Handbook for Conducting Standard CMMI Appraisal Method for Process Improvement (SCAMPI) B and C Appraisals, Version 1.1

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Abstract

The Standard CMMI Appraisal Method for Process Improvement (SCAMPI[SM]) provides a well defined, publicly available set of methodologies for providing appraisals relative to Capability Maturity Model® Integration (CMMI®) models. It is applicable to a wide range of appraisal usage modes, including both internal process improvement and external capability determinations. With the publication of this handbook, the method is embodied in three standard variants based on the class structure defined in the Appraisal Requirements for CMMI (ARC V1.1). As a set, the SCAMPI methods provide a variety of solutions to accommodate the needs of appraisers who play a variety of different roles. The internal change agent, the professional consultant, and the external auditor all have needs that lead to specific sets of tailoring decisions in the use of process appraisals. Guidance for these needs is provided for each applicable process description. This document defines the boundaries of tailoring and provides guidance for the application of the SCAMPI B and SCAMPI C methods.

Chapter 1: Introduction

Overview

This document provides procedural information regarding the conduct of Standard CMMI® Appraisal Method for Process Improvement (SCAMPI℠) B and SCAMPI C appraisals.

Document Contents

Chapter	Contents
1. Introduction	This chapter consists of a brief overview of the document and its contents, an executive summary, and the method overview.
2. Process Descriptions	This chapter consists of the core procedural requirements and guidelines for the conduct of SCAMPI B and SCAMPI C. This chapter is intended to provide the authoritative definition of these methods.
Appendix A	Appraisal Requirements for CMMI (ARC) Traceability: SCAMPI A, SCAMPI B, SCAMPI C

How to Use This Document

This document serves as the process definition of the SCAMPI B and SCAMPI C methods. The primary role of the document is to serve as a reference volume during training and field use of the methods. It is expected that the first chapter of this document may be read by a broader audience, while the remaining chapters are of primary interest to team leaders and members of teams. The document incorporates layout conventions derived from Information Mapping™ techniques, which are intended to aid navigation and information retrieval.

Bi-Directional Traceability of Requirements

Most of the formatting conventions used in the document are self-explanatory; for example, the key words in the left margin for each block of text identify the topic covered in that block. In Chapter 2, many of these key words are also accompanied by tags that identify a specific requirement from the Appraisal Requirements for CMMI (ARC). In combination with the ARC Traceability Appendix, bi-directional traceability is documented.

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Executive Summary

The following is a high-level overview of the key concepts covered in this handbook. It is provided to support the information needs of executive decision makers, as well as others who may want to know about these methods without knowing how to implement them.

Purpose

The acronym “SCAMPI” stands for Standard CMMI Appraisal Method for Process Improvement. (CMMI stands for Capability Maturity Model Integration.) With the publication of this handbook, the method is embodied in three standard variants based on the class structure defined in the Appraisal Requirements for CMMI (ARC V1.1). As a set, the SCAMPI methods provide a variety of solutions to accommodate the needs of appraisers who play a variety of different roles. The internal change agent, the professional consultant, and the external auditor all have needs that lead to specific sets of tailoring decisions in the use of process appraisals. Guidance for these needs is provided for each applicable process description. This document defines the boundaries of tailoring and provides guidance for the application of the SCAMPI B and SCAMPI C methods.

Flow of Activity

An initial contact between the potential appraisal (team) leader and the appraisal sponsor focuses on the business objectives that create a need for the appraisal. During the planning process, the needs of the sponsor are matched to the type and magnitude of appraisal. The elements of the organization to involve as well as the scope of the model to examine are also specified as elements of a comprehensive appraisal plan. Next, appraisal data gathering is typically accomplished through interviews and a thorough review of documentation. Then, appraisal results, including strengths and weaknesses, are based on analysis and verification of information which is compared to relevant portions of a CMMI model. Characterizations of individual model practices are typically summarized using a red/yellow/green scheme, and are reported along with the detailed findings statements. Finally, results of the appraisal are documented and archived in accordance with the agreements established during planning, and required data are submitted to the CMMI Steward.

Core Concepts

Five important core concepts that appraisal users should be aware of—the SCAMPI family architecture, objective evidence, data sources, practice characterization, and appraisal outputs—are covered in this section. Important issues relating to the appropriate use and reporting of appraisals can be traced to these five concepts.

The *SCAMPI family architecture* differentiates three classes of methods by identifying the primary focus of SCAMPI A, B, and C as "institutionalization," "deployment," and "approach" respectively. The SCAMPI A method has rigorous standards for detailed data collection, and for identification and coverage of the organizational unit. The SCAMPI B method retains some of the requirements for detailed data collection, but provides relaxed standards for sampling the organization. The SCAMPI C method has relaxed standards relating to evidence of usage. 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.

Standards of *objective evidence* for the SCAMPI family distinguish among direct artifacts, indirect artifacts, and affirmations. Individual items of evidence examined during an appraisal are related to the practices and other components of the CMMI model in use. Traceability between items of evidence and the project or organizational entity to which they apply is also maintained. Using the definitions for objective evidence, we can define Practice Implementation Indicators (PIIs) to manage the information collected during an appraisal. Documents or databases that catalogue and map PIIs can be used as an input to the appraisal process or be selected as an output of the process.

The *data sources* used in appraisals focus primarily on interviews with technical and managerial staff as well as a review of documentation. Presentations made by members of the organization, along with demonstrations of tools, may also be used as data sources. In SCAMPI C, information is sought that describes the approach taken (or planned for the future) to implement practices consistent with the intent of CMMI. In SCAMPI B, evidence of implementation (not just the intended approach) must be examined, in the form of direct artifacts. This more rigorous method also requires the use of interview data in support of a team consensus process to derive the appraisal results.

The use of *practice characterization* is a hallmark of the SCAMPI family. The characterization scales are designed to match the level of conclusiveness with the standards for data collection and analysis in each method. Characterizations for each practice in the appraisal scope can be determined for the organizational unit, as well as for individual projects or other appropriate organizational entities. Characterization and rating of goals are not permitted in a SCAMPI B or SCAMPI C appraisal. While the characterization scales are designed to support planning of future actions, they are not legitimate predictors of future success. An effective approach to meeting the intent of the CMMI goals may be rendered useless through poor implementation. Similarly, institutionalizing an approach that works well for only a small segment of the organization may not be feasible.

The *appraisal outputs* associated with each class of method are also matched to the conclusiveness supported by the appraisal process. The SCAMPI C and SCAMPI B methods require the generation of findings statements. Using a red/yellow/green scale, the two methods also support the derivation of detailed results mapped to each model practice. In the SCAMPI C,

a characterization scale reflecting the fidelity of the approach in reference to the intent of CMMI is available, but alternatives are permitted as well. In SCAMPI B, the characterization reflects the extent to which the examined practices, if implemented across the organization, would likely contribute to the satisfaction of process area goals. Finally, an Appraisal Disclosure Statement is required as an output of every SCAMPI appraisal. This standardized appraisal statement serves to document an accurate description of the result, and must be submitted along with other appraisal outputs to the CMMI Steward.

Rough Order of Magnitude Estimating

The SCAMPI C method can be performed in a single day by a single (qualified) individual, performing the tasks described in this chapter, for a narrow scope of the model and organization. SCAMPI C appraisals with a larger scope, in terms of the organization or model, are performed using an appraisal team working over a number of days. Sometimes, a professional consultant will elect to perform a SCAMPI C chiefly because it can be performed alone, while the SCAMPI B requires use of a team. A SCAMPI B used as a dress-rehearsal for a SCAMPI A, in contrast, will often employ four to eight team members over a five- to eight-day period.

Appraisals of medium to large magnitude are always performed using an appraisal team. By dividing the team into sub-teams of two or three individuals, the process areas in the scope of the appraisal can be assigned to individual mini-teams and the data collection and analysis work can be distributed efficiently. A team of six to eight skilled and knowledgeable appraisers can perform an appraisal focused on seven to fifteen process areas in five to ten days. A SCAMPI C is not recommended for large teams or appraisals of broad scope, unless there is ample justification for the expense in light of the limited generalizability of SCAMPI C results.

Why Do Multiple Appraisals

A formal benchmarking SCAMPI A appraisal is rarely the most appropriate event to initiate a program of model-based process improvement. As well, most appraisal sponsors and process improvement champions can ill afford to wait for a benchmarking appraisal to gain insight about the status of the process improvement program. The set of three SCAMPI methods allows the use of a sequence of appropriately tailored appraisal events—as illustrated in the discussion of the *SCAMPI family architecture* above—to meet a variety of needs.

Summary

The first step in preparing for an appraisal is to contact an SEI-authorized appraisal (team) leader. The sponsor or a designee will initiate a dialog about the objectives and key parameters of the appraisal. Based on experience and the constraints of the work, an SEI-authorized appraiser can tailor the appropriate method to meet the needs of the sponsor.

Method Overview

This section covers material that is key to understanding the intended use and implementation of the SCAMPI B and C methods. Rather than focus on detailed procedures and requirements, this section provides a systems view, describing how the appraisal components fit together to form a coherent picture. Key concepts associated with the methods are described, with an emphasis on the variety of ways the requirements for these methods can be met.

Method Context

The SCAMPI B and C methods benefited from the practical experience of numerous talented and experienced professionals; their contributions over the years have made process appraisals successful. The intent of the SEI Appraisal Program is to provide qualified professionals with the ability to creatively define appraisal solutions to satisfy organizational and process appraisal needs.

The vast experience gathered from the practical use of many different appraisal methods has played a substantial role in shaping SCAMPI B and C. The influence of the Software Process Assessment (SPA) and Software Capability Evaluation (SCE), which grew out of the original work by Watts Humphrey as well as subsequent generations of methods, such as the Capability Maturity Model Based Assessment for Internal Process Improvement (CBA IPI), SCE Version 3.0, and EIA 731.2, can be seen in the definition of these methods. The pilot appraisals were staffed with software and system professionals who brought experience with many other methods and models. These included the SEI's Interim Profile, and the suite of methods used by Honeywell, Intel, Lockheed Martin M&DS, Motorola, and the large group of acquisition-oriented organizations listed in the Acknowledgements section.

The intent of the SCAMPI B and C project was to define a robust framework that skilled and knowledgeable professionals can use to tailor an appraisal event to meet the needs at hand. There are many different ways to satisfy the Required Practices and the Parameters and Limits of the methods. Thus, there is no single (limited) definition of the set of operational procedures that compose the SCAMPI B or SCAMPI C methods. Rather, there is an explicit set of requirements and guidance for how to configure an appraisal event that meets the needs of the organization and satisfies the requirement for the method.

Method Objectives and Characteristics

The CMMI product suite includes the Appraisal Requirements for CMMI (ARC), which provides a publicly visible architecture for the specification of a variety of appraisal methods designed to meet common requirements. Key objectives for the SCAMPI B and C methods include

- broad flexibility to define an appraisal event to match business drivers
- selectable components that can be assembled to create an appraisal event
- a proven, well specified, and flexible framework to lower the risk and cost of separately building unique appraisal solutions

Documentation for the methods includes the specification of Required Practices, Parameters and Limits, and Guidance. Role-specific guidance sections also help to illustrate how the methods can satisfy a variety of needs that had previously been met only through use of different appraisal methods. Therefore, it is important to understand that a skilled and knowledgeable user is needed to design and perform these appraisals.

Method Core Concepts

SCAMPI Family Architecture

The SCAMPI family of appraisal methods contains three different appraisal method definitions (A, B, and C) that, in combination, span the range of typical appraisal objectives. The tailoring and scaling permitted in each method class is so wide that the three methods overlap in many respects; this overlap is evident when the full range of customized appraisal events and the options they support are considered in detail.

SCAMPI B and C are intended to support focused individual applications, as well as use in a multi-event, on-going program of improvement, acquisition, or consultation. Used in a progression, all three methods in the SCAMPI family can be tailored to enhance integration of data from one appraisal event to the next. The SCAMPI family is designed to be interoperable, where the specified outputs of appraisals can serve as inputs to subsequent appraisals.

Pilot tests of the methods revealed that there is a high-payoff sequencing and tailoring strategy: a sequence of appraisals focused on approach, then deployment, then institutionalization is used for a single organizational unit (or a group of organizational units). In this strategy, the first appraisal examines the approach taken (or planned) by the organizational unit to implement practices that satisfy the goals of the model. Later appraisals then examine the deployment of these practices (newly deployed or long institutionalized) to the projects or other groups within the organizational unit. Finally, the benchmarking appraisal (SCAMPI A) establishes a rating result to demonstrate institutionalization (either newly achieved or re-verified).

This sequence is best illustrated with an example from the B/C pilots. One organization had an existing CMM implementation and wanted to migrate to CMMI. The organization developed proposed changes to existing processes to make them CMMI-compliant. In addition, new processes were designed to address the process areas not found in CMM.

Step 1: A SCAMPI C was conducted on the proposed processes (approach) to determine their fidelity to the model. The question being addressed was: If these proposed processes are implemented, would they satisfy the goals and meet the intent of CMMI? Using the data from the

SCAMPI C, the organization could then make adjustments to these processes to increase their confidence of fidelity to the CMMI model.

Step 2: The processes were implemented in pilot projects. The SCAMPI B method could then be used to examine the results of executing these processes (deployment). A key question the SCAMPI B data could address was: If the processes examined in the pilot projects were broadly implemented, would they satisfy the goals and meet the intent of CMMI?

Step 3: The organization could then, with a higher level of confidence, broadly implement the processes. A SCAMPI A could then be used to validate institutionalization and establish a benchmark for the organization.

The utility of each method in the different phases of the process improvement/appraisal life cycle described above is affected by the decisions made in customizing the method for use. The SCAMPI C method is well suited for an appraisal focused on the approach taken to satisfying the goals of CMMI. Appraisals that focus on the deployment of processes across an organizational unit are less well supported by SCAMPI C, where more comprehensive data collection standards would be required to better support that focus. SCAMPI B, on the other hand, is well suited to either approach or deployment. The SCAMPI B method should require relatively less modification to accommodate either focus or even to focus on both approach and deployment. Limited information about institutionalization may also be obtained using SCAMPI B, with appropriate data collection standards. Finally, SCAMPI A can be tailored to accommodate all three types of focus.

SCAMPI Family Data Structure: Objective Evidence

The definitions for different kinds of objective evidence are given in the glossary of the Method Definition Document for SCAMPI A. They read as follows:

Direct Artifact: The tangible outputs resulting directly from implementation of a specific or generic practice. An integral part of verifying practice implementation. May be explicitly stated or implied by the practice statement or associated informative material [MDD method overview].

Indirect Artifact: An artifact that is a consequence of performing a specific or generic practice or that substantiates its implementation, but which is not the purpose for which the practice is performed. This indicator type is especially useful when there may be doubts about whether the intent of the practice has been met (e.g., a work product exists but there is no indication of where it came from, who worked to develop it, or how it is used) [MDD method overview].

Affirmation: An oral or written statement confirming or supporting implementation of a CMMI model practice. Affirmations are usually provided by the implementers of the practice and/or internal or external customers, but may also include other stakeholders (e.g., managers, suppliers) [derived from MDD method overview]. Interview responses are examples of oral affirmations. Alternative forms of affirmations could include presentations or demonstrations of a tool or

mechanism as it relates to implementation of a CMMI model practice (e.g., instruments including questionnaires, surveys, PII descriptions, and other written information that indicates practice implementation) [derived from MDD PII appendix B].

These data definitions are a hallmark of the SCAMPI family of appraisal methods. Each method can be made to work more efficiently by utilizing an organized structure for storing and presenting the objective evidence needed for the appraisal. Practice Implementation Indicators (PIIs) are one way objective evidence can be identified and documented in advance and in accordance with the definitions above. When a sufficient amount of such pre-defined evidence is available, the appraisal may be conducted in what is termed "verification mode." In verification mode an appraisal team does not need to search for data, only to verify the data presented. However, when such evidence is not prepared in advance, the appraisal is typically carried out in what is termed "discovery mode," because those conducting the appraisal must search for and discover the information and artifacts that can serve as objective evidence.

There are three general uses for the concept and structure of PIIs:

- as a suggested structure and content guide for "evidence" provided as input to the appraisal. The PII structure maps the objective evidence to the model and organization, facilitating the work of the appraisal team
- as a framework for data collection planning, progress tracking, and data interpretation
- as a format for summarizing appraisal data and results for future use

One strategy for using SCAMPI methods is to build a set of Practice Implementation Indicators gradually, through a series of informal appraisals. A baseline appraisal can be conducted at different points to ensure that an efficient verification-based appraisal is supported by the organization's knowledge of its own practices.

Types of Objective Evidence: Interviews and Documents

The combination of desired depth of model coverage and the breadth of organizational coverage sought will mandate the use of different types of objective evidence (e.g., documents or interviews). Interviews may take a collaborative workshop approach, with relaxed coverage requirements for objective evidence. Interviews can provide a very comprehensive source of data in an appraisal, as they permit interviewers to change focus "on the fly" to pursue practices described by the interviewees. Interviews may be selected as the primary data type in many implementations of SCAMPI B and C. Detailed review of artifacts can provide evidence that represent objectively verifiable data. Documents, which are often in electronic form, can help achieve greater coverage when paired with well planned interviews. It is this pattern of multiple converging data types and the sufficiency of the sample used (coverage) that support the strength of judgments made at the conclusion of the appraisal.

By tailoring the depth of coverage for both the organization and model, the SCAMPI C method can be configured as a bare-bones appraisal carried out by a single expert consultant, interviewing people over the course of a day, and yielding findings of strengths and weaknesses. The SCAMPI

C method can also be configured as a week-long event in which detailed reviews of documents are combined with interviews of a substantial cross-section of the staff in the organization. The choice to perform this latter, more robust, appraisal as a SCAMPI C may be prompted by the intent to use a single expert appraiser, or to use a collaborative approach in which the interviewees are enlisted to brainstorm new approaches, rather than providing objective evidence.

The SCAMPI B method carries a requirement for interview data as well as direct artifacts. There is a higher standard of data coverage to meet in the minimal configuration of the SCAMPI B method compared to the minimal configuration of the SCAMPI C method. The SCAMPI B method requires the use of a team and a consensus-driven process. The desire to avoid ratings is sometimes the key reason to select SCAMPI B. In such cases, the data coverage may meet (or exceed) the standards defined for SCAMPI A.

In summary, the use of a single data type, or a single appraiser, in order to minimize the cost of an appraisal will necessarily lead to the SCAMPI C method. When more than one data type is used, one of them being interviews, and a consensus-based appraisal is desired, the SCAMPI B is more frequently used.

Practice Characterization

CMMI establishes goals as required components, and the practices that relate to each goal are treated as expected components. It is important to view the practices in the model as examples. When characterizing practices, the intent is to describe the extent to which the organization has accounted for how each practice contributes to the achievement of the goal to which it relates. The nature of this contribution is governed by the context in which the process must be defined or implemented. It is tempting to try to find a one-for-one mapping between model practices and practices implemented in the organization. This is often unrealistic. Organizations frequently have multiple practices, sometimes from different parts of the organization, that when taken as a whole address the intent of the CMMI practice and contribute to goal satisfaction. A one-for-one mapping is not a necessary pre-condition to characterization of model practices. The organization’s objective evidence, and other appraisal data, are usually mapped to the model structure, rather than prescribing the implementation of practices and functions as specified in the model.

While practice characterizations apply only to practices, these outcomes can be grouped by model components, such as process areas or organizational groups such as projects. Each SCAMPI class has a characterization scale that is designed to match the minimum standards of data sufficiency for that method. These scales are defined in the following table.

Optional "Fidelity" Scale for SCAMPI C		Required Scale for SCAMPI B	
Low	The intent of the model practice is judged absent, or inadequately addressed in the approach; goal achievement is judged unlikely because of this absence or inadequacy.	**Red**	The intent of the model practice is judged to be absent or poorly addressed in the set of implemented practices; gaps or issues that will prevent goal achievement, if the deployment occurred in this way across the organizational unit, were identified.
Medium	The intent of the model practice is judged to be partially addressed in the approach, and only limited support for goal achievement is evident.	**Yellow**	The intent of the model practice is judged to be partially addressed in the set of implemented practices; some gaps or issues were identified, which might threaten goal achievement if the deployment occurred in this way across the organizational unit.
High	The intent of the model practice is judged to be adequately addressed in the set of practices (planned or deployed), in a manner that supports achievement of the goal in the given process context.	**Green**	The intent of the model practice is judged to be adequately addressed in the implemented set of practices examined, in a manner that would support goal achievement, if the practice were deployed across the organizational unit.

In addition to the above, a designation of "out of scope" is used when no characterization was assigned because the appraisal did not gather data to support characterization of the practice.

The purpose of the characterization scale is to support comparisons of different model components, or of different elements of the organizational unit. These differences draw attention to things that represent significant improvement opportunities. The absolute value of any given characterization result is of limited value. The characterization, along with a link to the evidence reviewed and the strengths and weaknesses found, can be very meaningful. The contrast among the characterization values conveys the beneficial information provided by this technique.

Findings and Other Appraisal Results

The vast majority of appraisals performed using the CMM and CMMI result in a slide presentation that catalogs or summarizes statements of strengths, weaknesses, or other descriptive findings. This presentation is typically structured in accordance with the structure of the model, and its length is determined by the model scope of the appraisal. The SCAMPI process requires analysis at a very detailed level. The high-level results typically found in the findings presentation are summaries based on individual comparisons between practices in CMMI and the planned or implemented practices in the organizational unit.

Beyond the findings presentation, SCAMPI B and C appraisals can provide profiles of practice characterization results summarized in categories determined by elements of the model or elements of the organizational unit (or both). A spreadsheet containing the red/yellow/green characterizations for elements (model and/or organizational) within the scope of the appraisal is often integrated with the findings presentation. The patterns in the characterization data are used to add emphasis or elaborate the findings statements as appropriate. This detailed, project by project, practice by practice, data collection and analysis has proven to be a very powerful approach. The data and judgments supporting the high-level findings can be recorded for later review and use.

Findings mapped to individual elements of the model, as well as individual elements of the organization, may be reported. Findings that do not specifically relate to the model but represent significant issues or strengths in the organization may also be reported. Findings that focus on the contrast between the organizational standards and project implementations may be selected as well. Finally, it is permissible to define custom specifications for appraisal outputs such as "anticipated return on investment from implementing the practice" or "estimated cost of implementing the practice."

A simple matrix or database of Practice Implementation Indicators may be developed incrementally over the conduct of several SCAMPI C or SCAMPI B appraisals. The less formal environment of the class C can serve as an opportunity to brainstorm with members of the organization. In a class B appraisal, the identified direct and indirect artifacts can be reviewed for relevance and appropriateness. Over time, the organization's confidence in the quality of the set of Practice Implementation Indicators improves, as more appraisals are performed and the database is incrementally refined.

Method Flow

At the most general level, every SCAMPI appraisal has three primary phases: (1) plan and prepare for the appraisal, (2) conduct the appraisal, and (3) report the results. Within this structure, the feasibility of the plan for the appraisal event must be evaluated during planning and throughout the conduct of the appraisal. The focus of data collection activities may require adjustments based on results from tracking against the defined set of desired information. Analysis of objective evidence, as well as other data collected for the appraisal, transforms the data into appraisal results that are then documented and reported to appropriate stakeholders.

The Appraisal Method User Perspective

Guidance for tailoring SCAMPI B and C methods is based on the perspective of the appraisal method user, who can be an internal change agent, a professional consultant, or an external auditor. This perspective has a strong influence on the tailoring decisions. The differences in tailoring occur most significantly in the planning processes (i.e., establishing the appraisal objectives, sponsorship, appraisal planning, and selection of participants) and reporting processes

(i.e., reporting appraisal results, use of results for decision making, and follow-on activities). Sets of tailoring options can be bundled together for application in specific domains.

Internal Change Agent

The internal change agent often works within the organizational unit being appraised. The internal change agent might be a member of the appraised organization or an employee of the company but external to the appraised organization. Appraisals in this context are commonly used to monitor implementation of process improvement actions, determine readiness for a more formal appraisal event, and to confirm remediation of weaknesses identified in previous appraisal activities. Knowledge of the organization –its structure, the dissemination of roles and responsibilities, and the history of individual people– provides a basis for insightful scoping and sampling decisions. The internal change agent knows the lay of the land and where the "skeletons" are.

Professional Consultant

The professional consultant is typically brought in on a temporary basis, though most consulting firms have ongoing business relationships with their clients. Professional consultants are typically used to enhance the perception of objectivity of appraisal results through use of a third party, to integrate highly specialized knowledge and skills, or to transfer competencies to internal staff by their participation in a team led by an expert. The findings and results provided are often used to initiate a program of model-based improvement or to monitor progress at meaningful milestones.

External Auditor

The external auditor may be from the same company as the appraised organization, but performing an auditing function; from a company considering or monitoring the appraised organization as a supplier; or from a government organization engaged in source selection or contract monitoring activities. While each of these appraisal users has an auditing responsibility, the government auditor has perhaps the most stringent environment in which to work. For this reason, much of the external auditor guidance offered in this handbook pertains to the often unique requirements placed on a government auditor. The government auditor, for example, uses appraisals to examine organizations' processes as input to a decision regarding future business. The two primary uses of these appraisals are for source selection and contract process monitoring. In source selection, appraisal results are used as a high-value discriminator to select suppliers. The results are used in characterizing the process-related risk of awarding a contract to a supplier. The appraisal results are typically one criterion among many used to select a supplier. Results are often used to establish a baseline that is used in subsequent process monitoring with the selected supplier. In contract process monitoring, appraisal results are used as input for an incentive/award fee decision or to monitor implementation of a risk management plan. The appraisal results are used to help the sponsoring organization tailor contract or process monitoring efforts by focusing on the observed strengths and weaknesses of the supplier organization's processes. These activities may be useful for commercial organizations in their selection of suppliers.

Chapter 2: Process Descriptions

Appraisal Processes ARC.4.1.2 ARC.4.1.2.a ARC.4.2.10	The SCAMPI B and C appraisal methods are defined according to three major phases that comprise any given appraisal. The phases are (1) plan and prepare for appraisal, (2) conduct appraisal, and (3) report results. These phases each contain a set of processes that can be tailored, within certain parameters, by the user. This chapter provides definitions of the required practices, parameters and limits of tailoring, and guidance associated with each of the processes. The responsibilities of the appraisal (team) leader are also detailed in this chapter. When the required practices are performed in accordance with the specified parameters and limits, valid enactments of SCAMPI B or SCAMPI C are assured.
1. Plan and Prepare for Appraisal ARC4.3	This phase consists of the following processes 1.1 Analyze Requirements 1.2 Develop Appraisal Plan 1.3 Select and Prepare Team 1.4 Prepare Participants & Obtain Initial Objective Evidence 1.5 Prepare for Collection of Objective Evidence
2. Conduct Appraisal	This phase consists of the following processes 2.1 Examine Objective Evidence 2.2 Document Objective Evidence 2.3 Verify Objective Evidence 2.4 Validate Preliminary Appraisal Outputs 2.5 Generate Appraisal Results
3. Report Results ARC4.7	This phase consists of the following processes 3.1 Deliver Appraisal Results 3.2 Package and Archive Appraisal Assets
Summary	Each of the 3 phases and 12 processes outlined above is covered in the remaining sections of this chapter.

Phase 1 Plan and Prepare for Appraisal

Overview	The minimum requirements for conducting planning processes and creating artifacts are specified in this section. This phase consists of the following processes:
1.1 Analyze Requirements	The appraisal input provides the foundation for planning and conducting the appraisal activities in a way that maximizes achievement of the appraisal sponsor's goals. The appraisal input must be documented and baselined (with the sponsor's signature) prior to the start of data collection that targets information related to model practices. "Sponsor" may be a different type of person when we consider different usage modes. In source selection, it is someone in the source selection organization rather than a senior manager at the site(s) where appraisal activities are carried out.
1.2 Develop Appraisal Plan ARC4.3.5	The appraisal plan forms the basis for communicating and maintaining commitments. Review by stakeholders and sponsor signoff are required.
1.3 Select and Prepare Team	For the SCAMPI B method, minimum standards for team composition and team preparation are described in detail. The SCAMPI C method does not require that a team be used.
1.4 Prepare Participants and Obtain Initial Objective Evidence	Preparing appraisal participants to contribute effectively to the appraisal requires consideration of the roles they are to play. The appraisal plan must include activities intended to communicate such information to the appraisal participants.
1.5 Prepare for Collection of Objective Evidence	The conduct of a readiness review is a requirement for all SCAMPI appraisals. The focus and conduct of the readiness review will vary depending on which method is being used.

1.1 Analyze Requirements

Overview

The needs and constraints of the appraisal sponsor must be determined in order to best tailor the appraisal method. The initial set of parameters that guide appraisal planning must be collected in an appraisal input document. When the appraisal planning is complete, all of the information from the appraisal input may migrate to the appraisal plan. In fact, use of a "draft appraisal plan" as the vehicle for documenting and obtaining commitment to the appraisal input is permitted, though not recommended unless the appraisal is to be a very short event that involves only a few people (e.g., fewer than 10 interviewees).

Required Practices

ARC.4.1.1.e

The appraisal team leader shall

- Meet or correspond with the appraisal sponsor
- Seek, clarify, and verify appraisal requirements
- Document and maintain the appraisal input
- Obtain sponsor approval of the appraisal input

Parameters and Limits: General

ARC.4.2.2.b
ARC.4.3.2
ARC.4.3.4

At least one interaction between the sponsor and the team leader—whether that interaction occurs in person, via telephone, or through written correspondence—is required in advance of final approval of the appraisal input. The suitability of the method selected (SCAMPI B or SCAMPI C) must be discussed.

Each of the elements of the appraisal input (detailed below) must be documented and approved by the appraisal sponsor. The method for packaging this information is to be selected by the appraisal (team) leader—however, use of the appraisal input template, provided by the SEI, is strongly recommended.

Final approval of the appraisal input must be designated by the sponsor, who must sign the document that contains the information. The team leader also signs the appraisal input document to indicate his/her understanding and commitment. This sign-off must occur before any interviews or artifact reviews may begin. Electronic signatures (e.g., an email indicating commitment to the appraisal input) are acceptable as long as they clearly identify the document upon which the agreement is based—typically by naming the document and its version number or publication date. The document containing the electronic signature must be printed and maintained with the appraisal artifacts as an element of the appraisal input.

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1.1 Analyze Requirements (continued)

Parameters and Limits: Required Contents of Appraisal Input

ARC 4.1.1.a
ARC.4.2.2.a
ARC4.3.3.a-n
ARC4.3.4

The appraisal (team) leader and the sponsor agree and coordinate revisions to the documented appraisal input, which must include every item listed below (Note: items marked with an asterisk [*] are elaborated in subsequent Parameters and Limits sections):

a. the identity of the sponsor of the appraisal, and the sponsor's relationship to the organizational unit being appraised
b. the appraisal purpose, including alignment with business objectives
c. the appraisal reference model scope*
d. the organizational unit that is the subject of the appraisal*
e. the process context*
f. the appraisal constraints*
g. the CMMI models used, including the version, discipline, and representation (staged or continuous)
h. a written affirmation that the appraisal (team) leader meets the minimum criteria specified by the SEI for leading SCAMPI B and C appraisals*
i. the identity and affiliation of the appraisal team members, including the appraisal (team) leader, with their specific appraisal responsibilities (if a team is used)*
j. the identity (name and organizational affiliation) of appraisal participants and support staff, with their specific responsibilities for the appraisal. For early drafts of the appraisal input, these participants may be specified by role, rather than by name. However, the names of all participants must be documented for sponsor review and approval prior to the start of interviews.
k. any additional information to be collected during the appraisal to support achievement of the appraisal objectives
l. a description of the planned appraisal outputs, including outputs to be validated, and stakeholders who will participate in the validation and those who will ultimately receive individual appraisal outputs
m. anticipated follow-on activities (e.g., reports, appraisal action plans, re-appraisal)*
n. planned tailoring of the appraisal method and associated tradeoffs, including the sample size or coverage of the organizational unit (Please refer to the Guidance section on tailoring, below, as well as the contents of Chapter 2 of this document for detailed information about tailoring.)

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1.1 Analyze Requirements (continued)

Parameters and Limits: Model Scope
ARC.4.2.1.a
ARC.4.2.1.b
ARC.4.2.3.a-b
ARC.4.3.3.c

The SCAMPI B and SCAMPI C methods are based on the Appraisal Requirements for CMMI (ARC) Version 1.1 and are intended for use with all variants of models published with Version 1.1 of the CMMI product suite.

The appraisal input must specify the detailed scope of the model under consideration in the appraisal. It is expected that a list of process areas and the capability level scope (when the continuous model representation is used) will be documented. However, if portions of process areas are sampled (to the exclusion of the rest of the process area), then a more detailed specification of the exact model scope must be documented—especially if some model components will be covered with data relating to only a subset of the organizational unit.

Parameters and Limits: Organizational Unit
ARC.4.1.1.b
ARC4.2.4.a-d

A description of the organizational unit must be documented. The written description must include identification of

- projects selected for inclusion
- functional elements selected for inclusion
- names of individuals sampled for participation and their affiliation to the included projects or functional elements

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Parameters and Limits: Process Context
ARC4.3.3.e

The documentation of process context must include

1. the size of the organizational unit
2. the demographics of the organizational unit
3. the application domain of the products or services of the organizational unit
4. the size, criticality, and complexity of products or services

These are attributes of the organization that help form the context in which engineering and management processes must be deployed and maintained. These contextual attributes therefore must inform the interpretation of implemented practices as they are compared to CMMI.

In the use of SCAMPI B or SCAMPI C in an acquisition or process monitoring context, there may be a need for more contextual information. In such settings, there is often a broader context in which the appraised organization must operate, and this context can have a bearing on the appraisal planning. For example, the rationale for selecting particular projects or participants might be tied to their future involvement in a contract under competition. Similarly, the involvement of a part of the organization with a corporate initiative may account for differences observed among participating groups. Items of this type must be documented in the appraisal input.

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1.1 Analyze Requirements (continued)

Parameters and Limits: Appraisal Constraints
ARC.4.1.1.d
ARC.4.3.3.f

The documented appraisal constraints must address

1. availability of key resources
2. schedule constraints
3. the maximum amount of time to be used for the appraisal
4. specific process areas or organizational entities to be excluded from the appraisal if the documented model scope of the appraisal does not already make this clear
5. the minimum, maximum, or specific sample size or coverage that is desired for the appraisal if there are such constraints communicated or implied by the sponsor
6. the ownership of the appraisal outputs and any restrictions on their use
7. controls on information resulting from a confidentiality agreement
8. non-attribution of appraisal data to associated sources (see the next section on Confidentiality and Non-Attribution)

The first five constraints typically form the initial input to planning and represent areas where compromise may be negotiated to meet the objectives of the appraisal sponsor. The last three constraints reflect efforts to protect the integrity and credibility associated with the appraisal process. These are elaborated more fully in the Parameters and Limits section below.

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1.1 Analyze Requirements (continued)

Parameters and Limits: Confidentiality and Non-Attribution of Data Sources
ARC.4.1.1.c
ARC4.2.15

Confidentiality of appraisal data and appraisal results is a principle that serves to enhance the integrity and credibility of the process. This principle mandates that the appraisal sponsor is the owner of the appraisal outputs. It also mandates that intermediate work products of the appraisal are to be viewed only by team members, and that specific information (raw data) provided by individuals is to be kept confidential, except as it appears in the appraisal results. The principle of confidentiality should be distinguished from the principle of non-attribution.

In no case shall the appraisal be designed in such a way as to identify, in the appraisal results, individual participants with the specific data they provide. This non-attribution requirement extends to a prohibition from associating (explicitly) the names of people providing data and the characterizations or findings that derive from those data. This does not preclude the potential for identifying groups or projects to which appraisal findings apply, as long as the individuals who provide data leading to those findings are not identified with the data they provide.

In some cases, the sponsor may request project-specific results, or results organized by some other grouping of organizational participants. Such lower-level aggregations of data are supported by the SCAMPI B and SCAMPI C methods. However, the intent to summarize the data in this way must be made clear in advance to all appraisal participants.

All appropriate mitigation steps must be taken to minimize the possibility of attributing data or results to individuals within the organization. This may include subtle considerations in the way findings are worded, or aggregating the results of several small groups that would stand out among others. In no case shall the agreed-upon reporting strategy be changed during the course of the appraisal if the potentially affected individuals have already provided data under an existing agreement for its use.

A more stringent set of confidentiality provisions is likely to be required for use of these appraisal methods in an acquisition context.

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1.1 Analyze Requirements (continued)

Parameters and Limits: Identification of the Appraisal Team and Appraisal Team Leader

The identification of the appraisal team and the appraisal team leader must include (by explicit statement or by reference) the qualifications they have met in order to serve in their designated roles. These qualifications include prerequisite engineering and management experience as well as the successful completion of prerequisite training. Please refer to the information under Process 1.3, Select and Prepare Team, for more elaboration of this topic.

In an acquisition context, prerequisites pertaining to applicable regulations or provisions for security clearances may also be relevant. It is required that all such matters be documented in the appraisal input, even if some information of this type would have to be omitted before the document could be provided to others (e.g., submitted to the SEI).

The SCAMPI C method does not require use of an appraisal team. In the appraisal input for this class, only the appraisal leader must be identified.

Parameters and Limits: Appraisal Input Template

An appraisal input template is available in the materials provided to SCAMPI Lead Appraisers[SM]. Use of this template is strongly recommended. One might choose not to use this template if there is a different template already in routine use within the organization for communicating this type of detailed information. In addition, one might choose to use a preliminary draft of an appraisal plan (based on an existing template) to document and communicate this information rather than creating an entirely separate document for the appraisal input.

Parameters and Limits: Anticipated Follow-on Activities

The appraisal input document must specify the follow-on activities that have a bearing on the conduct of the appraisal. Examples of such activities include the generation of a report summarizing the appraisal outcome or providing recommendations for improvement. In addition, the linkage of the appraisal to future appraisals to be conducted in the same organization should be documented in the appraisal input. Activities not directly tied to the appraisal event, such as process improvement plans, strategies at a corporate level, or acquisition-related events, are not expected to be documented in the appraisal input.

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1.1 Analyze Requirements (continued)

Parameters and Limits: Tailoring the Appraisal Method

The SCAMPI family of appraisal methods provides for a great deal of flexibility in customizing the application of the method to meet the needs of sponsors and organizations. The appraisal input must document important decisions about tailoring the method, which bear on how the results must be interpreted. All decisions regarding scoping, in terms of the model and the organizational unit, must be clearly documented. In addition, all decisions regarding the structure and content of the output must be documented, because understanding this information may affect the way some appraisal participants will respond to requests for information.

Significant decisions regarding the nature of data sought by the team, and the standards by which these data are treated, must also be documented in the appraisal input. This is not to say that the specific database structure used must be communicated in the appraisal input. However, if participants are expected to provide actual project artifacts (live data) and not just "process documentation," then this must be understood during planning. Similarly, if the team expects to update a set of practice implementation indicator descriptions (supplied by the organizational unit at the start of the appraisal), then this fact must be documented in the appraisal input.

Obviously, many detailed choices (e.g., where to eat lunch, specific questions to ask during interviews) will not be documented in the appraisal input. However, it is expected that a thorough review of the Required Practices and Parameters and Limits sections of this document will be performed during planning in order to identify tailoring decisions that warrant inclusion in the appraisal input.

Guidance: Model Scope

CMMI-based appraisals typically specify the process areas to be considered during the appraisal, along with the highest expected rating. With SCAMPI B and SCAMPI C, it is permissible to sample model content at a more detailed level. Because no goal ratings or capability/maturity level ratings are permitted in classes B and C, there is no requirement to include an entire process area, although it is expected that most appraisals will sample according to process areas. For example, a sponsor might choose to examine a single goal (and its associated practices) within a particular process area, or a set of generic practices associated with one or more process areas.

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1.1 Analyze Requirements (continued)

Guidance: Organizational Unit

Objectively documenting the definition of the organizational unit clarifies the portion of the organization to which the appraisal results can be legitimately generalized. The extent to which the sampled appraisal participants adequately represent the views of the organizational unit, as a whole, may be estimated during data collection in order to gauge generalizability of appraisal outputs.

Some appraisals are applied to organizational units defined narrowly as a set of four projects. Other appraisals sample practitioners and managers from across the organizational unit, as well as the people within the individual projects identified to comprise the organizational unit. This type of sampling strategy may tend to improve the veracity of the appraisal outcomes. The sampling strategy must be documented in the appraisal input.

The initial draft of the appraisal input may lack some details like the names of individuals sampled for participation. However, a list of projects and functional elements selected—or the set from which the final selection will be made—is typically specified. Not every project involved in the appraisal may provide data for every model element included; this aspect of sampling is also described in the appraisal input.

Guidance: Appraisal Input

The use of a clearly defined appraisal input is one of the hallmarks of SCAMPI appraisals. This artifact establishes a well-defined basis for performing appraisal activities.

For external audits, laws, regulations, or contractual restrictions may limit the availability of certain information based on sensitivities associated with the appraisal. This may lead to creation of a baseline appraisal input document initially, with some information missing. As the information becomes available, the input is updated and reapproved by the sponsor. The sponsor, in this context, is likely to be a responsible manager from an external organization, and not a senior site manager from one of the organizations appraised. The senior site managers are stakeholders in the appraisal process, but they should not be treated as appraisal sponsors in this context.

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1.1 Analyze Requirements (continued)

Guidance: Linkage Between Appraisal Objectives and Business Goals

The linkage between the business goals that drive choices in an organization's strategy, and the role to be played by the appraisal in furthering those goals, must be well understood. The sponsor's rationale for conducting an appraisal is typically a very important part of the information sought by appraisal participants.

By documenting the purpose of the appraisal and its alignment to the business goals of the organization, the appraisal (team) leader frequently serves to make this alignment more apparent in the organization. In addition, the communication between the appraisal (team) leader and the sponsor can encourage greater understanding of the set of tactical actions sponsored in pursuit of business goals.

This dialog between the sponsor and the appraisal (team) leader at the very start of appraisal planning frequently influences sampling strategies for projects and individuals. For example, consider an organization that has a set of legacy projects based on older technology, and a set of leading edge projects based on new (perhaps unproven) technology. The choice to include one or the other (or both) types of projects should be driven by the anticipated benefits—which might be unique to these two, potentially very different, contexts.

As another example, consider an acquisition setting where a large number of bidders are expected to respond. The sponsor might choose a phased approach in which SCAMPI C appraisals are used to "down-select," followed by a smaller number of SCAMPI B appraisals to be used in making a final selection. The business goals in this context may also influence the model scope of the appraisal as well as the type of outputs needed.

Guidance for the Internal Change Agent

Use of the draft appraisal plan as the vehicle for documenting and obtaining commitment to the appraisal input will be more feasible in this environment. The internal change agent may have more opportunity to interact with the sponsor on review and approval of documents, allowing successive versions of the same document to be used as the planning continues. The ability to "get something on the manager's desk" is greater through internal channels, which might not be available to the professional consultant or the external auditor.

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1.1 Analyze Requirements (continued)

Guidance for the Internal Change Agent (continued)

As a member of the organization, the internal change agent may also be more able to identify subtle issues relating to appraisal objectives. This deeper insight will also inform choices about scoping the appraisal. When the internal change agent is able to select parts of the model that will help bring attention to successful improvement efforts and help motivate sponsorship for solving other challenges, he or she may be most qualified to focus this type of effort. In addition, past experience interacting with members of the organization will contribute to more strategic sampling and selection of interview participants.

The following sampling strategies may be useful in this context:

- uneven sampling of model detail, where some process areas or goals are covered with much more detailed data while others are covered only at a high level
- selection of Generic Practices as the focus of the appraisal
- examination of integrated product and process development (IPPD) content from the CMMI models that include IPPD, with limited inclusion of the rest of the model
- a focus on supplier agreement management alone
- a focus on an individual process area category (e.g., Project Management, or Engineering)

The internal change agent works within the same system of rewards and incentives (and disincentives) in which the process improvement program exists. The internal change agent is frequently called upon to convince stakeholders that the goals of the appraisal process are not in conflict with the goals of the improvement program. In many organizations, the availability of key resources is a major issue. An internal change agent will often test the bounds of sponsorship (out of necessity) to get the "right people" involved in the appraisal. A professional consultant may have a better bargaining position in some cases.

The influence of corporate and local initiatives sometimes leads to differences in practices used in prior projects. This will affect the sampling choices, because too much variation within a small sample will make it very difficult to aggregate information. Responding to sponsors' interests in validating the return from previous improvement efforts—or providing recommendations about an ongoing (or future) effort—may influence the scope and schedule of the appraisal.

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1.1 Analyze Requirements (continued)

Guidance for the Professional Consultant

The professional consultant must possess competencies that enable him/her to quickly learn the business objectives that drive the need for an appraisal, and to then tailor the method to accommodate the context in which it will be used. Efficient ways to gather information and avoid miscommunication are needed. The professional consultant may never get the opportunity to understand the full detail of the managerial, cultural, and political systems that govern the organization. This has both positive and negative implications for people who choose this line of work.

The contracting process for consulting services will often include provisions for executing a non-disclosure agreement, and it may require other actions that potentially delay the work or expand the effort required to perform it. Estimating without considering these issues may lead to significant problems.

Documenting a separate appraisal input, prior to providing a draft appraisal plan to the sponsor, can support a more explicit commitment process—which can support maintenance of sponsorship if it should be called into question. This document as well as the appraisal plan can be identified as deliverables and treated more formally in this context than in others.

The professional consultant typically offers a variety of services in addition to process appraisals. Organizations often hire a consultant for improvement support, with appraisal services being a relatively small part of the work. The professional consultant frequently plans appraisals to support the generation of data and information in the context of an ongoing program of training and consultation. While the internal change agent may have better access to information and insights that support this integration, the professional consultant will have a broader frame of reference from his/her experience of working on improvement programs in other client organizations.

A purely education-oriented appraisal is a common service offered by professional consultants. Using a workshop format, organizations can perform a gap analysis or receive focused training on some aspect of process or process improvement. The SCAMPI C method supports many different approaches like this.

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1.1 Analyze Requirements (continued)

Guidance for the External Auditor

The sponsor for an external audit may be from an external organization and not a senior manager at the site(s) where appraisal activities are carried out. Some of the information required in the appraisal input (such as process context and organizational unit) that could otherwise be provided by the sponsor must be collected from the organization being appraised.

The external auditor may work in the context of a government or corporate appraisal. In either case, there may be multiple appraisal on-site periods being planned, with a sponsor who represents an external authority to the organization(s) being appraised. Planning many site visits with an overarching appraisal input and/or appraisal plan can be an effective strategy for making the best use of the sponsor's authority.

There are frequently numerous and diverse stakeholders to the performance of appraisals in this context. Relevant stakeholders may include the sponsor, program manger, contracting officer, and personnel responsible for the acquisition and source selection.

If the appraisal is part of outsourcing or acquisition decision-making, analyzing requirements should occur early. The SCAMPI planning activities should be integrated with the other activities and scheduled accordingly.

It may be more challenging to devise sampling strategies for projects and appraisal participants in this context. Organizations teaming to bid on a contract, or virtual organizations being monitored over time, present special challenges to the collection and reporting of data that best represents the process of interest. For supplier selection uses, the connection between the people and projects appraised, and the "to be formed" project, is sometimes very difficult to establish. Identifying the specializations and skill levels needed on the future project, and assuring that the appraisal includes the "right people," is often the strategy to employ, unless the team is already intact.

Using a SCAMPI C to "down-select" from a larger group of potential suppliers, then following with focused SCAMPI B appraisals, can be an effective strategy for managing appraisal resources when the contract under consideration is of sufficient magnitude.

The intent to use appraisal results in the context of an acquisition or contractual situation will place requirements on the nature and content of the appraisal outputs. These matters must be understood and communicated to stakeholders, such as appraisal team members, appraisal participants, and recipients of appraisal outputs.

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1.2 Develop Appraisal Plan

Overview

An appraisal plan forms the basis for realistic commitments and serves as the basis for monitoring and controlling the appraisal process. Therefore, both uses of the plan (establishing commitments and monitoring the process) are addressed in the requirements for developing an appraisal plan.

Required Practices
ARC.4.1.2.b

The appraisal team leader shall

- Document and maintain the appraisal plan
- Obtain sponsor approval of the appraisal plan

Parameters and Limits: General
ARC.4.3.5

All required elements of the appraisal plan must be included in the final version of the appraisal plan. Preliminary versions that lack individual items (e.g., logistical details) may be used to manage the commitment process—especially if the process of documenting the appraisal plan must begin prior to the designation of an appraisal (team) leader.

Final approval of the appraisal plan must be designated by the sponsor, who must indicate his/her approval by signing the document. The team leader must also sign the plan to indicate his/her understanding and commitment. This sign-off must occur before any interviews or artifact reviews may begin.

Electronic signatures may be used as long as the same parameters and limits specified for electronic signatures in Process 1.1 are met.

Parameters and Limits: Required Contents of Appraisal Plan
ARC.4.2.12
ARC4.3.5.a-e

At a minimum, the appraisal plan must include the following:

1. the appraisal input (by reference if desired)
2. the activities to be performed in conducting the appraisal
3. resources and schedule assigned to appraisal activities
4. appraisal logistics
5. risks and mitigations to appraisal planning and execution

Parameters and Limits: Sponsor Responsibilities
ARC 4.1.1
ARC 4.2.9

The appraisal sponsor is responsible for assuring that the appraisal input is accurate and that the appraisal plan includes the appropriate information as he/she reviews and approves these documents. The sponsor must ensure that the commitments made during planning are realistic and that they are met.

Parameters and Limits: Review of Appraisal Plan

If an appraisal team is used, each member of the team must be provided an opportunity to review the plan prior to its approval by the appraisal sponsor. The sponsor may also designate other people to review the plan as he/she deems appropriate.

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1.2 Develop Appraisal Plan (continued)

Parameters and Limits: Revision of the Appraisal Plan

The appraisal plan is baselined when the appraisal sponsor signs it to reflect her/his commitment to the appraisal reflected in the plan. If and when any element of the appraisal input must change, the appraisal plan must be re-baselined through review and sign-off on a revised version of the plan by the sponsor and appraisal (team) leader. The evolution of the plan must be documented. This is typically done using a "change history page" within the plan.

Parameters and Limits: Appraisal Plan Template

An appraisal plan template is available in the materials provided by the SEI. Use of this template is strongly recommended. One might choose not to use this template if there is a plan template in wide use in the organization and use of that template would result in more effective planning and monitoring.

Parameters and Limits: Risk Management

Appraisal planning must address any risks to the appraisal in order to be considered complete. It is not sufficient to merely identify perfunctory issues, such as resource constraints and the possibility that a team member might take ill, which are typical and generally mitigated with general contingency planning.

It may also be important to identify and mitigate risks that pertain to planning. Where large numbers of people must participate in planning, or where potential barriers to obtaining and/or providing important information exist, risks and mitigation strategies for effective appraisal planning must be documented.

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1.2 Develop Appraisal Plan (continued)

Guidance: Risk Management

Appraisal planning must address any risks to the appraisal in order to be considered complete. It is not sufficient to merely identify perfunctory issues, such as resource constraints and the possibility that a team member might take ill, which are typical and generally mitigated with general contingency planning.

It may also be important to identify and mitigate risks that pertain to planning. Where large numbers of people must participate in planning, or where potential barriers to obtaining and/or providing important information exist, risks and mitigation strategies for effective appraisal planning must be documented.

Effective risk management planning addresses key assumptions on which the success of the appraisal is based. For example: "The appraisal on-site period will take place at the ABC Company campus from <specified dates>". This statement in an appraisal plan presumes the given facilities are available and the dates are open for all participants. Questions to ask include: Is the facility available and have the appropriate rooms been set aside for participants and team members? Do the dates cited encompass any national holidays, company events, or major events, such as a program review of a key participant? If positive responses to the questions are not forthcoming, then mitigation and contingency planning should be invoked and documented in the appraisal plan. Similarly, involvement of personnel with particular types of capabilities or information is an area where risk mitigation planning is frequently inadequate. Risks that simply state "key participants may be unavailable" are not adequate without documenting the context—for example, "key participants may be unavailable due to concurrent ISO audit, which cannot be rescheduled." Documenting the needs to be fulfilled by such people will be necessary in order to find replacements, in the event the risk is realized and becomes a problem.

Contingency planning, by adding buffer time to the schedule or identifying alternate participants for key (or all) interview participants, is also an element of risk management planning.

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1.2 Develop Appraisal Plan (continued)

Guidance: Relevant Stakeholders

The purpose of documenting a plan includes forecasting the future to set expectations, as well as establishing a basis for determining corrective actions if reality departs from initial expectations. The involvement of relevant stakeholders in drafting and reviewing the plan facilitates their participation and helps to assure their buy-in if corrective actions are needed. The following role names describe people who are typically considered relevant stakeholders for the appraisal plan:

- appraisal sponsor
- appraisal team leader
- appraisal team members
- administrative staff supporting on-site activities
- sponsor-designated personnel in the organizational unit
- sponsor-designated acquisition agents

Guidance for the Internal Change Agent

For the internal change agent, the appraisal typically plays a role in an ongoing program of sponsored change. Given this backdrop, the appraisal plan can be an asset to be used to reinforce a coherent image of sponsorship. The linkage between business goals and appraisal goals documented in the plan can be a touchstone for members of the organization, and may need to be written to be consistent with other published information in the organization.

The contents of the plan may also include more of the pre- and post-appraisal activities than would otherwise be typical for appraisals led by people external to the organization. The internal change agent may also include more sponsorship-building activities as part of the appraisal as well. Opportunities to have “all-hands meetings” or other activities to facilitate communication during the appraisal may be desirable.

Finally, risk and risk mitigation planning may be influenced by similar planning associated with the larger improvement program. The implication that risks arising during the appraisal can affect the success of the process improvement program can be articulated. Mitigation strategies to address risks can be documented in the appraisal plan to elevate their visibility to the sponsor, who commits to the plan (and the risk mitigation strategies) by signing the document.

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1.2 Develop Appraisal Plan (continued)

Guidance for the Professional Consultant

The professional consultant may manage relationships and planning using a variety of documents in addition to the appraisal plan. Frequently there is an overarching contractual document that lists the appraisal plan as one of the deliverables. It is rare that the appraisal plan is the only document used to establish sponsorship and commitment to the appraisal.

The distinction between the appraisal input and the appraisal plan may be more pronounced for the professional consultant. The availability of key information to plan the appraisal may be very limited in the early stages of planning. Therefore, creating a separate appraisal input document may help to establish commitment early on, without having to wait for more complete information. In addition, the possibility that changes will be needed as new information is obtained is greater for the professional consultant, who must frequently rely on people she/he does not know very well.

Because the professional consultant does not typically work in the appraised organization, her/his familiarity with the location, culture, and policies of the organization may be limited. Logistics planning, as well as provisions for security (e.g., badging, access to electronic media, and the ability to receive documents in advance) may require more attention in the appraisal plan.

Risk planning often takes on added importance, as the ability to spend adequate time examining data and information in advance may be limited. Risk of misconceptions regarding objective evidence mapping, or failure to identify key personnel to participate in the appraisal, may necessitate more readiness reviews as well as much more explicit elaboration in the appraisal plan. Strategies to prioritize appraisal goals, develop contingency plans to reduce the appraisal scope, and build extra reserves for time and personnel can be very important.

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1.2 Develop Appraisal Plan (continued)

Guidance for the External Auditor

The external auditor may be required to satisfy requirements about the nature of information she/he is permitted to reveal to the organization, as well as requirements that limit access to the organization. The validation of preliminary findings may be constrained to one-way communication using documents rather than a "live" presentation. The appraisal plan must consider solicitation updates, a strategy for providing feedback on findings through discussions or other mechanism, and a strategy for delivering final findings post award.

When the appraisal is used to monitor performance on an existing contract, the appraisal plan may become an element of the contract. It may be necessary to address the strategy for conducting appraisals across the development life cycle as part of risk mitigation. The relevance of contractual implications associated with the appraisal may be addressed or referenced in the appraisal plan as well.

Many of the risks described in relation to the professional consultant may apply as well. However, for the external auditor, there may be more limited flexibility in re-planning events or making other mid-course corrections. The appraisal goals of the external appraisal sponsor may not always be perceived as benevolent to appraisal participants. Planning must ensure that interactions during the appraisal yield the necessary outcomes without undue perturbation to the business of the organization being appraised.

1.3 Select and Prepare Team

Overview

Use of an appraisal team is required for SCAMPI B, but not required for SCAMPI C. However, as a team-based activity, appraisals gain a great deal of momentum from the participation of people with diverse perspectives and experience. Use of a team in the performance of a SCAMPI C is recommended in contexts where there is sufficient workload and support to justify the expenditure.

Required Practices
ARC.4.1.2.d

If performing a SCAMPI B, the appraisal team leader shall select team members who meet the criteria—individually and as a group—specified in the sections on qualifications, below.

If using a team in performing a SCAMPI C, the information specified below shall be documented. Although the minimums may not be met, the team leader must specify the actual experience levels present on the team.

If using a team, the appraisal team leader shall provide training in accordance with the requirements specified below.

Parameters and Limits: Appraisal (Team) Leader Qualifications
ARC.4.2.6.a-c

The CMMI Steward maintains a program of qualification, training, and monitoring for SCAMPI Lead Appraisers. Information relating to the specific qualifications required of appraisal (team) leaders is published on the SEI's Web site at http://www.sei.cmu.edu.

Parameters and Limits: Team Member Qualifications
4.2.5.a-c
4.2.7

The minimum acceptable team size for a SCAMPI B appraisal is two people, including the team leader. SCAMPI C does not require a team.

In selecting team members for a SCAMPI B, the following criteria must be met:

Experience Category	Individuals	Team
Engineering Discipline (each discipline in scope)	At least 5 years on average	At least 10 years total
Management	At least one with 5 years	At least 5 years total
Each life-cycle phase used by the organizational unit	The team must include experienced practitioners for at least the majority of life-cycle phases in use.	
Completion of the Introduction to CMMI course taught by an SEI-authorized instructor	Each team member must successfully complete model training prior to participating in the appraisal.	

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1.3 Select and Prepare Team (continued)

Parameters and Limits: Documenting Team Member Qualifications

A table (or other form of documentation) summarizing the satisfaction of minimum requirements (for SCAMPI B) or the actual level of experience on the team (for SCAMPI C) must be included in the appraisal input, per the Parameters and Limits specified in Process 1.1: Analyze Requirements.

Parameters and Limits: Prerequisite Training for Team Members

Every team member must complete the required model training; this is a uniform requirement for all SCAMPI methods. To serve as a team member on a SCAMPI, one must successfully complete the Introduction to CMMI course. This course must be taught by an SEI-authorized instructor working on behalf of an SEI Partner in order to be accepted.

Parameters and Limits: Team Training Requirements

The team training materials used by SCAMPI Lead Appraisers are expected to be tailored and customized, as appropriate, for use in preparing teams for a given appraisal. Depending on the scope of the appraisal, and the level of responsibility assigned to the team members, different subsets of the standard team training are to be used.

At a minimum, all team members must be trained on the following topics using information from the SCAMPI B team training materials provided by the SEI:

- SCAMPI method overview
- appraisal planning, including the contents of the appraisal plan
- objective evidence collection and analysis
- team decision making
- appraisal confidentiality and non-attribution
- practice characterization
- findings development, verification, and validation
- appraisal output requirements

For teams involved in U.S. government source selection or contract monitoring appraisals, team members must also be trained in

- applicable laws, regulations, and policies that affect the appraisal, such as Federal Acquisition Regulations, DoD service, or organization regulations and policies
- role of the appraisal and the appraisal team in the source selection or contract monitoring processes and structures
- limitations on findings development, validation, and release
- special domain and/or model requirements (e.g., space, C21, IT: supplier sourcing, statistical process management)

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1.3 Select and Prepare Team (continued)

Parameters and Limits: Team Member Roles and Responsibilities
ARC 4.2.8

The appraisal team leader (when a team is used) is responsible for defining specific roles and responsibilities for each member of the team. Balancing the workload of appraisal activities and matching individual tasks to the skills and talents of the team members are essential responsibilities of the team leader.

Guidance: Use of Mini-Teams
ARC 4.2.8

In appraisals with a substantial model or organizational scope, appraisal team leaders frequently divide the appraisal team into mini-teams in order to distribute responsibility evenly across the team. This strategy, if used, must be made clear to team members as they are trained in how to fulfill their specific responsibilities.

Most often, each mini-team is assigned a subset of the process areas in the scope of the appraisal, for them to take primary responsibility for data collection and initial analysis. Later the larger team reviews the results of the work of each mini-team.

In other situations, mini-teams are assigned to focus on individual projects included in the appraisal. This arrangement is particularly beneficial when the number of projects included in the appraisal exceeds the number of process areas included in the appraisal.

Guidance for the Internal Change Agent

It is important for the internal change agent to select team members who are considered credible by the organization. The people selected are typically proponents of process improvement from different parts of the organization. Members of an engineering process group are very often selected as team members. Managers and other people with authority over a large number of the interview participants are frequently avoided because their participation may influence the interaction among appraisal participants in unproductive ways, though a strict prohibition against their involvement may not always make sense.

In selecting the appraisal team members, consider selecting individuals who are familiar with the participating projects, have a working knowledge of the organizational standard process, and can easily access or locate additional artifacts. Drawing from a pool of established experts who are accustomed to working together limits the need for extensive team training and provides savings over time for organizations that conduct frequent appraisals.

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1.3 Select and Prepare Team (continued)

Guidance for the Professional Consultant

The professional consultant will frequently mentor one or more points of contact from the organization to aid in the transfer of knowledge. This person (or people) will facilitate access to information and people in the organization. The type of coaching and mentoring they receive will often be more detailed and time-consuming than for other members of the team. Team members from within the organization are often selected on the basis of their familiarity with the operating procedures of the organization and the projects involved in the appraisal, as well as their ability to locate information needed to perform the appraisal.

Training offerings may be elaborate or very streamlined, depending on the focus of the consultant and the nature of his or her agreement with the customer. Organizations sometimes use consultants for a series of training and mentoring activities in which the appraisal is only one event. The goal of the overall engagement is often to build "organic capability" in the organization for using the tools and techniques employed by the professional consultant.

As a team leader from outside the organization, the professional consultant must gain familiarity with the relevant characteristics of the organization in order to make reasonable interpretations of CMMI. This process can include presentations and interviews during the training activities, especially if team members external to the organization are used. The professional consultant might also receive a briefing to become acquainted with the organizational unit's characteristics and documentation, the structure of the organization's standard process, and descriptions of the projects involved. This increases the consultant's understanding of the context of the appraisal. Learning the roles and responsibilities deployed in the organization is typically addressed as well.

It is often critical that training activities adequately demonstrate and explain data collection and management tools to be used.

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1.3 Select and Prepare Team (continued)

Guidance for the External Auditor

Appraisals led by external auditors are sometimes part of a series of appraisals in which multiple organizations are examined. In some situations, multiple teams may work in parallel or in succession to collect information that will be used to monitor ongoing activities or to make a decision that affects multiple organizations. Also, there are sometimes significant financial implications for the participants in the appraisal(s). Single-person SCAMPI C appraisals are not likely to be appropriate for many situations where an external auditor is required.

The appraisal team members frequently receive a briefing to acquaint them with the organizational unit's characteristics and documentation and the structure of the organization's standard process as well as descriptions of the projects involved. This increases the team's understanding of the context of the appraisal. Learning the roles and responsibilities deployed in the organization is typically addressed as well.

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1.4 Prepare Participants and Obtain Initial Objective Evidence

Overview

One hallmark of all SCAMPI appraisals is an emphasis on the structured use of objective evidence acquired early in the appraisal process. The important distinction between the "discovery" and "verification" approaches to appraisal provides a basis for differentiating the efficiency of the appraisal process.

A documented set of Practice Implementation Indicators (PIIs) is not a required input for the SCAMPI family of methods. However, efficiency is greatly enhanced if objective evidence can be identified in advance and then associated with elements of the organization as well as components of the model. The availability of such key information shapes the data collection plan, and it is typically discussed with personnel who are supporting the appraisal activities at the site where it is being conducted. The formality with which this process is conducted must be matched to the nature of the data collection envisioned for the appraisal.

Finally, preparing the members of the organization who will participate in the appraisal tends to enhance the success of efforts aimed at getting objective evidence in advance. Communication mechanisms used in preparing participants range from formal presentations to brief email or voicemail messages. Appropriate levels of detail regarding the data structure, described below, will need to be made clear to different appraisal participants.

Required Practices

The appraisal team leader shall

- Establish and communicate a strategy for preparing appraisal participants to provide needed information
- Communicate with appraisal participants to establish expectations and answer questions
- Obtain an initial set of objective evidence
- Inventory the objective evidence

Continued on next page

1.4 Prepare Participants and Obtain Initial Objective Evidence (continued)

Parameters and Limits: Communication with Appraisal Participants
ARC.4.1.2.c
ARC4.3.1.a-e

The strategy for preparing appraisal participants may include written communications, formal presentations, and direct interaction with individual appraisal participants (one on one). Information about the purpose of the appraisal and the roles and responsibilities of participants must be provided to everyone who will supply data to the appraisal. In a supplier selection application, the request for proposals (RFP) or other similar communications should be used as an element in the appraisal communication strategy.

The communications used to prepare participants must cover the following content:

1. purpose of the appraisal
2. scope of the appraisal
3. appraisal approach
4. roles and responsibilities of participants
5. schedule of appraisal activities

Every participant must have an opportunity to understand the same basic information about the appraisal and must have a way to communicate a question to the appraisal (team) leader.

Parameters and Limits: Confidentiality and Non-Attribution Provisions
ARC4.2.15

Agreements with the appraisal sponsor, as reflected in the appraisal input, must be included in communications with appraisal participants. Depending on their potential impact, this topic may be covered during every interaction with the participants of an appraisal.

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1.4 Prepare Participants and Obtain Initial Objective Evidence (continued)

Parameters and Limits: Use of Practice Implementation Indicators

As a data structure, the use of Practice Implementation Indicators (PIIs) is required. Specific requirements are

- the classification of artifacts into direct and indirect indicators of practice implementation
- labeling affirmations as a distinct source of data
- associating each item of evidence with a particular practice in a CMMI model (or a non-model category)
- associating each item of evidence with either a given project or an organizational function
- using inventories of data based on this framework to establish that sufficient data have been examined to support appraisal outcomes. Section 2.3 in Parameters and Limits provides further discussion on this topic.

In light of this structure, the data may be rather incomplete and lacking in detail in a SCAMPI C appraisal as compared to SCAMPI A. However, it is expected that this data structure will always be used.

Use of this data structure in reporting outcomes of the appraisal, while strongly encouraged, is not mandatory.

Parameters and Limits: Obtaining Initial Objective Evidence

Initial objective evidence may be as much as a complete set of PII databases with supporting documentation integrated using hyperlinks, or as little as a document that maps elements of CMMI to processes and/or artifacts used in the organization. For SCAMPI C, the initial objective evidence may be merely a set of notes written by the appraisal (team) leader during a telephone conversation with the sponsor.

While the initial set of objective evidence need not conform to the PII structure described above, the data used during the appraisal process must be organized in this way.

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1.4 Prepare Participants and Obtain Initial Objective Evidence (continued)

Parameters and Limits: Inventory of Initial Objective Evidence

Objective evidence must be labeled and inventoried in order to determine how much evidence there is for:

- each practice included in the scope of the appraisal
- each project included in the scope of the appraisal
- each type of data (i.e., direct artifacts, indirect artifacts, and, where appropriate, affirmations)

The amount and quality of objective evidence obtained in advance must be considered in preparing for future activities, also taking into account the minimum amount of evidence required to support valid appraisal outputs, which is specified later in this document.

The inventory must be sufficiently well documented to support detailed planning for discovery of the objective evidence still needed to meet the minimum standards. Documenting these results in the format of a PII database is recommended but not required. Such a structure (which is required to organize data later) displays the different types of evidence available for each practice and for each project (as appropriate) included in the scope of the appraisal.

It is not expected that each item of evidence will be reviewed for sufficiency at this point. However, a cursory review of the contents of the evidence provided will help identify any gross misconceptions that could threaten the proper interpretation of the evidence. A much more detailed examination, which includes a focus on the appropriateness of individual items, is carried out during the readiness review (described below). At this stage in the process, the inventory should focus only on applicability and suitability, at most, and not on sufficiency of the evidence in meeting the intent of the model practice.

Guidance: Opening Meeting

A group meeting or larger presentation frequently provides the best forum for communication with the entire set of participants. This type of venue is desirable because it provides added visibility for the activities of the appraisal and the support of the management in the organization. In this meeting, participants are encouraged to ask questions to ensure that they all understand the expectations for their participation, and that other participants can hear the same information in response to these questions.

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1.4 Prepare Participants and Obtain Initial Objective Evidence (continued)

Guidance for the Internal Change Agent

The preparation of participants for the appraisal is likely to be one of the ongoing responsibilities of the internal change agent. Briefings or other communications that orient participants regarding their roles and participation may be part of an ongoing communication strategy, and they may require more coordination and advance notification.

Extensive databases and document libraries may be under the management of the internal change agent or one of his or her peers. The internal change agent frequently works in the organization to amass information, index it appropriately, and review it in advance of an appraisal. Familiarity with the data that forms the basis for the appraisal can provide great efficiency.

Guidance for the Professional Consultant

Whether working to perform a single appraisal or delivering services to an organization on an ongoing basis, the professional consultant typically employs a communication strategy for preparing participants. Information-sharing briefings, written communications, or teleconferences may be used.

As an "outsider" the professional consultant frequently faces limitations on the amount of data and insight she or he can obtain in advance of the appraisal. Classification or proprietary restrictions may also limit the consultant's ability to take materials away from the organization's office locations for review in advance or in off-hours during the appraisal.

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1.4 Prepare Participants and Obtain Initial Objective Evidence (continued)

Guidance for the External Auditor

For the external auditor, preparing participants could take the form of emails describing the appraisal process or a briefing on the first day that the appraisal (team) leader is on site. The appraisal participants typically require a vehicle for asking questions about the appraisal.

For government source selections, this could be an official bidders' correspondence procedure. For commercial source selections, this could be email, telecom, briefings, or meetings with company representatives.

In either case, considerations for fair competition may influence the communication strategy as well as the strategy for obtaining the initial objective evidence.

Because source selection requirements may include constraints on the level of interaction allowed with the bidder, initial data may not be available for team training. The data collection plan may also need to be updated to address schedule changes. Updates must be coordinated with the sponsor to determine appropriate actions, which might include adjusting the appraisal schedule to allow for a discovery-mode appraisal.

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1.5 Prepare for Collection of Objective Evidence

Overview

The performance of a readiness review provides risk mitigation for situations where completion of the appraisal process is contingent on sufficiency of data examined during the appraisal.

As a more general technique, great utility can be found in conducting readiness reviews to assess satisfaction of entry criteria for any activity. In some situations, the motivation of an upcoming readiness review can lead to clarification of vague entry criteria.

Required Practices: General

The appraisal team leader shall

- Use the appraisal input, appraisal plan, and other artifacts created in planning the appraisal to plan for the collection of objective evidence.
- Use one or more readiness reviews to evaluate the feasibility of the plan for collecting objective evidence and the plan for the appraisal in general.
- Make minor adjustments or major revisions to the plan for collecting objective evidence, as needed.

Parameters and Limits: Data Collection Plan

Appraisal documents created during planning and conduct of the appraisal must support planning and replanning the collection of objective evidence. An artifact named "data collection plan" is not required, but is a recommended best practice for appraisals with large scopes. Typically, the combination of the on-site schedule, other elements of the appraisal plan, and the data-tracking tools used during the appraisal compose (in aggregate) the data collection plan.

Parameters and Limits: Readiness Review

Information resulting from each readiness review must be reported to the sponsor and must explicitly address the feasibility of the appraisal schedule.

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1.5 Prepare for Collection of Objective Evidence (continued)

Parameters and Limits: Readiness Review Pertaining to Objective Evidence

The minimum requirements that must be met when conducting a readiness review focused on objective evidence are as follows:

- criteria for judging the sufficiency of data are established
- the amount and type of data required is specified
- actual data available for the appraisal are inventoried
- results of the review are documented
- results of the review are communicated to the sponsor

In some applications, the ability to perform a robust readiness review may be limited by the context. For example, in an acquisition application, the accessibility of objective evidence may be limited by the classification of information as proprietary or classified. In such a situation at least one readiness review must still be performed. In fact, more frequent readiness reviews, if feasible, are desirable in these situations because the risks associated with availability of objective evidence may be more severe.

Guidance: Level of Formality in the Readiness Review

The focus of the readiness review and the level of formality warranted for this activity should be tailored to match the context of the appraisal. For a SCAMPI C conducted by a single appraiser over a one-day period, confirming the availability of documentation, and/or key interviewees based on a previous agreement may be all that is needed. This confirmation could be accomplished with a phone call or an email. In contrast, a week-long SCAMPI B using a team of appraisers may require a two-hour readiness review at the conclusion of team training, where a set of artifacts is reviewed for relevance to the model practices and the availability of the interviewees is confirmed.

Guidance: Continuous Consolidation

As the team collects and examines data, a mechanism should be used for tracking the data already examined, the data yet to be examined, and the remaining opportunities to collect new data. Commercial software tools are available to support this process.

Planning to answer the following three questions on a regular basis allows the appraisal activities to be adjusted as needed:

- “What data do we have?”
- “What data do we need?”
- “Where are we going to get it?”

For a multi-day on-site, at the conclusion of each day, a review of the answers to the above questions is often performed. The formality of this review and the option to conduct it more frequently than once a day is a matter of style or preference on the part of the appraisal (team) leader.

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1.5 Prepare for Collection of Objective Evidence (continued)

Guidance for the Internal Change Agent

Conducting a thorough readiness review is important in determining the satisfaction of entry criteria for conducting the appraisal. The internal change agent typically resides within the organization and may be subject to more pressures to proceed in the absence of adequate preparation. The readiness review process can be used to mitigate this risk. The readiness review should be performed far enough in advance to give the organization time to collect additional evidence to support a more successful appraisal.

The extent of the readiness review will vary based on the amount and type of data required. For example, a SCAMPI C could be limited to interviews only or use of instruments only, or it could consist of a document review limited to examining the approach (reviewing documented policy and process documentation) versus reviewing project artifacts.

The focus of a readiness review in which only interviews are conducted would include a check of the availability of interviewees and their ability to address information needs. A readiness review of an appraisal limited to the use of an instrument (survey) would include a check on both the availability and appropriateness of the individuals completing the survey. The focus of a readiness review where only a document review is conducted would include a check of the availability of the appropriate documentation and its appropriateness to address information needs.

In a SCAMPI C, the data collection plan has the greatest potential for tailoring. The availability of direct or indirect evidence can be augmented with interviews, instruments, or presentations. The amount of objective evidence collected depends on the appraisal objectives. For example, if the appraisal objective is to expose the organization to the appraisal process, both interviews and document review may be warranted. Determining how extensively new practices are implemented may only require interviews or a survey. In low-maturity organizations, the emphasis is often on the organization's priorities, not those of the model, which allows for a lot of leeway in the amount and type of objective evidence collected.

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1.5 Prepare for Collection of Objective Evidence (continued)

Guidance for the Professional Consultant

Timing the readiness review can be difficult for the professional consultant, who often has a very limited amount of time on-site. Allowing for corrective actions following the readiness review is very difficult. More often, the professional consultant is forced to react to the situation by adjusting the approach when the satisfaction of entry criteria is not feasible.

As described earlier, the professional consultant will often arrange for a dedicated resource to act as the primary point of contact. This person will provide essential support during the preparatory activities. This type of vehicle for gaining access to information is essential for the professional consultant, who is typically an "outsider" to the organization.

Guidance for the External Auditor

The external auditor is sometimes severely constrained in the amount of time available and the access provided to gather information about the organization and the appraisal participants. More formal communication paths are frequently necessary, as are strategies for pre-packaging information and delegating responsibilities to others.

Readiness reviews may be performed very late in the planning process, even on the first day of data collection, if appraisal constraints necessitate. If the readiness review reveals significant issues with the plan for the appraisal, then formal mechanisms may exist to require that the organization to be appraised first correct the situation. More likely, the appraisal will need to be re-planned or reconfigured.

Another consideration for the external auditor is that the accessibility of objective evidence may be limited by the classification of information as proprietary or classified. Use of at least two "cleared" team members is strongly recommended.

Phase 2 Conduct Appraisal

Overview	The minimum requirements for data collection processes and artifacts are specified in this section.
2.1 Examine Objective Evidence	The fundamental process of collecting relevant data about the organizational unit and relating it to the specific and generic practices of the reference model is similar for all members of the SCAMPI family of appraisals. Minimum standards and shared operational definitions provide the basis for upward compatibility of the data collected on all SCAMPI appraisals.
2.2 Document Objective Evidence ARC4.2	Data gathered during the appraisal must be consistently recorded and maintained to ensure the reliable use of the appraisal methodology and valid appraisal results. The minimal standards associated with recording data provide flexibility in implementation. Non-attribution provisions and traceability of data to their sources is maintained at all times.
2.3 Verify Objective Evidence ARC4.5.2	Objective evidence is examined to understand the practices planned or deployed in the organization. The requirements for verification of objective evidence address the use of direct and indirect artifacts of practice implementation, and affirmations. Activities required in the processing of preliminary findings are elaborated as well.
2.4 Validate Preliminary Appraisal Outputs	Validation of preliminary appraisal results is a hallmark of SCAMPI appraisals. The ideal method is the traditional preliminary findings presentation, though other means are available. The SCAMPI C method allows for a very limited validation mechanism.
2.5 Generate Appraisal Results ARC4.6.1	Variations in the implementation of practices across parts of the organizational unit and/or across parts of the appraisal reference model can be communicated using characterization schemes. Other attributes of the data can be characterized to aid their interpretation as well. Prose statements relating planned or enacted practices to CMMI are standard output of SCAMPI.

2.1 Examine Objective Evidence

Overview

This section addresses fundamental definitions that capture the intent of data collection in the SCAMPI B and C methods.

Required Practices
ARC.4.2.13

The appraisal team leader (or appraisal team members, if a team is used) shall

- Seek and review information and artifacts that relate to the approach, deployment, or institutionalization of practices
- Annotate appraisal work products that identify information or artifacts reviewed
- Annotate appraisal work products to indicate the portion of CMMI to which the information applies
- Annotate appraisal work products to identify the portion of the organizational unit to which the information applies

Parameters and Limits: General

Oral statements and written information examined by the team must serve as objective evidence of the approach, deployment, or institutionalization of practices in the organization that support satisfaction of the goals found in CMMI. (Note: determining ratings of goal satisfaction is permissible only in a SCAMPI A appraisal.)

Sources of information—people, documents, or other work products—must be recorded in order to support bi-directional traceability between objective evidence and the appraisal outputs that were derived from the objective evidence.

The relevance of the information examined to individual practices or other components of CMMI must be documented. This must be done in a way that allows the appraisal (team) leader to determine the amount of objective evidence examined that relates to each individual model component at various points during the appraisal.

The association of information examined with one or more portions of the organizational unit must also be documented. This must be done in a way that allows the appraisal (team) leader to determine which information applies to which sampled instantiation (project or other work group).

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2.1 Examine Objective Evidence (continued)

Parameters and Limits: Objective Evidence
ARC.4.4

The term "objective evidence" provides a basis for identifying information that supports judgments made during the appraisal. The SCAMPI family of appraisals defines three types of objective evidence:

- direct artifacts
- indirect artifacts
- affirmations

Consistent use of these definitions is a requirement that enables upward compatibility in the family of SCAMPI methods.

Parameters and Limits: Practice Implementation Indicators

Practice Implementation Indicators (PIIs) provide a structure for relating individual pieces of objective evidence to particular practices in the model, as well as to particular parts of an organizational unit. The discussion of initial objective evidence under Process 1.4 provides additional information on this topic.

PIIs can be used in at least three different ways in an appraisal, to organize

- the input data provided to the team
- the data collected, managed, and used by the team
- the output of the appraisal

As a data structure, the use of PIIs is required. Specific requirements are

- the classification of artifacts into direct and indirect indicators of practice implementation
- labeling of affirmations as a distinct source of data
- associating each item of evidence with a particular practice in a CMMI model (or a non-model category)
- associating each item of evidence with either a given project or an organizational function
- use of inventories of data based on this framework to establish that sufficient data have been examined to support appraisal outcomes

Use of this data structure promotes compatibility across the SCAMPI family. However, there is no requirement to structure the input or output this way. Deriving "updated PIIs" as an output to a SCAMPI B is strongly recommended, especially in settings where a future Class A appraisal is anticipated.

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2.1 Examine Objective Evidence (continued)

Parameters and Limits: Work Actually Being Done
ARC4.5.4.c

In Class B methods, the ARC requires the corroboration of data that reflects "work actually being done (e.g., process area implementation)." This requirement applies to verification of objective evidence and has consequences for data collection.

This requirement ensures that data collected reflects work products and results from the implementation of one or more practices. This is in contrast to items like policies and implementation guidance, which support consistent use of practices.

The focus on deployment in the SCAMPI B method requires that direct artifacts be reviewed in order to ensure coverage of "work actually being done." The Class C method (according to the ARC) does not require that this type of data necessarily be included. SCAMPI C can be used to go beyond an examination of "approach," in which case direct artifacts may well be examined. However, there is no requirement that direct artifacts (or "work actually being done") be examined in a SCAMPI C.

Parameters and Limits: Interviews
ARC.4.4.2

For SCAMPI B, interviews must be conducted in the presence of at least two members of the appraisal team. For SCAMPI C, there is no requirement to use a team. If a team is used in a SCAMPI C, then interviews may be conducted by individual team members.

Parameters and Limits: Remote Interviews

Because of the increasing prevalence of distributed workforces and strategies that leverage the concept of the "virtual enterprise," some appraisals now rely on technology such as video teleconferencing. SCAMPI B and C appraisals allow the conduct of interviews using such technology.

For SCAMPI B and C, there is no limitation on the use of technology to conduct interviews. Every interview can be conducted using teleconference or video teleconference technology if interviews are used during the appraisal. However, for SCAMPI B, it is not recommended that all interviews be conducted via teleconference. In cases where a heavy reliance on this technology is anticipated, it is strongly recommended that one or more members of the team be present at the remote site. This arrangement permits at least one team member to be in the room with the people being interviewed.

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2.1 Examine Objective Evidence (continued)

Parameters and Limits: Using Presentations as Interviews

The use of standardized presentations, delivered live by an "interviewee," is another variant of the interview process permitted in the SCAMPI B and C methods.

For SCAMPI B, in order for this method to serve the same role as an interview, the following conditions must be met:

- The content of the presentation must be specified in advance, with involvement of the appraisal (team) leader.
- At least two team members must be present during the presentation.
- Team members must be able to ask clarifying questions and seek related information.
- The person making the presentation must be a manager or practitioner who has first-hand experience with the practices related to the material being presented.

There are no limitations on the use of presentations for SCAMPI C.

Parameters and Limits: Concurrent Interviews

When using an appraisal team, it is conceivable that more than one interview session will be underway simultaneously. In performing a SCAMPI C, it is permissible that each of these interviews be conducted by a single team member. In a SCAMPI B, at least two team members must be present in each interview session. Consideration must be given to achieving consensus when performing concurrent interviews.

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Guidance: Instruments
ARC.4.4.1

Instruments can provide a relatively low-cost source of appraisal data. This form of data collection also places added burden on the organization to supply information in advance.

Many different things will qualify as an instrument in a SCAMPI appraisal. Instruments may be data tables, templates, forms, questionnaires, surveys, or other standardized response formats for providing data.

When instruments are self-administered in a setting with little past experience or support to aid the respondent, they can yield very little useful information and can even become counterproductive. Support for explaining the intended use of the data as well as clarifications for the content of the questions are usually needed to ensure that data are usable.

Instruments may also play a dominant role in the data collection process, as when Practice Implementation Indicator databases are used to organize and inventory objective evidence. An instrument-centric appraisal method employs the structure and content of a questionnaire to define the inventory of data to be pursued during the appraisal.

The information summarized in an instrument is not always combined directly with other data collected during an appraisal. For surveys and questionnaires, a summarization or tabulation process transforms the data before they are used to support creation of findings and other outputs of the appraisal. The scheme by which the tabulations and summaries are interpreted will be defined within the appraisal outputs that include them.

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2.1 Examine Objective Evidence (continued)

Guidance: Interviews

Interviews are viewed as a very flexible and useful data gathering activity. The ability to dynamically change topics and pursue additional detail as opportunities arise makes interviews a robust method to gather data. Successful conduct of this activity is also contingent on the knowledge and skill of the interviewer(s).

At the most fundamental level, an interview consists of a verbal interaction between two or more people, from which data related to the appraisal are obtained. Many different types of interviews are permitted within the family of SCAMPI appraisals. The major differentiators among different types of interviews are summarized below.

The most structured approach is the *standard interview*, which is scheduled in advance and notification is given to participants that includes detailed expectations for topics to be covered. A more flexible approach to scheduling interviews is available in the form of *on-call interviews*. Prospective interviewees are identified and notified in advance; however, the interviews are only held as needed. *Office-hour interviews* represent an agreement for availability that permits pairs of team members to visit interviewees at their offices. The prospective interviewees block off a specific time period to be available on a contingency basis.

Interviews may also take on a *collaborative workshop* or *brainstorming* approach, with relaxed coverage requirements for objective evidence. In this approach, interviewees are asked to brainstorm rather than provide affirmations about objective evidence. This approach involves the contribution of ideas from a group of interviewees relative to broader process improvement topics.

Some interviews may be conducted on a one-to-one basis, as in SCAMPI C where only one appraiser might be used. Other interviews may be a many-to-one basis, where the appraisal team (or a subset of the team) interviews a single person. Still other interviews may be a one-to-many or many-to-many basis, where the appraisal team, a subset of the team, or a single appraiser interviews a group of people. The Parameters and Limits section covering interviews (above) clarifies the patterns that are permissible in each SCAMPI method.

Parallel interviews may also be conducted. This allows for more than one interview to be conducted simultaneously using different members of the team as interviewers. In planning for such parallel sessions, care must be taken to assign skilled team members to perform interviews.

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2.1 Examine Objective Evidence (continued)

Guidance: Interviews (continued)

Interviews may also rely on the use of teleconferencing, video teleconferencing, or virtual meeting technology (e.g., Net Meeting). Obviously, there are implications for interviewee comfort as well as a need for context setting that may be increased when relying on technology in this way. Also, the accuracy and precision of the appraisal results may be called into question by some stakeholders if they perceive an over-reliance on teleconferences as the primary source of data.

The Parameters and Limits section above specifies no limitation on who can be interviewed during an appraisal. In general, people will be better suited to serve as interviewees for questions related to the role they play in the organization. Roles typically interviewed include: senior or middle management, program or project management, engineering or technical staff, support or administrative staff, and functional area specialists (e.g., quality assurance).

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2.1 Examine Objective Evidence (continued)

Guidance: Document Review

Document review is an important part of the appraisal process. Documents come in many forms and types and can be the source of information for a wide range of practices.

Many different forms of information may be treated as documents during an appraisal. Most broadly defined, any lasting or reusable representation of relevant information can be considered a document for the purpose of an appraisal.

Documents may come in the form of paper copies, electronic files, and media stored on a network, including database queries, computerized training materials, and system-generated records. The accessibility of information or records of usage (such as "hit counts" on Web pages) are unique considerations of the acceptability of evidence from document reviews. Such things are not typically referred to as documents in other contexts.

Documents can be classified with respect to the level of the organizational hierarchy from which they originate, or to which they apply. There is often a meaningful difference between organizational, division- or discipline-specific, or program- or project-specific documents. Each level of the hierarchy potentially relates to different process areas and practices.

Some documents communicate expectations or acceptable tailoring limits for processes in the organization/division/project. Other documents are byproducts of implementing the process.

For example, a Capability Level 1 implementation is typically sought through examining operational work products, while Capability Level 2 and above will often involve guidance documents, such as policies or process documentation in addition to the operational work products. Depending on the practice under consideration, the appropriate document may be an organizational level document, a project-specific work product, or something in between.

Document review conducted during an appraisal will always involve reading and understanding the content of the document, and how it pertains to the practices planned or implemented in the organization. A simple inventory of documents does not establish objective evidence for an appraisal. The role played by the document in the process is what the appraisal process examines.

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2.1 Examine Objective Evidence (continued)

Guidance: Presentations

Presentations can be used during the conduct of appraisals in a number of different ways. The focus in this section is on the ways that presentations can serve as a data-collection technique.

Objective evidence may be presented by members of the organization through an interactive session in which the appraisal team can receive explanations by someone familiar with the organization and can ask specific questions about the information.

Demonstrations of tools or products may include presentation material that helps to orient the appraisal team members as they examine the role of the tool or product in the organization's process.

Presentations found in some standard project status reviews can be highly informative to the appraisal process. This is especially true for high-maturity organizations that share data and the results of "Decision Analysis and Resolution" with affected stakeholders.

Guidance for the Internal Change Agent

Given the contextual knowledge the internal change agent typically has, he or she can often be sure that the full set of available documentation has been reviewed. However, the dynamics of the interview process may be more challenging. Existing relationships and the need to promote cooperation for ongoing and future activities will influence the interview process.

Interviewee selection may include a mix of process proponents and naysayers. Having a mix of interviewees provides the appraisal team with a better understanding of the organizational culture. This knowledge may help determine the appropriate approach to change the culture.

A note on remote interviews: Reliance on technology (e.g., teleconference, video teleconference, Web Ex) to support interviews with members of the workforce who are distributed across a wide geographic area can help the organization meet appraisal cost constraints. When there is a heavy reliance on this technology, the data collection plan may be adjusted to emphasize the use of direct and or indirect evidence to augment any perceived risks relative to the accuracy and precision of the appraisal results.

Guidance for the Professional Consultant

The professional consultant must build rapport with members of the organization in order to ensure that sufficient objective evidence can be obtained in a timely manner. Strategies for delegating data-collection responsibilities are very important to the professional consultant, who does not typically interact daily with members of the organization.

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2.1 Examine Objective Evidence (continued)

Guidance for the External Auditor

The external auditor may not always be viewed as a welcome visitor to the organization. Interview techniques may need to be adjusted significantly if participants are not comfortable with the idea of frank and open dialog about the way they do their jobs. One common approach to dealing with this issue is to rely more heavily on presentations offered by members of the organization. By specifying the required content of the presentation in advance, specified objective evidence can be pursued while providing the presenter (interviewee) with an opportunity to consider their responses to the information requests.

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2.2 Document Objective Evidence

Overview

Consistent use of data-recording procedures ensures that key information will not be lost and that the data will be treated appropriately during the appraisal process.

Required Practices

The appraisal team leader (or appraisal team members, if a team is used) shall

- Write notes and annotate worksheets (as appropriate) to capture information that serves as objective evidence or supports the valid interpretation of objective evidence
- Write notes and annotate worksheets (as appropriate) to document the absence of objective evidence needed to verify the approach, deployment, or institutionalization of the planned or deployed practices in the organizational unit
- Document issues or gaps in the approach, deployment, or institutionalization of practices that support achievement of CMMI goals in the process context at hand
- Periodically compare, combine, and consolidate documented information, performing a reconciliation of differences that might arise in the understanding of the objective evidence
- Periodically inventory the objective evidence reviewed to identify the information already collected, the information yet to be collected, and the set of remaining activities available to gather that information

Parameters and Limits: Recording Affirmations

Affirmations provided during interviews must be written in notes or identified on worksheets in order to be treated as objective evidence. Recollections of the interviewer(s) are not adequate to support the characterization of practices or to derive findings and other appraisal outputs.

Parameters and Limits: Recording Deficiencies

Where objective evidence is judged to be missing or deficient in some way, a written statement or worksheet annotation that will be used in deriving appraisal outputs must be created.

Parameters and Limits: Recording Strengths

Approaches or implementations that represent exemplary practices (in reference to CMMI goals) should be documented in the worksheet and appraisal outputs as strengths. Practices that meet the intent of the model are not necessarily to be documented as strengths unless the method is tailored to provide this additional output.

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2.2 Document Objective Evidence (continued)

Parameters and Limits: Traceability
ARC4.2.16 (1)

As individual elements of data are combined, the origin of the data being combined must be recorded. The sphere of applicability for the combined data must be understood. Maintaining the traceability back to data sources also supports the verification processes described later in this handbook.

Parameters and Limits: Non-Attribution
ARC4.2.15

Protecting the anonymity of individuals who provide data is a cornerstone principle of process appraisals. Non-attribution and/or confidentiality agreements are established during planning and communicated when participants are prepared for the appraisal.

The interim work products of the appraisal process must not be made available to others; this helps to protect the identity of people who supply information. In generating appraisal outputs, data-aggregation strategies are used to generalize beyond identifiable individuals. Specific strategies that provide sub-groupings of data must be negotiated with the sponsor and consistently communicated to all appraisal participants before they provide data to the appraisal.

Guidance: Continuous Consolidation

In order to effectively manage the appraisal process, one must use effective methods for maintaining an inventory of data. Effective methods are those that help to answer the following three questions:

- What data do we have?
- What data do we need?
- Where am I going to get the needed data?

Integrated software tools are often used to support this process. Such tools typically permit a user to summarize data that answer the first two questions. When the data-collection plan is integrated with the data-tracking tool, the user is also able to "allocate" data needs to data-collection events. The data-collection plan is updated as required during the appraisal as objective evidence is found or new sources of information are uncovered.

Guidance: Tabular Data

Frequently, tabular summaries of instrument data (including questionnaires as well as Practice Implementation Indicator descriptions) communicate significant patterns in the appraisal data. When such patterns in the raw data are used in the context of appraisal outputs, they are typically accompanied by written statements that summarize the pattern and its significance.

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2.2 Document Objective Evidence (continued)

Guidance: Practice Level Data

The minimum level of abstraction expected in the data being combined and consolidated is a focus at the practice level. Findings frequently span multiple practices (or even cross process area boundaries), so a one-to-many mapping between findings and practices is not uncommon. However, the opposite is not very likely. For example, large numbers of findings covering detailed subpractices are not expected.

There are times when a more detailed focus is appropriate. For example, in an appraisal that serves as a readiness review for a benchmarking appraisal, a focus on attributes of individual artifacts may be appropriate.

Guidance: Organizational Level Findings

Data collected during an appraisal are typically associated with a particular instance of the practice implementation in the organization. Commonly this is understood in terms of the implementation of a given practice in a specified project. With CMMI, implementations in different divisions (or discipline groups) may also come into play when considering the aggregation of data.

Findings are worded (or constructed) to focus on the organizational unit that is the subject of the appraisal. Tailoring options to generate appraisal outputs at a lower level of aggregation are available. Appraisal participants are informed of the level of aggregation used in appraisal outputs if information will be reported below the level of the organizational unit.

Guidance for the Internal Change Agent

The internal change agent typically has knowledge and experience that aids in the careful wording of findings. Balancing the "word-smithing" issues with the substantive issues may be difficult at times. However, people who are very familiar with an organization may be able to choose words that communicate difficult issues most clearly. Such people may also have inhibitions that limit their ability to see the root cause of issues that are very close to them.

Guidance for the Professional Consultant

Professional consultants must be quick studies to ensure that their communications and the way that they characterize the practices of the organization are well received. Learning to "speak the organization's language" is important. This is one of the areas where effective consultants differentiate themselves from others.

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2.2 Document Objective Evidence (continued)

Guidance for the External Auditor

Taking great care in maintaining traceability is a higher priority for the external auditor than for others who lead appraisals in an organization. The defensibility of the appraisal outputs may not rest on the sentiments of the appraisal participants, who may never interact with the sponsor (who is external to the organization). Clear traceability of objective evidence and data sources serves the external auditor well.

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2.3 Verify Objective Evidence

Overview
ARC4.5.3

The data used to formulate appraisal outputs must be verified to ensure that the results of aggregating individual detailed data items will lead to appropriate appraisal outputs.

Required Practices
ARC.4.5.1

The appraisal team leader (or appraisal team members, if a team is used) shall

- Verify that direct artifacts, indirect artifacts, affirmations, and other information relating to each model component meet the appropriate criteria specified in Parameters and Limits below
- Verify that criteria for data sufficiency are satisfied and, if a team is used, that this verification is done with the team's consensus
- Verify that each preliminary finding is supported by objective evidence that meet the specified criteria

Parameters and Limits: General

For SCAMPI B, objective evidence must be sought for each individual practice and instantiation included in the scope of the appraisal. For each practice, at least one direct artifact or one oral affirmation must be obtained for each instantiation. In addition, for each practice within the scope of the appraisal, at least one oral affirmation and one direct artifact must be present when considering the set of instantiations for that practice.

In the case of a SCAMPI B focused on a single instantiation, a direct artifact must be obtained for every practice. In addition, at least one oral affirmation must be obtained for at least one practice from the set of practices mapped to a goal.

For SCAMPI C, at least one item of objective evidence must be sought for each model component included in the scope of the appraisal. Whether the model scope is defined in terms of individual practices, goals, process areas, or other model component, at least one item of objective evidence is required for each sampled element (practice, goal, process area, or other model component). Direct artifacts, indirect artifacts, oral affirmations, and other affirmations (e.g., survey data) may be used, as determined by the judgment of the SCAMPI team leader.

Parameters and Limits: Verify Interdependencies Among Objective Evidence

Items of objective evidence that relate to one another must be reviewed to verify that interrelationship. For example, in cases where standards and policies mandate the creation of an artifact that meets a given standard, the existence and form of that artifact must be verified. Interpretations of the set of objective evidence must support internally self-consistent conclusions.

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2.3 Verify Objective Evidence (continued)

Parameters and Limits: Verify Accuracy ARC4.5.2.a	Preliminary findings must be accurate, in that they are derived from what is seen or heard during data collection, worded clearly using terminology that is understood by the intended audience, and associated with a particular model component.
Parameters and Limits: Verify Data Sources	The preliminary findings must be identified with the sources of data from which they were derived. This identification must include the data-gathering event (time/place) and the information provider or location. This identification is not to be made visible to members of the appraised organization. Wording of preliminary findings must not contain generalizations that exceed the logical scope suggested by the identified data sources.
Parameters and Limits: Verify Non-Attribution ARC.4.2.15 ARC4.5.2.b	The preliminary findings must be clearly worded, without attribution of information to the individuals who provided it. Subtle wording choice may have unique significance within a given organization. The history of the organization and the memorable events of the past often lead to the identification of certain "loaded words." Such words and associated phrases must be avoided in the wording of preliminary findings.
Parameters and Limits: Verify Model Relevance ARC.4.2.16(1) ARC.4.5.1 ARC4.5.2.c	Preliminary findings related to the model are expected to comprise the majority (if not the totality) of the appraisal focus. Including "non-model" findings is permitted. Model-related preliminary findings must be accurately traced to the model components included in their scope. It is expected that at least one practice in the model scope of the appraisal will be identified, and that this relationship will be verified. Where consensus decision making is used (it is required for SCAMPI B) the team must achieve consensus on the mapping of preliminary findings to particular model components.
Parameters and Limits: Verify Consistency ARC4.5.3.b	The preliminary findings, taken as a set, must be internally consistent. Apparent (or actual) contradictions among or within preliminary findings that arise from unfortunate wording choices must be discovered and eliminated.

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2.3 Verify Objective Evidence (continued)

Parameters and Limits: Verify Corroboration
ARC4.5.3.a
ARC4.5.4.a-b

The SCAMPI B method requires that preliminary findings be corroborated according to the following criteria:

- they are based on data from at least two different sources (i.e., originating from two different individuals)
- they are based on data from at least two data-gathering sessions
- at least one source must derive from work actually being done*

* The phrase "work actually being done" is elaborated below.

Parameters and Limits: Work Actually Being Done
ARC4.5.4.c

In the context of an appraisal, the phrase "work actually being done" helps to define a class of data that is expected to provide more direct and credible objective evidence than data from other sources.

With respect to data from *instruments*, Practice Implementation Indicator descriptions contain direct artifacts that result from execution of the practice under consideration.

In *interview* data, descriptions of actual events by actors in those events are more direct evidence of the practice.

When performing *document reviews*, artifacts that derive from operational work products are more directly indicative of practice implementation. For practices implemented at the project level, project-level work products are more likely to be relevant than command media such as policies and process descriptions. For practices implemented across a larger group in the organization, command media such as policies and process descriptions may represent operational work products.

Guidance: "Discovery" vs. "Verification"

The distinction between "discovery" and "verification" appraisals is quite important in the context of a SCAMPI A. In some applications of SCAMPI B, a verification approach will be highly desirable, especially if the appraisal is being conducted as a "dress-rehearsal" for a future SCAMPI A. In contrast, it may not be feasible to use a verification approach in conducting a SCAMPI C, especially if the appraisal is being conducted as a "getting started intervention," where the objective is to educate staff on the model and process improvement, while identifying the critical issues that motivate people to participate in the process improvement program.

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2.3 Verify Objective Evidence (continued)

Guidance for the Internal Change Agent

Use of appraisals in the context of an ongoing program of model-based improvement is typically motivated by the need to frequently know the status of the improvement activities and how they contribute to meeting the organization's goals. Tailoring the level of rigor applied in the appraisal process can facilitate efficient data collection for this purpose. In monitoring progress, the appraisal may focus more rigor on "new process areas" and spend relatively less time investigating process areas that have previously been judged "satisfied" in a benchmarking appraisal. This sort of hybrid approach would entail applying the standards of the SCAMPI B to some areas, and the standards of SCAMPI C to others. Conversely, in performing a SCAMPI A, corroboration rules must be adhered to for all process areas regardless of whether the process areas were satisfied in a prior SCAMPI B or SCAMPI C.

Guidance for the Professional Consultant

With diverse experience working in a variety of organizational settings, the professional consultant often has well-established ways of communicating the methods for achieving the verification activities described here. Sometimes a data-management tool is used to embody these practices. Clear and effective training on the use of the tool is necessary for the team to get the most benefit from their use.

Guidance for the External Auditor

As when objective evidence is verified, the external auditor has a need for clear and defensible traceability of data. Though this traceability may be withheld from reports to the members of the organization, the external sponsor will need assurance that the appraisal outputs are well founded.

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2.4 Validate Preliminary Appraisal Outputs

Overview

Use of a "preliminary findings presentation" is a longstanding value-added component of process appraisals. Other ways of validating preliminary results are also available, but experience shows that the traditional preliminary findings presentation is a very powerful tool.

Required Practices
ARC.4.5.7

The appraisal team leader (or appraisal team members, if a team is used) shall

- Assure that preliminary versions of key appraisal outputs are validated by the set of stakeholders defined in the appraisal plan (if any are defined)
- Consider feedback obtained during validation of preliminary appraisal outputs in revising the outputs

Parameters and Limits: General

When performing a SCAMPI B, preliminary findings statements must be validated with appraisal participants who provided data. Not every appraisal participant must be present, though that is recommended. At a minimum, there must be a representative from each project and functional group that provided data for the appraisal.

When performing a SCAMPI C, validation with appraisal participants is strongly recommended but not required. Stakeholders who review the preliminary results of a SCAMPI C may be limited to appraisal team members and/or the sponsor.

Statements of weaknesses must be validated. Validation of other preliminary appraisal outputs (e.g., strengths or characterizations) is recommended but not required.

Parameters and Limits: Preliminary Findings Presentation

When presenting preliminary findings for validation, justification of the findings statements must be avoided. Elaborations that clarify the intent of the findings statements may be offered, if the participants in the validation session have questions.

The presentation is typically delivered by the appraisal (team) leader. However, members of the team (if a team is used) may serve as presenters, at the sole discretion of the team leader.

The presenter must accept feedback from the audience and avoid making promises to change the content of the findings based on comments made during the session.

Confidentiality of data sources must be maintained during this and any other activity in the appraisal process. This extends to the participants in the preliminary findings briefing as well. The presenter must make it clear to the audience that they are not to take notes, or repeat what is heard during the presentation.

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2.4 Validate Preliminary Appraisal Outputs (continued)

Guidance: Validation Techniques

The preliminary findings presentation is the most common method of performing validation. However, alternative ways of obtaining feedback—such as the use of an instrument listing each preliminary finding—may be employed. Focus groups that provide a forum for discussing a subset of the preliminary findings may also be useful.

Guidance for the Internal Change Agent

All presentation of information relating to process improvement actions can have a consistent theme in an organization—one that reinforces the motivations of the appraisal sponsor. The internal change agent is typically responsible for communicating a coherent picture of the process improvement program, and this will shape the content and style of the preliminary findings presentation.

Guidance for the Professional Consultant

Validation of preliminary findings with the appraisal participants is a very powerful tool. Having an opportunity to provide feedback on appraisal findings in this setting is important because the professional consultant may be able to create a safe environment. As an outsider, the consultant may be able to communicate information as a neutral party who is not viewed as taking one side or another on contentious issues.

However, when not practical, validations of preliminary findings should occur with defined stakeholders. Stakeholders must include the sponsor. Typical stakeholders include representation from the process group, key project managers, and individuals with change authority.

Guidance for the External Auditor

Constraints deriving from an acquisition or contractual process may preclude validating findings with appraisal participants using the traditional presentation. An approach to validating findings should be established early. There may be ways of using a formal communication process. Another option is to have follow-up focus group interviews with questions that target areas of weakness.

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2.5 Generate Appraisal Results

Overview

Appraisal results in the form of findings (statements of strengths and weaknesses) are intended to support the needs of appraisal sponsors. Characterization scales are also frequently employed to help illustrate trends and patterns in appraisal data.

Required Practices

The appraisal team leader (or appraisal team members, if a team is used) shall

- Document statements of strengths, weaknesses, or other written expressions of appraisal outcome
- Document detailed model scope of the appraisal to be reported
- Document characterizations (as appropriate) for each model component in the scope of the appraisal

Parameters and Limits
ARC.4.2.14
ARC.4.5.1

A set of descriptive or comparative statements must be generated as a result of every appraisal. These statements typically take the form of strengths or weaknesses in the intended or deployed practices. Such statements are referred to generically as findings. Findings may take many forms in SCAMPI B and C, including

- statements of weaknesses or inadequacies found
- explanations of strengths or positive attributes found
- identification of best practices and where they reside
- summary statements that accompany data profiles

Characterizations are an optional output of SCAMPI C, but a required output of SCAMPI B.

Whenever an appraisal team is used, all appraisal outputs must be derived through team consensus.

Parameters and Limits: Findings
ARC.4.2.14

Based on issues, or gaps identified (see 2.2 Document Objective Evidence), preliminary findings must be documented. These preliminary findings are then verified (2.3) and validated (2.4) before they become appraisal outputs.

Parameters and Limits: Detailed Model Scope

Because the SCAMPI B and SCAMPI C methods permit great flexibility in determining the model scope, a simple list of process area names will not always be sufficient to document the appraisal scope. When individual practices or other groups of model content are selected that don't correspond to sets of entire process areas, a more detailed description is needed. A list of individual practices or a graphical representation that communicates the list must be used in cases where the model scope cannot be accurately conveyed with a list of process areas.

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2.5 Generate Appraisal Results (continued)

Parameters and Limits: SCAMPI C Characterization

In SCAMPI C, data may be examined at a higher level of granularity than an individual practice. It is possible that no individual practice is characterized because all data are examined at a higher level of abstraction—for example, at the goal, process area, maturity level, or process area category level.

If characterizations are to be generated during the conduct of a SCAMPI C, the following conditions must be met:

- The characterization scale used must be a three-point scale.
- The three-point scale may include additional values for "not yet" as well as "out of scope," as illustrated in the guidance below.
- Every characterization generated must be supported by relevant objective evidence.
- The characterization scale must not overstate the conclusiveness of the outcome (e.g., referencing satisfaction of related goals, process areas, or capability or maturity levels).

Characterization schemes used in SCAMPI C must be explained in the appraisal plan, along with applicable data-sufficiency rules. These data-sufficiency rules must be based on the level of granularity intended in the data collection (e.g., each practice, each goal, each process area).

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Parameters and Limits: Practice Characterization for SCAMPI B

For SCAMPI B, every practice (specific and generic) within the scope of the appraisal must be characterized for each instantiation within the appraisal scope through a consensus process using the scale described in the table below.

Label	Meaning
Red	The intent of the model practice is judged to be absent or poorly addressed in the set of implemented practices; gaps or issues that will prevent goal achievement, if the deployment occurred in this way across the organizational unit, were identified.
Yellow	The intent of the model practice is judged to be partially addressed in the set of implemented practices; some gaps or issues were identified, which might threaten goal achievement if the deployment occurred in this way across the organizational unit.
Green	The intent of the model practice is judged to be adequately addressed in the implemented set of practices examined in a manner that would support goal achievement, if the practice were deployed across the organizational unit.

In addition to the above, a designation of "out of scope" is used when no characterization was assigned because the appraisal did not gather data to support characterization of the practice. Also, a designation of "not yet" may be used to indicate that there was no opportunity to observe the implementation of the practice due to the fact that none of the sampled parts of the organization have reached the phase in the life cycle where the practice would be implemented.

Parameters and Limits: Instance and Organizational Unit Characterizations

For SCAMPI B, characterizations must be performed at the instance level. Characterization at the organizational unit (OU) level is not required; but if OU characterizations are generated, they must be based on an aggregation of the instance level characterizations, using the aggregation rules specified below.

For SCAMPI C, characterizations may be performed at the instance level or at the OU level. If OU characterizations are generated, they may be based on aggregation of instance characterizations, or they may be based on data summarized at the OU level.

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2.5 Generate Appraisal Results (continued)

Parameters and Limits: Aggregating Instance Level Characterizations

In generating OU characterizations for each practice in SCAMPI B, the following aggregation scheme is required.

Instance Characterizations	**Resulting OU Characterization**
All instantiations characterized Red	Red
All instantiations characterized Yellow	Yellow
All instantiations characterized Green	Green
All conditions not included above	Team judgment—subject to below*
* The OU characterization shall not be Red unless at least one instance characterization is Red, and the OU characterization shall not be green unless at least one instance characterization is green	

Appraisal teams use professional judgment, in light of the needs of the organization, to determine OU characterizations for practices where not all instantiations are Red and where not all instantiations are Green. When the team elects to set rules of thumb (e.g., if at least one instance is red, then the OU is red), these rules must be documented in the appraisal plan and reported as part of the appraisal results.

Guidance: Practice Characterization in SCAMPI C

The scheme below is one example of a characterization scale that can be used for SCAMPI C.

Label	**Meaning**
Low	The intent of the model practice is judged absent or inadequately addressed in the approach; goal achievement is judged unlikely because of this absence or inadequacy.
Medium	The intent of the model practice is judged to be partially addressed in the approach, and only limited support for goal achievement is evident.
High	The intent of the model practice is judged to be adequately addressed in the set of practices (planned or deployed) in a manner that supports achievement of the goal in the given process context.

In addition to the above, a designation of “out of scope” is used when no characterization was assigned because the appraisal did not gather data to support characterization of the practice.

Note that in this case, because of the focus on “approach,” the designation of “not yet” may not apply.

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2.5 Generate Appraisal Results (continued)

Guidance: Practice Characterization Profile

A profile of characterizations relating to individual practices in the model (and across elements of the organization) is often used to communicate status of improvement relative to the model. Such profiles can communicate a summary (broad) view, while at the same time identifying detailed (narrow) information that stands out from other information.

Guidance: Findings Organized by Model Content or Organizational Scope

Most appraisal findings are organized in accordance with content of the model. However, there are situations where summarizing across a variety of model structures might be advantageous (e.g., when there are common themes associated with generic practices, in addition to themes by process area).

In some settings, findings associated with particular projects or units within the scope of the appraisal are desired. Obviously the wisdom of providing such potentially targeted results must be considered during the process of establishing the appraisal input.

Guidance: Data Sufficiency

SCAMPI B and C methods are not required to meet the sufficiency criteria for coverage of the practice, the organization, and the relevant life-cycle phases. However, the appraisal goals typically suggest one emphasis or another. For example, in some situations it is more important to be confident that all weaknesses have been identified, even if some strengths remain undetected. In other situations, it is important to identify all evidence that supports positive conclusions, even if minor issues remain unexplored. The priority given to one or more criteria, in pursuing data sufficient to support the appraisal outputs, must be made known with the appraisal outputs.

Another important consideration relating to data sufficiency revolves around the use of characterizations as an appraisal output. If instance-level characterizations are to be reported in a SCAMPI B, it may be necessary to examine more than the minimum of one item of objective evidence per practice. In situations where the instance-level characterizations are not treated as intermediate work products available only to the team, it is strongly recommended that a second item of objective evidence (e.g., an indirect artifact) be examined for each practice.

Continued on next page

2.5 Generate Appraisal Results (continued)

Guidance: Improvement Task Completion Status

Appraisals can be used to monitor ongoing model-based process improvement efforts. This strategy entails using the work breakdown structure that defines process improvement tasks as the reference model. Because the improvement program is model-based, data supporting conclusions of progress are also relevant to the model underlying the improvement program. Task completion, or summaries expressed as percentages, in each area of work can be presented in a profile with the appraisal results.

Guidance for the Internal Change Agent

Use of profiles to communicate a summary view is beneficial when comparing appraisal results from successive appraisals. The internal change agent typically has knowledge of continuity that helps to explain the progression reflected in the set of profiles. Also, the significant findings or patterns of characterizations can be related to areas of focus for the organization's process improvement effort. For example, a special team or task force may be identified as the impetus for the change reflected in several categories of appraisal outputs.

Guidance for the Professional Consultant

Tools for summarizing and presenting results may be one of the ways that a professional consultant may differentiate himself or herself from the competition. Professional consultants typically bring a diversity of previous experiences to their ability to explain appraisal outcomes. They can make insightful connections between weaknesses and the resulting business consequences, as well as to the options available to remedy weaknesses.

Guidance for the External Auditor

Often, the external auditor is given a reporting format to be used. These data-reporting requirements may be unseen by the appraisal participants in some settings. In other settings, the external auditor has some freedom to tailor a reporting format to provide added benefit to the appraised organization.

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Phase 3 Report Results

Overview	The minimum requirements for the process of reporting results and the required artifacts to be produced are specified in this section.
3.1 Deliver Appraisal Results	Appraisal results must be delivered to designated recipients, including the sponsor and stakeholders identified on the appraisal plan.
3.2 Package and Archive Appraisal Assets	The required contents of the appraisal record must be assembled and archived. The sponsor has complete discretion over access and distribution of the appraisal record. The CMMI Steward maintains the Appraisal Program, and a database of records from process appraisals. The required artifacts submitted to the steward are used to monitor trends and support quality assurance activities.

3.1 Deliver Appraisal Results

Overview

Appraisal results are presented or delivered to groups and individuals designated by the sponsor and agreed upon during the process of planning the appraisal.

Required Practices

The appraisal team leader (or appraisal team members, if a team is used) shall

- Present, deliver or otherwise transmit designated appraisal results to the stakeholders identified in the appraisal plan
- Reinforce, through written and/or oral communication, the provisions in place for confidentiality of the appraisal results

Parameters and Limits: General

Every SCAMPI B and C appraisal must have documented results that represent a lasting record of the outputs. An oral presentation alone is not sufficient.

At a minimum, prose statements about the approach or deployment of practices—related to model components in the scope of the appraisal—must be included in the appraisal results.

Guidance: Executive Session

It is common practice to provide a forum for the appraisal sponsor to discuss the appraisal results in a closed session. The purpose of the executive session is to allow the sponsor (and other attendees designated by the sponsor) to ask questions and seek clarification they might prefer not to cover in a more public setting. It is very important to emphasize that the confidentiality provisions established during planning are still in effect.

Guidance for the Internal Change Agent

Interaction with the appraisal participants in a final findings presentation can aid in developing an understanding of the findings. The findings presentation can also focus on next steps, including the generation of corrective action plans and any tie-in to future appraisals. The internal change agent can use this forum as another element of the communication strategy for an ongoing process improvement program.

Guidance for the Professional Consultant

The findings of a professional consultant can often be viewed as an external validation of known issues in the organization. Skillful delivery of final findings can create momentum for change, based on an objective view of the current state. In this context, this external person may be in a good position to deliver bad news as well. The perception that the consultant is a neutral observer is very important.

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3.1 Deliver Appraisal Results (continued)

Guidance for the External Auditor

In some acquisition settings, regulations may preclude delivering final findings until after contract award, if ever. Typically this would be done in a written report versus a presentation. The sponsor of the appraisal is typically an external authority. The sponsor will designate who receives the appraisal results.

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3.2 Package and Archive Appraisal Assets

Overview

The appraisal sponsor owns the appraisal record, and controls the distribution and dissemination of information contained in the record. This artifact is the lasting record for appraisal data.

Required Practices
ARC.4.7.3
ARC.4.7.4

The appraisal team leader shall

- Assemble the appraisal record for the appraisal sponsor
- Assemble the data package to submit to the CMMI Steward

Parameters and Limits: General
ARC.4.1.2.e

Unless precluded by the sponsor, the following items must be submitted to the CMMI Steward:

- appraisal plan, including the appraisal input
- appraisal findings, including strength and/or weakness statements
- appraisal disclosure statement

The appraisal findings and appraisal disclosure statement are frequently contained in a final findings presentation. In such cases, submitting the briefing slides (if all relevant data are contained in them), along with the appraisal plan, will be considered sufficient to meet this requirement.

Parameters and Limits: Required Contents of the Appraisal Record
ARC4.2.16.(3)
ARC4.2.16.a-b
ARC4.2.16.d-e

The appraisal record must contain the following:

- dates of the appraisal
- appraisal input
- identification of the appraisal method used (including tailoring)
- findings, including strength and/or weakness statements
- practice characterizations (if generated)
- other characterizations of data or attributes of practices or projects, generated during the appraisal (if any)
- appraisal disclosure statement

Parameters and Limits: Disposition of the Appraisal Record
ARC4.2.16(2)

Distribution of the appraisal record to parties other than the appraisal sponsor must be specified in the appraisal plan in advance, or managed entirely under the authority of the appraisal sponsor, following conclusion of the appraisal.

After the appraisal record is transmitted to the appraisal sponsor (in paper and/or electronic format), participants in the appraisal process no longer have the ability to change its contents; the appraisal process is considered complete.

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3.2 Package and Archive Appraisal Assets (continued)

Guidance for the Internal Change Agent

Maintaining records of process appraisals is typically an ongoing part of a process improvement program. Often a library of documentation related to the process appraisal will be maintained. Review of past accomplishments and the pace of improvement can be facilitated by such a library.

Guidance for the Professional Consultant

Professional consultants sometimes use the quality of the final report or linkage to follow-on activities to differentiate themselves from the competition. Using the appraisal outputs to make these links is addressed during the planning activities, in order to eliminate ambiguity about the use or disposition of key appraisal outputs.

Guidance for the External Auditor

The external auditor will typically transmit the appraisal results to a third party outside the appraised organization. This may require conformance to standards in acquisition policies or other directives. Avoiding the inadvertent release of "competition sensitive" materials is paramount.

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Appendix A ARC Traceability: SCAMPI A, B, and C

The table below provides a tracing between the Appraisal Requirements for CMMI (ARC) (Version 1.1) and the documentation for SCAMPI A (in the column labeled "SCAMPI A MDD"), as well as the two methods documented in this handbook (in the columns labeled "SCAMPI B" and "SCAMPI C").

The following conventions are used to reduce the length of this appendix.

- "P&L" is used to stand for "Parameters and Limits"
- "RP" is used to stand for "Required Practices"

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4	Requirements for CMMI Appraisal Methods			
4.1	Responsibilities			
4.1.1	The method shall define the responsibilities of the appraisal sponsor, which at a minimum shall include the following activities:		1.2 Develop Appraisal Plan: P&L: Sponsor Responsibilities	1.2 Develop Appraisal Plan: P&L: Sponsor Responsibilities
4.1.1.a	(ABC) Verify that the appraisal team leader has the appropriate experience, knowledge, and skills to take responsibility for and lead the appraisal.	1.3 Select and Prepare Team 1.3.1 Identify Team Leader	1.1 Analyze Requirements: P&L: Required Contents of Appraisal Input item h	1.1 Analyze Requirements: P&L: Required Contents of Appraisal Input item h
4.1.1.b	(ABC) Ensure that the appropriate organizational units or subunits (e.g., projects, functional units) participate in the appraisal.	1.1 Analyze Requirements 1.1.3 Determine Appraisal Scope	1.1 Analyze Requirements: P&L: Organizational Unit	1.1 Analyze Requirements: P&L: Organizational Unit
4.1.1.c	(ABC) Support appraisal method provisions for ensuring non-attribution to appraisal participants.	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements: P&L: Confidentiality and Non-Attribution of Data Sources	1.1 Analyze Requirements: P&L: Confidentiality and Non-Attribution of Data Sources

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.1.1.d	(ABC) Ensure that resources are made available to conduct the appraisal.	1.2 Develop Appraisal Plan 1.2.6 Obtain Commitment to Appraisal Plan	1.1 Analyze Requirements: P&L: Appraisal Constraints	1.1 Analyze Requirements: P&L: Appraisal Constraints
4.1.1.e	(ABC) Review and approve the appraisal input prior to the beginning of data collection by the appraisal team.	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements: RP	1.1 Analyze Requirements: RP
4.1.2	The method shall define the responsibilities of the appraisal team leader, which at a minimum shall include the following activities:	1.3 Select and Prepare Team 1.3.1 Identify Team Leader	Chapter 2 Introduction: Appraisal Processes	Chapter 2 Introduction: Appraisal Processes
4.1.2.a	(ABC) Ensure that the appraisal is conducted in accordance with the method's documented process.	1.2 Develop Appraisal Plan 1.2.1 Tailor Method	Chapter 2 Introduction: Appraisal Processes	Chapter 2 Introduction: Appraisal Processes
4.1.2.b	(ABC) Confirm the sponsor's commitment to proceed with the appraisal.	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.2 Develop Appraisal Plan: RP	1.2 Develop Appraisal Plan: RP
4.1.2.c	(ABC) Ensure that appraisal participants are briefed on the purpose, scope, and approach of the appraisal.	1.4 Obtain and Analyze Preliminary Objective Evidence 1.4.1 Prepare Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants
4.1.2.d	(ABC) Ensure that all appraisal team members have the appropriate experience, knowledge, and skills in the appraisal reference model and appraisal method; the necessary competence to use instruments or tools chosen to support the appraisal; and access to documented guidance on how to perform the defined appraisal activities.	1.3 Select and Prepare Team 1.3.3 Prepare Team	1.3 Select and Prepare Team: RP	1.3 Select and Prepare Team: RP
4.1.2.e	(ABC)Verify and document that the appraisal method requirements have been met.	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record	3.2 Package and Archive Appraisal Assets: P&L	3.2 Package and Archive Appraisal Assets: P&L
4.2	Appraisal Method Documentation			
4.2.1	The method shall be documented and, at a minimum, include	MDD, V1.1 All	This Handbook	This Handbook

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.2.1.a	(ABC) identification of the CMMI models (version, discipline, and representation [staged or continuous]) with which the method can be used	Method Overview	1.1 Analyze Requirements P&L: Model Scope	1.1 Analyze Requirements P&L: Model Scope
4.2.1.b	(ABC) identification of the ARC version upon which the appraisal method is based	Method Context	1.1 Analyze Requirements P&L: Model Scope	1.1 Analyze Requirements P&L: Model Scope
4.2.1.c	(ABC) identification of which CMMI appraisal requirements are satisfied by the method, along with the CMMI appraisal class membership (if applicable)	Method Context	This Table	This Table
4.2.1.d	(ABC) activity descriptions, artifacts, and guidance that implement each of the appraisal requirements	(All phases, processes, activities)	This Handbook	This Handbook
4.2.1.e	(A) declaration as to whether or not the method supports 15504-conformant appraisals	TBD		
4.2.2	The method documentation shall provide guidance for			
4.2.2.a	(ABC) identifying an appraisal's purpose, objectives, and constraints	1.1 Analyze Requirements 1.1.1 Determine Appraisal Objectives	1.1 Analyze Requirements: P&L: Required Contents of Appraisal Input	1.1 Analyze Requirements: P&L: Required Contents of Appraisal Input
4.2.2.b	(ABC) determining the suitability of the appraisal method relative to the appraisal's purpose, objectives, and constraints	1.1 Analyze Requirements 1.1.1 Determine Appraisal Objectives	1.1 Analyze Requirements: P&L	1.1 Analyze Requirements: P&L
4.2.3	The method documentation shall provide guidance for identifying the scope of the CMMI model(s) to be used for the appraisal:	1.1 Analyze Requirements 1.1.3 Determine Appraisal Scope	1.1 Analyze Requirements: P&L: Model Scope	1.1 Analyze Requirements: P&L: Model Scope
4.2.3.a	(ABC) process areas to be investigated (continuous and staged representations)	1.1 Analyze Requirements 1.1.3 Determine Appraisal Scope	1.1 Analyze Requirements: P&L: Model Scope	1.1 Analyze Requirements: P&L: Model Scope
4.2.3.b	(ABC) capability levels to be investigated for each process area (continuous representation)	1.1 Analyze Requirements 1.1.3 Determine Appraisal Scope	1.1 Analyze Requirements: P&L: Model Scope	1.1 Analyze Requirements: P&L: Model Scope
4.2.4	The method documentation shall provide guidance for identifying the organizational unit to be appraised:	1.1 Analyze Requirements 1.1.3 Determine Appraisal Scope	1.1 Analyze Requirements: P&L: Organizational Unit	1.1 Analyze Requirements: P&L: Organizational Unit
4.2.4.a	(ABC) the sponsor of the appraisal and the sponsor's relationship to the organizational unit being appraised	1.1 Analyze Requirements 1.1.1 Determine Appraisal Goals	1.1 Analyze Requirements: P&L: Organizational Unit	1.1 Analyze Requirements: P&L: Organizational Unit

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.2.4.b	(ABC) projects within the organizational unit that will participate	1.1 Analyze Requirements 1.1.3 Determine Appraisal Scope	1.1 Analyze Requirements: P&L: Organizational Unit	1.1 Analyze Requirements: P&L: Organizational Unit
4.2.4.c	(ABC) functional elements of the organizational unit that will participate	1.1 Analyze Requirements 1.1.3 Determine Appraisal Scope	1.1 Analyze Requirements: P&L: Organizational Unit	1.1 Analyze Requirements: P&L: Organizational Unit
4.2.4.d	(ABC) names and affiliations (organizational units) of participants in the appraisal activities	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements: P&L: Organizational Unit	1.1 Analyze Requirements: P&L: Organizational Unit
4.2.5	The method documentation shall provide guidance for selecting appraisal team members and criteria for qualification including	1.3 Select and Prepare Team 1.3.2 Select Team Members	1.3 Select and Prepare Team: P&L: Team Member Qualifications	1.3 Select and Prepare Team: P&L: Team Member Qualifications
4.2.5.a	(ABC) technical experience (discipline-specific)	1.3 Select and Prepare Team 1.3.2 Select Team Members	1.3 Select and Prepare Team: P&L: Team Member Qualifications	1.3 Select and Prepare Team: P&L: Team Member Qualifications
4.2.5.b	(ABC) management experience	1.3 Select and Prepare Team 1.3.2 Select Team Members	1.3 Select and Prepare Team: P&L: Team Member Qualifications	1.3 Select and Prepare Team: P&L: Team Member Qualifications
4.2.5.c	(ABC) experience, knowledge, and skills in the appraisal reference model and appraisal method	1.3 Select and Prepare Team 1.3.2 Select Team Members	1.3 Select and Prepare Team: P&L: Team Member Qualifications	1.3 Select and Prepare Team: P&L: Team Member Qualifications
4.2.6	The method documentation shall provide guidance for an appraisal team leader's qualification criteria, including	1.3 Select and Prepare Team 1.3.1 Identify Team Leader	1.3 Select and Prepare Team: P&L: Appraisal (Team) Leader Qualifications	1.3 Select and Prepare Team: P&L: Appraisal (Team) Leader Qualifications
4.2.6.a	(ABC) training and experience using the appraisal reference model	1.3 Select and Prepare Team 1.3.1 Identify Team Leader	1.3 Select and Prepare Team: P&L: Appraisal (Team) Leader Qualifications	1.3 Select and Prepare Team: P&L: Appraisal (Team) Leader Qualifications
4.2.6.b	(ABC) training and experience using the appraisal method	1.3 Select and Prepare Team 1.3.1 Identify Team Leader	1.3 Select and Prepare Team: P&L: Appraisal (Team) Leader Qualifications	1.3 Select and Prepare Team: P&L: Appraisal (Team) Leader Qualifications
4.2.6.c	(ABC) experience in delivering training, managing teams, facilitating group discussions, and making presentations	1.3 Select and Prepare Team 1.3.1 Identify Team Leader	1.3 Select and Prepare Team: P&L: Appraisal (Team) Leader Qualifications	1.3 Select and Prepare Team: P&L: Appraisal (Team) Leader Qualifications
4.2.7	(ABC) The method documentation shall provide guidance for determining the appropriate size of the appraisal team.	1.3 Select and Prepare Team 1.3.2 Select Team Members	1.3 Select and Prepare Team: P&L: Team Member Qualifications	1.3 Select and Prepare Team: P&L: Team Member Qualifications

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.2.8	(ABC) The method documentation shall provide guidance on the roles and responsibilities of appraisal team members.	1.3 Select and Prepare Team 1.3.2 Select Team Members	1.3 Select and Prepare Team: P&L: Team Member Roles and Responsibilities Guidance: Use of Mini-teams	1.3 Select and Prepare Team: P&L: Team Member Roles and Responsibilities Guidance: Use of Mini-teams
4.2.9	(ABC) The method documentation shall provide guidance addressing the responsibilities of the appraisal sponsor.	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.2 Develop Appraisal Plan: P&L Sponsor Responsibilities	1.2 Develop Appraisal Plan: P&L Sponsor Responsibilities
4.2.10	(ABC) The method documentation shall provide guidance addressing the responsibilities of the appraisal team leader.	1.3 Select and Prepare Team 1.3.1 Identify Team Leader	Chapter 2: Appraisal Processes	Chapter 2: Appraisal Processes
4.2.11	(ABC) The method documentation shall provide guidance for estimating the resources required to conduct the appraisal (including the amount of time required to conduct an appraisal).	1.2 Develop Appraisal Plan 1.3.1 Identify Team Leader	Chapter 1, Executive Summary Rough Order of Magnitude Estimating	Chapter 1, Executive Summary Rough Order of Magnitude Estimating
4.2.12	(ABC) The method documentation shall provide guidance for appraisal logistics.	1.2 Develop Appraisal Plan 1.2.4 Plan and Manage Logistics	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Plan	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Plan
4.2.13	(ABC) The method documentation shall provide guidance for collecting relevant data on the organizational unit and associating the data to the specific and generic practices of the appraisal reference model.	2.1 Examine Objective Evidence	2.1 Examine Objective Evidence: RP	2.1 Examine Objective Evidence: RP
4.2.14	(ABC) The method documentation shall provide guidance for creating findings, including both strengths and weaknesses relative to the appraisal reference model.	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence	2.5 Generate Appraisal Results: P&L P&L Findings	2.5 Generate Appraisal Results: P&L P&L Findings

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.2.15	(ABC) The method documentation shall provide guidance for protecting the confidentiality of appraisal data and ensuring non-attribution of data contributed by appraisal participants.	3.2 Package and Archive Appraisal Assets 3.2.4 Archive and/or Dispose of Key Artifacts	1.1 Analyze Requirements: P&L: Confidentiality and Non-attribution of Data Sources 1.4 Prepare Participants and Obtain Initial Objective Evidence : P&L: Confidentiality and Non-attribution of Data Sources 2.2 Document Objective Evidence: P&L: Non-attribution 2.3 Verify Objective Evidence: P&L: Verify Non-Attribution	1.1 Analyze Requirements: P&L: Confidentiality and Non-attribution of Data Sources 1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Confidentiality and Non-attribution of Data Sources 2.2 Document Objective Evidence: P&L: Non-attribution 2.3 Verify Objective Evidence: P&L: Verify Non-Attribution
4.2.16	The method documentation shall provide guidance for (1) recording traceability between the data collected during the appraisal and the findings and/or ratings,	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record	2.2 Document Objective Evidence: P&L: Traceability 2.3 Verify Objective Evidence: P&L: Verify Model Relevance	2.2 Document Objective Evidence: P&L: Traceability 2.3 Verify Objective Evidence: P&L: Verify Model Relevance
	(2) the retention and safekeeping of appraisal records, and		3.2 Package and Archive Appraisal Assets: P&L: Disposition of appraisal record	3.2 Package and Archive Appraisal Assets: P&L: Disposition of appraisal record
	(3) compiling and maintaining an appraisal record that supports the appraisal team's findings and/or ratings and that contains the following minimum content:		3.2 Package and Archive Appraisal Assets: P&L: Required Contents of the appraisal record	3.2 Package and Archive Appraisal Assets: P&L: Required Contents of the appraisal record
4.2.16.a	(ABC) dates of appraisal	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record	3.2 Package and Archive Appraisal Assets: P&L: Required Contents of the appraisal record	3.2 Package and Archive Appraisal Assets : P&L: Required Contents of the appraisal record
4.2.16.b	(ABC) appraisal input	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record	3.2 Package and Archive Appraisal Assets: P&L: Required Contents of the appraisal record	3.2 Package and Archive Appraisal Assets: P&L: Required Contents of the appraisal record
4.2.16.c	(A) objective evidence, or identification thereof, sufficient to substantiate goal rating judgments	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record		

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.2.16.d	(ABC) identification of appraisal method (and version) used, along with any tailoring options	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record	3.2 Package and Archive Appraisal Assets: P&L: Required Contents of the appraisal record	3.2 Package and Archive Appraisal Assets: P&L: Required Contents of the appraisal record
4.2.16.e	(ABC) findings	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record	3.2 Package and Archive Appraisal Assets: P&L: Required Contents of the appraisal record	3.2 Package and Archive Appraisal Assets: P&L: Required Contents of the appraisal record
4.2.16.f	(A) any ratings rendered during the appraisal (goals, process areas, and maturity or capability levels)	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record		
4.2.16.g	(A) the set of 15504 process profiles resulting from the appraisal, if requested by the appraisal sponsor	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record		
4.3	Planning and Preparing for the Appraisal		Chapter 2: 1. Plan and Prepare for Appraisal	Chapter 2: 1. Plan and Prepare for Appraisal
4.3.1	The method shall provide for the preparation of appraisal participants by addressing, at a minimum,	1.4 Obtain and Analyze Preliminary Objective Evidence 1.4.1 Prepare Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants
4.3.1.a	(ABC) the purpose of the appraisal	1.4 Obtain and Analyze Preliminary Objective Evidence 1.4.1 Prepare Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants
4.3.1.b	(ABC) the scope of the appraisal	1.4 Obtain and Analyze Preliminary Objective Evidence 1.4.1 Prepare Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants
4.3.1.c	(ABC) the appraisal approach	1.4 Obtain and Analyze Preliminary Objective Evidence 1.4.1 Prepare Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.3.1.d	(ABC) the roles and responsibilities of participants in the appraisal	1.4 Obtain and Analyze Preliminary Objective Evidence 1.4.1 Prepare Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants
4.3.1.e	(ABC) the schedule of appraisal activities	1.4 Obtain and Analyze Preliminary Objective Evidence 1.4.1 Prepare Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants	1.4 Prepare Participants and Obtain Initial Objective Evidence: P&L: Communication with Appraisal Participants
4.3.2	(ABC) The method shall provide for the development of the appraisal input prior to the beginning of data collection by the appraisal team.	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements: P&L	1.1 Analyze Requirements: P&L
4.3.3	At a minimum, the appraisal input shall specify	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements: P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements: P&L: Required Contents of the Appraisal Input
4.3.3.a	(ABC) the identity of the sponsor of the appraisal and the sponsor's relationship to the organizational unit being appraised	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements: P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements: P&L: Required Contents of the Appraisal Input
4.3.3.b	(ABC) the appraisal purpose, including alignment with business objectives	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.c	(ABC) the appraisal reference model scope, including	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.c.1	the process areas to be investigated within the organizational unit	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Model Scope	1.1 Analyze Requirements P&L: Model Scope
4.3.3.c.2	the highest maturity level and/or capability level to be investigated for each process area within the appraisal scope	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Model Scope	1.1 Analyze Requirements P&L: Model Scope
4.3.3.d	(ABC) the organizational unit that is the subject of the appraisal	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.e	(ABC) the process context, which, at a minimum, shall include	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.3.3.e.1	the size of the organizational unit	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Process Context	1.1 Analyze Requirements P&L: Process Context
4.3.3.e.2	the demographics of the organizational unit	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Process Context	1.1 Analyze Requirements P&L: Process Context
4.3.3.e.3	the application domain of the products or services of the organizational unit	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Process Context	1.1 Analyze Requirements P&L: Process Context
4.3.3.e.4	the size, criticality, and complexity of the products or services	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Process Context	1.1 Analyze Requirements P&L: Process Context
4.3.3.e.5	the quality characteristics of the products or services (e.g., defect density, reliability)	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Process Context	1.1 Analyze Requirements P&L: Process Context
4.3.3.f	(ABC) the appraisal constraints, which, at a minimum, shall include	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.f.1	availability of key resources (e.g., staffing, funding, tools, facilities)	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Appraisal Constraints	1.1 Analyze Requirements P&L: Appraisal Constraints
4.3.3.f.2	schedule constraints	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Appraisal Constraints	1.1 Analyze Requirements P&L: Appraisal Constraints
4.3.3.f.3	the maximum amount of time to be used for the appraisal	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Appraisal Constraints	1.1 Analyze Requirements P&L: Appraisal Constraints
4.3.3.f.4	specific process areas or organizational entities to be excluded from the appraisal	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Appraisal Constraints	1.1 Analyze Requirements P&L: Appraisal Constraints
4.3.3.f.5	the minimum, maximum, or specific sample size or coverage that is desired for the appraisal	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Appraisal Constraints	1.1 Analyze Requirements P&L: Appraisal Constraints

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.3.3.f.6	the ownership of the appraisal outputs and any restrictions on their use	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Appraisal Constraints	1.1 Analyze Requirements P&L: Appraisal Constraints
4.3.3.f.7	controls on information resulting from a confidentiality agreement	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Appraisal Constraints	1.1 Analyze Requirements P&L: Appraisal Constraints
4.3.3.f.8	non-attribution of appraisal data to associated sources	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Appraisal Constraints	1.1 Analyze Requirements P&L: Appraisal Constraints
4.3.3.g	(ABC) the identity of the CMMI models used, including the version, discipline, and representation (staged or continuous)	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.h	(ABC) the criteria for experience, knowledge, and skills of the appraisal team leader who is responsible for the appraisal	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.i	(ABC) the identity and affiliation of the appraisal team members, including the appraisal team leader, with their specific responsibilities for the appraisal	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.j	(ABC) the identity (name and organizational affiliation) of appraisal participants and support staff, with specific responsibilities for the appraisal	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.k	(ABC) any additional information to be collected during the appraisal to support achievement of the appraisal objectives	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.l	(ABC) a description of the planned appraisal outputs, including ratings to be generated (process areas, maturity level)	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.m	(ABC) anticipated follow-on activities (e.g., reports, appraisal action plans, re-appraisal)	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input
4.3.3.n	(ABC) planned tailoring of the appraisal method and associated tradeoffs, including the sample size or coverage of the organizational unit	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements P&L: Required Contents of the Appraisal Input

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.3.4	(ABC) The method shall require that the appraisal input and any changes to the appraisal input shall be agreed to by the sponsor (or the delegated authority) and documented in the appraisal record.	1.1 Analyze Requirements 1.1.5 Obtain Commitment to Appraisal Input	1.1 Analyze Requirements: P&L P&L: Required Contents of the Appraisal Input	1.1 Analyze Requirements: P&L P&L: Required Contents of the Appraisal Input
4.3.5	The method shall require the development of an appraisal plan that, at a minimum, specifies			
4.3.5.a	(ABC) the appraisal input	1.2 Develop Appraisal Plan 1.2.6 Obtain Commitment to Appraisal Plan	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record
4.3.5.b	(ABC) the activities to be performed in conducting the appraisal	1.2 Develop Appraisal Plan 1.2.6 Obtain Commitment to Appraisal Plan	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record
4.3.5.c	(ABC) resources and schedule assigned to appraisal activities	1.2 Develop Appraisal Plan 1.2.6 Obtain Commitment to Appraisal Plan	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record
4.3.5.d	(ABC) appraisal logistics	1.2 Develop Appraisal Plan 1.2.6 Obtain Commitment to Appraisal Plan	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record
4.3.5.e	(ABC) mitigation steps to address risks associated with appraisal execution	1.2 Develop Appraisal Plan 1.2.6 Obtain Commitment to Appraisal Plan	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record	1.2 Develop Appraisal Plan: P&L: Required Contents of the Appraisal Record
4.3.5.f	(A) the criteria to verify that the requirements of ISO/IEC 15504 have been met, if requested by the appraisal sponsor	1.2 Develop Appraisal Plan 1.2.6 Obtain Commitment to Appraisal Plan		
4.4	Appraisal Data Collection			
4.4.intro	Appraisal teams base their findings on observations that, in turn, are based on objective evidence gathered from one or more sources. The requirements in this section identify the sources of objective evidence recognized by CMMI appraisal methods. As indicated in Appendix A, all three sources of objective evidence identified below are required for Class A appraisal methods. At least two sources are required for Class B methods, one of which must be interviews. At least one source is required for Class C methods.		2.1 Examine Objective Evidence P&L: Objective Evidence	2.1 Examine Objective Evidence P&L: Objective Evidence

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.4.1	(See Appendix A)The method shall collect data by administering instruments (e.g., questionnaires, surveys).	2.1 Examine Objective Evidence 2.1.1 Examine Objective Evidence from Instruments	2.1 Examine Objective Evidence: Guidance: Instruments	2.1 Examine Objective Evidence: Guidance: Instruments
4.4.2	(See Appendix A) The method shall collect data by conducting interviews (e.g., with project leaders, managers, practitioners).	2.1 Examine Objective Evidence 2.1.4 Examine Objective Evidence from Interviews	2.1 Examine Objective Evidence: P&L: Interviews	2.1 Examine Objective Evidence: P&L: Interviews
4.4.3	(See Appendix A) The method shall collect data by reviewing documentation (e.g., organizational policies, project procedures, and implementation-level work products).	2.1 Examine Objective Evidence 2.1.3 Examine Objective Evidence from Documents	2.1 Examine Objective Evidence: P&L: Work Actually Being Done	2.1 Examine Objective Evidence: P&L: Work Actually Being Done
4.5	Data Consolidation and Validation			
4.5.1	(AB) The method shall require appraisal team consensus in decisions when determining the validity of observations, creating findings, and establishing ratings.	2.4 Generate Appraisal Results 2.4.1 Derive Findings and Rate Goals	2.3 Verify Objective Evidence: RP P&L: Verify Model Relevance 2.5 Generate Appraisal Results: P&L	
4.5.2	The method shall require a mechanism for consolidating the data collected during an appraisal into accurate observations according to the following criteria:			
4.5.2.a	(ABC) The observation was derived from objective evidence seen or heard during data collection sessions.	2.3 Document Objective Evidence 2.3.3 Document Practice Implementation Gaps	2.3 Verify Objective Evidence: P&L: Verify Accuracy	2.3 Verify Objective Evidence: P&L: Verify Accuracy
4.5.2.b	(ABC) The observation is clearly worded, phrased without attribution, and expressed in terminology used at the organizational unit.	2.3 Document Objective Evidence 2.3.3 Document Practice Implementation Gaps	2.3 Verify Objective Evidence: P&L: Verify Non-attribution	2.3 Verify Objective Evidence: P&L: Verify Non-attribution
4.5.2.c	(ABC) The observation is relevant to the appraisal reference model and can be associated with a specific model component.	2.3 Document Objective Evidence 2.3.3 Document Practice Implementation Gaps	2.3 Verify Objective Evidence: P&L: Verify Model Relevance	2.3 Verify Objective Evidence: P&L: Verify Model Relevance

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.5.3	The method shall require a mechanism for validating each accurate observation according to the following criteria:	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence	2.3 Verify Objective Evidence (all)	
4.5.3.a	(AB) The observation is corroborated.	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence	2.3 Verify Objective Evidence: P&L: Verify Corroboration	
4.5.3.b	(AB) The observation is consistent with other validated observations. (Validated observations cannot be both true and mutually inconsistent; in aggregate, they constitute a set of truths about the organizational unit that must be consistent.)	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence	2.3 Verify Objective Evidence: P&L: Verify Consistency	
4.5.4	The method shall require the following minimum set of criteria to be satisfied in order for an observation to be considered “corroborated”:			
4.5.4.a	(AB) The observation is based on data from at least two different sources (e.g., the data should originate from at least two different individuals).	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence	2.3 Verify Objective Evidence: P&L: Verify Corroboration	
4.5.4.b	(AB) The observation is based on data from at least two different data-gathering sessions.	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence	2.3 Verify Objective Evidence: P&L: Verify Corroboration	
4.5.4.c	(AB) At least one of the two data points must reflect work actually being done (e.g., process area implementation).	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence	2.3 Verify Objective Evidence: P&L: Work Actually Being Done	
4.5.5	The method shall require a mechanism for determining that sufficient data has been collected to cover the scope of the appraisal, according to the following minimum set of rules:	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence		

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.5.5.a	(A) A specific or generic practice has sufficient data coverage if validated observations exist for the practice and	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence		
4.5.5.a.1	are adequate to understand the extent of implementation of the practice	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence		
4.5.5.a.2	are representative of the organizational unit	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence		
4.5.5.a.3	are representative of the life-cycle phases in use within the organizational unit	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence		
4.5.5.b	(A) In a staged representation, a process area has sufficient data coverage if all of its specific and generic practices have sufficient data coverage.	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence		
4.5.5.c	(A) In a continuous representation, a process area has sufficient data coverage if all of its specific practices and the generic practices within the appraisal scope have sufficient data coverage up through the capability level being investigated for the process area (e.g., the target capability level).	2.2 Verify and Validate Objective Evidence 2.2.1 Verify Objective Evidence		
4.5.6	(A) The method shall require a mechanism for consolidating observations into draft findings of strengths and weaknesses relative to the appraisal reference model.	2.2 Verify and Validate Objective Evidence 3.7.3 Validate Practice Implementation Gaps		
4.5.7	(A) The method shall require that the appraisal participants be presented with the draft findings in order to solicit their responses for verification of the findings' accuracy and clarity.	2.2 Verify and Validate Objective Evidence 3.7.3 Validate Practice Implementation Gaps	2.4 Validate Preliminary Appraisal Outputs	2.4 Validate Preliminary Appraisal Outputs
4.6	Rating			

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.6.1	The method shall define a rating process that specifies, at a minimum, the following:	2.4 Generate Appraisal Results		
4.6.1.a	(A) An appraisal team can rate a specific or generic goal when valid observations for each practice related to the goal meet the method's defined data coverage criteria.	2.4 Generate Appraisal Results 2.4.1 Derive Findings and Rate Goals		
4.6.1.b	(A) An appraisal team can rate a process area when it has rated each of the process area's specific goals and generic goals within the appraisal scope.	2.4 Generate Appraisal Results 2.4.2a Determine Process Area Capability Level 3.9.2b Determine Satisfaction of Process Areas		
4.6.1.c	(A)An appraisal team can determine a maturity level rating once it has rated all of the process areas within that level and each level below.	2.4 Generate Appraisal Results 2.4.3b Determine Maturity Level		
4.6.1.d	(A) An appraisal team can determine the capability level of a process area when it has rated each of the generic goals at or below the target capability level.	2.4 Generate Appraisal Results 2.4.3a Derive Process Area Capability Profile		
4.6.2	(A)The method shall require that maturity level ratings and/or capability level ratings be based on the definitions of capability levels and maturity levels in the CMMI models.	2.4 Generate Appraisal Results 2.4.3a Derive Process Area Capability Profile 2.4.3b Determine Maturity Level		
4.6.3	The method shall rate each specific and generic goal (provided the prerequisites of rating have been completed) within the appraisal scope in accordance with the following rules:	2.4 Generate Appraisal Results 2.4.1 Derive Findings and Rate Goals		
4.6.3.a	(A) Rate the goal "satisfied" when the associated generic or specific practices (or acceptable alternative practices) are judged to be implemented and the aggregate of weaknesses does not have a significant negative impact on goal achievement.	2.4 Generate Appraisal Results 2.4.1 Derive Findings and Rate Goals		

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.6.3.b	(A) Rate the goal "unsatisfied" otherwise.	2.4 Generate Appraisal Results 2.4.1 Derive Findings and Rate Goals		
4.6.4	The method shall rate each process area within the appraisal scope, if requested by the appraisal sponsor, in accordance with the following rules:			
4.6.4.a	(A) For a staged representation, the process area is "satisfied" if and only if all of its specific and generic goals are rated "satisfied."	2.4 Generate Appraisal Results 2.4.2b Determine Satisfaction of Process Areas		
4.6.4.b	(A) For a continuous representation, the process area is given a capability level rating based upon the highest level and all levels below for which its specific goals and the generic goals within the appraisal scope have been satisfied.	2.4 Generate Appraisal Results 2.4.2a Determine Process Area Capability Level		
4.6.4.c	(A) When a process area is determined to be outside of the organizational unit's scope of work, the process area is designated as "not applicable" and is not rated.	2.4 Generate Appraisal Results 2.4.3a Determine Process Area Capability Profile 2.4.3b Determine Maturity Level		
4.6.4.d	(A) When a process area is outside of the appraisal scope, or if the associated findings do not meet the method's defined criteria for data coverage, the process area is designated as "not rated" and is not rated.	2.4 Generate Appraisal Results 2.4.3a Determine Process Area Capability Profile 2.4.3b Determine Maturity Level		
4.6.5	The method shall rate the maturity level, if requested by the appraisal sponsor, in accordance with the following rules:	2.4 Generate Appraisal Results 2.4.3b Determine Maturity Level		

ARC ID	ARC Requirement	SCAMPI A MDD	SCAMPI B	SCAMPI C
4.6.5.a	(A) A maturity level for a staged representation is achieved if all process areas within the level and within each lower level are either “satisfied” or “not applicable.”	2.4 Generate Appraisal Results 2.4.3b Determine Maturity Level		
4.6.5.b	(A) A maturity level for a continuous representation is achieved if the capability level profile is at or above the target profile for all process areas for that maturity level and all lower maturity levels in the equivalent staging, excepting those process areas that are designated as “not applicable.”	2.4 Generate Appraisal Results 2.4.3b Determine Maturity Level		
4.7	Reporting Results			
4.7.1	(ABC) The method shall require documenting and reporting the appraisal findings and/or ratings to the appraisal sponsor and to the appraised organization.	3.1 Deliver Appraisal Results 3.1.1 Present Final Findings	3.1 Deliver Appraisal Results: RP	3.1 Deliver Appraisal Results: RP
4.7.2	(A) If ISO/IEC 15504 conformance is desired, the method shall define a mechanism for converting objective evidence used by the appraisal team as the basis for goal ratings into associated process attribute outcomes in accordance with the translation requirement of ISO/IEC TR 15504-2 (clause 7.6).	TBD		
4.7.3	(A) The method shall require the submission of appraisal data required by the CMMI Steward for the purpose of reporting aggregated appraisal information to the constituent community.	3.2 Package and Archive Appraisal Assets 3.2.3 Provide Appropriate Feedback to CMMI Steward	3.2 Package and Archive Appraisal Assets	3.2 Package and Archive Appraisal Assets
4.7.4	(ABC) The method shall require that the appraisal record be provided to the appraisal sponsor for retention.	3.2 Package and Archive Appraisal Assets 3.2.2 Generate Appraisal Record	3.2 Package and Archive Appraisal Assets: RP	3.2 Package and Archive Appraisal Assets: RP

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Glossary

Affirmation — An oral or written statement confirming or supporting implementation of a CMMI model specific practice or generic practice. Affirmations are usually provided by the implementers of the practice and/or internal or external customers, but may also include other stakeholders (e.g., managers, suppliers). [derived from SCAMPI MDD method overview] Interview responses are examples of face-to-face affirmations. Alternative forms of affirmations could include presentations or demonstrations of a tool or mechanism as it relates to implementation of a CMMI model practice. [derived from SCAMPI MDD PII appendix B]

Alternative Practice — A practice that is a substitute for one or more generic or specific practices contained in the CMMI model that achieves an equivalent effect toward satisfying the goal associated with the practices. Alternative practices are not necessarily one-for-one replacements for the generic or specific practices. [ARC v1.1 and CMMI model glossary]

Appraisal — An examination of one or more processes by a trained team of professionals using an appraisal reference model as the basis for determining, as a minimum, strengths and weaknesses. [ARC v1.1]

Appraisal Disclosure Statement (ADS) — A summary statement describing the ratings generated as outputs of the appraisal, and the conditions and constraints under which the appraisal was performed. The ADS should be used for public disclosures of maturity level or capability level ratings so they can be interpreted accurately. [SCAMPI MDD]

Appraisal Input — The collection of appraisal information required before data collection can commence. [ISO 98C and ARC v1.1]

Appraisal Method Class — A family of appraisal methods that satisfy a defined subset of requirements in the Appraisal Requirements for CMMI (ARC). These classes are defined so as to align with typical usage modes of appraisal methods. [derived from ARC v1.0, CMMI model glossary and ARC v1.1]

Appraisal Objectives — The desired outcome(s) of an appraisal process. [ARC v1.1]

Appraisal Outputs — All of the tangible results from an appraisal (see "appraisal record"). [ISO 98C and ARC v1.1]

Appraisal Participant — Members of the organizational unit who participate in providing information during the appraisal. [CMMI model glossary and ARC v1.1]

Appraisal Record — An orderly, documented collection of information that is pertinent to the appraisal and adds to the understanding and verification of the appraisal findings and ratings generated. [derived from ISO 98C and ARC v1.1]

Appraisal Reference Model — The CMMI model to which an appraisal team correlates implemented process activities. [CMMI model glossary and ARC v1.1]

Appraisal Sponsor — The individual, internal or external to the organization being appraised, who requires the appraisal to be performed, and provides financial or other resources to carry it out. [derived from ISO 98C and ARC v1.1]

Appraisal Tailoring — Selection of options within the appraisal method for use in a specific instance. The intent of tailoring is to assist an organization in aligning application of the method with its business needs and objectives. [CMMI model glossary and ARC v1.1]

Appraisal Team Leader — The person who leads the activities of an appraisal and has satisfied the qualification criteria for experience, knowledge, and skills defined by the appraisal method. [ARC v1.1]

Consensus — A method of decision making that allows team members to develop a common basis of understanding and develop general agreement concerning a decision that all team members are willing to support. [ARC v1.1]

Consolidation — The activity of collecting and summarizing the information provided into a manageable set of data to (a) determine the extent to which the data are corroborated and cover the areas being investigated, (b) determine the data's sufficiency for making judgments, and (c) revise the data-gathering plan as necessary to achieve this sufficiency. [ARC v1.1]

Corroboration — The extent to which enough data has been gathered to confirm that an observation is acceptable for use by an appraisal team. [ARC v1.1] In SCAMPI, corroboration is obtained through method requirements for the collection of practice implementation indicators of multiple types (see "practice implementation indicator"). [SCAMPI MDD]

Data Collection Session — An activity during which information that will later be used as the basis for observation formulation or corroboration is gathered. Data collection sessions (or activities) include the administration and/or analysis of instruments, document review, interviews, and presentations. [ARC v1.1]

Direct Artifact — The tangible outputs resulting directly from implementation of a specific or generic practice. An integral part of verifying practice implementation. May be explicitly stated or implied by the practice statement or associated informative material. [SCAMPI MDD method overview]

Discovery-Based Appraisal — An appraisal in which limited objective evidence is provided by the appraised organization prior to the appraisal, and the appraisal team must

probe and uncover a majority of the objective evidence necessary to obtain sufficient coverage of CMMI model practices. Discovery-based appraisals typically involve substantially greater appraisal team effort than verification-based appraisals, in which much of the objective evidence is provided by the appraised organization. (See verification-based appraisal for contrast.) [SCAMPI MDD]

Document — A collection of data, regardless of the medium on which it is recorded, that generally has permanence and can be read by humans or machines. [ARC v1.1] In SCAMPI, documents are work products reflecting the implementation of one or more model practices. This typically includes work products such as organizational policies, procedures, and implementation-level work products. Documents may be available in hardcopy, softcopy, or accessible via hyperlinks in a web-based environment. [derived from SCAMPI MDD method overview]

Indirect Artifact — An artifact that is a consequence of performing a specific or generic practice or that substantiates its implementation, but that is not the purpose for which the practice is performed. This indicator type is especially useful when there may be doubts about whether the intent of the practice has been met (e.g., a work product exists but there is no indication of where it came from, who worked to develop it, or how it is used). [SCAMPI MDD method overview]

Instantiation — For practices implemented by projects, each project; for practices implemented organization-wide, the instance. [SCAMPI MDD]

Instrument — Artifacts used in an appraisal for the collection and presentation of data (e.g., questionnaires, organizational unit information packets). [ARC v1.1] In SCAMPI, instruments are used to collect written information relative to the organizational unit's implementation of CMMI model practices. This can include assets such as questionnaires, surveys, or an organizational mapping of CMMI model practices to its corresponding processes. [SCAMPI MDD]

Interview — A meeting of appraisal team members with appraisal participants for the purpose of gathering information relative to work processes in place. [ARC v1.1] In SCAMPI, this includes face-to-face interaction with those implementing or using the processes within the organizational unit. Interviews are typically held with various groups or individuals, such as project leaders, managers, and practitioners. A combination of formal and informal interviews may be held and interview scripts or exploratory questions developed to elicit the information needed. [SCAMPI MDD]

Mini-Team — A subset of the appraisal team members, typically two or three, assigned primary responsibility for collection of sufficient appraisal data to ensure coverage of their assigned reference model process areas. [SCAMPI MDD]

Objective Evidence — Qualitative or quantitative information, records, or statements of fact pertaining to the characteristics of an item or service or to the existence and implementation of a process element, which is based on observation, measurement, or test and which can be verified. [CMMI model glossary, ISO 98C and ARC v1.1] In SCAMPI, sources of

objective evidence include instruments, presentations, documents, and interviews. [SCAMPI MDD]

Observation — A written record that represents the appraisal team members' understanding of information either seen or heard during the appraisal data collection activities. The written record may take the form of a statement or may take alternative forms as long as the information content is preserved. [CMMI model glossary, ARC v1.1]

Organization's Set of Standard Processes (OSSP) — A collection of definitions of the processes that guide activities in an organization. These process descriptions cover the fundamental process elements (and their relationships to each other, such as ordering and interfaces) that must be incorporated into the defined processes that are implemented in projects across the organization. A standard process enables consistent develop [CMMI model glossary]

Organizational Unit (OU) — That part of an organization that is the subject of an appraisal (also known as the organizational scope of the appraisal). An organizational unit deploys one or more processes that have a coherent process context and operates within a coherent set of business objectives. An organizational unit is typically part of a larger organization, although in a small organization, the organizational unit may be the whole organization. [derived from CMMI model glossary, ISO 98C and ARC v1.1]

Practice Characterization — The assignment of a value describing the extent to which a CMMI model practice is implemented, used as a mechanism to reach appraisal team consensus. The range of values for practice characterization values includes Fully Implemented (FI), Largely Implemented (LI), Partially Implemented (PI), and Not Implemented (NI). Practice characterization values are assigned to each CMMI model practice for each process instantiation within the appraisal scope, and aggregated to the organizational unit level. [local]

Practice Implementation Indicators (PIIs) — An objective attribute or characteristic used as a "footprint" to verify the conduct of an activity or implementation of a CMMI model specific or generic practice. Types of practice implementation indicators include direct artifacts, indirect artifacts, and affirmations. [derived from 15504-9 and MDD method overview]

Preliminary Finding — Initial findings created by an appraisal team after consolidating and synthesizing valid observations to provide the findings to appraisal participants for validation of accuracy. [derived from ARC v1.1]

Presentation — In SCAMPI, a source of objective evidence that includes information prepared by the organization and delivered visually or verbally to the appraisal team to aid in understanding the organizational processes and implementation of CMMI model practices. This typically includes such mechanisms as orientation or overview briefings, and demonstrations of tools or capabilities. [derived from SCAMPI MDD method overview]

Process Context — The set of factors documented in the appraisal input that influences the judgment and comparability of appraisal ratings. These include, but are not limited to,

(a) the size of the organizational unit to be appraised, (b) the demographics of the organizational unit, (c) the application domain of the products or services, (d) the size, criticality, and complexity of the products or services, and (e) the quality characteristics of the products or services. [CMMI model glossary]

Process Monitoring — An appraisal mode of usage in which appraisals are used to monitor process implementation (for example, after contract award by serving as an input for an incentive/award fee decision or a risk management plan). The appraisal results are used to help the sponsoring organization tailor its contract or process monitoring efforts by allowing it to prioritize efforts based on the observed strengths and weaknesses of the organization's processes. This usage mode focuses on a long-term teaming relationship between the sponsoring organization and the development organization (buyer and supplier). [derived from SCAMPI MDD method overview]

Relevant Stakeholders — A stakeholder that is identified for involvement in specified activities and is included in a plan. [CMMI model glossary]

Strength — Exemplary or noteworthy implementation of a CMMI model practice. [CMMI model glossary and ARC v1.1]

Sufficient Data Coverage — A determination that the coverage requirements have been met. See "coverage" and "coverage criteria." [ARC v1.1]

Supplier Selection — An appraisal mode of usage in which appraisal results are used as a high value discriminator to select suppliers. The results are used in characterizing the process-related risk of awarding a contract to a supplier. [derived from SCAMPI MDD method overview]

Valid Observation — An observation that the appraisal team members agree is (a) accurate, (b) corroborated, and (c) consistent with other valid observations. [ARC v1.1]

Verification-Based Appraisal — An appraisal in which the focus of the appraisal team is on verifying the set of objective evidence provided by the appraised organization in advance of the appraisal, in order to reduce the amount of probing and discovery of objective evidence during the appraisal on-site period. (See discovery-based appraisal for contrast.) [SCAMPI MDD]

Weakness — The ineffective, or lack of, implementation of one or more CMMI model practices. [CMMI model glossary and ARC v1.1]

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The Standard CMMI Appraisal Method for Process Improvement (SCAMPI[SM]) provides a well defined, publicly available set of methodologies for providing appraisals relative to Capability Maturity Model® Integration (CMMI®) models. It is applicable to a wide range of appraisal usage modes, including both internal process improvement and external capability determinations. With the publication of this handbook, the method is embodied in three standard variants based on the class structure defined in the Appraisal Requirements for CMMI (ARC V1.1). As a set, the SCAMPI methods provide a variety of solutions to accommodate the needs of appraisers who play a variety of different roles. The internal change agent, the professional consultant, and the external auditor all have needs that lead to specific sets of tailoring decisions in the use of process appraisals. Guidance for these needs is provided for each applicable process description. This document defines the boundaries of tailoring and provides guidance for the application of the SCAMPI B and SCAMPI C methods.

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