



Multi-Model Organizational Process Quality Assurance Program

Prepared for:



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A Professional Services Technology Firm

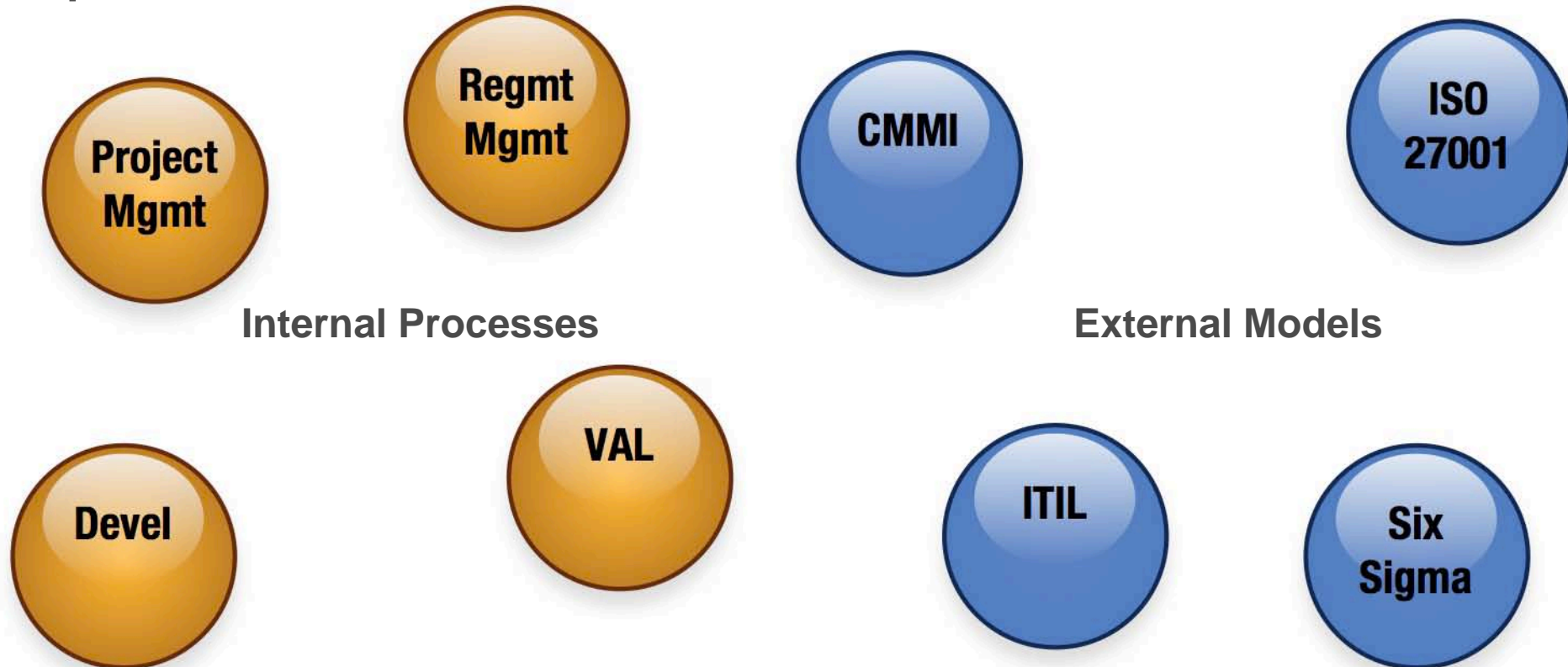
- Founded in 1992, building technology solutions for bank and & brokerage clients
- Expanded to complex transaction, system integration, and compliance problems
- Solutions used by over 200,000 professional users in 140 countries
- Provide analysis, software development, data, and data center services
- 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.

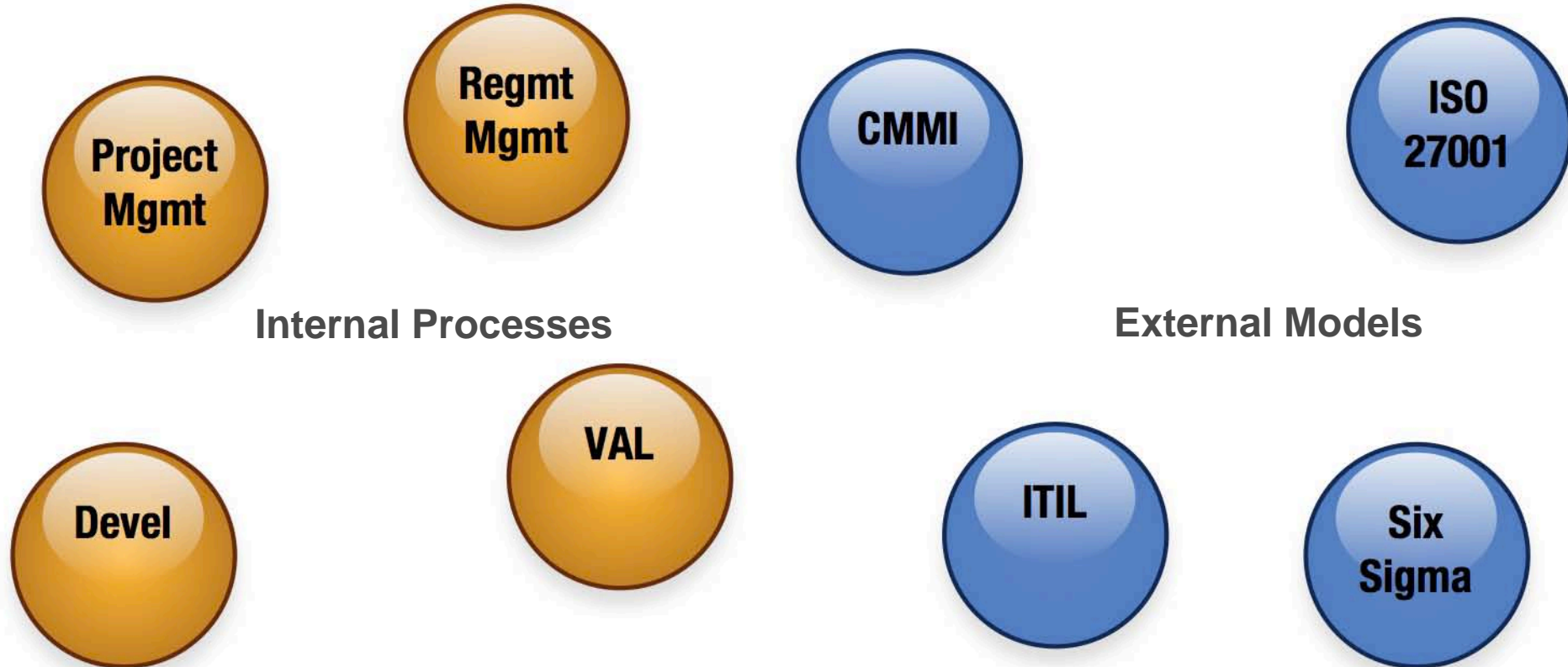
Our Original Approach to PPQA: Individual Process Audits

- 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

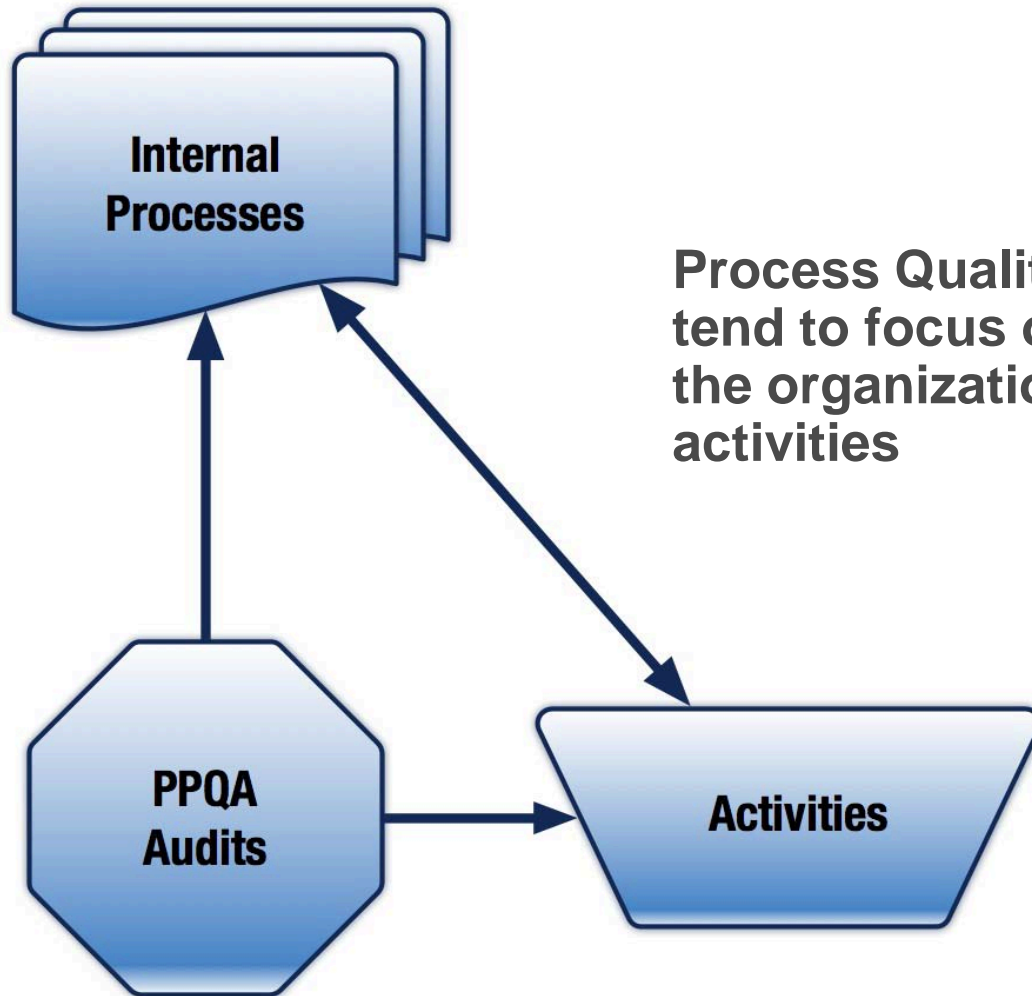
- Audits focused on the evidence existing, rather than the quality of the evidence/effectiveness of the process
- No direct traceability back to the CMMI model
- This model was unsustainable:
 - Time intensive, manual
 - More audits as processes were added
 - Didn't ensure compliance across a project's lifecycle

Our Original Approach to PPQA: Individual Process Audits



Internal Processes and External Models were silos,
with no traceability or visibility across

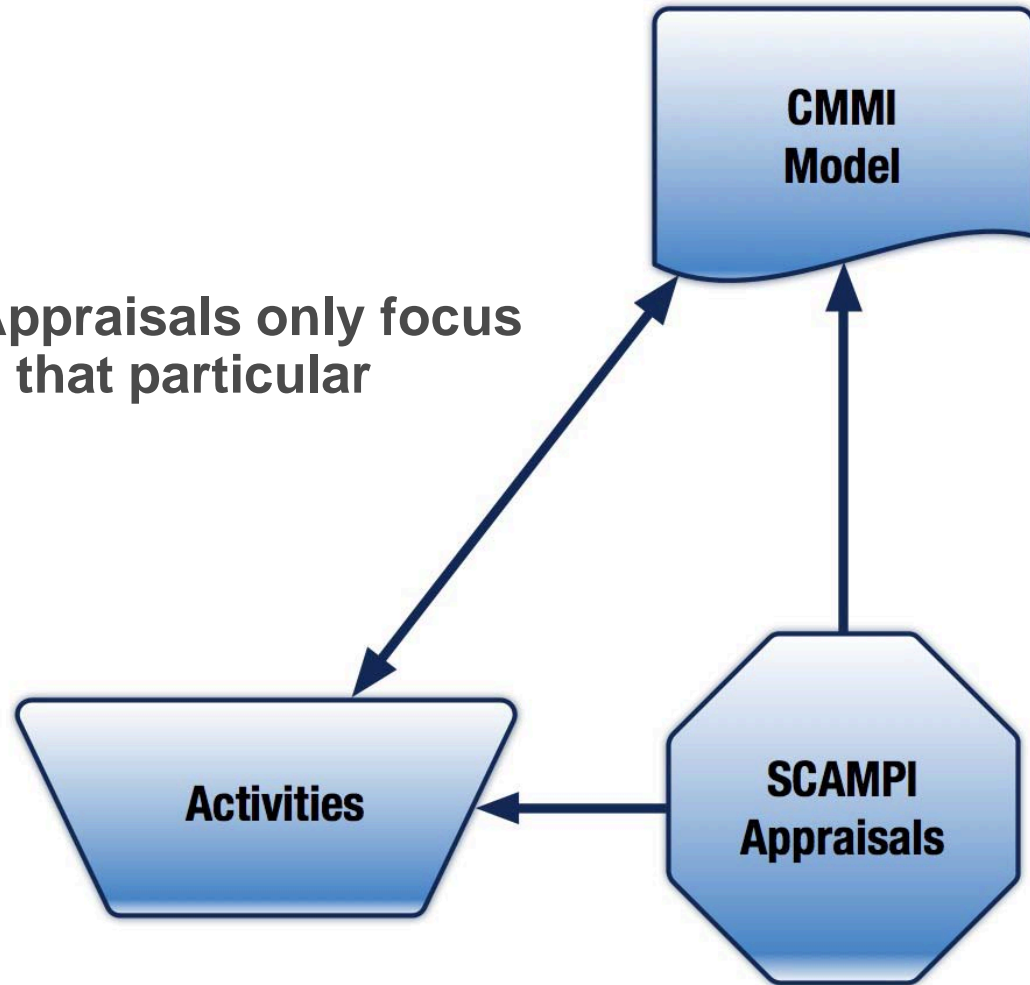
Overview – Internal Perspective



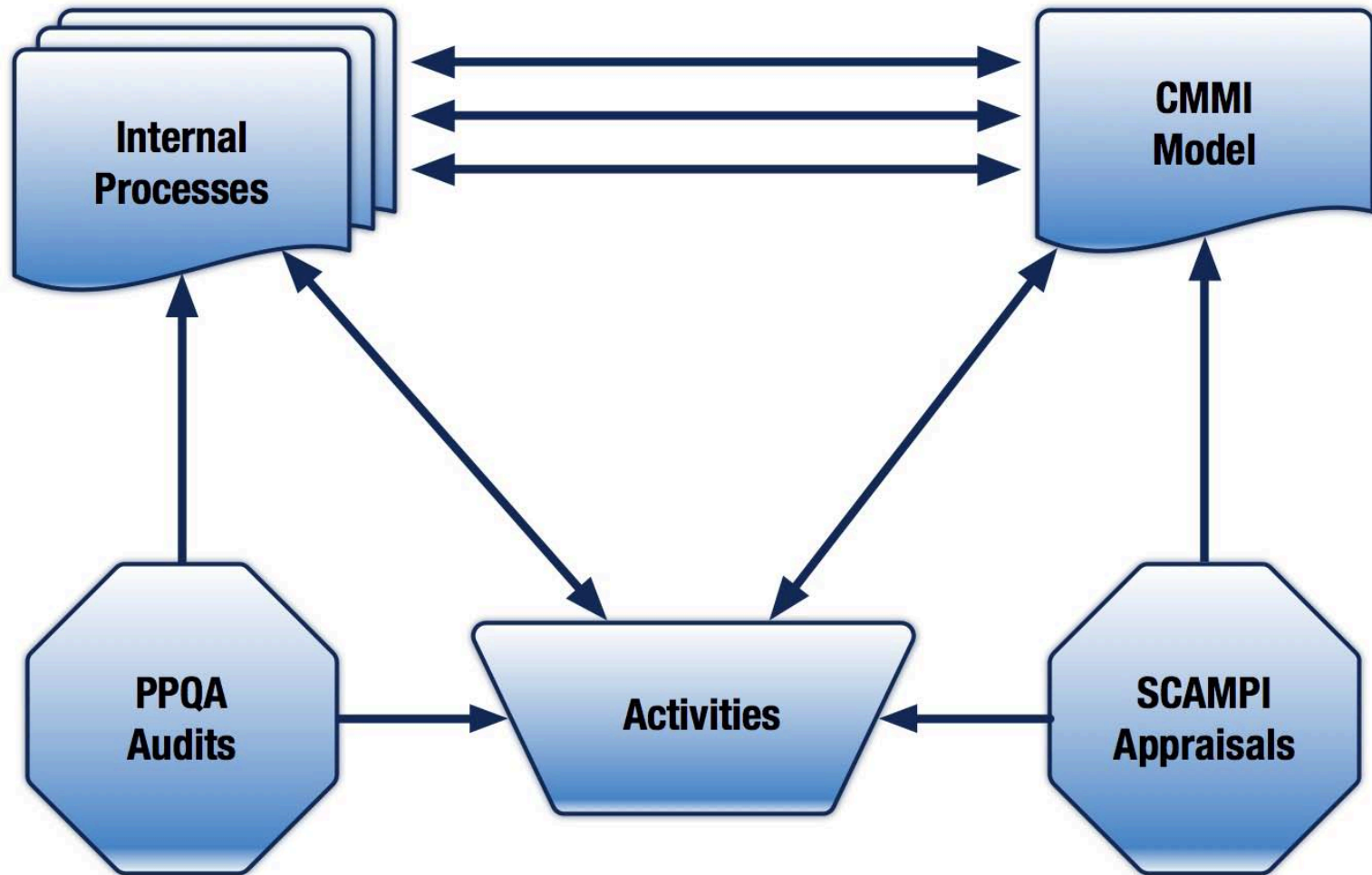
Process Quality Assurance Programs tend to focus on compliance to only the organization's processes or activities

Overview – External Perspective

External Audits/Appraisals only focus on compliance to that particular model



Overview – Combined Perspective

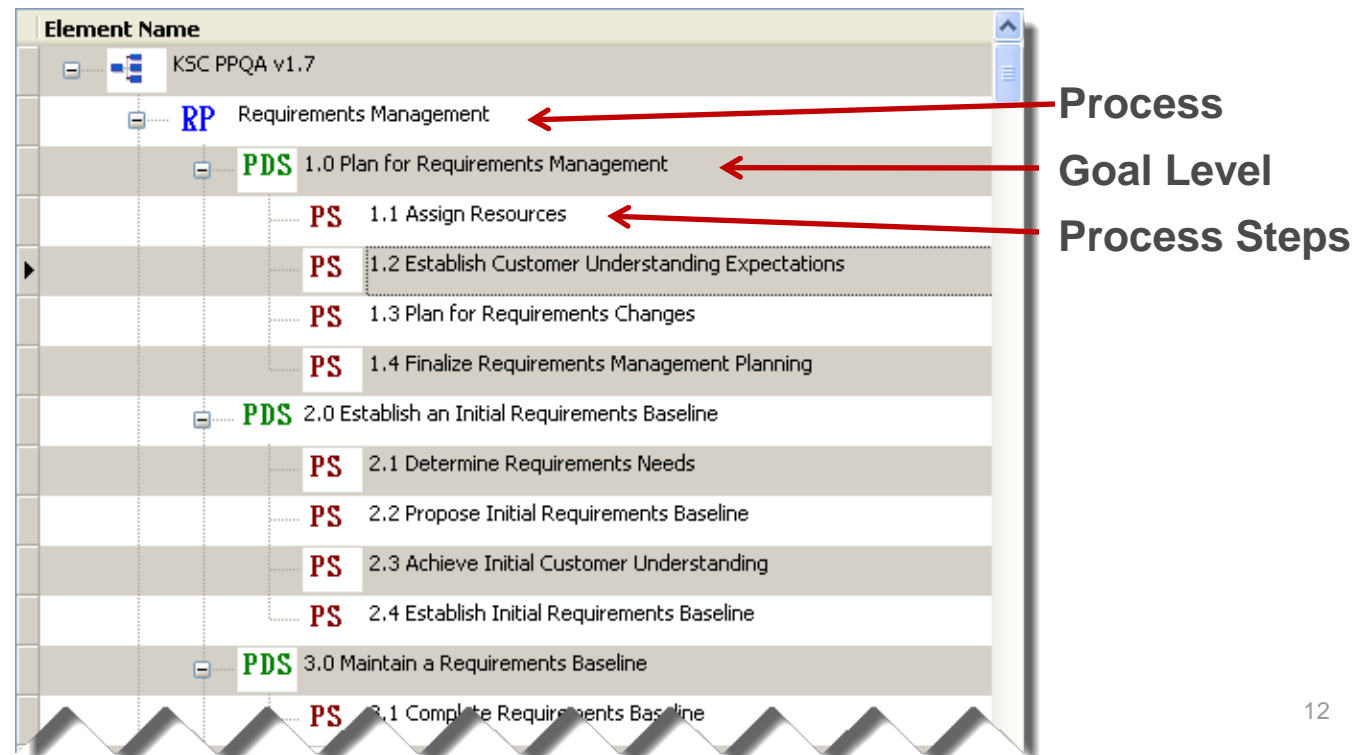


Second Approach to PPQA: Milestone Audits

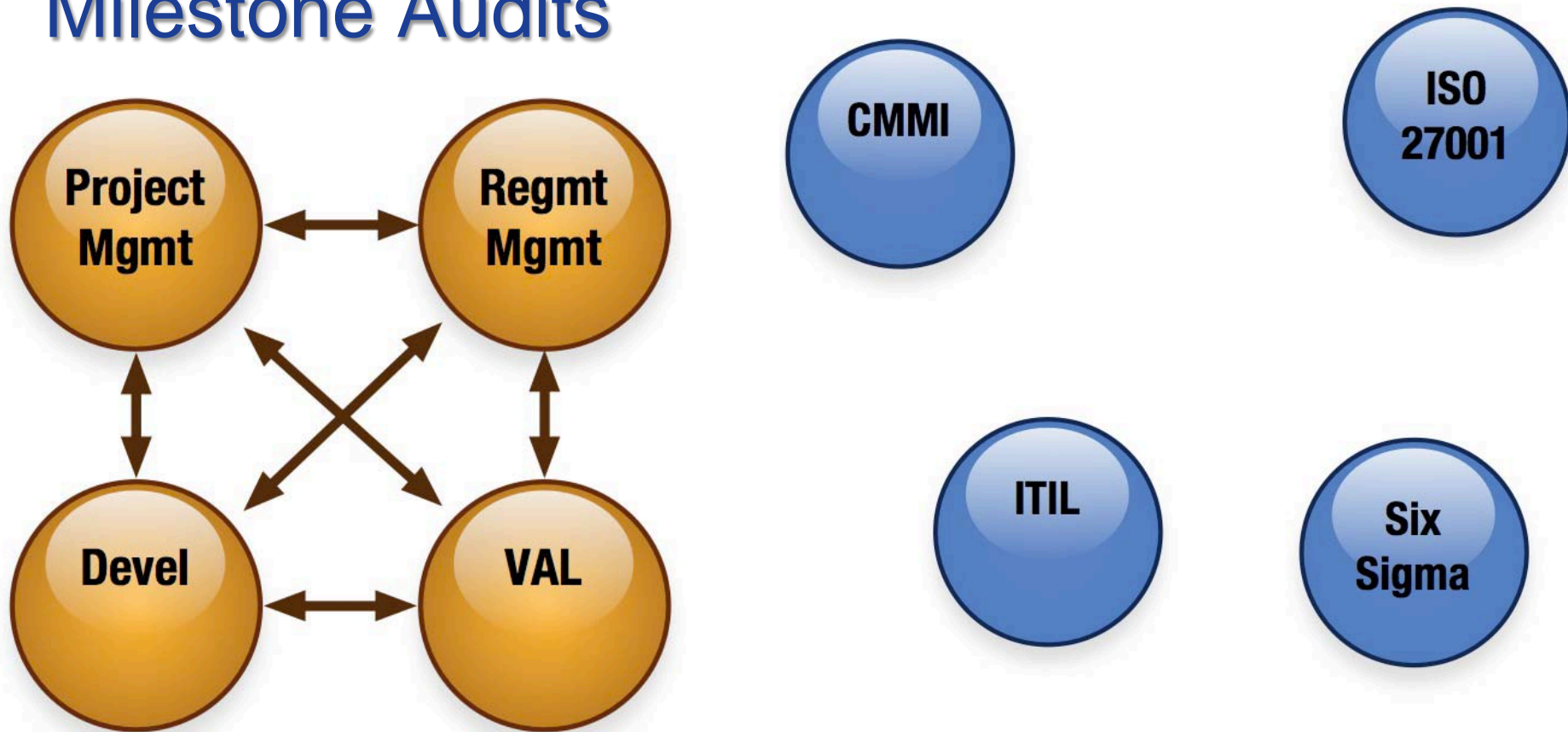
- **Performed audits across processes at milestones:**
 - Planning Complete
 - Elaboration Complete
 - Development Complete
 - Transition Complete
- **Examined aspects of the processes that were appropriate for each milestone**
- **Ensured compliance across a project's lifecycle**
- **Began to leverage 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



Second Approach to PPQA: Milestone Audits



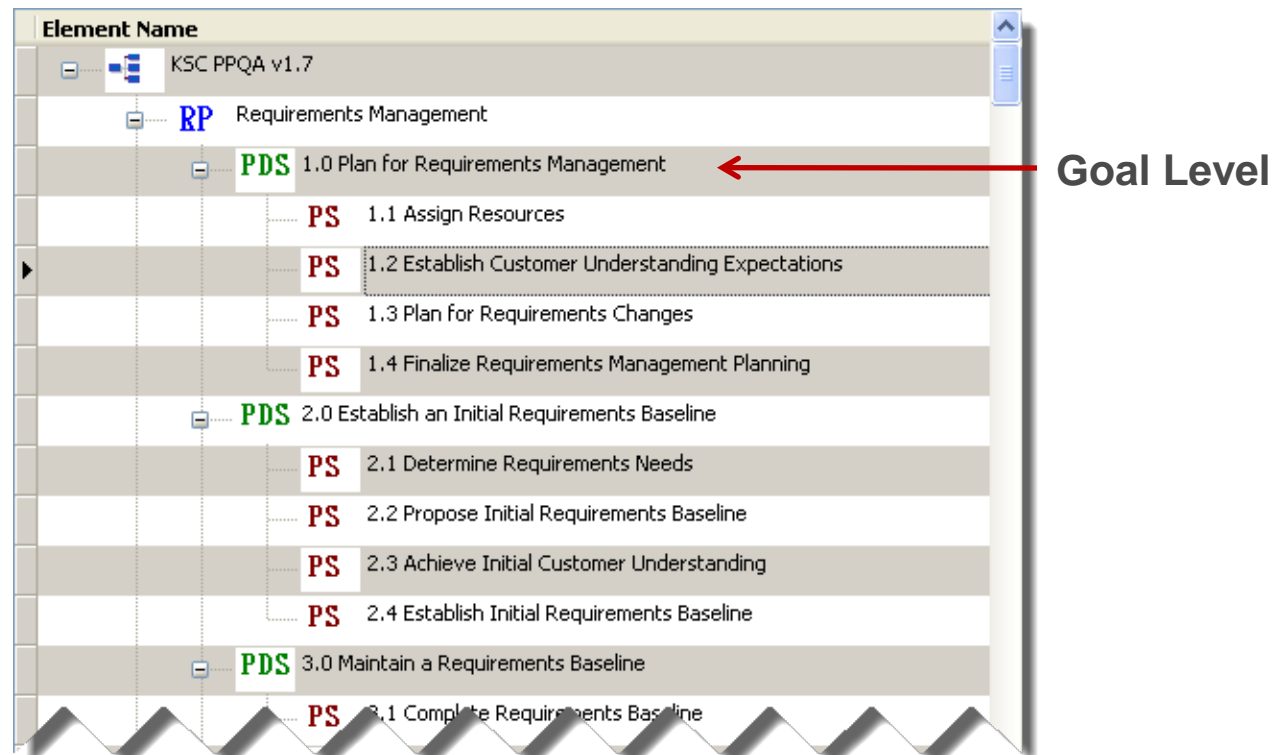
Started to see internal process traceability, but still no visibility across to the external models

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

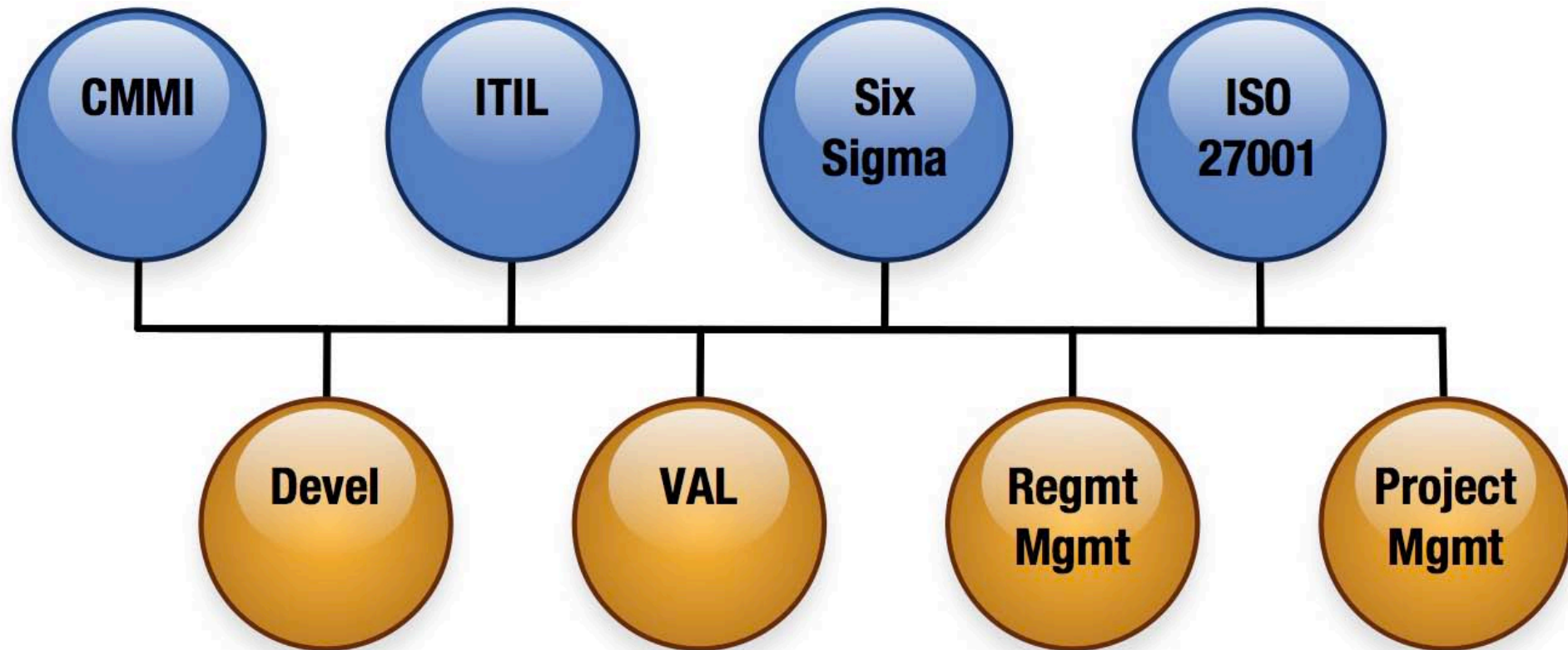
Lessons Learned

- 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

Element Review (AM009) Element: 1.2 Establish Customer Understanding Expectations

Options Tree View Record View Document Filtering Document List

Model KSC_PPQA_v1.7 Element Type [ALL] Rating Level Compliance Solutions Element Color: Process Step

Record Filter NONE State View

Element Name

- KSC PPQA v1.7
 - RP Requirements Management
 - PDS 1.0 Plan for Requirements Management
 - PS 1.1 Assign Resources
 - PS 1.2 Establish Customer Understanding Expectations**
 - PS 1.3 Plan for Requirements Changes
 - PS 1.4 Finalize Requirements Management Planning
 - PDS 2.0 Establish an Initial Requirements Baseline
 - PS 2.1 Determine Requirements Needs
 - PS 2.2 Propose Initial Requirements Baseline
 - PS 2.3 Achieve Initial Customer Understanding
 - PS 2.4 Establish Initial Requirements Baseline
 - PDS 3.0 Maintain Initial Requirements Baseline
 - PS 3.1 Complete Requirements Baseline
 - PS 3.2 Confirm Customer Understanding
 - PS 3.3 Establish Requirements Baseline
 - PDS 4.0 Manage Requirements Change and Inconsistency
 - PS 4.1 Review Requirements Change Requests
 - PS 4.2 Monitor for Requirements Inconsistencies
 - R1.1) Perform Specific Practices
 - R2.1) Establish an Organizational Policy
 - R2.2) Plan the Process
 - R2.3) Provide Resources
 - R2.4) Assign Responsibility
 - R2.5) Train People

Element Record

Req ID	Record Type	Status	Verification	Record Text	GLBL	Include in Summary Rpts	Rec Date / Time
2546	Audit Question	Completed	Yes	Describe how you developed and communicated your plan for identifying, elaborating and managing requirements. contained within REQM Plan			8/25/2010 10:48:28 AM
3026	Audit Question	Completed	Yes	Does the REQM plan address the following areas? - Acceptable sources to provide requirements to the team? - Acceptable forms of requirements and how they will be approved? - Means for which the team will ensure a common understanding of requirements between the customer and the team? - How changes to requirements will be managed? - How requirements baselines will be established and maintained? - How commitments to individual requirements will be managed? - How inconsistencies between the requirements baseline and work activities and related work products will be monitored for, and how discovered inconsistencies will be addressed? - How bi-directional traceability between requirements and work products will be managed?			10/18/2010 3:01:3 PM

Record Documents

Drag a column header here to group by that column

ID	Title	File Name or URL	Evidence Comments	Evidence Type	Doc Status	Doc Type	Owner	Last	Id
0038	Project Charter v1.0	http://kingland/sites/compliance_solution/indy%206_0/v60%20Project%20Adminstr						10/18/2010	301
0041	REQM Plan v1.0	http://kingland/sites/compliance_solution/indy%206_0/v60%20Project%20Adminstr						10/18/2010	301
0057	Initial Enhancements Lists	http://kingland/sites/compliance_solution/indy%206_0/v60%20Requirement%20Defi						10/18/2010	301
0058	Project Summaries	http://kingland/sites/compliance_solution/indy%206_0/v60%20Requirement%20Defi						10/18/2010	301

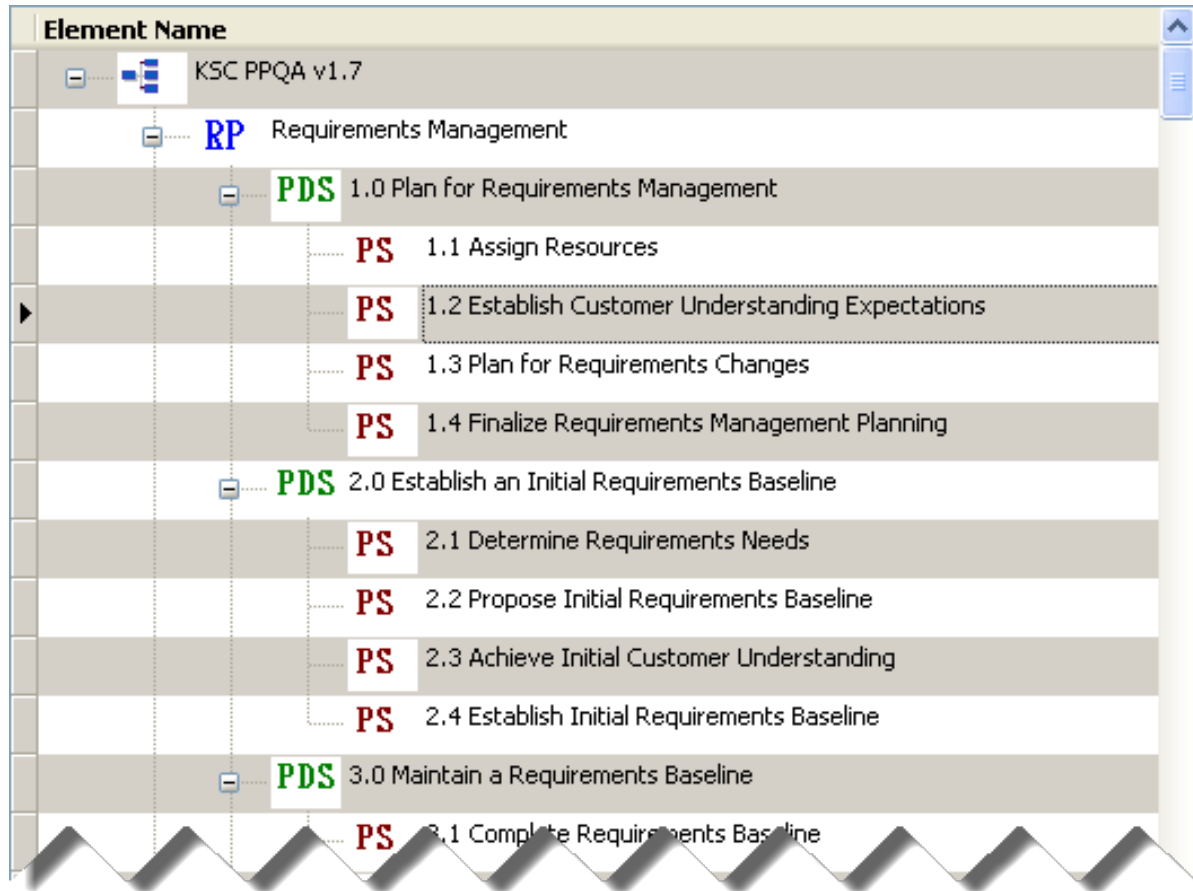
Process Goal: To develop a plan that the team will use to identify approved requirements, maintain the integrity of the requirements and related work products by identifying and managing inconsistencies, and managing changes to requirements.

Auditor Guidance: The REQM plan used by the team must specifically identify the sources of requirements, who is authorized to approve requirements and changes, how the requirements are base lined and controlled, and the manner in which these approvals and changes will be managed. The plan must also identify how requirements related work products will be monitored for inconsistencies and how these inconsistencies will be managed to closure. Examples of inconsistencies include such things as work being performed that is outside the scope of the requirements, or identified requirements with no associated planned work activities or simply not addressed within the developed work products. Monitoring for inconsistencies is a key aspect of scope control.

Evidence: Ensure that the project team has an Approved REQM plan that clearly outlines all aspects of Requirements Management in accordance with the Registered Process. Also test to ensure that the project team actually understands and is using the plan that they have developed.

- REQM Plan
- Affirmation evidence that the team understands and is using the REQM Plan

Appraisal Wizard – Element Name




Appraisal Wizard – Element Records

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

Includes questions and checklist information for auditors

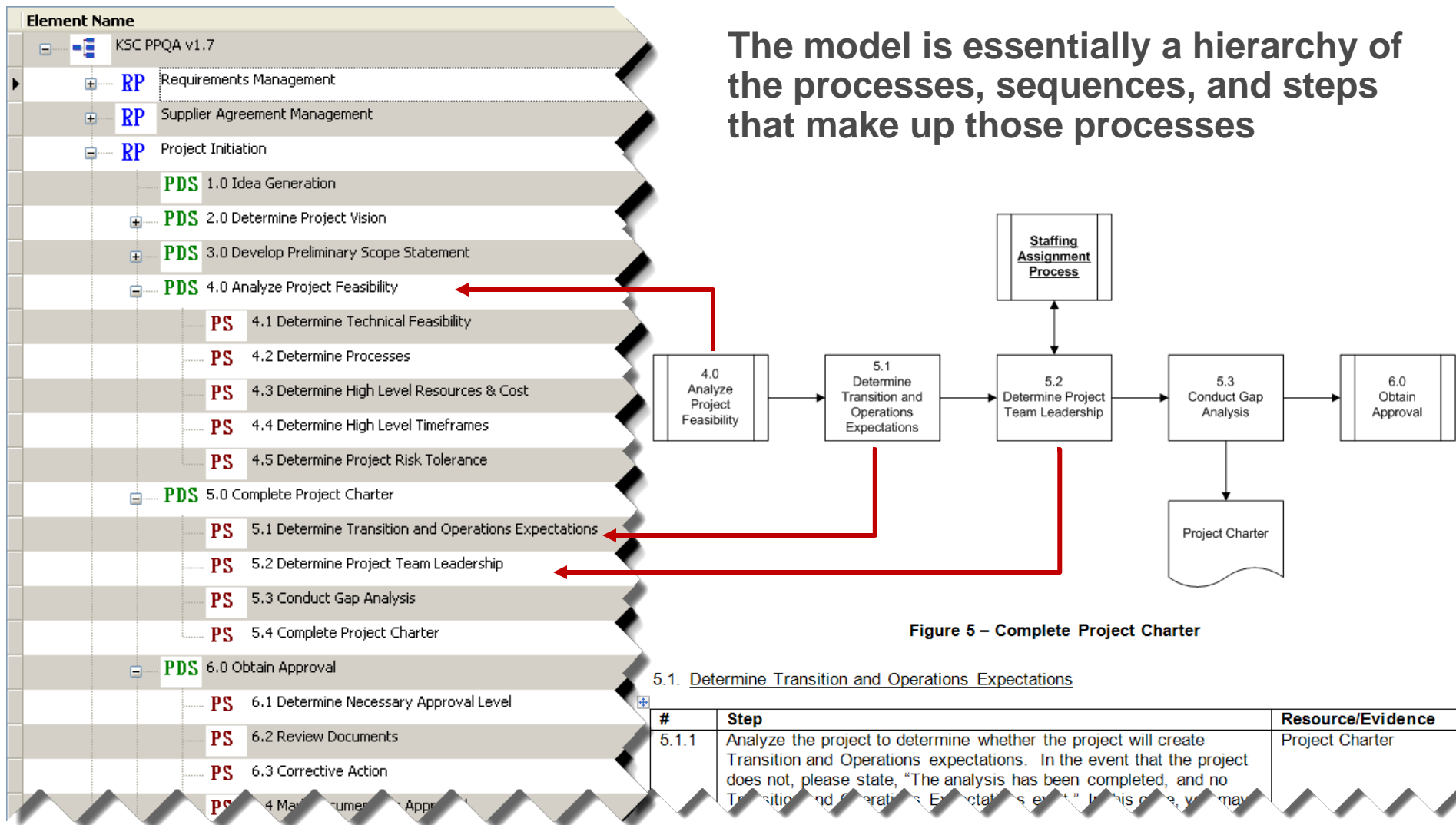
Appraisal Wizard – Record Documents

Dr 	Title	File Name or URL	Evidence Comments
0041	REQM Plan v1.0	http://kingland/sites/compliance_solution/indy%206_0/v60%20Project%20Administr	
0052	Requirements Traceability Matrix v1.2	http://kingland.kingland.cc/sites/compliance_solution/Document%20Library6/1/Indep	

Includes evidence examined for each question

Model Wizard

The model is essentially a hierarchy of the processes, sequences, and steps that make up those processes



Model Mapper

Map Elements (MM007) - KristiTest

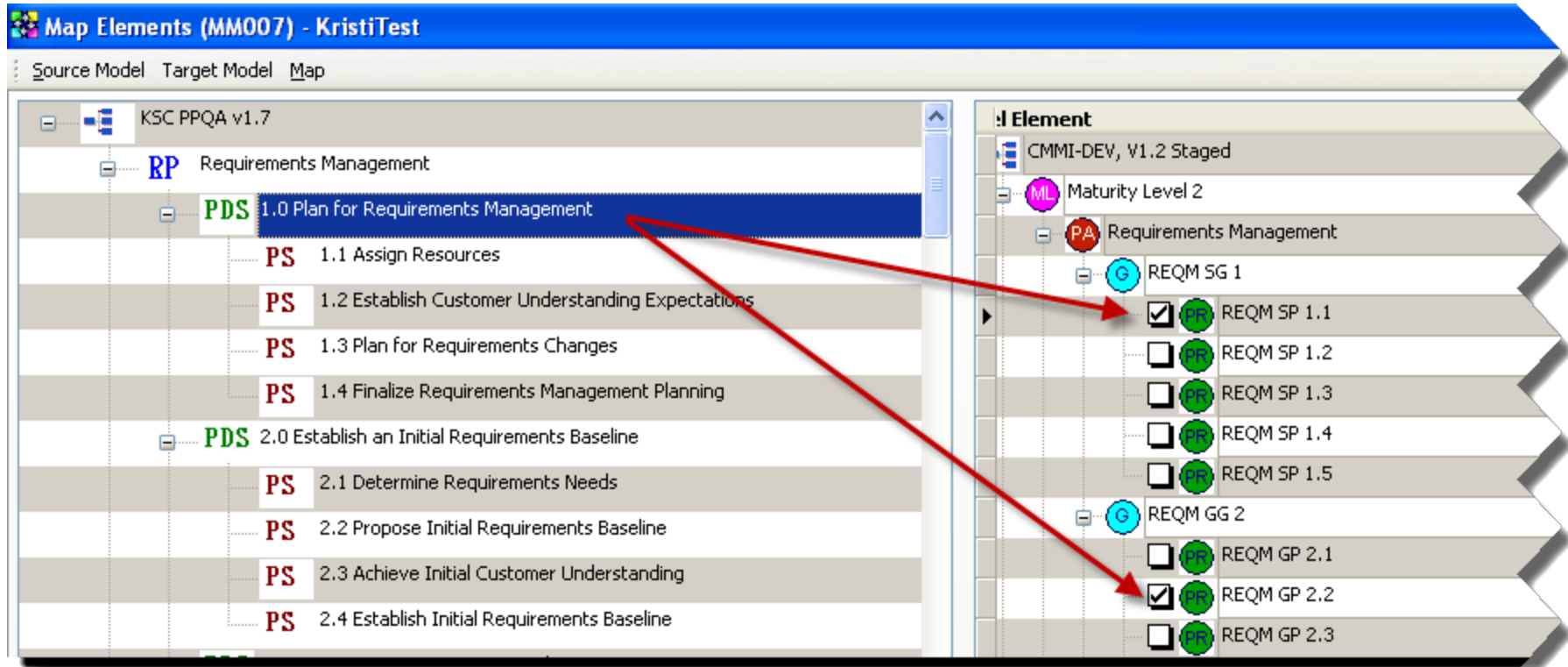
Source Model Target Model Map

KSC PPQA v1.7

- RP** Requirements Management
 - PDS** 1.0 Plan for Requirements Management
 - PS** 1.1 Assign Resources
 - PS** 1.2 Establish Customer Understanding Expectations
 - PS** 1.3 Plan for Requirements Changes
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 - PDS** 2.0 Establish an Initial Requirements Baseline
 - PS** 2.1 Determine Requirements Needs
 - PS** 2.2 Propose Initial Requirements Baseline
 - PS** 2.3 Achieve Initial Customer Understanding
 - PS** 2.4 Establish Initial Requirements Baseline

! Element

- CMMI-DEV, V1.2 Staged**
 - ML** Maturity Level 2
 - PA** Requirements Management
 - G** REQM SG 1
 - ☒ **PR** REQM SP 1.1
 - ☐ **PR** REQM SP 1.2
 - ☐ **PR** REQM SP 1.3
 - ☐ **PR** REQM SP 1.4
 - ☐ **PR** REQM SP 1.5
 - G** REQM GG 2
 - ☐ **PR** REQM GP 2.1
 - ☒ **PR** REQM GP 2.2
 - ☐ **PR** REQM GP 2.3



Enables mapping from one process or model to another

Model Mapper

<i>Element</i>	<i>Mapped Elements</i>	<i>Link Comment</i>	<i>Certainty</i>
2.0 Establish an Initial Requirements Baseline:	- REQM SP 1.1	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	100
KSC Process	CMMI Model		

Rationale behind the mappings and coverage certainty can also be captured and used for additional visibility and reporting

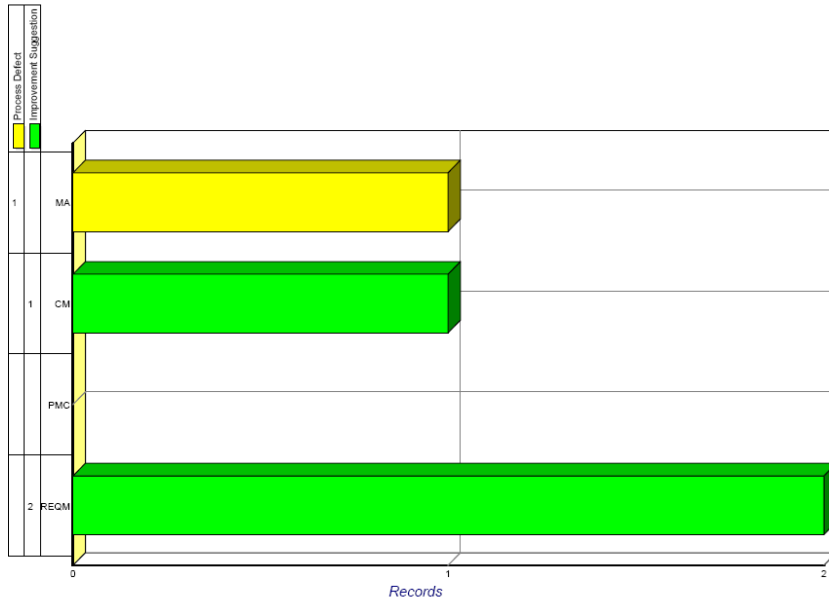
Reporting Compliance

RE QM	RE QM 1.0	RE QM 2.0	RE QM 3.0	RE QM 4.0			
PMC	PMC 1.0	PMC 2.0	PMC 3.0	PMC 4.0	PMC 5.0		
CM	CM 1.0	CM 2.0	CM 3.0	CM 4.0			
MA	MA 1.0	MA 2.0	MA 3.0	MA 4.0	MA 5.0	MA 6.0	MA 7.0

	NA [2 / 3.9%]
	Compliant [12 / 23.5%]
	Major Noncompliant [2 / 3.9%]
	Minor Noncompliant [4 / 7.8%]
	[No Rating Assigned] [31 / 60.8%]
	Not in Scope / No Element

Generate reports on internal process compliance

Reporting Compliance



Component

6.0 Analyze and Interpret Data

Analysis and interpretation of the data.

- 6.1 Consider the source
- 6.2 Consider the purpose
- 6.3 Consider the context
- 6.4 Develop Conclusions

Rec ID	Record Text	R
3000	Are the activities that are associated with this process sequence consistent with the teams Project Plan?	Pla
<p>There is no evidence of an analysis being performed on the metrics that are currently being reported. There is also no evidence that things "aren't as expected", but would be good to see the team using the metrics more proactively and performing an analysis along with the calculations (at progress status meetings, milestones, etc.) to determine if everything is as expected of if something may need to change on the project.</p>		

Gap Analysis

Map Report - Unmapped Model Elements

KSC_PPQAv1.7 to CMMI Dev v1.2

Source Model: KSC PPQA v1.7

Target Model: CMMI-DEV, V1.2 Staged

KSC PPQA v1.7	KSC PPQA v1.7
<u>Element Name</u>	<u>Element Name</u>
KSC PPQA v1.7	2.2 Establish Evaluation Criteria
Requirements Management	2.3 Determine List of Potential Suppliers
1.3 Plan for Requirements Changes	2.4 Gather Information
Final Requirements Management	5 Evaluate and Select Supplier

Model Map Report

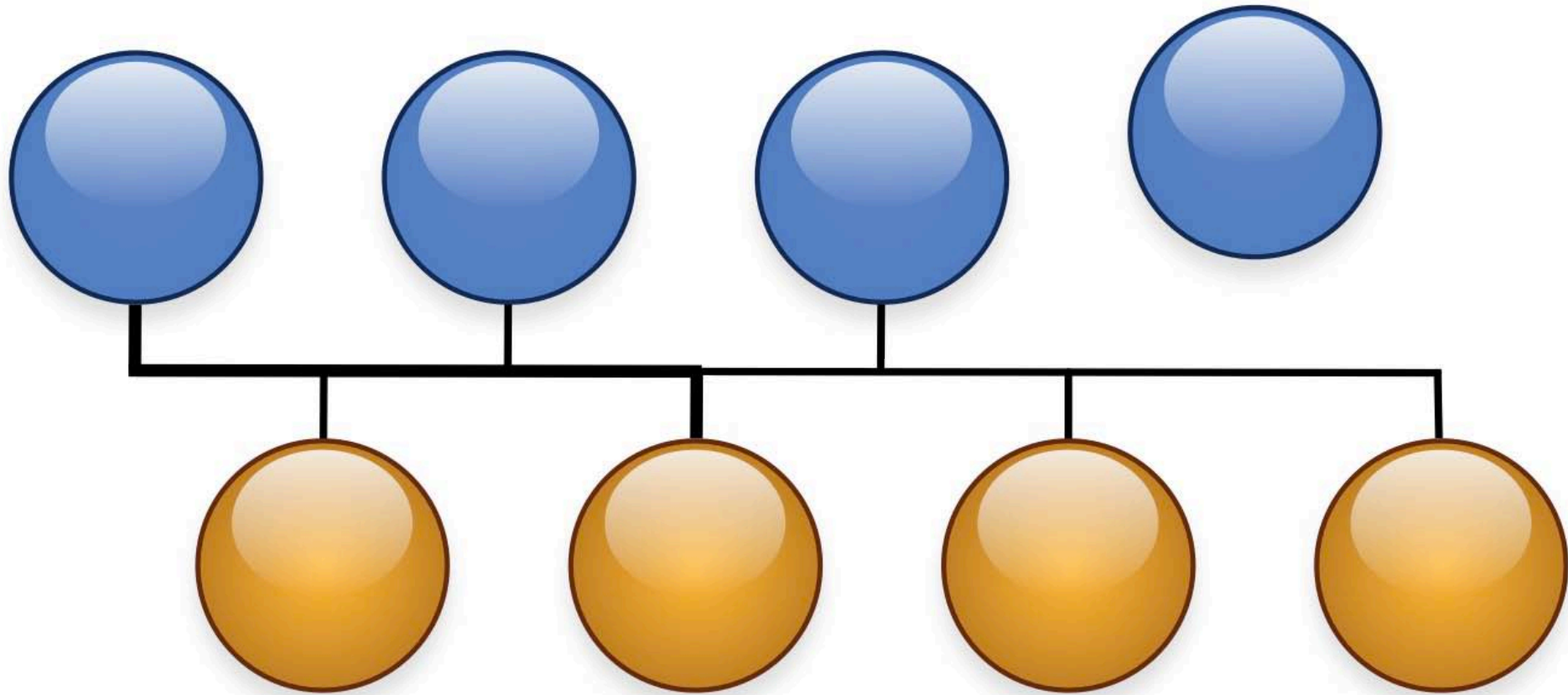
KSC_PPQAv1.7 to CMMI Dev v1.2

Source Model: KSC PPQA v1.7

Target Model: CMMI-DEV, V1.2 Staged

<i>Element</i>	<i>Mapped Elements</i>	<i>Link Comment</i>	<i>Certainty</i>
1.0 Analyze Stakeholder Needs:	- PP SP 2.6	Link Comments:Identifies stakeholders and determines level of necessary involvement	50
	- PP GP 2.7		50

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%

The screenshot displays the 'Element Review (AM009)' tool interface. The top section shows filters for 'Model CS11', 'Element Type Practice', 'Rating Level XYZ Corp', and 'Element Color'. Below this, a 'Record Filter' is set to 'NONE'. The main area is divided into two panes. The left pane shows a hierarchical tree of elements, including 'REQM SP 1.1' through 'REQM GP 2.10' and 'PP SP 1.1' through 'PP GP 2.10'. The right pane shows a detailed view of a selected record, '1887 WPD Project PIID'. This view includes columns for 'Record Type', 'Status', 'Verification', 'Record Text', 'GLBL', 'Include in Sum', 'Rec Date / Time', and 'Doc'. The 'Record Text' column contains a detailed description of the project and the requirements process. Below the record view, there is a 'Record Fields' section with a 'Create New Document' button. At the bottom, a table lists documents with columns for 'ID', 'Title', 'File Name or URL', 'Evidence Comments', 'Evidence Type', 'Doc Status', and 'Doc'.

ID	Title	File Name or URL	Evidence Comments	Evidence Type	Doc Status	Doc
1328	Statement of Work	C:\GAIL\352 GA SOW 1.2.doc	Section 11	Direct	Plan	Plan
1337	Business Requirements Document	C:\GAIL\352 GA BusinessRequirementsDocument 1.0.doc		Direct	Plan	Plan
1338	SOW Approval Meeting Minutes	C:\GAIL\352 GA SOW Approval Minutes 20040806.doc		Indirect	Spec	Spec

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:

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