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Test-Focused Knowledge Sharing using A3-assisted Communication

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[*FreeDigitalPhotos.net](http://FreeDigitalPhotos.net)



Testers' Requirements

- Overall goals
- System overview
- Functions in context

- Spend less time searching for design specific information

Category	Statements -Specific
Test Goals	I know the specific goals for testing in the project
Test Level	I know exactly what level of testing to perform on each part of the system that I am responsible for
System Overview	I have sufficient information about the functional structure of the system
Requirements	Quality of the current requirements provide me with sufficient value for the purpose of testing
Design	I have sufficient information about how features/functions in scope are designed to work
Interfaces	I know how features/functions are related to each other so that I can test interfaces and dependencies
Category	Statements - General
Availability	I spend more time writing test cases or executing them than on gathering information
Detail	The detail of information about the system is sufficient for me to adequately test it
Collaboration	The current situation allows me to work closely with developers, stakeholders and architects
Test Efficiency	The current situation allows me to be an effective tester
Test Coverage	The current situation allows me to create a sufficient amount of tests for my area of responsibility
Quality Confidence	I believe that the system will be properly tested based on the current state and validity of information



Causes

- Complex information database
- Documents with large and complex texts
- Models are often object-oriented
- Knowledge in the heads of experts
- Various mental models
- Knowledge evolves and changes
- Temporary knowledge sharing



A3 - Feedback

- General and concise
- Quick overview
- Little noise
- Multiple necessary aspects

A3.TQP Overview v.1.0

KCS Web Location Folder [LINK](#)

System: KCS v.1.1.x

Keywords: Technology Qualification Program, KCS, Technology Readiness, FMECA, Risk Reduction

Document Purpose:
The purpose of this A3 is to provide a systemic overview of the Technology Qualification Program (TQP) for the new KCS. (see related documents).

Related Documents:

1. Risk Assessment v.1.0 [LINK](#)

2. TQP Program rev A [LINK](#)

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Is-Model References:
Models and text that are related are marked with a Color and Letter

Purpose

1. The primary goal of the TQP is to provide sufficient evidence that the new technology will function within given operational conditions and that it meets specified requirements.

2. The primary goal of the KCS development project is to qualify the KCS platform for Technology Readiness Level (TRL) 4 before the KCS development project releases the system

Risk Assessment (FMECA)

Purpose: To provide systematically structured information that helps identify processes, functions and design ideas that can reduce the risk related to each failure mode.

An FMECA is a tool that helps to systematically identify how failures of the system may occur, what can cause those failures, and what risk it may entail.

Component	Function	Failure Mode	Failure Cause	Failure Effect	Failure Detection	Risk Reduction	Risk Reduction	Residual	Final

TQP Risk assessment: The risk of any failure mode identified in the FMECA is a product of:
1. Probability of Occurrence (Likelihood), and
2. Severity of Consequence
Probability x Consequence = Risk (Low, Medium, High)
* Detectability is usually included as a third measure (known as RPN)

The FMECA is conducted based on the functions of the components in the KCS (Functional FMECA). The contents of the analysis are based on KM's knowledge of the KCS architecture solution.

Execution Plan

The model below describes the intended parallel execution of both the KCS development project and the TQP. The model contains major events and how they are sequentially related.

TQP Process

Technology Readiness Level

The technological readiness of the KCS platform is assessed* according to the model below. The levels describe the main goal of the Qualification Activities that will provide the evidence that the system fulfills the criteria for each level.

*See Related Documents for more details

Risk Reduction Strategy

Purpose: Explain how to reduce identified risk to a level lower than medium, and how to verify this reduction.

STEP 1. Define and implement risk reducing functionality. This functionality is divided in two categories and is a responsibility of the KCS development project.

Prevention function (prevent the effect from occurring): This is a function that restores the system functionality before it reaches the operator. Usually by use of redundancy features or relief functions.

Mitigation function (treat the effect before consequence): This is a function that reduces severity of the consequence when the effect reaches the operator. Usually by informing the operator about the failure (Topology/Surveillance)

STEP 2. Create and execute test plan for failure modes that are detectable by verification of established requirements

STEP 4. Design and execute TQP specific tests *

STEP 4. Design and execute TQP specific OS Compare tests *

*See Related Documents for more details

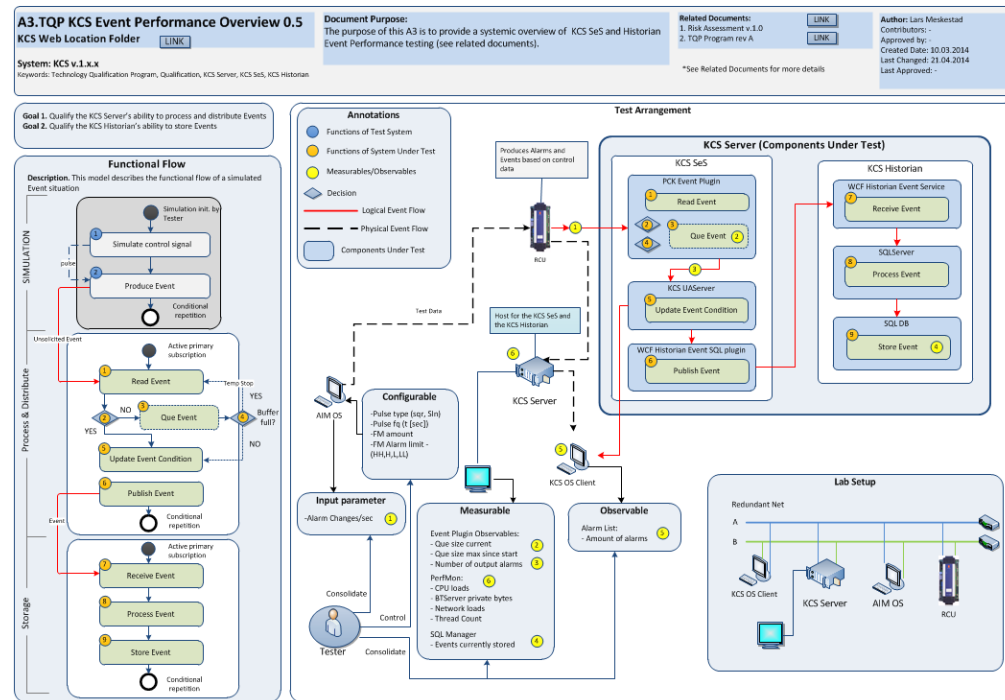
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19-Nov-2010

THE FULL PICTURE

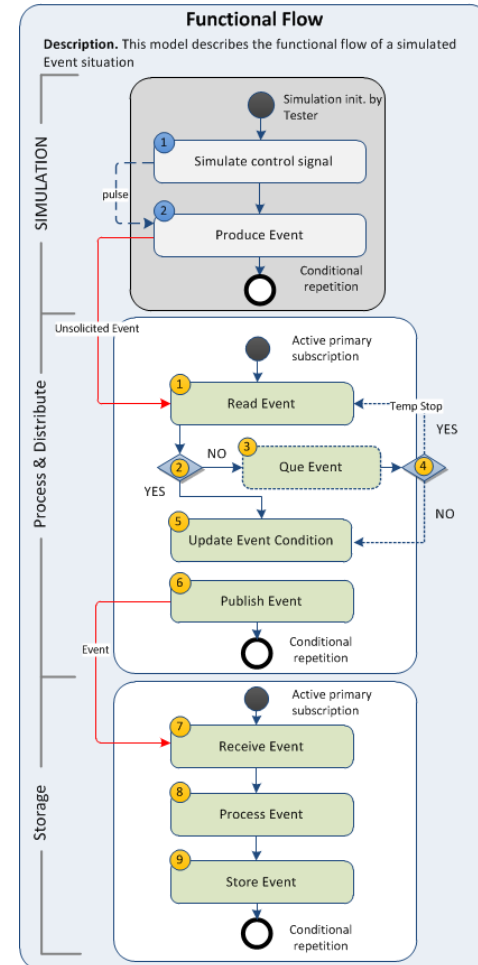
A3 – Event Performance

- Functions involved
- Components under test
- Relationship between software and hardware
- Measurables



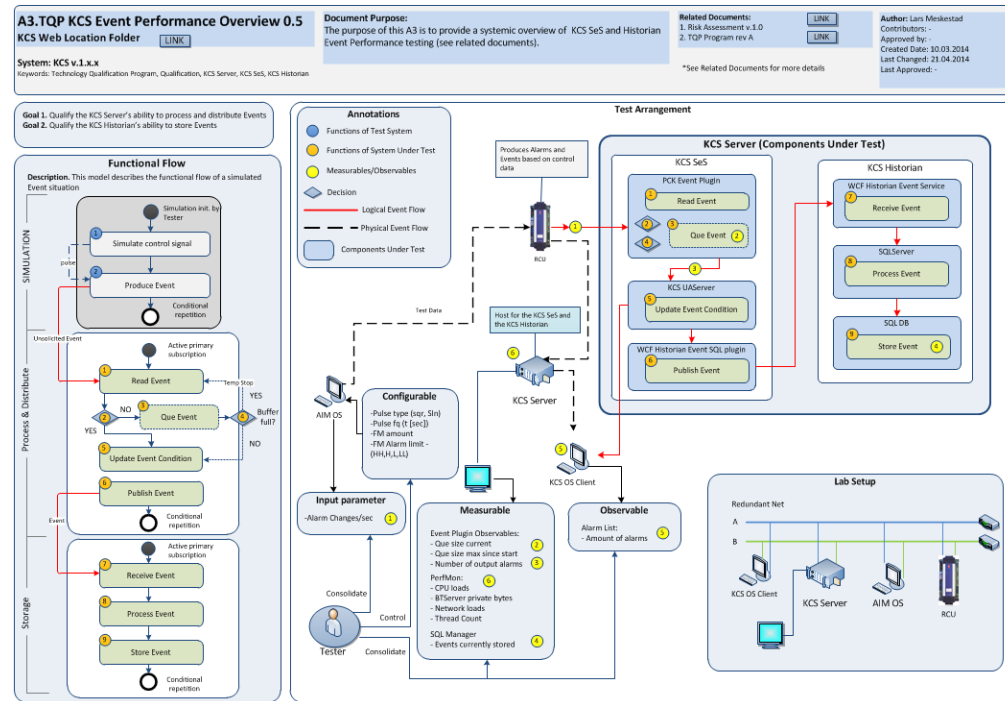
A3 – Activities/Functions

- Main activities
- Functional flow
- Major decisions



A3 – Feedback

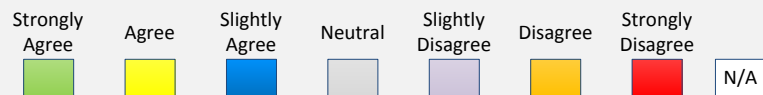
- Insight in process
- Overview of measurables
- Easier to learn from
- Conversation platform
- May decrease code reading



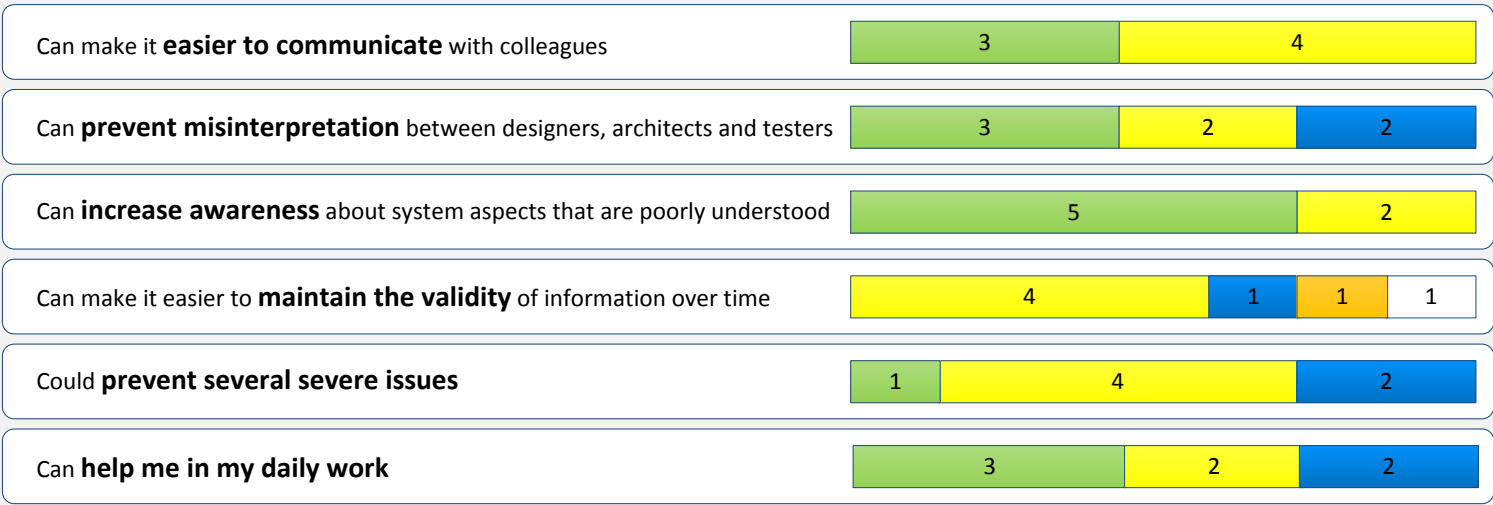


Findings – Benefits

Evaluation – Benefits of A3



NPS





Findings - experience

- No special tool needed
- Good conversation platform
- Allows quick feedback
- Available and transparent knowledge
- Contextual understanding

- Need modelling skills
- Capable of abstraction
- Understand various views

- Works when informal



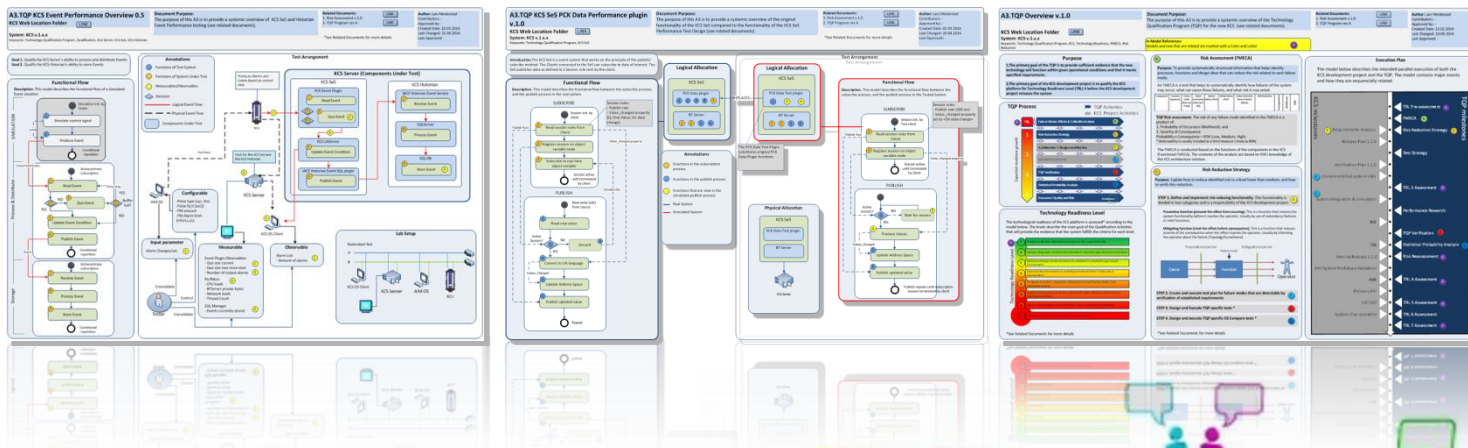
Conclusion

- Increases knowledge sharing between testers and rest of project members
- Creates awareness about little known areas
- Emphasizes essential knowledge
- More available and transparent knowledge
- Can prevent serious problems

- Skilled modeller(s) should be involved (abstraction)
- Should have a support system
- May benefit from specific roles



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Insight into each other's knowledge

