Effectively Managing Process Compliance

Systems Engineering in the Face of Multiple Models, Standards and Best Practices.

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Agenda

- Current Challenges
- Goals
- Proposed Solution
- Tool Support and Interfaces
- Benefits
Current Challenges

- Heavy time and cost pressure affects product quality
- Frequent audits or appraisals
- Up to 25% of work hours for audit preparation and performance
- Assure compliance with specific models or standards for safety, security, quality, reliability, etc. in parallel
Goals

- Allow organizations to focus on the definition and implementation of processes
- Provide automated support to facilitate enactment of the processes
- Provide support for continuously monitoring adherence to the processes
- Support appraisal preparation and performance by automating evidence collection
- Effectively collect, manage and track non-conformances to closure in order to improve processes and secure future audit success
Key Idea

• Actively use the development processes in projects, i.e. by creating work products in projects

• Link the actively used development processes to the models or standards that need to be fulfilled (e.g. CMMI, ISO)

• Continuously perform PPQA activities

• Result: evidence data will automatically be collected in the background
Multi-model Support

- Multiple reference models can be linked into multi-models
- Multimodel links are weighted
- Multimodels are specific to organization (i.e. dependent on type of business)
Process Composition and Definition

- Establish and maintain Organization Standard Process model(s) in Model Wizard or Stages or tooling with similar capability.

- Create or import a model of your enterprise processes that incorporates the desired best practices of applicable standards and model(s). Update when needed.

  - This step is performed once for each level at which the process is tailored within the enterprise. (e.g. Enterprise, Division, Department, Product Line)

  - Ultimately it is tailored to a particular project. At that point it becomes a representation of the Project’s Defined Process.

  - It can then be used as the basis for identifying and analyzing information and evidence supporting:
    - Project QA activity and monitoring,
    - Internal compliance audits, and
    - External benchmarking appraisals or compliance audits.
Relationship
Enterprise Architecture, Best Practices, Process Improvement

Business Architecture

Activity A – Missing Process

Activity B – Needs Process Improvement

Process Improvement
Implementation Guidance

Best Practices

ISF CPP X Objective Z
ISO Clause X
PCCM Practice Y

ISF CPP X Objective Z
ISO Clause B
CMMI Practice SP ##

Market & Competitors
Leadership, Culture, Strategic Alignment
Infrastructure & Technology
Measurement, Innovation and Improvement
Human Capital
Organizational
Marketing

P&S Execution
P&S Sustentation

Customers
Support Management

Customers
(post-contract)

Suppliers

Results (performance)
Relationships:
Process Architecture, Best Practices, Audits

Best Practices
- COBIT
- ISO/IEC 20000
- CMMI
- ISF for Excellence
- PPQA / Audit / Appraisal Findings
- Integration / System
- Process Definition
- Customer Process Architecture
- Process Compliance
- Diagnostic Tools
- Enterprise Appraisal
- ISF for Excellence
- Market & Competitors
- Culture, Strategic Alignment
- Measurement, Innovation and Improvement
- Customers (pre-contract)
- Results (performance)
- Suppliers (post-contract)
- P&S Execution
- P&S Sustenance
- Management
Solution Details

- Reference models are broken into different model requirements
- Process elements are linked with model requirements
- Model requirements are mapped to evidences
- Evidence data maps can be generated
Example: Process Lifecycle
Example: Process Compliance Mapping
Example: Compliance Gap Analysis
Example: Evidence Data Generation
Use **Model Wizard** to create or import a model that represents your Organizational Standard Model and/or the desired QA Reference Model.

Use **Appraisal Wizard (AW)** to setup Appraisal Wizard Audit Template(s) for each type of Audit you want to perform (e.g. setup unique record types, status values, and document types, etc.)

- Create Audit Question records to build audit checklist for set of audit checkpoints.
- Use the Record Documents tab and the document list to identify the expected objective evidence for each audit question.

Use the **AW** tool during the audit to document the audit finding(s) (e.g. “Compliance, “Non-Compliance (N/C)”, “Information Needed” record types).

- Write up N/C Action Item records
- Determine compliance ratings

Use the **AW** tool to build various reports of the audit finding(s) (e.g. Reports of % compliant/% non-compliant findings; List N/C Action Items; etc.) to prepare for follow-on audits.

- Use **Model Mapper** to map QA Reference model to a standard or model (e.g. CMMI) for use in appraisals.
- Import new “**Mapped Model**” into AW to use audit results and organization’s existing data to support Readiness Reviews and Appraisals.
Step 4.2.1: To prepare for monitoring activities, review current Internal and Customer Requirements Baselines to ensure an accurate and complete traceability matrix. Method: N/A

Step 4.2.2: Meet with individuals who maintain the requirements traceability matrix to identify any inconsistencies between the matrix.

- **Business Requirements and Solution Requirements**
  - Requirements and WBS assignment
  - Requirements and Solution Design
  - Requirements and Test Cases
  - Requirements and Functions/Features

The goal of this meeting is to ensure that the requirements traceability matrix is accurate. Examples of inconsistencies include:

- A new requirement was added yet no design was created
- A requirement changed and a test case was not updated
- A function/feature is being modified as a part of the project, yet is not traced to a requirement

Generate a requirements change request for any inconsistencies identified during this meeting.

Method: CMMI Direct Evidence

- Meeting minutes w/ attendees and notes specifying requirements inconsistencies review activities
- Requirements change requests

Step 4.2.3: Meet with Project leadership to review Project Plans to identify any inconsistencies between Requirements Baselines and Project Plans.
Setup Audit Templates Using QA Reference Model

- **Element Name**
  - Policy
  - Organizational Procedures
    - Requirements Management
      - 1.0 Plan for Requirements Management
      - 1.1 Assign Resources
      - 1.2 Establish Customer Understanding Expectations
      - 1.3 Plan for Requirements Changes
      - 1.4 Finalize Requirements Management Planning
    - 2.0 Establish an Initial Requirements Baseline
      - 2.1 Determine Requirements Baseline
      - 2.2 Propose Initial Requirements Baseline
      - 2.3 Achieve Initial Customer Understanding
      - 2.4 Establish Initial Requirements Baseline
    - 3.0 Maintain a Requirements Baseline
      - 3.1 Complete Requirements Baseline
      - 3.2 Confirm Customer Understanding
      - 3.3 Establish Requirements Baseline
    - 4.0 Manage Requirements Change and Inconsistency

- **Step 1.2.1:** Document all parties that will serve in the Customer role. Requirements are considered valid if they are understood from the Customer.
  - Method: Stakeholder Analysis

- **Step 1.2.2:** For step 1.2.3 through 1.2.4, communicate with the Customer(s).
  - Method: N/A

**Drag a column header here to group by that column**

<table>
<thead>
<tr>
<th>Rec ID</th>
<th>Record Type</th>
<th>Status</th>
<th>Verification</th>
<th>Record Text</th>
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<td>13</td>
<td>Audit Checkpoint</td>
<td>Noncompliant</td>
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<td>1. Determine the communication planned or that have occurred to establish an understanding of requirements with customers. 2. Collect the expected direct evidence from the project representative or their project library. 3. Identify the objective evidence provided as direct or indirect.</td>
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**Record Type:** Audit Checkpoint

**Status:** Noncompliant

**Verification**

- GLBL
- Summary R

**Elements Attached to Record**

- Project Name 1
- Organization
- Project Name 3
- Project Name 8
- Project Name 4
- Project Name 5
- TL
- 01-Sen Div Mgmt
- G8 - Proj SE Leaders
- 02 - Program Managers
- 04A - Proj Sys Engs
- 04B - Proj Sys Engs
- 05A - Proj CM/DM
- 06B - Proj CM/DM
- 06 - Proj QA
- 07 - Eng Mgrs
- G8 - Proj SW Leaders
## Audit Spreadsheet Generate and Re-import

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<th>ID</th>
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<th>Type</th>
<th>Rec Status</th>
<th>Doc ID</th>
<th>Ev Type</th>
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<td>1. Preview and confirm assignment of the Requirements lead role with the project representative</td>
<td>Audit Checklist Item</td>
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<td>1. Determine the communication that planned or those that have occurred for establishing an understanding of requirements with customers</td>
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<td>Expected Direct Evidence</td>
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<td>2. Collect the expected direct evidence from the project representative or their project library</td>
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<td>Requirements Management Plans</td>
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</table>

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Determine Status of Records/Documents

1. Determine the communication planned or that have occurred to establish an understanding of requirements with customers.
2. Collect the expected direct evidence from the project representative or their project library.
3. Identify the objective evidence provided as direct or indirect.

Element Name
- Kingland Systems Corp (REQM Demo)_081106
  - Policy
  - Organizational Procedures
    - 1.0 Plan for Requirements Management
      1.1 Assign Resources
      1.2 Establish Customer Understanding Expectations
      1.3 Plan for Requirements Changes
      1.4 Finalize Requirements Management Planning
    - 2.0 Establish an Initial Requirements Baseline
      2.1 Determine Requirements Needs
      2.2 Propose Initial Requirements Baseline
      2.3 Achieve Initial Customer Understanding
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      3.1 Complete Requirements Baseline
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Step 1.2.1: Document all parties that will serve in the customer role. Requirements are considered valid if they are understood from the customer. Method: Stakeholder Analysis

Step 1.2.2: For step 1.2.3 through 1.2.4, communicate with the customer(s). Method: N/A
Determine Element Compliance Ratings

- Element Name:
  - Element: 1.1 Assign Resources
  - Requirement: 1.0 Plan for Requirements Management
  - Sub-requirements:
    - 1.1 Assign Resources
    - 1.2 Establish Customer Understanding Expectations
    - 1.4 Finalize Requirements Management Planning

- Record Documents:
  - Record Type: Audit Checkpoint
  - Status: Noncompliant
  - Verification:
    - GLBL
    - Record Details:
      - Element: 1.1 Assign Resources
      - Project Name 1
      - Project Name 2
      - Project Name 3
      - Project Name 4
      - Project Name 5
      - Project Name 6
      - TL
      - QM
      - QA
      - SE
      - Eng
Audit Results and organization's existing data supports appraisals and ties to other standards/models.
CMMI-DEV 1.2 Mapped to QA Reference Model

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SP 1.1 Establish Organizational Process Needs

**Establish and maintain the description of the process needs and objectives for the organization.**

**IPPD Addition**

Integrated processes that emphasize parallel rather than serial development are a cornerstone of IPPD implementation. The processes for developing the product and for developing product-related lifecycle processes, such as the manufacturing process and the support process processes, are integrated and conducted.


Benefits

- **Reduce complexity**
  - Process descriptions become consistent and lean
  - No „CMMI or ISO speak“
  - Fulfill multiple standards in parallel

- **Reduce efforts and costs**
  - Companies reported up to 60% less efforts for audit preparations
  - No interruption of operational work because of audit preparations

- **Concentrate on process improvement, not process administration**
Thank you for your interest.


Register for product trials at http://www.stagesAsAService.com

Request additional information at info@isd-inc.com or info@methodpark.com