Multi-Model Organizational Process Quality Assurance Program

Prepared for:

10TH ANNUAL CMMI® TECHNOLOGY CONFERENCE AND USER GROUP

November 17, 2010

Kristi Kingland Glowaski
Kristi.Kingland@Kingland.com
Founded in 1992, building technology solutions for bank and brokerage clients

Expanded to complex transaction, system integration, and compliance problems

Solutions used by over 200,000 professional users in 140 countries

Provide analysis, software development, data, and data center services

75 Fulltime Employees, ~$18 million in Revenue
Agenda

• Overview

• Kingland System’s Path to PPQA

• Mapping Internal Processes to External Models

• Reporting Compliance

• Preparing for external audits/appraisals

• Conclusion
Overview

Organizations typically leverage multiple models to guide internal processes.

The trick is to effectively map them for a complete enterprise-wide view.
Our Original Approach to PPQA: Individual Process Audits

• Started with separate audits for each process

• Each process was audited one time per project

• Averaged 5 audits per project, at ~4 hours each

• Paper audit checklists were used
Our Original Approach to PPQA: Individual Process Audits

- Audits focused on the evidence existing, rather than the quality of the evidence/effectiveness of the process

- No direct traceability back to the CMMI model

- This model was unsustainable:
  - Time intensive, manual
  - More audits as processes were added
  - Didn’t ensure compliance across a project’s lifecycle
Our Original Approach to PPQA: Individual Process Audits

Internal Processes and External Models were silos, with no traceability or visibility across.
Process Quality Assurance Programs tend to focus on compliance to only the organization’s processes or activities.
Overview – External Perspective

External Audits/Appraisals only focus on compliance to that particular model.
The goal is to have a comprehensive view across internal process and external model compliance.
Second Approach to PPQA: Milestone Audits

- Performed audits across processes at milestones:
  - Planning Complete
  - Elaboration Complete
  - Development Complete
  - Transition Complete

- Examined aspects of the processes that were appropriate for each milestone

- Ensured compliance across a project’s lifecycle

- Began to leverage tooling to eliminate manual effort
Second Approach to PPQA: Milestone Audits

- Began using tooling to support Audits

- Audited by process step, focusing more on quality of evidence and effectiveness of the process
Started to see internal process traceability, but still no visibility across to the external models
Current Approach to PPQA

• Still perform audits across processes at milestones

• Still examine process sequences that are appropriate for each milestone

• Still ensure compliance across a project’s lifecycle

• Increased use of tooling to:
  • Support Audits
  • Report compliance against internal processes
  • Map and identify gaps across external models

• Different Approach to audit focus
Current Approach to PPQA

- Audit projects at the goal level, ensuring that projects:
  - Meet the goal of each process sequence
  - Their plans are consistent with the process
  - Their activities are consistent with their plans
Guiding Principles

- All processes will be audited
- Ensure everyone is performing consistently
- Compliance evaluated against goals of each process sequence
- Map internal processes to external models, driving the model to the background
- Leverage audits to provide coaching as well as provide a vehicle for process improvement
- Provide feedback to the project teams and follow-up on non-compliance items
Lessons Learned

• Evaluation at the goal level allows for better mapping to external models

• Need objective rules in place for evaluation
  • Goal Achieved
  • Team’s Plan consistent with the Process
  • Team’s Activities consistent with their plan

• Auditor Guidance within checklists is a **must** to maintain consistency of audits

• Having auditors review evidence in advance, followed by interviews with team members is much more efficient (SCAMPI-like events)
Lessons Learned

- Tooling allowed us to have better record retention, trending, and reference for internal audits

- Reduced average time spent on audits per project by 24%

- Increased process compliance by 46%
Current Approach to PPQA

The current approach allows us to have a comprehensive view across internal processes and external models.
Tooling

Appraisal Wizard Suite by Integrated System Diagnostics, Inc.

• Appraisal Wizard
  • Used for PPQA Audits and SCAMPI Appraisals
  • Database of checklist questions, evidence examined, and ratings tied to the process(es) being evaluated

• Model Wizard
  • Used to design models for use in Audits and Appraisals
  • Ability to import organizational processes
  • Contains models such as CMMI, ISO, etc.

• Model Mapper
  • Used to map internal processes to external models
  • Contains maps across external models such as CMMI to ISO, etc.
Appraisal Wizard

Record Documents

Element Name

Element Record
Appraisal Wizard – Element Name

Includes the model you are auditing against
Appraisal Wizard – Element Records

<table>
<thead>
<tr>
<th>Rec</th>
<th>Record Type</th>
<th>Status</th>
<th>Verification</th>
<th>Record Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>3026</td>
<td>Audit Question</td>
<td>Completed</td>
<td>Yes</td>
<td>Does the REQM plan address the following areas?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Acceptable sources to provide requirements to the team?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Acceptable forms of requirements and how they will be approved?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Means for which the team will ensure a common understanding of requirements between the customer and the team?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- How changes to requirements will be managed?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- How requirements baselines will be established and maintained?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- How commitments to individual requirements will be managed?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- How inconsistencies between the requirements baseline and work activities and related work products will be monitored for, and how discovered inconsistencies will be addressed?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- How bi-directional traceability between requirements and work products will be managed?</td>
</tr>
</tbody>
</table>

Includes questions and checklist information for auditors
## Appraisal Wizard – Record Documents

<table>
<thead>
<tr>
<th>Dr</th>
<th>Title</th>
<th>File Name or URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0041</td>
<td>REQM Plan v1.0</td>
<td><a href="http://kingland/sites/compliance_solution/indy%206_0/v60%20Project%20Administr">http://kingland/sites/compliance_solution/indy%206_0/v60%20Project%20Administr</a></td>
</tr>
</tbody>
</table>

Includes evidence examined for each question
The model is essentially a hierarchy of the processes, sequences, and steps that make up those processes.
Model Mapper

Enables mapping from one process or model to another
<table>
<thead>
<tr>
<th>Element</th>
<th>Mapped Elements</th>
<th>Link Comment</th>
<th>Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 Establish an Initial Requirements Baseline:</td>
<td>- REQM SP 1.1</td>
<td>Link Comments: After contingent commitment from the team, the initial requirements are provided to the customer for validation and approval. Once received, these are baselined in the RTM and become the basis for subsequent planning.</td>
<td>100</td>
</tr>
</tbody>
</table>

Rationale behind the mappings and coverage certainty can also be captured and used for additional visibility and reporting.
Generate reports on internal process compliance
Generate reports on findings
# Gap Analysis

## Map Report - Unmapped Model Elements

**KSC_PPQA v1.7 to CMMI Dev v1.2**

- **Source Model:** KSC PPQA v1.7
- **Target Model:** CMMI-DEV, V1.2 Staged

<table>
<thead>
<tr>
<th>KSC PPQA v1.7</th>
<th>KSC PPQA v1.7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Element Name</strong></td>
<td><strong>Element Name</strong></td>
</tr>
<tr>
<td>KSC PPQA v1.7</td>
<td>2.2 Establish Evaluation Criteria</td>
</tr>
<tr>
<td>Requirements Management</td>
<td>2.3 Determine List of Potential Suppliers</td>
</tr>
<tr>
<td>1.3 Plan for Requirements Changes</td>
<td>2.4 Gather Information</td>
</tr>
<tr>
<td>Evaluate Supplier(s)</td>
<td>5.1 Determine List of Potential Suppliers</td>
</tr>
</tbody>
</table>

## Model Map Report

**KSC_PPQA v1.7 to CMMI Dev v1.2**

- **Source Model:** KSC PPQA v1.7
- **Target Model:** CMMI-DEV, V1.2 Staged

<table>
<thead>
<tr>
<th><strong>Element</strong></th>
<th><strong>Mapped Elements</strong></th>
<th><strong>Link Comment</strong></th>
<th><strong>Certainty</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Analyze Stakeholder Needs</td>
<td>- PP SP 2.6</td>
<td>Link Comments: Identifies stakeholders and determines level of necessary involvement</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>- PP GP 2.7</td>
<td></td>
<td>50</td>
</tr>
</tbody>
</table>
Gap Analysis

Create reports to understand alignment of internal processes relative to external models, to see where there are gaps and strong alignment
Preparing for SCAMPI Appraisals

- From our internal audits, the tool already includes evidence/information in preparation for SCAMPI Appraisals
- Reduced time spent in preparation for a SCAMPI by 21%
Conclusion

How do you ensure that your program has a complete view across internal processes and external models?

• Ensure internal processes are addressing external practices

• Map internal processes to industry models

• Provide a means to report on and modify the mapping

• Provide visibility of compliance between internal processes and external models
Questions / Discussion
Thank You

For questions related to this presentation, please contact:

Kristi Kingland Glowaski
641.355.1017
Kristi.Kingland@Kingland.com