

Capability-Level-3 Quick-turn-around Web Development

Gordon Ward (presenter)

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Raytheon Information Solutions

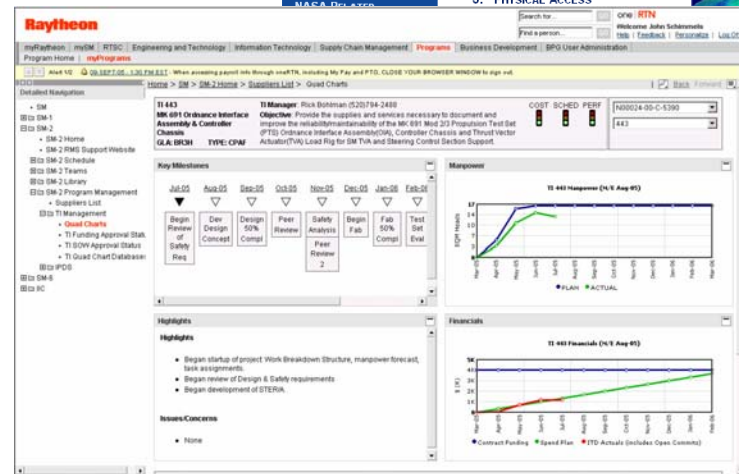
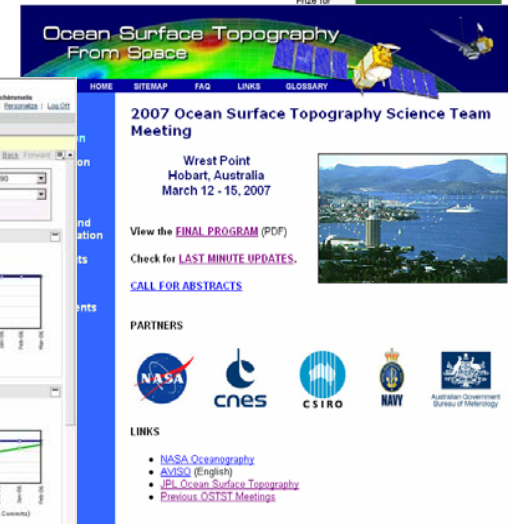
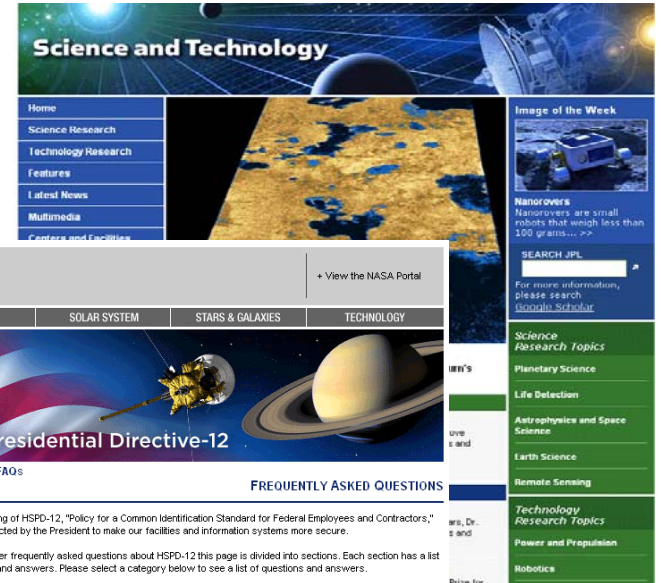
- Introduction
- Raytheon Six Sigma™
- The Fast Food Approach
- Our Process vs. the Model
- Applicability to other disciplines
- Conclusions

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Raytheon Web Solutions

- Part of RIS Pasadena Operations
- Serving NASA JPL and other customers
- State-of-the art web services
- Short turn-around (weeks) projects
- Rated SEI

CMMI[®] Capability L3
in Eng. Practices



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Raytheon Six Sigma™



Our Engine for Process Improvement

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The Final Product: How does this happen in two weeks?

The screenshot shows the top portion of the JPL website. At the top left is the NASA logo and the text "Jet Propulsion Laboratory California Institute of Technology". To the right is a search bar labeled "Search JPL" and a link "+ View the NASA Portal". Below this is a horizontal navigation menu with tabs for "JPL HOME", "EARTH", "SOLAR SYSTEM", "STARS & GALAXIES", and "TECHNOLOGY". The "EARTH" tab is highlighted. Below the menu is a large banner image featuring a satellite in orbit around Earth, with the text "Jet Propulsion Laboratory California Institute of Technology" overlaid. At the bottom of the banner is another navigation menu with tabs for "IMAGES", "MULTIMEDIA", "NEWS", "MISSIONS", "PUBLIC SERVICES", "KIDS", "EDUCATION", and "ABOUT JPL".

MISSIONS

[CURRENT](#)

[FUTURE](#)

[PROPOSED](#)

[PAST](#)

[COMPLETE
ALPHABETICAL
LISTING](#)

JPL Missions

Current Missions

** Current missions are listed from earliest launch to most recent.*



Voyager to the outer planets

Launches: August 20 and September 5, 1977

The twin spacecraft Voyager 1 and 2 flew by and observed Jupiter and Saturn, while Voyager 2 went on to visit Uranus and Neptune. Both craft are now heading out of the solar system. In 1998, Voyager 1 became the most distant human-made object in space.

[Voyager home page](#)

[Voyager, the Grandest Tour](#)

[Mission description](#)



Ulysses solar polar mission

Launch: October 6, 1990

A joint project between NASA and the European Space Agency, Ulysses for the first time sent a spacecraft out of the ecliptic - the plane in which Earth and other planets orbit the Sun - to study the Sun's north and south poles. The prime mission concluded in 1995 but Ulysses continues to monitor the Sun.

[Ulysses home page](#)

[Mission description](#)

Fast Food Approach: Website Portfolio

Banners

Navigation (Horizontal)

Navigation (Vertical)

Windows (with Links)

observed Uranus, solar system, human, Voyager, Mission

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[Ulysses home page](#)
[Mission description](#)

Windows (with Functions)

MOAC SM-2 Calendar

CALENDAR OPTIONS

APRIL 2007

S	M	T	W	T	F	S
1	2	3	4	5	6	7

FY05 Block IIIA and IIIA IOMs (Thru March 2007)

Quantity

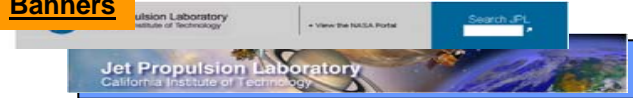
Delivery Date (Month-Year)

• CUM CONTRACT SCHEDULE • CUM ACTUAL DELIVERIES

Select data: FY05 Block IIIA and IIIA IOMs

Requirements Development with High Level Design

Banners



Navigation (Horizontal)



Navigation (Vertical)



Windows (with Links)



Windows (with Functions)



Customer/RWS Engineering Mockup

- JPL Std Banner with Search Box
- JPL Site Navigation
- JPL/CalTech Banner
- JPL/CalTech Topic Navigation

Sub-Topic
Navigation

Window
Function-1

Window
Related Links-1

Window
Function-2

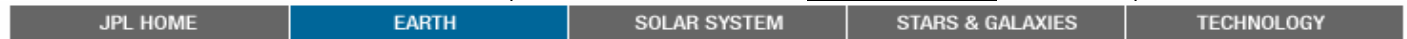
Window
Related Links-2

Customer/Raytheon Work with Engineering Mockup

JPL Std Banner with Search Box



JPL Site Navigation



JPL/CalTech Banner



JPL/CalTech Topic Navigation



Customer
Requests
Removal of
Function
Window

Sub-Topic Navigation

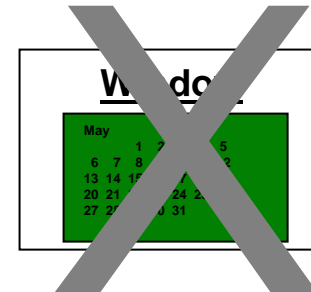
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[COMPLETE ALPHABETICAL LISTING](#)

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The work-flow is driven by a master checklist Engineering Development Plan (EDP)

	A	B
1		EDP Plan
2		<i>The EDP tab is intended to be the plan document. All planning activities are detailed in this tab. As the Engineering in nature, a traditional life cycle can not be applied. Each Engineering Project can be viewed in terms of three phase and delivery. An estimated number of hours is associated with each phase as calculated by the Engineering Project</i>
3		<input type="checkbox"/> <i>Scheduling Template.</i>
		<i>The Checklist tabs are intended to be the procedures that the Project Lead follows to demonstrate adherence to the categorized by phases and will also allow the Project Lead to monitor and control the processes in terms of the estim</i>
		<i>Engineering Project's instantiation of the Cost Scheduling Template.</i>
		• • •
44		Objective evaluation shall occur periodically (quarterly) and shall be a check against the Engineering Project's instantiation of the EDP Template by a third party (PM). The evaluation shall be recorded in the Project Notebook

	A	B	F	G	H
1			DEFINITION CHECKLIST		
2			<i>Requirements management occurs through out all the phases of the project's life. Where ever it occurs, requirements will be managed according to the processes embodied in the EDP.</i>		

	A	B	F	G	H
1			IMPLEMENTATION CHECKLIST		
2			<i>Requirements management occurs through out all the phases of the project's life.</i>		
3			<i>according to th</i>		

	A	B	F	G
1			DELIVERY CHECKLIST	
2			<i>Requirements management occurs throughout all the phases of the project's life. Where ever it occurs, requirements will be managed according to the processes embodied in the EDP.</i>	
3				
4			Order	Stakeholders
			Step	
1			Peer Review the product and record the findings in the Project Notebook Any findings that require changes will be recorded as tasks in the Project Notebook Evaluate the assembled product for interface compatibility with respect to the Engineering Mockup, Graphical Mockup, Site Map, Work Flow, IT/SA Checklist, Component Reuse Doc. and any incorporated changes from the Task Diary.	PL
			Entry Title: Peer Review Contents: Date, Reviewer(s), Product identification, product quantity, portion of	Project

Checklists correlate to the Process Phases

EDP Checklist Attributes

	A	B	F	G	H
1			DEFINITION CHECKLIST		
2			<i>Requirements management occurs through out all the phases of the project's life. Where ever it occurs, requirements will be managed according to the processes embodied in the EDP.</i>		
3		Order	Step	Stakeholders	Artifacts
4		<input type="checkbox"/> 8/7/2007			
8		1	<Insert project name here>	PL	EDP
9			Project Lead: <insert name here>		
10			Customer: <insert name here>	Date	Comments
11					
12					
13					
14		<input type="checkbox"/>	2 Copy Project Folder directory template into RWS eRoom. See file "_General Instructions.doc", Step 1 in the IIS - RIS - Raytheon Pasadena Web Solutions > Project Folders > Template Project Folder.	PL	URL of the project eRoom
15		<input type="checkbox"/>		Date	Comments
16					
17					
18					
19					
20		<input type="checkbox"/>	2.1 Put the following files under the designated level of control: NOTE: make note if these need to be prepended with Mission Name	PL	URL of the project eRoom
21					
22				Date	Comments
23					
24					
25					

**Time-stamped
Checkbox**

**Stakeholder
by Role**

**Relevant
Artifacts**

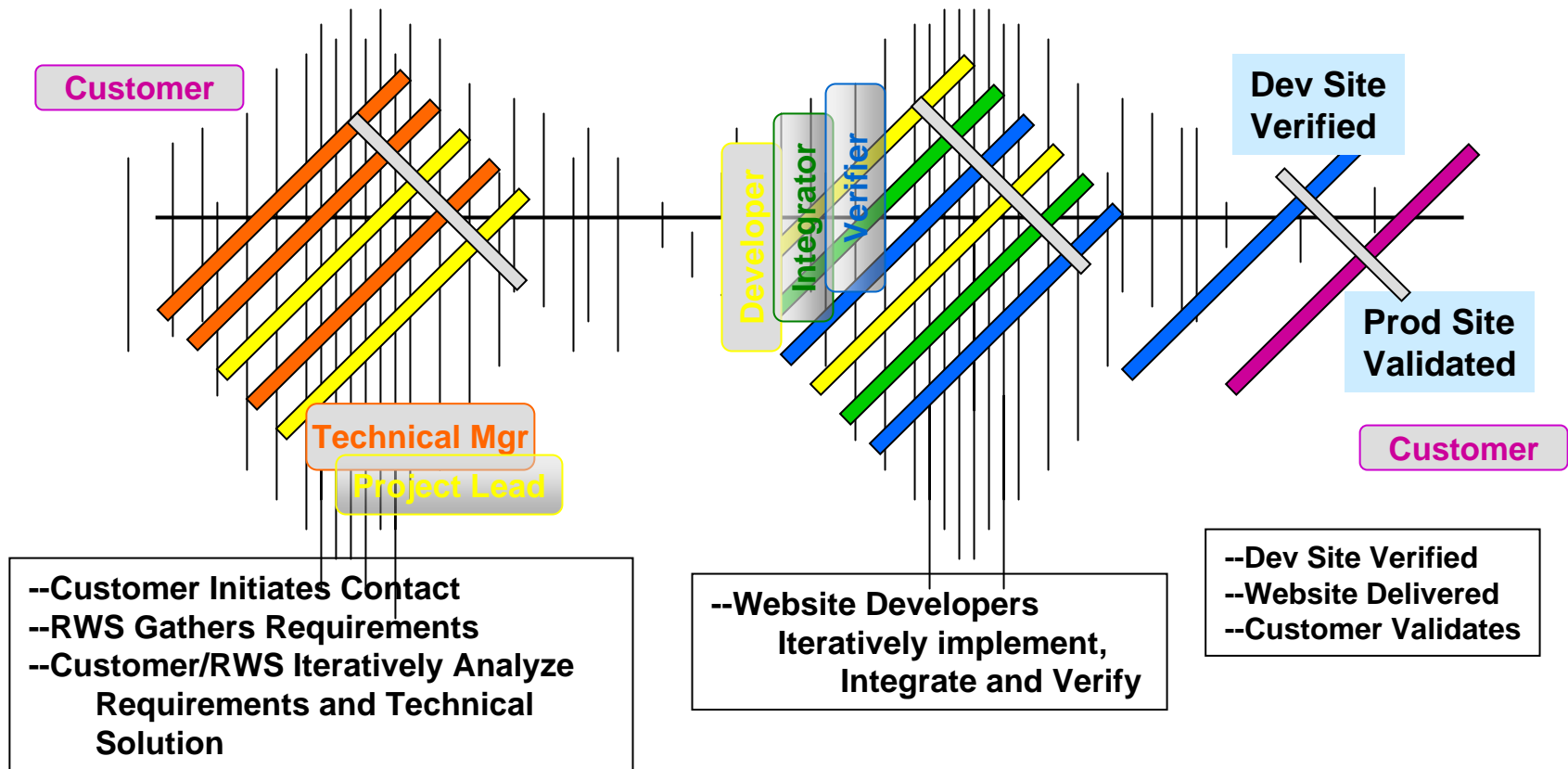
Referenced Instructions

**Dated Comments
for Iterative Steps**

**Unique Step Numbers
for Reference**

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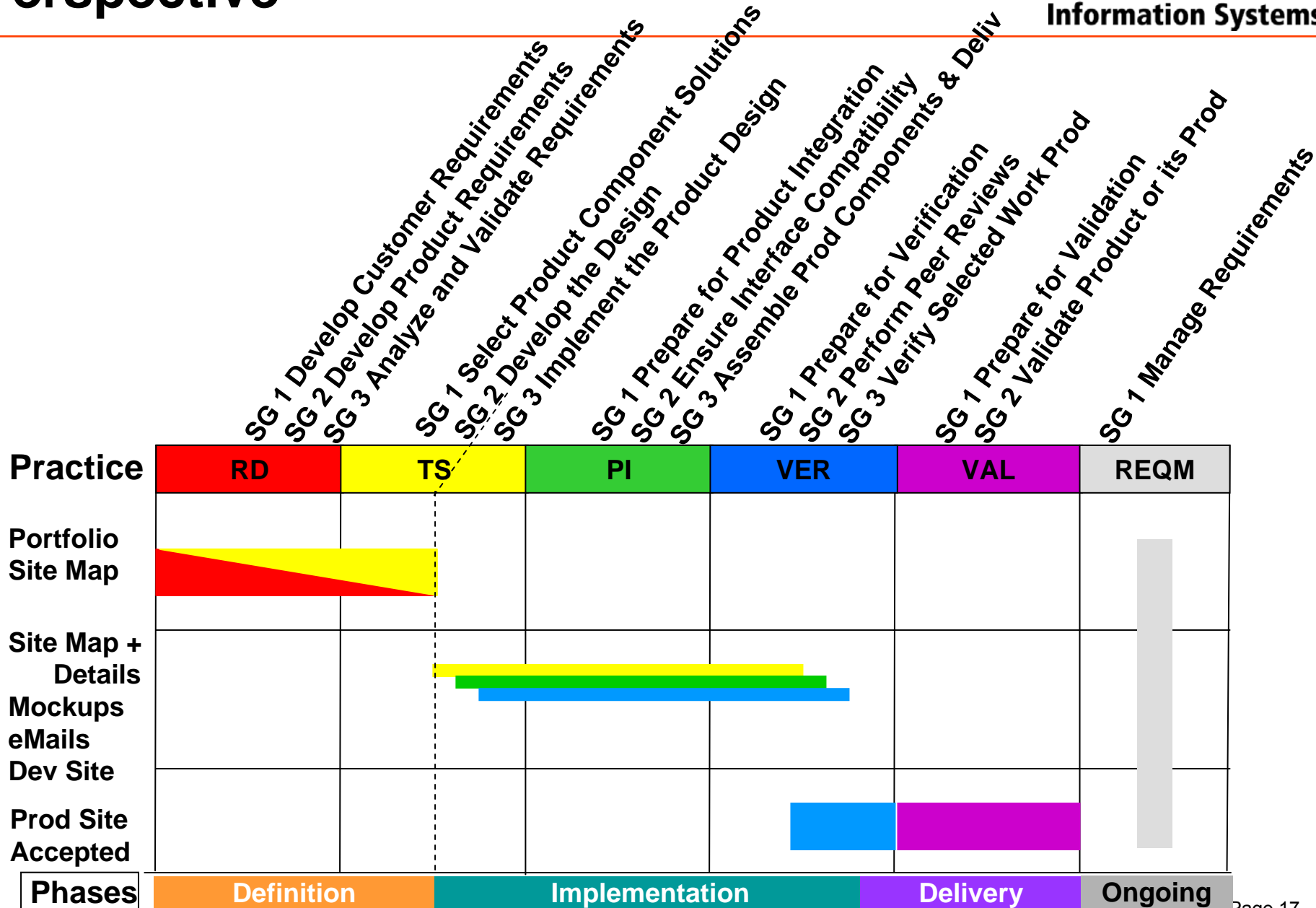
Model vs. Lifecycle: Scenario Perspective: Three Phases of Activity



Legend:

RD	TS	PI	VER	VAL	REQM
----	----	----	-----	-----	------

Model vs. Lifecycle: Practice Area Perspective



RD & TS (SG 1, SG 2) Happen Concurrently

■ RD

- SG 1 Develop Customer Requirements
- SG 2 Develop Product Requirements
- SG 3 Analyze and Validate Requirements

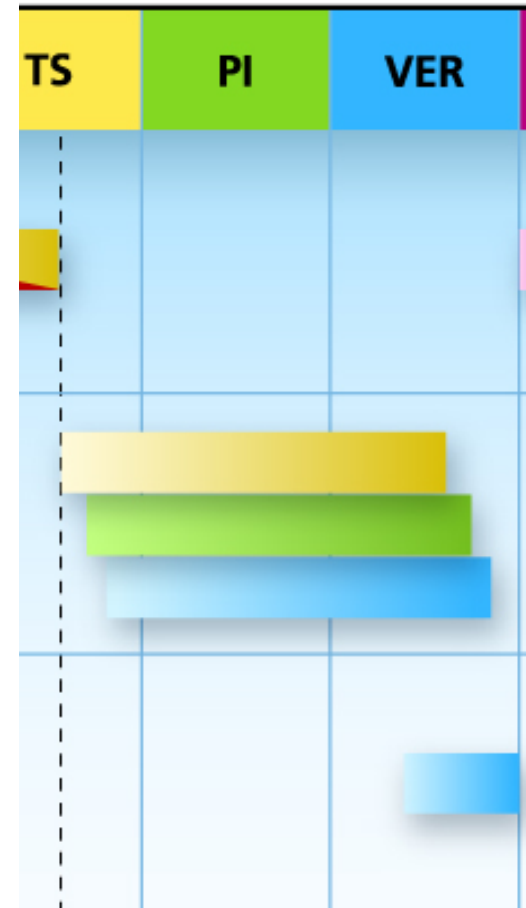
■ TS

- SG 1 Select Component Solutions
- SG 2 Develop the Design



TS (SG 3), PI & VER Happen Simultaneously on a Web Application

- TS (SG 3)
 - SG 3 Implement the Product Design
- PI
 - SG 1 Prepare for Product Integration
 - SG 2 Ensure Interface Capability
 - SG 3 Assemble Product Components and Deliver the Product
- VER
 - SG 1 Prepare for Verification
 - SG 2 Perform Peer Reviews
 - SG 3 Verify Selected Work Products



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Other Disciplines

- The overall philosophy of a simple compact template-based approach can include disciplines, typically ignored, into the CMMI® world
 - Other fast-turn around component-reuse-driven applications
 - Fast Prototyping
 - Algorithm development

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Conclusions

- We have presented R6σ™ as great framework to carry out process improvement initiatives
- We have presented our compact (fast food) approach to architect and implementing web solutions in a short-turn-around environment
- We have shared some interesting aspects when mapping to the CMMI® model
- We submit that this approach can be used on applications typically excluded from CMMI®