

CMMI SCAMPI Appraisals

The People / The Process / The Results

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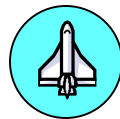
7th Annual CMMI Technology Conference and Users Group

Track 6

11/14/07

Overview

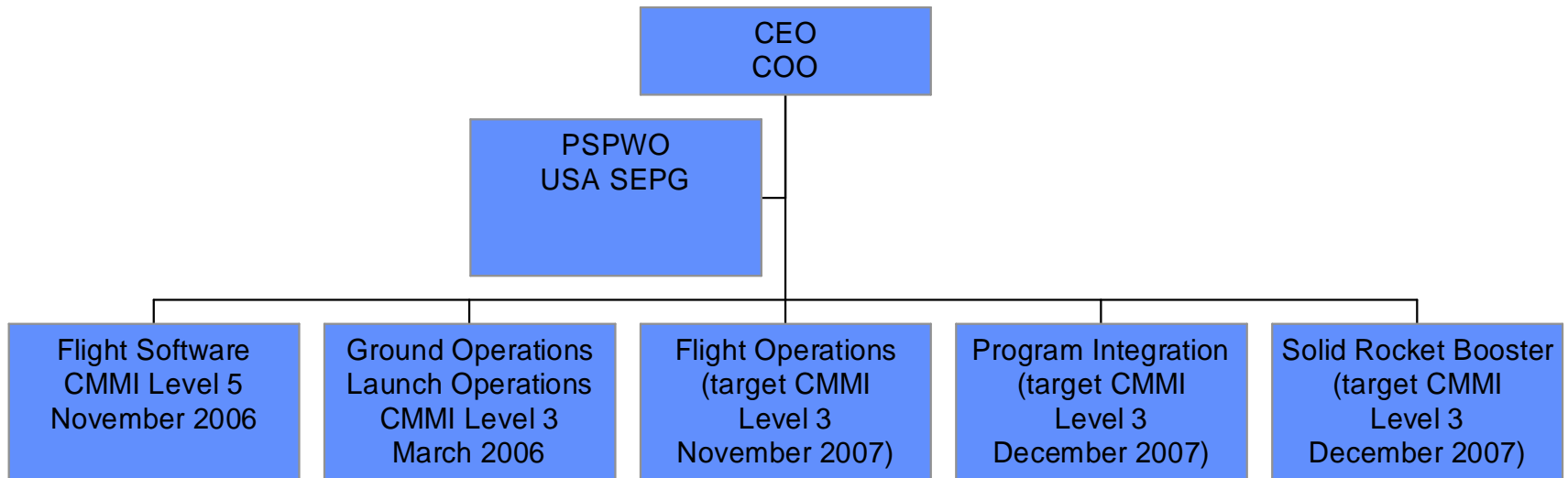
- “ **Who are the participants?**
- “ **What activities occur?**
- “ **What artifacts are produced?**
- “ **What actions/reactions should result?**



USA best practices or helpful hints

Structure and CMMI Compliance

United Space Alliance, LLC



The Participants

” **Sponsor**

” **PIID developers (Practice Implementation Indicator Description)**

” **Lead appraiser**

” **Appraisal team members**

” **Interviewees (project team members)**

” **Other Participants**

- . **SEPG (Software Engineering Process Group)**
- . **Project managers**
- . **Process architect**
- . **Project team members**

” **All USA elements had these participants involved (some known by other titles or names)**



Participants – Sponsor

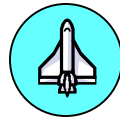
” **Sponsor – Identified as the person responsible for all appraisal activities. Allocates and approves all schedules, personnel and activities involved in the activities before, during and after the appraisal.**

” **Soft Skills**

- . Able to focus on important goals and objective
- . Good cheerleader/encourager
- . Provider of resources (not just words but deeds too)


” **Communicates – gives and receives information**

- . PIID developers
- . Lead appraiser
- . Project team members (interviewees)
- . Process architect(s)



The sponsor is typically supported by a management team who has had the difficult task of overseeing a culture change. They will continue to provide critical roles as champions of change, encouragers and even interviewees during the appraisal process.

Teams – PIID Developers

- “ Prepares PIIDs for the selected projects to be appraised
- “ Ideally not more than 8 - 10 people
 - . Group size dependent on organizational size 
- “ Soft Skills
 - . Familiar with CMMI (Capability Maturity Model Integration)
 - . Familiar with the projects
 - . Understand the organization's processes
 - . Can work alone or as a team member
 - . Possess good written communication skills
 - . Productive (able to work on time constraint schedules)
 - . Provide attention to detail
- “ Communicates – gives and receives information
 - . Sponsor
 - . Lead appraiser
 - . Project team members

Participants – Lead Appraiser

“ **Authorized SCAMPI (Standard CMMI Appraisal Method for Process Improvement) Lead Appraiser contracted by organization to conduct SCAMPI appraisal activities**

” **May consult with organization prior to appraisal activities**

- . **Reviewing PIIDs**
- . **Reviewing process documentation**

” **Soft Skills**

- . **Possess good oral and written communication skills**
- . **Facilitative**
- . **Knowledgeable of industry and CMMI best and acceptable practices**
- . **Creative**

” **Communicates – gives and receives information**

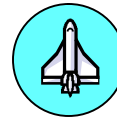
- . **Sponsor**
- . **PIID developers**
- . **Appraisal team members**
- . **Process architect(s)**

Participants – Appraisal Team

“ **Trained team members – per Method Description Document**

“ **Ideally**

- . **8 team members and 1 lead appraiser (minimum 4)**
- . **4 internal organization members**
- . **4 external members**



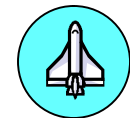
“ **External organizations or companies**

“ **Soft Skills**

- . **Possess good oral and written communication skills**
- . **Can work alone and as a team member**
- . **Can maintain objectivity and confidentiality**
- . **Good time manager**

“ **Communicates – gives and receives information**

- . **Sponsor**
- . **PIID developers**
- . **Lead appraiser**
- . **Process architect(s)**



“ **Some appraisal team members may also be PIID developers/reviewers.**

Participants - Interviewees

Interviewees – Project team members who represent process area activities (SEPG, project management, CM, SQA, SW engineering, testing, etc). During interviews, activities annotated in PIIDs are expected to be affirmed by those being interviewed.

May provide artifacts to PIID developers as requested

Usually have access to PIIDs prior to appraisal activities

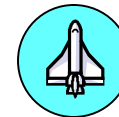
Soft Skills

- . Possess good oral communication skills**
- . Knowledgeable of the project activities and processes**
- . Champion of the process (if possible)**

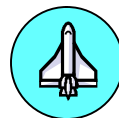
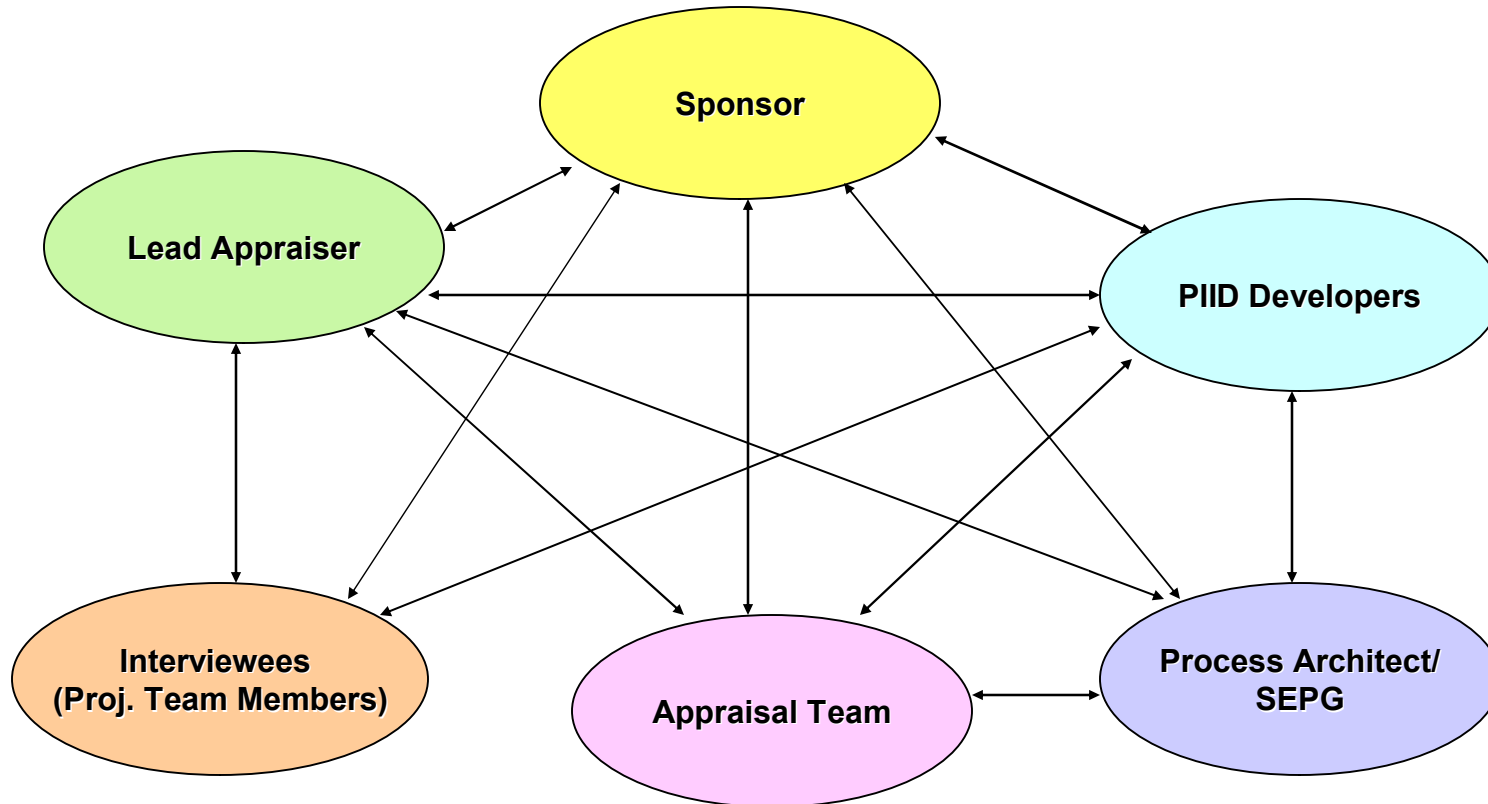
Communicates – gives and receives information

- . PIID developers**
- . Lead appraiser**

Best practice – “Charm School” for interviewees



part - Communications



Communication is essential between all involved participants in appraisal activities.



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ies – Before, During and After

- “ **Before the appraisal**
- “ **During the appraisal**
- “ **After the appraisal**

Pre Appraisal Activities - Before

“ Before the appraisal

- . Determination of appraisal needs (analyze requirements)
- . Selection of lead appraiser
- . Develop appraisal plan
 - “ Identification of appraisal scope
 - “ Projects to be appraised
 - “ Identification of interviews to be held and interviewees
 - “ Identification of appraisal team members
 - “ Risk management
 - “ Scheduling on appraisal activities (including interviews)
- . Training of appraisal team members
- . Identification/training of PIID developers
- . PIID annotation 
- . Consultation
- . PIID population

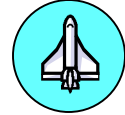
Determine Appraisal Needs

- ” **USA determined the following reasons for being appraised against the CMMI**
- . **New business objective**
 - . **Maintenance of existing CMMI rating**
 - . **Meeting a customer expectation**

- **Lead Appraiser Selection**

“ **Determine through interviews and evaluations the following:**

- “ **Experience**
- “ **Availability**
- “ **Expectations**
- “ **Model interpretations**
- “ **Consultations**
- “ **Resources**
- “ **Ability to communicate**
- “ **Ability to support your needs and objectives**



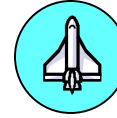
“ **The lead appraiser must be able to work and communicate with the sponsor and PIID lead. Final lead appraiser selection was determined by the sponsor.**

D/Train Appraisal Members¹

“ **Method Description Document (MDD) identifies the training and experience base needed to comprise a qualified appraisal team (total engineering and management team experience)**

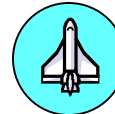
“ **Good team makeup :**

- . **1/2 the team have previous appraisal experience**
- . **New teams have some type of team facilitation training**
 - “ **Belbin, Meyers Briggs**



“ **May be asked to help interpret practices for the PIID developers while PIID annotation is being performed. May contact the lead appraiser for interpretational guidance**

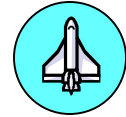
“ **USA determined that it was good to always train backup appraisal members for a given team to mitigate risks for retraining due to team member loss or unavailability**



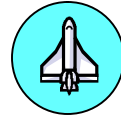
D/Train Appraisal Members²

Organized into mini-teams

- . Typically four 2-member mini-teams
 - “ One member from the organizational unit and one external member
 - “ Preferably one experienced team member per mini-team
- . Assigned a group of process areas to review
- . One Example:
 - “ Organizational PAs – OPF, OPD+IPPD, IPM+IPPD, OT
 - “ Support PAs – PPQA, CM, MA, DAR
 - “ Engineering PAs – REQM, RD, TS, PI, VER, VAL
 - “ Management PAs – PP, PMC, RSKM



– ID/Train PIID Developers



Select a lead to coordinate and plan PIID preparation and team activities

- Possibly an appraisal team member – must be knowledgeable of CMMI practices and appraisal methods (*some danger of objectivity in the appraisal*)

” Select PIID team members - 1 or 2 from each identified organizational unit to be appraised

- Primary and backup always works to your advantage
- Support (SEPG) member used to populate organizational PAs (OPF, OPD, OT,..)

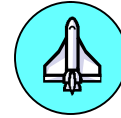
” Ensure that line management understands the impact (hours) of PIID team members involvement in PIID preparation

- Communicate commitment of resources (time, facilities) to all relevant stakeholders (line management, sponsor, facilities, team members, etc)
- Create team charter (process action team (PAT) or similar) with appropriate signatures acknowledging commitments, resources and manage as a project

” Train PIID developers in

- CMMI model
- PIID tool of choice
- Team operating rule and expectations (contained in charter)

Activity – PIID Annotation¹



- “ This activity involves documenting what the practices of the CMMI model means in the PIID
- “ Mapping the projects’/organization’s processes to the model practices and providing evidence of implementation of the practices
 - . Generic statement describing what artifacts should be provided for each practice and what makes it appropriate
- “ Labor intensive task for a team who has never annotated PIIDs before
- “ Example: PIID with annotation (no project or org. attribution) on next slide
 - . Green italic text explains how the artifact meets the intent of the practice

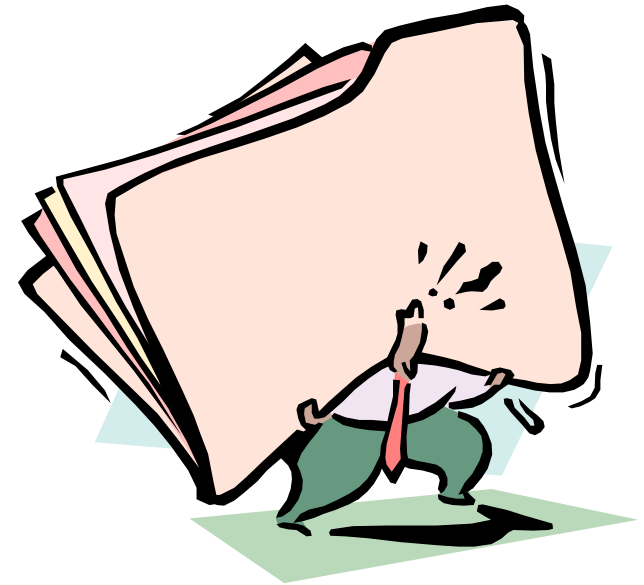
Activity – PIID Annotation²

Project Planning		Project	M	Model	P	PIID	Evidence			Interview	Char	OU
	Description	C	C	Observation	C	Observation	Direct	Direct Link	Indirect	Indirect Link		
SG 1	Estimates of project planning parameters are established and maintained.											
	SP 1.1 Establish a top-level work breakdown structure (WBS) to estimate the scope of the project.	P1					Project1 Project Plan Document # xxxxx (section y.y, z.z, revision history) <i>Statement of Work, Project specific WBS identified, revisions to plan due to template changes (including WBS)</i>	link to the project_plan1.html	P1 Project Plan Document # xxxxx Approval/ Concurrence page <i>Approval and concurrence pages from both the SEPG and the relevant stakeholders for the project</i>	link to the_pp1_approval.html		
		P2					Project2 Project Plan Document # xxxxx (section y.y, z.z, revision history) <i>Statement of Work, Project specific WBS identified, revisions to plan due to template changes (including WBS)</i>	link to the project_plan2.html	P1 Project Plan Document # xxxxx Approval/ Concurrence page <i>Approval and concurrence pages from both the SEPG and the relevant stakeholders for the project</i>	link to the_pp2_approval.html		
	SP 1.2 Establish and maintain estimates of the attributes of the work products and tasks	P1										
		P2										

ctivity – PIID Stats

“ Statistics – Typical CMMI Maturity Level 3 Appraisal (not including Supplier Agreement Management)

- . 17 Process Areas (PAs)
 - “ 3 Process Management PAs
 - “ 4 Project Management PAs
 - “ 6 Engineering PAs
 - “ 4 Support PAs
- . 128 Specific Practices (SPs)
 - “ Approximately 960 pieces of evidence
- . 204 Generic Practices (GPs)
 - “ Approximately 1600 pieces of evidence



Lead Appraiser Consultation

Types of consultation

- . Process document reviews
- . PIID annotation reviews
- . Information gathering


Benefits

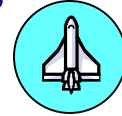
- . Identify gaps before process institutionalization or identification in appraisal settings
- . Consistent interpretation from lead appraiser

Drawbacks

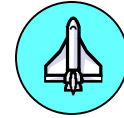
- . Expense and schedule
- . Academic interpretation vs real world implementation due to lack of understanding of the organization's context

Activity – PIID Population

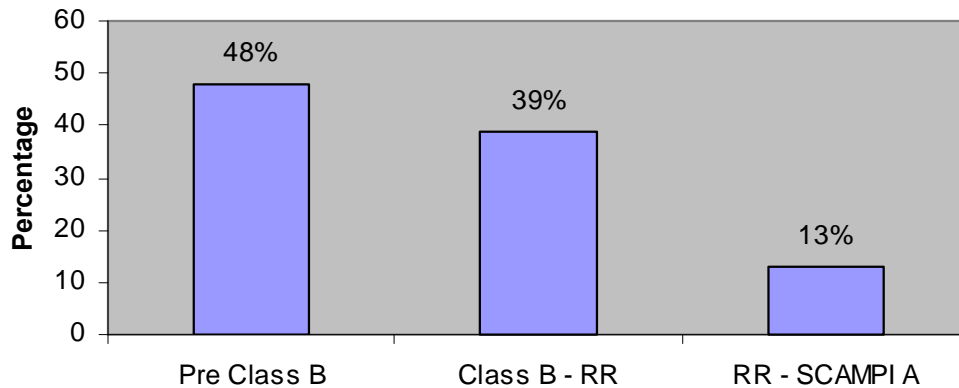
- ” Identify “focus” and “non-focus” projects
- ” Identify PIID artifacts which must be obtained from the selected projects to complete PIID population (per annotation)
- ” Create a data management plan for controlling the PIID artifacts which will be used for the SCAMPI appraisal
- ” USA used the technique of “Relocation of Artifacts”
 - . Reduced security impacts for appraisal team 
 - . Reduced risk of content change or archival
 - . Used tool snapshots
 - ” No learning curve for team on tools
 - ” Current content capture



Effort – USA PIID Prep Stats



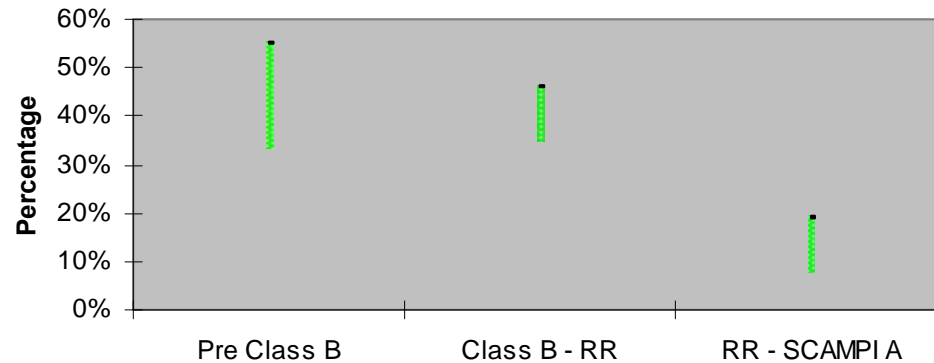
Average % PIID Effort



3 phases of PIID development:
Pre-Class B
Class B to Readiness Review
Readiness Review to SCAMPI A

Effort to complete PIID population remains consistent across USA elements independent of maturity level and organizational size

PIID Effort Average Distribution



Key Activities – During

“ During the appraisal

- . Prepare participants
- . Review objective evidence (PIID review)
- . Conduct interviews
- . “Tag” notes and PIIDs
- . Identify weaknesses of the practices
- . Verify implementation of practices – characterize the extent to which the practices meet the model
- . Review with team to reach consensus
- . Prepare and conduct preliminary findings presentation
- . Generate and present appraisal results

ty – Prepare Participants



“ In addition to the opening briefing performed by the lead appraiser, USA has found great benefit in having the home organization provide an overview presentation to help the appraisal team level-set the process and tools that the organization is using to meet the model expectations

- . This presentation is typically presented by the software project manager or process architect and includes:

- “ Organizational structure and appraisal scope
- “ Information about the organizations standard software process (including a process map)
- “ Description of process assets and access methods (web interface, etc)
- “ Organizational approach to SQA/CM/VER/VAL/IPPD
- “ Size and nature of project being appraised
- “ Glossary of organizational unit or project specific terms
- “ Demonstration of tools used by the project/organization

Review Objective Evidence¹

- “ PIID review... document review...artifact review...
- “ Factors that play an important role in determining how to review a process area (PA)
 - . Appraisal experience
 - . The PA being reviewed
 - . The organizational unit – level of commonality
 - . Readiness of the PIIDs

Remember. . .

- “ 128 Specific Practices (SPs)
 - . Approximately 960 pieces of evidence
- “ 204 Generic Practices (GPs)
 - . Approximately 1600 pieces of evidence



Review Objective Evidence²

- “ Appraisal team members (mini-team members) focus
 - . Organizational processes and standards comply with model expectations
 - . Projects implementing model per organizational processes and standards
 - . Note area of concern – possible question
 - . Look for threads
 - . (NON-SCAMPI A) identify and document PIID issues
 - “ Evidence does not support the practice
- “ Each team member has a strength – use it during objective evidence review



ty - Conduct Interviews¹

“ For CMMI activities lead appraiser does all interviews – asks all questions

- . Mini-team members take notes
- . Mini-team members provide specific questions needed to support evidence provided in PIIDs (affirmation of the practice)
- . List of questions provided to mini-teams for following during session



“ Example of interview question spreadsheet on next slide

ty - Conduct Interviews²

Example: Showing Project Planning Practice Question for SPM Interview Session



Goal	Pratice	SEPG/OT	SPMs	Developers	Testers	SQA	SCM
PROJECT PLANNING (PP)							
SG1 Estimates of project planning parameters are established and maintained.	SP1.1 Establish a top-level work breakdown structure (WBS) to estimate the scope of the project.		Where and how is the framework to plan, organize and control the work done on the project documented? Do you have a WBS? Where is it documented?				
	SP1.2 Establish and maintain estimates of the attributes of the work products and tasks		What parameters do you use to estimate work products and tasks (document size, critical computer resources, and source size, bandwidth)?				
	SP 1.3 Define the project lifecycle phases upon which to scope the planning effort.		How do you determine the project's lifecycle phases so you can scope the planning of the project? Where is the life cycle documented?				
	SP 1.4 Estimate the project effort and cost for the work products and tasks based on estimation rationale.		How do you estimate the project's effort and costs? What rational is used?				

y - l d

- “ **Tag notes and PIIDs per the appraisal methodology**
- “ **Document weaknesses in the PIIDs for projects which do not have artifacts and affirmations which support the intended implementation of the model practice**
 - . **Joint agreement by mini-team on weaknesses**
 - . **Suggested improvements may also be documented (I/O)**
 - . **PIID feedback may also be included (non-SCAMPI A)**
- “ **Many hours have been wasted in wordsmithing during an appraisal – don’t fall victim of this trap**
 - . **Home organization should take lead in “crafting” words for findings so that projects and improvement opportunities are easily understood**



Review to Reach Consensus

- “ **Verify implementation per the appraisal methodology**
- “ **Reaching consensus can be the hardest (or easiest) part of the appraisal**
 - . **Deciding factors:**
 - “ **How well the artifacts were reviewed and mini-team notes were taken**
 - “ **Mini-team consensus and objectivity**
 - . **Leaving “I, we, me at the door”** 
 - “ **How weaknesses are written and explained**
- “ **Each PA is reviewed with the entire appraisal team**
 - . **Each mini-team presents their insight and documented weaknesses for the PAs assigned to them**
 - . **Question/comments from entire appraisal team**
 - “ **Pick your battles** 

Prepare Findings Presentations

“ Weaknesses from PIIDs are gathered “polished” into “finding” and slides are produced



- . Global weaknesses are documented
- . Practice weaknesses are documented
- . Process improvements are documented

“ Documenting weaknesses...

- . Use “some”, “most” , not “all” when speaking of projects
- . Don’t reiterate the model practice
- . Use words that have meaning to the organization
- . Only identify the weakness once (global)

“ Non-attribution of appraisal output to individuals [ARC V 1.2 4.1.1]

erate and Present Appraisal Results

- “ **Derive final finding using preliminary findings statements**
 - . **Rewording preliminary findings to make them more understandable to the organization may be needed** 
- “ **Rate each specific goal and generic goal within the scope of the appraisal and obtain consensus with the appraisal team**
- “ **Many organizations conduct executive final findings briefings prior to the organizational briefing**
 - . **Ensure appraisal sponsor has sound understanding of the results and provides them with an opportunity to decide what they are going to say to the organization about the appraisal results** 

The Activities - After

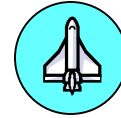
“ After the appraisal

- . Archival of appraisal assets
- . Appraisal team lessons learned
- . Lead appraiser provides reports to the SEI
 - “ Appraisal plan
 - “ Final findings presentation
 - “ Appraisal disclosure statement
 - “ Appraisal evaluation forms (lead appraiser, sponsor, appraisal team members)

Archival of Appraisal Assets

- “ **Dispose of sensitive material and preserve important data and records from the appraisal**
- “ **Gather appraisal artifacts and data for the sponsoring organization**
 - . **Typically – opening briefing, cleansed PIIDs, preliminary findings and final findings briefings, appraisal disclosure statement (ADS)**

ity – Lessons Learned



- “ **Conducted with the lead appraiser and the appraisal team**
 - . **Identify best practices that occurred during the appraisal**
 - . **Identify areas of the appraisal that need to be improved or that did not work and do not need to be repeated**
- “ **Experienced appraisal team member keep a running log of these items during the appraisal**
- “ **Need to be taken seriously and conducted on site**
- “ **Example:**
 - . **Best practice - Mini-team members were well paired (previous appraisal experience/no previous appraisal experience) in their area of expertise (engineering, process, project management, support)**
 - . **Needs improving – Process areas were not well divided among the mini-teams. When mini-teams completed their area assigned library hours were not maintained.**

raisals Over – What Now?

- “ **Sponsor/SPM meets with internal organizational appraisal team members**
 - . **Understand the findings**
 - . **Review PIIDs**
 - . **Request corrective action plan**
- “ **Internal appraisal team members should be prepared to explain findings to the sponsor**
 - . **Possibly extent of corrective action necessary**
 - . **Magnitude of impact to the organization**
 - . **Should always maintain non-attribution to ensure detailed information about individuals does not lead to inappropriate consequences following the appraisal**
- “ **All meetings and feedback should be positive and reflect a job well done**
- “ **Sponsor (and possibly the appraisal team) meets with the lead appraiser to ask questions and review their corrective action plans**



Summary Nuggets



- “ It take a lot of hard work and dedicated people to have a successful appraisal (sponsor, PIID developers, appraisal team members, lead appraiser, interviewees, ...)
- “ Many hours are spent by many individuals in the preparation, execution and follow up work of an appraisal
- “ Team work is the key to success
- “ A positive attitude and a sense of humor will help you get there
- “ No two appraisals are exactly the same
- “ Be willing to listen, be willing to change, be willing to admit you could be wrong
- “ Pick your battles
- “ Be flexible
- “ You will have findings! No one is perfect!

Questions

” Robin’s quote – I don’t have to fix it in my world, I just have to document it in yours.

