### On Lock Down: Requirements Change Management

PROJECT WORLD\*BUSINESS ANALYST WORLD, TORONTO, ONTARIO MAY 25 - 28, 2015 @HansEckman | #BAOT #PMOT | @projectworld #PWBAW HansEckman.com

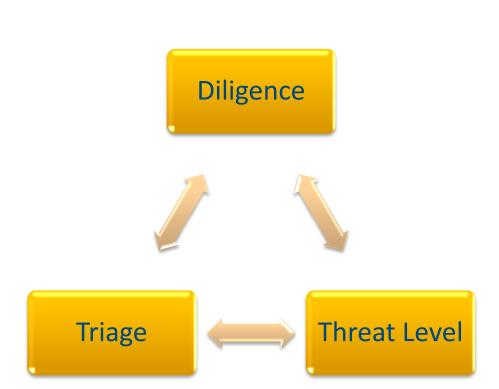


- This session is for you, so please participate.
- The content in this presentation and discussion are the responsibility of Hans Eckman, and does not express the views and opinions SunTrust Banks, Inc.
- No animals were harmed during the creation of this presentation. Please support your local rescue groups.



## 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 <sup>1</sup>	1x	5x	10x	15x	30x
Boehm <sup>2,3</sup>	1x	3x	7x	50x	100x
When Errors are introduced <sup>1</sup>	3.5%	10.5%	35%	6%	15%

#### Other Cost Factors<sup>3</sup>

- "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 - The Only Constant is Change



Ambiguities, Clarifications, Invalid Requirements

**Missed Requirements** 

Scope and Prioritization Changes

Constraints: Design, Resource, Time, Budget

**Missed implementation** 

Change in business need



## **Threat Levels**

### **No Material Impact:**

Typos, Wording Ambiguities, Clarifications, Structure, Formatting, Decomposition, Supporting Requirements, Details, Etc.

#### **Material Impact:**

Missed Requirements, New Requirements, Constraints, External Impacts, Etc.

Governance

Impact





# No Material Impact:

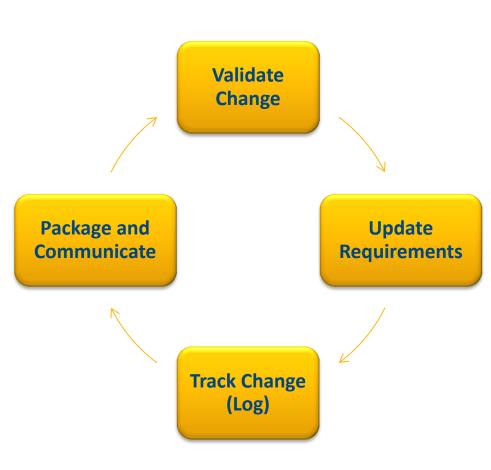
Log and communicate changes

### **Material Impact:**

Determine impact, approve before implementing

Governance Change Control

## No Material Impact - Update Process



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



## **Documenting Changes**

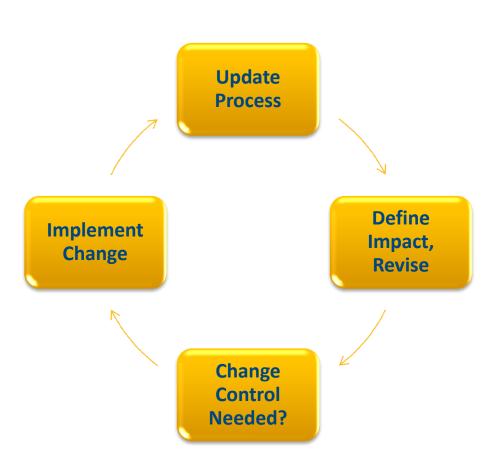
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 Changes are logged by document version

- State changes source: defect, change control, etc.
- Indentify 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**

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## **Governance Change Controls**

SUNTRUST CHANGE CONTROL FORM					
	CHECK SPELLING				
P	roject Information				
Program/Project Name:	Project Number:				
Project Manager:	Current Project Level:				
Technology Workstream:	Commodity:				
Vorkstream 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:	Scopo/Roquiromont 🔲 Schodulo	Cart Dthor:			
Change Type:	Resource Architecture/Technology	🗖 Natification Only (e.q., eGovernance)			
Description of change:					
Justification/Reason for the cha	inge:				
Implications of not making the c	hang				
Risk Impact of the change:					
Impact to Business Case:					

	Scope/Requirement Change Details			
Scope/Requirement Impact:				
Deliverables Impacted:				
External Implications:				

Schedule Impact:								
Release Change (Technology Projects Only)	Current	Current Release		New R	New Release			
Governance Phase/Activity Nar	ne	Bas	eline		Forecast			
		Start	End		Start	End		
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	Cost Char	nge Details -	for Current	Governanc	e Phase			
Cost Impact:								
Change in Project Level	Current	Level:		F	orecast Level			
Cost Category	Funding	Source/Year	Baseline Co	ost F	orecast Cost	Cost ¥ariance		

### 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**

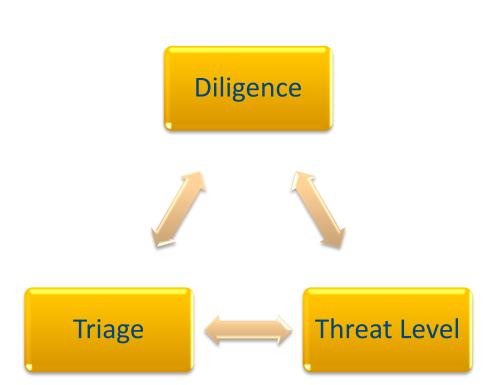


- Starting from baseline documentation dramatically reduces cost and risk
- Treat all scope as changes to baseline requirements
- Sum of changes is the release scope
- Sum of changes and original baseline becomes the new baseline
- May take additional time and effort to maintain accurate baseline



## 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 Tassey, 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

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

#### 3. Software Defect Reduction Top 10 List

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

#### 4. An Introduction to Agile Software Development

- <u>http://www.danube.com/docs/Intro\_to\_Agile.pdf</u>
- Victor Szalvay, Danube Technologies, Inc., November 2004
- 5. Cost of Change Modernized
  - <u>http://www.aptprocess.com/whitepapers/CostOfChangeModernised.pdf</u>
  - Paul Oldfield, Mentors, 2003, Appropriate Process Group



#### Our Purpose

We are committed to Lighting the Way to Financial Well-Being for our clients. We help clients achieve greater confidence and control over their finances. We strive to understand our clients' specific circumstances and provide the personalized advice and services that meet their unique banking, borrowing and investing needs.

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- www.suntrust.com
- Hans Eckman
  - <u>http://HansEckman.com</u>
  - Hans@HansEckman.com
  - http://www.linkedin.com/in/hanseckman
- Twitter
  - @HansEckman
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