SCAMPI 1.3 CHANGES

By Neil Potter and Mary Sakry

Introduction

In March 2011 the SEI released a new version of the SCAMPI1 appraisal method. In this article we discuss the major changes. The article covers:

- Terminology Changes
- Scoping and Sampling
- Data Coverage Rules
- Managed Discovery
- Appraisal Team Training
- Conflicts of Interest
- Appraisal Team Qualifications
- Appraisals including Multiple Models
- Dates to Watch Out For

Terminology Changes

From the Method Definition Document (MDD), the following changes are described:

“Artifacts
- The distinction between direct and indirect artifacts has been removed. This distinction was often confusing and could unnecessarily drive data collection costs higher. The more general term artifact is used now.
- Artifacts - a tangible form of objective evidence indicative of work being performed that represents either the primary output of a model practice or a consequence of implementing a model practice. These artifacts may include organizational policies, meeting minutes, review results, or other implementation-level work products.
- Affirmations - an oral or written statement confirming or supporting implementation (or lack of implementation) of a model practice provided by the implementers of the practice, provided via an interactive forum in which the appraisal team has control over the interaction. These statements are typically collected using interviews, demonstrations, questionnaires, or other means.

Focus and non-focus projects:
- The terms ‘focus project’ and ‘non-focus project’ were removed in V1.3 to better reflect the new sampling approach and to avoid confusion that has occasionally occurred with these terms in prior method versions. The same concept is reflected in V1.3 data sampling and coverage rules (see later).

Appraisal input:
- The Appraisal Input document has been removed. Content previously required by the appraisal input is reflected in the initial appraisal plan.

Determine Data Collection Strategy (activity 1.1.2)
This is a new activity added to the method. The data collection strategy outlines the overall high-level scheme for data collection making it more explicit than before. This includes:
- “The choice of data collection approach (discovery, managed discovery, and/or verification).
- When the data will be collected (e.g., preparation

http://www.sei.cmu.edu/library/abstracts/reports/11hb001.cfm
phase or conduct phase).

- What data collection techniques (e.g.,
demonstrations, presentations, interviews and
questionnaires) will be employed for both objective
evidence types (artifacts and affirmations).

- How and when all evidence types will be collected
(artifacts and affirmations).

- The organization responsible for collecting the data.”

Scoping and Sampling

This is the biggest change in the SCAMPI method
and will probably cause the most problems. The intent is
to improve the previous sampling algorithm, which
referred to Focus and Non-focus projects. Organizations
sometimes abused this by selecting the best three projects
from an organization (regardless of its size) and stating
that these were a representative sample.

The new sampling rules define a specific set of
criteria that must be considered to define the sample. The result is intended to be a better sample, more consistent
among appraisals and transparent (or auditable). Only time
will tell if this is indeed the case.

The MDD states:

- “An organization is made up of basic units. These
identify blocks of work, or people, who form the
elements of the organizational unit to be sampled.
Examples of basic units include projects, work
groups, and teams.

- The concept of a support function has also been
introduced to explicitly account for other structures
within the organizational unit that do not tend to do
customer-facing work. Examples of support functions
include Quality Assurance or Process Engineering
groups.

- Sampling factors serve to identify meaningful
differences in the conditions under which work is
performed in the organizational unit. The following
candidate sampling factors must be evaluated to
determine the organizational scope of the appraisal:

  - Location: if work is performed differently in
different locations (e.g., countries, cities, sites or
installations).

  - Customer: if work is performed differently
depending on the customer served by that work.

  - Size: if work is performed differently based on
the size of the basic unit or support function.

  - Organizational Structure: if work is performed
differently in different parts of the
organizational structure (e.g., different divisions
as depicted on an organization chart).

  - Type of Work: if work is performed differently
based on the type of work (e.g., system
integration, software development, IT-support
services, or help-desk).”

Other example sampling factors considered could
include funding source, duration and complexity.

- Subgroups, derived from the sampling factors, are
a collection of basic units that perform work in a
similar way.

- A representative sample for the organizational
unit (the name of the group that can claim the
appraisal result) is established by selecting basic
units from each of the subgroups according to the
formula at the top of page 3.

To explain the new selection calculation, we describe
an example below.

Example

- Company X has 6 projects in total, split between 2
sites (Dallas and Austin).

- The projects are either software development or
system integration.

- The relevant sampling factors are determined to be
location and type of work.

- The total number of possible subgroups (see Table 1)
is therefore 4 (i.e., System Integration Austin,
System Integration Dallas, Software Development
Austin and Software Development Dallas). Note that
the actual number of subgroups is 3 since there is no
Software Development work in Dallas.

The number of basic units (i.e., projects) in the
organization is 6. The number of basic units that must be
sampled is proportional to how many basic units there are
in a subgroup. More than the minimum can be sampled,
but the equation defines the minimum. Table 2 shows the results of the calculation. In this case, 4 projects have to be selected from the 6 available (see “Basic Units Sampled” column). The SCAMPI rule states that the result is rounded to 1 if it is less than 1. Otherwise normal rounding rules apply.

If the organization decides that it does not want to sample from a specific location, and location is a critical factor, then that location is removed from the declared Organizational Unit being appraised. For example, in an appraisal, if Austin is not sampled, then Austin cannot claim to be part of the appraisal result. The reason might be that including location might make the appraisal too costly, or including the location might cause a lower rating.

The risk of this new sampling method is that differences between basic units, and the process maturity of the subgroups, may be overlooked. For example, if the discussion between the Lead Appraiser and sponsor starts with, “The India and Denmark locations are identical and follow the same processes, so let’s call them the “international” subgroup.” But suppose that India is performing at Maturity Level (ML) 3 and Denmark is ML1. If both are grouped as “international,” and the sample is only taken from India, then Denmark will also be credited with being ML3. The visibility into exactly how each location performs is lost.

**Data Coverage Rules**

Once the basic units have been selected, the SCAMPI method has the appraisal team create a data collection plan based on new data coverage rules. The rules are stated below, and they are not easy to follow without practice.

Following on with the example, the process areas that these groups perform are listed in the

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**Table 1**

<table>
<thead>
<tr>
<th>Location</th>
<th>Basic Units At Each Location</th>
<th>Basic Units Sampled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austin</td>
<td>1 basic unit</td>
<td>1</td>
</tr>
<tr>
<td>Dallas</td>
<td>3 basic units</td>
<td>2</td>
</tr>
</tbody>
</table>

(i.e., 3 x 2 / 6 = 1.0)

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**Table 2**

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of subgroups</th>
<th>X</th>
<th>Number of basic units in the given subgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austin</td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Dallas</td>
<td>2</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

(i.e., 3 x 3 / 6 = 1.5)
columns in Table 3. The coverage rules are used to
determine what data to collect. Below we explain the
rules (taken from MDD) and how they are applied.

- **Coverage rule 1:** For each subgroup, both
  artifacts and affirmations shall be provided for at
  least one basic unit for every process area
  implemented by basic units within that
  subgroup. This sampled basic unit shall provide
  data for all process areas.

  *Our explanation: There are three subgroups, so
  at least one line per subgroup in the table
  samples both artifacts (Art) and Affirmations
  (Aff) from one sampled basic unit. “X”
  represents a sample; “O” represents no sample
  taken.*

- **Coverage rule 2:** For at least 50 percent of the
  sampled basic units in each subgroup, both
  artifacts and affirmations shall be provided for
  at least one process area implemented by basic
  units within that subgroup.

  *Our explanation: In the second subgroup there
  are two basic units: “Austin Software
  Development 1,” and “Austin Software
  Development 2.” Only one has to be sampled
  (see Table 2). Coverage rule 2 is therefore
  covered from applying rule 1 since rule 1 has
  already selected a basic unit to sample.

*In the third subgroup there are 3 basic units.
However, only 2 are required to be sampled (see
Table 2) and 50% is 1 basic unit. This means

- **Coverage rule 3:** For all sampled basic units
  in each subgroup, either artifacts or
  affirmations shall be provided for at least one
  process area implemented by basic units
  within that subgroup.

  *Our explanation: In the third subgroup (the
  last three lines of the table), there are three
  basic units. The selection calculation (Table 2)
determined that only 2 of these needed
sampling. So one PA (PMC) is selected from
“Dallas System Integration 3” to seek
affirmations. The other basic units in the
subgroup, another PA, or artifacts could have
been selected.

There are also three similar coverage rules for
support functions, such as Quality Assurance,
Configuration management, and the Software
Engineering Process Group. These can be found in the
MDD.

The selection and data coverage rules do make
the Lead Appraiser and sponsor more conscious of
how they sample the organization. But they also help
organizations hide low performing teams, and allow
organizations to provide “some data on some PA,” to
complete the table. If a Lead Appraiser believes that
“Division A and division B are just alike,” and they are
merged into one subgroup, then it is just luck whether
the appraisal ratings reflect what is actually going on.

<table>
<thead>
<tr>
<th>Business Unit by Subgroup</th>
<th>REQM</th>
<th>PP</th>
<th>PMC</th>
<th>RD</th>
<th>TS</th>
<th>PI</th>
<th>VER</th>
<th>VAL</th>
<th>IPM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Art</td>
<td>Aff</td>
<td>Art</td>
<td>Aff</td>
<td>Art</td>
<td>Aff</td>
<td>Art</td>
<td>Aff</td>
<td>Art</td>
</tr>
<tr>
<td>Austin System Integration 1</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Austin Software Development 1</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Austin Software Development 2</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Dallas System Integration 1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Dallas System Integration 2</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Dallas System Integration 3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

Table 3 – All basic units listed, with sampled ones shown with “x”
A short webinar on this topic by SEI is available (see link at bottom of page). Note that it was recorded in May 2010, and a few of the terms have changed.

**Managed Discovery**

SCAMPI 1.2 appraisals had two modes, *Verification* and *Discovery*. That is, you could either go into the appraisal having identified the majority of evidence and verify it, or you could have little idea of what the organization was doing and discover it as you go.

In SCAMPI 1.3, *Managed Discovery* represents a third data collection approach where appraisals provide an interactive build-up of the organization’s objective evidence database. This approach describes what usually happens in most appraisals anyway, and so it is not a big change.

**Appraisal Team Training**

There is no upgrade class to take for appraisal team members. The method expects the lead appraiser to train the team members in the SCAMPI process based on their current familiarity with the process, with at least one meeting to coordinate the team.

**Conflicts of Interest**

There is a new section on identifying conflicts of interest among team members (activity 1.3.3). This is pretty much common sense but makes the discussion with the sponsor more explicit. The intent is to have people avoid evaluating their own work in the appraisal. Conflicts are assessed, discussed with the sponsor, and mitigated in the risk management plan.

Suggested mitigation actions from MDD include: adding people external to the organization being appraised, matching experienced and non-experienced team members in mini-teams, having the LA more involved in mini-teams where there could be an issue, and terminating the appraisal after discussion with the sponsor.

**Appraisal Team Qualifications**

In the previous version of the method, the total number of years’ experience factored into the team experience count included the Lead Appraiser. For appraisal team members that were only a few years out of college, the 20+ years’ experience of the Lead Appraiser helped make the averages meet SEI rules by themselves.

In SCAMPI 1.3, the Lead Appraiser experience is not counted and therefore the team will have to meet the following rules:

“Team members must have:
- An average of at least 6 years of field experience.
- At least 2 years of experience performing the type of work addressed in each appraisal reference model included.
- An aggregate of 25 years of field experience relating to the content of each of the reference models in the scope of the appraisal.

The team (as a group):
- Must have a total of at least 10 years of management experience, and at least one team member must have at least 6 years of experience as a manager.
- Shall not be comprised entirely of staff that wrote the processes being appraised.
- Shall not include the sponsor of the appraisal.
- Shall not include a senior manager who has supervisory authority over the entire organizational unit.”

**Appraisals including Multiple Models**

The new method, and the SEI’s appraisal tool SAS, allows for a single appraisal to appraise multiple organizations using multiple models. For example, one appraisal could be scoped to look at two groups, one development group and one services group. There would be one appraisal plan, one team, and one submission of artifacts to SEI. This is discussed in Appendix F of the MDD.

**Dates to Watch Out For**

All appraisals must use SCAMPI 1.3 by 4/1/12. Until then, either method can be used.

All appraisals must use CMMI 1.3 by 12/1/11.

The SEI date list is at:

Re
ad Our Book!
Also available in Chinese and Japanese.
See www.processgroup.com/book.html

Here is the book’s Table of Contents:

Foreword by Karl Wiegers
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Practical Solutions for Your Current Challenges
Webinar-style sessions to save on travel, or onsite coaching to save on time.

- Run your software development projects faster and incrementally. Two-day workshop, AGILE SOFTWARE DEVELOPMENT (SCRUM).
- Understand how to save money, produce more and work faster. Two-day workshop, DOING MORE FOR LESS.
- Understand customer needs. Clarify product requirements early. Two-day workshop, IN SEARCH OF EXCELLENT REQUIREMENTS.
- Manage projects effectively. Meet project deadlines and reduce risks. Three-day workshop, PROJECT PLANNING AND MANAGEMENT.
- Meet project deadlines. Scope and estimate the project work. One-day workshop, PROJECT ESTIMATION.
- Avoid schedule delays caused by needless product rework. Find defects rapidly. Two-day workshop, INSPECTION (PEER REVIEWS).
- Hands-on SEI CMMI. Perform a CMMI gap-analysis. The following workshops are available:
  - CMMI-DEV: Overview (1/2 day), LEVEL 2 (1 day), LEVEL 3 (2 days), Intro to CMMI-DEV (3 days).
  - Intro to CMMI-SVC (3 days), Supplement class (1 day), LEVEL 2 (1 day).
- Identify critical changes to improve organizational results. Benchmark against the CMMI.
  A PROCESS APPRAISAL examines your organization’s current practices and generates a focused list of strengths and critical areas for improvement. Our SEI-certified Lead Appraisers conduct customized CMMI-based appraisals.
- Clarify and refine business/project measures and analysis. One-day workshop, MEASUREMENT AND ANALYSIS.
- Systematically evaluate decision alternatives. Half-day workshop, DECISION ANALYSIS AND RESOLUTION.
- Goal/problem-based improvement. Two-day workshop, MAKING PROCESS IMPROVEMENT WORK.
- Manage your suppliers. One and one-half-day workshop, SUPPLIER MANAGEMENT.
- Achieve more with your time. Make your staff more productive. One-day workshop, TIME MANAGEMENT.
- Tailored assistance. Dedicated phone/web-based assistance. This service consists of customized education and coaching on your specific problems (e.g., meeting deadlines, quality and cultural change).

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Telephone: 972-418-9541
Fax: 866-526-4645
E-mail: help@processgroup.com
Web: www.processgroup.com
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