



The Project Academy Series:

Project Requirements Definition & Management

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Welcome and Introductions

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Presentation Objectives

- **Help develop an understanding of:**
 - **How to develop and define Project requirements**
 - **What Requirements Management is all about**
 - **Specific emphasis on Requirements Traceability**
 - **Common problems and pitfalls encountered when developing and managing requirements**
 - **Impacts if Requirements Definition and Management is not done properly**



Agenda

- Requirements Definition
 - What is Requirements Definition
 - Requirements Alignment, 3-levels
 - General Process Flow
 - Quality Requirements **Exercise/Break**
- Requirements Management
 - What is Requirements Management
 - Requirements Management Activities
 - Traceability **Break**
- Common Problems and Pitfalls
- Impact if Not Done Right



Requirements Definition

This is NOT a PM Job!



What is Requirements Definition?

- The Set of Activities and Tasks that Identifies the Stakeholders, Elicitation techniques, and Collects, Analyzes, Documents, Approves, and Controls All of their requirements for a Project
 - Begins early, typically immediately after Project Concept/S1BA approval
 - Must be planned, scheduled, resourced, and managed to be successful
 - **THIS IS NOT AN AD HOC OR CASUAL EFFORT**
 - The results document the Project-level requirements, not just the RFP requirements



Requirements Alignment, 3-levels

■ First: Project Scope

- “Scope: The sum of the products and services to be provided [by the] project
- All requirements must stem from the Project Scope

■ Second: Project Requirements

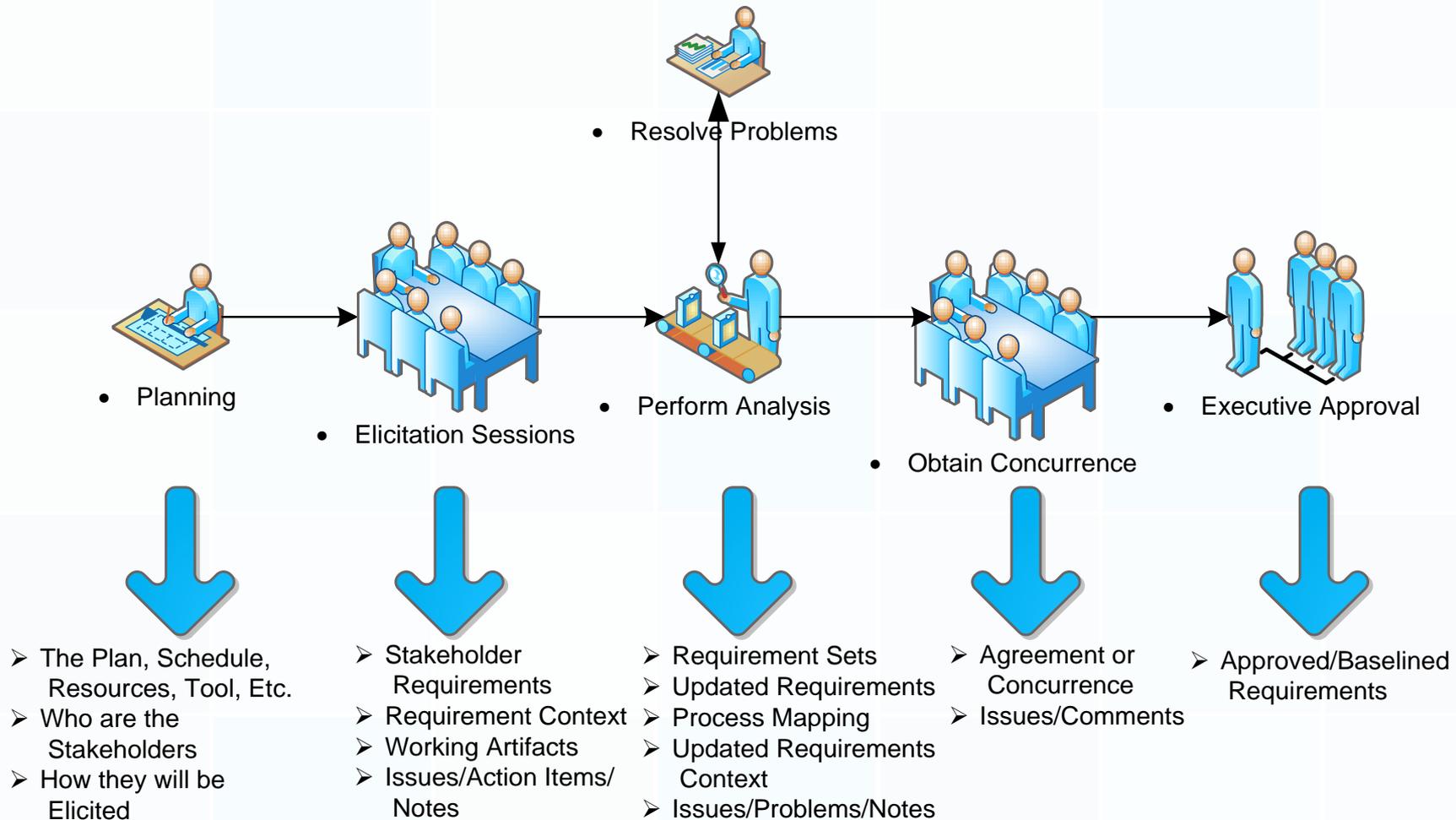
- Consist of mid and low level requirements
- Typically derived through a hierarchical decomposition process

■ Third: Allocate Requirements

- Assignment of Project Requirements to responsible entities



General Process Flow





General Process Flow

- **Key Predecessor for Performing Requirements Definition**
 - **Planning and scheduling of the activities and tasks**
 - **Identifying the resources, direct and indirect**
 - **Identifying Project resources relatively easy but estimates must be made for Stakeholders supporting the effort**
 - **Manage the effort**
 - **Activity tracking, progress reporting, status updates, management and artifact reviews, etc. should be performed to ensure the effort stays on track**
 - **This effort has a common tendency to slip and result in a poor requirements document**



General Process Flow

■ Elicit Stakeholder Requirements

- All Stakeholders must be identified
- An elicitation approach must be determined for each Stakeholder and Stakeholder Class/Group
 - Best way to elicit requirement from one Stakeholder may NOT be the same as another Stakeholder
- Schedule and conduct elicitation sessions
 - Document context of the requirements with the requirements
 - Capture all documentation, word, pictures, flow charts, etc.
 - Capture commonly missed areas: constraints, M&O scenarios, usability, etc.
- Do NOT attempt to perform analysis during elicitation



General Process Flow

- Analyze Stakeholder Requirements
 - Analyze the complete set of requirements
 - Analyze subsets defined around a common requirements context
 - Focus on subsets of related requirements and then individual requirements
 - Standard items such as **readability**, correctness, consistency, completeness, accuracy, testability, etc.
 - Verify scope and need for all requirements
 - Resolve problems with Stakeholders
 - Obtain concurrence that requirements and context is correct and complete



General Process Flow

- **Approve Stakeholder Requirements**
 - **Allocate** and obtain Project Executive Management approval of the requirements and the allocation
 - Establishes the Project Requirements Baseline
 - The commitment between the Project, Executive Management and the Stakeholders on what will be delivered and/or provided
 - Place the approved (Project Baseline) requirements under formal Configuration/Version Control
- **Project Requirement Definition is complete and Requirements Management begins**
 - Similar mini-efforts may be done for Change Requests per the Change Management Plan



Requirements Quality

- What are “Quality” Requirements?
 - 1. “Quality” Requirements implies that the documented requirements have a high degree of correctness, completeness, consistency, accuracy, etc.
 - 2. “Quality” Requirements **COMMUNICATE** the Stakeholders **needs** to potential vendors so that both the State and vendors have the same understanding of what is required
- Quality is Built-in, NOT Added-in
 - The process used and artifacts produced are the **Foundation** for understanding and communicating the Shared Vision/View of what is needed



Exercise and Break

- See Handout



Exercise Recap

- See Handout



Requirements Management

This is NOT a PM Job!



What's Requirements Management?

■ ISO/IEEE 29148 Standard Definition

- “[The] activities that ensure requirements are identified, documented, maintained, communicated and traced throughout the life cycle of a system, product, or service”
 - The recommended approach does not include the initial Requirements Identification/documentation as part of Requirements Management

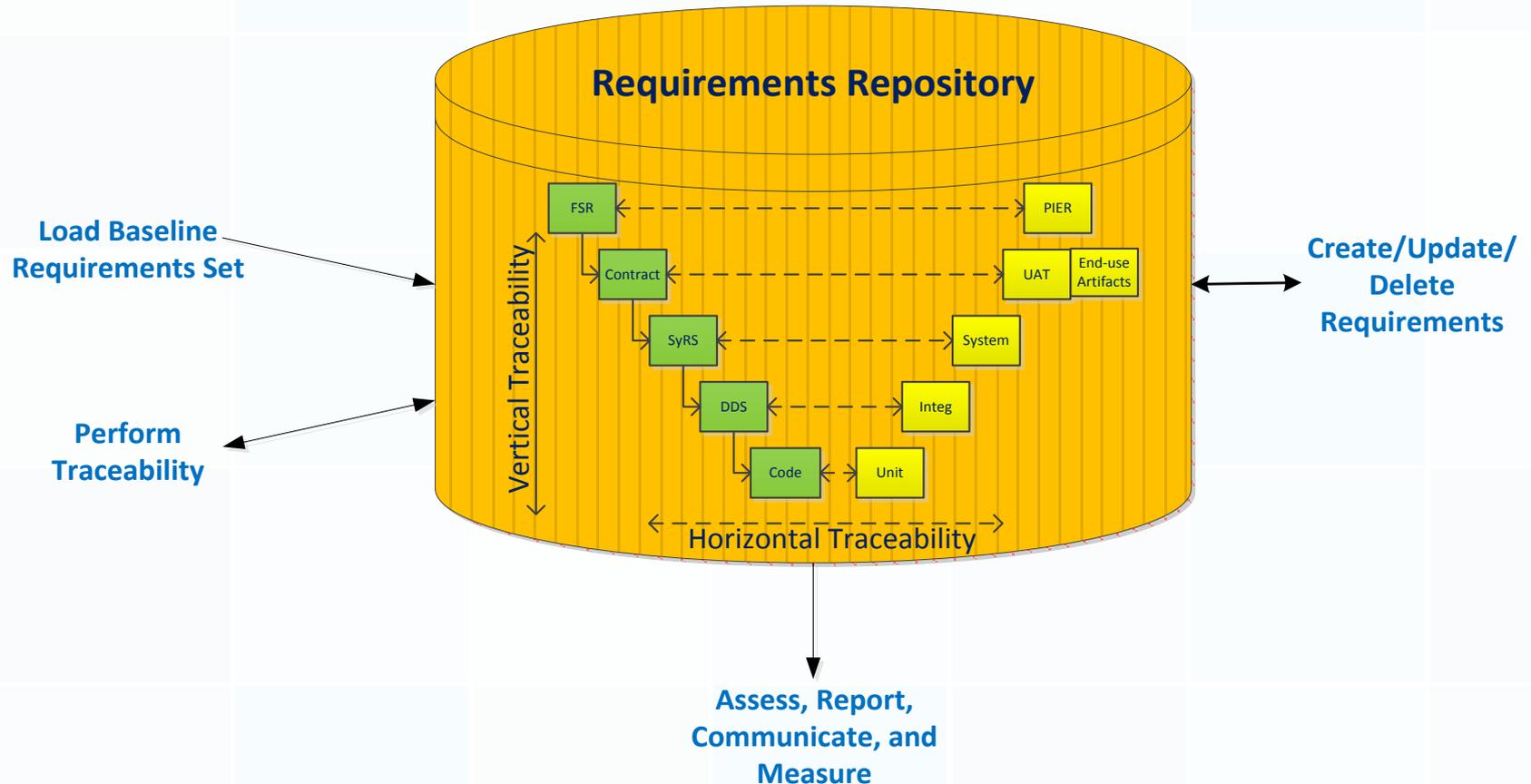
■ Requirements Management then deals with ...

- Capturing/Documenting, maintaining, communicating, and tracing requirements throughout the project life cycle



What's Requirements Management?

Requirements Management Process World





Requirements Management Activities

- Key Predecessors for Performing Requirements Management
 - Planning and scheduling the activities and tasks that will be Performed
 - Includes specifying the “**Level of Traceability**” and how Requirements Management will be performed and integrated into the other PM Processes
 - Identifying direct and indirect resources involved
 - Manage the Effort
 - Ensuring critical integration with Change Management
 - Turnaround times for Requirements Management tasks are often very short so as to not impact other efforts
 - Issues, such as traceability gaps, must be resolved quickly

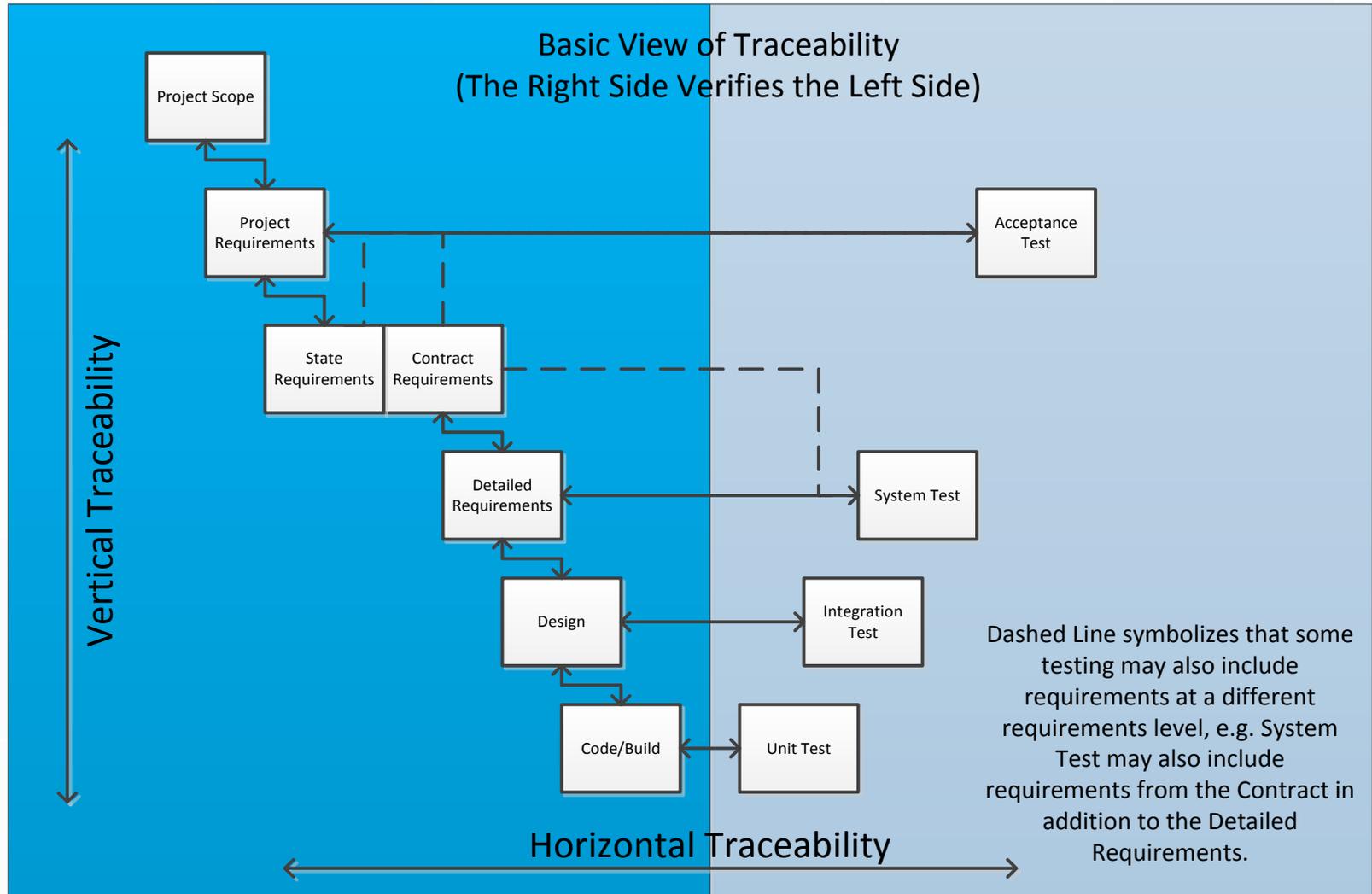


Requirements Management Activities

- **Establish Controlled Requirements Repository**
 - Includes both establishing the repository and creating the Project Requirements Baseline(s)
- **Performing Requirements Traceability & Analysis**
 - Performed incrementally as requirements are captured, both Vertical and Horizontal
 - Maybe, and often is, performed by multiple teams
- **Managing Requirements Changes**
 - Assessing impacts of proposed changes, capturing approved changes, and communicating the changes
- **Requirements Metrics and Reporting**



Requirements Traceability





Requirements Traceability

- Vertical Traceability performed incrementally as requirements are approved at each level
 - Mapping relationships between requirements at different levels
 - E.g., Project Requirements ↔ Contract ↔ Requirements Deliverable ↔ Design Deliverable
- Horizontal Traceability performed as soon as corresponding requirements level baselined
 - Mapping relationships between requirements and tests that verify the requirements
 - E.g., Project & Contract Requirements ↔ User Acceptance Test, Design ↔ Integration Test



Break



Common Problems and Pitfalls

- **Lack of Planning**
 - Not identifying level of traceability to be performed
- **Insufficient Tools**
 - MS Excel is generally insufficient
- **Inexperienced Resources Performing RM**
 - Extremely Difficult to Learn On-the-Job
- **Identifying Requirements at too high of a Level**
 - Very common as it greatly simplifies traceability but loses all benefits of performing Requirements Management
- **Change Management bypasses RM**
 - Impacts of Proposed Changes Not Understood until After Approved
- **RM activities performed late or not at all**



Impacts if Not Done Right

- **Incorrect Expectations Between Stakeholders, Project, and Vendor(s)**
 - Failure to communicate
- **Failure to Identify and Deliver All Required by the Project Scope Statement**
 - Failure to identify and trace
- **Inability to Know when Items, Functionality, etc. is Dropped or Forgotten until the End of the Project**
 - Failure to trace and/or manage changes
- **Inability to Know if Everything was Tested or Verified and when Testing is Complete**



Impacts if Not Done Right

- Failure to First Identify Project Requirements Leads to unclear Liabilities for State
 - Liabilities appear during requirements allocation and must be addressed in RFP
- Poor RFP requirements results in an increased proposed cost due to risk
 - Think vague requirements beneficial - **WRONG**
 - Careful vendors typically protect themselves by incorporating assumptions or other statements in their proposal



Summary

- Write Requirements to **Communicate** the Stakeholders Needs
 - Plan your approach
 - ID Stakeholders and techniques, elicit, analyze, resolve, validate, and approve
 - Work top down from the Scope to Project Requirements and then allocate responsibilities
- Manage Requirements through the Lifecycle
 - Plan your approach
 - Integrate approach with PM processes
 - Let the Requirements Repository be the record-of-fact
 - Perform traceability as complete as possible



Questions



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Consulting and Planning Division (CPD)

■ Resources

■ CPD's Home page

<http://www.cio.ca.gov/cpd/default.asp>

■ Consulting landing page

<http://www.cio.ca.gov/cpd/consulting.asp>

■ CPD Project Plans and Tools

<http://www.cio.ca.gov/cpd/plansandtools.asp>