Lessons Learned and Best Practices for
Evidence Collection in Preparation for a
SCAMPI Appraisal

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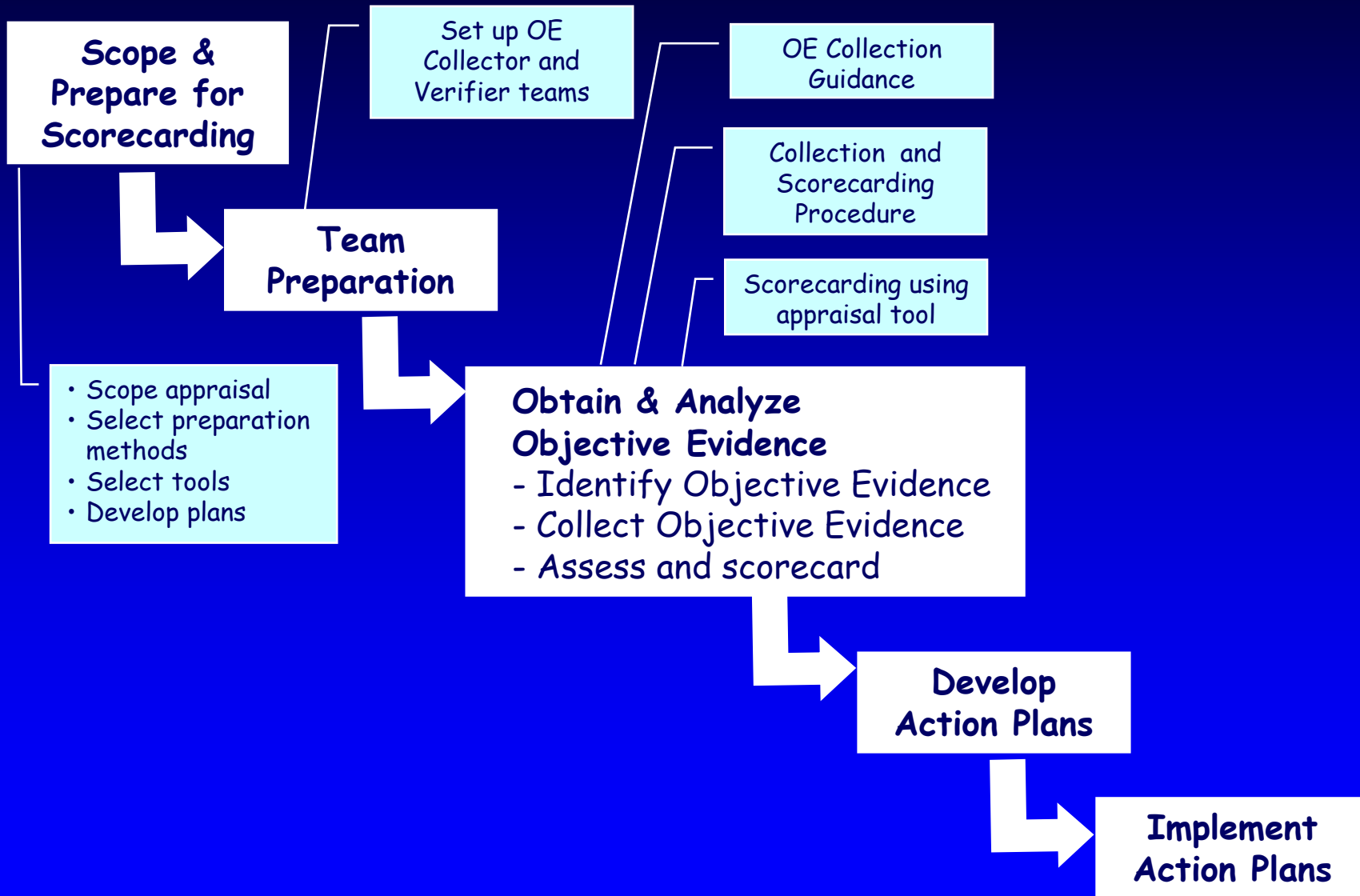November 14-17, 2005

Presentation Outline

- Methodologies and approaches
- Lessons learned
- Best practices for appraisal preparation and evidence collection
- Summary take-aways

Methodologies and Approaches Taken

- Program scorecard based on Objective Evidence (OE)
  - Collecting and documenting OE follows a disciplined data collection and scorecarding process
  - Customizing the appraisal tool to meet the collection process
  - PIID building using appraisal tool with direct linkage into organizational Process Asset Library
- Evidence verification
  - Collecting the right direct and indirect evidence
  - Focusing on the required (expected) evidence … don't try to inundate with unessential data or "almost" the right thing
  - Identifying evidence using OE Collectors, FARs, Verifiers
- Gap analysis and closure
  - Detailing action plans targeting identified deficiencies
  - Collecting OE until specified scoring criteria are met

Pre-Appraisal Scorecarding

Scope & Prepare for Scorecarding

Set up OE Collector and Verifier teams

OE Collection Guidance

Collection and Scorecarding Procedure

Team Preparation

Scorecarding using appraisal tool

- Scope appraisal
- Select preparation methods
- Select tools
- Develop plans

Obtain & Analyze Objective Evidence
- Identify Objective Evidence
- Collect Objective Evidence
- Assess and scorecard

Develop Action Plans

Implement Action Plans

Methodologies and Approaches Taken - 2

- Evidence collectors
  - Populate appraisal tool with appropriate direct and indirect OE
  - Tag data when linked to a practice
- Evidence verifiers
  - Review each practice for adequate evidence based on program scope, discipline responsibilities, etc.
  - Tag data to indicate verification results
  - Mentor evidence collectors
- Class C and B appraisals validate that right evidence was provided
  - Tag data to indicate practice implemented and evidence is satisfactory
- Loop through above steps as needed until the right evidence is captured
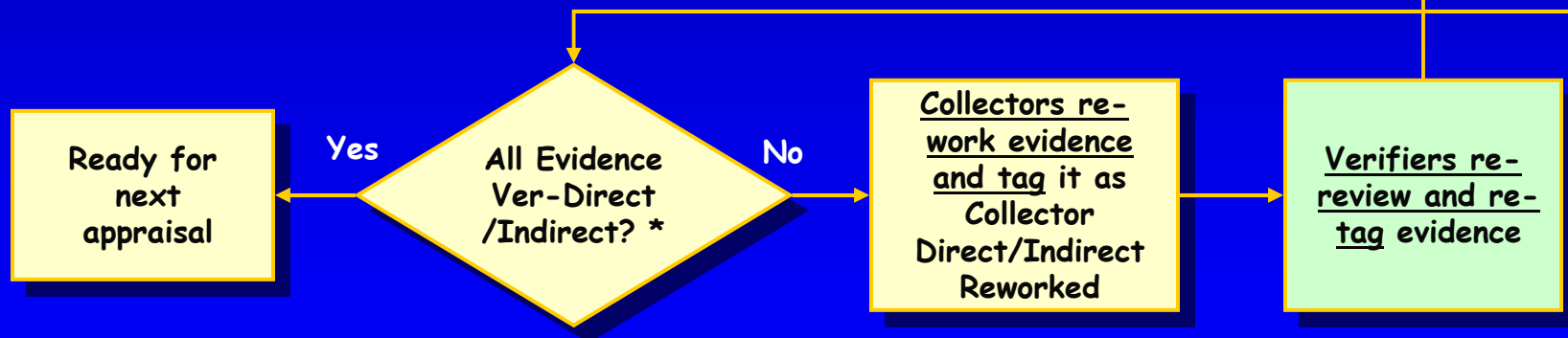 - Tagging at each step of process ensures closure on any evidence issues

"Evidence Tracking/Tagging" Flow

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Evidence is initially <u>tagged by Collectors</u> as:

· Added-Direct/Added-Indirect – Evidence that has been added as a result of an earlier Class B

· Collector-Direct/Indirect – Evidence for practices that were not included in an earlier Class B

Evidence is <u>reviewed by Verifiers and tagged</u> as:

· Ver-Direct/Indirect – Evidence is ready for an appraisal and requires no additional work. *

· Ver-Direct/Indirect-Rework – Evidence supports the practice but is not ready for an appraisal and needs additional work by the collector

· Rejected-Remove – Evidence does not support the practice and should be removed by the collector

Ready for next appraisal

← **Yes** ─ **All Evidence Ver-Direct /Indirect? *** ─ **No** →

<u>Collectors re-work evidence and tag</u> it as Collector Direct/Indirect Reworked

<u>Verifiers re-review and re-tag</u> evidence

* Evidence that has an "Evidence Type" flag of Direct(A) or Indirect(B) was accepted in an earlier Class B. For this effort, this evidence is considered verified and will not be reviewed by the verifiers.

"Evidence Type" Tagging

For each practice in the PA ...

Verifier reviews the evidence and rates it:

- Ver-Direct/Indirect – Evidence is ready for an appraisal and requires no additional work.

- Ver-Direct/Indirect-Rework – Evidence supports the practice but is not ready for an appraisal and needs additional work by the collector

- Rejected-Remove – Evidence does not support the practice and should be removed by the collector

- Contested – Program position on practice may not be acceptable to an appraiser

Evidence Issues Process

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Verifier documents issues with the evidence for a project - they document it in an evidence record for that project, i.e.

EI-DD(X)
EI-CEC
EI-GAMOS
EI-E4B2

Once the issues are documented the **Verifier sets the status** to "Open"

Once the issues have been addressed the **Collector changes the status** to "Addressed"

The **Verifier** then reviews the collectors response and **changes the status** to:

- **Additional_Data** – Additional evidence or explanation is required and the collector has additional work to do. When the work is complete the collector changes the status back to "Addressed" the process loops back to the verifier.

- **Rejected** – The verifier disagrees with the evidence or explanation provided and the collector needs to resolve with the verifier. When the work is complete the collector changes the status back to "Addressed" the process loops back to the verifier.

- **Closed** - The verifier agrees with the evidence or explanation provided and no additional work is required.
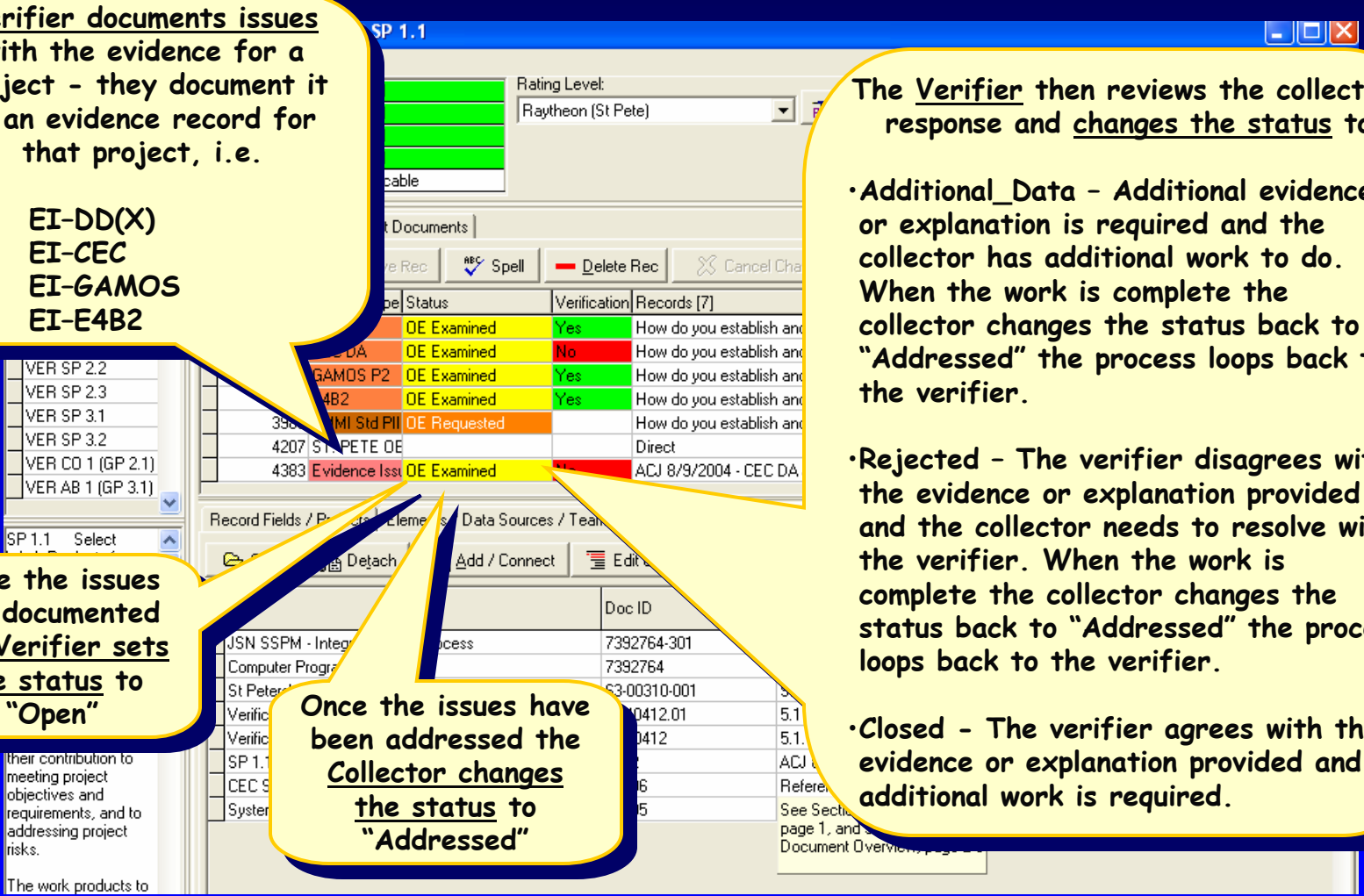
Verification Process (cont.)
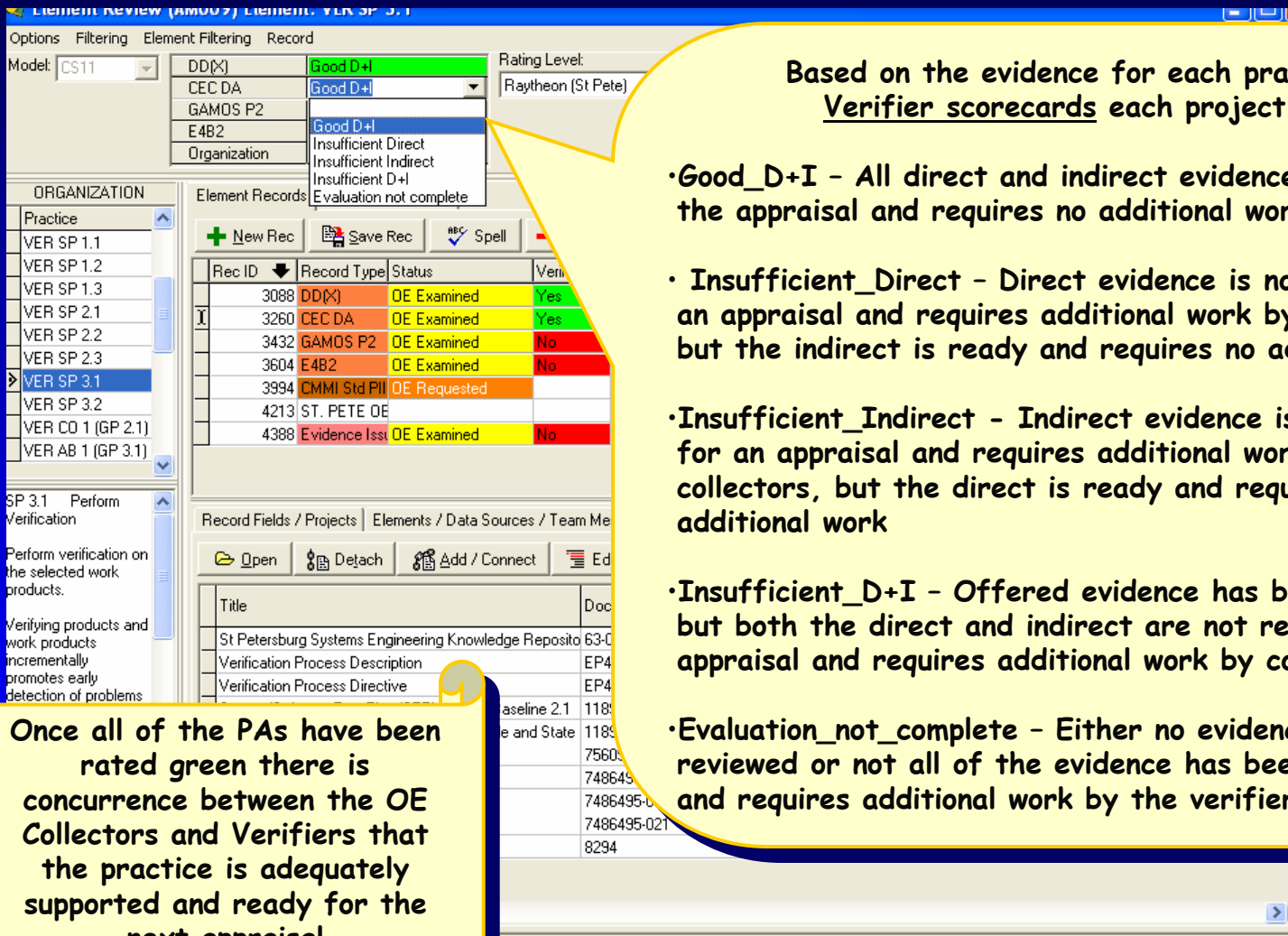
Based on the evidence for each practice, **Verifier scorecards** each project as:

- **Good_D+I** – All direct and indirect evidence is ready for the appraisal and requires no additional work

- **Insufficient_Direct** – Direct evidence is not ready for an appraisal and requires additional work by collectors, but the indirect is ready and requires no additional work

- **Insufficient_Indirect** - Indirect evidence is not ready for an appraisal and requires additional work by collectors, but the direct is ready and requires no additional work

- **Insufficient_D+I** – Offered evidence has been reviewed, but both the direct and indirect are not ready for an appraisal and requires additional work by collectors

- **Evaluation_not_complete** – Either no evidence has been reviewed or not all of the evidence has been reviewed and requires additional work by the verifier

Once all of the PAs have been rated green there is concurrence between the OE Collectors and Verifiers that the practice is adequately supported and ready for the next appraisal
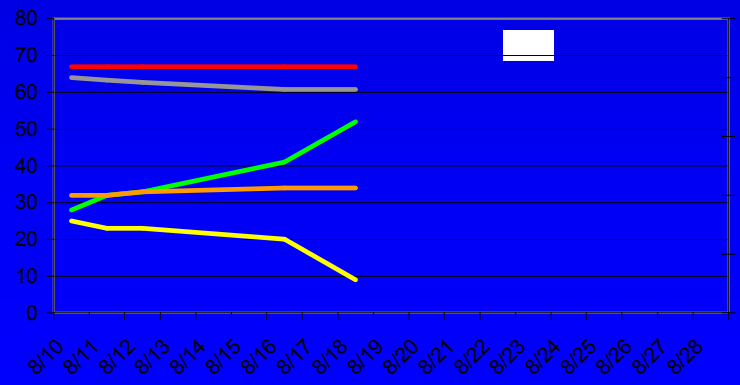
Program B Stoplight Status

PA	Resp	Sched	CO	AB					DI				VE		SP													
			1	1	2	3	4	5	1	2	3	4	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14
REQM	Jost	16-Aug													1.1	1.2	1.3	1.4	1.5									
PP	Louthan														1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3
PMC	Louthan														1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3				
SAM	Louthan														1.1	1.2	1.3	2.1	2.2	2.3	2.4							
M&A	Ruhlman														1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
PPQA	Jost	18-Aug													1.1	1.2	2.1	2.2										
CM	Jost	19-Aug													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
RD	Jost	17-Aug													1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5				
TS	Ruhlman														1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2					
PI	Ruhlman	13-Aug													1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4					
VER	Jost	11-Aug													1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2						
VAL	Jost	13-Aug													1.1	1.2	1.3	2.1	2.2									
OPF	Ruhlman														1.1	1.2	1.3	2.1	2.2	2.3	2.4							
OPD	Ruhlman														1.1	1.2	1.3	1.4	1.5									
OT	Ruhlman														1.1	1.2	1.3	1.4	2.1	2.2	2.3							
IPM	Louthan	20-Aug													1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3						
RSKM	Louthan														1.1	1.2	1.3	2.1	2.2	3.1	3.2							
DAR	Louthan	20-Aug													1.1	1.2	1.3	1.4	1.5	1.6								

Legend/Count

NAME	
Good D+I	52
Insufficient Direct	9
Insufficient Indirect	34
Insufficient D+I	67
Evaluation not complete	190

Trend

(Trend chart: dates 8/10, 8/11, 8/12, 8/13, 8/14, 8/15, 8/16, 8/17, 8/18, 8/19, 8/20, 8/21, 8/22, 8/23, 8/24, 8/25, 8/26, 8/27, 8/28)

## Current

Green 15%
Yellow 3%
Orange 10%
Red 19%
Grey 53%
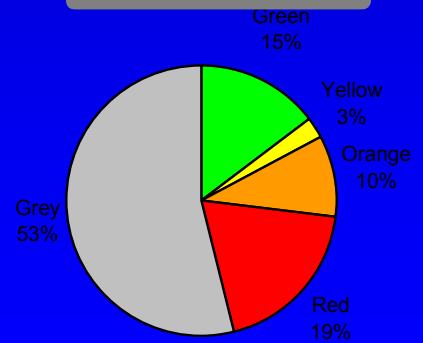
Lessons Learned

- Appraisal preparation requires tooling
  - Flexible appraisal tools supporting preparation are very important
  - Tool must be flexible and configurable
- Use the same tools for appraisal preparation and the appraisal
  - Scorecard readiness using the appraisal tool
  - Using the tool as a window to the organization's PAL (not a separate collection of evidence)
- Tools are not enough
  - Need to have scorecarding requirements and features defined
  - Need a well thought out scorecarding process that is both implemented and followed
  - Appraisal tools did not adequately support appraisal preparation right out of the box
- Every tool has it's bugs and hidden "features"
  - Need tool "wizard" to ensure features are implemented, and ensure any tool problems do not affect progress
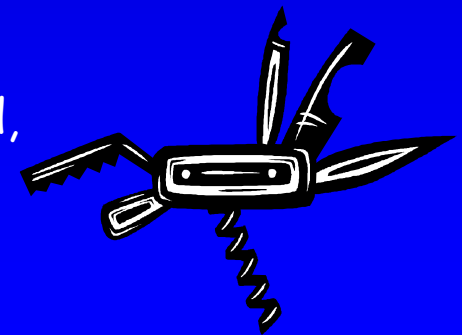
Lessons Learned (cont.)

- You may not always have the right people collecting data
  - Collectors of program OE must have program data repository and work product knowledge
  - FARs must be the ones that do the work and are familiar with how they do it and what they produce
  - Evidence verifiers must be familiar with needed OE
  - What you see is what you get … OE collected must support FAR story (This connection is **KEY** to the success of the appraisals)
  - Evidence collectors may not be FARs !!??
    - FARs are typically key program personnel
    - Programs are resistant to dedicate key program personnel to OE collection
    - FARS must see / understand collected evidence
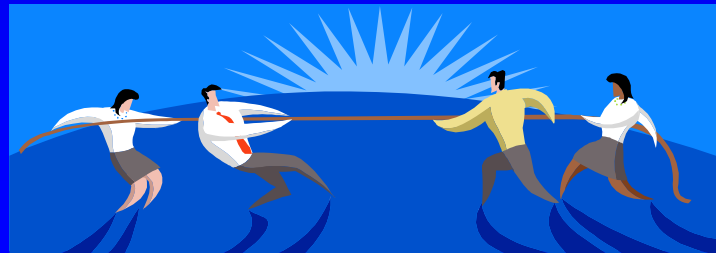
Best Practices – Evidence Collection (1)

- Use PIID questions to guide the process
  - Guides the collection team to what needs to be collected for a given program
  - Shows compliance with the org processes by answering the question for your program, for each practice,
  - Provides discipline and/or support function specific unique answers, if applicable
  - Explains any life-cycle or other program considerations that affect how the practice is implemented, and the evidence to support them
  - Weaves the story of how it is done, and what work products are produced, and then provide those work products as evidence
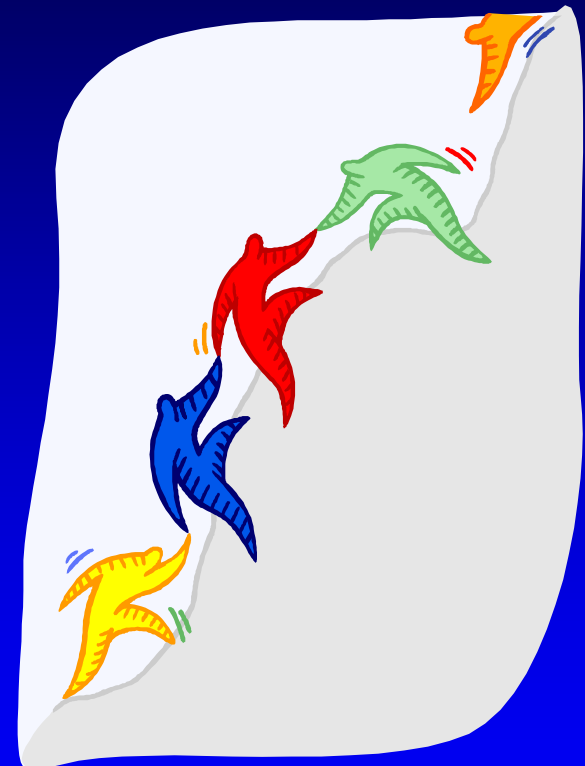
Best Practices – Evidence Collection (2)

- Focusing on the principle "direct evidence", the rest will come
  - Started with both direct and indirect evidence collection direction
  - Found the indirect evidence usually came naturally
- Focusing on providing the major program work products as evidence everywhere they applied
  - SDP, SEMP, PMP, IMP/IMS, etc.
- Building evidence threads across practices and even process areas
  - Especially for the GPs
- Look for consistency with organization procedures
  - Keep a cross-program focus for consistency and common evidence

Best Practices – Evidence Collection (3)

- A close working relationship between the program's FAR, the Verifier, and the evidence collectors
  - Evidence Collectors and FARs provide program expertise in work products produced
  - Verifiers provide CMMI model/method, Organizational Process expertise, and evidence coordination
  - OE supports what the FARs describe as standard practices, and the model!
  - Team review of expected work products for each model practice

Best Practices –
Evidence Review

- Reviewing evidence across programs to ensure consistency
  - Understand the organizational standard process, and focus on common program responses, explaining any tailoring or program unique behaviors
  - Identifying and ensuring all programs had similar "right" data
- Identify where evidence does not exist, and needs to be produced !!!!!!
  - shouldn't be too many cases of non-existent data
- Review regularly and provide corrective action feedback promptly
 - Drive the evidence collection to completion, and get the right stuff!

Best Practices –
Preparation Monitoring and Control

- Monitor and report status of every practice
- Review with appropriate management drives the process
  - This can be both a positive and negative driver
- Know your status at all times
- Maintain action item and action plan status
  - Ensure that all 'to do's" get done promptly
  - Plan appropriate correction actions plans to address issues
  - Set due dates that achieve the desired result
  - Identify and track risks, and develop risk mitigation plans
- Collect OE until you meet specific scoring criteria
  - Iterate process until ready for appraisal

In Summary

- Collecting and documenting OE requires a well defined and disciplined process, just like the appraisal
- Objective Evidence PIID's are central in how we prepare for the appraisals
- Appropriate tools can greatly facilitate preparation
  - Using the same tools for preparation and the appraisal is a big plus
- Determining if a project's OE is appropriate and adequate is ultimately left up to CMMI appraisers
  - But developing appropriate OE database is key to preparing for the appraisal
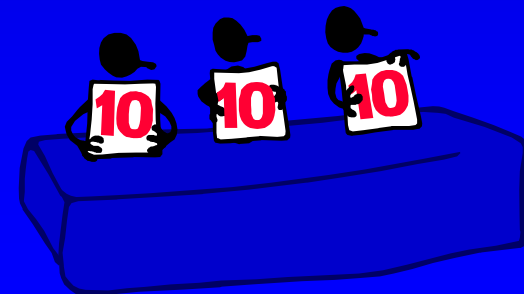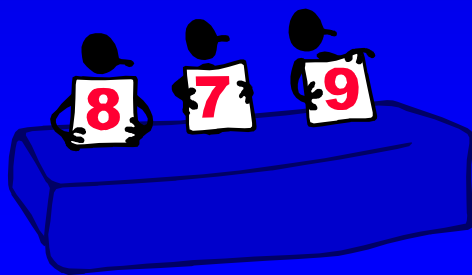
Some Terms Used

Appraisal Scorecard: A scorecard showing how well prepared for an appraisal a program is. Can be OE focused (Do we think we have the right evidence).

Scorecarding: The procedural steps followed to collect, validate, monitor, and control preparations using a scorecard.

PIIDs: Practice Implementation Indicator Database showing what OE your organization and programs expect for each practice of the CMMI Model, and what each program has to meet that expectation.