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Integrated Class C Process Appraisals (ICPA)

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Agenda

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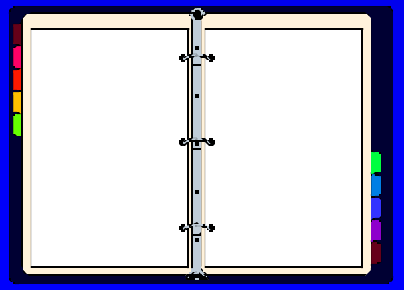
- ICPA Purpose
- Choosing A Methodology
- Integrated Class C Process Appraisal (ICPA)
- Experiences with the ICPA



ICPA Purpose

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- Provide CMMI appraisal technique that has minimal project impact
  - Limit number of project hours
  - Limit preparation requirements
- Identify significant project strengths and weaknesses
- Introduce projects to the CMMI model
- Appraise software and systems engineering processes jointly

ARC Appraisal Classes

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- 3 classes of appraisals are defined in the Appraisal Requirements for CMMI (ARC)
- Class A- Most rigorous
  - SCAMPI maintained by CMMI custodian (SEI)
  - May receive a maturity or capability rating
- Class B - Less rigorous
  - Raytheon has defined a Process Baseline Appraisal (PBA)
- Class C - Quick look

Garland ICPA Requirements

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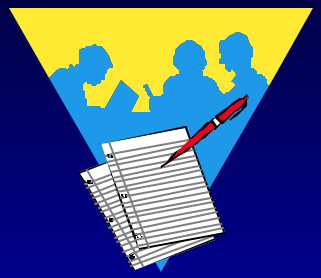

- CMMI Class C compliant
- Project spends less than 40 hours participating in the appraisal
- Appraisal is completed in one week
- Appraisal supports follow-up process improvement activities

Choosing a Methodology

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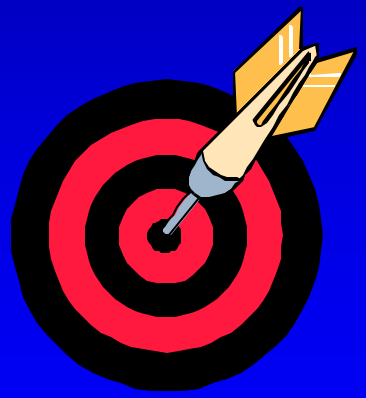
- Understand appraisal objectives
  - Process improvement
  - Process monitoring/risk appraisal
  - Formal maturity/capability rating
  - Current maturity
- Understand appraisal scale
  - Organization
  - Single project
  - Multiple projects
  - Project size



Applying the ICPA

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- ICPA is USUALLY project centric
- Project Participants (7)
  - Software Lead and Systems Engineering Lead
  - 5 Engineering contributors
- ICPA Appraisers (2-4)
  - Process engineers from both software and systems
- Project ICPA focuses on engineering, management, and support process areas
- Organizational ICPA focuses on process management across projects

ICPA Activities

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- Planning
- Document Review
- Opening Meeting
- Interviews
- Data Consolidation
- Follow-Up
- Closing Meeting

Planning

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- Sponsor contact
- Appraisal team formation and roles
- Project planning
  - Project commitment
  - Appraisal scoping
  - Participant identification
  - Schedule planning
  - Documentation collection

Document Review

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- Core process documents
  - Integrated Master Schedule
  - Systems Engineering Management Plan
  - Software Development Plan
  - Metrics Plan
  - Risk Management
  - Quality Plan
- Review is guided by ICPA document review sheets

Document Review Sheet
Training Plan Example

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439	Project Training Plan	Description of Required Requirements Management Skills Needed and Training Mechanisms to Satisfy	2-RM	GP2.5
440	Project Training Plan	This Artifact is described in Project: ABC PTP		
441	Project Training Plan	Description of Project Management Skills Needed and Training Mechanisms to Satisfy (also covers PMC GP2.5)	2-PP	GP2.5
442	Project Training Plan	Identification needed skills on the project	2-PP	SP2.5
443	Project Training Plan	Description of Supplier Agreement Management Skills Needed and Training Mechanisms to Satisfy	2-SAM	GP2.5
444	Project Training Plan	Description of Measurement and Analysis Skills Needed and Training Mechanisms to Satisfy	2-MA	GP2.5
445	Project Training Plan	Description of Configuration Management Skills Needed and Training Mechanisms to Satisfy	2-PPQA	GP2.5
446	Project Training Plan	Description of Quality Assurance Skills Needed and Training Mechanisms to Satisfy	2-CM	GP2.5
447	Project Training Plan	Description of Requirement Development Skills Needed and Training Mechanisms to Satisfy	3-RD	GP2.5
448	Project Training Plan	Description of Product Integration Skills Needed and Training Mechanisms to Satisfy	3-TS	GP2.5
449	Project Training Plan	Description of Technical Solution Skills Needed and Training Mechanisms to Satisfy	3-PI	GP2.5
450	Project Training Plan	Description of Product Validation Skills Needed and Training Mechanisms to Satisfy	3-VE	GP2.5
451	Project Training Plan	Description of Product Verification Skills Needed and Training Mechanisms to Satisfy	3-VAL	GP2.5
452	Project Training Plan	Description of Integrated Project Management Skills Needed and Training Mechanisms to Satisfy	3-IPM	GP2.5
453	Project Training Plan	Description of Risk Management Skills Needed and Training Mechanisms to Satisfy	3-Risk	GP2.5
454	Project Training Plan	Description of Decision Analysis and Resolution Skills Needed and Training Mechanisms to Satisfy	3-DAR	GP2.5

Opening Meeting

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- Attendance
  - Appraisal team
  - Project Participants
  - Sponsor
- Agenda
  - Purpose and objectives of appraisal
  - CMMI awareness
  - Review schedule
  - Provide sample questions
  - Answer participant’s questions

Interview Meetings

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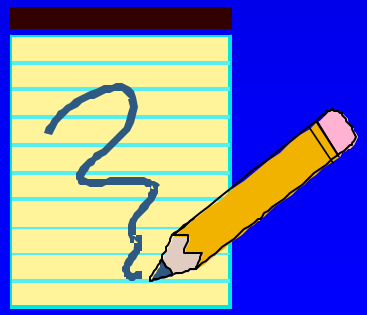
- Engineering and Management sessions held
  - Sessions last approximately 2 hours
- Interviews guided by ICPA Interview sheets
  - Questions are asked at the goal level
  - Appraisers take notes on interview sheets
  - Follow-up questions guided by results of document review



ICPA Interview Sheets
Project Planning Example

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PP: Project Planning (Maturity Level 2, Category: Project Management)

The purpose of Project Planning is to establish and maintain plans that define project activities.

Duration: _____ Start time: _____ Stop Time: _____

SG 1 Estimates of project planning parameters are established and maintained.			
D	**I1**	**I2**	**How do you select criteria by which you establish and maintain estimates of effort?**
			SP 1.1 Establish and maintain a top-level work breakdown structure (WBS) to estimate of the scope of the project.
			SP 1.2 Establish and document estimates of the attributes of the work products and tasks.
			SP 1.3 Define the project life-cycle phases upon which to scope the planning effort.
			SP 1.4 Estimate the project effort and cost for the attributes of the work products and tasks based on estimation rationale.

❑ 2.1 Policy/Org Policy	❑ 2.4 Responsibility	❑ 2.8 Mon/Ctrl Process
❑ 3.1 Defined Process	❑ 2.5 Train People	❑ 3.2 Collect Impr. Info.
❑ 2.2 Plan the Process	❑ 2.6 Manage Config.	❑ 2.9 Eval. Adherence
❑ 2.3 Resources	❑ 2.7 Stakeholders	❑ 2.10 Status Management

Data Consolidation

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- Classes of Evidence
  - Interviewee responses (including follow-up conversations)
  - Document review
- Draft strengths and weaknesses are recorded on ICPA Results summary
  - Each finding is evaluated for accuracy
  - Each finding corresponds to a CMMI model element

ICPA Results Summary
Process Mgmt Process Areas Example

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Results Summary

	Process Area	Strength	Weakness
Process Management			
1	Organizational Process Focus		
2	Organizational Process Definition		
3	Organizational Training		
4	Organizational Process Performance		
5	Organizational Innovation and Deployment		

Follow-up and Closing Meetings

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- Separate follow-up meetings are held to verify accuracy of findings
  - This feedback is used to refine draft findings into final results
- Closing meeting
  - Final results are reported
  - Plans discussed for follow-up process improvement

Experience with ICPAs

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- Lessons Learned
  - Appraisal scoping is key to optimal results
    - ICPA is flexible
  - ICPA roles needed – lead and coordinator
  - Using CMMI language in question interviews leads to confusion
  - Document review prior to interview improves ability to identify weaknesses
  - Time management increases ICPA capability

Current Directions

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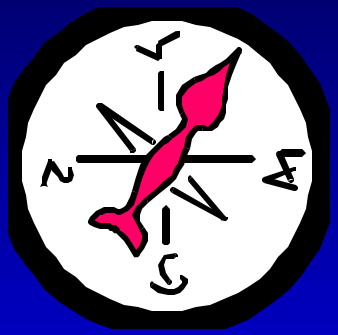
- Improve support for process improvement activities
- Incorporate lessons learned from other Raytheon sites
- Use the ICPA for organizational process improvement
- Provide the document to the SEI for use as a Class C process.



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Biographical Information

Dr. Suzanne Delcambre

Suzanne is a Principal Software Engineer at the Raytheon Garland facility. She is currently assigned to the IDS-D program and is a member of the Garland Engineering Process Group. Suzanne has been an employee of the company for 16 years. She has a doctorate in Computer Science from Southern Methodist University.

Mr. Kent McClurg

Kent is a Sr. Principal Software Engineer at the Raytheon Garland facility. He is a member of the Garland Engineering Process Group and the Raytheon C3I CMMI Guidance Team. Kent has been an employee of the company for 21 years. He has a master's degree in Systems Engineering from Texas Tech University.