Lower Cost, More Effective Alternatives to SCAMPIs

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Background

- As a set, the SCAMPI methods provide a powerful set of tools to use in CMMI adoption
- However, there are some situations in which these three methods are not appropriate, or are not cost-effective
- This presentation will discuss the features and limitations of the three methods, and alternatives that should be considered
Characteristics of CMMI Appraisal Classes

The ARC (Appraisal Requirements for CMMI) defines appraisal classes
- A guide to inventors of appraisal methods, and their customers

Key differentiating attributes for appraisal classes include
- the degree of confidence in the appraisal outcomes
- the generation of ratings
- appraisal cost and duration

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Class A</th>
<th>Class B</th>
<th>Class C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of Objective Evidence Gathered</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>(relative)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ratings Generated</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Resource Needs (relative)</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Team Size (relative)</td>
<td>Large</td>
<td>Medium</td>
<td>Small</td>
</tr>
<tr>
<td>Appraisal Team Leader Requirements</td>
<td>Lead appraiser</td>
<td>Lead appraiser</td>
<td>Person trained</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or person trained and experienced</td>
<td>and experienced</td>
</tr>
</tbody>
</table>

References: “A Quantitative Comparison of SCAMPI A, B, and C,” R. Hefner and D. Luttrel, CMMI Technology Conference and User Group, 2005

SCAMPI-A
SCAMPI-B
SCAMPI-C

Hefner, "Lower Cost, More Effective Alternatives to SCAMPIs", 2007
A Variety of Appraisals

Hefner, "Lower Cost, More Effective Alternatives to SCAMPiS", 2007
What’s Important About ARC Compliance?

The appraisal principles for the CMMI Product Suite are similar to those for appraisals using the Capability Maturity Model for Software and Systems Engineering Capability Model:

- Start with an appraisal reference model.
- Use a formalized appraisal process.
- Involve senior management as the appraisal sponsor.
- Focus the appraisal on the sponsor’s business objectives.
- Observe strict confidentiality and non-attribution of data.
- Approach the appraisal collaboratively.
- Focus on follow-on activities and decision-making based upon the appraisal results.

- ARC, v1.2

- In what situations would these principles not be appropriate?
  - Sponsor desire for an informal appraisal process
  - Non-attribution not critical
  - Inability/no desire to work collaboratively

Hefner, "Lower Cost, More Effective Alternatives to SCAMPIs", 2007
What’s Important About SCAMPI-A Compliance?

The Standard CMMI Appraisal Method for Process Improvement (SCAMPI) is designed to provide benchmark-quality ratings relative to Capability Maturity Model Integration (CMMI) models.

SCAMPI A enables a sponsor to

- gain insight into an organization’s capability by identifying the strengths and weaknesses of its current processes
- relate these strengths and weaknesses to the CMMI reference model(s)
- prioritize improvement plans
- focus on improvements (correct weaknesses that generate risks) that are most beneficial
- to the organization given its current level of organizational maturity or process capabilities
- derive capability level ratings as well as a maturity level rating
- identify development/acquisition risks relative to capability/maturity determinations

- SCAMPI A, v1.2

**SCAMPI-A appraisals were designed to:**

- Be accurate (collaboration of multiple sources – direct, indirect, written/face-to-face affirmations, trained team, authorized team leader)
- Achieve organizational buy-in (collaborative approach, construction of PIIDs, interviews, draft findings)

**In what situations would this not be appropriate?**

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How Do SCAMPI -B and -C Relate?

These methods can form building blocks for a progression of appraisals – for example, starting with a SCAMPI C reviewing the process descriptions, then a SCAMPI B investigating their deployment to projects, finally leading to a formal benchmarking event focused on institutionalization of the practices across the organization.


- But all SCAMPI appraisals share the same basic methods (interviews, evidence review, team qualifications) and reflect similar objectives (accuracy, buy-in)

- The typical SCAMPI C/B/A sequence works well for an organization starting a process improvement effort, i.e., no defined processes

- May not work as well for an organization that has existing processes, and whose main issue is project adoption
Adopting the CMMI

Key enablers
- Willingness to learn unfamiliar practices
- Desire to extract value rather than “check the box”
- Ability to interpret the CMMI in your context
- Access to experts

Hefner, "Lower Cost, More Effective Alternatives to SCAMPIS", 2007
Effective Use of Audits and Appraisals

- Process and product audits provide tangible, objective measures of adoption/sustainment
  - Policies, processes, and standards must reflect the desired behaviors

- Appraisals evaluate the effectiveness of the audit program
  - Standardized tools, approaches, and methods
  - Consistency of appraisers – if they understand the way we are structured and operate, there is less time required to understand what we are doing.
  - Pre-appraisal activities to prepare projects for the appraisal process

- The frequency of audits and appraisals, and the sampling, must reflect the progress of the cultural change
  - As the culture begins the change, more frequent and more in-depth audits/appraisals are required
  - Later, the amount of audits/appraisal may decrease, if the culture has truly changed

“Sustaining CMMI Compliance ,” R. Hefner, CMMI Technology Conference and User Group, 2006

Hefner, "Lower Cost, More Effective Alternatives to SCAMPIs", 2007
Where Could We Save Money?

- Could we ignore/relax some of the ARC requirements?
  - Use an undocumented method
  - Use an untrained team
  - Less preparation of participants
  - Less involvement of participants
  - Less corroboration of evidence

- Could we use different approaches than SCAMPI uses?
  - Assist projects in evidence gathering
  - Don’t require consensus among appraisers
  - Use a different rating scheme (or no ratings)
  - Use different objectives than practice compliance (efficiency, effectiveness, consistency, understanding/awareness, etc.)
Impacts

“A Quantitative Comparison of SCAMPI A, B, and C,” R. Hefner and D. Luttrell, CMMI Technology Conference and User Group, 2005

Hefner, "Lower Cost, More Effective Alternatives to SCAMPIs", 2007
Minimum Team Size

- **Cost is composed of:**
  - Team costs – goes up with team members
  - Organizational costs (interview, presentations) – largely fixed regardless of size

- **Accuracy goes up with as team size increases**

- **Buy-in is driven by the confidence the organization’s members has in the appraisal process and appraisal team**
  - Larger teams can increase the likelihood that a respected person is on the team

*Hefner, "Lower Cost, More Effective Alternatives to SCAMPIs", 2007*
Team Accuracy vs. Team Size

- Team accuracy vs. team size, for given individual accuracies
  - As team size goes up, team accuracy rapidly increases (assuming the right answer is obvious once presented)
  - Teams of greater than 4 provide little increase in accuracy

- Same, assuming 90% leader accuracy
  - If the team leader is 90% accurate, additional team members add little accuracy
  - Adding team members does give a chance for them to learn

Appraiser accuracy, not team size, is critical

Hefner, "Lower Cost, More Effective Alternatives to SCAMPIs", 2007
Sources of Objective Evidence

- Evidence review takes 1-2 times the length of interviews
  - If evidence is not reviewed, easy to answer “correctly” in the interviews
  - If interviews are not conducted, evidence may be faked (not really in use) - normally easy to spot

- Accuracy increases significantly with evidence review

- Validation takes little time and often increases accuracy 20-30%

- Buy-in is greatly increased by validation
  - Nothing decreases buy-in faster than a “weakness” that everyone knows is wrong

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The Workshop Concept

- **Objectives:**
  - Determine current gaps relative to project compliance with CMMI
  - Map existing evidence to CMMI
  - Determine effective ways to perform and/or document practices
  - Raise awareness of project personnel, build buy-in

- **Process:**
  1. Train projects on CMMI terminology and structure (1-3 day)
  2. Projects complete PIIDs mapping of their existing evidence, self-assess practice and evidence gaps
  3. A CMMI expert walks a group of projects through the model. For each practice, the expert:
     - Describes the practice and typical evidence
     - Reviews each project’s evidence for acceptability
     - Identifies practice gaps and discusses possible solutions
     - Identifies documentation gaps and possible solutions
Summary

- As a set, the SCAMPI methods provide a powerful set of tools to use in CMMI adoption.

- However, there are some situations in which these three methods are not appropriate, or are not cost-effective.

- Improvement professionals should consider the full range of options available to them, and select the tools and methods best suited to the needs of the sponsor.