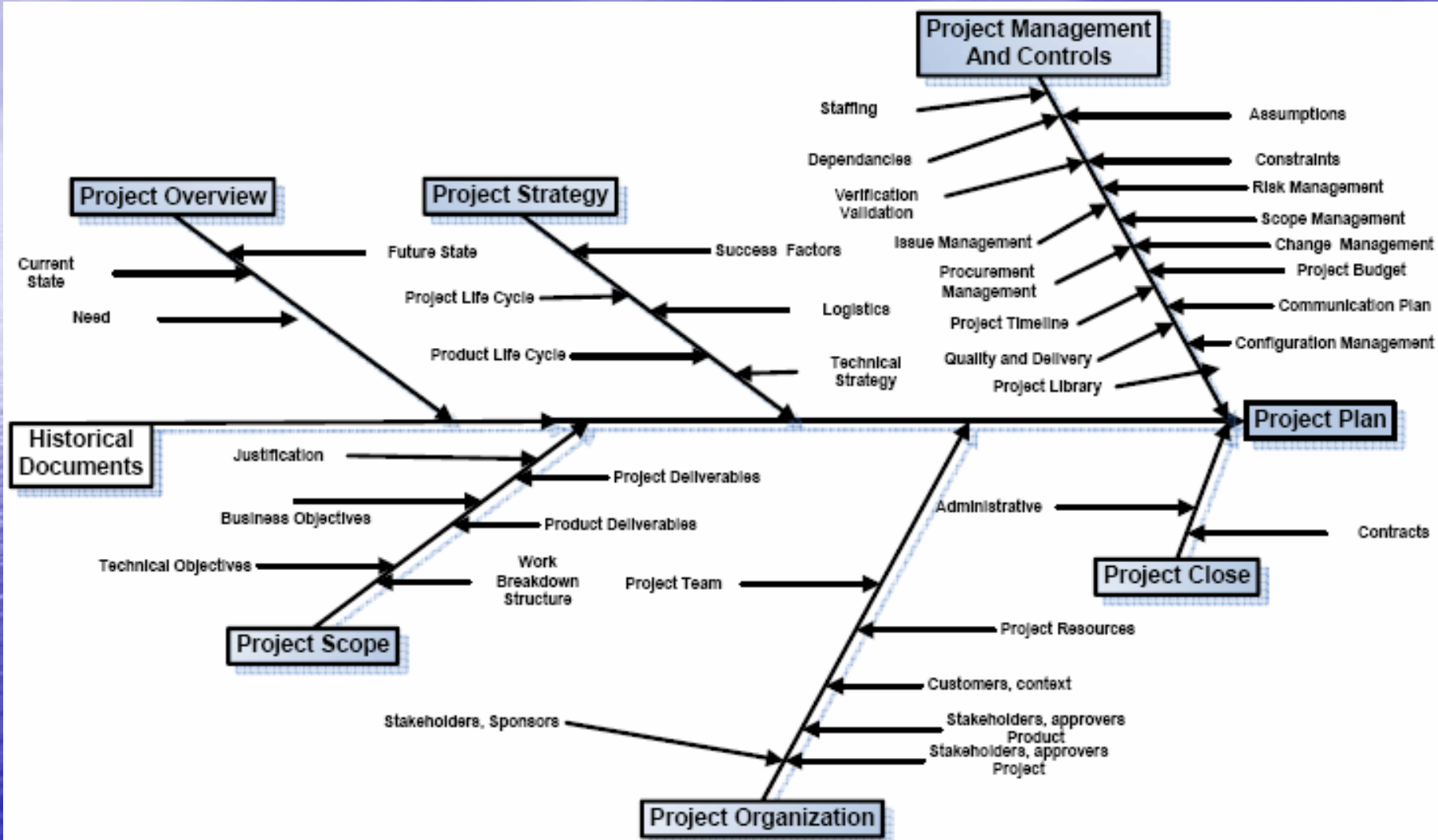
First The Requirements

Then the SOLUTION (s)

Project Requirements Workshop

- Defining what a requirement needs to be
- Defining how requirements are documented
- Defining types of requirements
- Establishing requirements trace-ability
- Managing changes in requirements
 - As more gets known during the project
 - As the customer asks for them

Project Management 101



Project Management Governance

- New Mexico State Office of the CIO
 - <http://cio.state.nm.us/>
- Project Management Institute
 - <http://www.pmi.org/info/default.asp>

Project Management Institute

- “Project Scope Management includes the processes to ensure that the project includes all the work required, and only the work required, to complete the project successfully.” As quoted in PMBOK®
- Project Requirements
 - Describes the conditions or capabilities that must be met or possessed by the deliverables of the project to satisfy a contract, standard, specification or other formally imposed documents. Stakeholder analyses of all stakeholder needs, wants, and expectations are translated into prioritized requirements. PMBOK®

Proposed 12.9 Project Certification Rule

1.12.9.12 PROJECT PLANS.

A. Plan required. An agency shall prepare, in accordance with the instructions contained in the project management guidelines and best practices document prepared by the office, a project plan for every IT project regardless of its scope or cost. The agency project manager shall document the plan and all revisions to the plan, and shall keep it on file until the system is removed from operation

B. Plan contents. The plan shall contain at a minimum:

- (1) a description of the project;
- (2) a description of the functions the system will provide;
- (3) a description of the development lifecycle methodology;
- (4) an initial risk assessment;
- (5) risk management strategies, including mitigation actions;
- (6) quality assurance strategies or plan;
- (7) human and financial resource requirements and allocations;
- (8) a project review schedule;
- (9) IV&V plan and reports;
- (10) project deliverables;
- (11) a project schedule; and
- (12) Appropriate security planning (data, disaster recovery, system back-up).

Proposed Project Certification 12.9

Rule Definitions

- **independent verification and validation**
 - means the process of evaluating a system to determine compliance with specified requirements and the process of determining whether the products of a given development phase fulfill the requirements established during the previous stage, both of which are performed by a organization independent of the development organization;
- **quality**
 - means the degree to which a system, system component, or process meets specified requirements, customer needs, and user expectations;
- **quality assurance**
 - means a planned and systematic pattern of all actions necessary to provide adequate confidence that an product or system component conforms to established requirements;

See OCIO website "OCIO IV&V Services Contract/Purchase Template "
–Exhibit A Scope of Work for questions dealing with Requirements
Management.

IV&V Requirements Management

Task Item	Task #	Task Description	Applicable (X)
Requirements Management	RM-1	Evaluate and make recommendations on the Project's process and procedures for managing requirements.	
	RM-2	Verify that system requirements are well-defined, understood and documented.	
	RM-3	Evaluate the allocation of system requirements to hardware and software requirements.	
	RM-4	Verify that software requirements can be traced through design, code and test phases to verify that the system performs as intended and contains no unnecessary software elements.	
	RM-5	Verify that requirements are under formal configuration control.	

IV&V Requirements Analysis

Requirements Analysis	RM-10	Verify that an analysis of client, State and federal needs and objectives has been performed to verify that requirements of the system are well understood, well defined, and satisfy federal regulations.	
	RM-11	Verify that all stakeholders have been consulted to the desired functionality of the system, and that users have been involved in prototyping of the user interface.	
	RM-12	Verify that all stakeholders have bought-in to all changes which impact Project objectives, cost, or schedule.	
	RM-13	Verify that performance requirements (e.g. timing, response time and throughput) satisfy user needs	
	RM-14	Verify that user's maintenance requirements for the system are completely specified	

Project Requirements Workshop

- To provide the detail:
 - Defining what a requirement needs to be
 - Defining how requirements are documented
 - Defining types of requirements
 - Establishing requirements trace-ability
 - Managing changes in requirements
 - As more gets known during the project
 - As the customer asks for them

Elements of a Requirement

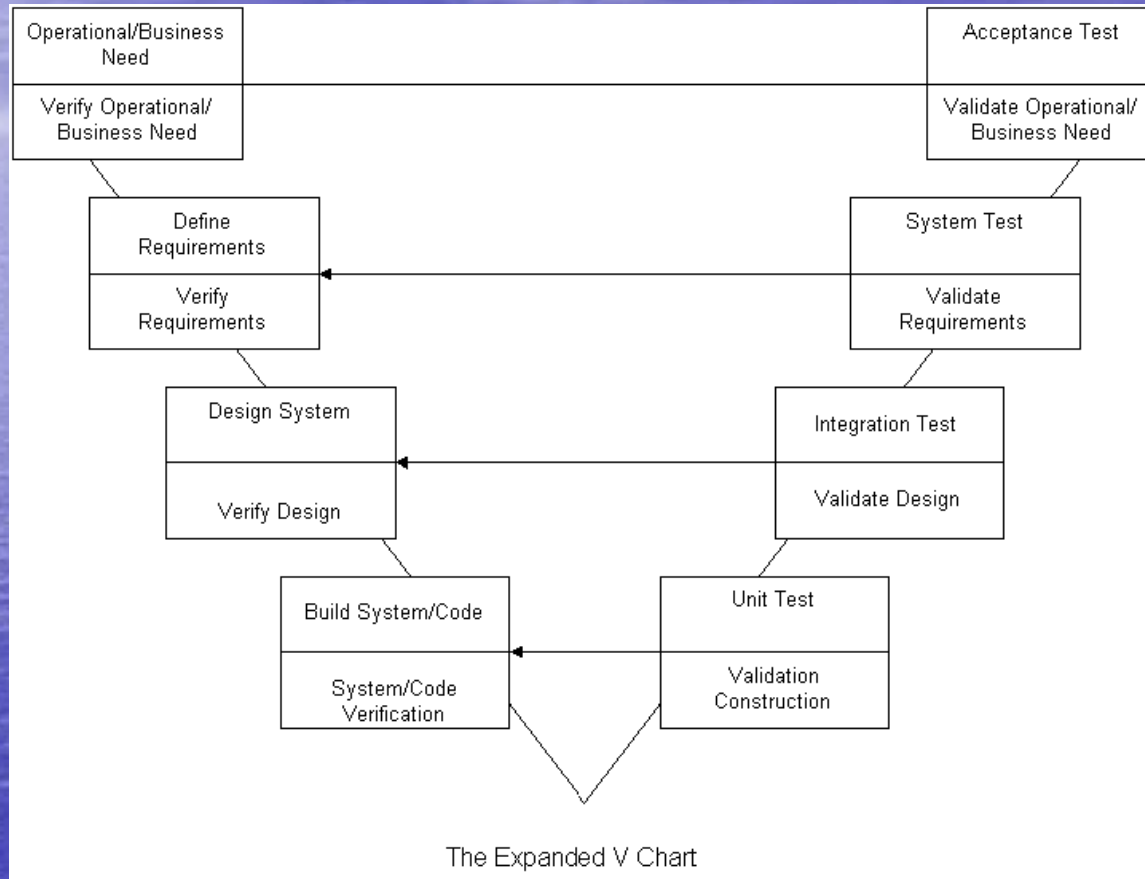
Requirement ID	<Unique id #>		Requirement. Type	Business					
Status	New	<x>	Agreed-to	<x>	Base lined	<x>	Rejected	<x>	
Description	<Enter concise description of requirement>								
Rationale	<Provide a brief rationale, and or business value for the requirement>								
Source	<Name of Requirement. Provider>			Source Document		<llenams>			
Acceptance/Fit Criteria	<Provide a target that makes it possible to test if requirement was satisfied>								
Dependencies									
Priority	Essential		<x>	Conditional		<x>	Optional		<x>
Change History	<List history of changes to this requirement>								

Review Handout – “Requirements Information Collection Template”

Types of Requirements

- Business Requirements: Why the project is being undertaken!
- User Requirements: What the end users will be expecting!
- Systems Requirements: What will be required for the solution to work!
- Functional Requirements: What the solution must accomplish
- Behavioral Requirements: How the solution should look and feel!
- Operational Requirements: Defining how the solution should be available and supported
- Training Requirements: What must the end user learn to successfully use the solution; what must the support staff learn in order to run the system or support the end user?

Trace-Ability



“all the work required, and only the work required”

Some Clarifying Terms

- Use Case
 - What is the response the solution will provide to a given user action under certain conditions!
 - Elaboration of a requirement and is used to build solution
- Test Case
 - Describes testing criteria related to a use case/requirement
- Pilot vs. “Proof of Concept”
 - Pilot – field testing the solution
 - Is it technically ready?
 - Are the users prepared?
 - What unforeseen exists in the environment?
 - “Proof of Concept”
 - Usually before project starts – will it work, do we like the look feel...and other questions – some times helps to sell project

Requirements Change Management

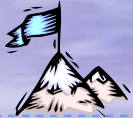
Agency:		Change Request:	
Project Manager:		Date:	
Agency and Project Information:			
Requested By:		Date:	
Authorized By:		Date:	
Description:			
Impact:	Tech	Schedule	Cost
			Other

The Importance of Stakeholder Involvement

- Who owns the problem?
- Who funds the project?
- Who must support the solution?
- Who must not be surprised?
- These are the stakeholders!
 - They should be approving the requirements!

Goal Model – “KISS” Project Overview for Stakeholders

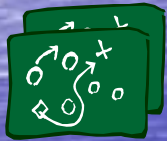
Goal



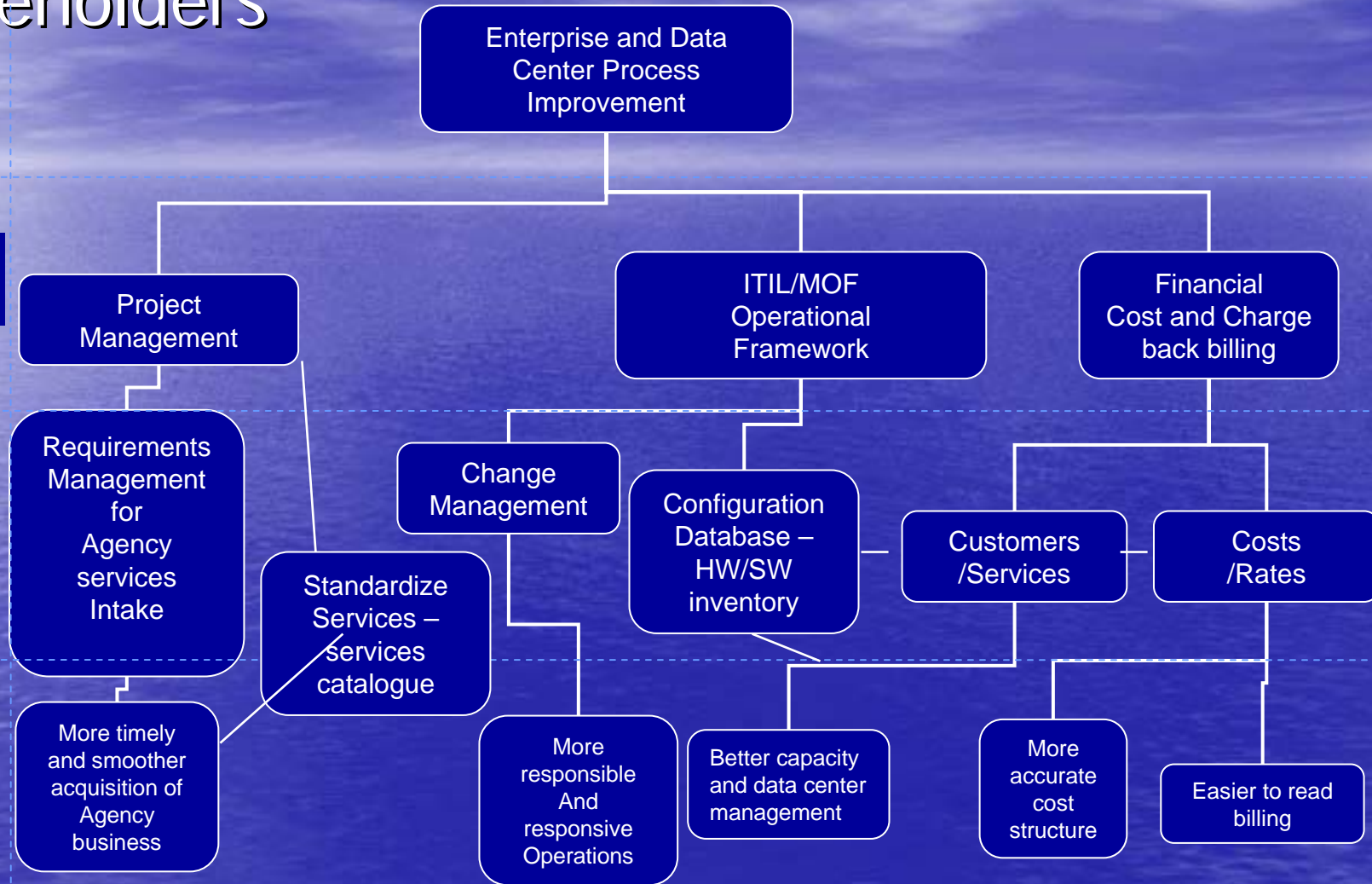
Objectives/
Targets



Strategies



Process
Critical
Success
Factors



"Context of the project – Can You identify the Stakeholders?"

Influencing Organizations

- GSD
- IT Consolidation Executive Board
- ITC
- Enterprise Architecture
- Network Domain Team
- Security Requirements
- Agency Requirements
- SPO – Staffing/ Chg Mgmt
- Service Providers

Key Inputs

- Agency Requirements

Agencies

- Executive Agencies
- Education
- Judicial Branch
-

Name: Process Improvement
Purpose: To structure and standardize GSD/ISD operations
Begins with: Gap Analysis between current and goals leading to Enterprise Operations
Ends with: Standard processes for agency consolidation activities and day to day GSD/ISD operations

Influenced Organizations

- GSD
- State Agencies
- Enterprise Architecture
- IT Consolidation
- Legislature
- Governor's Office
- Service Providers

Key outputs

- Projects
- CIMS Billing and Chargeback system
- Operational Framework

Service Processes

- Capacity and Technology Planning
- Centralized service
- Network Monitoring
- Engineering
- Provisioning
- Performance management
- Network and transmitted data security

Key Systems used by the process

- project management
- Help desk

Related projects or initiatives

- Email Consolidation
- SHARE
- Other GSD/Network..
- Data Center/ISD
- Enterprise Storage

Time for a break





Project and Solution Life Cycles

A Brief Exercise

Pick a problem in your work and fill in the blanks!

Problem Statement	
Root Causes	
Recommendations	
Benefits	

Fill-in Handout – “Project Recommendation”

Exercise – Part 2

Identify the steps toward solution!

Plan: Actions to Implement*	Owners	

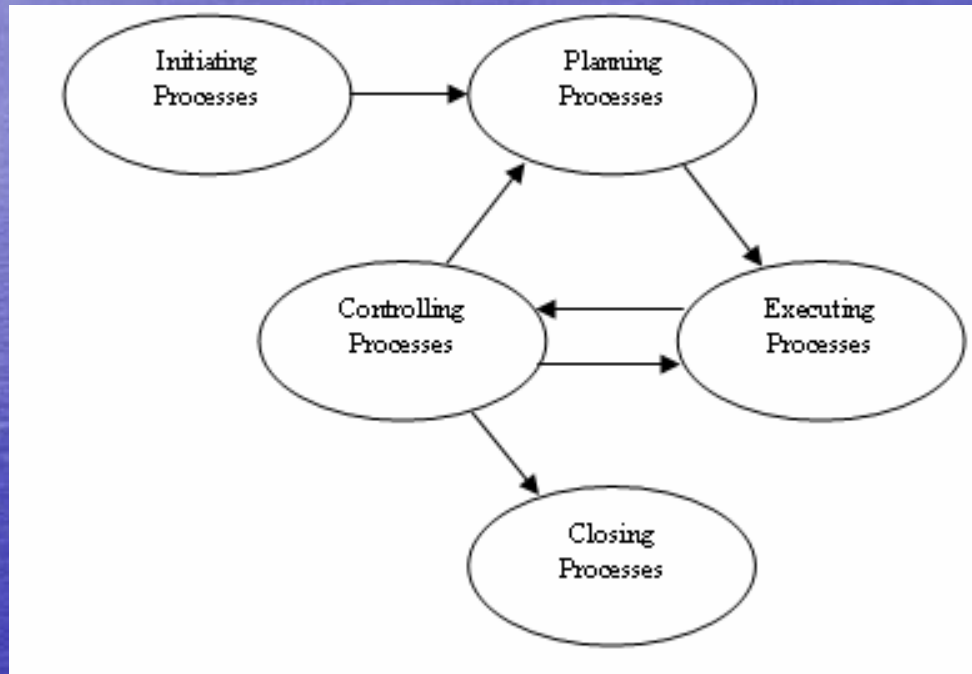
Now Translate the problem recommendation into a Requirement

Description	<Enter concise description of requirement>							
Rationale	<Provide a brief rationale, and or business value for the requirement>							
Source	<Name of Requirement. Provider>				Source Document		<Idenams>	
Acceptance/Fit Criteria	<Provide a target that makes it possible to test if requirement was satisfied>							
Dependencies								

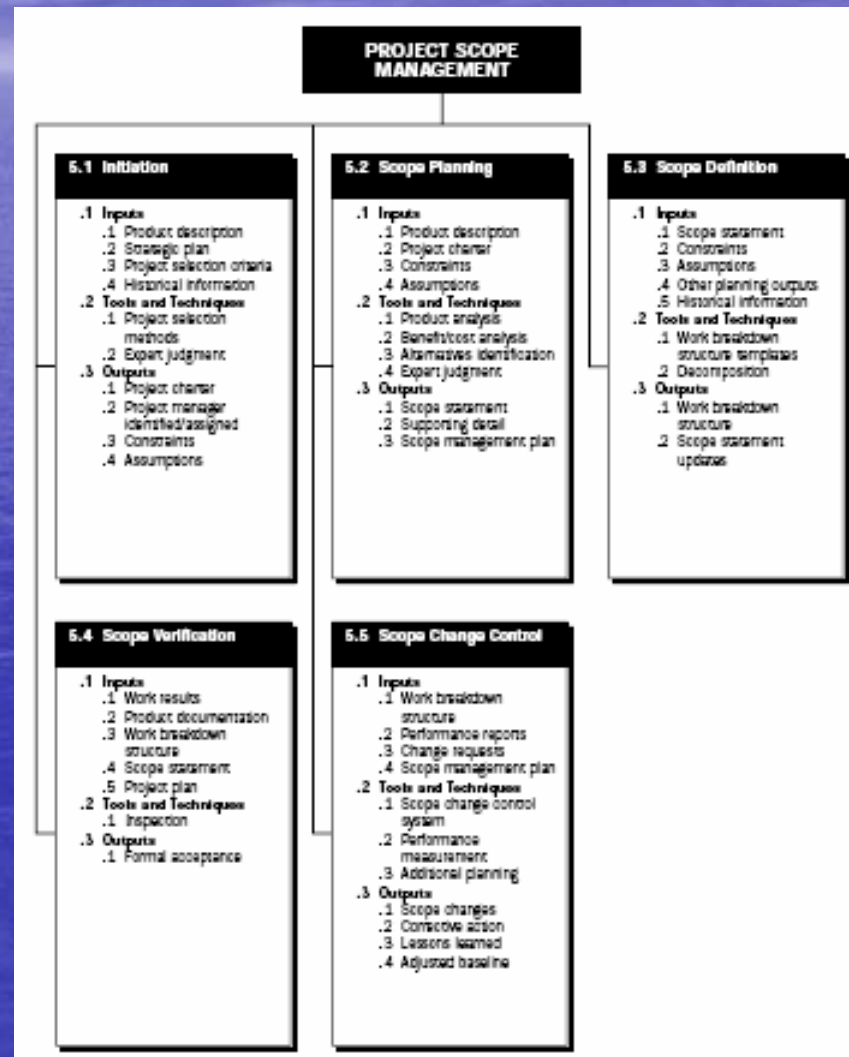
Evaluation Criteria for Requirements!

- Is your Requirement SMART?
 - Specific?
 - Measurable?
 - Attainable?
 - Realistic?
 - Timely or time framed?

PMI Project Life Cycle



Project Scope Management



OCIO - Business and Technical Objectives

- OCIO Project Management Plan requires business and technical objectives
- Think about the relationship between the business and technical objectives
 - Trace-ability
- Business Objective 1
 - Technical Objective 1 – traces back to Bus Obj1
 - Technical objective 2 - traces back to Bus Obj1

IT Consolidation as example of hierarchical requirements development

Business Objective 2	<i>Reduce cost of IT operations through an enterprise Model</i>	
	Tech. Objective 11	Elimination of duplication in network infrastructure capacity where enterprise network infrastructure provides bandwidth usable by agencies who have had their own bandwidth and support staff
		Requirement XX Reduce the number of 45 standalone networks that share no significant resources in common

Note that we move from high level through an indented process as we get more specific

Product or Solution Life Cycle

- Plan
- Define
- Design
- Build
- Deploy
- Close

Requirements change during this life cycle. Some may drop (but not be deleted), some get modified, while others get added as needed.

Types of Requirements

- Plan
 - Business Requirements: Why the project is being undertaken!
 - User Requirements: What the end users will be expecting!
- Define
 - Systems Requirements: What will be required for the solution to work!
 - Functional Requirements: What the solution must accomplish
 - Behavioral Requirements: How the solution should look and feel!
 - Operational Requirements: Defining how the solution should be available and supported
- Design
 - Training Requirements: What must the end user learn to successfully use the solution; what must the support staff learn in order to run the system or support the end user?

Elements of a Requirement

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Dependencies									
Priority	Essential		<x>	Conditional		<x>	Optional		<x>
Change History	<List history of changes to this requirement>								

Same form for different types, Status may change, priorities may change
While Requirement ID will not. Change history should reflect changes.

Stake Holder Involvement

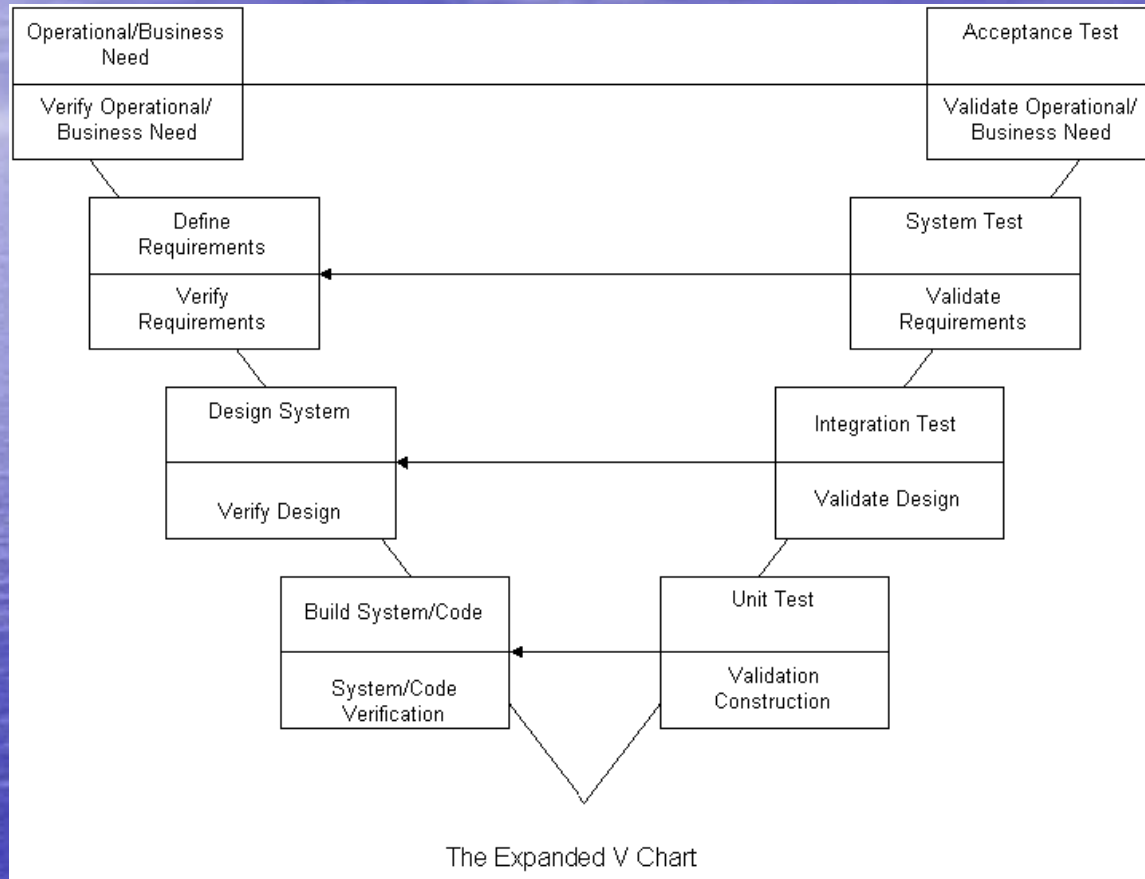
- Stake Holders – emphasis will change during project
 - Sponsors
 - Users
 - Technical teams
 - vendor
- Scope Management - Sponsors
- Requirements Management
 - Business – sponsors
 - System – technical teams
 - Operations –technical teams within end user requirements
- Design Management – technical teams
- Change Management – project management
- Requirement Form
 - Status
 - Priority
 - Change History

Requirements Life Cycle and Tracking (Naming Conventions)

- BR1 -Business Requirement
 - USR1-User Requirements
 - UCUSR! -Use cases
 - SR1-System Requirements
 - ❖ TCSR1-Test Cases
 - DS1-Design Specifications

Requirement ID	<Unique id #>	Reqmnt. Type	<See List Below>	Use Case #	<Unique id #>
Parent Requirement #	<Enter the unique id #(s) for each requirement that this requirement supports (This field will be empty for high level requirements e.g., business requirements)>				

Trace-Ability



“all the work required, and only the work required”

Requirement Traceability Matrix

<u>Req ID</u>	<u>Requirement</u> (abbreviated title)	<u>Req Owner</u> *	<u>Design Ref</u>	<u>Design Owner</u>	<u>Test Case</u>	<u>Test Owner</u>	<u>Revision Reference</u>
ES-1	Mainframe interface	DM					
ES-2	Use C:D	DM	TD-1	IBM / TH	TC-1	IBM / TH	
ES-3.1	Data archived 5 days	DM	TD-2	IBM / TH	TC-2	IBM / TH	
ES-3.2	Archived file names	DM	TD-3	IBM / TH	TC-2	IBM / TH	
ES-4.1	Pass/fail history 30 days	DM	TD-4	IBM / TH	TC-3	IBM / TH	
ES-4.2	History log success / failure	DM	TD-4	IBM / TH	TC-4	IBM / TH	
ES-5	User can easily inspect the logs	DM	TD-4	IBM / TH	TC-4	IBM / TH	Added 2/3/5

Sample Courtesy of **Mike Ricklin** Human Services Department

Break

The background is a smooth blue gradient. On the left side, there is a bright, glowing light source that creates a shimmering, rippling effect across the surface, suggesting water or a reflective material. The overall tone is a deep, vibrant blue.

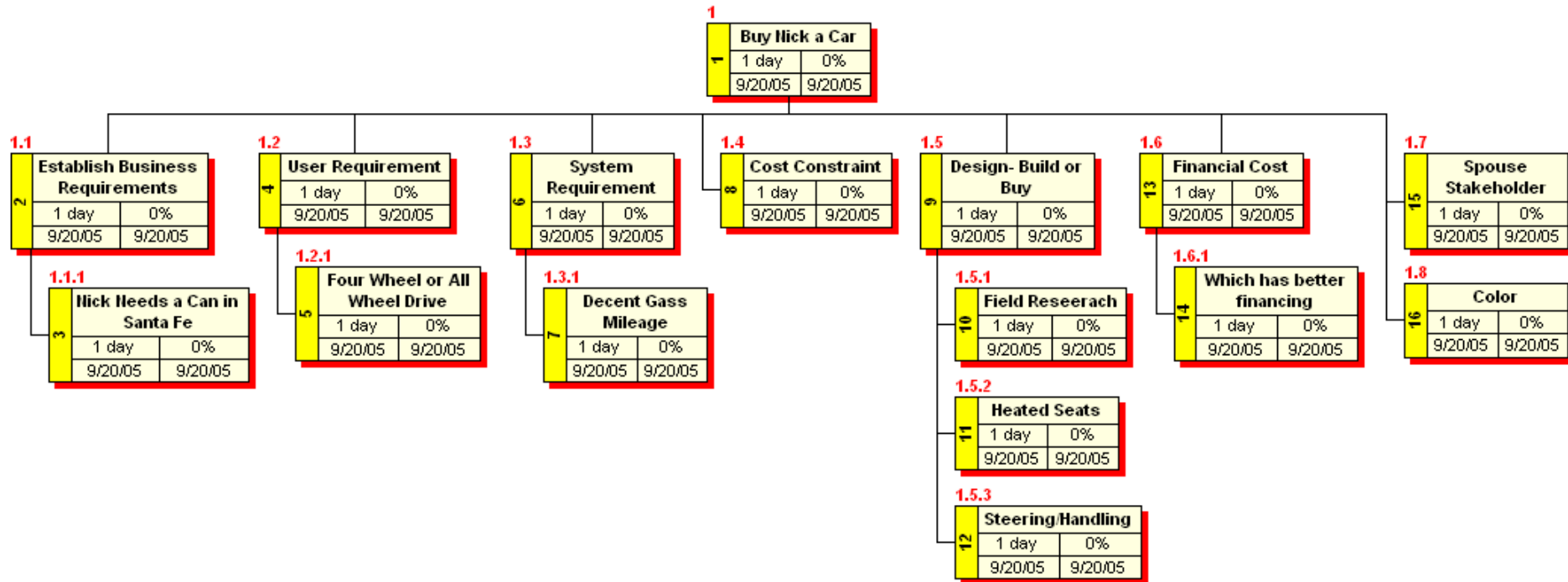
Requirements Solve Problems

How we go from business requirements to deployment of solution!

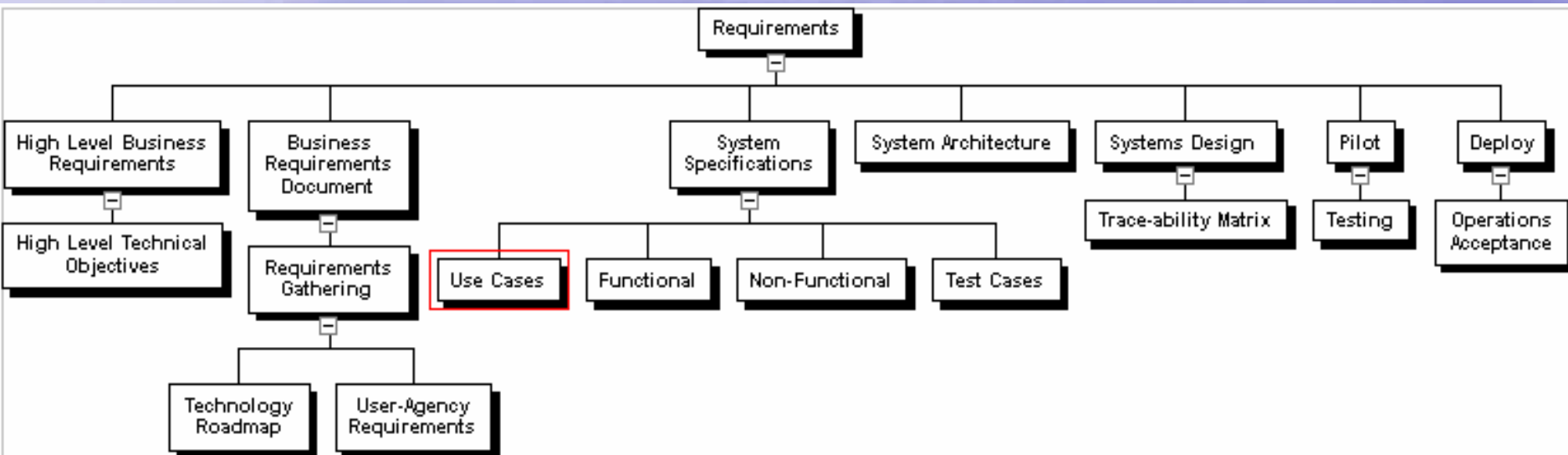
Work Break Down Structure

- Steps that need to be done to complete a project
 - Used to estimate time and costs for projects
 - Used to create project schedules
 - Used to explain how a project works

Buy Nick a Car - WBS



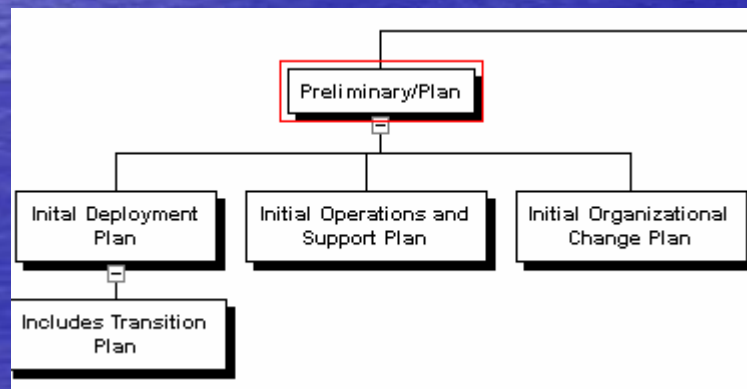
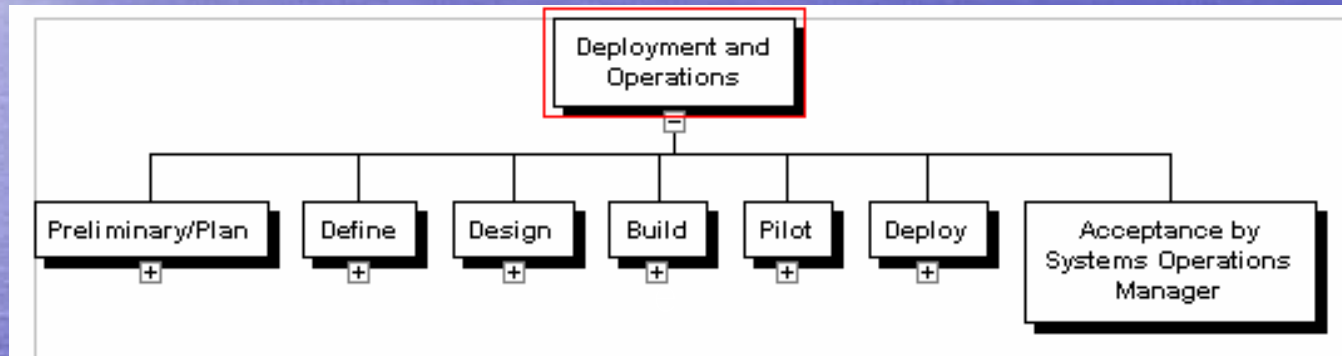
Requirements WBS- simplified



OCIO Project Plan "Product Life Cycle"
Industry variations on "Software Development Life Cycle"

Requirements are developed and refined as we move from left to right

“Transition to Operations” - Requirements avoid and anticipate problems!

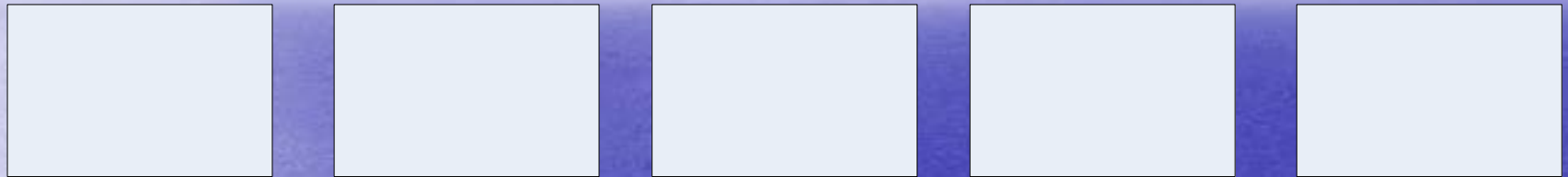
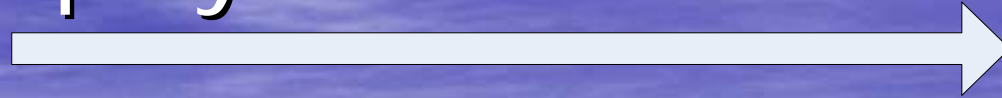


Requirements are anticipated from the right and refined as we move from left to right

Moving through Solution Life Cycle

- As we move through the project from Plan to Define to Design to Build to Deploy:
 - We ask questions appropriate to the project phase.
 - We add or refine requirements
 - We might even reject requirements (but not delete them!)
 - We add depth to the requirements hierarchy
 - Trace-Ability becomes more crucial

From Plan to Define to Design to Build to Deploy:



BR1 -Business Requirement
USR1-User Requirements

Plan
Questions

Define
Questions

Q

Hand Out – “4 User Requirements”

Typical Requirements Documents

- Business Requirements
- System Requirements
- Design Specifications
- Training Requirements
- Deployment and Operations Plans

Each document should be considered a project deliverable.

Each Document project deliverable should be formally accepted by relevant stake holders

Business Requirements Topics

3	Business Requirements.....
3.1	Major Features.....
4	User Requirements.....
4.1	Functionality Requirements.....
4.1.1	Processing Requirements.....
4.1.2	Information Requirements.....
4.2	Usability Requirements.....
4.2.1	Ease-of-use Requirements.....
4.2.2	Documentation Requirements.....
4.2.3	Safety Requirements.....
4.3	Performance Requirements.....
4.3.1	Availability Requirements.....
4.3.2	Responsiveness Requirements.....
4.3.3	Reliability Requirements.....
4.3.4	Capacity Requirements.....
4.3.5	Scalability Requirements.....
4.3.6	Disaster Recovery & Business Continuity Requirements.....
4.4	Security Requirements.....
4.4.1	User Security Requirements.....

Examples of user requirement questions

- **Ease-of-use Requirements**

- [From the perspective of the business user, document the requirements pertaining to the ease with which the user must be able to interact with the system. Examples include the accessibility of information, high-level user interface guidelines, and support for various levels of user expertise (e.g., novice vs. power user).]

- **Documentation Requirements**

- [From the perspective of the business user, document the kinds of user documentation that will need to be produced. This should include not only printed user manuals, but also any requirements for on-line help, tutorials, and installation instructions.]

System Requirements

3	Functional Requirements.....
3.1	Behavioral Requirements.....
3.2	Data Requirements.....
3.3	Integration Requirements.....
3.4	User Interface Requirements.....
3.4.1	Screen Layout Requirements.....
3.4.2	Reporting Requirements.....
4	Non-Functional Requirements.....
4.1	Usability Requirements.....
4.1.1	Ease-of-use Requirements.....
4.1.2	Documentation Requirements.....
4.1.3	Safety Requirements.....
4.2	Performance Requirements.....
4.2.1	Availability Requirements.....
4.2.2	Responsiveness Requirements.....
4.2.3	Reliability Requirements.....
4.2.4	Capacity Requirements.....
4.2.5	Scalability Requirements.....
4.2.6	Disaster Recovery & Business Continuity Requirements.....
4.3	Security Requirements.....
4.3.1	User Security Requirements.....
4.3.2	Data Security Requirements.....

Performance Requirement Questions

- **Availability Requirements**
 - [Document the required availability of the system, such as hours of operation and expected uptime requirements.]
- **Responsiveness Requirements**
 - [Document the required responsiveness of the system, such as online response times and report deadlines.]
- **Reliability Requirements**
 - [Document the required reliability of the system, such as mean time between failures.]
- **Capacity Requirements**
 - [Document the required capacity of the system, including CPU, memory, disk space, and network bandwidth.]
- **Scalability Requirements**
 - [Document the requirements for increasing the capacity of the system over time.]
- **Disaster Recovery & Business Continuity Requirements**
 - [Document the requirements for system behavior and operation in the event of a disaster.]
- **Availability Requirements**
 - [Document the required availability of the system, such as hours of operation and expected uptime requirements.]

System Operational Requirements

4.6	Operational Requirements.....
4.6.1	Hardware Requirements.....
4.6.2	Software Requirements.....
4.6.3	Network Requirements.....
4.6.4	Architectural Requirements.....
4.6.5	Data Management Requirements.....
4.6.6	Production Support Requirements.....
4.6.7	Software Licensing Requirements.....
5	Operational Concepts.....
5.1	Functionality (behavioral).....
5.1.1	Use Cases.....
5.1.2	Functional Analysis Model.....
5.2	Data Models.....
5.3	User Interface Prototypes.....

Operational Requirement Questions

- **Hardware Requirements**
 - [Specify the computing platforms on which the system will run, and the expected usage of resources such as processor capacity, disk space, and memory. Describe the logical and physical characteristics of each interface between the software and hardware components of the system. This may include the supported device types, the nature of the data and control interactions between the software and the hardware, and communication protocols to be used. Include any constraints imposed on the system by the hardware environment. The detailed analysis and the implications of these environmental constraints may be included in the Software Architecture Document.]
- **Software Requirements**
 - [Specify the connections between this system and other specific software components (name and version), including databases, operating systems, middleware, tools, libraries, and integrated commercial components. Describe the services needed and the nature of communications. Include any constraints imposed on the system by the software environment. The detailed analysis and the implications of these environmental constraints may be included in the Software Architecture Document.]
- **Network Requirements**
 - [Specify the requirements associated with any communications functions required by this system, including e-mail, web browser, network server communications protocols, electronic forms, and so on. Specify the expected bandwidth requirements. Define any pertinent message formatting. Identify any communication standards that will be used, such as FTP or HTTP. Specify requirements for data transfer rates and message synchronization.]
- **Architectural Requirements**
 - [Specify the architectural requirements and constraints for the system, such as architecture design patterns, IT standards, and COTS applications. Requirements pertaining to the portability of the system to other environments and the reusability of system components should be captured here. Also consider maintainability requirements, specified in terms of complexity analysis metrics thresholds.]

Review Business Requirements Document

- Review hand out – “Business Requirements Document”

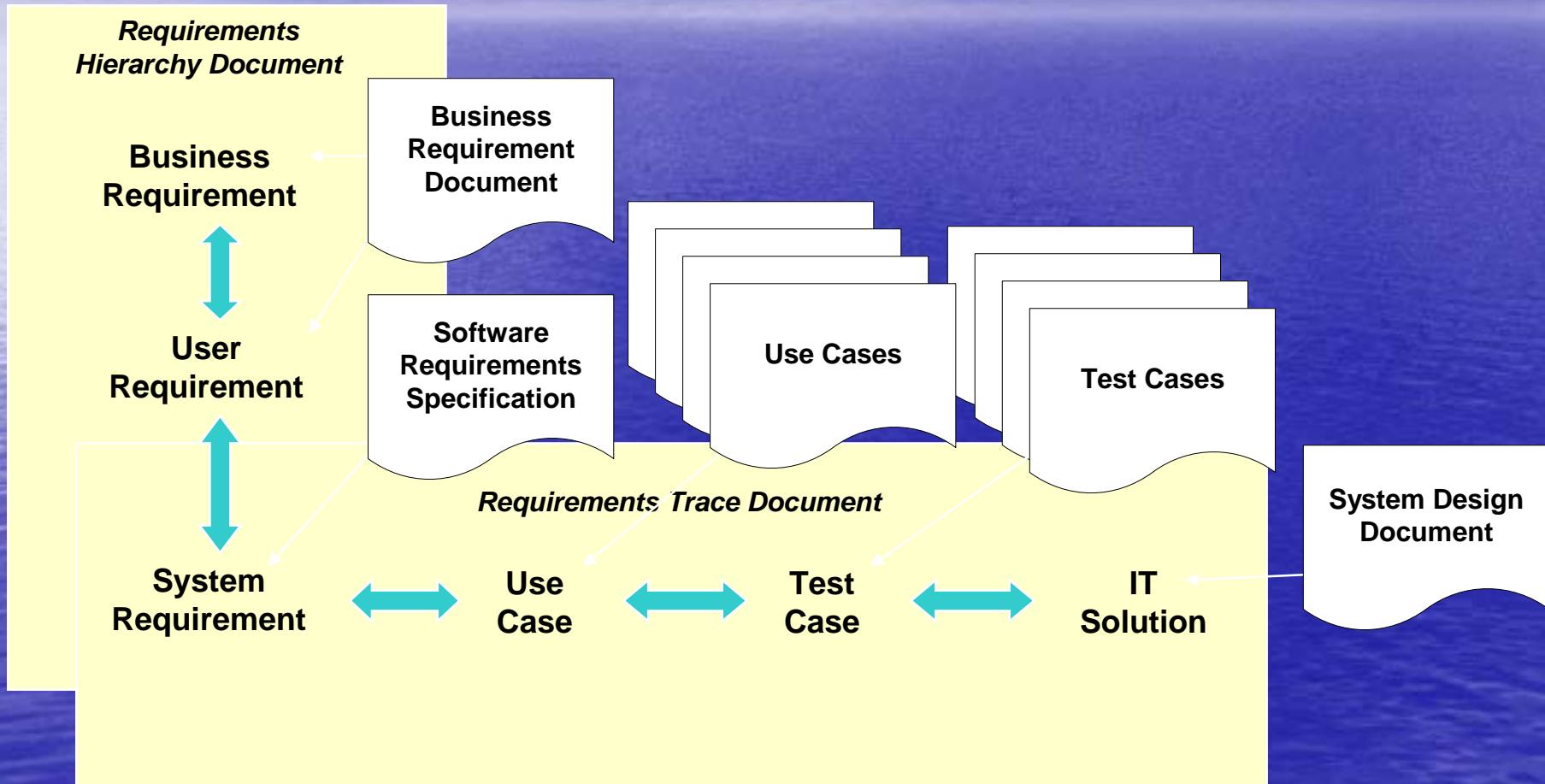
Requirements Gathering

Writing Good Requirements

Caveat – Observation about State Projects

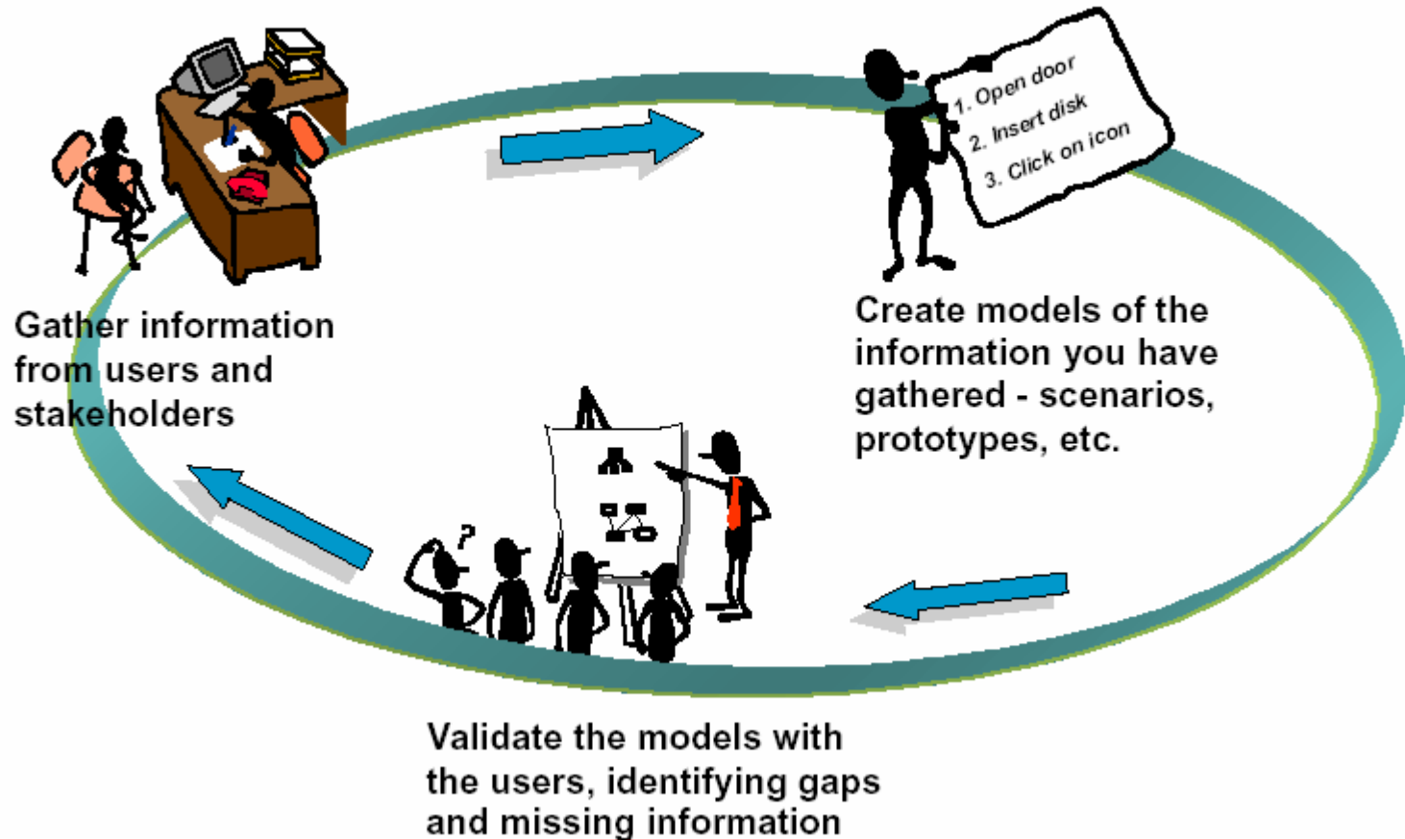
- We often have to deal with “mandated” projects where we are not starting from scratch.
- A key problem is that we are not handed “project documents”
- We neglect this painstaking “requirements” process at our project peril!
- We must make the project our own!

Summary of Key Activities – Requirements to Deployment



Gathering Information

Gathering and modeling are *iterative processes*



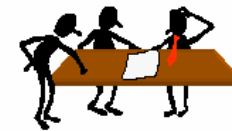
Requirements Gathering Techniques



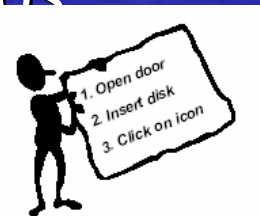
Interviews



Facilitated Sessions



Focus Groups



Scenarios

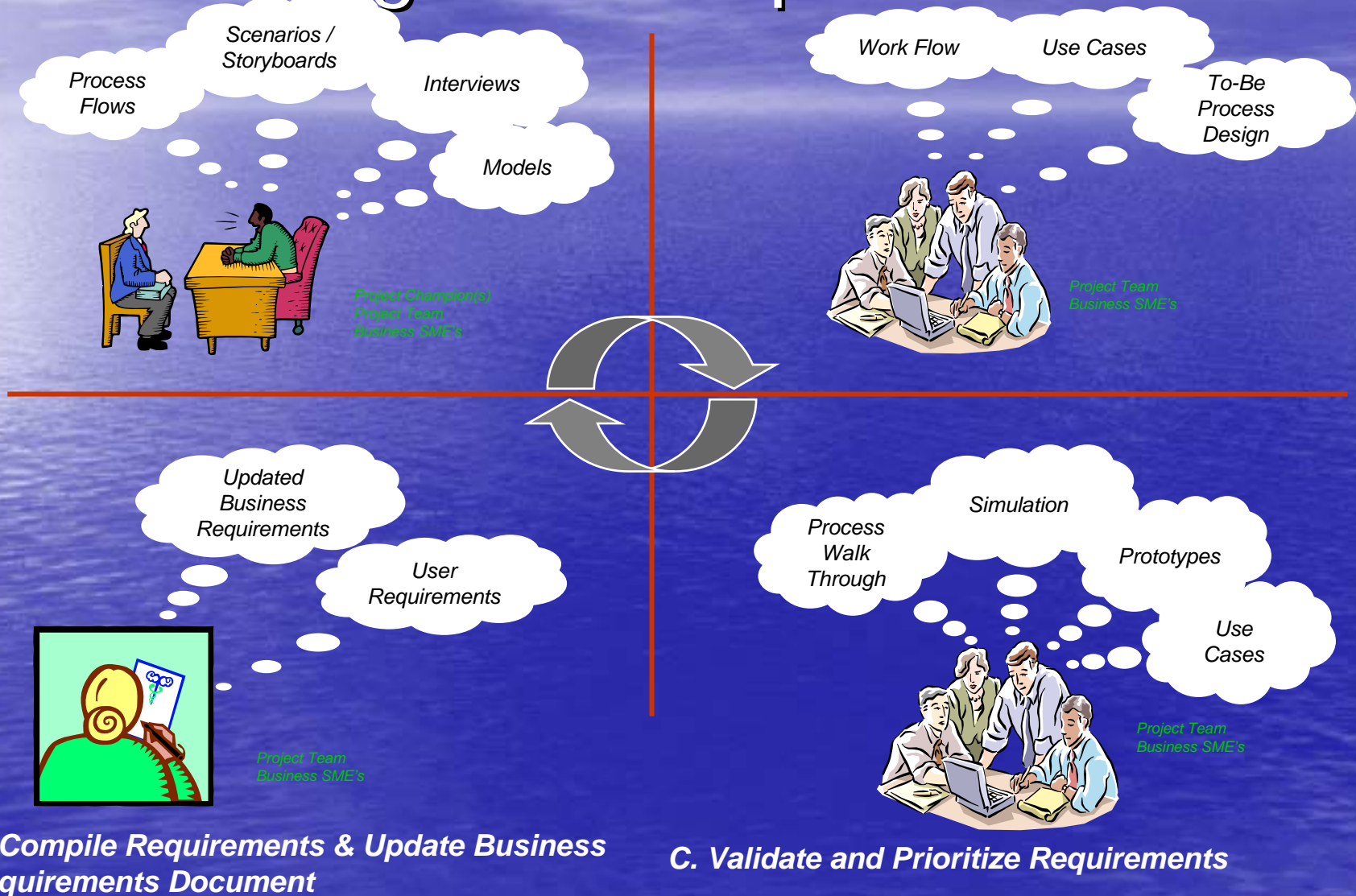
- Interviews
- Facilitated Sessions
 - JAD Sessions
 - Facilitated User Groups
 - Collaborative Techniques
 - Focus Groups

- Modeling Techniques

A. Gather Information from Users & Stakeholders

B. Understand Work & Determine User's Needs

Developing User Requirements



D. Compile Requirements & Update Business Requirements Document

C. Validate and Prioritize Requirements

Developing User Requirements

A. Gather Information from Users & Stakeholders

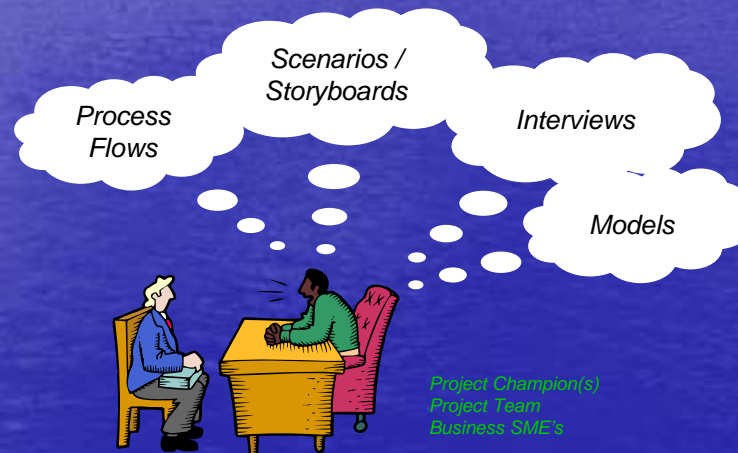
Determine requirement gathering techniques

• *Note: Using multiple techniques is recommended*

Create models of the information gathered

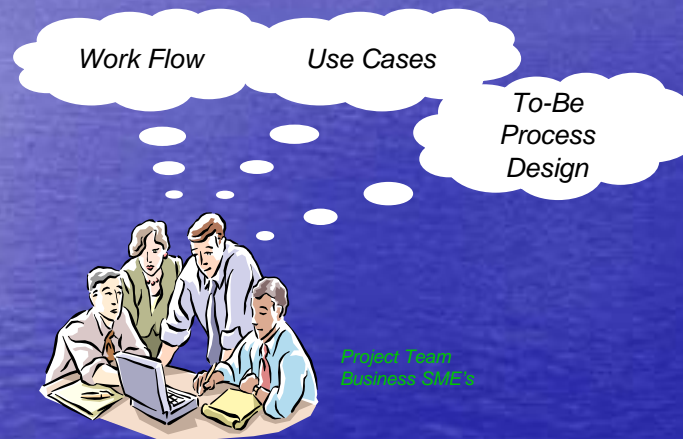
• *e.g., work flows, use cases, storyboards, etc.*

Validate the models with the users and stakeholders



Developing User Requirements

B. Understand Work & Determine User's Needs



People ↔ Process ↔ Technology

- Review the to-be process design detail.
- Expand the to-be design detail as necessary

Understand the workflow

• **People:**

Organization, Skills, Roles, Perceptions, etc.

• **Process:**

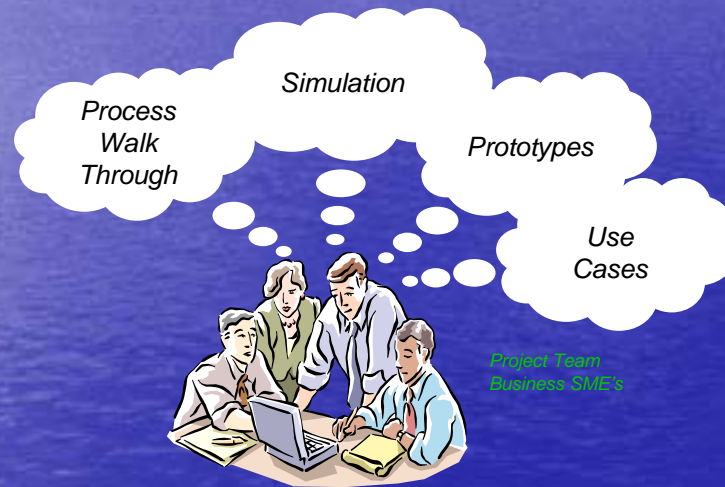
Rules, Procedures, Communication, Information Flow, etc.

• **Technology:**

Fitness to purpose, Efficiency, Redundancy, Gaps, etc.

- Identify Functional user requirements.
- Identify Non-Functional user requirements

Developing User Requirements



Validate requirements and ensure that as many as possible have been captured through:

- *Process walk through*
- *Simulations*
- *Prototypes*
- *Use Cases*

Have the users and stakeholders prioritize each requirement

- **Essential**
- **Conditional**
- **Optional**

C. Validate & Prioritize Requirements

Prioritize Requirements

- Prioritizing requirements is a **crucial** activity
 - It helps manage the scope and delivery of the new/enhanced system
 - Provides a means for stakeholders to make their priorities known
 - Project can focus on delivering to those priorities
 - Provides a capability to determine impact of scope changes
- Priority definitions
 - **Essential** – system not acceptable unless this requirement is provided in an agreed manner
 - **Conditional** – would enhance the system, but would not make it unacceptable if absent
 - **Optional** – might be worthwhile if resources permit

Develop Use Cases

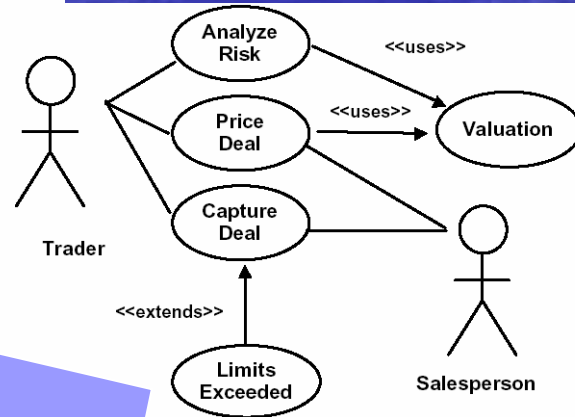
Identify Actors



Identify Goals



Write Use Case Briefs



*Complete Use Case
(Specification & Model)*

Use Cases

- Use cases are a way of modeling the system, its environment, and how it is related to its environment
 - They model the system from the users' point of view
 - Actors represent roles that users can play
 - Use cases represent what the users should be able to do with the system
 - Use case modeling has been extended through UML (Unified Modeling Language)

Use Case Brief – Library

Actor	Goal	Brief
Librarian or Library member	Find all publications related to a given subject	Actor enters identification data into the system to access search engine, selects a type of search and reviews results to thin the list to a manageable number
Librarian	Enter a new library member	Actor signs in and introduces requirements administrative and demographical data of the future cardholder to produce an ID card to be used by the person
Library member	Update information on own library record	Actor enters identification data to access own record and selectively updates the information within

Even More Key Terminology

- Actors

- **Primary actor** – The “role” that will be using the system and initiating the use case (functionality)
- **Supporting Actor** – “Things” (another system, 3rd party, etc.) that interact with the system.

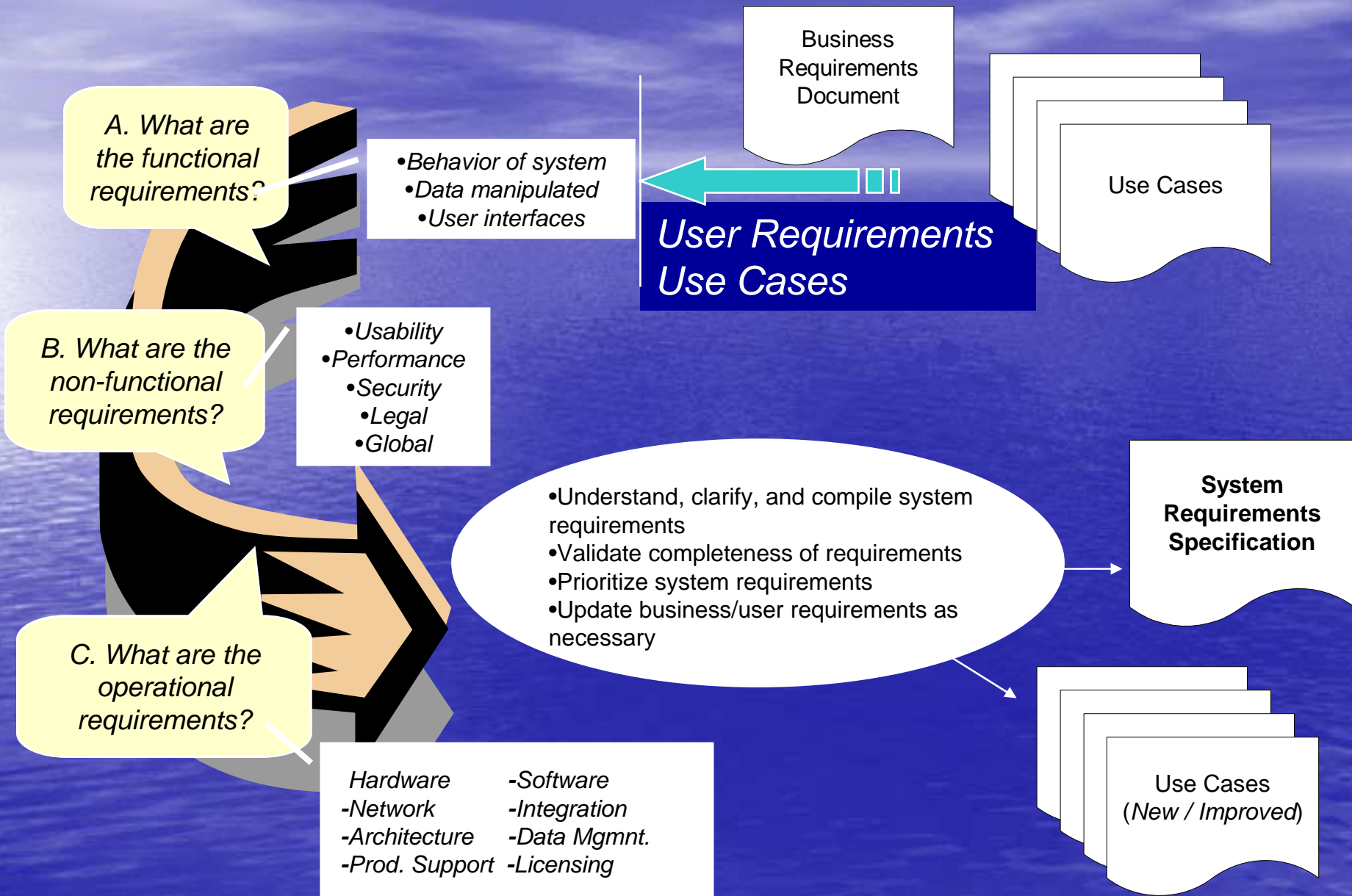
- Goals

- Describe the desired state of one or more resources utilized by the use cases (functionality)

- Use Case Brief

- A short depiction of the actor, the goal, and a brief statement of the actor–system interaction necessary to achieve the goal

Developing System Requirements



Evaluation Criteria for Requirements!

- Is your Requirement SMART?
 - Specific?
 - Measurable?
 - Attainable?
 - Realistic?
 - Timely or time framed?

Can a non expert read and understand the requirement?

Common Requirements problems

- Paragraphs or sections are written without numbering them for identification.
- Paragraph or section numbering is done but is inconsistent.
- Requirements are not adequately grouped into functional areas and categories.
- Ambiguous requirements are written, using terms such as “could”, “should”, “might”, and “may” in place of “shall”, “must”, and “will”.
- Multiple requirements are merged into single paragraphs.
- Requirements are identified using bullets or tables.
- Redundant requirements are placed into different but related sections of the document.
- Deliverables or program management tasks are mixed in with the system requirement paragraphs.
- The requirements do not correctly describe the desired system behavior, resulting in ambiguous interpretation by designers and coders.
- Conceptual design requirements are mixed in with the system requirements

List Courtesy of **Mike Ricklin** Human Services Department

Not Well Written Requirements

Poorly Written Sample:	Comments:
<p data-bbox="211 532 635 565">Exchange Server Requirements</p> <ul style="list-style-type: none"><li data-bbox="274 582 912 654">A. The mainframe interface to the XYZ server will use an interface server that uses C;D.<li data-bbox="274 668 912 739">B. The server will also be used for temporary storage of data and logging of transactions.<li data-bbox="274 753 635 786">C. User friendly interface<li data-bbox="274 801 839 872">D. An archive and an error log should be maintained.<li data-bbox="274 886 849 1158">E. Performance:<ul style="list-style-type: none"><li data-bbox="363 939 811 1011">• This server should have 24x7 availability<li data-bbox="363 1025 839 1096">• Five-second response times are required<li data-bbox="363 1110 849 1158">• Backup power will be provided.	<p data-bbox="953 532 1477 604">There are numerous problems with this specification:</p> <ul style="list-style-type: none"><li data-bbox="972 618 1448 651">• What is meant by “temporary”?<li data-bbox="972 665 1506 698">• What data is to be stored or logged?<li data-bbox="972 712 1467 745">• What is a user-friendly interface?<li data-bbox="972 759 1620 831">• Is the archive requirement D redundant with B?<li data-bbox="972 845 1344 878">• What errors are logged?<li data-bbox="972 892 1487 925">• Does 24x7 mean continuously up?<li data-bbox="972 939 1553 1011">• Which transaction does the five-second response time refer to?<li data-bbox="972 1025 1629 1096">• Is the exchange server on a UPS battery, or is there a redundant power supply unit, or both?<li data-bbox="972 1110 1506 1143">• The requirement numbering is poor.

Courtesy of Mike Ricklin Human Services Department

Better Written Requirements

Written Better:	Comments:
<p>Exchange Server Requirements:</p> <p>ES-1: The mainframe shall interface to the remote site via a data exchange server</p> <p>ES-2: The data exchange server shall use C:\<u>D</u> (Connect Direct) transfer protocols for transfers to and from the remote site.</p> <p>ES-3.1: Data sent and received shall be archived for 5 days.</p> <p>ES-3.2: The archived files shall be given file names that reflect the date and time of the file transfer.</p> <p>ES-4.1: A pass/fail history log will be maintained with 30 days of history.</p> <p>ES-4.2: The history log will show the success or failure of each transaction attempt with a time tag.</p> <p>ES-5: The directory structure shall be organized so the user can easily inspect the logs.</p> <p>ES-6.1: The exchange server must have a <u>99.99%</u> availability for any contiguous 30-day period, for the 24x7 operation, excepting external power outages.</p>	<ul style="list-style-type: none">● The requirement identification method uses the “ES” prefix to identify the Exchange Server subsystem, very helpful for later reference.● Each “shall statement” is a requirement, and is uniquely identified.● The ambiguity has been removed. The words “shall” and “must” are used often. The word “should” is never used.● The user-friendly requirement is specified in requirements ES-3.2 and ES-5.● The availability requirement clearly shows the required up-time.● The response time requirement shows exactly which transaction is referred to.● Power supply redundancy is required. And a UPS is required in the event of failure of the external power.

Courtesy of Mike Ricklin Human Services Department

Requirement Summary!

Requirement ID	<Unique id #>		Requirement. Type	Business					
Status	New	<x>	Agreed-to	<x>	Base lined	<x>	Rejected	<x>	
Description	<Enter concise description of requirement>								
Rationale	<Provide a brief rationale, and or business value for the requirement.>								
Source	<Name of Requirement. Provider>			Source Document		<filenams>			
Acceptance/Fit Criteria	<Provide a target that makes it possible to test if requirement was satisfied>								
Dependencies									
Priority	Essential		<x>	Conditional		<x>	Optional		<x>
Change History	<List history of changes to this requirement>								

Clear Language – Specific- Measurable- Attainable –Realistic-Timely
 Organize-able ID, Type identified, Status-ed, Prioritized, Changes documented.