



Managing PLM Deployments with Teamcenter Systems Engineering

PLM World 2006 Conference, May 8-12, 2006

Tony Komar
Project Manager/ System Architect
Systems Engineering Consulting Services



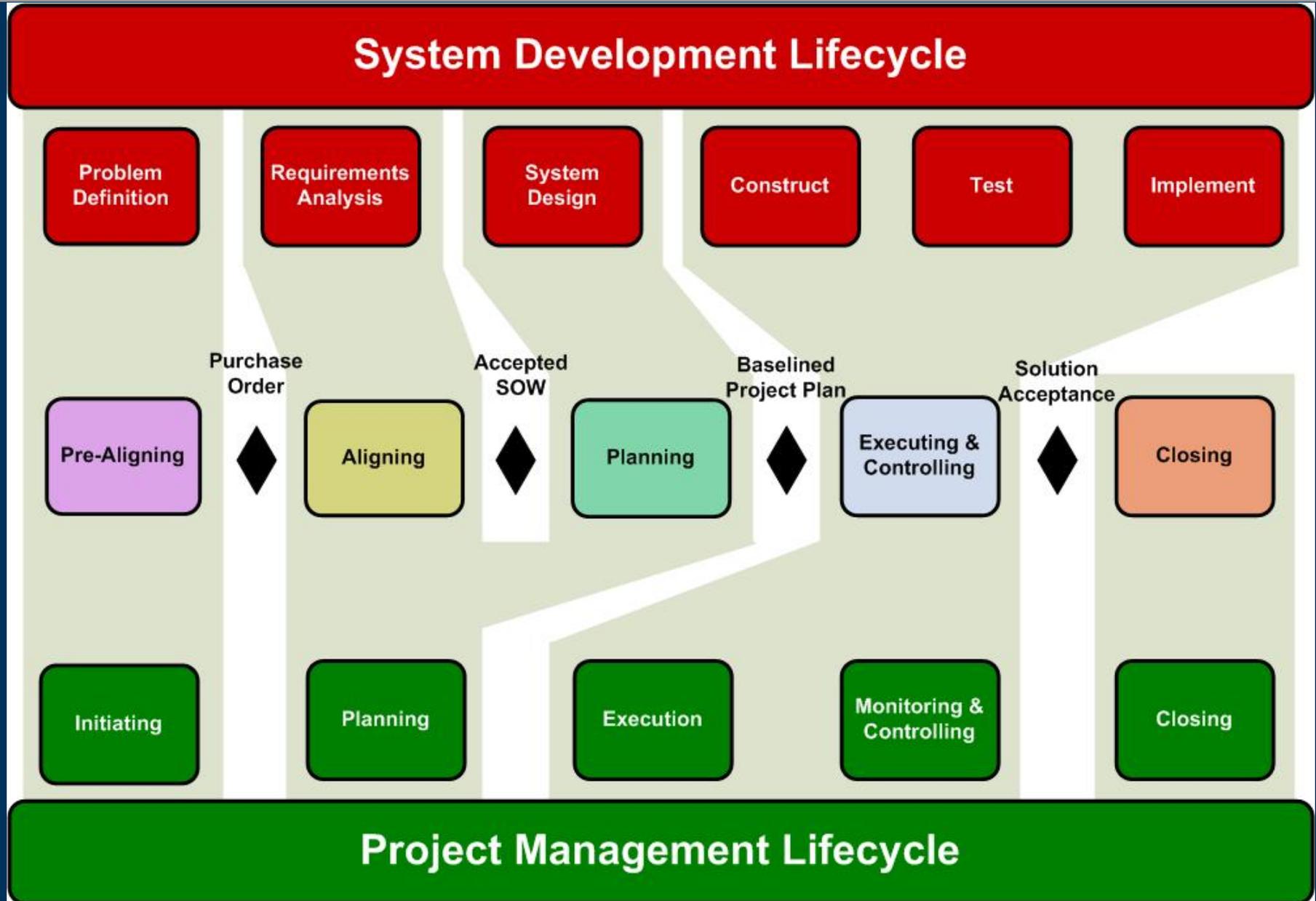
Agenda

- ▶ Overview of the UGS deployment process
- ▶ Capabilities of a Systems Engineering tool
- ▶ Mapping of UGS Delivery Process to Teamcenter Systems Engineering.
- ▶ Benefits to the Customer



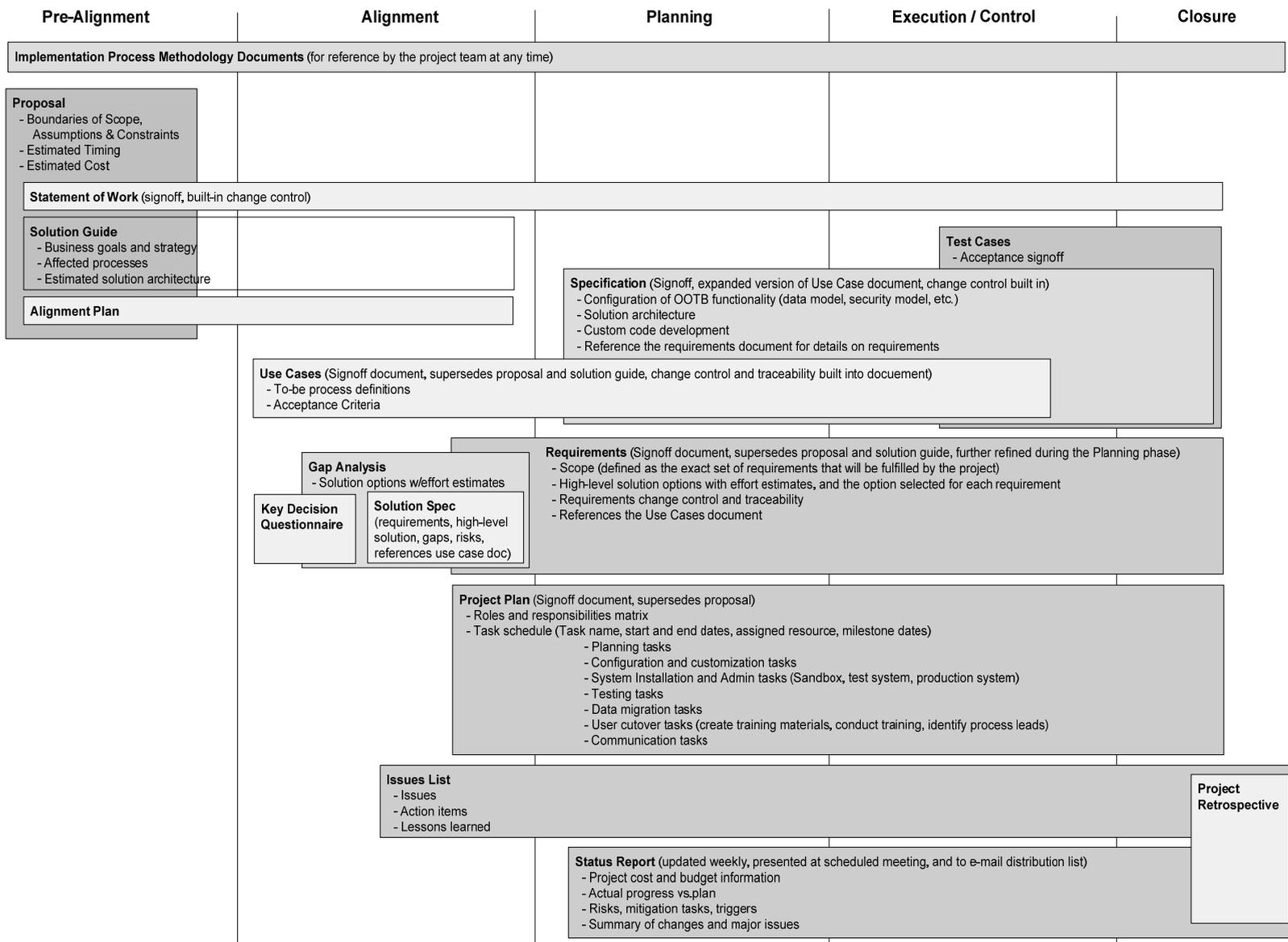
UGS PLM Deployment Process

Combining the Power of PMI and SDLC



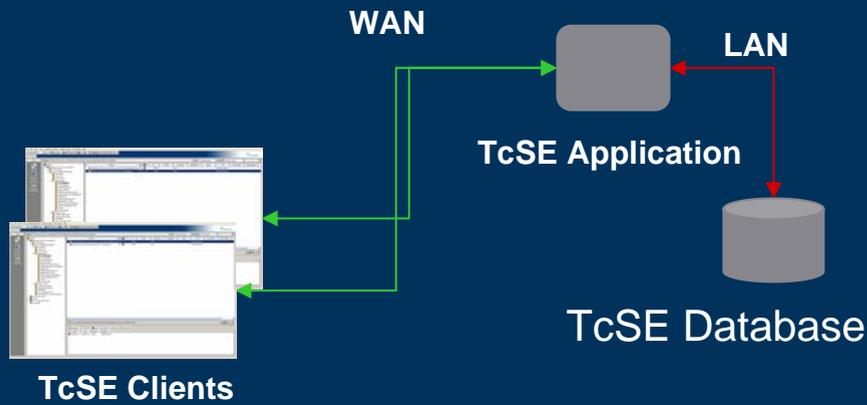


UGS PLM Deployment Process - Project Management Documents





Why use TcSE for Managing a PLM Deployment?



Multi-User Collaboration

Date	User	Event	Old Value	New Value
February 09, 2006 2:31:00 PM	tkomar	Activator:Clear Excel Text	CGM files will be created by default.	
Feb 9, 2006 2:30:52 PM	tkomar	Modify Text Event		
February 09, 2006 2:30:52 PM	tkomar	Activator:Excel_Text to Body		CGM files will be created by default.
Feb 9, 2006 2:30:36 PM	tkomar	Property Event: Comments	4201	4203
Feb 9, 2006 2:30:14 PM	tkomar	Modify Name Event	Generate PDF files of drawings.	Generate CGM files of NX drawings upon save and automatically store the CGM file in TcEng.
Feb 9, 2006 2:29:40 PM	tkomar	New Version Event	Fit Gap Req: 0302-1 Generate PDF files of drawings. \Americas\Del. Servs. Development\TcSE TcEngineering\Example\Requirements\3D Visualization\Generate PDF files of drawings.	
Feb 9, 2006 2:28:49 PM	tkomar	Modify Name Event	Fit Gap Req	Generate PDF files of drawings.
Feb 9, 2006 2:28:36 PM	tkomar	Property Event: Comments		4201
Feb 9, 2006 2:27:52 PM	tkomar	Modify Name Event		Fit Gap Req

Change History

Folders	Version...	Comments	Change Time	Change User
Generate CGM files of NX drawings upon save and automatically store	1	0302-2	4203	
Enable non-CAD users to access and view CGM drawings.	2	0303-2	4204	

Folders	Version...	Comments	Change Time	Change User
Generate PDF files of drawings.	0302-1 Static	4201	2/9/06 2:29 PM	tkomar
Generate CGM files of NX drawings upon	0302-2	4203	2/9/06 2:39 PM	tkomar

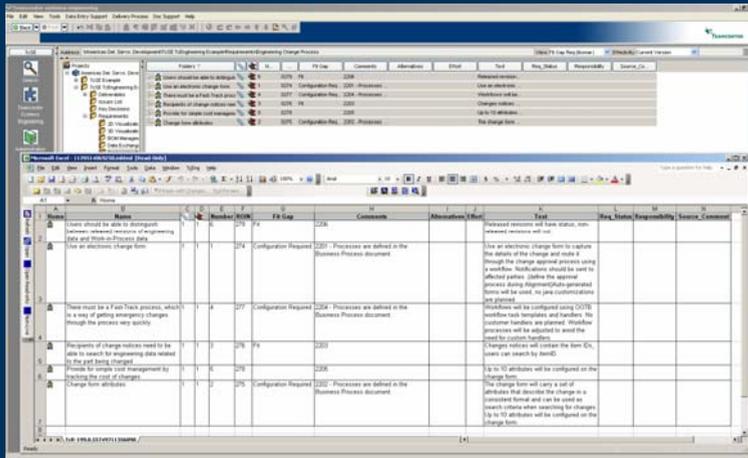
Revisions

- EXECUTIVE SUMMARY 1
 - Business Goals 1.1
 - Approach 1.2
 - Scope 1.3
 - Implementation Methodology 1.4
 - Budget Requirements 1.5
- PROJECT SCOPE 2
 - Statement of Work 2.1
 - Data 2.2
 - Location & Users 2.3
 - Infrastructure 2.4
- PROJECT ORGANIZATION 3
 - Project Team Structure 3.1
 - Roles and Responsibilities 3.2
- Estimating Parameters 4
 - Assumptions 4.1
 - Constraints 4.2
 - Risks 4.3
- Solution Guide 5
 - Solution Guide 5.1
- DELIVERY METHODOLOGY 6
 - Quality 6.1

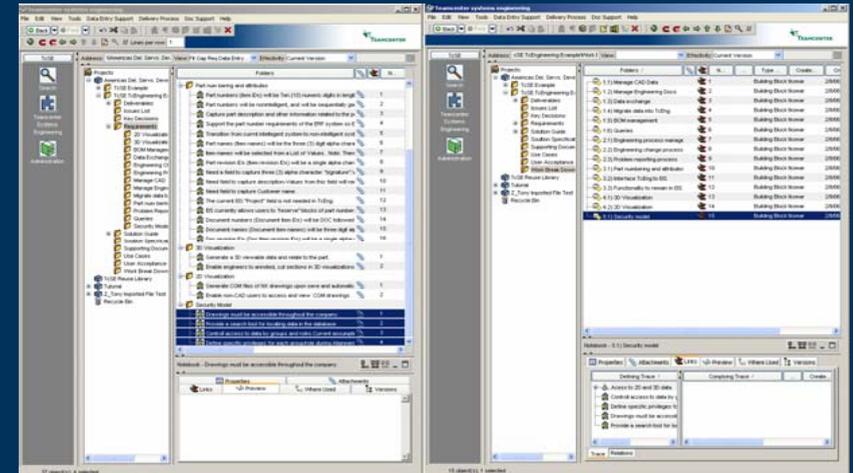
Documentation Production



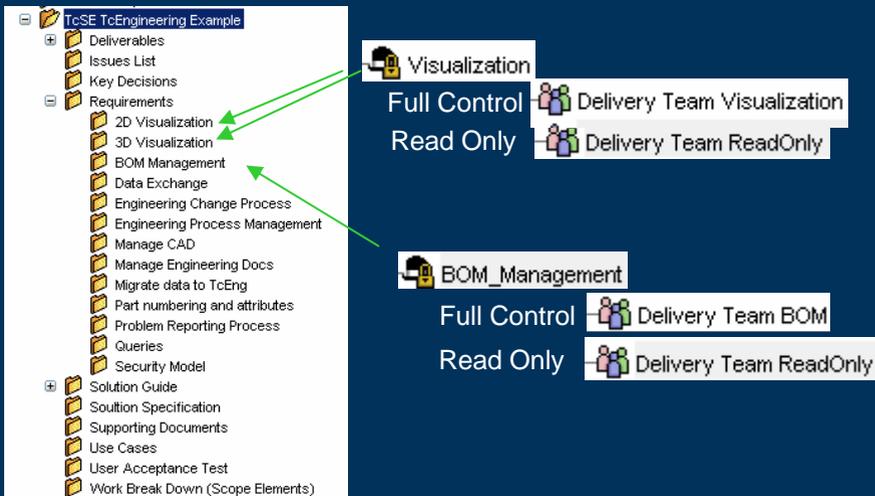
Why use TcSE for Managing a PLM Deployment?



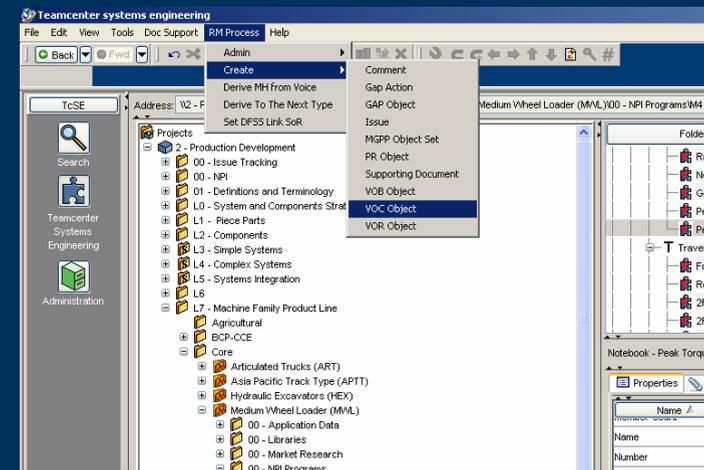
Excel User Interface



Multiple Window Support



Security Profiles



Process Oriented Configurations



Why use TcSE for Managing a PLM Deployment?

Tracing requirements through the Delivery Process

Features of TcSE

Ending a Link

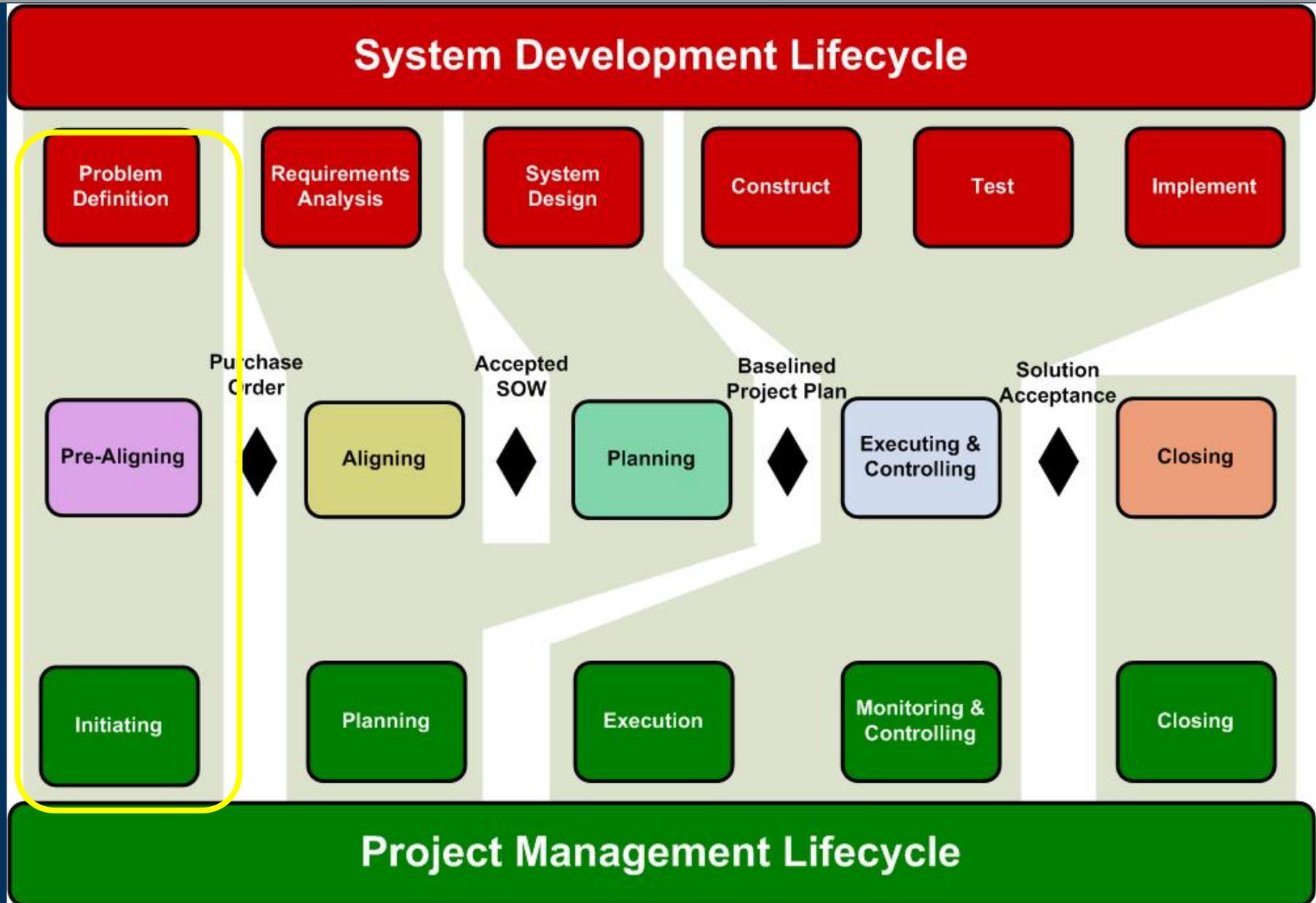
Starting a Link

The image displays several screenshots of the TcSE software interface. The top-left screenshot shows a toolbar with a red circle around the 'End a trace link subtype at selected item(s)' button. The top-right screenshot shows a toolbar with a red circle around the 'Start a trace link from selected item(s)' button. The middle-left screenshot shows a project tree with a red circle around the 'Forward Speed' requirement. The middle-right screenshot shows a table of requirements with a red circle around the 'Forward Speed' row. The bottom-right screenshot shows a 'Compiling Trace' dialog box with a red circle around the 'Compiling Trace' button.

Req. ID	Req. Name	Version	Subtype	Status	Created By	Created Date	End Date
7.7.2.1.1.1	Lower Torque	11020	Req	Saved as H...	2.8.06		
7.7.2.1.1.2	Engine	11020	Template	To need req...			
7.7.2.1.1.3	Net Power vs. Speed	11020	Req	Saved as H...			
7.7.2.1.1.4	Line Acceptance	11020	Req	Saved as H...			
7.7.2.1.1.5	Rated Speed	11020	Req	Rated speed: 1700 RPM			
7.7.2.1.1.6	Net Rated Power	11020.2	Req	As required: 372 kW			
7.7.2.1.1.7	Gross Rated Power	11041	Req	As required: 288 kW			
7.7.2.1.1.8	Peak Torque Speed	11041	Req	As required: 1300 RPM			
7.7.2.1.1.9	Peak Torque Rise	11041	Req	As required: 0.201			
7.7.2.1.1.10	Torque	11041	Template				
7.7.4.1	Forward Speed	11020	Req	Saved as Req...	4/26/06		
7.7.4.2	Reverse Speed	11020	Req	Reverse Plan: 27 km/h			
7.7.4.3	2R-2F Time (Empty)	11020	Req	Saved as H...	3/23/06		
7.7.4.4	2R-2F Time (Loaded)	11024	Req	Saved as H...	3/24/06		
7.7.4.5	2R-2F Jerk (Empty)	11020	Req	Requirement: 1.05			
7.7.4.6	2R-2F Jerk (Loaded)	11020	Req	Requirement: 1.04			
7.7.4.7	1R-1F Jerk (Empty)	11020	Req	Requirement: 1.01			

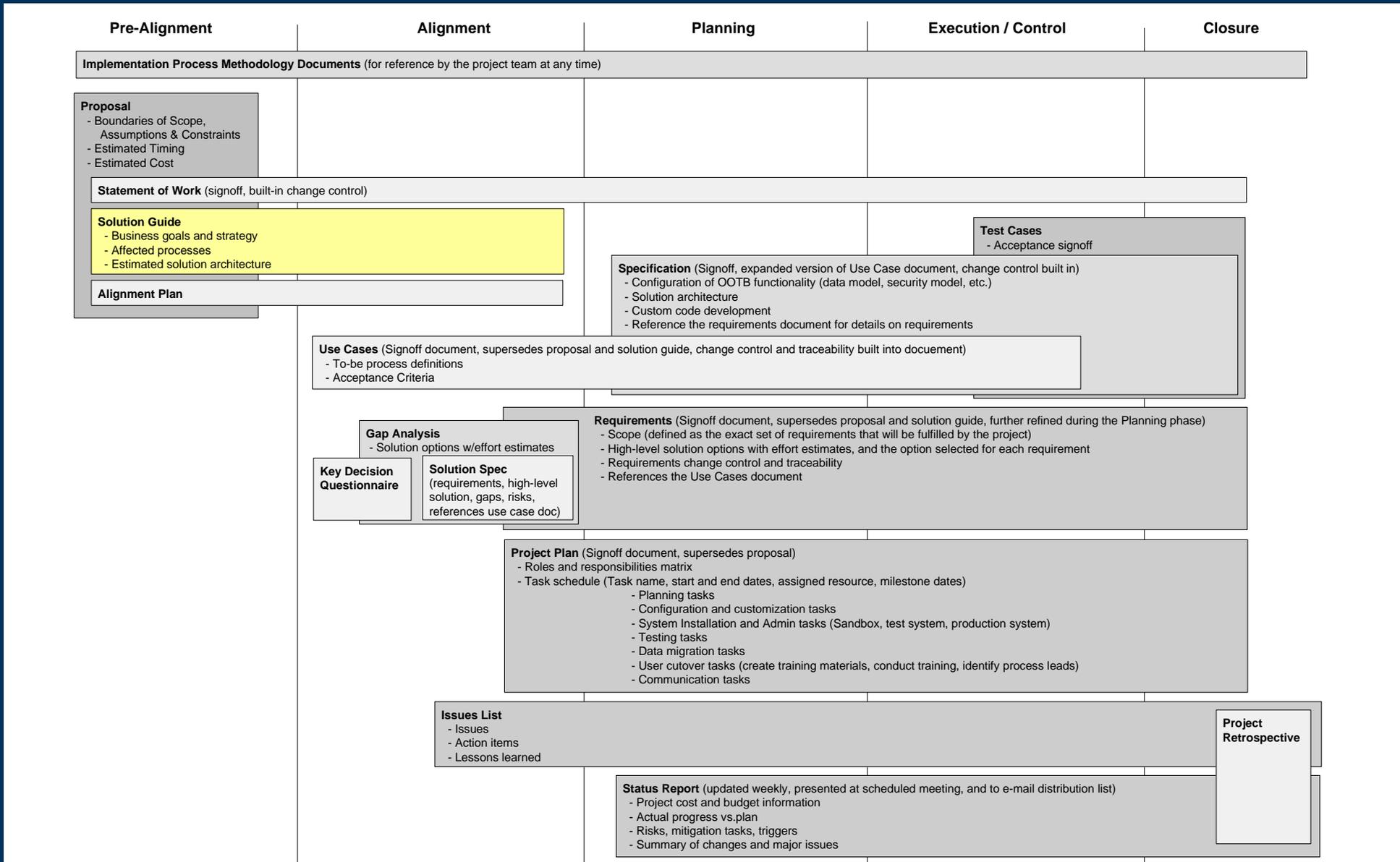


Pre-Aligning Phase – Defining the Problem



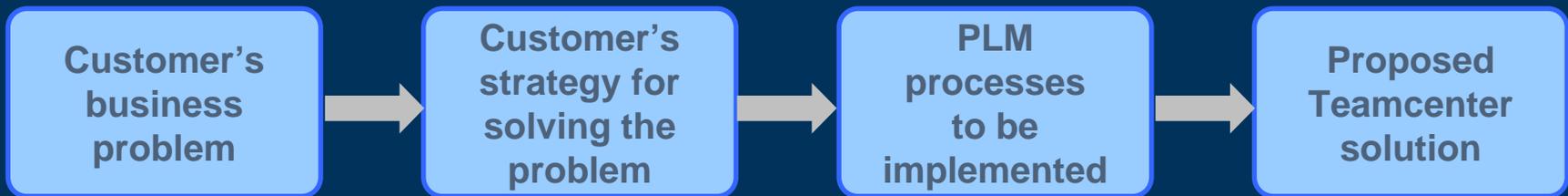


Solution Guide



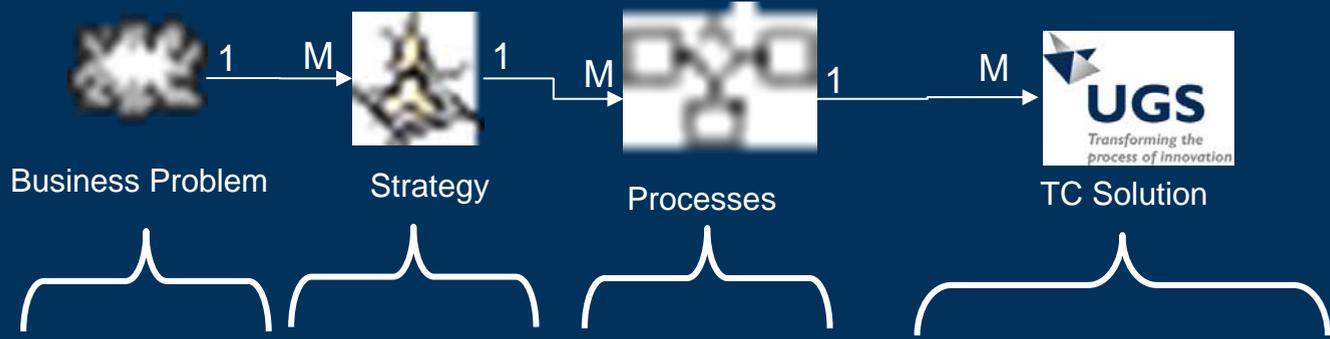


- ▶ A tool for transitioning from Sales mode to Implementation mode
- ▶ It states the target for what the project is to accomplish



Example: Tier-1 Parts Supplier

Business problem	Strategies for fixing the problem	PLM Processes	Teamcenter solution discussed by the Sales team.
Losing money because of bad quotes, slow response to RFPs.	Improve quote accuracy by basing quotes on historical engineering and manufacturing data.	Store, search, and retrieve best-practice designs from an on-line parts catalog.	Build a parts catalog in TcEng. Relate all supporting documents to the parts in the catalog. Use In-class tool to facilitate searches.
	Streamline the response process. Eliminate wasted time.	Automatic routing of the quote through the response process. Include PD, Mfg, purchasing, and Sales.	Facilitate the quoting process with TcEngineering-based workflows.

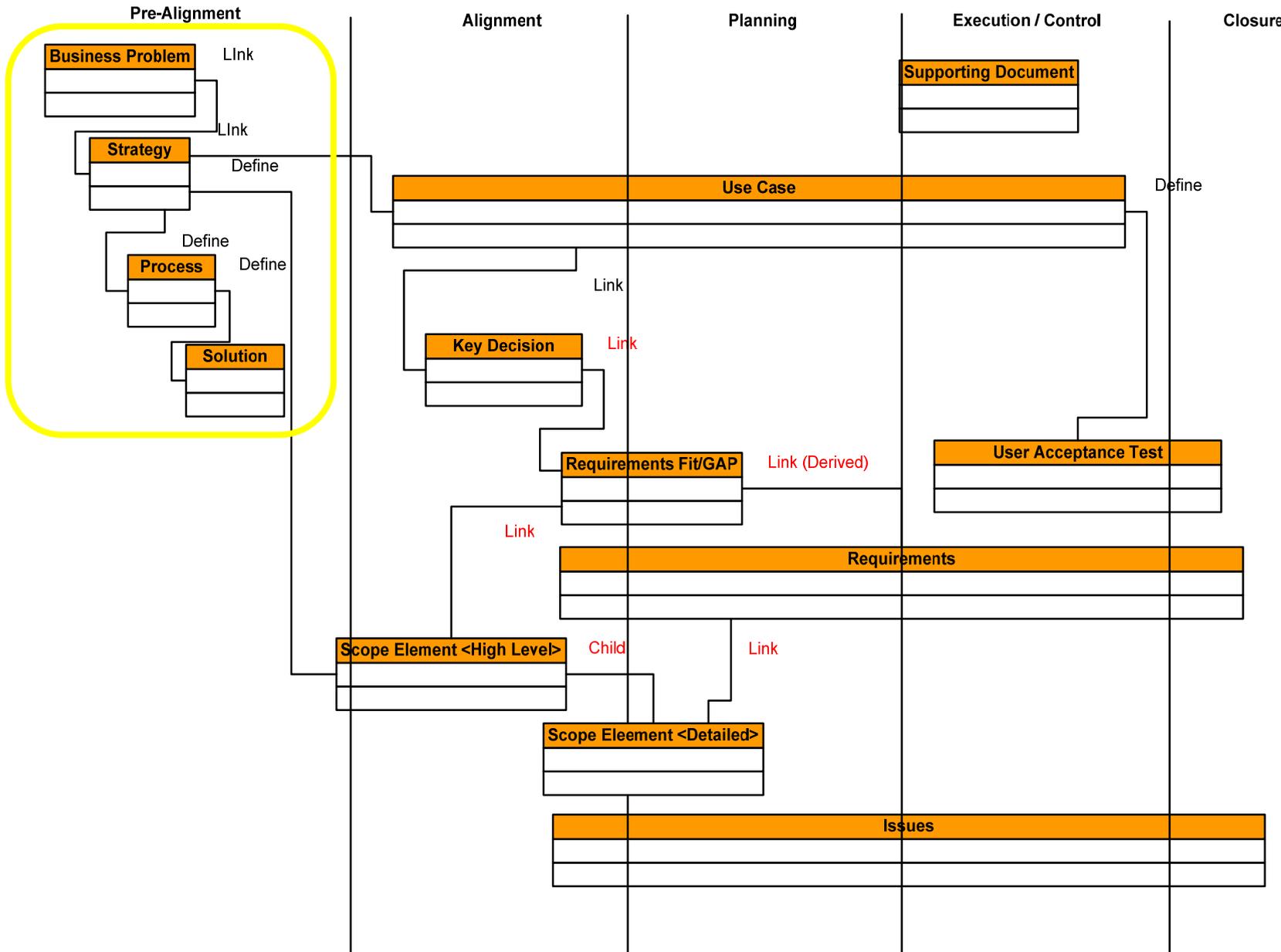


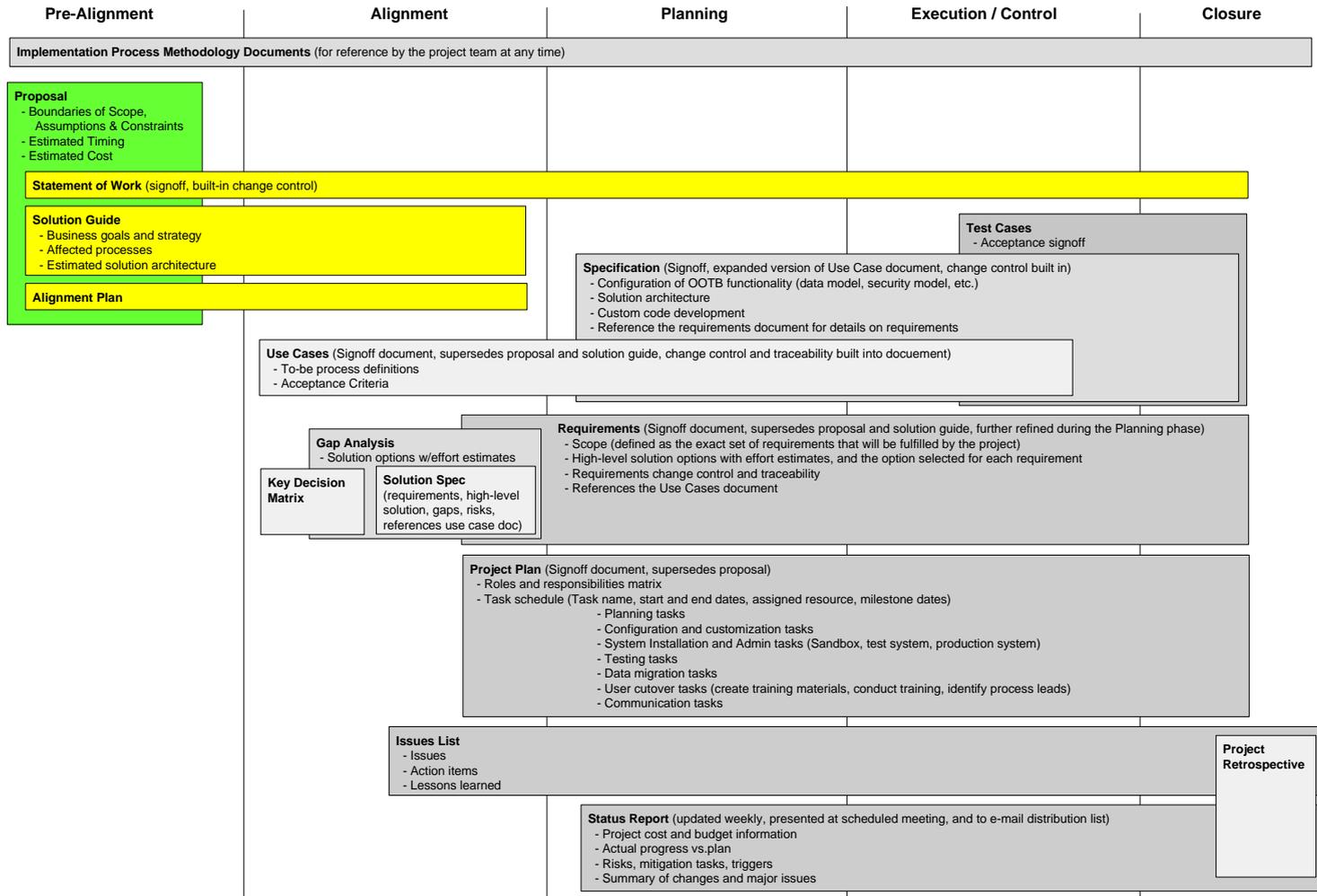
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Solution Guide







Pre-Aligning

Proposal Generation

Project Feasibility

The screenshot shows a Microsoft Word document titled "TcR-Export109543363fb.html (Read-Only) - Microsoft Word". The left-hand side displays a table of contents for a proposal, with the "Solution Guide" entry highlighted in yellow. The main body of the document shows the "5 Solution Guide" section, which includes a table titled "Table 1 Solution Guide".

Business Problem	Strategies for fixing the problem	PLM Processes	Teamcenter solution discussed by the Sales Team.
0035 - Gain efficiency - 1) Gain efficiency in the new product development process.	0039 - Single database for engr data and product structure - 1) Manage all product engineering data in a single database. Organize the data under product structures so all data for each product can be easily found.	0185 - Processes-	0048 - Implement TcSE-
0035 - Gain efficiency - 1) Gain efficiency in the new product development process.	0040 - Enable a consistent release process. - 2) Enable consistent engineering release and change management systems.	0185 - Processes-	0048 - Implement TcSE-
0035 - Gain efficiency - 1) Gain efficiency in the new product development process.	0041 - Discontin in house development - 3) Discontinue development of in-house information management systems and implement commercial systems.	0185 - Processes-	0048 - Implement TcSE-
0035 - Gain efficiency - 1) Gain efficiency in the new product development process.	0183 - Access to 2D and 3D data - 4) Enable non-engineering groups to access and utilize 2D and 3D engineering data.	0185 - Processes-	0048 - Implement TcSE-
0035 - Gain efficiency - 1) Gain efficiency in the new product development process.	0184 - Access control to information - 5) Provide greater control of access to information.	0185 - Processes-	0048 - Implement TcSE-

The status bar at the bottom of the window indicates "Page 8", "Sec 1", "8/18", "At 1\"", "Ln 1", "Col 17", and "REC TRK EXT OVR".



Pre-Aligning

The Strategy is allocated to Scope Elements

Project Feasibility



1

Strategy



Scope Element

The screenshot displays a software interface with a 'Folders' pane on the left and a 'Text' pane on the right. The 'Folders' pane shows a tree structure with the following items:

- Constraints
- Matrices
- Business Problems (0033)
- Strategy (0038)
 - Single database for engr data and product structure (0039)
 - Enable a consistent release process. (0040)
 - Discontin in house development (0041)
 - Access to 2D and 3D data (0183)
 - Access control to information (0184)
- Processes (0042)
- Solution List (0047)

The 'Text' pane shows the content of the selected folder, 'Single database for engr data and product structure', with the following list of items:

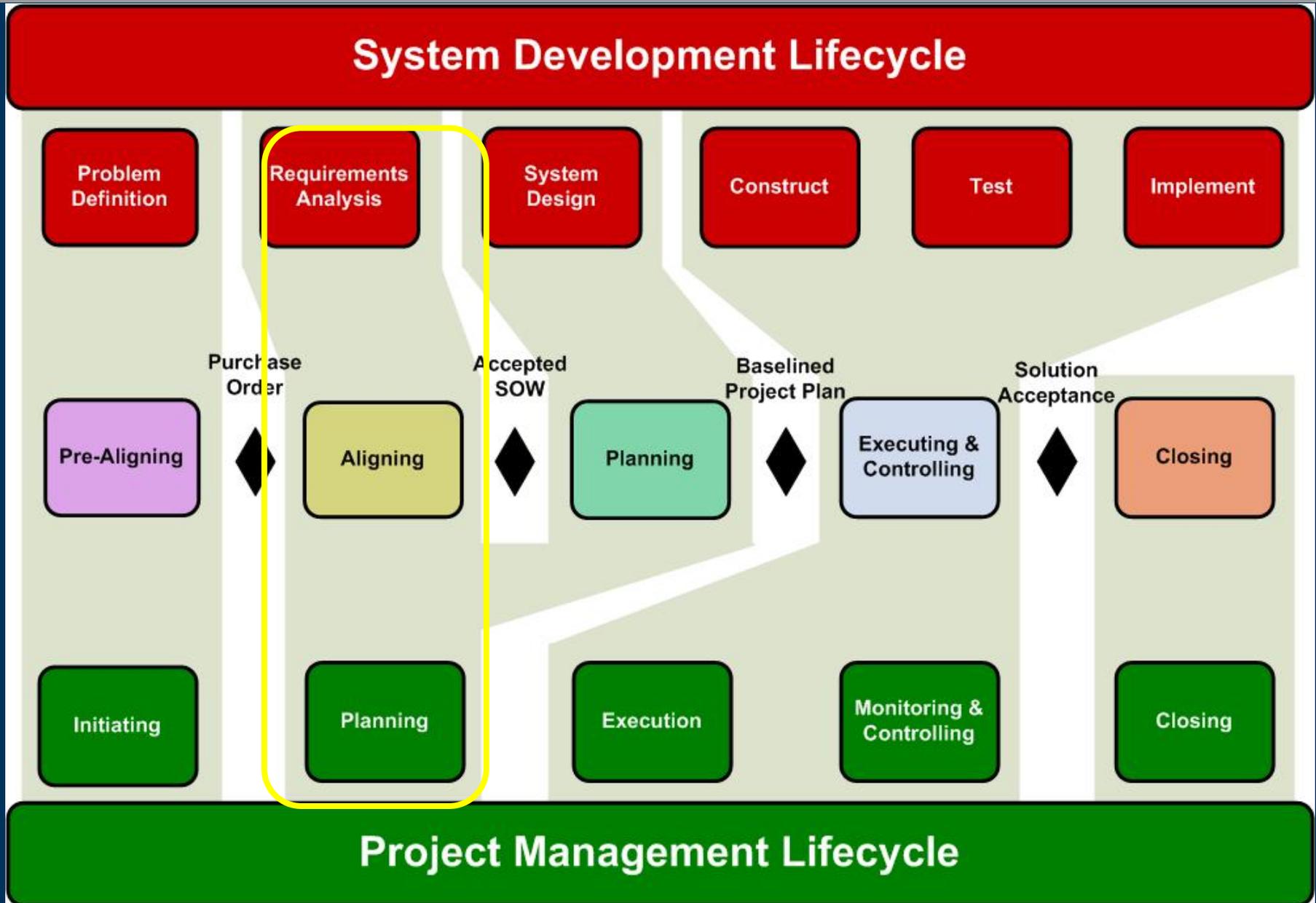
- 1) Manage all product engineering data i...
- 2) Enable consistent engineering releas...
- 3) Discontinue development of in-house...
- 4) Enable non-engineering groups to ac...
- 5) Provide greater control of access to i...

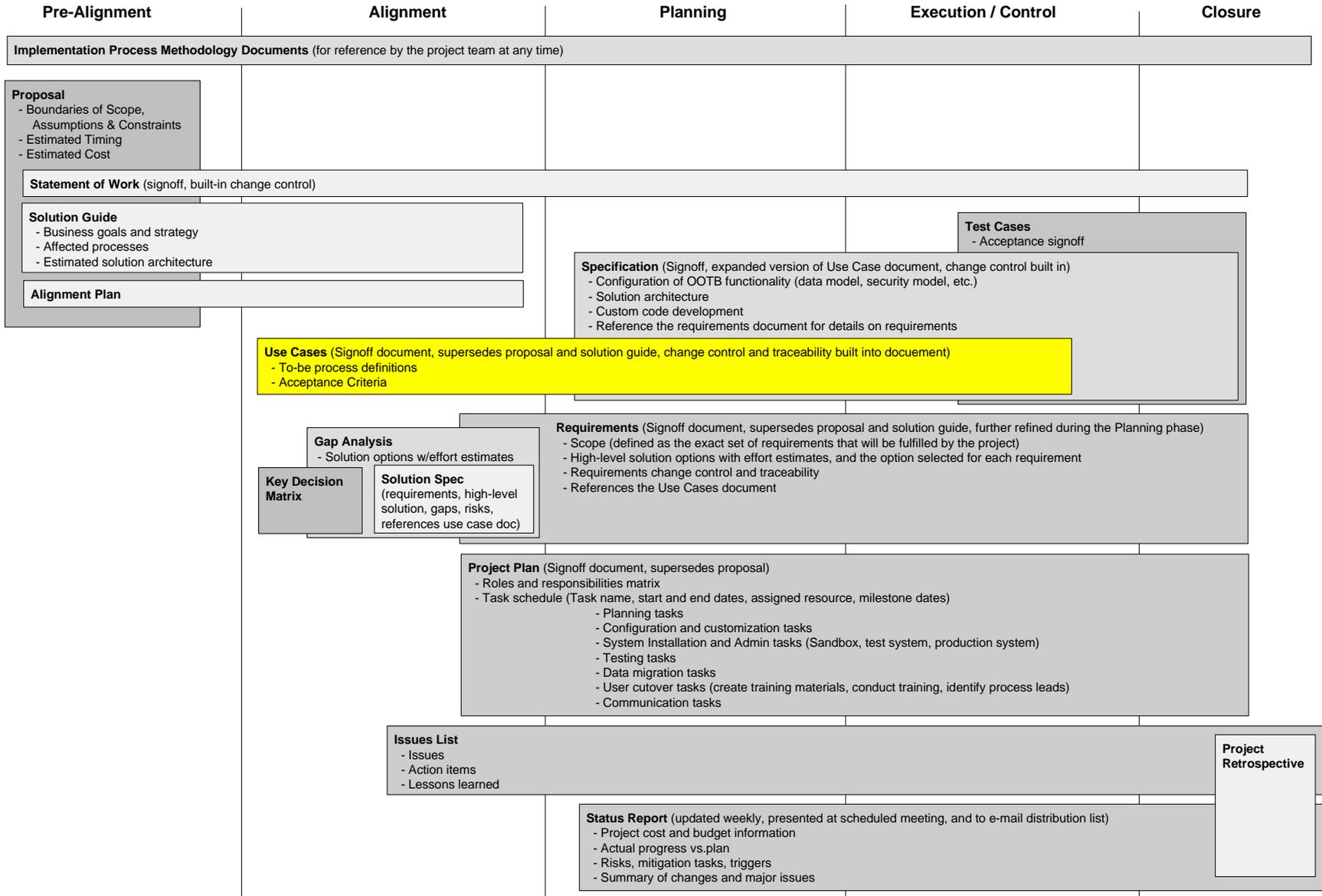
Below the 'Text' pane, there is a 'Notebook - Single database for engr data and product structure' section. It contains a 'Defining Trace' table and a 'Complying Trace' table. The 'Complying Trace' table is highlighted with a yellow box and contains the following data:

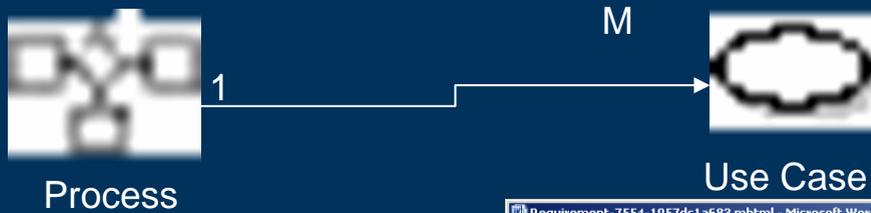
+	1.1) Manage CAD Data	0186	tkomar	2/8/06	5:06 ...
+	1.2) Manage Engineering Docs	0187	tkomar	2/8/06	5:06 ...
+	1.3) Data exchange	0189	tkomar	2/8/06	5:06 ...
+	1.4) Migrate data into TcEng	0188	tkomar	2/8/06	5:06 ...
+	1.5) BOM management	0190	tkomar	2/8/06	5:06 ...
+	1.6) Queries	0191	tkomar	2/8/06	5:06 ...



Aligning Phase – Defining the Requirements







Requirement-7554-1057dc1a683.mhtml - Microsoft Word

File Edit View Insert Format Tools Table Window TcEng Help

Normal + Bold 12 Normal + Bold

Scope: This addresses the process of building a Multi-Generational Program Plan in TeR. Multi-Generational Product Plans (MGPP's) are a dynamic set of plans identifying technical and program scope to be accomplished at a specific time. MGPP's define the releases for the product and what capability/functions will be available in each release. These capabilities/functions will change and evolve as each generation is more carefully analyzed. Capabilities may shift to other generations or may be revised so they may be accomplished with existing technology/designs. Traceability between VOC/VOB, CCR/CBRs, and PRs and the MGPP statements are required. MGPPs are created at a high level from the strategy phase. MGPPs are base lined at the launch review and changes to it are controlled requiring reason and decision logic. A common design needs to be developed so that the MGPP can track along with the NPI process, evolve with the changes and decisions of requirements gathering, concept selection and technical specification definition. The MGPP will be the collector of these decisions so there needs to be the ability to link decisions to elements of the MGPP. There needs to be a report capability so that the user can view and print the MGPP and status it. MGPP's are management level objects that will be reviewed on a regular basis to help determine the progress of the development project.

Primary Stakeholders: NPI Team

Primary Actors: NPI Team, TeR

Trigger Event: Opening the MGPP object.

Preconditions:

The MGPP_Report object needs to have two links connected to it from two objects. One object will be of type MGPP_Gen_Folder, and the other will be of type MGPP_Plan_Folder. The MGPP_Plan_Folder object shall have members that reflect capabilities, features etc... They may be of any type. The Generation hierarchy shall contain building blocks of type MGPP_Generation. Links made from items in the MGPP_Plan_Folder to Generations shall reflect a plan to implement that capability/ feature in that generation.

Goal (post condition): The desired information is presented to the user, in the form of a table that is updated within the MGPP object.

Basic Flow:

1. User opens the MGPP_Report object and it builds a table that shows the plans as rows and generations as columns.
2. The table shall be populated with the header and the contents of the text body as an HTML object. (This would allow graphics)
- 3) Plans can link to other plans at lower levels.

Extensions (alternate flows):

- 1a) An error will be generated if links are not present on the MGPP object.

Variations:

Since the MGPP requires both a Plan Folder and the Generation Hierarchy it is possible that one Hierarchy could support many MGPP's The

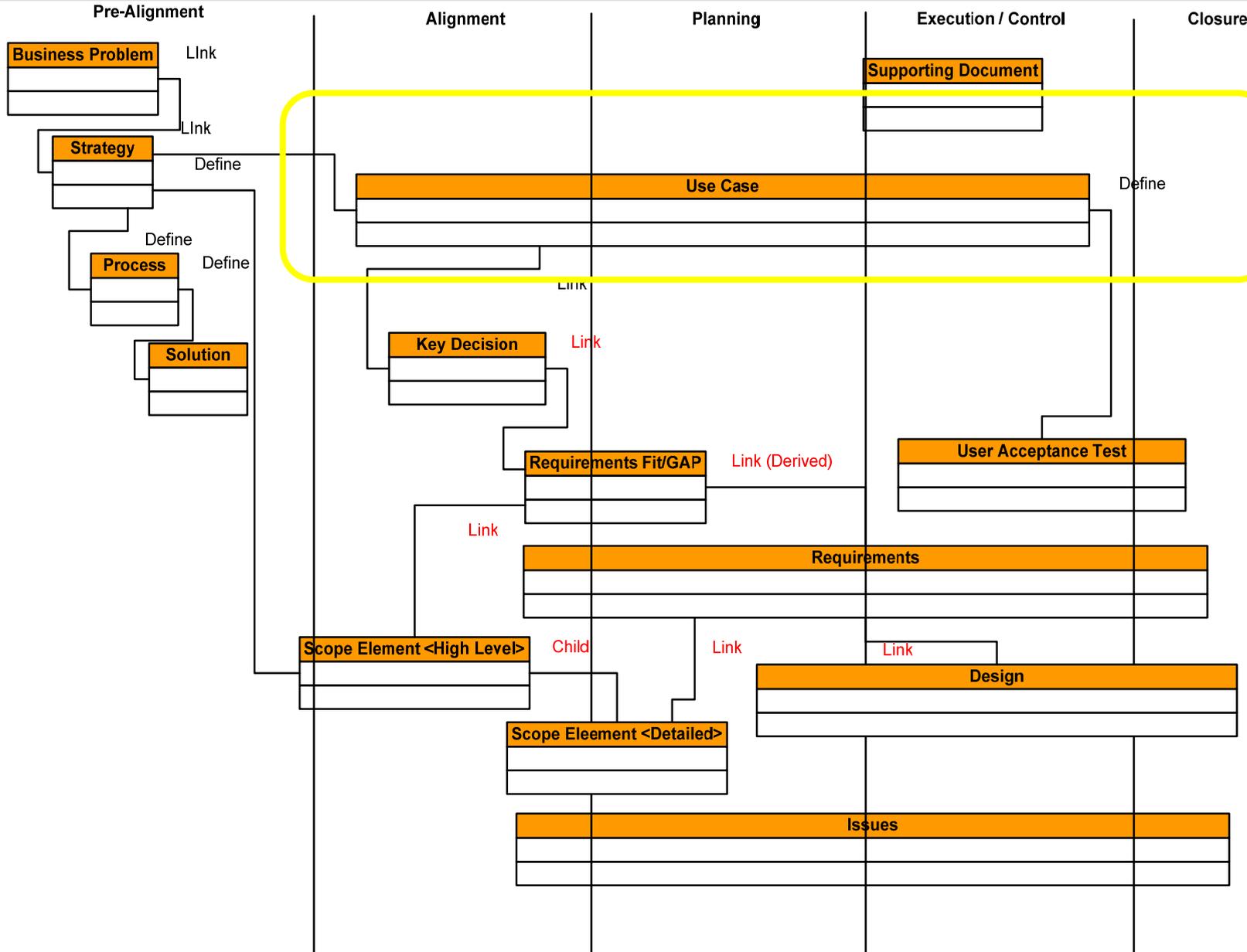
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Aligning

Use Cases

Requirements Analysis

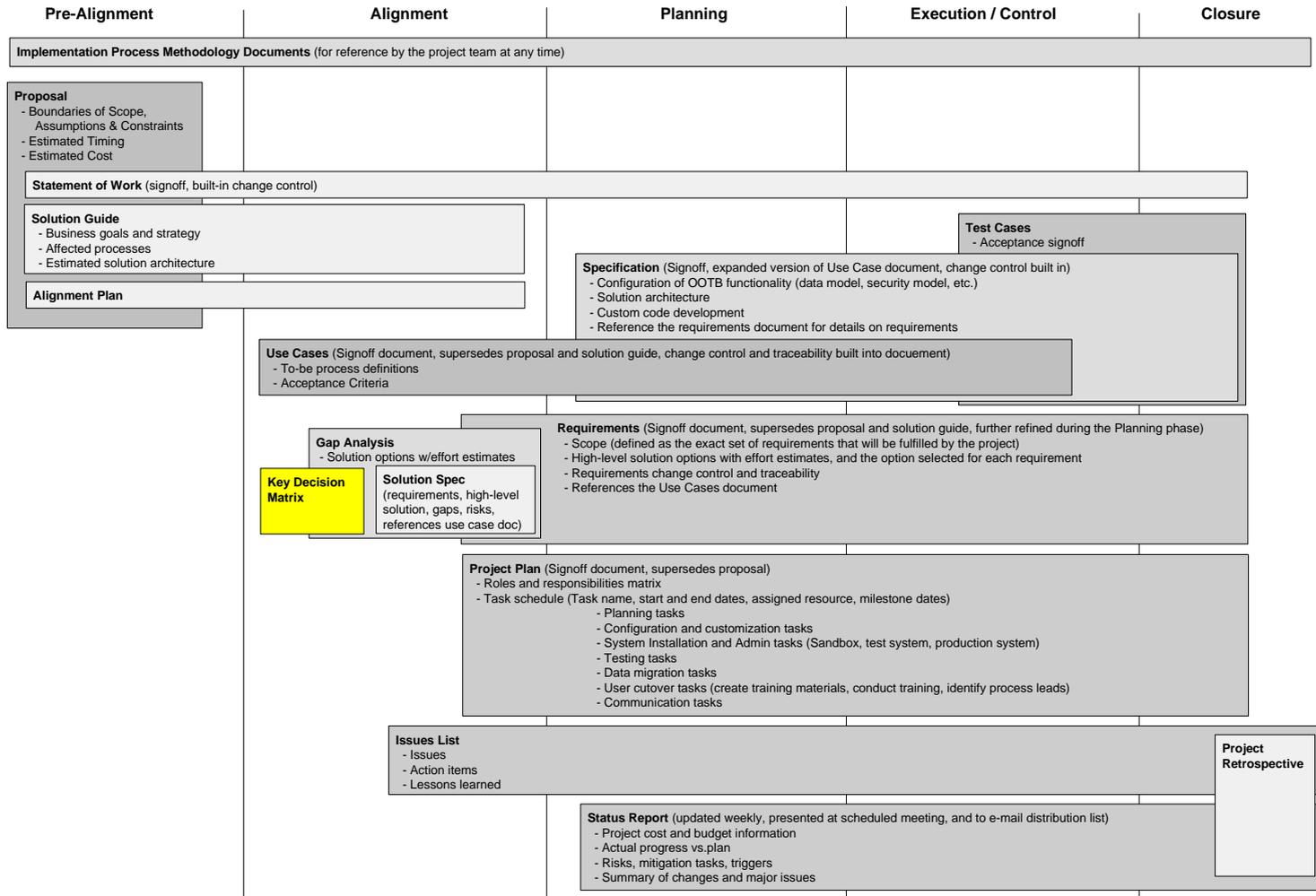




Aligning

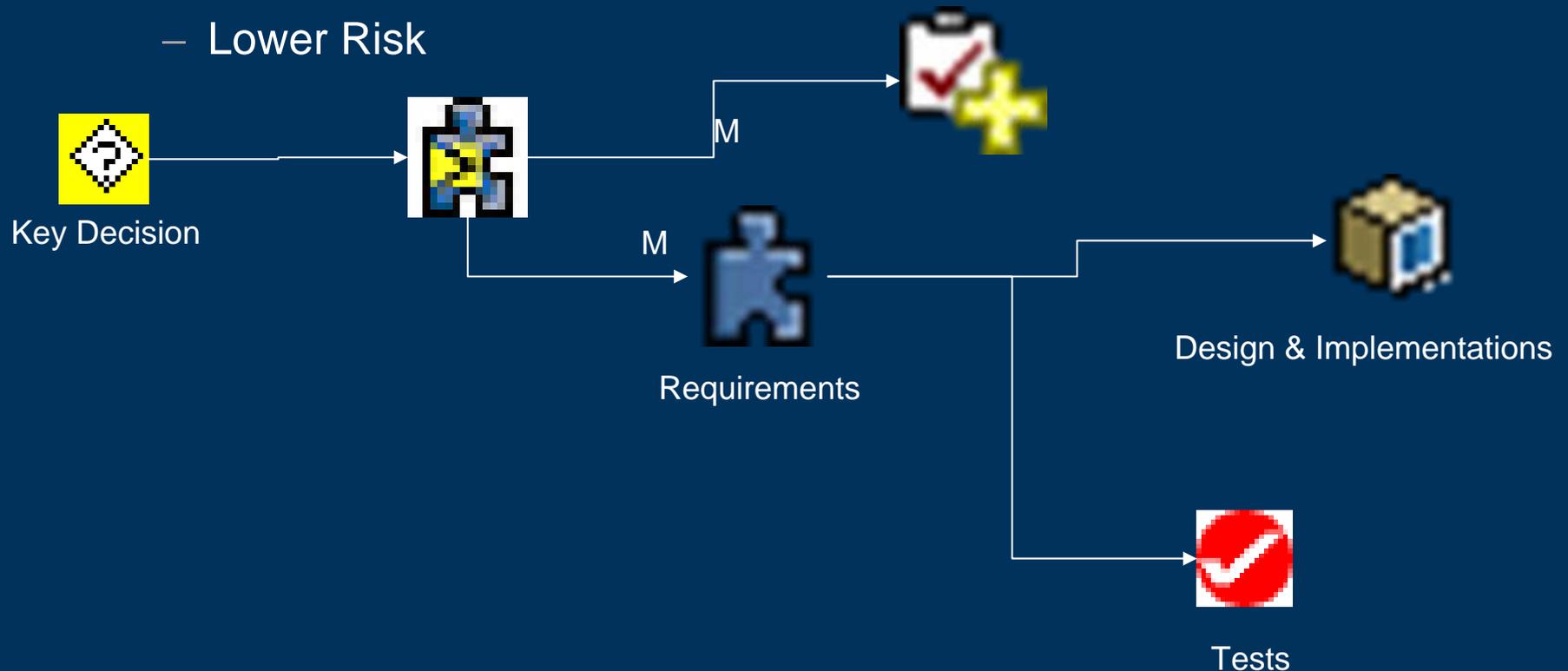
Key Decisions Development

Requirements Analysis





- ▶ Key Decisions Guide are used to guide the customer to
 - Out-of-the-Box
 - Pre-designed and implemented solutions
 - Lower Development Costs
 - Lower Risk





Aligning

Key Decisions

Requirements Analysis

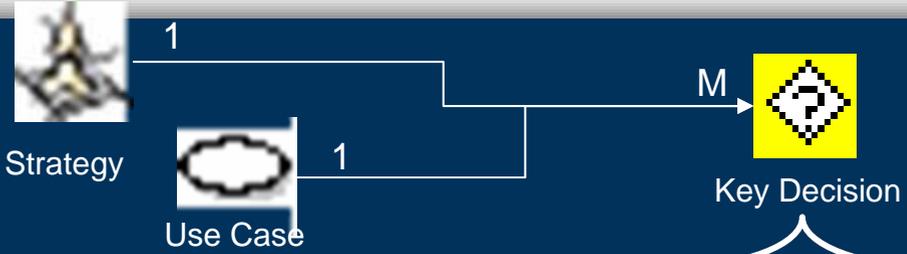
KD#	Key Decisions	Options	Considerations	Recommendation	Decision
Administration Considerations					
1	Will users be allowed to create sites?	<ul style="list-style-type: none"> • Yes • No 	Sites have to be created as business grows/changes. Users should not be allowed to create, but rather request a site to be created by an admin process.	No, users should not create sites. Use a process to involve proper administration that allows users to request sites to be created.	
2	Will users be allowed to "personalize" TcC sites?	<ul style="list-style-type: none"> • Yes • No 	Using the "My Site" functions of TcC this is easy	Yes	
3	Where are the sign-on credentials for TcComm managed?	<ul style="list-style-type: none"> • Current authentication • Active Directory in TcComm Server 	TcC requires AD, so set up a 1-way outgoing trust from TcC server to Exchange authentication (current authenticator)	Current authentication	
Data Considerations					
4	Will TcComm be the vault for any Product data? [Central repository]	<ul style="list-style-type: none"> • Yes • No 	Official product data should reside in TcEng. Consider all data kept in TcC as transient data	No	
5	Will TcComm be used as the corporate issue tracking tool?	<ul style="list-style-type: none"> • Yes • No 	<ul style="list-style-type: none"> • Use of templates and sites to collaborate, track, and manage issues is recommended • All users will need access to the issue management site. 	Yes	
Access Considerations					
6	Will every employee need to have access to TcComm?	<ul style="list-style-type: none"> • Yes • No 	Potential for high administrative presence.	No, but add task to project plan to define user list	
7	Will external organizations be allowed access into TcComm	<ul style="list-style-type: none"> • Yes • No 	Eventually, suppliers will need visibility to collaborations. The infrastructure planning should help facilitate this (DMZ).	Initially, no. However plans should be made to allow limited access from outside the firewall.	
8	Will TcComm need to be accessed from all facilities on the company network?	<ul style="list-style-type: none"> • Yes • No 	"Anywhere" means all facilities around the world	Yes	



Aligning

Key Decisions

Requirements Analysis



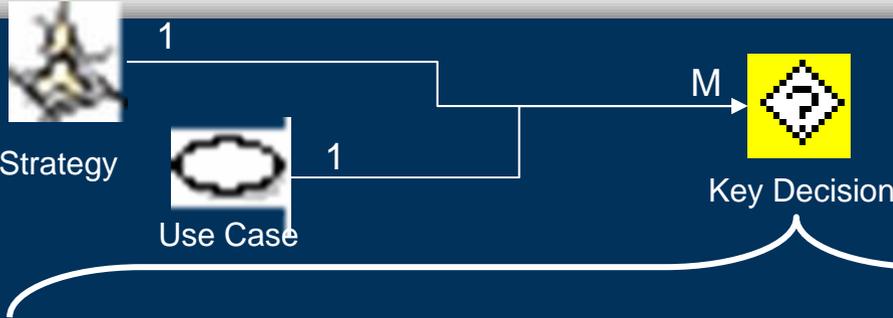
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Aligning

Key Decisions

Requirements Analysis



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Home	Name	ROIN			Text	Comments	Options	Considerations	Recommend	Decision	KD Status	Source Comment
1		How will part revisions be represented in Macola?	209	1	1	How will part revisions be represented in Macola?	311	Option 1) Concatenate the item ID with the revision number and use as the Macola part number. Option 2) Use the item ID in Macola without the revision. Once a part is released to manufacturing in TcEng, it can never be revised. Use Save-As to a new	TcEng uses item ID numbers and revision numbers to identify parts. Macola only uses the item ID numbers. It does not use revision numbers. 1200 parts already exist in Macola system without an appended revision.			Closed	Workshop #1
2		For products with options, how will BOMs be managed so that each BOM sent to the Macola has a unique part number? The engineering dept would like to minimize the work involved in maintaining BOM structures.	177	1	1	For products with options, how will BOMs be managed so that each BOM sent to the Macola has a unique part number? The engineering dept	151	Option 1) Manage each BOM as a separate structure under different items. Option 2) Manage all related BOMs as a single BOM structure in TcEng with options and variants, and apply alternate IDs for the top node. A separate alternate ID and context will b	Each variant must have a unique part number in the manufacturing system. Macola system uses 10 digit part number, but does not use revision 1200 parts already exist in Macola system without an appended revision.		Demo variants and options and revisit.	Open	Workshop #1
3		Can CGM files be used instead of PDF files for drawings?	485	1	1	Can CGM files be used instead of PDF files for drawings?	421	Option 1) Create CGM files, which is a 2D vector format. CGMs can be automatically written and stored in TcEng when drawings are checked into TcEng. Option 2) Continue to generate PDFs using current process and manually checking them in to TcEng.	Both CGM and JT files can be viewed in JT2Go, a free viewer available to everyone.		Generate CGM files	Open	Workshop #1
4		Will the engineering system and the manufacturing system use the same numbering system?	206	1	1	Will the engineering system and the manufacturing system use the same numbering system?	152	Option 1) Do not use item revisions for the top node of end-items. This will provide a unique part number for every BOM. Option 2) Combine the item ID with the Revision ID to create a unique BOM ID.	• Macola system uses 10 digit part number, but does not use revision -Need detailed discussion on appending revision to item ID for Macola "part number" field. (1200 parts already exist in Macola system without this appended revision) (Macola system pa		Option 2) combine item ID with revision. Revision IDs will be 1 alpha character. First rev will be A , do not use I or O.	Open	
5		How will BOMs be transferred from TcEng to Macola?	207	1	2	How will BOMs be transferred from TcEng to Macola?	153	Option 1) Manual process. Malcoa graphical interface is used to construct BOMs Option 2) Investigate exporting BOMs using a standard TcEng capability such as a Report or XML Option 3) ITK or TcIntegrator customization Option 4) Investigate exporting a SQ	• Macola system is SQL Server based and Osmic would like the ability to automate the population of Macola from TCE for Items/Parts and also BOM if possible. 12-5-05 Current assumption is that it will be a manual process.		Would like to automate.	Open	
6		When BOMs are transferred to Macola, will all parts be transferred or will only the parts that do not yet exist in Macola	208	1	1	When BOMs are transferred to Macola, will all parts be	154	Yes No	How would TcEng know that a part already existing in Macola and avoid transferring it?			Open	DR - Post Workshop #1
7													



▶ Example of Key Decisions regarding a deployment on TcSE

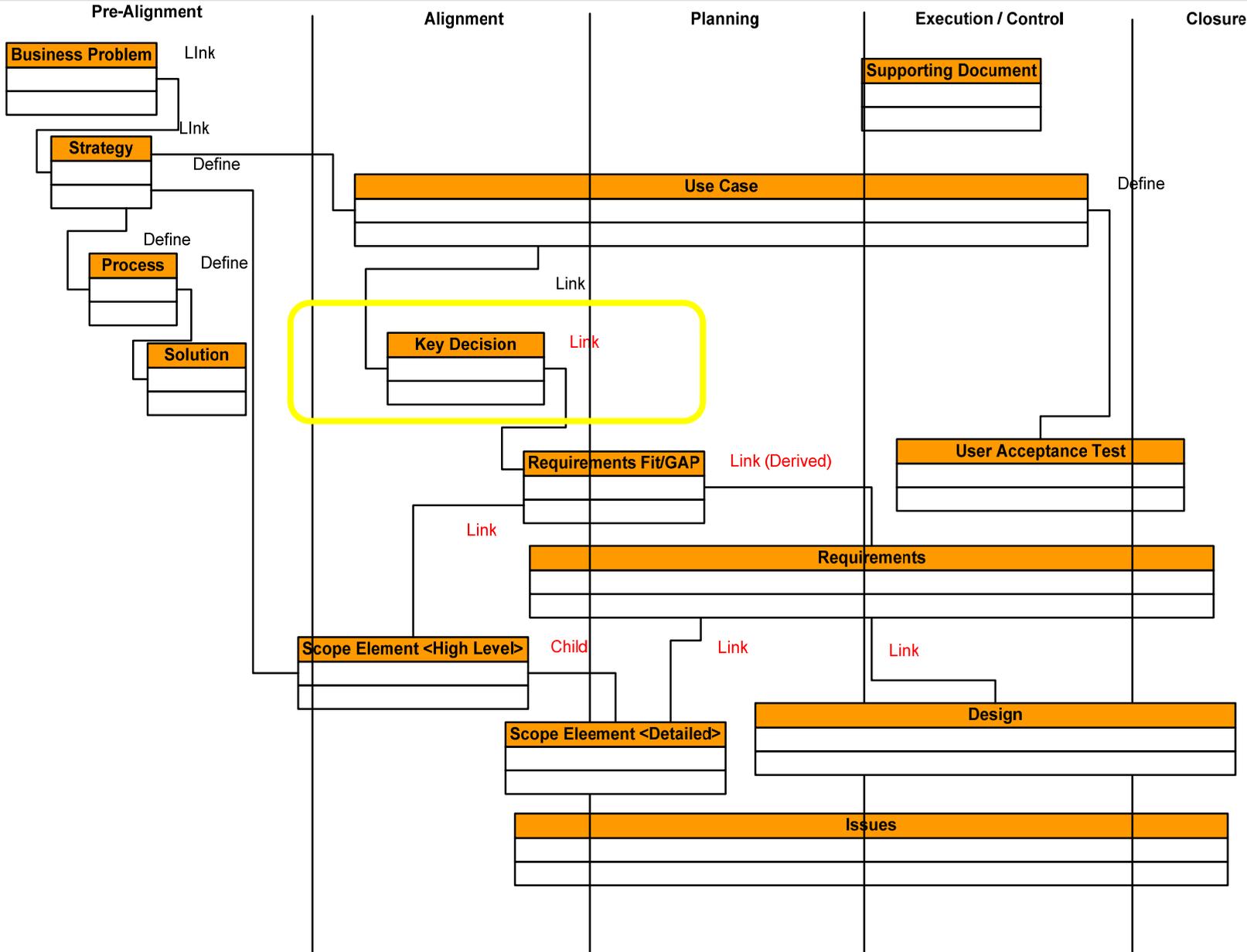
Folders	ROIN			Text	C...	Options	Considerati...	Recommend...	Decision	KD Status /	Source_Co...
✦ Email Notification	0095			Will you be using email notification upon object creation, modification or				No		Open	
✦ Change Processing	0097			Will you be using TcSE change processing?				No		Open	
✦ TcCommunity Integration	0098			Will you be using be integrating to TcCommunity?				No		Open	
✦ TcEngineering Integration	0099			Will you be integrating to TcEngineering?				No		Open	
✦ TcEnterprise Integration	0100			Will you be integrating to TcEnterprise?				No		Open	
✦ Custom .jsp Pages	0101			Will you require .jsp forms or report?				No		Open	
✦ Custom Training Materials	0102			Will you be developing custom training materials to support your process?				No		Open	
✦ Level of test	0103			Will we be required to test above and beyond typical UGS script testing?				No		Open	
✦ Suppress headings	0104			Do you want suppress heading support?				Yes		Open	
✦ Development server	0105			Will you be setting up a development server?				No		Open	
✦ Webserver	0106			What kind of webserver?				No		Open	
✦ Sever Hardware	0107			What is the server hardware?				No		Open	
✦ Architecture	0108			What is the architecture for the hardware?				No		Open	
✦ Number Users	0109			How many users do you foresee and when?				No		Open	



Aligning

Key Decisions

Requirements Analysis

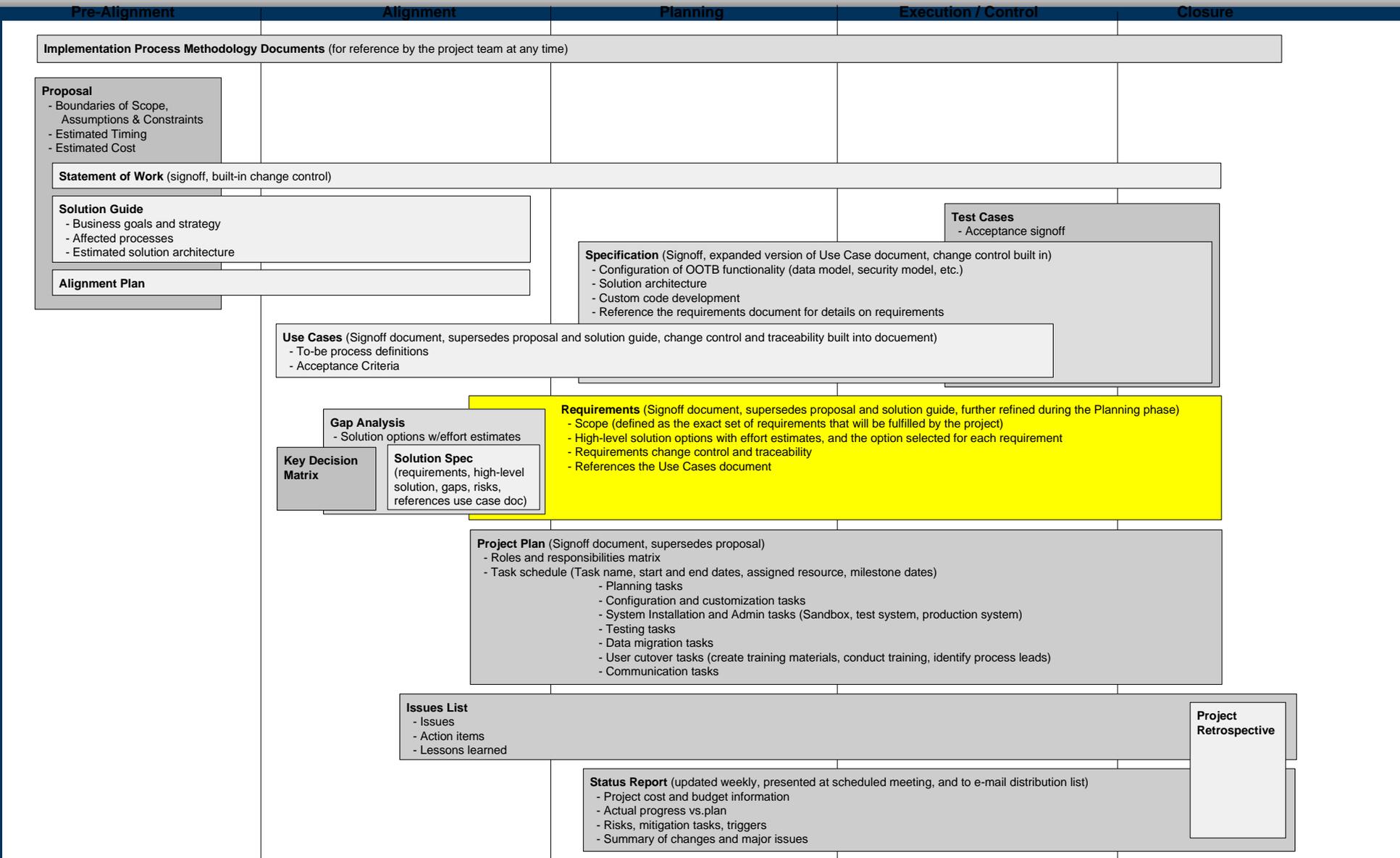




Aligning

Requirement Fit Gap

Requirements Analysis

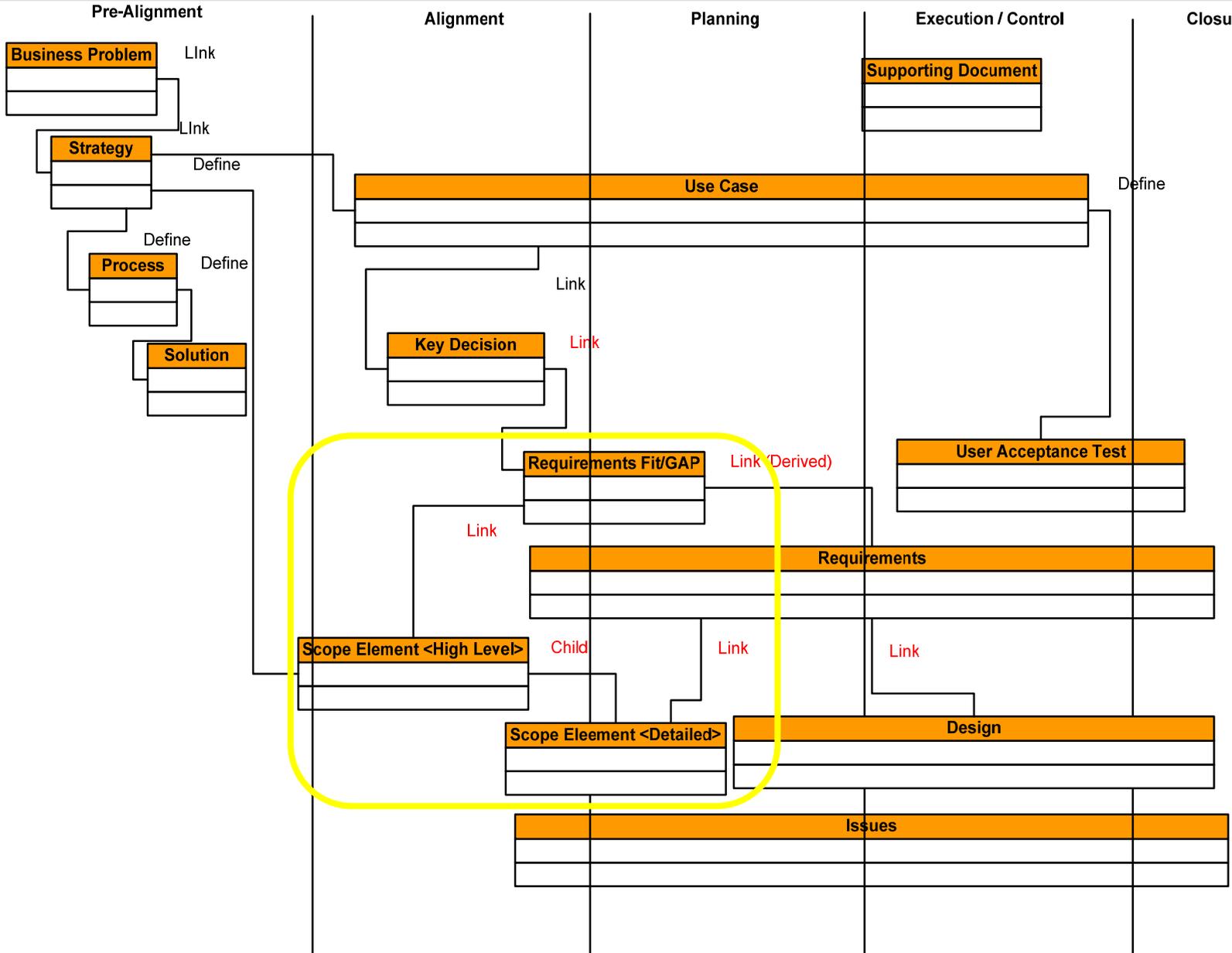


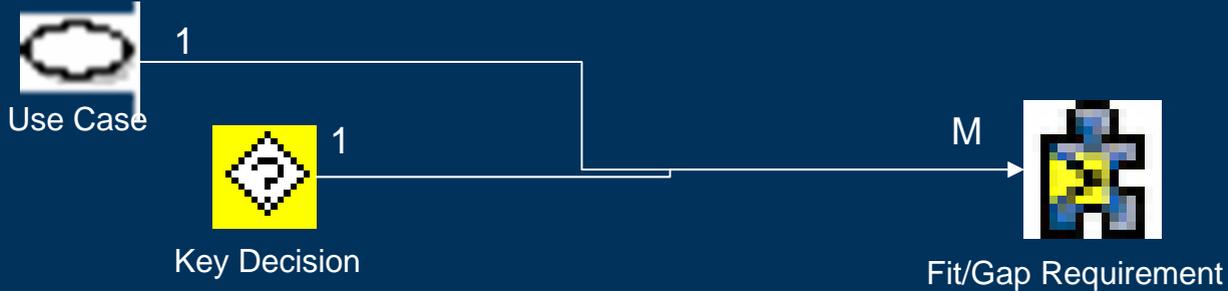


Aligning

Fit/Gap Requirements and Scope Elements

Requirements Analysis





KD#	Key Decision	Options	Considerations	Recommendation	Decision / Requirement	Fit/Gap	Alternatives	Effort	Accepted
76	Will every facility around the world store their data in the same database?	<ul style="list-style-type: none"> • Yes • No 	High-latency WAN will produce a very slow response for users.	No, use multiple databases.	Yes, we really want one database with fast response for everyone.	Gap	1) Upgrade the WAN 2) Use Multi-site and multiple databases.	\$\$\$ \$	Multi-site

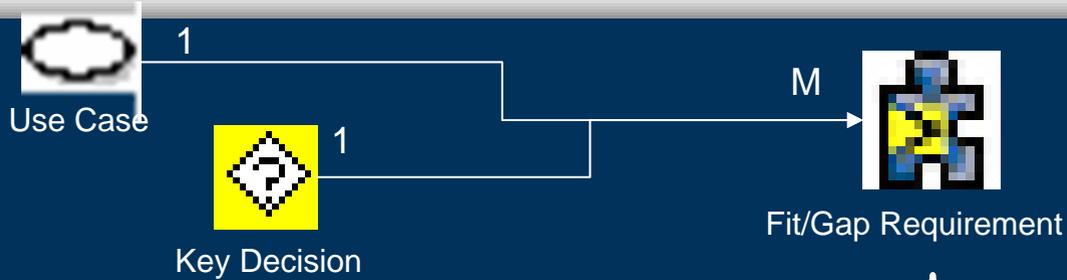
Example Key Decision Matrix – TcEngineering (oversimplified example)



Aligning

Requirement Fit Gap – Capture Recommendation and Costs associated with filling a Gap

Requirements Analysis



Folders	Fit Gap	Comments	Alternatives	Effort	Text	Req_Status	Responsibility	Source_Co...
Generate a 3D viewable data and rel	1	0300	Gap	4104	JT files will be generated from NX when saving CAD data OOTB functionality of the standard viewer in TcEng Portal.			
Enable engineers to annotated, cut sec	2	0301						

Notebook - Generate a 3D viewable data and relate to the part.

Properties
 Attachments
 Links
 Preview
 Where Used
 Versions

[0300] Generate a 3D viewable data and relate to the part.

Responsibility: State:

Fit/Gap: Gap

Comments: 4104

Alternatives:

Effort:

Source:

Solution Accepted:

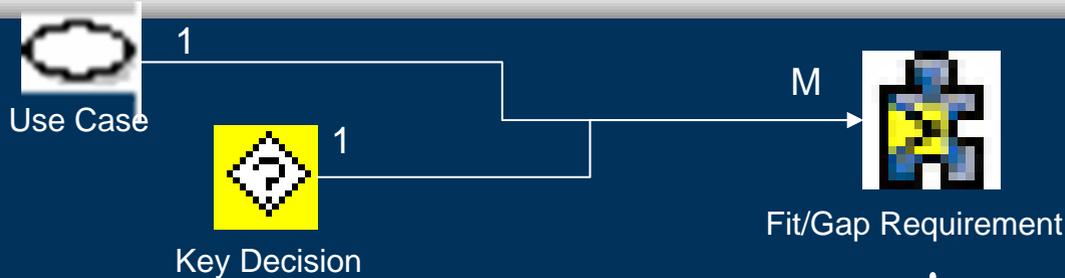
JT files will be generated from NX when saving CAD data into TcEng.



Aligning

Requirement Fit Gap – Defined by a Key Decision.

Requirements Analysis



Folders	Fit Gap	Comments	Alternatives	Effort	Text	Req_Status
Data Exchange						
BOM Management						
The Macola part number	3	0256	1503 - There are no plans to create Macola part		Part numbers will be manually entered into Macola	
Each variant must have	1	0254	1501		Manage each BOM as a separate structure under different items.	
Each configuration of a	2	0255	1502		Manage each BOM as a separate structure	

Notebook - The Macola part number will be a concatenation of the item ID and the Revision ID. For example, for item revision 1234567890/A the Macola part number will be 1234567890A.

Defining Trace	...	Create...	Complying Trace	...	Create...	Text
How will part revisions be represented?	0209	tkomar	1.5) BOM management	tkomar	2/9/06 11:05	
Will the engineering system and the	0206	tkomar	The Macola part number will be a	0479	tkomar	2/9/06 3:43 PM Part numbers will be manually

Key Decision

Scope Elements



Aligning

Requirement Fit Gap - Shape a Work Breakdown Structure for the Project.

Requirements Analysis

- ▶ All requirement including Fit Gap Requirements are mapped to Scope Elements.

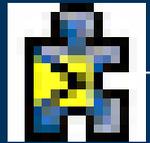




Aligning

Scope Elements – Defined by the set of Fit/Gap Requirements Assigned to them.

Requirements Analysis



1

Fit/Gap Requirement

M



Scope Elements

Folders	Number	Defining Objects
WBS	1	
1.1) Manage CAD Data	1.7	[0039]Single database for engr data and product structure [0224]Store UG NX CAD fi...
1.2) Manage Engineering Docs	1.8	[0039]Single database for engr data and product structure [0233]Manage MSWord d...
1.3) Data exchange	1.12	[0039]Single database for engr data and product structure [0243]Users must be able...
1.4) Migrate data into TcEng	1.10	[0039]Single database for engr data and product structure [0252]Solidworks data ne...
1.5) BOM management	1.14	[0039]Single database for engr data and product structure [0254]Each variant must h...
1.6) Queries	1.1	[0039]Single database for engr data and product structure [0258]Create a query for ...
2.1) Engineering process manag	1.6	[0040]Enable a consistent release process. [0260]Route the part or assembly to be r...
2.2) Engineering change proces	1.11	[0040]Enable a consistent release process. [0274]Use an electronic change form [02...

Notebook - 1.1) Manage CAD Data

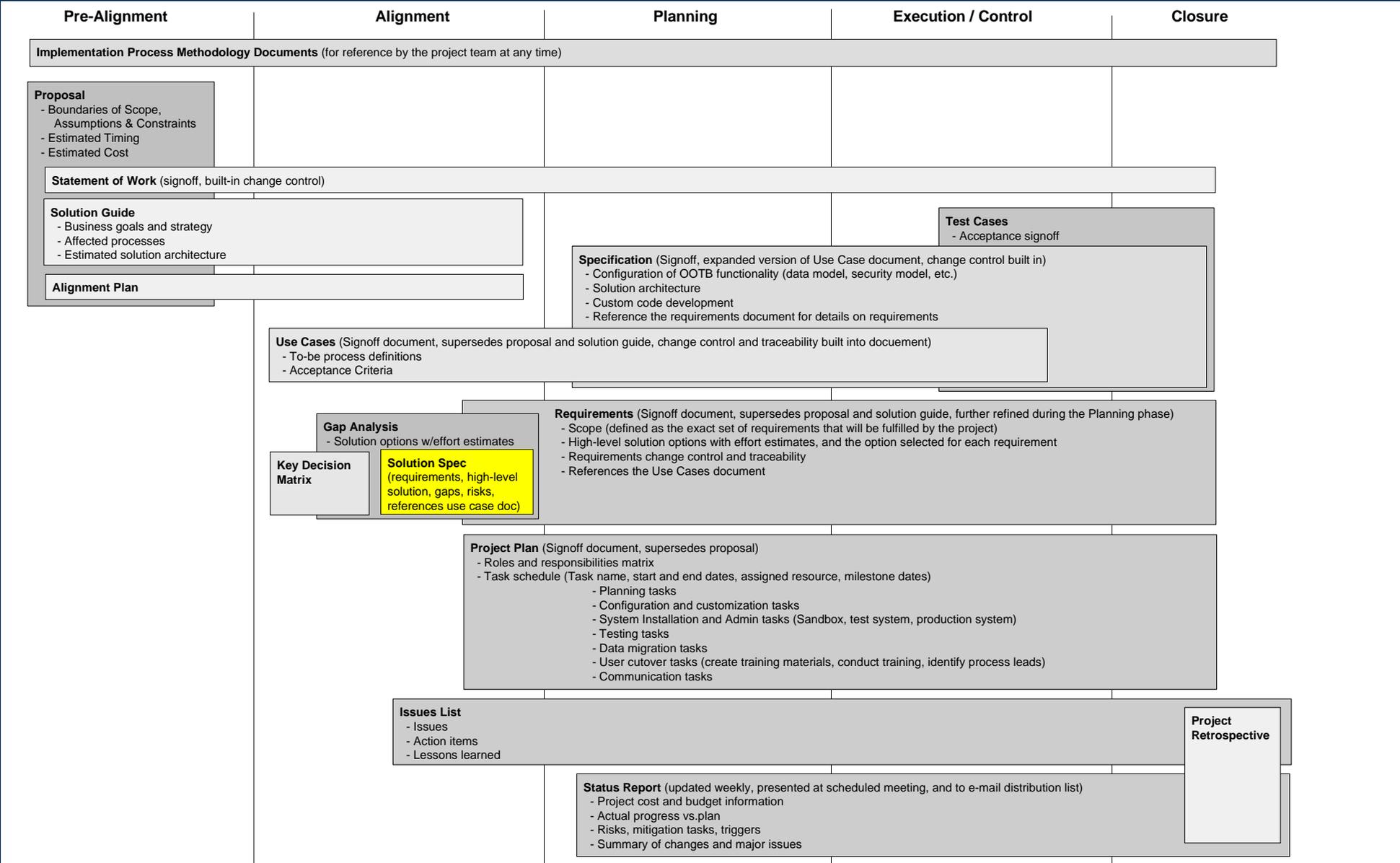
Defining Trace	...	Create...	Complying Trace	...	Create...	Create...	Te
By default, load latest released re	0227	tkomar	2%				
Must be able to save and retrieve	0228	tkomar	2%				
Provide check-in and check-out c	0226	tkomar	2%				
Provide the ability to create and s	0225	tkomar	2%				
Single database for engr data an	0039	tkomar	2%	1.1) Manage CAD Data	0412	tkomar	2/9/06 3:43 ...
Store Solid/Works data files, but o	0229	tkomar	2%				
Store UG NX CAD files for part, a	0224	tkomar	2%				



Aligning

Solution Specification

Requirements Analysis





Aligning

Solution Specification – Are a Result of the Fit Gap Requirement Process.

Requirements Analysis

Solution Specification populated as part of the Requirement process.

Folders	Fit Gap	Comments	Alternatives	Effort	Text	Req_Status
Data Exchange						
BOM Management						
The Macola part number	3	0256			Part numbers will be manually entered into Macola	
Each variant must have	1	0254			Manage each BOM as a separate structure under different items.	
Each configuration of a	2	0255			Manage each BOM as a separate structure	

Notebook - The Macola part number will be a concatenation of the item ID and the Revision ID. For example, for item revision 1234567890/A the Macola part number will be 1234567890A.

Defining Trace	...	Create...	Complying Trace	...	Create...	Text
How will part revisions be represented?	0209	tkomar	2/8			
Will the engineering system and the	0206	tkomar	2/8			
				1.5) BOM management	tkomar	2/9/06 11:05
				The Macola part number will be a	0479	tkomar 2/9/06 3:43 PM
						Part numbers will be manually

Key Decision

Scope Elements



Aligning

Solution Specification – Gets Generated from the Key Decisions.

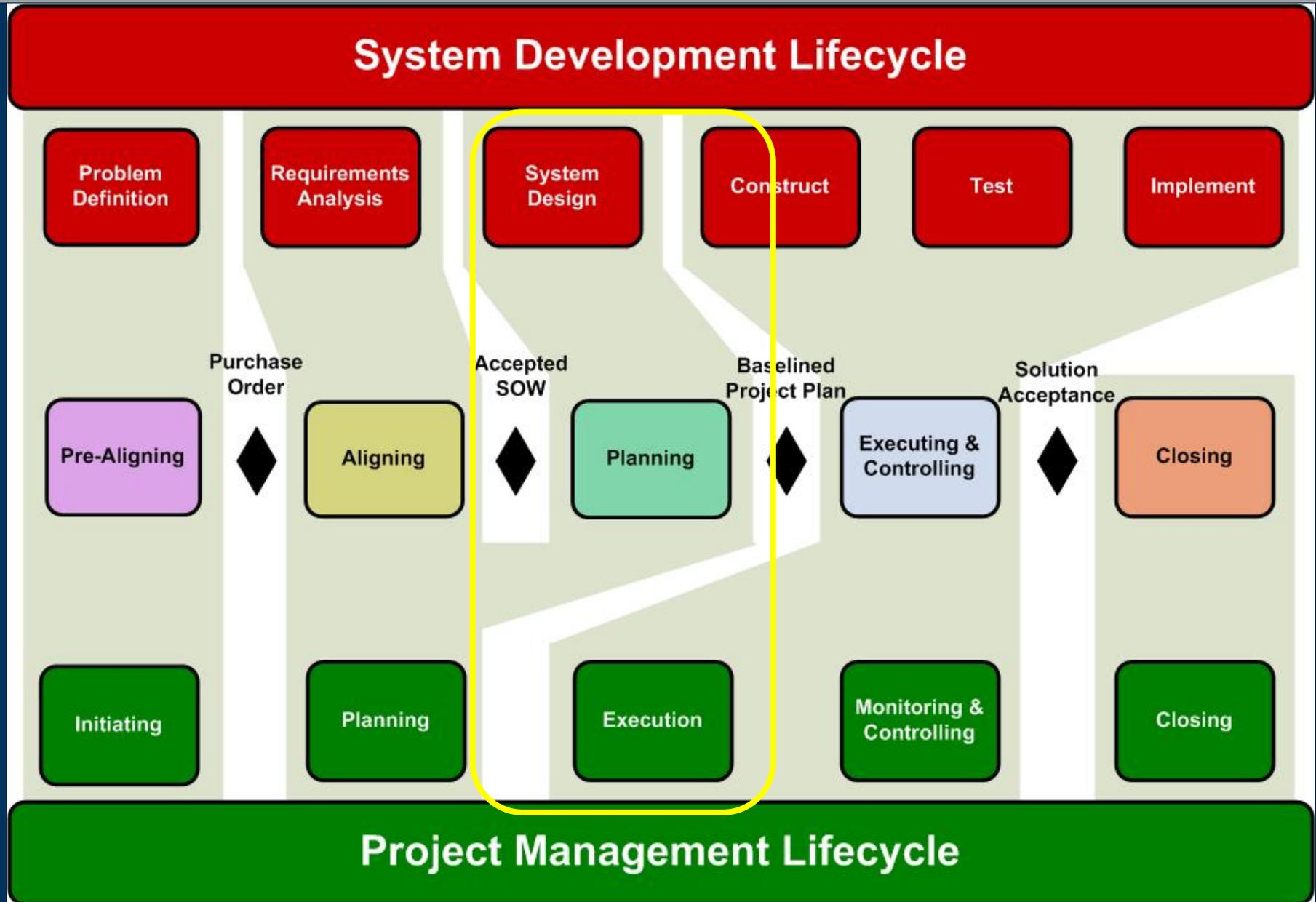
Requirements Analysis

The Solution Specification

Folders	Number		Defining Objects
Project Plan Approval Form	1		
Document History	2		
Project Summary	3		
Project Scope	4		
Scope Statement	4.1		
WBS	4.2		
WBS Structure	4.2.1		WBS
1.6) Queries	4.2.1.1		1.6) Queries
Single database for	4.2.1.1.1		[0039]Single database for engr data and product structure
Create a query for E	4.2.1.1.2		[0256]Create a query for Engineering data.
Create a query for E	4.2.1.1.3		[0259]Create a query for Engineering Documents.
5.1) Security model	4.2.1.2		5.1) Security model
3.3) Functionaltiy to rem	4.2.1.3		3.3) Functionaltiy to remain in EIS
4.1) 3D Visualization	4.2.1.4		4.1) 3D Visualization
3.2) Interface TcEng to E	4.2.1.5		3.2) Interface TcEng to EIS
2.1) Engineering proces	4.2.1.6		2.1) Engineering process management
1.1) Manage CAD Data	4.2.1.7		1.1) Manage CAD Data
1.2) Manage Engineering	4.2.1.8		1.2) Manage Engineering Docs
2.3) Problem reporting p	4.2.1.9		2.3) Problem reporting process
1.4) Migrate data into Tc	4.2.1.10		1.4) Migrate data into TcEng
2.2) Engineering change	4.2.1.11		2.2) Engineering change process
1.3) Data exchange	4.2.1.12		1.3) Data exchange
3.1) Part numbering and	4.2.1.13		3.1) Part numbering and attributes.
1.5) BOM management	4.2.1.14		1.5) BOM management

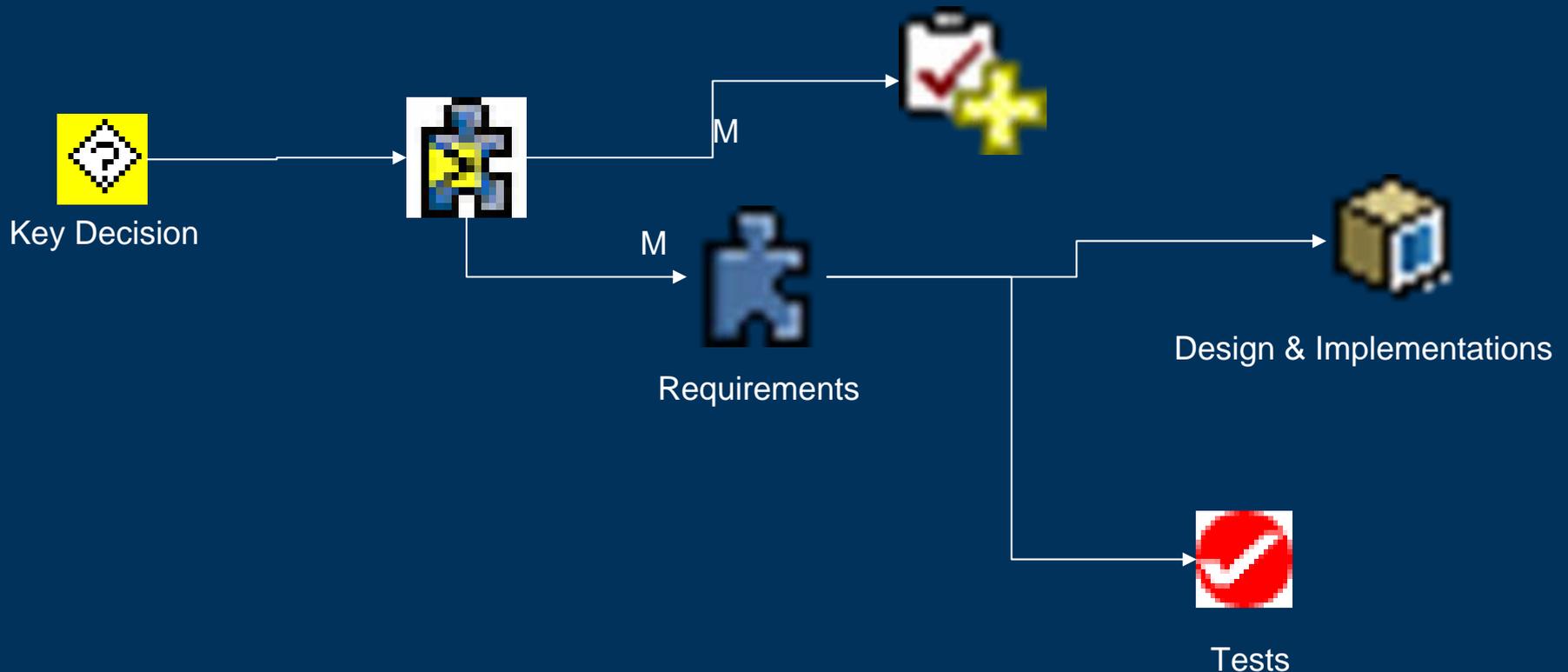


Planning Phase – Developing the System Design





- ▶ System design begins the process of mapping requirements to the system design and requirements to system tests.
 - Example: Visualization requirements will be mapped to Visualization tools being configured and installed.

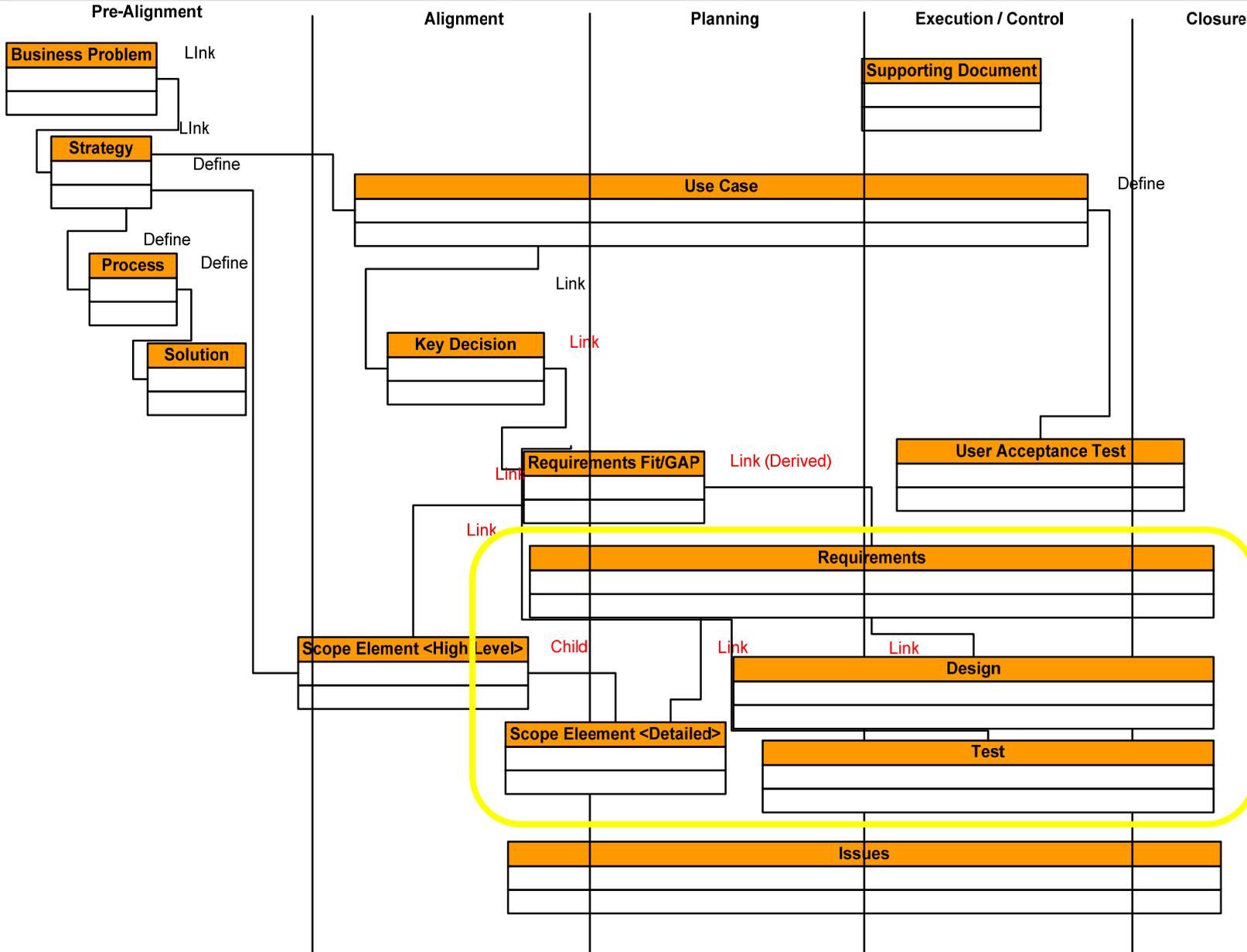




Planning

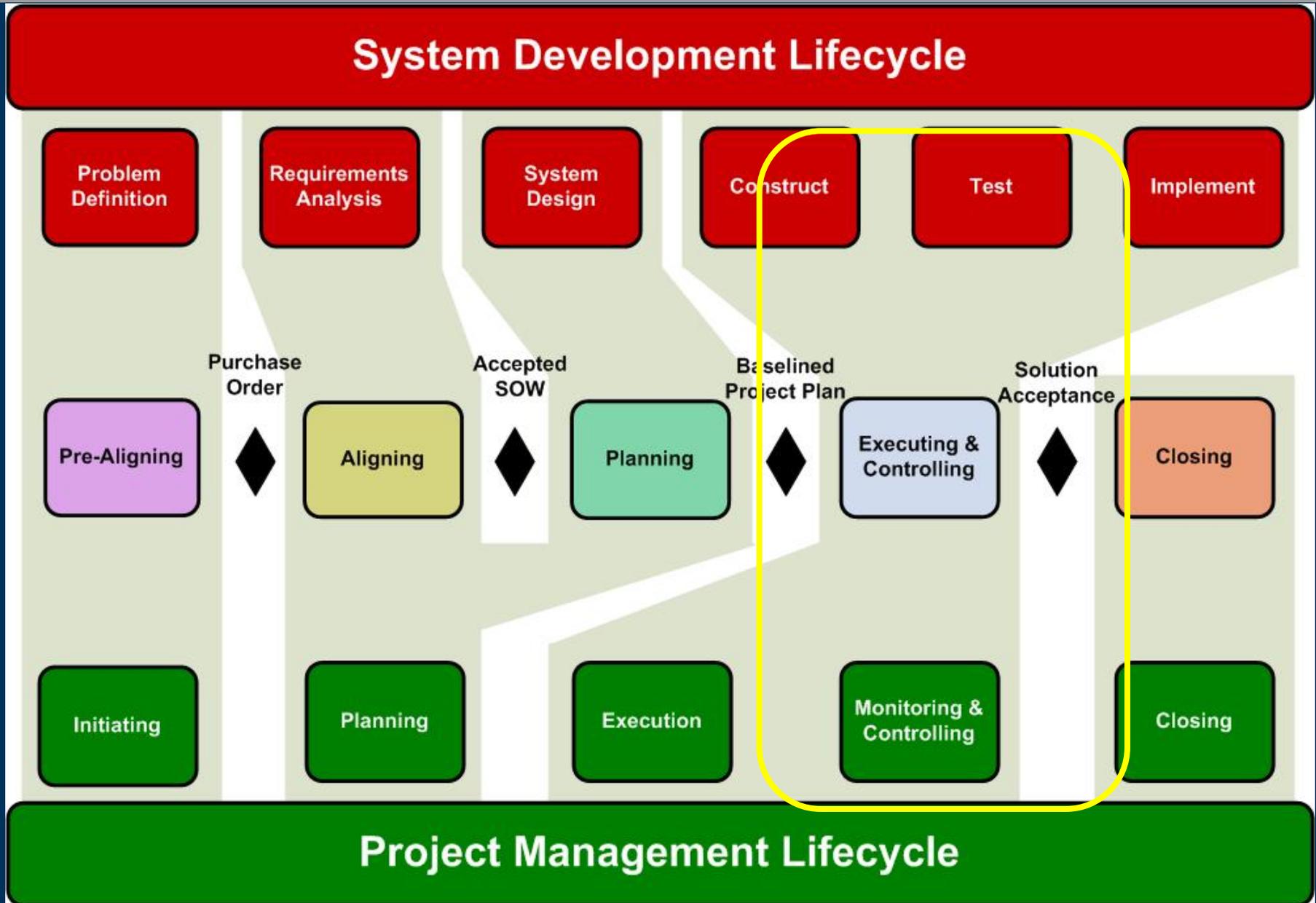
Planning Phase – Developing the System Design

System Design





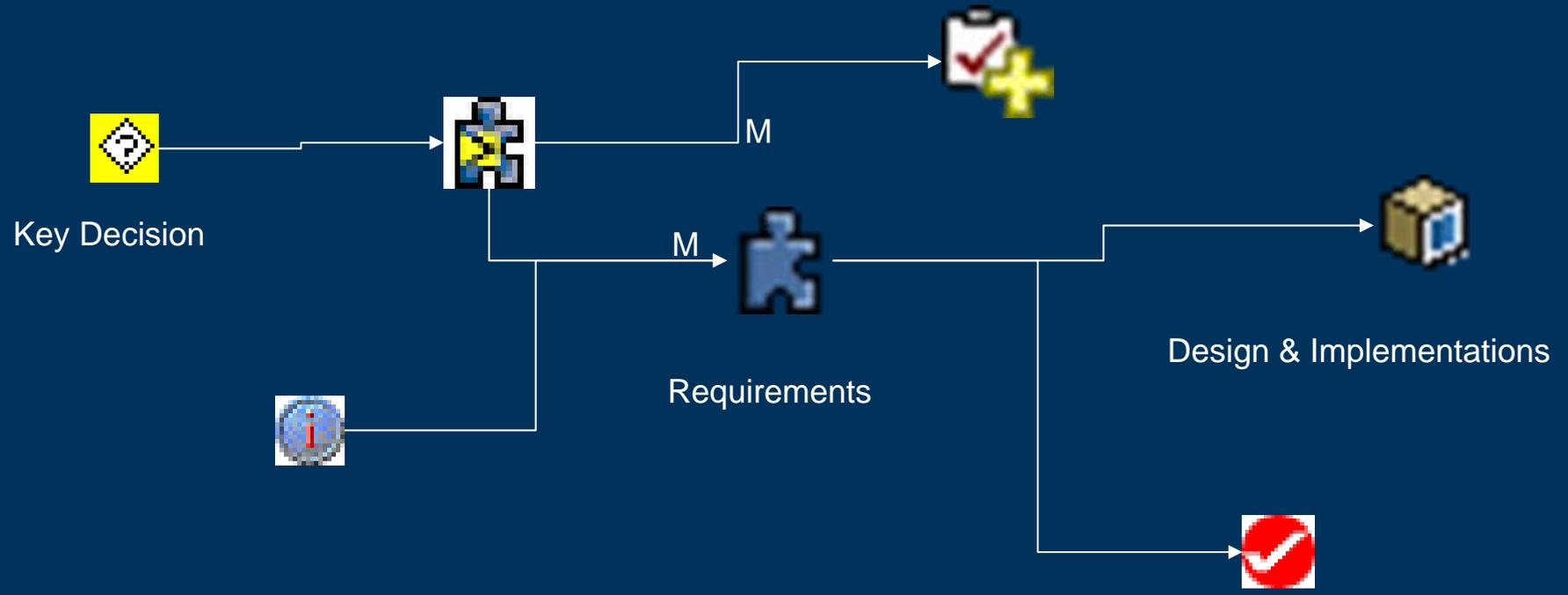
Executing & Controlling – Constructing, Testing and Implementing





Executing & Controlling – Constructing, Testing and Implementing

- ▶ System design continues, as tests becomes more complete.
- ▶ Issue tracking and resolution becomes a part of the project.



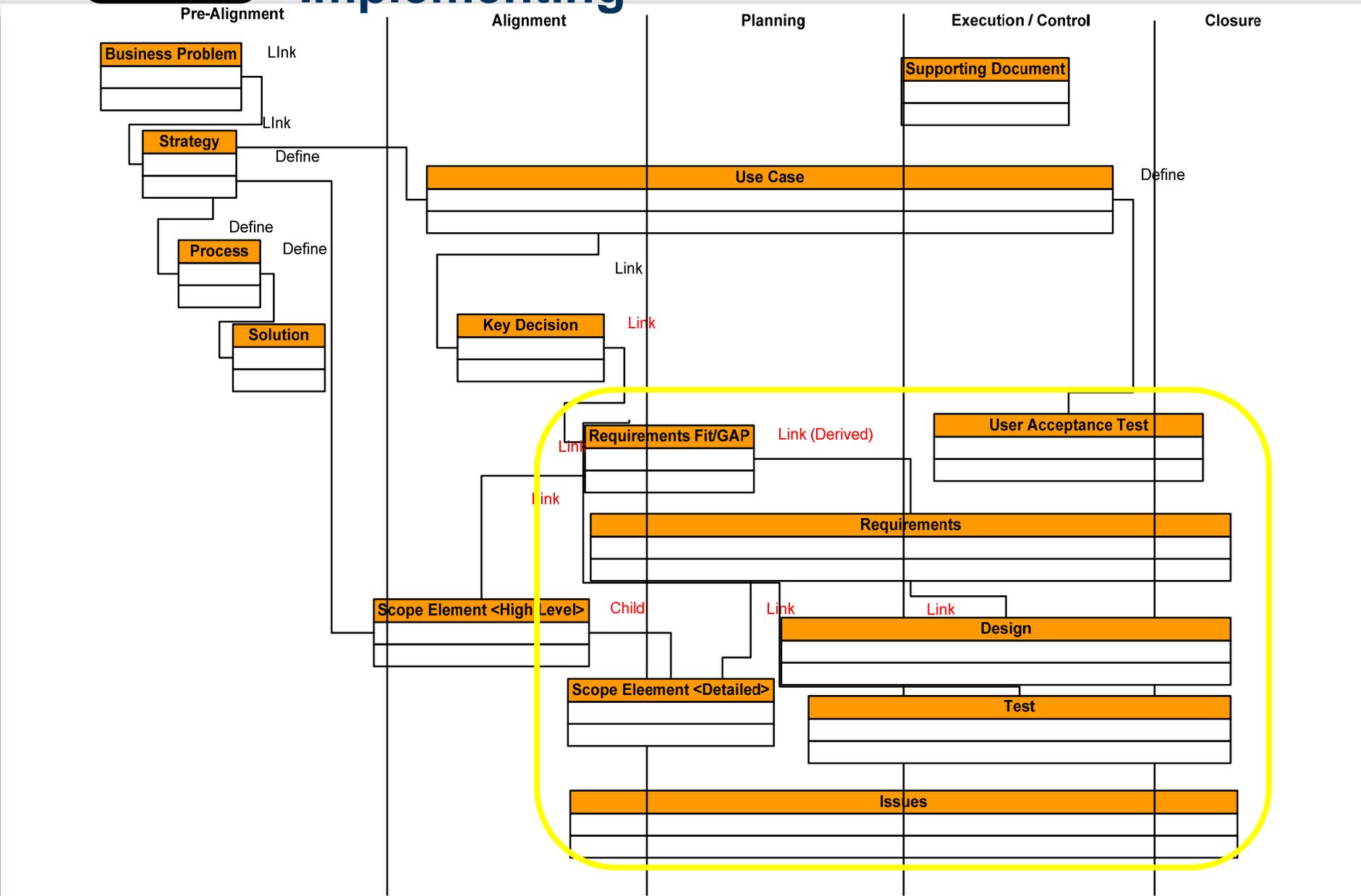
Folders	Type ...	Create...	Cre... /	Subtype	Issue Priority	Issue_Status	GTAC Numb...	Due Date	Responsibility
Need clarification on TcSE Requir	0493	Requirement	tkomar	4/14/06 2:23... Issue	Low	Open (New)		4/14/06	Gunter Daley
Need Lifecycle States defined	0494	Requirement	tkomar	4/14/06 2:24... Issue	Low	Open (New)		4/14/06	Kris Howard



Executing & Controlling

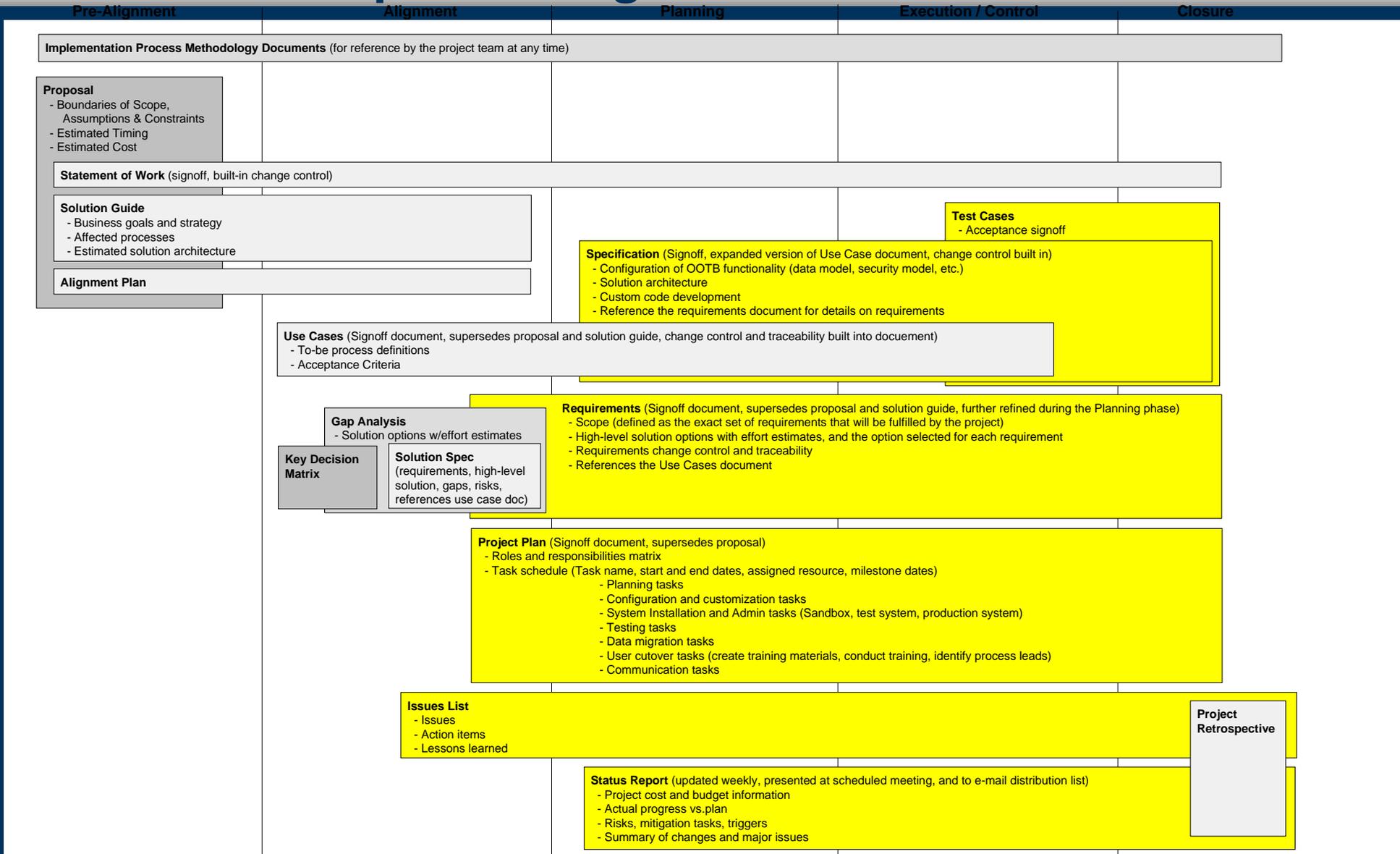
Executing & Controlling – Constructing, Testing and Implementing

Construct Test and Implement



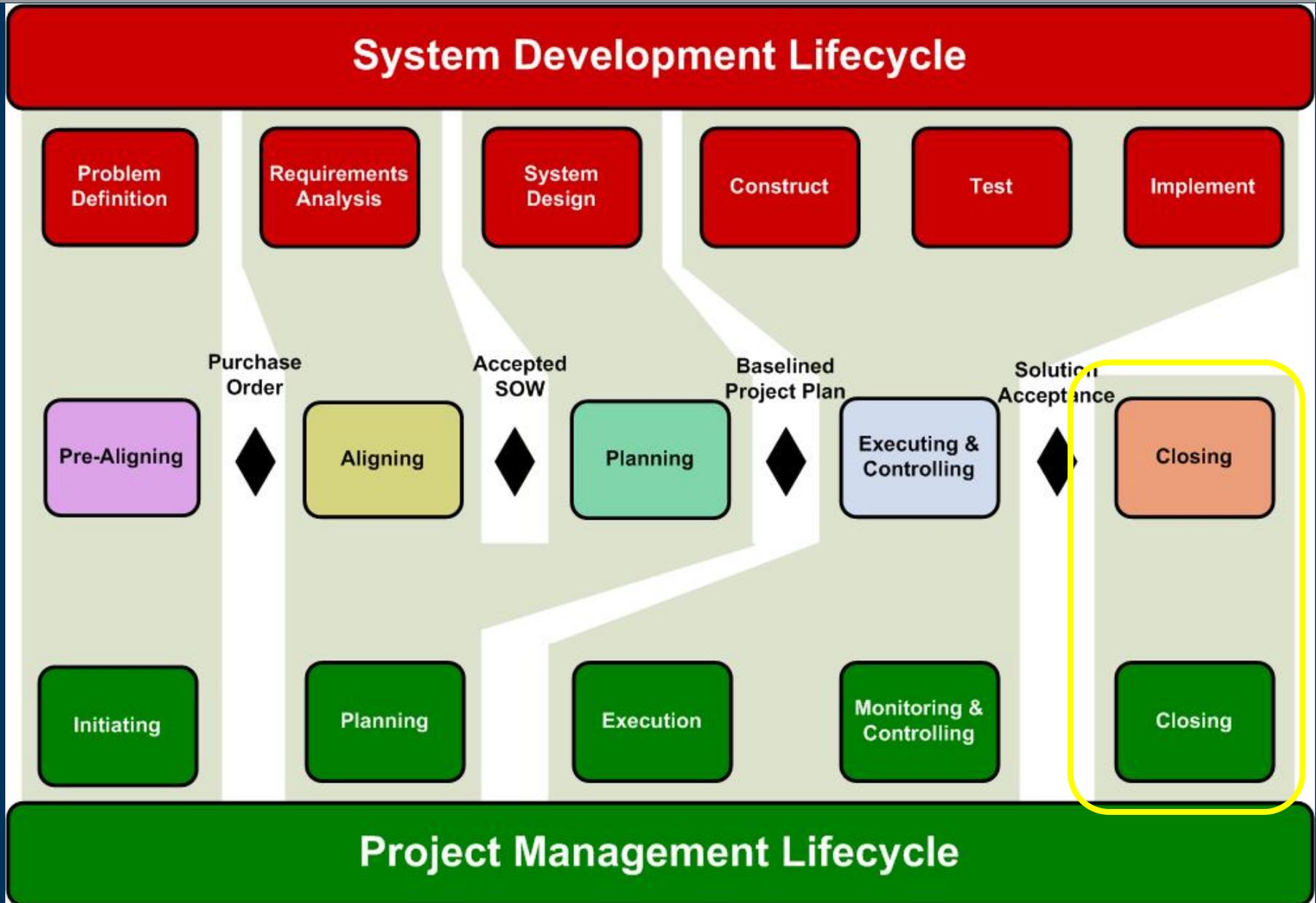


Executing & Controlling – Constructing, Testing and Implementing





Closing





Closing

Closing

Implement

Pre-Alignment | **Alignment** | **Planning** | **Execution / Control** | **Closure**

Implementation Process Methodology Documents (for reference by the project team at any time)

Proposal
 - Boundaries of Scope, Assumptions & Constraints
 - Estimated Timing
 - Estimated Cost

Statement of Work (signoff, built-in change control)

Solution Guide
 - Business goals and strategy
 - Affected processes
 - Estimated solution architecture

Alignment Plan

Test Cases
 - Acceptance signoff

Specification (Signoff, expanded version of Use Case document, change control built in)
 - Configuration of OOTB functionality (data model, security model, etc.)
 - Solution architecture
 - Custom code development
 - Reference the requirements document for details on requirements

Use Cases (Signoff document, supersedes proposal and solution guide, change control and traceability built into document)
 - To-be process definitions
 - Acceptance Criteria

Requirements (Signoff document, supersedes proposal and solution guide, further refined during the Planning phase)
 - Scope (defined as the exact set of requirements that will be fulfilled by the project)
 - High-level solution options with effort estimates, and the option selected for each requirement
 - Requirements change control and traceability
 - References the Use Cases document

Gap Analysis
 - Solution options w/effort estimates

Key Decision Matrix

Solution Spec (requirements, high-level solution, gaps, risks, references use case doc)

Project Plan (Signoff document, supersedes proposal)
 - Roles and responsibilities matrix
 - Task schedule (Task name, start and end dates, assigned resource, milestone dates)
 - Planning tasks
 - Configuration and customization tasks
 - System Installation and Admin tasks (Sandbox, test system, production system)
 - Testing tasks
 - Data migration tasks
 - User cutover tasks (create training materials, conduct training, identify process leads)
 - Communication tasks

Issues List
 - Issues
 - Action items
 - Lessons learned

Status Report (updated weekly, presented at scheduled meeting, and to e-mail distribution list)
 - Project cost and budget information
 - Actual progress vs.plan
 - Risks, mitigation tasks, triggers
 - Summary of changes and major issues

Project Retrospective

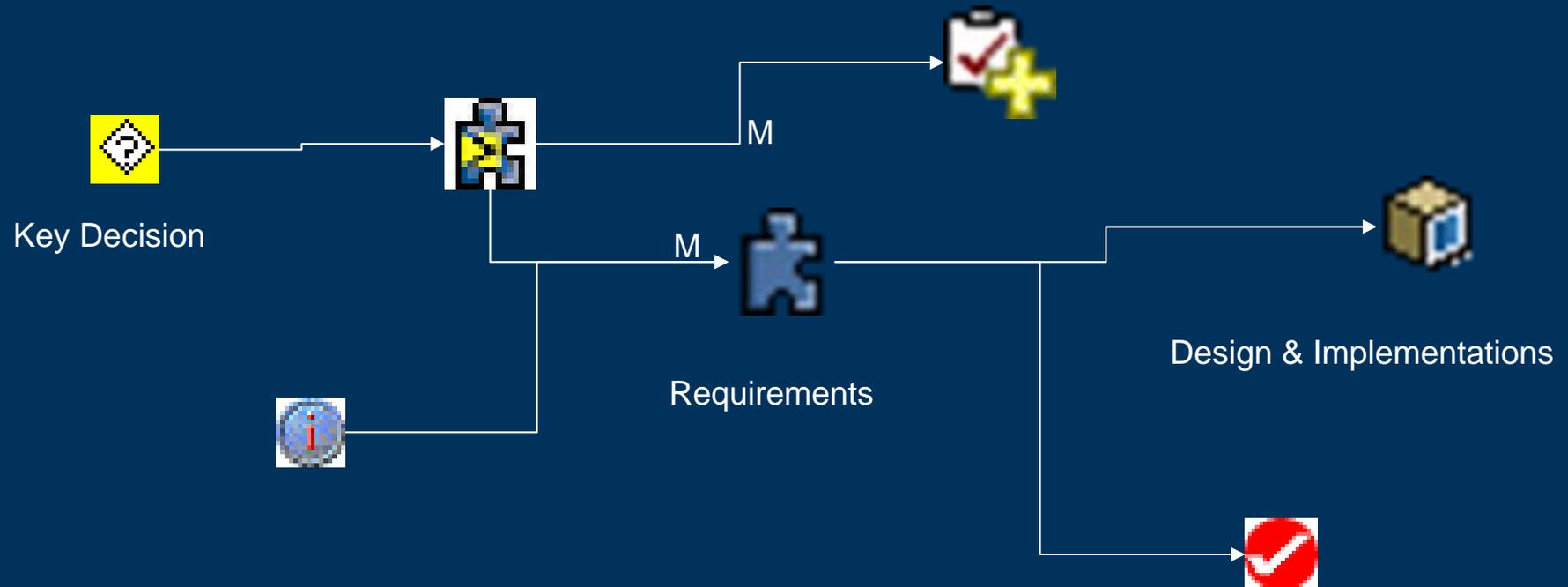


Closing

Closing - Phase

Implement

Review of the Requirements Lifecycle





Summary

- ▶ Deployment of a PLM System deserves the same care as the development of your products.
- ▶ Using an established process supported by a robust tool such as Teamcenter Systems Engineering (TcSE) will ensure success.

