Make PIIDs Easy, No Surprises!

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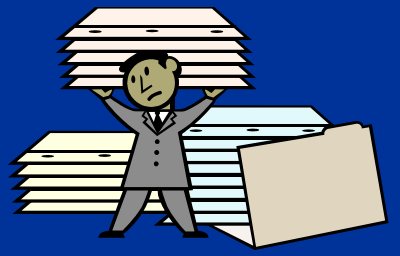
Topics

- Introduction
- Process Improvement Techniques
- PIID Implementations
- Process Compliance
- SCAMPI Appraisal Efficiency
- Bottom Line Results



Introduction

- Approaches described in this briefing originated from Lockheed Martin organizations that
  - Have successfully managed several CMMI Appraisals
  - Have maintained CMMI Achievements
  - Are highly motivated to conduct successful SCAMPIs, reduce costs and improve efficiency
  - Continually monitor and control Process/Program Adherence against OSPs which are CMMI compliant
  - Have invested in enabling technologies
- Specific implementation examples are from
  - Lockheed Martin MS2
  - Lockheed Martin Information Systems and Global Services (IS&GS)

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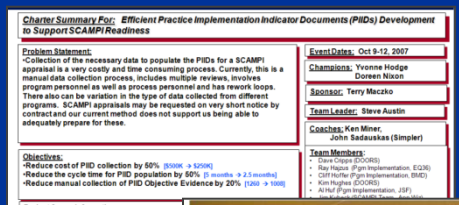
PIID Implementations

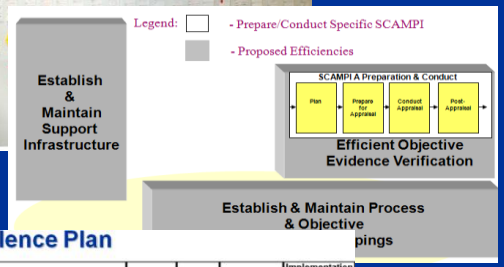
- Develop standard and program tailored processes that meet the needs of the business and adhere to source standards (CMMI, ISO 9001:2000 and AS9100 Rev B)
- Ensure work products/objective evidence are required and not tailorable in the processes
- Ensure program compliance with standard processes on all programs – Allow for Program/Project defined/tailored processes
- Develop a comprehensive database (DB) for all objective evidence (processes, work products, source standards, etc)

Process Improvement Techniques

- **Establish a Process Infrastructure that supports process improvement and allows for efficient appraisals and audits**

- **Use Structured Lean/Six Sigma Methods**
  - √ **Create Formal Charter**
  - √ **Involve Key Stakeholders**
  - √ **Map Current Process**
  - √ **Identify Improvements**
  - √ **Develop Action Plans**





Get to Excellence Plan

#	Enabler Description	Due Date	% Comp	Tm Ldr/RI	Implementation Cost
16	Update SSRC PIID/OSP Analysis Worksheet for CMMI v1.2 & Lvl 5	11/15/07	0.00%	Rita Rice	$3,600.00
12	Create & Agree to Resource Plan for NRE & Recurring	11/16/07	0.00%	Steve Austin	$5,000.00
21	Determine the measurement and instrumentation needed to evaluate results (and ROI)	12/1/07	0.00%	Steve Austin	TBD
8	Conduct Trade Study to Analyze what tool produces PIID	12/15/07	0.00%	Al Huf	$10,000.00
15	Determine Future State Roles & Responsibilities	12/22/07	0.00%	Kin Hughes	$2,500.00
19	Define Program Cost Estimates for WP Names and Locations	12/23/07	0.00%	Pat Tenney	$400.00
17	Add OSP Shalls to require future state PIID activities	1/31/08	0.00%	Kim Hughes	$2,300.00
5	Review Work Product Min Requirements and Templates to CMMI Coverage	2/1/08	0.00%	Cliff Hoffer	$24,750.00
1	Create Traces from CMMI (ISO/AS/IEP) to OSP to Work Products	2/15/08	0.00%	Cliff Hoffer	$17,000.00
18	Update OSP Process Outputs (Standard Work Products)	2/15/08	0.00%	Cliff Hoffer	$37,000.00
10	Create/Refine Standard Work Product Rationale	3/15/08	0.00%	Steve Austin	$11,300.00
9	Create PIID Guidance Document	3/16/08	0.00%	Jim Kubek	$4,800.00
20	Create/Verify OE Checklist to flow to QA for Process & WP Audits	4/1/08	0.00%	Dave Cripps	$32,100.00
11	Add PIID Status to PM Reviews	5/1/08	0.00%	Pat Tenney	$6,400.00
13	Create Better IPO Training for PIID for PM's	5/1/08	0.00%	Steve Austin	$2,000.00
2	Develop Solution Selected by Trade Study	5/15/08	0.00%	Kim Hughes	$59,000.00
6	Refresh PID Training/Retrain as needed	7/1/08	0.00%	Steve Austin	$900.00
7	Communicate w/ Key Stakeholders	12/31/08	0.00%	Steve Austin	$2,800.00

Ensure Process Compliance

- At program start-up each Program:
  - Creates a Program Profile (type of program)
  - Develops a Program Process Baseline which defines the processes followed by the program.
  - Completes a Program Baseline template (produced by the DB)
- Throughout Program Life Cycle:
  - Programs step-up to recent changes to Standard /Tailored Processes
- Process Engineers and QA ensure adherence through:
  - Consultations at program startup
  - Board approval prior to posting to Process Asset Library
  - Management focus meetings held to ensure processes are followed and assets are made available
  - QA Audits

SCAMPI℠ Appraisal Efficiency

- Program Profile Use
  - Results and Benefits
- Enterprise Database Use
  - Sample Reports
- Standard Practice Implementation Indicators Description (PIID) Use

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Program Profile

- **A Program Profile is created by completing a Program Profile Template (an Excel spreadsheet) which includes entries for a set of approximately 30 program attributes, for example (for a program whose acronym is EXAMPLE):**

Program Acronym	Attribute ID	Attribute Name	Attribute Description	Attribute Applies to Program
EXAMPLE	AT-01	External Interfaces	A program is said to have External Interfaces if the production system produced by that program will have electronic interaction with any other systems. In other words, this attribute will be 'N' only if there is no electronic connection between the system and any other electronic devices outside of a physically secured area.	
EXAMPLE	AT-02	Bound by Safety Requirements	A program is said to be Bound by Safety Requirements if a preliminary analysis by the chief engineer and program manager determines that a safety program (including appropriate further analysis) is required.	

Program Compliance Template

Standard Process ID	Standard Process Title	Standard Process Work Product Name	Standard Process Section Reference	Waiver Req'd to Omit	Compliance Status	Omission Rationale	Waiver #	Program Work Product Name	Program OE Rationale	Program OE Retention Location	Program OE Retention Period
								Seeded with Standard Process Work Product Name		*Seeded with default value from Standard Process work product*	*Seeded with default value from Standard Process work product*

Grey areas are seeded based on appropriate standard processes

Programs complete information based on tailored standard processes and program unique information

Program Profile/Compliance DB Results/Benefits -1

- All standards, processes, OE and program compliance information is MAPPED and LINKED in the compliance database
- Most of the information needed for an appraisal is there since project owners provide evidence throughout their program lifecycle
- Various reports are available to assist with training, audits and assessments for early identification of gaps and issues.
- Supported by the Process Group providing experience, skills and CMMI knowledge to assist programs

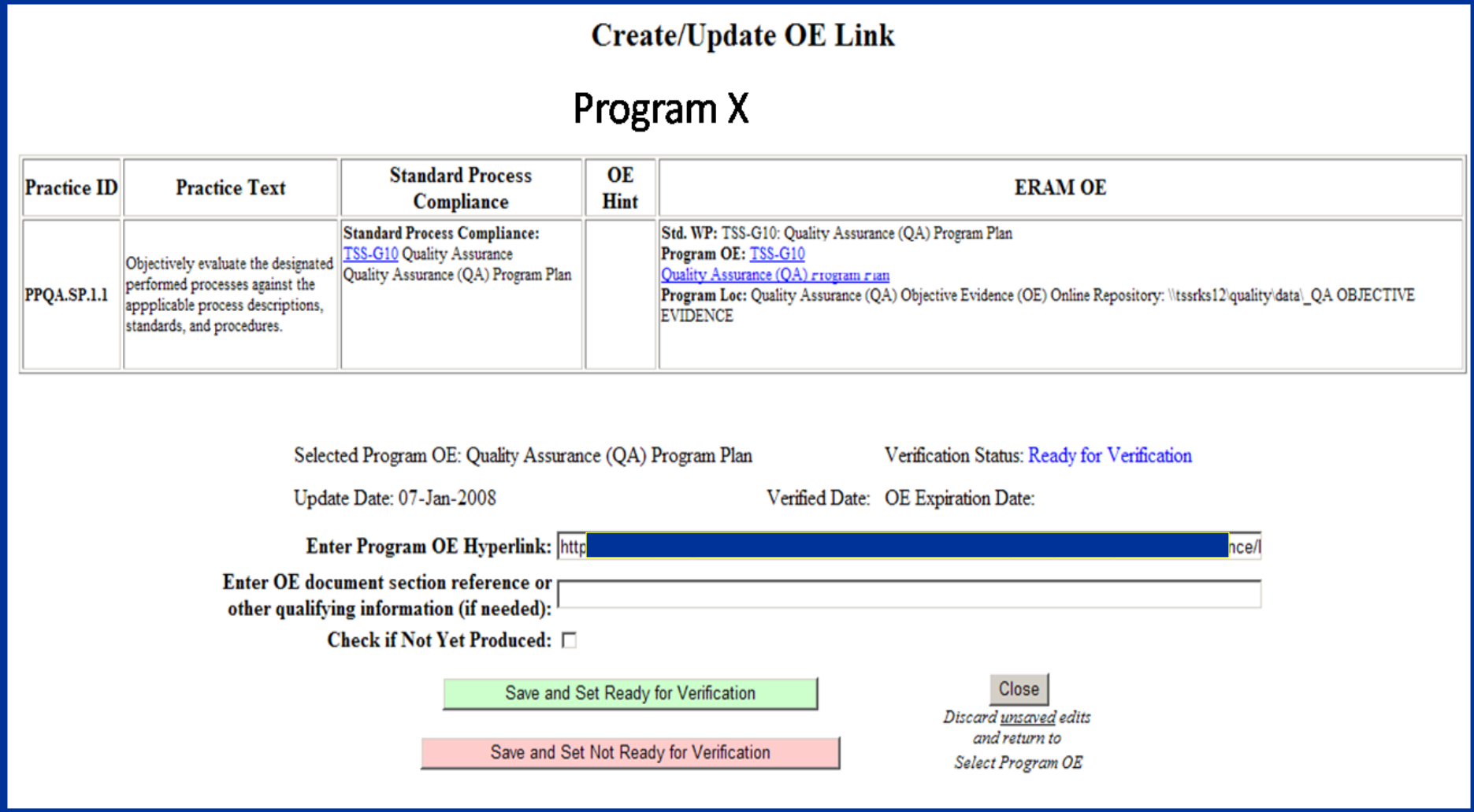
Program Profile/Compliance DB Results/Benefits -2

- Information can be added to database to support CMMI assessments to address varied and changing user needs.
  - Standard Process Rationale
  - OE Hints (specifics on what needs to be collected)
- Additionally, applications/tools, such as CMMI Appraisal Tool/PIID tool, were built on top of the database that
  - Allow for minimal PIID effort providing system maintenance strategy to allow for future upgrades (e.g. CMMI-SVC)
  - Are tied with current command media providing traceability of work products to model practices

Sample DB Reports

1. Example of Processes Mapped to CMMI Practices
2. CMMI Appraisal Tool PII/Data Entry Interface
3. CMMI Program Summary Report for PPQA on a Program

Compliance DB OE Entry



Create/Update OE Link

Program X

Practice ID	Practice Text	Standard Process Compliance	OE Hint	ERAM OE
PPQA.SP.1.1	Objectively evaluate the designated performed processes against the appplicable process descriptions, standards, and procedures.	**Standard Process Compliance:** TSS-G10 Quality Assurance Quality Assurance (QA) Program Plan		**Std. WP:** TSS-G10: Quality Assurance (QA) Program Plan **Program OE:** TSS-G10 Quality Assurance (QA) Program Plan **Program Loc:** Quality Assurance (QA) Objective Evidence (OE) Online Repository: \\tssrks12\quality\data_QA OBJECTIVE EVIDENCE

Selected Program OE: Quality Assurance (QA) Program Plan — Verification Status: Ready for Verification

Update Date: 07-Jan-2008 — Verified Date: — OE Expiration Date:

Enter Program OE Hyperlink: http[redacted]nce/l

Enter OE document section reference or other qualifying information (if needed):

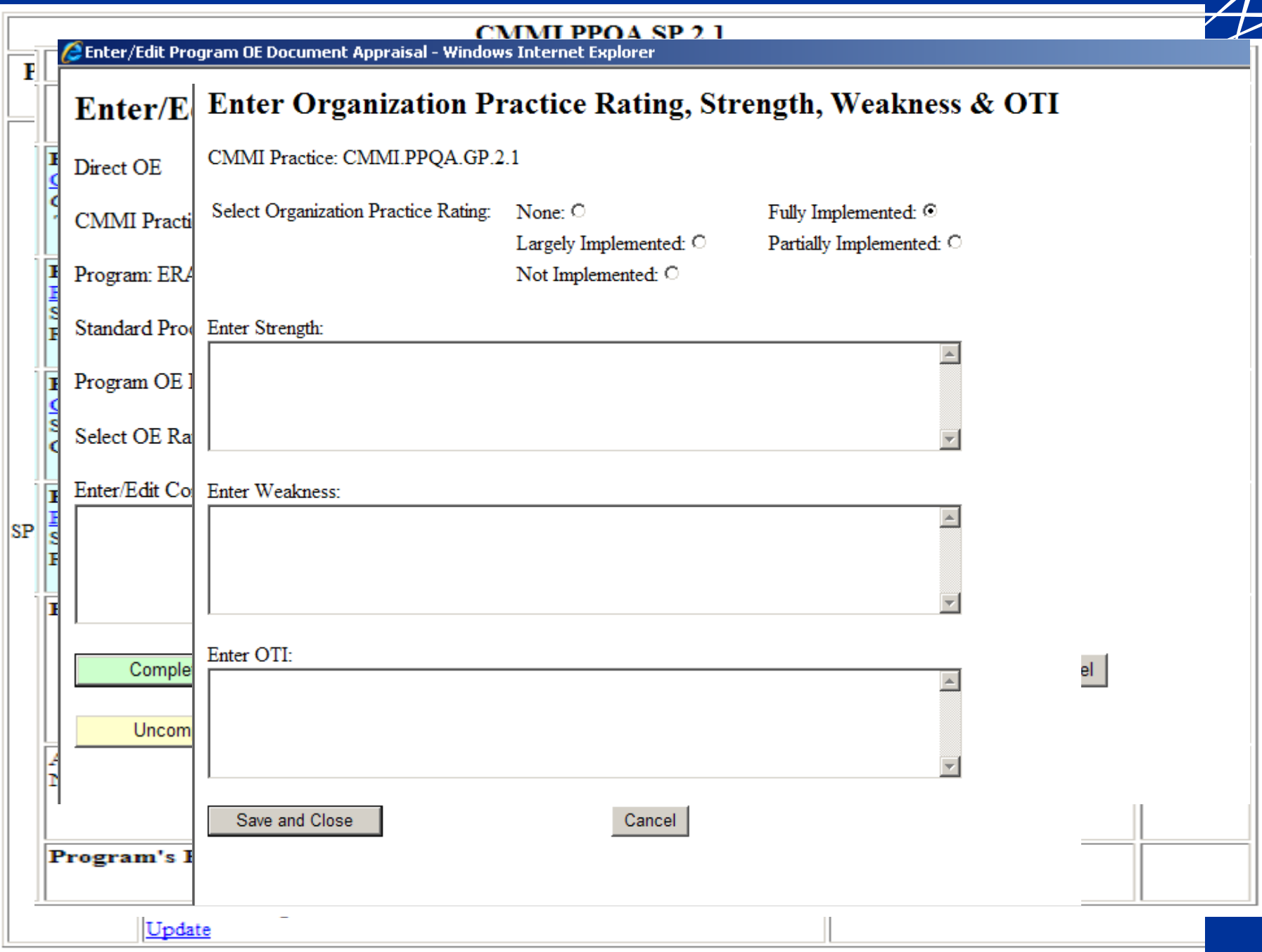
Check if Not Yet Produced: ☐

Save and Set Ready for Verification

Save and Set Not Ready for Verification

Close

Discard unsaved edits and return to Select Program OE


CMMI PPQA SP 2.1
Enter/Edit Program OE Document Appraisal - Windows Internet Explorer
Enter/E
Enter Organization Practice Rating, Strength, Weakness & OTI
Direct OE
CMMI Practi
Program: ERA
Standard Proc
Program OE I
Select OE Ra
Enter/Edit Co
CMMI Practice: CMMI.PPQA.GP.2.1
Select Organization Practice Rating:
None:
Fully Implemented:
Largely Implemented:
Partially Implemented:
Not Implemented:
Enter Strength:
Enter Weakness:
Enter OTI:
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CMMI Process Area Summary Report for PPQA on Program X

Process Area Report for PPQA

ID	Text	Standard Process	ERAM	Overall Rating	Strength	Weakness	OT
PPQA	Process and Product Quality Assurance			_			
PPQA.GG.2	Institutionalize a Managed Process			_			
PPQA.GP.2.1	Establish an Organizational Policy	FI	FI	FI			
PPQA.GP.2.10	Review Status with Higher Level Management	FI		FI			
PPQA.GP.2.2	Plan the Process	FI		FI			
PPQA.GP.2.3	Provide Resources	FI		FI			
PPQA.GP.2.4	Assign Responsibility	FI		FI			
PPQA.GP.2.5	Train People	FI		FI			
PPQA.GP.2.6	Manage Configurations	_		_			
PPQA.GP.2.7	Identify and Involve Relevant Stakeholders	_		_			
PPQA.GP.2.8	Monitor and Control the Process	_		_			
PPQA.GP.2.9	Objectively Evaluate Adherence	_		_			
PPQA.GG.3	Institutionalize a Defined Process						
PPQA.GP.3.1	Establish a Defined Process						
PPQA.GP.3.2	Collect Improvement Information						
PPQA.SG.1	Objectively Evaluate Processes and W						
PPQA.SP.1.1	Objectively Evaluate Processes						
PPQA.SP.1.2	Objectively Evaluate Work Products						
PPQA.SG.2	Provide Objective Insight			_			
PPQA.SP.2.1	Communicate and Ensure Resolution of Noncompliance Issues	_		_			
PPQA.SP.2.2	Establish Records	_		_			

Rolls up OE and affirmation ratings from the data entry report, and allows entry of Program Practice Characterizations by SCAMPI appraisal team.

Process Area Report for PPQA

ID	Text	Standard Process	ERAM	Overall Rating
PPQA	Process and Product Quality Assurance			_
PPQA.GG.2	Institutionalize a Managed Process			_
PPQA.GP.2.1	Establish an Organizational Policy	FI	FI	FI
PPQA.GP.2.10	Review Status with Higher Level Management	FI		FI
PPQA.GP.2.2	Plan the Process	FI		FI
PPQA.GP.2.3	Provide Resources	FI		FI
PPQA.GP.2.4	Assign Responsibility	FI		FI
PPQA.GP.2.5	Train People	FI		FI

Standard PIID Use

1. Standard PIID
2. Standard PIID Components
3. Example of Instantiated PIID
4. PIID Completion Visibility to Management
5. Example Status Reporting

Standard "PIID"-1

- Developing a "Standard PIID" provides a template for programs to supply objective evidence for CMMI appraisals
  - Analyzed previous appraisal evidence for accepted objective evidence
  - Common work products formed the basis for "Standard PIID"
  - Org CMMI experts established expected artifacts based on OSP/PDP
  - Rationale statements bridged the CMMI → OSP/PDP terminology

Standard "PIID"-2

- Benefits that a "Standard PIID" provide:
  - Reduces cost for programs/organization to populate
  - Increases the consistency of evidence across programs
  - Lowers risk for the organization during an appraisal
  - Can be used as a training resource for interview participants

“Standard PIID” Components -1

Category	Maturit	Process Area	Practice	Practice Title	Org. Prj	Evidence Type	Evidence ID#	Standard MS2 Work Product Name	Reason / Rationale	Evidence Type: - Single (one time only) - Recurring (frequently updated) - Refresh Needed - Annual - Refresh Needed within 12 months of SCAMPI - Refresh If Newer Version Available
Project Management	4	QPM	SP 1.1	Establish the Project's Objectives	P	ID	1209	Program Measurement Plan	The Program Measurement Plan Section [Fill in] contains the program's quality and process performance objectives, including interim objectives over the life cycle of the program, as appropriate.	Refresh If Newer Version Available
Project Management	4	QPM	SP 1.1	Establish the Project's Objectives	P	GO•II	1318	Measurement Techniques Guide	Section [3.2] of the Measurement Techniques Guide describes the relationship between the MS2 Goals and Objectives and the Quality and Process Performance Objectives. The MS2 Goals and Objectives are the highest level objectives in the organization. The more detailed Quality and Process Performance Objectives are derived from the MS2 Goals and Objectives.	Single

CMMI Model Info

Pre-defined as Direct or Indirect

Provides a standard rationale for each required evidence answering why this evidence satisfies a CMMI practice with “fill in the blank” (red text) for program unique info.

Uses Organization’s names for Standard work products from the OSP

Evidence refresh requirements based on type of artifact

“Standard PIID” Components -2

Details about the artifact

PIID Population status

Link to artifact’s location (Protected area for appraisal use)

Example of an Instantiated PIID -1

MS2 / Program (who has responsibility for providing evidence)	Category	Maturity Level	Process Area	Practice	Practice Title	Org. Prj	Evidence Ty	Evidence ID#	Standard MS2 Work Product Name	Reason / Rationale	Evidence Type: - Single (one time only) - Recurring (frequently updated) - Refresh Needed - Annual - Refresh Needed within 12 months of SCAMPI B - Refresh If Newer Version Availabl
Program	Project Management	4	QPM	SP 1.1	Establish the Project's Objectives	P	ID	1209	Program Measurement Plan	The Program Measurement Plan Section [5.3.3] contains the program's quality and process performance objectives, including interim objectives over the life cycle of the program, as appropriate.	Refresh If Newer Version Available
MS2	Project Management	4	QPM	SP 1.1	Establish the Project's Objectives	P	GO+II	1318	Measurement Techniques Guide	Section 3.2 of the Measurement Techniques Guide describes the relationship between the MS2 Goals and Objectives and the Quality and Process Performance Objectives. The MS2 Goals and Objectives are the highest level objectives in the organization. The more detailed Quality and Process Performance Objectives are derived from the MS2 Goals and Objectives.	Single

This can then be imported into an Appraisal Tool

Example of an Instantiated PIID -2

Objective Evidence VERSION NUMBER	Objective Evidence RELEASE DATE	Notes	Status: - Complete - Open - More evidence expected - Open - No evidence provided yet	URL / Location	Doc ID #	Validation Status
Jan 3, 2008 Rev A 12/11/2008 April 2009	1/3/2008 12/11/2008 April 2009		Complete	http://wss-isn.acct04.us.lmco.com/sites/CPT/Shared%20Documents/SCAMPI%20Planning/Level%205%20-%202007-2009/PIIDS/Baseline_PIID-Librarian_only/Objective%20Evidence%20-	EQ36_1209-005	validatedimport
			Complete	http://pal.man.fs.lmco.com/pal/viewDoc.aspx?id=102	EQ36_1318-001	validatedimport

This can then be imported into an Appraisal Tool

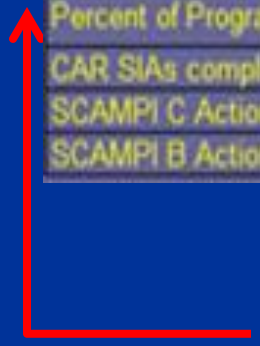
PIID Completion Visibility to Management

- Incorporate progress status reporting in your business rhythm
  - Recognition for teams that are ahead of schedule
  - Opportunity to assist teams that are behind schedule

Example Status Reporting

Program X

SCAMPI Preparation				
	YE Plan	YTD Plan	9-Jan	Comments
Num QA Process Audits Planned vs Actual	23	4	4	
Program Measurement Reviews performed (cumulative)	12	1	1	January review held on 1/28/2009
Percent of Program PIID Objective Evidence Submitted	100%	80%	88%	
CAR SIAs completed and actions closed	100%	0%	0%	
SCAMPI C Actions Items Complete (Program)	100%	0%	3%	One Item submitted (awaiting verification)
SCAMPI B Actions Items Complete (Program)	100%	0%	0%	



%PIID Complete

Bottom Line – Effective PIID Implementation Achieves Goals

- Reduced overall prep costs and labor hours on most recent SCAMPIs – less time in program personnel involvement
- In most recent SCAMPI A, coverage was expanded to include 2x number of programs with same prep schedule as previous SCAMPI
- SCAMPI B information needs were 66% lower due to improved fidelity of objective evidence
- SCAMPI readiness improved by 6 months
- Improved awareness of the organization's processes and best practices
- Leverage Corporate SCAMPI experiences by capturing the lessons learned and building on achievements

Questions?

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