

On Lock Down: Requirements Change Management

[BusinessAnalystWorld Atlanta](#)

March 3-4, 2014, 10:30 AM

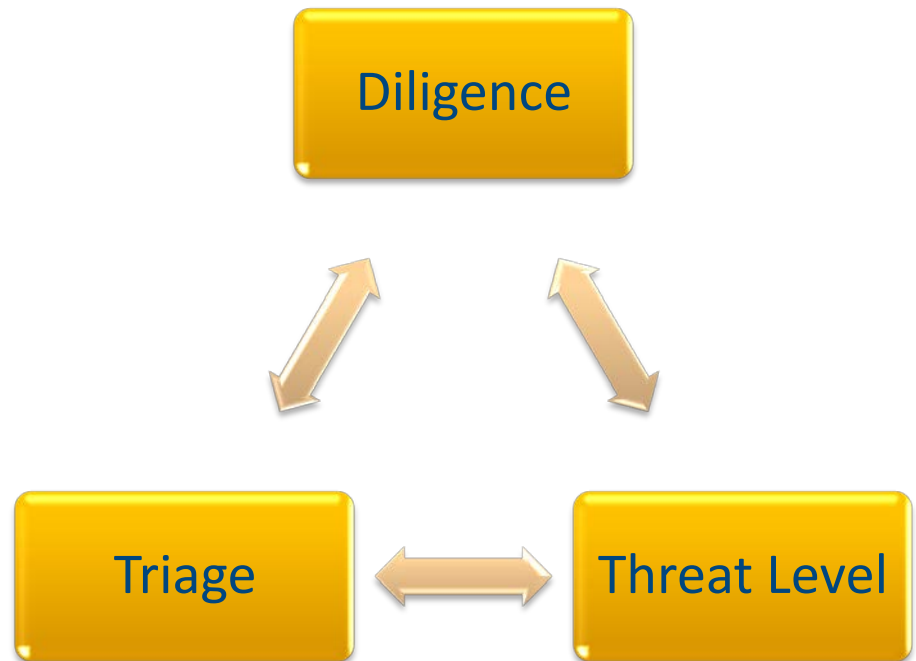


Ground Rules

- This session is for you, so please participate.
 - Interrupt me for clarification
 - Save situation specific questions till the end
- The content in this presentation and discussion are the responsibility of Hans Eckman, and does not express the views and opinions SunTrust Banks, Inc.
- No animals were harmed during the creation of this presentation. Please support your local rescue groups.
(like *Leftover Pets* - <http://www.leftoverpets.org>)

Conclusions

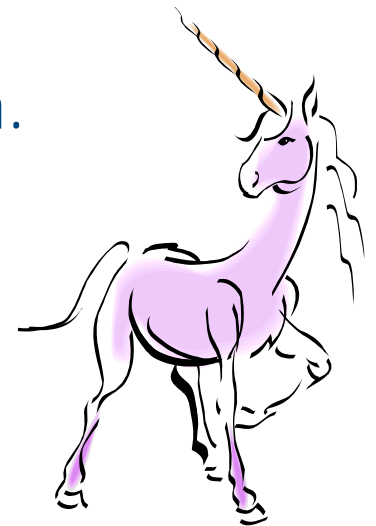
- Principles of release management and change control can be applied to requirements management.
- Level of control must match risk and timing.
- Consistency and diligence are required for success.



The Ideal Project Timeline



- All stakeholders agree, and know exactly what they need from the beginning.
- Developers translate the requirements perfectly into a viable solution.
- No defects or missed requirements in solution.
- No change in business need or prioritization during the project.



The High Cost of Change

Error Cost Factor	Requirements, Design	Coding, Unit Test	Integration Test	Acceptance Test	Post-product Release
Tassey ¹	1x	5x	10x	15x	30x
Boehm ^{2,3}	1x	3x	7x	50x	100x
When Errors are introduced ¹	3.5%	10.5%	35%	6%	15%

Other Cost Factors³

- *“One insight shows the cost-escalation factor for small, noncritical software systems to be more like 5:1 than 100:1.”*
- *“Current software projects spend about 40 to 50 percent of their effort on avoidable rework.”*
- *“Two major sources of avoidable rework involve hastily specified requirements and nominal-case design and development...”*

Facing Reality - Only Change is Constant



Ambiguities, Clarifications, Invalid Requirements

Missed Requirements

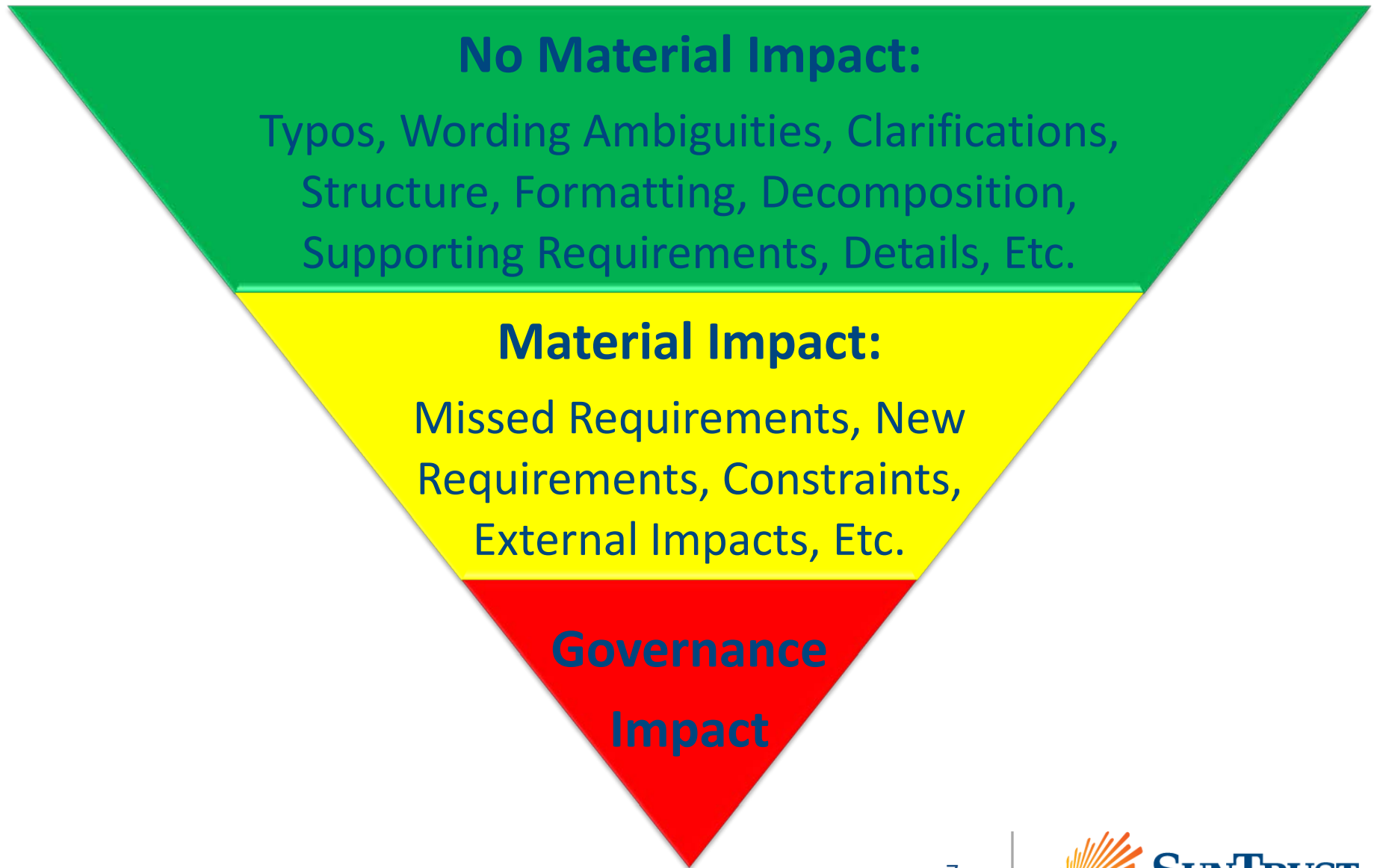
Scope and Prioritization Changes

Constraints: Design, Resource, Time, Budget

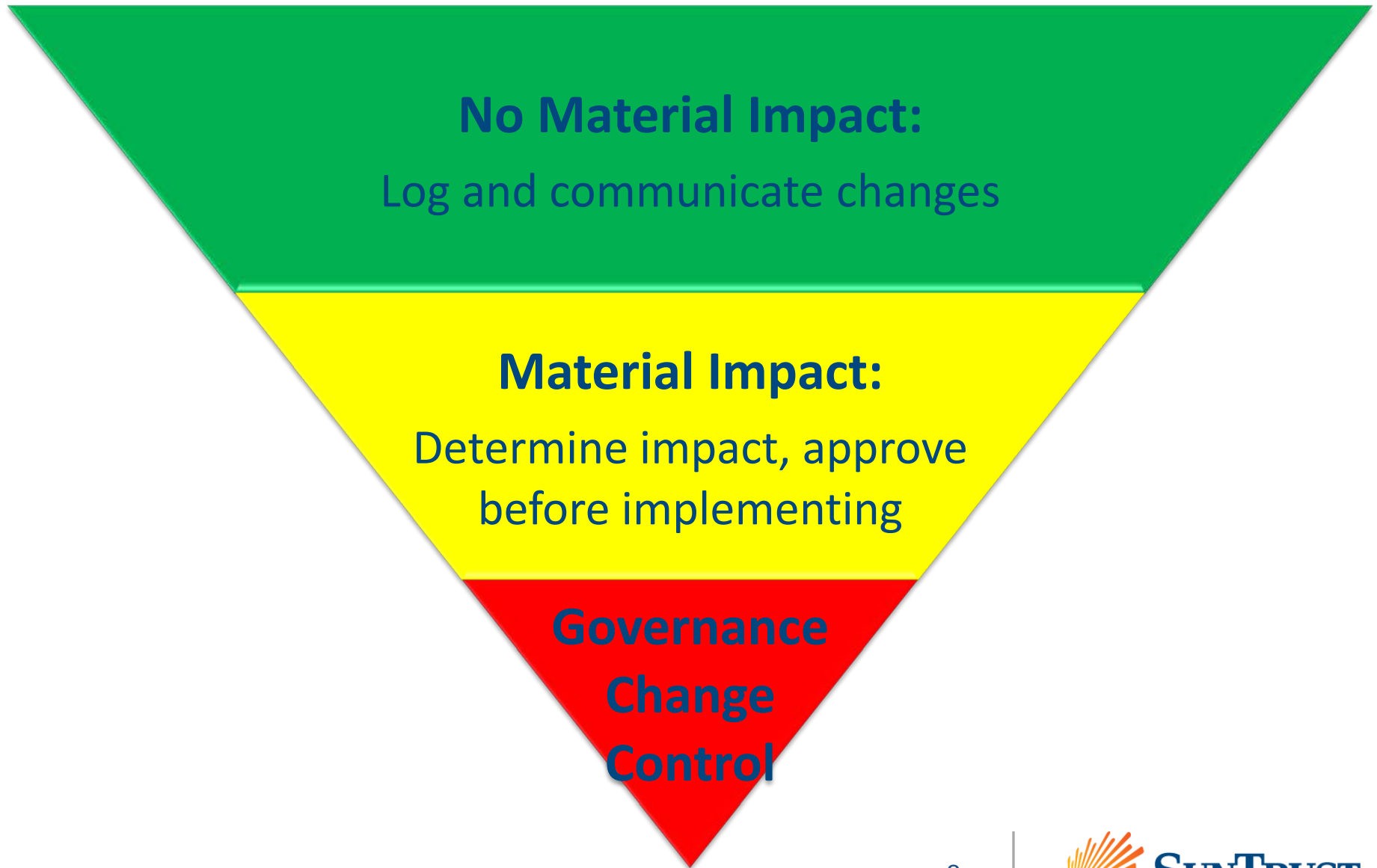
Missed implementation

Change in business need

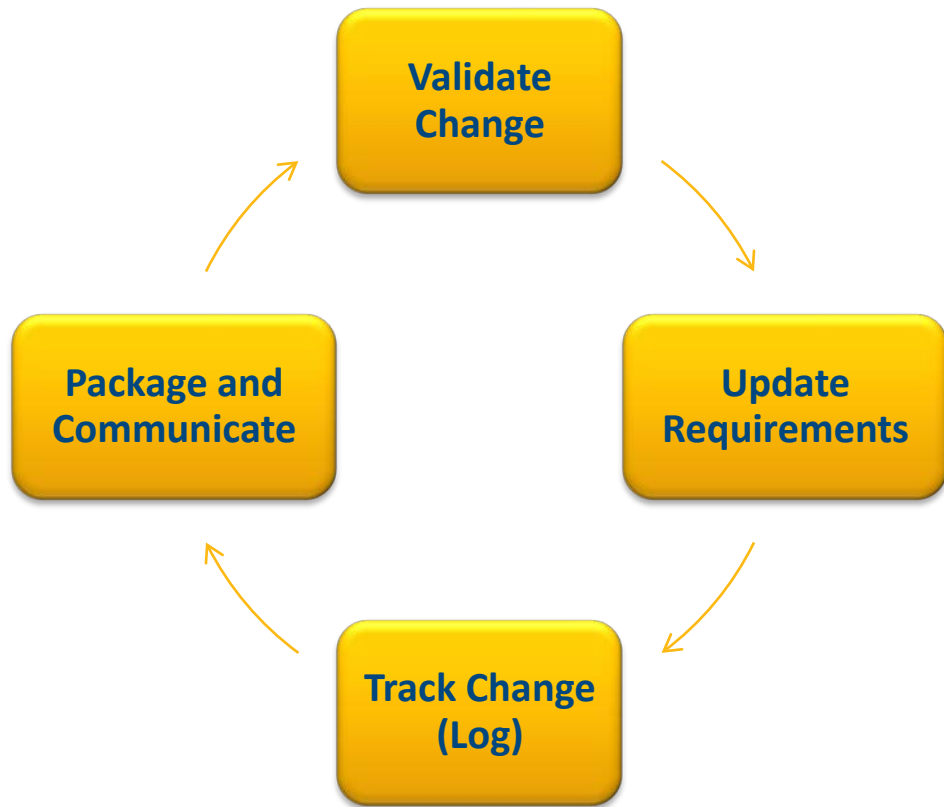
Threat Levels



Triage Levels



No Material Impact - Update Process



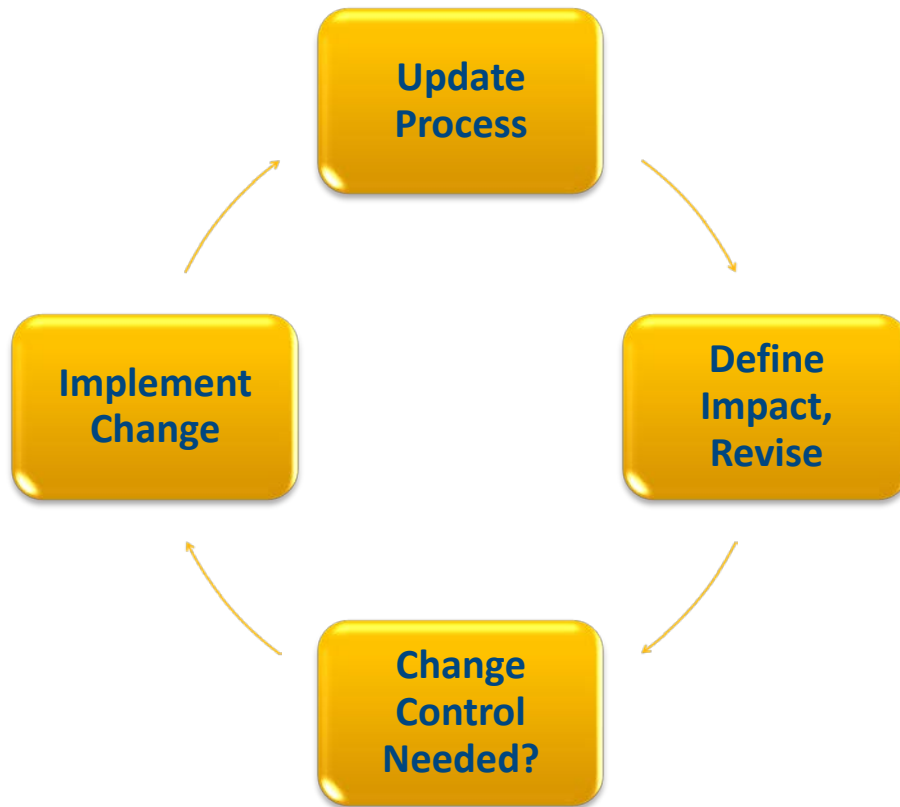
- Begins after first formal communication of requirements
- Needs to update system of record for requirements
- Log all changes with effective date
- Update Process is the foundation for Change Approvals

Documenting Changes

1.08	Eckman	<p>Correction to field value found during testing.</p> <p>UPDATE: 5.139.09.02 ID 5.139.09.02 - [REDACTED]</p> <p>TO: 5.139.09.02 ID 5.139.09.02 - [REDACTED]</p> <p>UPDATE: 5.142.09.02 ID 5.142.09.02 - [REDACTED]</p> <p>TO: 5.142.09.02 ID 5.142.09.02 - [REDACTED]</p>	11-24-2008
1.08	Eckman	<p>DefectID: 27246</p> <p>UPDATED: 5.06.04.01 ID 5.06.04.01 - [REDACTED]</p> <p>5.06.08.01 ID 5.06.08.01 - [REDACTED]</p>	12-01-2008

- Changes are logged by document version
- State changes source: defect, change control, etc.
- Identify owner, effective date and requirement ID
- Show before and after

Changes Requiring Approval



- Occurs when:
 - After document approval
 - Change to functionality
 - Impacts other deliverables
 - Impacts cost or schedule
- Leverages Update Process
- Define impact and cost if change is implemented
- Complete Governance Change Control if needed
- Stakeholders must approve

Tracking Approvals

The screenshot displays a Microsoft Excel spreadsheet titled "PVIC_PREIS0048_Change_Control_Log.xls" in Compatibility Mode. The spreadsheet is organized into columns for tracking change control items. The visible data includes:

Change Control	Date Identified	Change	Reason	Status	Hours	Contact	Targeted Release	Reviewed	Approved	Dev. Target	Dev. Complet	Verified	Comments
PVIC_PREIS0048_Change_Control_82	02/25/2009		Production Support 2447	Approved	1.0		2009.1 ML1	02/26/2009	02/26/2009	02/26/2009	02/26/2009	02/26/2009	
PVIC_PREIS0048_Change_Control_83	02/25/2009		Production Support 2448	Approved	1.0		2009.1 ML1	02/26/2009	02/26/2009	02/26/2009		03/08/2009	
PVIC_PREIS0048_Change_Control_84	02/25/2009		Production Support 2449	Approved	1.0		2009.1 ML1	02/26/2009	02/26/2009	02/26/2009		03/08/2009	
PVIC_PREIS0048_Change_Control_85	02/25/2009		Production Support 2454	Approved	1.0		2009.1 ML1	02/26/2009	02/26/2009	02/26/2009		03/08/2009	
PVIC_PREIS0048_Change_Control_86	02/26/2009		Production Support 2443	Rejected	2.0		2009.1 ML1	02/27/2009	NO				
PVIC_PREIS0048_Change_Control_87	02/26/2009		Production Support 2443	Rejected	2.0		2009.1 ML1	02/27/2009	NO				
PVIC_PREIS0048_Change_Control_84	02/25/2009		Production Support 2447	Approved	1.0		2009.1 ML1	02/26/2009	02/26/2009	02/26/2009		03/08/2009	
PVIC_PREIS0048_Change_Control_85	02/25/2009		Production Support 2449	Approved	1.0		2009.1 ML1	02/26/2009	02/26/2009	02/26/2009		03/08/2009	

The spreadsheet also features a detailed "Reason" column for several entries, providing specific details about the change requests and their approvals. The interface includes standard Excel toolbars and a task pane on the right side.

Governance Change Controls

CHANGE CONTROL FORM				
<input type="button" value="CHECK SPELLING"/>				
Project Information				
Program/Project Name:		Project Number:		
Project Manager:		Current Project Level:		
Technology Workstream:		Commodity:		
Workstream Owner:		Commodity Executive:		
Project Business Owner:		Commodity Owner:		
Current Governance Phase:		Contract Spend:		
Change Control Number:		Date Form Completed:		
Project Repository Path:				
Change Request Information				
Change Type:	<input checked="" type="checkbox"/> Scope/Requirement <input type="checkbox"/> Schedule <input type="checkbox"/> Cost <input type="checkbox"/> Other: <input type="text"/>			
	<input type="checkbox"/> Resource <input type="checkbox"/> Architecture/Technology <input type="checkbox"/> Notification Only (e.g., Governance)			
Description of change:				
Justification/Reason for the change:				
Implications of not making the change:				
Risk Impact of the change:				
Impact to Business Case:				
Scope/Requirement Change Details				
Scope/Requirement Impact:				
Deliverables Impacted:				
External Implications:				
Schedule Change Details - for Current Governance Phase				
Schedule Impact:				
Release Change (Technology Projects Only)	Current Release		New Release	
Governance Phase/Activity Name	Baseline		Forecast	
	Start	End	Start	End
<input type="button" value="ADD ROW"/>		<input type="button" value="DELETE ROW"/>		
Cost Change Details - for Current Governance Phase				
Cost Impact:				
Change in Project Level	Current Level:		Forecast Level	
Cost Category	Funding Source/Year	Baseline Cost	Forecast Cost	Cost Variance
				0.00
				0.00

Additional step in Approval Process

Follow standard change control form and process

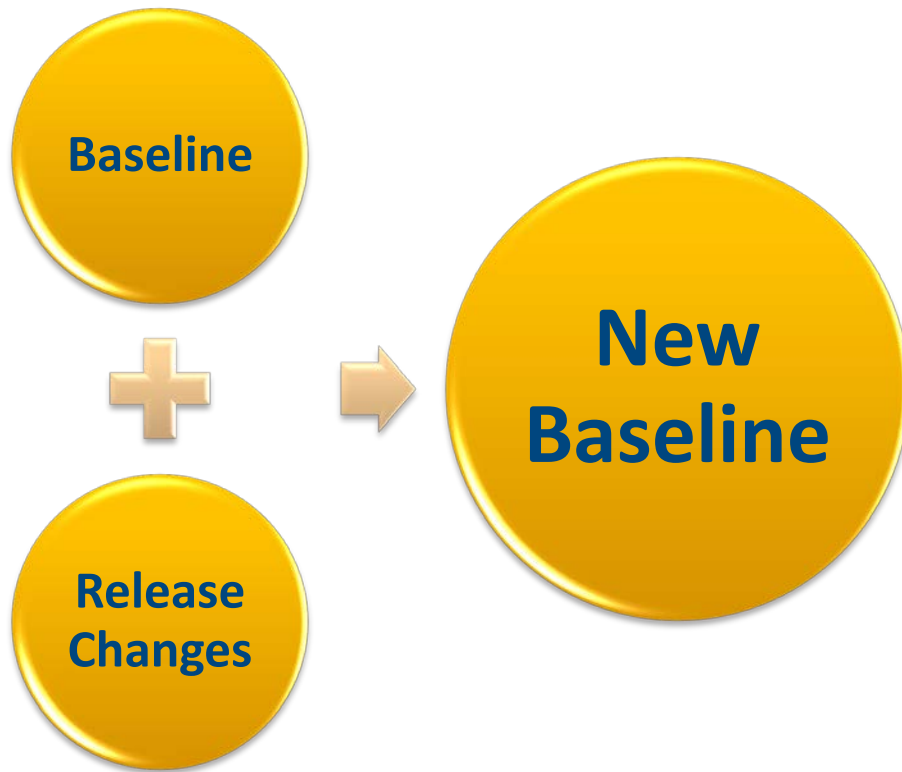
Use for

- Changes after artifact signoff
- Significant project impacts (scope, functionality, cost, schedule, etc.)
- Regrouping scope into releases or implementations
- Approval of all changes for final document version

Best Practices

- Communicate change process and templates as part of your requirements approach. No Surprises!
- Maintain consistent control and communication.
- Impact assessment is key to risk management.
- Leverage tools when available
 - Requirements management system
 - Defect/Change log
 - Track changes (Microsoft Word)
- Cross-reference every change
 - Source
 - Reason
 - Date
 - Supporting documentation: defect, change request, impact analysis, change control, etc.

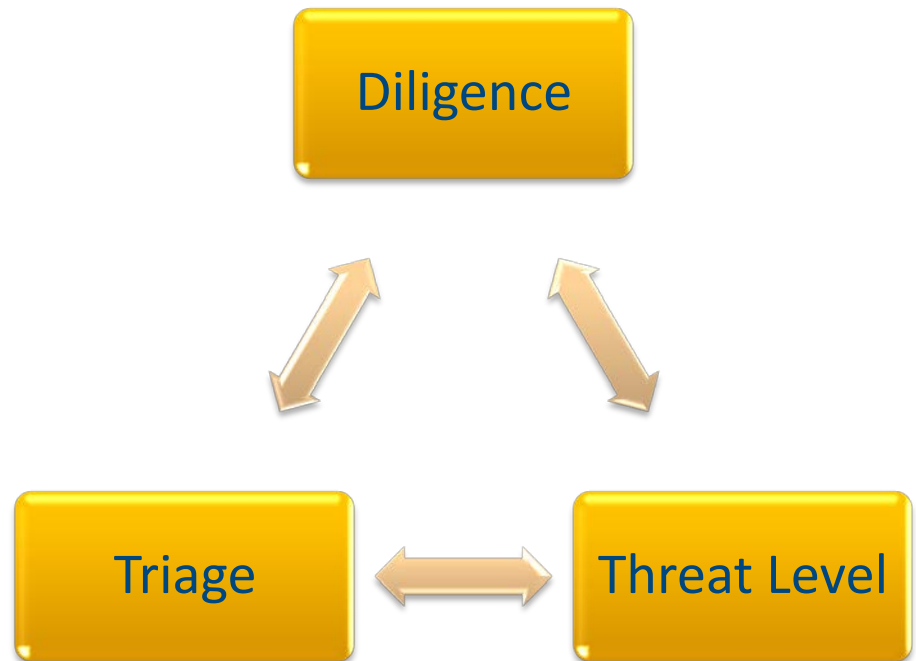
Applying to Baseline Documentation



- Starting from baseline documentation dramatically reduces cost and risk
- Treat all scope as changes to baseline requirements
- Sum of changes is the release scope
- Sum of changes and original baseline becomes the new baseline
- May take additional time and effort to maintain accurate baseline

Conclusions

- Principles of release management and change controls can be applied to requirements management.
- Level of control must match the risk and timing.
- Consistency and diligence are required for success.



Appendix: Cost of Changes and Defects

1. *The Economic Impacts of Inadequate Infrastructure for Software Testing*

- <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.122.3316&rep=rep1&type=pdf>
- Gregory Tassej, Ph.D., National Institute of Standards and Technology
- Prepared by RTI: Health, Social, and Economics Research, RTI Project Number 7007.011

2. *Requirements-Based Testing: Encourage Collaboration Through Traceability*

- <http://www.softwaremag.com/linkservid/0E91E962-AEE3-2E9A-B2B475D66F29CC30/showMeta/0/>
- MKS, 2009

3. *Software Defect Reduction Top 10 List*

- <http://www.cs.umd.edu/projects/SoftEng/ESEG/papers/82.78.pdf>
- Barry Boehm and Victor R. Basili, January 2001

4. *An Introduction to Agile Software Development*

- http://www.danube.com/docs/Intro_to_Agile.pdf
- Victor Szalvay, Danube Technologies, Inc., November 2004

5. *Cost of Change - Modernized*

- <http://www.aptprocess.com/whitepapers/CostOfChangeModernised.pdf>
- Paul Oldfield, Mentors, 2003, Appropriate Process Group

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