Using Self-Assessments as Part of a CMMI® Improvement Strategy

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Background

Organizations need a cost effective mechanism to baseline process capability, identify opportunities for improvement and prepare for a CMMI® rating. A Self-Assessment can help meet this need by translating CMMI® into the specific language of a particular organization. The pros and cons of using a Self-Assessment should be evaluated as part of any CMMI® process improvement initiative. Factors such as cost savings, comprehensiveness and quality of the Self-Assessments all need to be considered. Integrating these parameters to determine the optimal strategy helps an organization develop an improvement plan to operate at the desired CMMI® level.
Topics

- Appraisal validity period
- The problem
- The Self-Assessment solution – Pros and Cons
- How to develop a Self-Assessment
- How to give a Self-Assessment
- What to do with the results
Boeing Space and Intelligence Systems

- Boeing Space and Intelligence Systems (S&IS), headquartered in Seal Beach, Calif., is the company's center for satellites and experimental space systems. S&IS is a world leader in the design, development and manufacturing of satellites for government, civil and commercial customers. The division includes Boeing Satellite Systems International, Inc.

CMMI® Core Team located in El Segundo, Southern California
Appraisal Validity Period

**Carnegie Mellon Software Engineering Institute (SEI)** has defined a 3 year CMMI® Appraisal Validity Period

- CMMI® V1.2 appraisal results are valid for a maximum of 3 years from the date of the Appraisal Disclosure Statement (ADS)
- V1.1 appraisals expired on August 31, 2007 or 3 years after the date an appraisal was conducted, whichever is later
The Problem

- Organizations need an easy, cost effective mechanism to help
  - Identify CMMI® gaps
  - Baseline current process capability
  - Monitor / expand process capability
  - Identify opportunities for improvement
  - Prepare for an external CMMI® rating

SCAMPI* C, SCAMPI B, SCAMPI A

Level X

*Standard CMMI® Appraisal Method for Process Improvement (SCAMPI)
A Self-Assessment consists of a set of Goal Questions and Standard Document / Record Questions used to perform CMMI® gap analysis

- Goal Questions set the stage
- Standard Documents / Records are asked for to determine if specific artifacts have / will be created, or if specific processes exists

Teams answer “Yes” they have the asked for artifact (process) or “No” they don’t have the artifact (process)

- If the team has the artifact (process), they identify the name

### Example

<table>
<thead>
<tr>
<th>Activities for Managing Requirements</th>
<th>Standard Document / Records</th>
<th>HW #1</th>
<th>SE</th>
<th>SUB SYS1</th>
<th>Cmd</th>
<th>SW #1</th>
<th>Comments for all “Y” Responses</th>
<th>Standard Process Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQM SF 1.1 Criteria for evaluating completeness and acceptance of requirements</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>SPI-ex, GUIDE-ex</td>
</tr>
<tr>
<td>REQM SF 1.2 Specification documents are committed to by all stakeholders, and are being kept current / maintained.</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Signed-Off Spec</td>
</tr>
</tbody>
</table>
Feasibility

- The feasibility of using a Self-Assessment should be evaluated

Feasibility factors include:
- Ease of use
- Cost savings
- Comprehensiveness
- Quality of the Self-Assessments
PRO – Benefits of Using a Self-Assessment

- Translates CMMI® terminology into the specific language of a particular organization

- Maintains objectivity by focusing on Standard Documents / Records that the project or organization has created or established

- **Low cost: 8-10 hours (Levels 2 & 3)**
  - Eliminates high cost, non-valued added tasks (e.g. data gathering)

- Structured way to do CMMI® gap analysis

- Can be used to develop strategic improvement plans and to prepare for an external rating
CON – Potential Problems with Self-Assessment Approach

- Oversimplification or misinterpretation of model
  - Could miss part of the model

- Requires mentoring by internal CMMI® expert to interpret questions and help with artifact identification

- Need to ensure that questions are aligned with external lead appraiser expectations
Getting Started

- Establish a team to develop the Self-Assessment

- Team should be experienced with:
  - CMMI® appraisals
  - Org / Project Concept of Operations
  - Org processes and work products
  - Org / Project weaknesses
Development Guidelines

- Follow the structure of CMMI
  - Process Areas
  - Goals
  - Specific Practices (SPs)
  - Generic Practices (GPs)

- Questions should map directly to the model

- Questions should ask for objective evidence (artifacts) and processes

- Cover project and organization questions (validate organization / project interface)
Self-Assessment should be based on:
- Objective evidence/artifacts that are recognized by the team being assessed
- Organization Concept of Operations
  - Organization vision
  - Organization improvement plan
- Org standard processes and associated plans, data, reports
- Tailoring guidelines
- Lean principles of simplification and artifact reuse across specific and generic practices
Tools

- Simple spreadsheet works
- Web-based tools can help with data population and analysis
Strategic Deployment Plan

- Develop a 3 year plan to coincide with appraisal validity periods

- Determine scope
  - Programs / projects / products
  - Organizations

- Use criteria similar to SCAMPI project selection criteria:
  - Key product lines
  - Percent of population
  - Phase of lifecycle
Self-Assessment Participation

- Participants should commit to 3 sessions (2-3 Hrs each)
- Management should attend the first session
- Management should reevaluate personnel selection after the first session
  - Don’t want to have to modify results later
  - Does team know the answers?
How to Conduct a Self-Assessment

- **6 people max**
  - Larger teams are unwieldy

- **Participants should provide Y/N answers**
  - Provide short name or description of artifacts for yes answers

- **A knowledgeable CMMI® expert/mentor should assist the interviewees in interpreting the questions**
Establishing Clarifying Terms

- Institutionalization
- Organization Standard Processes
- Tailoring
- Process Owner
- Process Assets
- Work Product
- Performance Data
Evaluating Results

- Analyze / consolidate / graph results by process area / project / organization

- Compare Self-Assessment results to goals
Development of Gap Closure Plan

- **Components of closure plans**
  - Gaps / Scope / Who (project, organization) / Effort / Dates

- **Integrated / common solutions where possible**

- **Tracking the gap closure plan will help you know when you are ready for a SCAMPI**
Summary

- Self-assessment provides value
  - Low cost
  - Focuses on improvements, rather than “gold” star
  - Can be used to help prepare for a SCAMPI