TECHNICAL REPORT

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Systems Engineering Capability Model Appraisal Method

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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EIA-731.2

TechAmerica Standard

Systems Engineering Capability Model Appraisal Method

EIA-731.2

(Formerly EIA/IS-732.2)

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SYSTEMS ENGINEERING CAPABILITY MODEL APPRAISAL METHOD

CONTENTS

CONTENTS (*continued*)

CONTENTS (*continued*)

Tables

CONTENTS (*continued*)

Foreword

Purpose

This document describes the Appraisal Method (AM) for the Systems Engineering Capability Model (SECM). An appraisal compares an organization's Systems Engineering capabilities against the Specific Practices of the Focus Areas and the Generic Characteristics defined in EIA-731, Part 1.

Who Should Use the Appraisal Method

Executives and process owners in organizations, enterprises, or programs performing just about any kind of Systems Engineering product life cycle activities may use the Appraisal Method. Organizations already engaged in process improvement efforts may use this Appraisal Method and the SECM to baseline their efforts and success to date.

Why the Appraisal Method was developed

The problem that EPIC, the SECM Working Group, EIA, and INCOSE intends to solve is to reduce the barriers to enterprise-wide process improvement. As part of this, a consistent Appraisal Method is needed to provide a publicly accessible method to prepare for and acquire capability baselines and industry/product-independent, comparative appraisals.

Appraisal Method Scope

The scope of the Appraisal Method is designed specifically to support continuous process improvement. The Appraisal Method activities are the same basic set used by the SEI CMM-Based Appraisal for Internal Process Improvement (CBA-IPI) method for staged architecture CMM®s. Some differences exist due to the different model architectures.

This document is a process description for the Appraisal Method, not a training manual. Some materials are included that support appraisal training; however, it is *not* the intent of this document to be a substitute for appraisal training materials.

How this Appraisal Method should be used

This Appraisal Method description was written to support an appraisal using the SECM as a reference model. This Appraisal Method description was not written to meet the needs of a third-party evaluation or audit. An appraisal of an organization's systems engineering capabilities prmarily provides information useful for improving those capabilities vis-à-vis the SECM. This Appraisal Method can be performed as a self-appraisal or conducted by or with the assistance of an outside organization or consultant.

Appraisal Method developers

This Appraisal Method was developed by the EIA G47 SECM Working Group that developed EIA-731, Part 1.

Acknowledgments

The acknowledgments are given in Part 1 of this document.

1 Introduction

1.1 Overview

This document contains basic information on the continuous architecture Appraisal Method. It is broken into six Sections with Annexes A through H.

- Section 1 contains introductory information and assumptions used in creating the Appraisal Method.
- Section 2 contains a brief overview of the important aspects of initiating, preparing for, and conducting an appraisal.
- Sections 3, 4, and 5 contain summaries of each of the major phases and process activities of the Appraisal Method. They begin with activity objectives, expected duration, brief descriptions of what to do and how to do it, and end with closure criteria. One page summary checklists for most activities are included in Annex E.
- Section 6 contains guidance information that is helpful in preparing for and conducting an appraisal.
- The Annexes contain templates and instructions for using support tools, including the Appraisal Method questionnaire.

Sections 1 and 2 are informative. Sections 3, 4, and 5 are normative but tailorable. Section 6 is informative, and all annexes are informative except the questionnaire, which is normative but tailorable in format and media.

1.2 Assumptions

The Appraisal Method description is based on the following assumptions, both procedural and model-based, that are relevant to using the Appraisal Method:

- The SECM is the reference model for the Appraisal Method.
- Readers are familiar with the content and concepts of *Systems Engineering Capability Model.*
- Facilitators intending to use the Appraisal Method have been trained in basic organizational appraisal techniques.
- The focus and tone of the Appraisal Method is self-improvement versus audit.

1.2.1 Facilitator Training

This Appraisal Method makes heavy use of informal knowledge that practitioners provide through a series of interviews and feedback sessions. There are many methods for interviewing and synthesizing data from these types of data sources. Although it is not necessary for all members of the appraisal team to be thoroughly versed in the concepts of organizational appraisal, the appraisal will proceed more smoothly, and is likely to produce better results, if at least one, and preferably two, of the appraisal team members are skilled in the facilitator role for organizational appraisals. The facilitators are included as members of the appraisal team.

1.2.2 Focus on Self-Improvement

The actual character of each appraisal will differ based on differences in organizations' cultures and other business contexts. The process described concentrates on a feedback loop that includes multiple levels of the entity being appraised. This is one of the ways in which the Appraisal Method contributes to an overall process improvement activity in the organization. There are many other models for organizational improvement, and most include a diagnostic step that serves to determine the current state of the organization. Diagnostic appraisals steer the attention and resources of the improvement effort.

2 Summary of the Appraisal Method

2.1 Overview

This section provides a brief overview of the important aspects of initiating, preparing for, and conducting an appraisal. Each of these issues is treated in more depth in Sections 3 - 6.

2.2 Appraisal Method

2.2.1 Purpose

The purpose of an appraisal is typically one of the following:

- Identify specific areas for improvement, based upon known, general areas of deficiency (i.e., establish a baseline and Focus Areas for improvements),
- Obtain buy-in for change from the organization,
- Confirm process improvement progress and determine a new baseline during second or subsequent appraisals.

2.2.2 Tailoring Appraisal Based on Objectives

An appraisal should be tailored to meet the objectives of the sponsor's organization. In different industries and situations, various Focus Areas provide greater value if done well than others, so the Appraisal Method should be tailored by selecting the Focus Areas of greatest significance. In addition, an appraisal may concentrate on almost any cohesive engineering unit of an enterprise, including specific projects or programs. The appraisal scope is based upon the sponsor's influence and goals. The appraisal may include all of the Focus Areas (typical for an initial appraisal), or it may concentrate on specific Focus Areas that may have been targeted for process improvement. Tailoring the set of Focus Areas and selecting the organizational units included in the appraisal (programs, functional units, etc.) are the two primary choices that have a significant impact on the duration of and resources required by an appraisal.

Specific aspects of the appraisal that may be tailored are addressed in the "Tailorable Parameters" block of each Focus Area element described in Sections 3 - 5.

2.2.3 Flow Diagram

The flow diagram of activities for a complete, facilitated appraisal is provided in Figure 2-1. Details for each activity and decision point are provided in Sections 3 - 5.

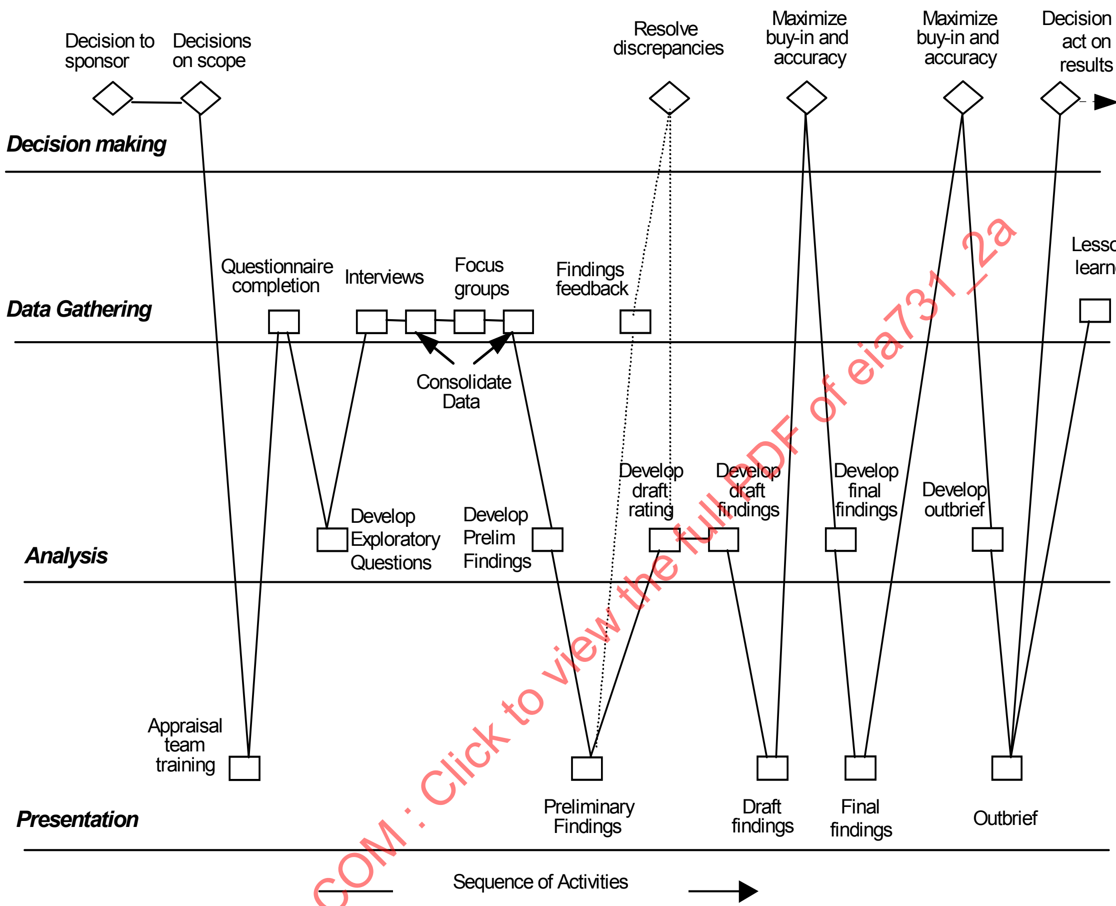


Figure 2-1. Flow Diagram for a Complete Appraisal

2.2.4 Results

The primary outputs of an appraisal are a findings briefing and an appraisal report. The findings briefing is presented at the end of the On-Site period of data collection, and includes a capability level for each Focus Area, capability profile and findings. The findings address both strengths of, and things to improve in, the appraised organization. The things to improve are typically limited to approximately seven synthesized findings to keep the focus on a smaller set of critical issues. The appraisal report is written by the appraisal team after the On-Site period. It includes details on each of the findings and specific recommendations for process improvement based on the findings.

Section 6 discusses the Focus Area capability profile and other aspects of developing and using appraisal results.

2.2.5 Labor Requirements

Table 2-1 defines the typical labor requirements for a complete appraisal (e.g., all SECM Focus Areas applied to three to five programs or equivalent). Labor requirements are tailored as a function of the scope of the appraisal. Typical schedule and labor templates are included in Annex C.

Table 2-1 - Labor Requirements for a Complete Appraisal

Role	Recommended number of people	Hours per person	Total hours for this role
Facilitator	2	66-92	132-184
Coordinator	1	60-100	60-100
Appraisal team members	4-6	65-91	260-546
Product leader interviewees	3-5 (1 per product line or life cycle)	7-10	21-50
Practitioners	3 groups of 8-10	7-10	168-300
TOTAL			641-1180

2.2.6 Phases

Table 2-2 lists the phases of the appraisal process. The activities for each phase are fully described in the indicated sections of this document.

Table 2-2 - Appraisal Phases

Section	Phase	Description
3	Preparation	The activities done in preparation for an appraisal
4	On-Site	The activities done at the site of the entity being appraised
5	Post-Appraisal	The activities done after the On-Site appraisal period

2.3 Appraisal Roles

2.3.1 Personnel Roles

Table 2-3 defines the personnel and associated roles that are typically involved in an appraisal. The responsibilities and functions performed by each of the roles is further defined in Sections 3 - 5. Note that multiple roles may be assigned to one person as appropriate.

Table 2-3 - Appraisal Roles

Role Name	**Description**
Appraisal team	The appraisal team consists of those who conduct the appraisal. *All of the personnel on the appraisal team should be familiar with the SECM prior to the On-Site phase.* This group includes the following roles: • Facilitator, • Appraisal team leader, • Site coordinator, and • Appraisers.
Facilitator	Member of the appraisal team who is responsible for: • Facilitating the appraisal process during the On-Site phase, and • Providing SECM expertise. The facilitator may be drawn from outside the sponsoring organization.
Appraisal Advocate	Individual who is responsible for championing the SECM process and obtaining resources and sponsor commitment.
Appraisal team leader	Individual who is responsible for: • Familiarizing the appraisal team with the Appraisal Method, • Presenting the appraisal findings and developing the appraisal report.
Site coordinator	Individual who is responsible for: • Obtaining facilities for the On-Site phase, • Scheduling activities during the On-Site phase, • Administering and collecting questionnaires, and • Ensuring personnel attendance, as appropriate.
Moderator	An appraisal team member who is responsible for keeping interview sessions focused and on schedule.
Appraisal team member	Anyone who participates in the data collection, analysis, findings generation, and communication with the participants from the appraised organization.
Appraisal participants	The appraisal participants are the subjects of data gathering in an appraisal. This group includes: • Product life cycle leaders (who know all or most of what is performed in the organization; i.e., interviewees that complete a questionnaire), and • Practitioners (technical, support, and management). Participants are the primary sources of data via questionnaires, interviews, and focus groups. Guidance on participant selection is found in Section 6.
Product life cycle leaders (may be called project leaders)	Appraisal participants identified as having responsibility for all or much of a product life cycle as defined by the organization. Each leader: • Completes the Appraisal Method questionnaire, • Participates in an interview, or question and answer session, and • Is a primary source of feedback on the validity of the findings.
Practitioners	Individuals who perform or support product life cycle (direct and indirect; e.g., training, customers, and suppliers). Practitioners are a source of data, primarily via the focus groups, and also as a feedback validation check of the appraisal findings. Practitioners complete all or parts of the questionnaire.
Model Maintenance Group	The group that is responsible for defining and maintaining engineering processes and assessment methods within the organization being appraised. This term also includes the external organization responsible for maintaining the SECM standard (EIA.)
Sponsor	Individual providing the resources for the appraisal and the commitment to the process improvement effort. It is particularly important for the sponsor to show commitment by attending both the opening and closing briefings of the On-Site phase, and especially accepting and indicating action that will occur as a result of the outbrief findings.

2.4 Appraisal Instruments

2.4.1 Findings

The goal of developing the findings is to accurately represent the most important organizational opportunities for process improvement. Data are sampled from the organization using the following check and balance mechanisms: questionnaires, interviews, and feedback sessions.

The findings evolve throughout the appraisal, beginning with the large amount of data from the questionnaire, as illustrated in Figure 2-2. From this data and data from the interviews, a set of preliminary findings is distilled. After reviewing them with the organization or program leaders, the preliminary findings are synthesized into a smaller set of draft findings. After reviewing these draft findings with both the leaders and the practitioners, the appraisal team generates the final findings. Note that the quantity of findings at each stage vary considerably with the capability of the organization.

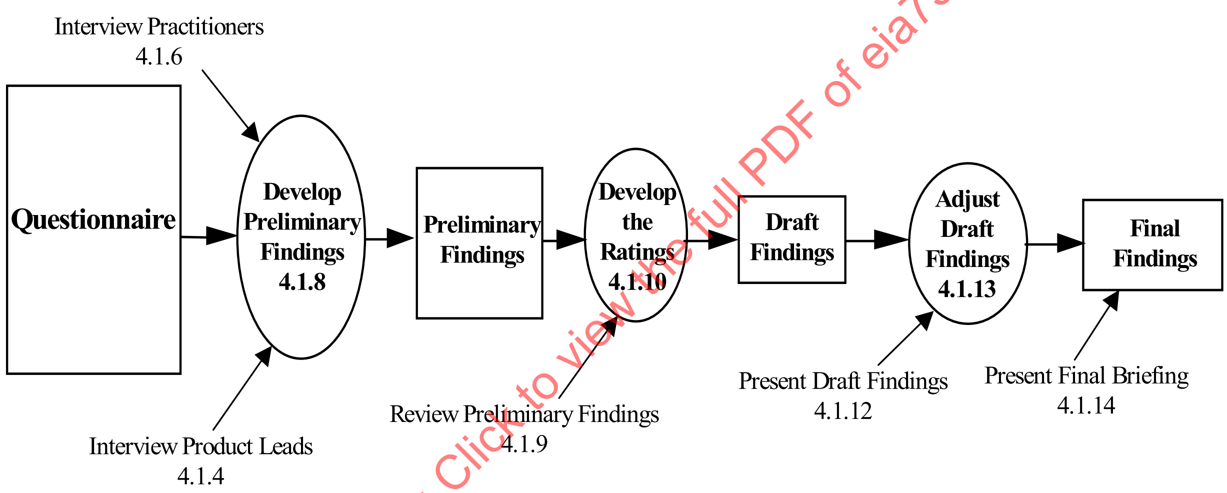


Figure 2-2. Findings Flow

2.4.2 Findings and Ratings Development

As the findings evolve throughout the appraisal, four identifiable products are created. These are described in Table 2-4. Each of the products leads to improving the ratings estimate. The table shows the estimates related to the products and how they are developed throughout the appraisal. The thrust of this process is to converge on a set of final ratings that fairly represent the team consensus of the organization's capability profile that will be presented in the format shown in Figure 2-3.

Table 2-4 - Findings and Ratings Development

Product	Role in Appraisal Process	Ratings
Questionnaires	The questionnaires, representing data from 3 to 5 product life cycle programs, serve as a starting point for the data gathering process. The questionnaire (see Annex H) provides a direct link to the SECM model. [This large volume of data is entered into the Data Tracking Sheet.] Analysis of the questionnaire leads to the exploratory questions for the product leaders and practitioners.	**Questionnaire Rating**: Exploratory questions are developed to resolve discrepancies or inconsistencies in the data from the questionnaires.
Preliminary Findings	The preliminary findings are the appraisal team's first attempt to reduce the information that it has gathered (i.e., from the questionnaire, interviews, and practitioner focus groups) into a set of corroborated observations.	**Preliminary Rating:** The second estimate incorporates preliminary findings as validation of non-satisfied practices. Each incorporated answer is intended to address a discrepancy or inconsistency with the original questionnaire data.
Draft Findings	The draft findings are developed based on feedback that the product leaders supply during their review of the preliminary findings. The draft findings are the appraisal team's consensus description of the opportunities the organization has for process improvement. They are carefully worded, and include the finding, a set of observations underlying it, and a business consequence.	**Draft Rating:** The third estimate is derived after incorporating feedback from the product leaders, based on their review of the Preliminary Findings.
Final Findings	The final findings are developed based on feedback that the practitioners and the product leaders supply during their independent reviews of the draft findings. The typical kinds of changes between the draft and final findings are wording changes for community acceptance, or clarifications of causes or consequences.	**Final Rating:** The final estimate is derived by adjustments from team knowledge and consensus changes to practice satisfaction based on algorithms.

Technical Category	Level 1 Specific Practices are performed	Results are at least of marginal utility	Level 2 Specific Practices are performed	Level 2 Generic Practices are performed	Results are at least of adequate utility	Level 3 Specific Practices are performed	Level 3 Generic Practices performed	Results are of at least significant utility	Level 4 Specific Practices are performed	Level 4 Generic Practices performed	Results are at least of measurably significant utility	Level 5 Specific Practices are performed	Level 5 Generic Practices performed	Results are of optimum utility
1.1 Define Stakeholder & System Level Reqts														
1.2 Define Technical Problem														
1.3 Define Solution														
1.4 Assess and Select														
1.5 Integrate system														
1.6 Verify System														
1.7 Validate System														
	Level 1		Level 2			Level 3			Level 4			Level 5		

Figure 2-3. Sample Format for Depicting Focus Area Ratings (Technical Category)

2.5 How to Read the Process Activity Summaries

All process activity descriptions are similarly formatted, and contain some or all of the information blocks described in Table 2-5. For each major phase (Preparation, On-Site, Post-Appraisal), the summary description contains the process activities that comprise that phase; for the process activities, the summary description contains the actual description of that activity.

Table 2-5 - Process Activity Summaries Organization

Paragraph Title	Description
Purpose	The purpose for this process activity within the Appraisal Method.
Summary Description	An overall summary of the tasks associated with the process activity.
Major Participants	The major roles involved and a summary of their responsibilities associated with the process activity.
Typical Duration	A range of the typical time duration (e.g., number of hours) expected for the process activity.
Steps	The detailed normative steps for the activity, along with informative guidance for performance, if appropriate.
Tailorable Parameters	The parameters associated with this process activity that are expected to be tailored for different appraisal goals.
Exit Criteria	A description of the decision-making criteria to determine if the process activity has been completed.
Notes	Notes on the process activities that do not fit in any of the other categories.

3 Preparation Phase Activities

3.1 Preparation Phase Overview

Purpose:

The Preparation phase prepares the sponsor, the appraisal team, and the organizational units being appraised for the On-Site period. Figure 3-1 illustrates the activities in this phase. Major prerequisites of the preparation phase include:

- The sponsor must commit to provide the resources and actions required for the appraisal process,
- The team must be selected to perform the appraisal,
- The organizational units being appraised must provide preliminary data to the team for analysis, and
- The team must analyze the data prior to arriving On-Site.

3.2 Preparation Phase Activities

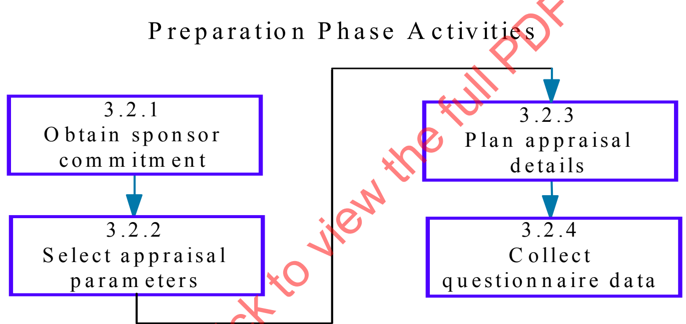


Figure 3-1. Diagram of Preparation Phase

Summary Description:

Table 3-1 lists the major activities of the Preparation phase and the expected output of each. Each element is described more fully in the summaries that follow.

Table 3-1 - Summary Description of Preparation Phase

ID	Activity	Description	Output
3.2.1	Obtain sponsor commitment	Verify that the sponsor: • understands the concept of the appraisal, • defines goals of the appraisal in relation to the sponsor's business goals, • agrees to provide necessary resources, including funding, and • understands his/her visible sponsorship role.	• Appraisal resources • Agreement to proceed and expend resources for the planning and conduct of the appraisal • Appraisal goals related to business goals • Sponsor role understood
3.2.2	Select appraisal parameters	Designate organization units to be appraised and appraisal team, and tailor appraisal method as required (e.g., team size, site time, ratings to produce, number of programs, program characteristics).	• Preliminary appraisal plan that defines appraisal parameters based on appraisal goals
3.2.3	Plan appraisal details	Use appraisal parameters to develop schedule, training requirements, and appraisal support materials; select training materials; and train appraisal team.	• Approved appraisal plan • Identified extent of necessary appraisal team training • Appraisal tools and materials
3.2.4	Collect questionnaire data	Administer questionnaire; review any appropriate documents and artifacts; complete initial practice baseline on spreadsheet.	• Practice baseline • Document and artifact review notes

Table 3-2 lists the primary roles involved in the preparation phase and a summary of their activity during this phase.

Table 3-2 - Participants for Preparation

Role	Summary
Sponsor	Makes the decision to commit to appraisal, provides resource commitments and tailoring guidelines for the appraisal.
Facilitator/site coordinator	Interacts with the management and personnel at the site to obtain commitment for the appraisal, and ensures that the planning for the appraisal is successfully completed.
Appraisal Team Leader/Moderator	Leads the team in planning, leads meetings related to data collection, and assesses the team training requirements
Appraisal team	Interacts with management and the appraisal moderator to assist the planning and learn how to perform the appraisal.

Typical Duration:

Preparation requires two to eight weeks, depending on the complexity of the appraisal selected and other site parameters.

Tailorable Parameters:

- Number of site visits prior to On-Site period
- Number of meetings with sponsor(s)
- Duration of On-Site visit(s)
- Number of meetings with appraisal team
- Appraisal goals
- Number of product examples and support units to appraise
- Number of appraisal team members
- Process area/capability level focus for the appraisal

Exit Criteria:

- Appraisal goals established
- Appraisal resources committed
- Sponsorship visibility ensured
- Product line, team member, and participant selection completed
- Appraisal plan approved
- Preliminary data gathering completed

Notes:

This is where the focus and context for the appraisal are established. The decisions made here will have an impact on the rest of the appraisal activities. All relevant decisions from this phase should be documented in the appraisal plan. The plan may serve as the basis for future activities, including re-appraisals.

3.2.1 Obtain Sponsor Commitment

Purpose:

Obtain Sponsor Commitment establishes the sponsor's commitment to the appraisal and determines the major goals of the appraisal. These goals guide the selection of appraisal parameters.

Summary Description:

Obtain Sponsor Commitment involves meeting with the sponsors of the appraisal to provide an understanding of the concepts of the model (reference model) and the Appraisal Method; engaging the sponsor in dialogue to determine his/her goals for the appraisal; and negotiating a commitment for resources, including personnel and funding for the appraisal activities. A primary aspect of obtaining sponsor commitment is ensuring that the sponsor understands his/her role in the appraisal.

For tailoring guidance, read the related paragraphs in Section 6. For checklist and recommended approach, see Annex F.

Major Participants:

Table 3-3 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 3-3 - Participants for Obtain Sponsor Commitment

Role	Summary
Sponsor	Engages in dialogue with appraisal advocate and moderator to understand appraisal context and set appraisal goals; commits resources for the appraisal.
Facilitator	Engages sponsor in dialogue to understand the appraisal method, outcomes, and expected sponsorship activities.
Site coordinator or appraisal advocate	Provides sponsor with information needed to make a commitment decision on the appraisal. Provides a link between the appraisal sponsor and participants.

Typical Duration:

This activity typically takes 1 to 3 hours.

Tailorable Parameters:

- Method of interaction with sponsor:
  - All face-to-face meetings,
  - Combination of telephone/video and face to face meetings,
  - Combination of written communication and face-to-face meetings,
  - Etc.
- Number of interactions with sponsor

Exit Criteria:

- Appraisal goals established
- Sponsor commitment to provide appraisal resources obtained
- Sponsor commitment to appropriate behavior during the appraisal obtained

Notes:

This is a go/no-go decision point. If sponsor commitment for the appraisal is not obtained, no further process activities related to the Appraisal Method will be performed. In particular, the sponsor must agree to accept the findings, thank the team and participants, and indicate what he/she intends to do to act on one or more of the findings.

Guidance on using business goals and organization context for tailoring the appraisal is addressed in Section 6.

3.2.2 Select Appraisal Parameters

Purpose:

Select Appraisal Parameters determines how the Appraisal Method needs to be tailored to meet the goals established for the appraisal with the sponsor.

Summary Description:

Select Appraisal Parameters involves determining the membership of the appraisal team, the profile of product lines from which to select the organizational units being appraised, and the key appraisal participants. In addition, a preliminary appraisal outline is produced that documents the tailoring of the Appraisal Method process activities and approximate schedule. For tailoring guidance, read the related paragraphs in Section 6.

Major Participants:

Table 3-4 lists the primary roles involved in this process activity and the summary of their tasks during this process.

Table 3-4 - Participants for Select Appraisal Parameters

Role	Summary
Site coordinator and/or appraisal advocate or facilitator	Engages in dialogue with management to determine the scope of the appraisal (who should be involved); engages the organization to determine the makeup of the appraisal team and key appraisal participants. Produces appraisal outline.
Sponsor	Engages in dialogue with site coordinator and/or facilitator and provides appropriate input on characteristics of team and organizational units to be included in appraisal.

Typical Duration:

Tailoring requires one to two weeks, depending on the complexity of tailoring.

Tailorable Parameters:

- Extent of appraisal plan documentation

Exit Criteria:

- Appraisal team selected
- Product lines and organizational units to be included are selected
- Key appraisal participants selected
- Preliminary appraisal outline developed

Notes:

This is the activity where tailoring decisions are made and documented, based on the goals of the appraisal. Guidance on tailoring the appraisal to support the organization's business goals is addressed in Section 6.

3.2.3 Plan Appraisal Details

Purpose:

The purpose of Plan Appraisal Details is to produce and obtain approval for the final appraisal plan, which documents the parameters and details of the appraisal. For tailoring guidance, read the related paragraphs in Section 6.

Summary Description:

Plan Appraisal Details involves establishing the availability of planned interviewees during the On-Site period, planning the logistics of the appraisal (meeting rooms, support staff availability, etc.), and verifying the schedule for the appraisal with all affected parties. It also involves verifying who will receive data on the appraisal and establishing feedback mechanisms for lessons learned. For tailoring guidance, read the related paragraphs in Section 6. The appraisal team's training needs with regard to the appraisal method and model should be identified. Training is addressed in Section 4.2.2.

Major Participants:

Table 3-5 lists the primary roles involved in this process activity and the summary of their tasks during this process.

Table 3-5 - Participants for Plan Appraisal Details

Role	Summary
Appraisal team leader	Oversees production of, and approval for, final appraisal plan.
Appraisal team	Produces assigned sections of appraisal plan.
Sponsor	Approves final appraisal plan.
Site coordinator	Verifies the schedules of the intended participants, arranges logistics details for the appraisal. May collect some documentation.

Typical Duration:

Planning an appraisal takes two to six weeks, depending on the organizational work and complexity of the appraisal plan.

Tailorable Parameters:

- Degree to which details are planned (depends on the complexity of the appraisal)
- Number of key participants needed
- Appraisal team size
- Actual schedule
- Activity participants

Exit Criteria:

- Appraisal schedule established
- Appraisal participant availability confirmed
- Appraisal plan approved
- Appraisal preparations completed

Notes:

This is when the actual arrangements and schedule for the On-Site period is produced. Key participants must be identified and committed to the scheduled activities. In volatile organizations, one to three backups should be identified for interviewees, and a set of appraisal team replacements or a somewhat larger appraisal team than needed should be selected to ensure continuity during the appraisal.

Interviews may be separate or combined, but should include persons who know the whole product life cycle. There is no requirement that interviews be conducted before the focus groups, just that all practice data collection occur before the preliminary findings are developed.

Practitioners may be grouped according to life-cycle phase (product selection, including marketing, finance, training, labs, hiring, etc.; requirements/designers; production/integration/testers; and product field support/disposal), organizational boundaries (organizational support elements together; engineering/ production; and marketing/delivery and retirement), or in other ways that will provide synergy of the information obtained. Groups that have feuds probably should not be grouped together. A program manager group might be set up if they cross organizational boundaries. The point is to use the particular organizational context to the best advantage to corroborate data obtained via the questionnaires and interviews.

Middle manager buy-in may be obtained by having a focus group before the On-Site period, to provide an opportunity to engage them as “owners” of the action plan recommendations. In addition, in some organizations, marketing or business development will “own” product line evolution, and should be included in practitioner groups or formed into a mini-focus group.

Any useful documents, such as policies, process descriptions (often in training materials), standards, even meeting minutes or action item lists, may be requested, collected, and stored for use by the appraisal team. External appraisal teams typically sign non-disclosure agreements with the appraised organization.

A team may request and use documentation generated for or by Focus Area activities before or during the appraisal On-Site period. Sufficient time should be allocated for this task. To the extent possible, pre-On-Site reading of summaries or documentation should be accomplished. Templates or outlines for what information to capture and how to capture it should be determined with the facilitator and communicated to team members and those providing the information.

See Section 6 and Annex F, Site Coordination Checklist, for details on preparing for the logistics of an appraisal.

3.2.4 Collect Questionnaire Data

Purpose:

Collect Questionnaire Data obtains and records profile information on the appraised organizational units.

Summary Description:

Collect Questionnaire Data involves administering and collecting results from the questionnaire and organization profile instruments. The appraisal team leader provides training for the appraisal participants and administers the questionnaire. The questionnaire rephrases the Specific and Generic Practices of the reference model into questions that can be answered with: yes; no; don't know; or not applicable. The questionnaire responses are transferred to the Data Tracking Sheet, either in this activity or in the “Analyze Questionnaire” activity (paragraph 4.1.3). For tailoring guidance, read the related paragraphs in Section 6.

Major Participants:

Table 3-6 lists the primary roles involved in this process activity and the summary of their tasks during this process.

Table 3-6 - Participants for Collect Questionnaire Data

Role	Summary
Appraisal participants	The selected participants provide data on programs and the organization via the questionnaire. The questionnaire may be administered in various ways, e.g., all participants together in a face-to-face meeting, as an on-line response activity, or mail-ins. It is recommended that the questionnaire be administered to the group, with a moderator, site coordinator, or other person with knowledge about the model present to answer questions of terminology, etc.
Site Coordinator	Determines respondents of the questionnaires, makes arrangements for them to complete the questionnaire, and may oversee administration.
Appraisal team leader or moderator	Conducts any meetings related to introducing the data collection activity.
Sponsor	Ensures that all participants are made available for data collection.

Typical Duration:

Collect Questionnaire Data requires two to three hours per participant.

Tailorable Parameters:

- Method of administering questionnaires
- Contents of questionnaire, based on appraisal goals (e.g., if only appraising the management Focus Areas, only use those questionnaire items)
- Who completes what parts of the questionnaire
- Amount of analysis performed prior to On-Site phase
- Transference of questionnaire responses to the Data Tracking Sheet (DTS)

Exit Criteria:

- Appraisal scope information (what different parts of the organization provide, tailored model to be appraised against, participants, etc.) received by appraisal team
- Filled-in questionnaires received by site coordinator
- *Optional*: If it is decided to transfer questionnaire responses to the Data Tracking Sheet prior to the On-Site phase, the transfer should be completed at the end of this process step

Notes:

See the questionnaire distribution table in Section 6.6 and the Appraisal Method questionnaire instructions in Annex F (Site Coordination Checklist) and Annex I (Appraisal Questionnaire) for information on using the questionnaire to collect data. See paragraph 4.1.5 for details on transferring the questionnaire responses to the Data Tracking Sheet (DTS).

4 On-Site Phase Activities

4.1 On-Site Phase Overview

Purpose:

The On-Site phase explores the results of the preliminary data analysis, provides an opportunity for practitioners at the organizational units being appraised to participate in the data gathering and validation process, and provides practitioners and management with input on the results of the appraisal.

Figure 4-1 shows the activities in the on-site phase in a sequential manner. In some cases, the team may be able to perform some activities in parallel. The On-Site phase may occur as several site visits. Annex C shows some alternative On-Site schedules that may be followed.

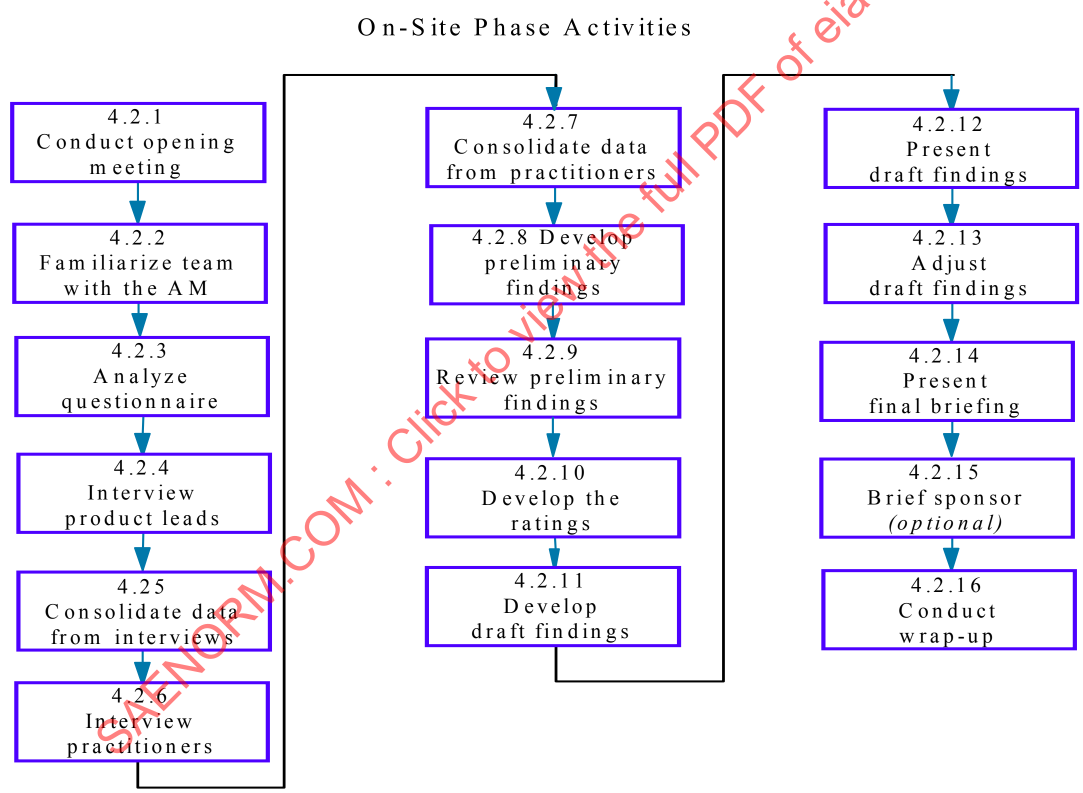


Figure 4-1. Diagram of On-Site Phase

Summary Description:

Table 4-1 lists the major activities of the On-Site phase and the expected output of each. Each element is described more fully in the summaries that follow.

Table 4-1 - Summary Description of the On-Site Phase

ID	Activity	Description	Outputs
4.2.1	Conduct opening meeting	The opening meeting provides participants with an overview of the appraisal and the context of the appraisal (e.g., schedule and confidentiality). The sponsor expresses support of the appraisal and subsequent process improvement activities.	• Appraisal effort described • Questions answered
4.2.2	Familiarize team with the AM	The team leader instructs the appraisal team on the detailed conduct of the appraisal activities and introduces the model as tailored for this appraisal.	• Team prepared
4.2.3	Analyze questionnaire	The appraisal team analyzes the responses to the questionnaire and formulates a set of follow-on, exploratory questions for the interviews and focus groups.	• Exploratory questions
4.2.4	Interview product life cycle leaders or project leaders	Through structured interview techniques using the exploratory questions, the appraisal team gathers corroborating data regarding the project practices.	• Practices described in interview notes • Data requests
4.2.5	Consolidate data from interviews	The team members update the Data Tracking Sheets (DTS) for each practice.	• Practice records updated • Updated DTS
4.2.6	Interview practitioners	Through open-ended, facilitated discussion, the team gathers corroborating data on overall organizational and specific organizational unit practices from different types of practitioners.	• Interview notes
4.2.7	Consolidate data from practitioners	The team members update the Data Tracking Sheets(DTS) for each practice.	• Practice records updated • Updated DTS
4.2.8	Develop preliminary findings	Using all data sources available, the team generates a preliminary list of findings with regard to the tailored set of focus areas and capability levels appropriate for this assessment.	• Preliminary findings worksheet
4.2.9	Review preliminary findings	The team provides preliminary findings to the product leaders who provided questionnaire and interview data, in order to validate that the team's synthesis is correct.	• Validated/Corrected preliminary findings
4.2.10	Develop the ratings	The team members review the Data Tracking Sheet, preliminary findings, and formulate draft ratings.	• Updated DTS • Draft ratings
4.2.11	Develop draft findings	The team synthesizes and prioritizes draft findings from valid preliminary findings.	• Prioritized draft findings

Table 4-1 - Summary Description of the On-Site Phase (continued)

ID	Activity	Description	Outputs
4.2.12	Present draft findings	The team reports draft findings to the practitioners and leaders.	• Practitioner feedback • Feedback from leaders

4.2.13	Adjust draft findings	Based on participants' feedback, the findings are adjusted for final presentation. The ratings and other briefing materials are reviewed for team consensus.	• Final briefing
			    • Findings
			    • FA ratings
			    • Method overview
			    • Other info

4.2.14	Present final briefing	The final findings and process capability profile are presented to all participants in the presence of the sponsor. Future activities are discussed.	• Participant buy-in • Participant expectations
4.2.15	Brief sponsor (*optional*)	The team provides the sponsor with the opportunity to discuss the results with the team or team leader and moderator privately.	• Sponsor buy-in • Sponsor expectations
4.2.16	Conduct wrap-up	The appraisal team discusses post On-Site activities. They should capture lessons-learned regarding the model and the appraisal method for later feedback to their organization's model maintenance group and if appropriate to the organization responsible for maintaining the EIA-731 standard.	• Follow-on plans • Model feedback

Typical Duration:

See Annex E for the sample schedules for the On-Site phase.

Tailorable Parameters:

- Number of interviews
- Number of focus groups
- Number of visits
- Number and type of document reviews
- Amount of directed questioning in interviews

Exit Criteria:

- Interviews completed
- Document reviews completed
- Findings briefing delivered
- Appraisal report planned
- Feedback on reference model and the Appraisal Method captured

4.2 On-Site Phase Activities

4.2.1 Conduct Opening Meeting

Purpose:

Conduct Opening Meeting presents the appraisal process and schedule to the sponsor and all appraisal participants. This also allows the sponsor to express visible support for the appraisal activities.

Summary Description:

Conduct Opening Meeting gathers all the appraisal participants together, along with the sponsor, to describe the appraisal process and reaffirm the sponsor's commitment to the appraisal.

Major Participants:

Table 4-2 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-2 - Participants for Conduct Opening Meeting

Role	Summary
Sponsor	Shows management support for the appraisal and subsequent process improvement activities.
Facilitator	Presents brief overview of the model and appraisal.
Site coordinator	Presents schedules and locations.
Appraisal participants	Become familiarized with the appraisal process, its outcomes, and their roles.

Typical Duration:

Typical duration is 1.5 hours.

Steps:

Table 4-3 shows the steps for this process activity.

Table 4-3 - Steps for Conduct Opening Meeting

Step	Guidance
Sponsor comments	The sponsor expresses support for the appraisal and commitment to the resulting process improvement recommendations. Sponsor expresses expectation that everyone will be candid and provide both good and bad, so that the best approach to improvement will be identified.
Model introduction	The moderator gives a brief introduction to the model.
Appraisal process	The moderator presents an overview of the appraisal process. Confidentiality rules are explained.
Schedule review	The site coordinator reviews the schedule and locations for the week's activities and stresses the necessity of being on time.
Question & answer	The sponsor, moderator, and site coordinator answer any questions from the appraisal participants.

Tailorable Parameters:

The presentation will vary based on the purpose of the appraisal. The presentation needs to provide information explaining the way in which the results will be used.

Exit Criteria:

- Opening briefing delivered
- Questions of appraisal participants answered or assigned to be answered by a specific date and person

Notes:

The appraisal goals and use of results is established in the Preparation phase as part of Select Appraisal Parameters. Refer to Annex A for a sample opening briefing.

4.2.2 Familiarize Team with the Appraisal Method

Purpose:

Familiarize Team with the Appraisal Method prepares the appraisal team for performing its role in the appraisal process.

Summary Description:

This is an opportunity for the appraisal team to begin to work together. The briefing begins with a review of the model. The appraisal steps are then presented in greater detail than at the opening meeting, and the team's role in each step is clarified, with examples of the activities provided or demonstrated by the moderator.

Major Participants:

Table 4-4 lists the primary roles involved in this process step and a summary of their activity during this process.

Table 4-4 - Participants for Familiarize Team with the Appraisal Method

Role	Summary
Facilitator	Presents the familiarization briefing and answers any questions.
Appraisal team	Brings up any questions on the model and appraisal method.

Typical Duration:

Familiarization requires two to eight hours.

Steps:

Table 4-5 shows the steps for this process activity.

Table 4-5 - Steps for Familiarize Team with the Appraisal Method

Step	Guidance
Team building	The moderator leads the team in a team-building exercise; at the very least, all team members introduce themselves.
Review model	The moderator presents the salient features of the model, its use in appraisal, and discusses them with the team.
Review the AM	The moderator explains each step in the appraisal process. The team's role is described, with particular emphasis on behavior and note-taking procedures to be followed during interviews. The moderator presents the techniques that will be followed to collect and manage data, develop results, and reach decisions including consensus.
Question and answer	The moderator responds to the team's questions concerning the model and the appraisal process.

Tailorable Parameters:

- Depth of instruction on model
- Depth of instruction on the Appraisal Method
- Types of tools to use to support the appraisal

Exit Criteria:

The Appraisal Team:

- understands use of model in appraisal,
- understands its role in appraisal activities, and
- commits to performing the appraisal as structured in Preparation phase.

Notes:

The appraisal team should understand the basic flow of the appraisal activities and their personal responsibilities throughout the On-Site period and afterwards. See Annexes C and D for some support materials useful in familiarizing the appraisal team with the Appraisal Method.

4.2.3 Analyze Questionnaire

Purpose:

Analyze Questionnaire develops a set of exploratory questions for use in the interviews with the product line leaders.

Summary Description:

The appraisal team analyzes the participants' responses to the questionnaire to determine areas for practice validation and potential discrepancy, and to perform a gap analysis against the model. If not completed previously, the questionnaire responses are transcribed to a Data Tracking Sheet (DTS). This process activity results in a set of candidate exploratory questions (EQ) and "listen for's" to use during the interviews with the product leaders and at practitioner focus groups. Operational documentation, such as plans, templates, training materials, meeting minutes, or action item lists that have been collected, may be reviewed and used to support EQ development or to corroborate questionnaire answers when completing the DTS or initial rating profile.

Major Participants:

Table 4-6 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-6 - Participants for Analyze Questionnaire

Role	Summary
Facilitator	Provides guidance in the formulation of exploratory questions and, if necessary, transcription of the questionnaire responses to the Data Tracking Sheet (DTS).
Appraisal team	Develops and agrees upon the set of follow-up questions for each of the interviewees and practitioner focus groups.

Typical Duration:

Analyze Questionnaire requires four hours.

Steps:

Table 4-7 shows the steps for this process activity.

Table 4-7 - Steps for Analyze Questionnaire

Step	Guidance
Review responses	The appraisal team reviews the questionnaires and the Data Tracking Sheets.
Transcribe to DTS (if necessary)	The moderator and site coordinator or site coordinator and helper, or appraisal team, with guidance from the moderator, transcribe the questionnaire responses from the original questionnaires to the DTS. A DTS is any form that permits a practice-by-respondent view of the questionnaire data. The transcription is most easily accomplished with 2-person teams, one calling out question number and response, and the other recording data in the appropriate spot in the DTS. With a 6-person appraisal team (three 2-person teams), all Focus Areas may be fairly easily transcribed in two hours (assuming 3-5 respondents per questionnaire). The handwritten DTS may then be transcribed by support staff into a spreadsheet or other electronic file for rating profile use.
Generate exploratory questions	The appraisal team, with guidance from the moderator and using the EQ templates based on the model, generates 20-40 exploratory questions for each interview and may develop 5 to 20 or so for focus groups as well. Questions should be used to refine questionnaire answers or explore inconsistencies. There is a separate set of questions for each interview and focus group, but there is usually overlap. The questions are designed to elicit more than just a yes/no response. Questions typically begin with, "Would you please describe ... ." The templates included in Annex D provide easy "listen for" follow-up questions that the moderator uses as a cues to elicit details when the interview or focus group participants don't mention practices. Some questions may be accompanied by a request for relevant or supporting documents. A template-based approach is described next, with a general EQ development approach in the paragraph following it.
Template approach for Exploratory Questions (EQs)	The questions should be on an appropriate form, and copies should be made for each team member. The form should list each question, any "listen for's," document requests, and room for notes. The EQ templates provide all Specific Practices for the reference model by Focus Areas, and a set of GPs as well. The moderator merely orders the FA sheets for each interview, and initiates an EQ with "Would you please describe how you/your program or product line perform (add FA practice name here from template page)." The follow-up/"listen for" items are also checked on the sheet, asked in the same manner: "Tell me more about how you (insert practice)."
General EQ development approach	If the exploratory question generation process is not well managed, it may easily exceed the typical four hour duration. A method for quickly generating a pool of questions follows: • Facilitator leads exploratory question generation with one Focus Area example to get team oriented to using the data embedded in the questionnaire. • Process areas are split up between the appraisal team members according to their specialty areas and to provide balance in workload. • For each Focus Area, the team member uses the initial DTS to scan for inconsistencies between programs and within a program. • Where probe points are discovered, the team member formulates a candidate question on a sticky note pad, marked with the team member's initials, the interview or focus group for which the question is intended, and the FA and practice(s) that led to the question. • The stickies may be laid out in a matrix, with FAs across the top and sessions down the side, to get a picture of the sample space represented by the initial question pool. • The team reconvenes and comes to consensus on which items to ask project leaders and practitioners.

Tailorable Parameters:

- When analysis is performed (may be done before On-Site period)

Exit Criteria:

- Exploratory questions are prepared for each interview session

Notes:

When sending participants their schedule, the site coordinator may attach a large mail bag with the invitation to enclose example documentation of both good and bad process information, such as plans, QA, CM, leadership, communications, decision making, etc. These are returned and kept in a box for use during interviews or focus groups if someone wants to make a point, and may be reviewed before or during the On-Site period to create another instance of practices demonstrated or not demonstrated.

4.2.4 Interview Product Leads

Purpose:

The purpose of Interview Product Leads is to resolve any misunderstandings about the responses to the questionnaire, and to explore areas that the appraisal team wishes to have clarified.

Summary Description:

The session is managed by a moderator. The moderator may be any appraisal team member. The first session should be moderated by the moderator, unless others have previous experience performing the moderator role, in which case they may moderate. The moderator introduces the team, explains the purpose of the session, and asks the leader(s) the exploratory questions. See Annex E for a checklist, often taped to a table in front of the moderator, next to the EQ sheets (see Annex G).

Team members record the responses in a notebook or on sticky note pads. If on stickies, they should be placed on the EQ template page to facilitate later allocation to the correct Focus Area. As a result of some responses, the leader may be asked to supply certain documents for later review.

There may be a separate session for each leader, or a combined session for all of them. If separate, generally an hour should be scheduled for each, while if three or more leaders are combined, the session should be scheduled for two hours. For two leaders, an hour and a half to two hours should be scheduled.

Major Participants:

Table 4-8 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-8 - Participants for Interview Product Leads

Role	Summary
Moderator	Conducts session and asks exploratory questions. Usually, the moderator takes no notes, but practices active listening and eye contact.
Appraisal team	Take notes of responses and occasionally ask for clarification, or follow-up to clarify what is being asked or responses.
Product leader(s)	Responds to questions with information about how the product line life cycles work, that he/she has been involved with.

Typical Duration:

One leader sessions typically consist of a one hour interview, 15 minutes for team discussion and a 15minute break. Multi-leader sessions typically consist of two hours for question/answer plus a 15 to 30 minute break.

Steps:

Table 4-9 shows the steps for this process activity.

Table 4-9 - Steps for Interview Product Leaders

Step	Guidance
Introduction	The moderator welcomes the product leader and introduces the appraisal team. The moderator then explains the purpose of the session and how it will be conducted. He/She also reminds the product leader about the confidentiality rules and encourages frank responses to the questions.
Exploratory questions	The moderator asks each exploratory question while keeping track of the time and any document requests. Any team member may ask a question, though the moderator should be allowed to lead the questioning to ensure that all high-priority questions are covered. The moderator should follow-up on the "listen for's" and make any document requests.
Data capture	All other team members take notes. This may be into a notebook for later summary and transfer to Focus Area worksheets, or direct to a mobile medium such as sticky note pads that may be allocated immediately to worksheets.
Closing	At the end of the questions (or when time has expired), the moderator concludes the session by reminding the product leader of the time and location of their next meeting for reviewing the preliminary findings. The session recorder reminds the product leader of any document requests and arranges for collecting them. The moderator thanks the product leader for his/her cooperation. The moderator then asks in round robin each practitioner the following question: *If you could change one thing in your organization other than your boss or your paycheck, what would it be?* Next, the moderator asks each product leader (perhaps going around the group in the opposite direction): *Other than the people, what do you think is this organization's major strength?*

Tailorable Parameters:

- Moderator assignments
- Extent of follow-up on individual issues
- Use of notebooks or recording of interviews directly to mobile medium
- Colors and sizes of sticky note pads
- Multiple persons or one per interview
- Number of interviews

Exit Criteria:

- As many exploratory questions as possible are covered

Notes:

Exploratory questions are ordered by priority to ensure that the most important questions (to the team) are asked. It is uncommon for all scripted questions to be addressed in any session. A team may request and use documentation generated for or by a Focus Area to demonstrate a capability level.

If stickies are used, each interview and focus group may be more easily identified by using a different color or size of stickie. Subteams developing preliminary findings may immediately see if they are corroborated across groups by the mix of colors. Only one issue or statement should be recorded per stickie. Using 3x3 inch stickies for data collection works well, since then summary findings may be recorded on 3x5 inch stickies to distinguish them. Pads of 100 stickies seem sufficient for most recorders, but a few spare pads should be accessible at the interview, especially if more than one hour is scheduled. If each team member has a copy of the Focus Areas, one FA per hardcopy page, in EQ order, the team may stick the stickies they generate on the appropriate FA for very rapid allocation to Focus Area worksheets later.

Depending on the acceptability in the appraisal organization's culture, it is very useful to have one team member use a laptop or other workstation to enter responses and dialogue from EQs as they are happening. If the EQs have been prepared electronically, and responses are recorded in spaces between, this permits much more rapid consolidation of post-interviews. More than one laptop in use seems daunting to most interviewees, however. Ask the interviewee(s) before using a laptop or other recording instrument. Manual note taking using stickies (one practice or fact per stickie) is recommended for team members.

4.2.5 Consolidate Data from Interviews

Purpose:

The purpose of Consolidate Data from Interviews is to allocate the information to Focus Areas, from notes taken during the interviews.

Summary Description:

Consolidate Data from Interviews involves allocating the data, gained in the interviews with the product line leaders, to Focus Area worksheets. It also verifies or clarifies the understanding of the information obtained from the questionnaires. This data consolidation step allows the team to re-prioritize any data requests in the ensuing schedule or to change other aspects of the remaining data-gathering period.

Major Participants:

Table 4-10 lists the primary roles involved in this process step and the summary of their activity during this process.

Table 4-10 - Participants for Consolidate Data from Interviews

Role	Summary
Facilitator	Provides guidance and model expertise for the team's allocation of data to Focus Areas.
Appraisal team	Review their notes, discuss any issues; may translate notebook data to stickies or electronic media, but always allocate data to Focus Area worksheets.

Typical Duration:

Consolidating data takes 15 minutes to one hour.

Steps:

Table 4-11 shows the steps for this process activity.

Table 4-11 - Steps for Consolidate Data from Interviews

Step	Guidance
Review notes (option if notebooks used)	Each team member privately reviews his/her notes from the interviews. Practice or performance issues and strengths noted are copied to stickies or marked for copying to electronic media.
Allocate data	Each team member allocates stickies, or enters on common electronic medium, the issues and strengths identified for each Focus Area to the Focus Area worksheet. The Focus Area worksheet may be a flip chart, a space on the wall or a table top, or a practice-by-practice electronic copy or subset of the model's practices in database or flat file format. All data captured should be allocated as one of these types: (a) issue or weakness (e.g., a delta, "Δ," symbol), (b) strength (e.g., a plus, "+," symbol), (c) comments or "check the box" for performing a practice but not a strength or issue (leave the symbol zone blank), or (d) duplicates (note during allocation and place in duplicates pile).
Discuss issues	Team members may raise issues that they have encountered during the interviews and update steps. The moderator moderates the discussions to give each issue time to be heard and acted on.
Preparation	The team notes remaining activities and proposes any alterations that they may wish to make, either in whom to include or exclude, what to ask which groups or individuals, or what other information sources could be tapped and how to include them. In particular, the team may want the moderators to guide the discussions into certain areas during one or more of the practitioner interviews. This direction should be carefully limited, as too much direction of the practitioner discussions will stifle spontaneity.

Tailorable Parameters:

- Medium for Focus Area worksheets
- Translate notebook data to Focus Area worksheets or medium

Exit Criteria:

- Team members complete update of their DTS
- Agreement on changes to schedule and other data gathering mechanisms

Notes:

Remember to record only one issue or strength per stickie or line entry in electronic medium. Remember to use different colored stickies or record a unique symbol for each interview session to ensure corroboration may be easily determined during preliminary findings. When a team copies interview statements directly to stickies, there tend to be 20% to 60% duplicates recorded.

The Focus Area worksheets may be just flip charts, with one Focus Area name per flip chart, hung up around the walls of the team work room. They may be blank except for FA title, have practices listed on them, or have marked zones for base and capability level stickies to be applied.

4.2.6 Interview Practitioners

Purpose:

Interview Practitioners ensures meetings with the actual practitioners of the domain's processes and support processes (e.g., quality assurance, manufacturing, marketing, finance, field service, etc.); obtains corroboration of the issues previously collected; and identifies new issues.

Summary Description:

Interview Practitioners involves facilitating a relatively free-form discussion centered around the question, "What works and what doesn't work so well in your (domain, product life cycle, systems engineering, software, etc.) processes?" This discussion typically provides corroborating and clarifying data, and sometimes references to additional data sources.

The moderator should have a set of 2-10 Exploratory Questions prepared to ask the practitioners, that focus on the processes the participants in this focus group should practice. It is usually best to let a free-form discussion begin the session; otherwise, participants may get the impression that the session is an audit, and cease volunteering the issues that are important to them. In particular, if the session appears to be degenerating into a gripe session, the moderator should introduce one or more Exploratory Questions.

Major Participants:

Table 4-12 lists the primary roles involved in this process activity and the summary of their tasks during this process.

Table 4-12 - Participants for Interview Practitioners

Role	Summary
Moderator	Sets participant expectations about the session (see Annex E summary sheet). Keeps discussion moving with minimal influence on its direction. Ensures all practitioners have a chance to speak by starting with round robin introductions, and continuing with round robin answers to the "what's working and not working" question.
Appraisal team	Take notes on statements made by practitioners. Different colored, 3x3 inch stickies are recommended for recording statements by practitioners, one statement per stickie.
Practitioners	Present issues from their perspective.

Typical Duration:

Two hours per practitioner group.

Steps:

Table 4-13 shows the steps for this process activity.

Table 4-13 - Steps for Interview Practitioners

Step	Guidance
Preparation	Arrange the focus group area before the practitioners' arrival. The setup may be around a table or in a circle without a table. The team should occupy every other seat, forcing the practitioners to spread out around the circle. The team members should be in their seats before the practitioners arrive. It is important to begin the meeting on time. If possible, have someone not on the team call any late-comers or no-shows.
Introduction	The moderator: • Welcomes the practitioners and introduces the session's topic (if appropriate). • Explains the purpose of the session and how it will be conducted, i.e., an unstructured discussion of the overall product life cycle (or other model domain) process and the practitioners' processes from their viewpoint. • Lets the practitioners know that the team will listen and take notes, but that the direction of the discussions will be up to them. • Notes that, at the end of the session, each participant will be asked for a strength of, and one important improvement needed by, the organization being appraised. • Encourages frank discussions. • Reminds the practitioners about the confidentiality rules, and cautions the participants about repeating comments outside of the session. The team and practitioners then introduce themselves, giving their name and role (team members should identify themselves as "members of the appraisal team"). The moderator then turns the meeting over to the practitioners.

Discussion	The moderator keeps the conversation moving with as little intrusion as possible. Team members should not participate in the conversations. The moderator should note non-participating practitioners and try to bring them into the conversation in a non-directed manner (e.g., “What do you think about that, Tom?”). If the discussions lag, or EQs have been identified, the moderator may either gently “nudge” the discussion in the desired direction or ask them again as open questions to the group, such as “What’s going well and not so well in (insert Focus Area name)?” If this is not done carefully, the participants will continually look to the moderator for direction and the focus group will lose its spontaneity and buy-in. The moderator should use leading comments (e.g., “How about quality assurance . . .?”), and avoid direct yes/no questions (e.g., “Do you do quality assurance?”), or judgmental questions (e.g., “What’s wrong with quality assurance?”).
Closing	Near the end of the session, the moderator brings the conversation to an end, and asks two questions of each practitioner. If the moderator senses that the discussions have reached the end of their usefulness, he/she may end the session before the end of the full time period. The moderator then asks in round robin each practitioner the following question: *If you could change one thing in your organization other than your boss or your paycheck, what would it be?* Next, the moderator asks each practitioner (perhaps going around the group in the opposite direction): *Other than the people, what do you think is this organization's major strength?* (The word “organization” should be customized for the situation.) Finally, the moderator thanks the practitioners for their participation and reminds them of the confidentiality rule, and the time and location for their review of the draft findings.
Process check	In the interval between practitioner focus groups, the team should perform a brief process check of how the last session went, and discuss any changes or special situations anticipated with the next focus group. The sessions are long, so be sure to leave time for 15 to 30 minute breaks before the next group arrives.

Table 4-13 - Steps for Interview Practitioners (continued)

Tailorable Parameters:

- Number and makeup of practitioner focus groups
- Data collection on stickies, electronic medium, or in notebooks

Exit Criteria:
- Session completed

Notes:

Groups are defined above in the Preparation phase. This activity may be performed before the formal On-Site period for special groups, to reduce the On-Site period somewhat.

Stickies, notebooks, or electronic media may be used to collect statements that are issues or weaknesses, strengths, or comments, “just doing it” statements. Use of stickies should include different colored pads of 100 for each session. Recorders write only one statement per stickie. Extra pads should be accessible in the focus group area, as some will generate more than 100 in a two-hour session. Special symbols should be used on recorded statements for “one big improvement” and major strength of the organization.

A session recorder may use a laptop or other workstation if the organization's culture permits it. This greatly facilitates consolidation of data and collection of "golden quotes," or key phrases, into draft and final findings. Ask before using a laptop or other recording equipment. No more than one or two team members should use laptops or workstations for recording data.

4.2.7 Consolidate Data from Practitioners

Purpose:

Consolidate Data from Practitioners allocates data collected from the practitioners to Focus Area worksheets, so that preliminary findings may be generated.

Summary Description:

Consolidate Data from Practitioners involves allocating data to Focus Area worksheets. It also allows the members of the appraisal team to verify their understanding of the information, obtained in the sessions with the other team members, and consider and request additional data sources.

Major Participants:

Table 4-14 lists the primary roles involved in this process step and a summary of their activity during this process.

Table 4-14 - Participants for Consolidate Data from Practitioners

Role	Summary
Facilitator	Provides guidance and model expertise for the team's deliberations.
Appraisal team	Optional if notebooks used: review notes and transfer to mobile medium, allocate data to Focus Area worksheets, discuss any issues, and identify and attempt to fill any gaps in coverage of the Focus Areas.

Typical Duration:

15 minutes to one hour.

Steps:

Table 4-15 shows the steps for this process activity.

Table 4-15 - Steps for Consolidate Data from Practitioners

Step	Guidance
Review notes (optional if notebooks used)	Each team member privately reviews his/her notes from the practitioner focus groups, committing issues to stickies or electronic medium for transfer to Focus Area worksheets.
Allocate data	Each team member allocates data on stickies or media to Focus Area worksheets where they apply.
Discuss issues	Team members raise issues that they have encountered during the review, and may propose alternative data sources to corroborate or refute data collected. The facilitator moderates the discussions to give each issue a chance to be aired. Any actions are recorded and requests communicated to the site coordinator for action.
Preparation	The team discusses the upcoming events and any alterations that they may wish to make, based on the discussions. In particular, the team may wish to add a few exploratory questions or "challenge" findings to the preliminary findings in order to resolve conflicting evidence, especially where the ratings are affected.

Tailorable Parameters:

- Media for allocation of data

Exit Criteria:

- Scheduling and data gathering changes are agreed to where appropriate
- Process Area worksheets have data allocated

Notes:

A typical team member generates 30-100+ issues per session, and the team may generate 500 to 2000 total, 400 to 1200 after duplicates are removed. Some teams have called the team work room "feathered," after its appearance with 24 flip charts (23 FAs and one for strengths) covered with stickies hanging on the walls.

4.2.8 Develop Preliminary Findings

Purpose:

Develop Preliminary Findings synthesizes the accumulated data from all data sources used in the appraisal.

Summary Description:

During Develop Preliminary Findings, the appraisal team systematically analyzes the data from all sources to generate a list of preliminary findings related to the Focus Areas and capability levels under investigation.

Major Participants:

Table 4-16 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-16 - Participants for Develop Preliminary Findings

Role	Summary
Facilitator	Leads team in an example activity, coaches subteam work, and oversees the preparation of the preliminary findings.
Appraisal team	Synthesizes the accumulated data by FA into preliminary findings, including both strengths and weaknesses.

Typical Duration:

Developing preliminary findings may require three to five hours.

Steps:

Table 4-17 shows the steps for this process activity.

Table 4-17 - Steps for Develop Preliminary Findings

Step	Guidance
Demonstration	Appraisal team members (and sometimes observers) are assigned or self-select into subteams of 2 or 3. Divide up the Focus Areas among them, keeping one Focus Area that has close to the median number of stickies for use as an initial example to be worked by the entire team. Separate the selected FA's issues, strengths, and comments or "check the box" items, and duplicates if not done during allocation. Record total number of stickies, issues and duplicates on the Focus Area worksheet. Demonstrate affinity diagram technique on the selected FA's issues (option: also on strengths if 10 or more stickies on strengths). The target is 2 to 3 preliminary findings per FA, but they will actually run 0 to 7 findings. Wordsmithing is NOT appropriate - emphasize getting the meaning or underlying factor or theme of the stickies in each cluster. Record the preliminary findings titles on the preliminary findings form. Check for questions.
Sub-teams develop preliminary findings	Sub-teams perform the separation into types of stickies, affinity diagram, and may also perform the initial rating of the FA process capability. The findings titles by FA are reported to the facilitator or person completing the preliminary findings form, as each subteam finishes an FA. If initial ratings are done, these should also be reported and recorded on the rating template. Subteams should change membership during the FA changes and work on a FA in which at least one of them has some knowledge or experience.

Table 4-17 - Steps for Develop Preliminary Findings (continued)

Team review	The team walks around and reviews the findings and clusters under them as individuals. Some teams assign each member primary and secondary responsibility for FAs, in which case they would use this opportunity to perform a QA role on their secondary FA findings, having helped develop their primary FA findings. Any alternative finding representations may be posted on different colored stickies as counter-proposals on the FA worksheet. Not all the findings will be validated by the preliminary finding feedback respondents, so challenge them with multiple alternatives if the team cannot quickly agree on one or build a better consensus statement of a finding.
Update preliminary findings form	A word processor or spreadsheet is a fine tool to record the preliminary findings and print the form for those who took the questionnaire or are selected to provide preliminary findings feedback. Leave room for notes on the form.

Tailorable Parameters:

- Subteam assignments
- Method for developing preliminary findings
- Number of preliminary findings presented for validation
- Method to separate affinity diagram strength stickies - don't do comments set or duplicates, just tape them down securely to the worksheet

Exit Criteria:

- 40-60 preliminary findings that may be verified with those selected to review them. They will indicate whether they are valid for their product operations or not, and whether perceived as true in general for the organization or not. These are usually the interviewed product line leaders.

Notes:

Time: The first FA by the whole team may take 15-45 minutes, and should be middle sized in terms of numbers of issues. Subteams will likely take 30 minutes on the first FA they do alone (encourage them to start with middle-sized FAs, then do small ones in terms of numbers of stickies, and lastly the large ones). By the end, most subteams take about 15 minutes to generate 2-5 preliminary findings per FA after separating them into the four types. Depending on the number of appraisal team members and observers who participate (teams of 2 are better than of 3), the time from the starting demonstration to finishing the last FA will be 2.5 to 4 hours. Walk-around review and agreements may be done during lunch. The form may be generated and updated so that the exercise may be done in a half day.

Subteam assignments: Match an organizational or process insider with an outsider to the extent possible. The insider provides context and interpretation of the issues, while the outsider maintains objective reality. Many teams will have people on them who have or perceive a need for a particular finding or rating to occur. They may inadvertently try to bend results to their need. The outsider is present to question when statements sound like a real stretch or a political spin, often asking, "Where's the data that says that?"

Affinity diagram technique:

1. Place all issue stickies on a surface where the subteam can see them. Rotating between the subteam members, place stickies that have an affinity for each other (some common theme, factor, cause, or meaning) together in clusters or sets, or separate a cluster or set into subsets if that seems appropriate. Typically, no discussion about the theme, or why one is placing issues, is permitted until clusters or sets are established.

2. If a stickie appears to belong in more than one set or cluster, duplicate it and put it in both or all - there is no requirement for unique allocation of an issue to a single finding. It might be a symptom for several potential causes. If an item seems to move back and forth, in and out of a cluster or set, have each person moving it write on a new stickie (same color!) what it means to them, and replace the ambiguous stickie with the alternatives. If one or the other alternatives seems a stretch, try to reconstruct the dialogue from which it originated and determine whether it is valid.

3. If the cluster or set has two or more colors, then it is a candidate for a preliminary finding. If only one color of stickie, then read through them and see if they represent the problems of one program, group, or product line, or more than one organizational entity. If one, then the cluster should not be a candidate for a finding because it does not have organization-wide application. Those clusters determined to be valid organizational issues are retained, while the others are taped to the worksheet with a note about specific, not general, applicability.

4. For each valid organizational issue cluster, the subteam brainstorms preliminary findings statements that capture the underlying cause or theme of the cluster. The subteam agrees on a preferred statement (not wordsmithing!) as a preliminary finding proposal, and places it on top of the cluster, taping the cluster to the worksheet so team members can read the preliminary finding proposal and cluster stickies when they review the FA.

4.2.9 Review Preliminary Findings

Purpose:

Review Preliminary Findings obtains feedback on the preliminary findings from the product line leaders who provided the original data. If a product line leader will not be available during the on-site phase, a capable alternate should be designated for this review.

Summary Description:

Review Preliminary Findings involves providing the synthesized data in the form of weaknesses (sometimes strengths are included on the form) to the same product line leaders who were the original sources of questionnaire and interview data. They then agree or disagree for their own operations or processes and their perception of organization wide operations or processes. This may be done via form or question and answer interview.

Major Participants:

Table 4-18 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-18 - Participants for Review Preliminary Findings

Role	Summary
Moderator	If interview format: Reads preliminary findings to the product line leaders for their comment. If possible, the moderator role should be filled by the appraisal team leader to increase his/her comfort with explaining the findings. If form completion format: Provides and collects form, and provides explanation of preliminary findings statements as needed.
Product line leader	Provides feedback on preliminary findings.

Typical Duration:

Reviewing preliminary findings takes one hour per product leader, if interviews are sequential, one hour if interview is combined or done in parallel by individual team members, or 15-30 minutes if product line leaders come to a common area and write out complete forms.

Steps:

Table 4-19 shows the steps for this process activity.

Table 4-19 - Steps for Review Preliminary Findings

Step	Guidance
Introduction	The moderator greets the product leader(s) and describes what the team has done since the last meeting. He/She describes the purpose of this session (or form) and explains that the findings are preliminary and will likely change; therefore, it is especially important not to discuss this version of the findings outside of this review. The moderator also tells the leader(s) that at the end of the session or form he/she will ask for a strength and an important change in the organizational units being appraised.
Review findings	Interview format: The moderator reads each preliminary finding to the product leader(s) and asks whether he/she believes that the finding is true on his/her program or current operation and whether he/she believes it is generally true for the organization being appraised. The moderator or members of the team may ask for clarification, or a follow-on question. However, *all* preliminary findings need to be presented in the allocated time. Therefore, the moderator needs to keep a tight rein on the time, and not let follow-up questions jeopardize the schedule. Form completion format: The preliminary findings are reviewed one by one by the product leaders, which they mark yes/no for true or not true for their particular operations, and then for the organization as a whole, in cells provided on the form. When done, each respondent gets 20 points to divide up among 1 to 20 preliminary findings as the most important findings to improve in the coming year. Any points allocated to a finding are written into a cell attached to each finding statement.
Closing	Interview format: The moderator closes the session by asking the product leader the following question: *If you could change one thing in your organization other than your boss or your paycheck, what would it be?* Next the moderator asks: *Other than the people, what do you think is this organization's major strength?* (Note the word "organization" should be customized for the situation.) Form completion format: The form has the two questions above at the bottom of the table of preliminary findings, yes/no for product/organization, and points for most important findings to improve. In both cases, the moderator thanks the product leader for participating and reminds him/her of the time and location for presenting the draft findings.
Validate preliminary findings list	A designated team member combines the feedback onto one form. Those preliminary findings with at least 50% "yes" marks for either program or organization are considered validated and retained, but may be reworded based on feedback or clarifications. Those with all but one respondent saying "no" are considered invalid (only one program rather than the whole organization). Those with answer patterns between the two listed alternatives should be consensus voted by the organization's members on the appraisal team only, to be retained or deleted. The set resulting is the validated preliminary findings.
Process check	Interview format: In the interval between interviews, the team should perform a brief process check of how the last interview went, and discuss any changes or special situations anticipated with the next product leader. Again, be sure to leave time for breaks before the next lead arrives.

Tailorable Parameters:

- Documentation may be requested and reviewed
- Selection of those to provide feedback (referred to as product leaders but not necessary - just those who would know the whole product life cycle)
- Format for review of preliminary findings

Exit Criteria:

- Feedback on the applicability of the preliminary findings has been obtained
- Valid preliminary findings set established

Notes:

Typically, the more homogeneous the respondents are, the fewer the invalidated preliminary findings. Homogeneous respondents generally validate 90% or more of preliminary findings. Non-homogeneous respondents may only validate 80%. A group of all software project leaders are fairly homogeneous for example, in contrast to a Management PC software product line, a construction automated design tools product line, and a telecommunications tool product line set of product line leaders, or a mixture of practitioners, support process, and product line leaders. As the scope of information in an appraisal gets larger, the agreement on any one symptom or cause of a problem tends to get smaller.

The form completion approach is faster and offers additional data that may be used later to prioritize draft findings. It is recommended for re-appraisals at a minimum, but has been used successfully in initial appraisals as well.

Form completion format: Moderator role: The site coordinator may do this activity off-line with the appraisal team, or the appraisal team may break up and go to product leader offices to provide the form in parallel, or the product leaders may be invited to a room together to complete the form.

4.2.10 Develop the Ratings

Purpose:

One of the results of the On-Site phase is a rating profile covering the appraised focus areas. The rating profile must correlate with the appraisal findings, and the two are developed in a closely coupled process.

The rating profile is developed and refined at specific points in the appraisal process, as detailed in the process step summaries in Section 2.4. Ratings are based on the degree to which the appraised entity performs all of the requirements at a given level, in the judgment of the appraisal team.

Summary Description:

Develop the Ratings involves synthesizing the data gathered from the questionnaire, interviews, and artifact reviews into a rating profile.

Major Participants:

Table 4-20 lists the primary roles involved in this process step and the summary of their activity during this process.

Table 4-20 - Participants for Develop the Ratings

Role	Summary
Facilitator	Provides guidance on rules for rating and model expertise for the team's deliberations.
Appraisal team	Select granularity to be used for scoring (whole point, half point or quarter point). Review the data and preliminary findings, allocate them to FA practices, and formulate ratings. Review the proposed ratings and come to consensus on the FA rating profile.

Typical Duration:

Two to three hours.

Steps:

Table 4-21 shows the steps for this process activity.

Table 4-21 - Steps for Develop the Ratings

Step	Guidance
Review rating procedure	The facilitator walks through the scoring rules (see Notes below) and answers any questions.
Review questionnaire data	The appraisal team reviews the questionnaire results for each Focus Area.
Review interview data	The appraisal team reviews the data collected during the interview process for each Focus Area.
Review process artifacts and work products	The appraisal team reviews the data collected during the review of the organization's process artifacts and work products.
Discuss issues	The full team walks through each Focus Area and the facilitator moderates a discussion to give everyone a chance to be heard. Based on the data collected, the team must reach consensus on whether each Specific and Generic Practice has been achieved, as well as the utility of the process being applied to the Focus Area.
Establish rating	Using the results of the previous discussion, the appraisal team completes the scoring charts (see Annex F) based on the scoring rules described in the Notes below. As the final findings are being determined, the ratings are reviewed against the findings and strengths to ensure there is continuity between these two parts of the report.

Scoring Rules:

The Scoring Template is completed one Focus Area at a time using the following rules.

- At each level, the number of Specific Practices achieved is compared to the number of Specific Practices at that level.
    - ♦ If there are four or fewer Specific Practices, all Specific Practices must be achieved to get credit.
    - ♦ If there are five to seven Specific Practices, no more than one Specific Practice may be deficient to get credit.

- ♦ If there are eight or more Specific Practices, no more than two Specific Practices may be deficient to get credit.

- At each level, all Generic Practices at that level must be achieved to get credit.

- Utility is calculated by averaging the combined responses for value and effectiveness with “Marginal” responses awarded 1 point, “Adequate” awarded 2 points, “Significant” awarded 3 points, “Measurably Significant” awarded 4 points, and “Optimal” awarded 5 points.

  - ♦ If the average is < 0.75, no credit is given.
  - ♦ If the average is ≥ 0.75 and < 1.75, credit is given for Marginal Utility.
  - ♦ If the average is ≥ 1.75 and < 2.75, credit is given for Marginal and Adequate Utility.
  - ♦ If the average is ≥ 2.75 and < 3.75, credit is given for Marginal, Adequate and Significant Utility.
  - ♦ If the average is ≥ 3.75 and < 4.75, credit is given for Marginal, Adequate, Significant and Measurably Significant Utility.
  - ♦ If the average is ≥ 4.75, credit is given for Marginal, Adequate, Significant, Measurably Significant and Optimal Utility.

- The Focus Area rating is determined by the number of boxes completed on the scoring template. The Specific Practices account for 50% at each level, the Generic Practices account for 25% at each level, and utility accounts for 25%. (Note: since there are no Generic Practices at level 1, utility accounts for 50% at this level. For Focus Areas that do not have Specific Practices at level 5, the Generic Practices account for 50% of the score and utility accounts for the other 50% of the score.)

  - ♦ If scoring on whole points, the rating is the highest level that has all boxes filled and all lower level boxes filled. If there is an unfilled box at a lower level, the appraisal team may award the score for the highest level with all boxes filled, if at least 50% of the practices associated with the unfilled box have been achieved.
  - ♦ If scoring on the half point scale, the rating is the highest level with all boxes filled (and all lower boxes filled), plus a half point is awarded if either the Specific Practices are satisfied at the next level or the Generic Practices and utility are satisfied at the next level. Credit for Specific or Generic Practices may be given at the highest level satisfied, if at least 50% of the Specific or Generic Practices associated with an unfilled box at a lower level have been achieved.
  - ♦ If scoring on the quarter point scale, the rating is the highest level with all boxes filled (and all lower boxes filled), plus a half point is awarded if the Specific Practices are satisfied at the next level, a quarter point is awarded if the Generic Practices are performed at the next level, and a quarter point is awarded if the utility is satisfied at the next higher level. Credit for Specific or Generic Practices may be given at the highest level satisfied, if at least 50% of the Specific or Generic Practices associated with an unfilled box at a lower level have been achieved.

Tailorable Parameters:

- Ratings development may not be performed if the appraisal excludes the rating profile from the appraisal results. That is, findings are all that was desired as an objective of the appraisal.
- Rating granularity - Scores may be presented as whole numbers, on a half point scale (0.5, 1, 1.5, 2, ...), or a quarter point scale (0.25, 0.5, 0.75, 1, 1.25, ...). The level of granularity will affect the scoring process, since it determines if and how “partial credit” will be indicated.

Exit Criteria:

- Consensus is obtained on the rating profile.

4.2.11 Develop Draft Findings

Purpose:

Develop Draft Findings develops summary findings for the appraisal, based on the validated preliminary findings.

Summary Description:

Develop Draft Findings involves synthesizing the preliminary findings into a manageable, high-value-if-fixed set for presentation to the sponsor. The 45-50 validated preliminary findings are synthesized into 5-9 draft findings that include short title, summary finding, observations or symptoms, and consequences.

Major Participants:

Table 4-22 lists the primary roles involved in this process activity and the summary of their tasks during this process.

Table 4-22 - Participants for Develop Draft Findings

Role	Summary
Facilitator	Provides expertise on the reference model and guides the team in reaching consensus.
Appraisal team	Develops the draft findings statements and presentation slides for feedback.

Typical Duration:

Plan on Develop Draft Findings taking four to eight hours.

Steps:

Table 4-23 shows the steps for this process activity.

Table 4-23 - Steps for Develop Draft Findings

Step	Guidance
Affinity diagram the validated findings	The team should use an affinity diagramming technique to create sets of related preliminary findings, and create a summary statement for each set.
Prioritize findings	There are usually more than 10 synthesized findings to start. Prioritization should be based on business goals, if available, or on the team's consensus on the major barriers to improvement in the organization.
Wording for impact	The team should form small groups (two to three people) to edit and wordsmith the findings. This is especially true if they could not agree on the wording during the previous step. The moderator should carefully consider the make-up of these groups and the assignment of findings. Sometimes it is a good idea to place antagonists in the same group and give them the controversial finding to edit. Other times, neutral parties should do the editing. In extreme cases both approaches might be tried. This is where the moderator makes use of his/her teaming skills and knowledge of the team.
Form consensus	Finally, each finding is presented to the group for final edit and approval. The team *must* agree with each finding. If team members go away from the appraisal without full commitment to all of the findings, the other participants will sense the lack of consensus and interpret it as a weakness in the findings. This step continues until consensus is achieved. If necessary, the team might have to go back to the previous step in an effort to come to an agreement.
Prepare slides	The findings are placed on slides for presentation. See Annex B for a sample of the findings presentation slides. The team members should be given copies of the draft findings for their notebook, and for recording comments from the draft presentation. Do not make copies for the participants, as the findings may change after their initial presentation. The appraisal team leader should take a copy with him/her in order to prepare for the presentation the next morning.

Tailorable Parameters:

- Level of granularity of findings
- Depth of analysis for determining capability level

Exit Criteria:

- Consensus is obtained on draft findings
- Draft findings briefing is completed

Notes:

The number of findings is normally limited to at least five, but no more than nine. Initially the team may identify more than nine areas, with the understanding that it will merge or drop some later. Findings may be presented in the context of Focus Area categories, Focus Areas, Specific Practices, Generic Practices, and common features.

4.2.12 Present Draft Findings

Purpose:

The purpose of Present Draft Findings is to provide a vehicle for the product line leaders and practitioners to validate that the synthesized findings represent the information provided throughout the On-Site phase of the appraisal.

Summary Description:

Present Draft Findings involves the appraisal team leader presenting the synthesized findings to the product line leaders as a group, and then to all the practitioners as a group. This provides the appraisal team leader with an opportunity to "rehearse" the briefing, and provides the appraisal participants with the opportunity to provide feedback on the validity of the information.

Major Participants:

Table 4-24 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-24 - Participants for Present Draft Findings

Role	Summary
Appraisal team leader	Presents the draft findings; does *not* present the rating profile or the introductory material, just the summarized findings; solicits comments from participants.
Appraisal team	Takes notes on presentation for feedback to appraisal team leader; observes reactions of participants to findings; takes notes on feedback.
Appraisal participants	Listen to findings presentation; provide feedback on whether the appraisal team captured what is happening in the organization.
Session recorder	Records agreed-upon changes to briefing on actual slides directly, as well as on a hard copy.
Moderator	Facilitates the feedback portion of the meeting; appraisal team leader may assume this role if desired.

Typical Duration:

Presenting draft findings takes one hour for product line leaders as a group, and one hour for all practitioners as a group.

Steps:

Table 4-25 shows the steps for this process activity.

Table 4-25 - Steps for Present Draft Findings

Step	Guidance
Describe purpose of session	The presenter re-emphasizes that the goal of the appraisal is to capture the "state of the practice" in the organizational units being appraised; this session allows the appraisal team to validate that they have accurately captured the practitioners' viewpoint. The presenter then asks to go through the entire briefing and then come back to questions. It is not recommended to pass out a copy of the briefing at this time; it is subject to change, and incorrect versions of the briefing could damage the credibility of the appraisal.
Present findings	The appraisal team leader rehearses his/her presentation of the findings portion of the briefing. Not showing the rating profile also gives participants another reason to attend the main findings briefing. During this briefing, the presenter tries to notice the reactions he/she gets from different findings.
Solicit feedback	After the run-through of the findings, the appraisal team leader (ATL) solicits feedback from the practitioners, e.g., "Is this what you told us and is this worded in a way to get positive action from management?" The ATL facilitates the discussion, and when changes are proposed by a member of the practitioner's group, the ATL tries to get a sense of the agreement within the group; there will not be time to get a full consensus, the ATL will just try to make sure that the comment is one that engenders general agreement. The appraisal team is not looking for a lot of changes, but is just making sure that the tone of the findings is able to be acted upon, and that the team is not misrepresenting the data gathered.
Make draft changes	Draft changes may be made directly on the actual slide, so participants can see the direct effect of their input; they should also be recorded on a hard copy or electronic copy for discussion among the team. (These draft changes will be validated in the next process step.)
Provide reminders	The ATL reminds participants of the time for the findings briefing and emphasizes that this is an opportunity to interact with the management who sponsored the appraisal. The ATL asks the practitioners to keep findings to themselves until after the findings briefing. This gives sponsors a chance to respond to the findings without the "rumor mill" interfering.
Adjourn meeting	The ATL thanks participants for their participation throughout the week.

Tailorable Parameters:

- Systems engineering leads and practitioner groups could conceivably be combined, though this risks inhibition of the practitioners in some environments. If a management practitioner group was used, you may want to combine them with the product line leaders.
- Someone other than the appraisal team leader may be selected as the presenter for the findings briefing, or the presentation may be split between multiple presenters. A common split is to have the moderator present the introduction, the appraisal team leader present the findings, and the moderator close with the "next steps." Presentation by the appraisal team leader has the advantage of organizational "ownership" of the material; in some environments, the moderator has the advantage of being the outside "independent" expert. The decision of who presents the findings should be based on the team's consensus of who will have the most impact and achieve the most momentum for improvement action.

Exit Criteria:

- Presentation of draft findings complete
- Practitioner concerns recorded

Notes:

This session is important in establishing the credibility of the appraisal with the practitioners and for providing practitioners with momentum toward change. It is important to make sure there are no findings where the product line leaders/practitioners say, “This is absolutely not true — whatever gave you that idea?” or something similar. There should not be many changes that come out of these presentations, but you should put a couple in, even if they are minor details, just to show the team’s willingness to listen.

4.2.13 Adjust Draft Findings

Purpose:

Adjust Draft Findings ensures that the final findings briefing accurately reflects the information obtained from the participants, by refining the findings briefing based on feedback from the appraisal participants.

Summary Description:

Adjust Draft Findings involves the appraisal team discussing the presentation of the draft findings to the appraisal participants and coming to consensus on the draft changes that will be incorporated into the final findings briefing. The final findings briefing is updated to reflect the accepted changes. Also, at this time any final adjustments to the rating profile are made, if appropriate. The team provides feedback on the dry-run to the appraisal team leader, who will be presenting the findings, to help him/her refine the delivery of the findings.

Major Participants:

Table 4-26 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-26 - Participants for Adjust Draft Findings

Role	Summary
Appraisal team	Discusses the proposed changes and comes to consensus on them; provides feedback to the appraisal team leader on the delivery of the findings.
Appraisal team leader	Accepts feedback on the presentation of the findings and rehearses rough points, where necessary; ensures that consensus on the proposed changes is achieved.
Session recorder	Incorporates the accepted changes into the final findings briefing.
Appraisal support personnel	Prepare slides and enough copies of the final briefing for the sponsor and the appraisal team, plus a few extra in case the sponsor wants extras for his/her own distribution.

Typical Duration:

Adjusting draft findings will take two to four hours.

Steps:

Table 4-27 shows the steps for this process activity.

Table 4-27 - Steps for Adjust Draft Findings

Step	Guidance
Review draft changes	Obtain consensus on the proposed changes provided by the participants. Not all changes must be accepted; in particular, ones that do not add to the global issues of the appraisal may not be accepted. The team must agree on the changes before they are made.
Determine impact on rating profile	Based on what was heard in the findings review, quickly review the rating profile to ensure that it is still valid (99% of the time it will be fine, but make sure findings stay consistent with the profile). If necessary, come to consensus on rating profile changes.
Discuss delivery of findings	Team members may provide hints on the delivery of the findings to the appraisal team leader (ATL) for consideration in making the message come across more clearly or simply. The ATL may rehearse alternate approaches to delivering findings that prove sensitive or more difficult to articulate.
Produce final findings briefing	Red-line changes are made to the original if red-lines are being presented, or the electronic file with the briefing is updated. At this point, ensure that all the other pieces of the briefing (the introduction, rating profile, and next steps) are incorporated into the final copy. Appraisal support personnel make the required number of slides and hard copies. Unless otherwise established ahead of time, only copies for the sponsor and appraisal team are made. Frequently, sponsors wish to control distribution of the findings briefing. To provide a copy to those who want one, while still retaining a measure of control over distribution, it's recommended to have a sign-in sheet at the findings meeting with a place to check if people want a copy of the briefing.

Tailorable Parameters:

- The findings briefing may either be revised electronically so a "fresh" copy is presented, or a red-lined copy of the draft briefing may be used, depending on the culture and support resources available. (Doing a fresh copy implies in-team computing support which may or may not be available.)

Exit Criteria:

- Ratings profile is finalized
- Final findings briefing is prepared for delivery to participants

Notes:

Be sure the appraisal team leader is comfortable delivering the briefing. The two rehearsals provided by the draft findings briefing are usually sufficient to reduce the nervousness of presenting to the sponsor.

4.2.14 Present Final Briefing

Purpose:

The purpose of Present Final Briefing is to provide the sponsor with the agreed-upon data from the appraisal and determine next steps for use of the findings (e.g., catalyst for process improvement effort).

Summary Description:

Present Final Briefing involves presenting the results of the appraisal to the sponsor, and usually to the other appraisal participants, via a briefing that synthesizes the data in a in a non-attributable form (so that the identity of sources of negative data are protected) and provides prioritized findings.

Major Participants:

Table 4-28 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-28 - Participants for Present Final Briefing

Role	Summary
Appraisal team leader	Presents the findings and rating profile to the sponsor. Facilitates any discussion after the briefing.
Appraisal team	Notes feedback from sponsor.
Sponsor	Accepts findings of appraisal from team; prioritizes actions to be taken based on appraisal results.
Appraisal participants	Listen to appraisal results.

Typical Duration:

One to two hours.

Steps:

Table 4-29 shows the steps for this process activity.

Table 4-29 - Steps for Present Final Briefing

Step	Guidance
Coach sponsor on his/her expected participation in meeting	Remind sponsor that his/her reaction to the findings will have an impact on the enthusiasm with which follow-on actions are greeted.
Remind all of purpose of meeting	Remind participants that they have already had opportunities for feedback – the focus of this session is to summarize what has been found during the week.
Thank sponsor and participants for cooperation in the appraisal	Acknowledge the support personnel and all those who helped the appraisal succeed.
Present final briefing	The presenter goes through the entire briefing, including process capability profile and next steps; presenter asks for questions to be held until the end.
Open discussion, if appropriate	Usually at the end of the briefing, the sponsor does a “thank you” message, provides initial reaction, and then opens with his/her own questions or opens the discussion to the floor.

Tailorable Parameters:

- Number and type of participants in audience
- Level of detail of findings
- Presenter: In some cases, having the moderator present the process of coming to the findings, and the team leader present the content of the findings may work best (see tailorable parameters in Present Draft Findings)

Exit Criteria:

- Final briefing presentation completed
- Participant questions answered, or recorded as actions

Notes:

See Section 6.9 and Annex B for a rating profile example.

4.2.15 Brief Sponsor (optional)

Purpose:

Brief Sponsor provides the sponsor with an opportunity to ask questions privately, obtain or give feedback on the appraisal process, and discuss next steps in more detail.

Summary Description:

Brief Sponsor involves the appraisal team members and sponsors having an open discussion on the results of the appraisal, the appraisal process, and the next steps, as appropriate. No confidentiality rules are abrogated in this meeting.

Major Participants:

Table 4-30 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-30 - Participants for Brief Sponsor

Role	Summary
Facilitator	Asks sponsor if any clarification or other information is needed; suggests follow-on assignments.
Appraisal team	Answer sponsor's questions, as appropriate.
Sponsor	Asks any questions not appropriate for a general audience; makes follow-up assignments.

Typical Duration:

Thirty minutes to one hour.

Steps:

Table 4-31 shows the steps for this process activity.

Table 4-31 - Steps for Brief Sponsor

Step	Guidance
Ask sponsor for feedback on results	Often the sponsor has questions of clarification that he/she prefers not to ask in a large group; even if there are no specific questions, this is a good time to gauge the sponsor's reaction – sometimes the results are right in line with the sponsor's prior thinking, sometimes they are a surprise.
Ask sponsor for feedback on process	Any feedback from the sponsor on the appraisal process should be included in the lessons learned that are returned to the reference model maintenance site.
Discuss next steps and add detail	At this point the assignments for follow-on work should be finalized. The moderator may provide some advice on how long the follow-up activities will be expected to take and the level of commitment required to finish the report and start to develop an improvement plan.

Tailorable Parameters:

- This is an optional process activity, so it may be tailored out if appropriate

Exit Criteria:

- Sponsor dismisses team

Notes:

This is an optional activity, but is frequently used as a way to ensure sponsor follow-through and assignment of actions. It also provides the sponsor with an opportunity to get a better understanding of the findings which he/she may not have been comfortable discussing in the large meeting.

4.2.16 Conduct Wrap-Up

Purpose:

The purposes of Conduct Wrap-Up are to obtain feedback from the appraisal team on the appraisal process itself, provide an opportunity for consulting with the moderator on moving forward with the results, and ensure that appraisal materials are properly accounted for.

Summary Description:

Conduct Wrap-Up involves obtaining information about what worked and what did not work from the appraisal team members for feeding back to the Appraisal Method maintainers. It also involves discussing and resolving findings and assignments from the recommendation report.

Major Participants:

Table 4-32 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 4-32 - Participants for Conduct Wrap-Up

Role	Summary
Facilitator	Facilitates gathering data on what worked and did not work during the appraisal.
Appraisal team members	Provide input into what worked and what didn't work.

Typical Duration:

One hour.

Steps:

Table 4-33 shows the steps for this process activity.

Table 4-33 - Steps for Conduct Wrap-Up

Step	Guidance
Conduct appraisal data gathering session	Getting the team to write "what worked" and "what didn't work" stickies provides an easy way to gather data and provide an affinitized list of improvement suggestions to the maintenance site. Note that what did work is just as important, so that successful elements of the AM aren't lost in future revisions
Verify findings and recommendations	If there were areas of disagreement that came out as results of the final briefing, this time may be used to resolve how the finding will be presented in the appraisal report.
Report assignments detailed	All appraisal team members should understand their commitments to the findings and recommendations report and their deadlines.
Answer last-minute questions	Often appraisal team members have questions about improvement plans, etc., that the moderator may spend some time answering and providing references for.

Tailorable Parameters:

- Amount of time spent in discussing lessons learned

Exit Criteria:

- Appraisal lessons learned are recorded
- Assignments are verified

Notes:

Depending on the team, there may be resistance to the wrap-up session (everybody wants to go home and get some sleep, or catch a plane, etc.). The moderator should judge how in-depth to make this session, based on the state of the team. A celebration of some sort is not out of place if the team members are available. (Often, however, the moderators have planes to catch.)

5 Post-Appraisal Phase Activities

5.1 Post-Appraisal Phase Overview

Purpose:

The Post-Appraisal phase finishes preparing the appraisal reports, documents lessons learned in the appraisal, and provides recommendations for action planning. Figure 5-1 shows the activities in the Post-Appraisal phase.

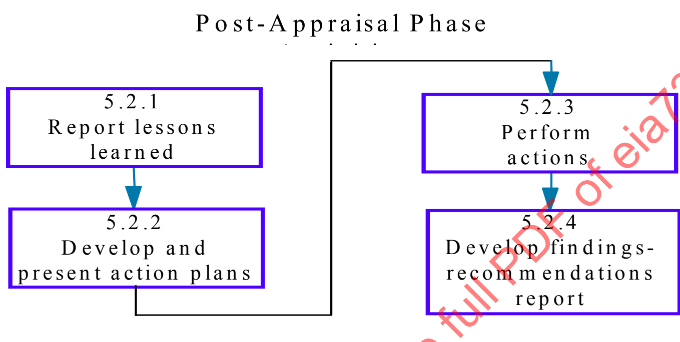


Figure 5-1. Diagram of Post-Appraisal Phase

Summary Description:

Table 5-1 shows the activities for this process phase.

Table 5-1 - Summary Description of Post-Appraisal Phase

ID	Activity	Description
5.2.1	Report lessons learned	Record lessons learned, risks avoided and encountered, and suggestions for improving the method to the reference model maintenance site.
5.2.2	Develop and present action plans	Coordinate the findings with the strategic plans of the organization such that the critical elements are worked on first. Get buy-in with sponsor.
5.2.3	Perform Actions	Set realistic schedules and commitment from those involved in the improvement process, and proceed to implement the sponsored changes.
5.2.4	Develop findings-recommendation report	Expand findings briefing into a report; add recommendations for the sequence of improvement and priorities.

Typical Duration:

Two to four weeks.

Tailorable Parameters:

- Reporting of appraisal data to other parties (e.g., reference model maintenance site) must be negotiated and agreed upon in the Preparation phase

Exit Criteria:

- Lessons learned on model and appraisal method reported back to model maintenance group
- Appraisal report completed and distributed appropriately
- Records disposed of per the appraisal plan

Notes:

One of the typical traps in getting an improvement effort started is allowing the release of the appraisal report to drag out.

5.2 Post-Appraisal Phase Activities

5.2.1 Report Lessons Learned

Purpose:

Report Lessons Learned provides the Appraisal Method maintainers with feedback on the strengths and weaknesses in the description of the method and model, and provides opportunities for improving the method and model.

Summary Description:

Report Lessons Learned involves describing the appraisal goals and tailoring decisions made by the team, and recording any effects (positive or negative) of either the described or implemented method.

Major Participants:

Table 5-2 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 5-2 - Participants for Report Lessons Learned

Role	Summary
Facilitator	Synthesizes and records lessons learned from appraisal participation.
Model maintenance group	Accepts and addresses comments from appraisal team.

Typical Duration:

Two hours (to write and send lessons learned information).

Tailorable Parameters:

- Level of detail of recommendations

Exit Criteria:

- Lessons learned sent to the Appraisal Method maintenance site and used to improve local tailoring

Notes:

Feedback received from appraisal teams will be a primary input to revisions and enhancements to the Appraisal Method. Feedback may be as simple as a set of stickies, or as elaborate as a formal white paper.

5.2.2 Develop and Present Action Plans

Purpose:

Action planning provides management and the appraisal sponsor with feasible, prioritized activities, costs, and schedules descriptions that are likely to be implemented; and delivers intended improvements from the perspectives of the organization's technical and managerial levels .

Summary Description:

Action planning requires willing and collaborative representatives from affected groups in the organization to develop realistic task descriptions, resource cost estimates, schedules, and perform risk assessments before submitting the plans for approval and implementation by the sponsor or management. The plans need not be long or detailed, but must motivate the people who must lead, do, and support the plans to implement them, and provide sufficient guidance to do so.

Major Participants:

Table 5-3 lists the primary roles involved in this process activity and a summary of their tasks during the process.

Table 5-3 - Participants for Report Appraisal Output to Other Parties

Role	Summary
Action planners	Develop action plans to implement prioritized recommendations, and prioritize the actions to maximize impact and buy-in from the organization.

Typical Duration:

Two days to four weeks.

Tailorable Parameters:

- Level of detail provided. At the low end, only title, objective (observable or measurable), linkage to finding or recommendation, task list, resources to accomplish, PERT, and force field analysis (pros/cons, risk assessment) are required. At the top end, this could be a significant portion of an organization's annual tactical or operational planning.

Notes:

The levels of detail, resources, and schedule to do this planning are negotiated during the Preparation phase with the sponsor.

5.2.3 Perform Actions

Purpose:

Perform Actions implements or deploys the approved action plans.

Summary Description:

Perform Actions involves the sponsor and affected groups (including management) reviewing the action plans, identifying resources, and appropriate start dates for those efforts approved. The sponsor and affected groups then deploy the resources per the plan(s), tracking and overseeing them like any other program (see FA 2.2 - Monitor and Control, in EIA-731, Part 1).

Major Participants:

Table 5-4 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 5-4 - Participants for Manage Records

Role	Summary
Sponsor	Accepts, prioritizes, and provides resources and leadership to implement the plan(s).
Action Plan team(s)	Per program FAs , perform action plans to achieve expected results.

Typical Duration:

From a few weeks to an ongoing effort each (from 3 to 5 distinct improvement action plans are typical outputs of an appraisal)

Tailorable Parameters:

- Many - these are determined by how the organization uses teams, task forces, inter-disciplinary groups, etc., to deploy changes

Exit Criteria:

- Plan exit criteria are met (success or failure is achieved)

5.2.4 Develop Findings and Recommendations Report

Purpose:

Develop the Findings and Recommendations (F&R) Report provides the organization with documentation of root causes of problems , and recommendations for actions to remove them.

Summary Description:

The F&R report copies and provides details or explanations of intent beyond the findings slides and Focus Area profiles. For each finding, the report contains a recommendation that addresses that finding. These recommendations focus on increasing the throughput and decreasing work-in-progress (WIP) in the organization's SE process improvement efforts for the Focus Areas as they are deployed in the organization.

Major Participants:

Table 5-5 lists the primary roles involved in this process activity and a summary of their tasks during this process.

Table 5-5 - Participants for Report Lessons Learned

Role	Summary
Leader	Collects and leads synthesis of recommendations from findings.
Appraisal team	Perform writing assignments and review and provide improvement recommendations to other authors' work.
Facilitator	Acts as a reviewer of the report.

Typical Duration:

Four work days over one to three weeks.

Tailorable Parameters:

- Level of detail of document and of explanatory material supporting findings and recommendations

Exit Criteria :

- Report delivered and accepted or approved by sponsor

Notes:

A worksheet, including some techniques that might be helpful, is included in Annex D.

6 Guidance for Initiating an Appraisal

6.1 Introduction

This section provides readers who are contemplating initiating an Appraisal Method with information that helps them properly resource and prepare for the appraisal.

6.1.1 Preparation Phase Activities

The Preparation phase is typically initiated six to eight weeks prior to the On-Site phase. The primary activities performed during the Preparation phase are:

- Establish appraisal objectives.
- Determine boundaries to be placed on the organization for the purpose of establishing the scope of the entity to be appraised.
- Select product lines, or major aspects of a product line, to receive questionnaires.
- Select appraisal team and site coordinator.
- Select product leaders, support functions, and practitioner groups.
- Obtain facilities and support material.
- Coordinate schedules, particularly senior management.
- Administer questionnaire.

Annex F provides a checklist to assist the site coordinator. Many of these tasks can go more quickly and achieve better results with some guidance.

6.1.2 Facilities Support

The On-Site appraisal phase is very intensive for the appraisal team. To maximize their efficiency, it is recommended that a large conference room that can be secured be made available for the On-Site effort. Other critical support facilities include computers, printers, display capability, and reproduction capability. Recommended support facilities include hotel rooms, food, and secretarial support.

6.1.3 Additional Appraisal Guidance

All three appraisal phases are discussed in detail in Sections 3, 4, and 5. In each process activity, guidance is provided to help appraisers avoid typical pitfalls associated with that process activity.

6.2 Using Business Goals in the Appraisal Method

6.2.1 Assumptions

The organization using the Appraisal Method has a strong set of deployed business goals at its disposal. The creation and deployment of business goals is a task of significant undertaking and is beyond the scope of this Appraisal Method.

6.2.2 Refining Appraisal Emphasis

An organization that has a strong sense of its mission and business goals can optimize the use of the Appraisal Method, by analyzing the model in relation to those goals, and deciding on the emphasis for the appraisal. An appraisal may be narrower in scope than the entire model, in order to provide more direct and specific information on the process improvement needs of the organization.

Alternatively, a broad evaluation may still be desired for data gathering. However, the selection of findings and recommendations can be limited to those which directly impact the business goals. This provides the breadth of data gathering that allows management a benchmark of overall capability, while still enabling targeted improvements directly tied to the business needs of the enterprise.

6.3 Tailoring the Appraisal Method Based on Organizational Context

6.3.1 Factors Influencing Organizations

Figure 6-1 illustrates some of the key influences organizations must face when attempting improvement using any reference model, such as the SECM. The paragraphs in this section assist organizations in tailoring the Appraisal Method to support improvement based on their particular context.

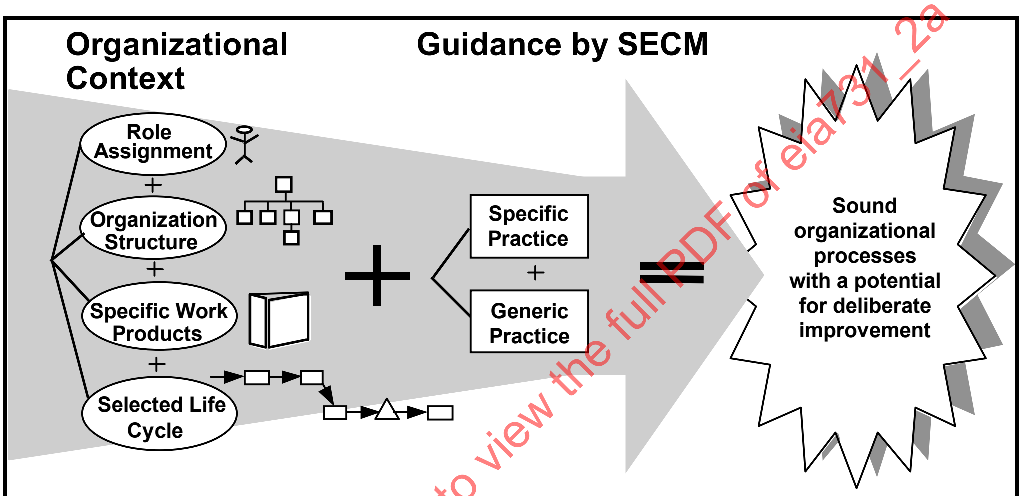


Figure 6-1. Key Influences of Organizational Improvement

6.3.2 Organizational Structures

To a certain extent, the Appraisal Method is optimized for appraisal efficiency in an organizational setting that uses product lines as the main means of accomplishing work. These product lines are assumed to be led by an individual or team who have resource planning, allocation, and monitoring responsibility, as well as responsibility for the quality and quantity of product delivered. Other management and control functions, such as staffing, career development, and administration, may or may not be performed within the product line boundaries.

Common organizational structures that the Appraisal Method can accommodate include:

(1) a program structure where all management, staffing, and administrative functions come within the purview of the program;
(2) a matrix structure, where the program planning, resources, monitoring, and performance are the responsibility of the program, with staffing and other administration handled by a “functional” or “central” organization; and
(3) integrated product development teams, where teams are created from functional or product line groups, and have the same general responsibilities as a program, but typically at a smaller scope for each team.

6.3.3 Using the Appraisal Method in a Functional Organization Structure

In some environments, a functional structure, where the resource planning and control for product development are under the management of a central or functional organization, can be a more challenging environment in which to use the Appraisal Method. However, the Appraisal Method still obtains a snapshot of organization-wide product design and development capability.

The Appraisal Method assumes that there is someone called the Product Leader (PL), who is a single point of information for a broad base of topics, all related to the product life cycle functions being performed in product lines within an organization. If three or four of these PLs are interviewed, the gaps in information are typically small, and are easily filled via the practitioner group discussions.

In some organizations, control is held by a functional manager, either related to life cycle, e.g., requirements manager, design manager, integration manager, etc., or by product line, e.g., product line A manager, product line B manager, etc. The "programs" supporting this type of organization's needs may be small enough that the ongoing overhead of a program management structure is inefficient, or this structure may support business goals of the organization in some way other structures cannot.

The challenge for applying the Appraisal Method is to find a single interview source for the broad information gathering needed at the beginning of the Appraisal Method. This may not always be possible. When a single source is unavailable, tailor the method to achieve getting both the breadth of information typically provided by the PLs, and the depth of information typically provided by the practitioner groups. This may entail changing the On-Site schedule for the appraisal, re-defining the "organization" being appraised, distributing the questionnaire across a broader range of product lines, and then selecting interviewees based on the breadth of knowledge exhibited by their questionnaire responses, or other alternatives.

6.3.4 Product Line Focus

Many organizations today are using product lines as a method of defining organizational boundaries. When applying the Appraisal Method in such an organization, an appraisal focusing within a single product line is likely to produce the most actionable results. Note that crossing product lines can give a perspective on the overall process strengths and weaknesses of the organization.

6.4 Selecting Appraisal Personnel

6.4.1 Guidance for Selecting the Appraisal Team

The facilitators and appraisal team members, drawn from the organization, work as a single team during the entire On-Site phase. The appraisal team analyzes data, performs all of the interviews, and develops the findings. They are also responsible for developing the recommendations to the findings that are published in the appraisal report, and should be involved in carrying out process improvement activities throughout the organization. To assure transition from the appraisal to a robust improvement effort, the appraisal team members should:

- Be advocates of process improvement;
- Be credible with both management and participants;
- Be involved in action planning and the subsequent improvement effort;
- Have good communication skills; and
- Have a positive and encouraging attitude.

If the organization has any previous experience with organizational appraisals and ensuing process improvement activities, such as appraisal and improvement based on the CMM® for Software, it can be advantageous to include a person who has been involved in those activities, even if his/her specific area of expertise differs from the program's area. Such a person brings appraisal experience from within the organizational culture, and can be used as a source to gain leverage from process improvement activities that have worked within the organizational culture. These individuals are also likely candidates to be the Appraisal Method facilitators.

6.4.2 Data Sources

The SECM appraisal method is structured to examine two views of the entity being appraised, typically program or product line, and organizational support. The objective is to get as broad a view of the organization as possible, while still maintaining control of the data gathering process. The product line lead systems engineers are typically the ones who complete the questionnaire, since they have a broader view of the tasks being performed in product life cycle and associated support functions. The questionnaires are essential to establishing the basis for data gathering for the entire On-Site period. The practitioners expand the appraisers' view of the organization, providing information on what is being done on other product lines or areas of the organization, besides those targeted for in-depth data gathering. The appraisal team may choose to have selected people in the practitioner group complete the questionnaire, but this is typically kept to a limited number for the purpose of data and resource management.

On some appraisals, the appraised organization may have a large product line. In that situation the "product lines" may be large subsystems or segments of the product line. The product line lead systems engineers would then be the segment lead systems engineers, and the practitioners would be drawn from other product line segments.

6.5 Selecting Programs to be Appraised

6.5.1 Program Selection Considerations

The types of programs and product lines selected to participate in the appraisal are based on the goals of the appraisal. Table 6-1 lists some considerations in selecting programs and product lines.

Table 6-1 - Program Selection Considerations

Goal of the Appraisal	Type of Programs to Select
Improve domain-related issues	Select product lines within desired domain. Note that the domain can be focused on any one of the following factors: industry, technology base, customer type, product line complexity, etc.
Improve deployment of new organizational practices	Select new product lines that have started since the deployment of new practices.
Determine overall capability of the organization	Select product lines that are expected to be representative of the organizational capability.
Determine progress of process improvement activities	Select product lines that have been the pilots for process improvements.

6.5.2 Program Location

Consider the logistics carefully, for appraisals involving personnel from different geographical sites. The appraisal interview and feedback process assumes that the interviewers will be available for multiple sessions during the On-Site period. Tailoring to accommodate multi-site appraisals should account for the need for the interview and feedback loop, when offsite activities are considered.

6.5.3 Selecting Practitioner Groups

There are two issues associated with the selection of the practitioner groups:

- Ensuring appropriate functional areas are represented; and
- Ensuring the right type of person is participating in the group.

The practitioner groups should represent the primary product life cycle-related tasks performed within the organization (e.g., analysis, requirements, and test). However, it is important to include the support organizations (specifically quality, configuration management, supplier management, and training), even if these functions are not encompassed, structure-wise, in the organization being appraised. It is also recommended that practitioners from specialty disciplines who support product life cycle-related tasks (e.g., human factors, reliability, and manufacturing) be included in the practitioner Appraisal Method.

The people who are selected to be in the practitioner groups should:

- Be opinion leaders who are credible with their peer group;
- Be drawn from areas widespread throughout the organization;
- Be willing to communicate and express their opinions;
- Be able to talk freely and supply useful information; and
- Not suppress or intimidate any conversation.

To ensure candid conversation in the practitioner groups, it is recommended to not mix line management and their subordinates during the group questioning. If one of the goals of the appraisal is to assess management issues, the recommendation is to have an entire practitioner group composed of managers.

6.6 Tailoring the Appraisal Questionnaire

6.6.1 Questionnaire Distribution

The questionnaire, at a minimum, is distributed to the product leaders or equivalent. However, depending upon the responsibilities and visibility of the product leaders within the organization, the questionnaires for some of the Focus Areas may be distributed to people who are more familiar with the area covered by the Focus Area. Specifically, the organizational Focus Areas should be completed by the appropriate subject matter experts.

6.6.2 Recommended Questionnaire Recipients

Distribute the questionnaires to the individuals with the skills and roles expressed in Table 6-2 to maximize the accuracy of initial responses to the SECM questionnaire.

Table 6-2 - Questionnaire Distribution Table

Focus Area	Primary Recipients	Secondary Recipients
1.1 Define Stakeholder and System Level Requirements	Product leaders for the product lines selected for appraisal	• Technical marketing personnel • Proposal personnel • Customer service personnel
1.2 Define Technical Problem	Product leaders for the product lines selected for appraisal	Senior practitioner with significant system design experience
1.3 Define Solution	Product leaders for the product lines selected for appraisal	Senior specialty engineers (e.g., reliability, safety, manufacturing, human factors) working on the product lines selected for appraisal
1.4 Assess and Select	Product leaders for the product lines selected for appraisal	Senior specialty engineers (e.g., reliability, safety, manufacturing, human factors) working on the product lines selected for appraisal
1.5 Integrate System	Product leaders for the product lines selected for appraisal	
1.6 Verify System	Product leaders for the product lines selected for appraisal	System verification manager or senior test engineers
1.7 Validate System	Product leaders for the product lines selected for appraisal	System validation manager or senior test engineers
2.1 Plan And Organize	Senior product-level quality manager or lead (in environments with shared quality leadership responsibility, product leader for the product)	• Product leaders for the products selected for appraisal • Organizational quality manager, total quality management coordinator
2.2 Monitor and Control	Senior functional manager or lead responsible for product	Product leaders for the product lines selected for appraisal
2.3 Integrate Disciplines	Product leaders for the product lines selected for appraisal	Senior practitioner with significant system design experience
2.4 Coordinate with Suppliers	Product leaders for the product lines selected for appraisal	Senior practitioner with significant system design experience
2.5 Manage Risk	Product leaders for the product lines selected for appraisal	Project or program manager for the product lines selected for appraisal
2.6 Manage Data	Individuals responsible for data management policies and procedures area, or other support group	Product leaders for the product lines selected for appraisal
2.7 Manage Configurations	Senior product-level CM manager for the product lines selected for appraisal	Senior practitioner with significant system design experience
2.8 Ensure Quality	Individuals responsible for quality leadership area, policies and procedures area, or other support group	Senior specialty engineers (e.g., reliability, safety, manufacturing, human factors) working on the product lines selected for appraisal

Table 6-2 - Questionnaire Distribution Table (continued)

Focus Area	Primary Recipients	Secondary Recipients
3.1 Define and Improve the Systems Engineering Process	Individuals responsible for defining organization-level processes; may be part of the quality leadership area, policies/procedures area, or other support group	Senior specialty engineers (e.g., reliability, safety, manufacturing, human factors) working on the product lines selected for appraisal
3.2 Manage Competency	Individuals in training, personnel resources, and those who define organization level goals	Senior practitioner with significant system design experience
3.3 Manage Technology	Individuals in training, personnel resources, and those who define organization level goals	Senior specialty engineers (e.g., reliability, safety, manufacturing, human factors) working on the product lines selected for appraisal
3.4 Manage Systems Engineering Support Environment	Senior product-level quality manager or lead (in environments with shared quality leadership responsibility, product leader for the product)	Senior practitioner with significant system design experience

6.6.3 Questionnaire Administration

The questionnaire must be completed prior to the On-Site phase. We recommend that it be administered with a facilitator or site coordinator present and administered to the product leaders and other appropriate personnel as a group, so that common questions can be answered. The typical question regards organizational roles. The person administering the questionnaire should emphasize that the SECM is role independent. The questionnaire only asks if specific tasks are performed on a product line, not if they are performed by a specific person.

6.7 Tracking and Maintaining Appraisal Data

The Data Tracking Sheet (DTS) is a data management tool used by the appraisal team during the On-Site phase. The responses to the questionnaires are transcribed onto the DTS at the beginning of (or prior to) the On-Site phase. Trends or inconsistencies in data can be identified more easily in the DTS format, which forms the basis for developing the exploratory questions asked of the participants. Information obtained from the product leader and practitioner interviews that supports (corroborating data) or contradicts (opposing data) the premise that the practice is exhibited is then recorded on the DTS. All information recorded on the DTS, in addition to the appraisal team's notes from interviews and reviews of supporting material, is used to develop the rating profile.

The DTS format also facilitates identifying areas where no additional supporting data have been obtained. This permits directing further interviews, particularly the practitioner interviews, to fill in any information gaps. Conscientious data management throughout the On-Site phase significantly improves the efficiency of the whole appraisal process and facilitates the rating development.

6.8 Developing the Rating Profile

One of the results of the On-Site phase is a rating profile covering the appraised Focus Areas. The rating profile must correlate with the appraisal findings, and the two are developed in a closely coupled process. The rating profile is developed and refined at specific points in the appraisal process, as detailed in the process activity summaries in Sections 3 - 5, and illustrated in Figure 6-2.

At the end of the primary data-gathering activities, prior to generating preliminary findings, the team reviews its data to formulate a preliminary rating for each Focus Area. Ratings are based on the degree to which the appraised entity performs all of the practices at a given level, in the judgment of the appraisal team. Issues raised in generating preliminary ratings can be addressed during the preliminary feedback sessions. The rating is then refined into a draft rating in conjunction with developing the draft findings. In conjunction with developing the final findings, the team once again reviews the data to formulate the final rating for each of the Focus Areas.

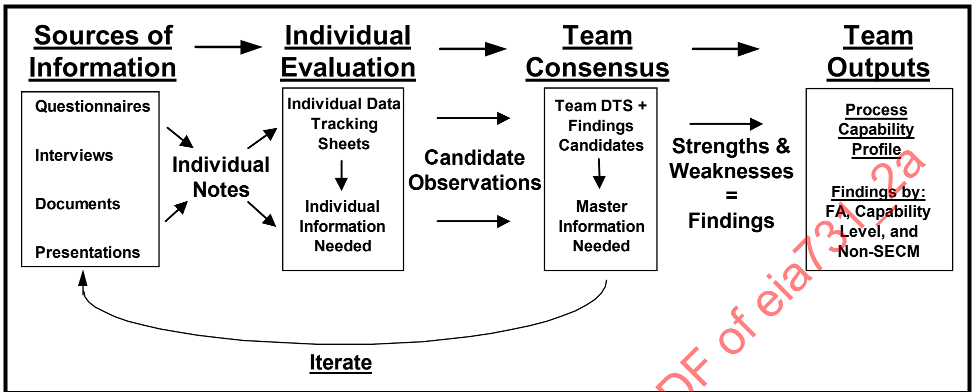


Figure 6-2. Rating Profile Development Process

6.8.1 Questionnaire Scoring

At this point the questionnaire data should have already been entered into the Data Tracking Sheet (a spreadsheet or database) for analysis, and percentages should have been tabulated for each Focus Area at each capability level. (Note: it may also be helpful to compare data across each work group being assessed, and within each personnel group [practitioner, program leads, management].)

6.8.2 Individual Team Member Data Analysis

The appraisal team now must compile the vast amount of information they have gained through interviews and artifact reviews. This step is comprised of each team member taking time to go through the notes they have taken during the interviews, highlighting important notes taken by the team member or comments given by the interviewees, as well as documenting any of their observations from the artifact reviews.

6.8.3 Team Analysis of Data

This step is often accomplished in parallel with developing the draft findings. The team steps through each Focus Area and provides the data they feel is relevant from their individual analysis. As strengths and weaknesses are identified, it will become apparent which practices are being performed by the organization and which are not. Analysis of the data will also provide insights into the effectiveness of the process that is in place.

6.8.4 Applying the Scoring Templates

Once these activities are completed, it is time to apply the scoring templates to determine the Focus Area scores. This activity is a critical event in the scoring process, and can involve intense discussions on the assigned scores. (Remember that the assigned scores are less important than the set of findings and strengths that will be delivered to the organization under assessment.)

When applying the scoring templates, the appraisal team must decide on the granularity of scoring: whole point (1, 2, 3, ...), half point (0.5, 1, 1.5, 2, 2.5, ...), or quarter point (0.25, 0.5, 0.75, 1, 1.25, ...). The granularity used will depend on the objectives of the organization and the level of maturity. If whole point scoring provides an adequate definition of the organization maturity profile, a finer scoring scale may prove unnecessary. On the other hand, if all of the organization's scores were centered around level 1, it may provide useful guidance to the organization to use a half point or quarter point scale, to highlight relative strengths and weaknesses.

As the final findings are being determined, the ratings are reviewed against the findings and strengths to ensure there is continuity between these two parts of the report.

6.9 Rating Presentation Formats

The following formats for presenting the rating profile have all been used in different appraisal contexts, and are illustrated in Figures 6-3 and 6-4, and Table 6-3.

- Pie chart: Number of FAs at specific levels (works well for organization primarily in the level 2-3 capability range).
- Bar chart: Score for each FA shown on a bar graph that allows the option to use quartiles for FAs below level 1 (a good option for the organization in the 0-2 maturity range).
- Tabular format: Score for each FA shown in a table.

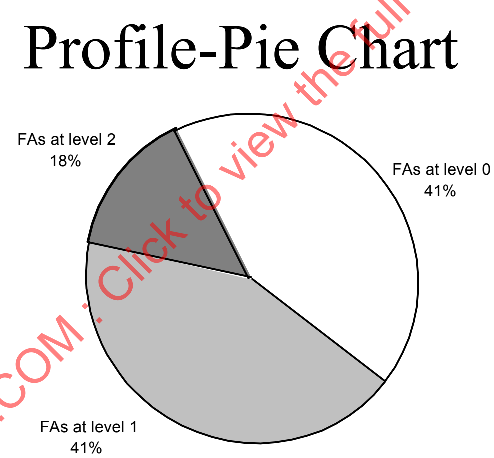


Figure 6-3. Pie Chart Example

Example Scoring Profile

The result is a profile highlighting strengths and weaknesses

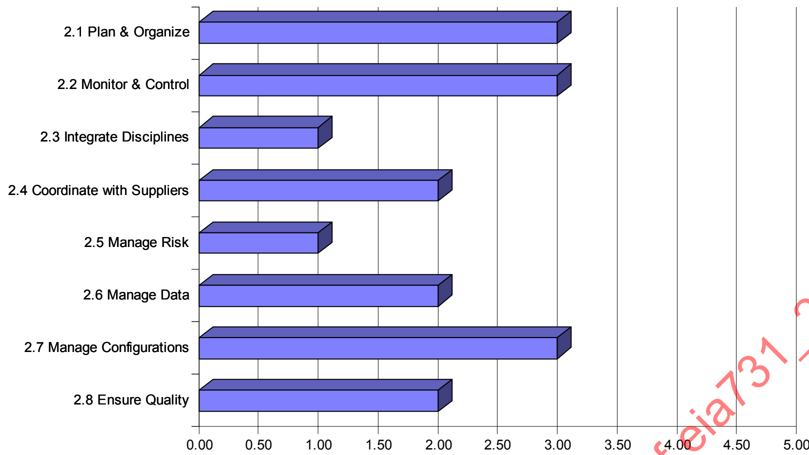


Figure 6-4. Bar Chart Example

Table 6-3 - Tabular Format Example

FA Title	Rating
Define Stakeholder and System Level Requirements	1
Define Technical Problem	2
Define Solution	2
Assess and Select	0
Integrate System	2
Verify System	1
Validate System	2
Plan and Organize	1
Monitor and Control	3
Integrate Disciplines	1
Coordinate with Suppliers	1
Manage Risk	2
Manage Data	0
Manage Configurations	1
Ensure Quality	0
Define and Improve the Systems Engineering Process	1
Manage Competency	2
Manage Technology	1
Manage Systems Engineering Support Environment	2

6.10 Developing Findings

6.10.1 Introduction

The appraisal findings are a key product of the appraisal. They are the result of synthesizing all of the data collected throughout the On-Site phase, along with the questionnaire responses. Findings should be limited to approximately seven, so that the organization is left with a manageable number of findings, for forming or continuing an improvement effort. If a finer division of findings is desired, provide the same information for each of the findings, and provide guidance to the recommended priority for improvement effort.

6.10.2 Exploratory Questions

Exploratory questions are developed to explore the reason for any inconsistencies in the questionnaire responses, and are the first step in eliciting supporting or conflicting information on the performance of Specific or Generic Practices. Exploratory questions:

- Should be limited to approximately 50 per product leader, and should be prioritized due to interview time limitations.
- Should be linked to the individual Focus Areas in order to maintain traceability to the model, and facilitate the data management that needs to occur throughout the On-Site phase.
- Are typically a mix of some specific questions designed to address inconsistencies on a specific product line, and general questions aimed at possible consistent misinterpretations of the questionnaire.

Information on the performance of Specific or Generic Practices is recorded on the Data Tracking Sheet after each of the interviews with the product leader.

6.10.3 Preliminary Findings

The preliminary findings are a synthesis of the primary issues that appraisal team members have collected from both the product leaders and the practitioner groups. Preliminary findings include both strengths and weaknesses.

The preliminary findings are reviewed with the product leaders to confirm that the findings are true for their product line, and that the findings are true for the organization based upon their knowledge. The primary objective of this set of sessions is to validate the synthesized comments.

Feedback from the product leaders also helps in the prioritization of the data. The number of times that a preliminary finding is supported or contradicted helps the appraisal team determine high-priority items in the next synthesis step to develop the draft findings.

An additional objective of the feedback sessions is to obtain more supporting or conflicting information that is used to establish the rating. Additional questions may be inserted to address uncertainties that the appraisal team may have with respect to the rating profile.

6.10.4 Developing Draft Findings

The draft findings are the unreviewed version of the final findings. Confirmed preliminary findings are clustered using a technique such as affinity diagram, and a set of 5 to 10 themes or underlying factors are derived to form the draft findings. Draft findings are presented via briefing charts in the format of finding, cause, and consequence.

The draft and final findings typically fall into one of three categories:

- General barriers to the next level,

- Weaknesses in the Specific Practices, or
- Weaknesses in the Generic Practices.

The draft findings are presented to the product leaders and practitioners to get validation of the draft findings, to give the appraisal team leader a chance to dry-run the presentations, and to allow a forum for the practitioners to refine the findings.

6.10.5 Finding, Cause, Consequence

Once a set of findings areas is identified, the team should brainstorm the findings, causes, and consequences. The main findings should be carefully worded to reflect what the team has actually heard from the participants. The finding is usually a single observation; it may be thought of as a characterization of a symptom. An example of a finding is:

System engineering plans do not realistically reflect the needs of the product lines.

Causes are observations that support the central finding, and may indicate potential causes of the finding. An example of a cause is:

Estimates are not based on available historical data.

Consequences list the probable results of the finding. An example of a consequence is:

Cost and schedule overruns.

The causes and consequences are often taken directly from the preliminary findings. The causes are an opportunity to employ the phrasing heard during the practitioner's sessions. On the other hand, consequences primarily target the sponsor, and should reflect his/her perspective. Use of organizational objectives or goals, and the risks to meeting those goals, is recommended as part of the consequences.

During this initial step, avoid getting bogged down. If the team cannot agree on wording, leave it for the next step and developing final findings. At the end of this step, the findings have been identified along with a set of causes and consequences.

6.10.6 Final Findings

Final findings are an edited version of the draft findings, based upon comments from the practitioners and product leaders. These are used to develop the appraisal report and recommendations.

A sample final findings briefing is included in Annex B for reference.

Annex A

Template for Appraisal Method Opening Briefing

Introduction

This set of slides is a suggested format for the opening briefing. The slides are used to support the appraisal site coordinator in preparing for the On-Site period of the Appraisal Method.

Slide one:

System Engineering Capability Model, v1.0 Appraisal

Findings and Lessons Learned

MM/DD/98

Slide two:

Agenda

- Background
  - Appraisal Objectives
  - Method
  - SECM Model
- Strengths
- Findings
- Rating
- Practices to Achieve Next Stage
- Next Steps

Slide three:

Background: Appraisal Objectives

- Understand Organization product life cycle processes and relationships
- Identify things most (or at least more) important to improve and things working well at OrgName as input to planning
- Baseline operations against this model - show that, and where, improvement occurs across time
- Test SECM model
- Test appraisal method
- Be on the leading edge

Slide four:

Scope of the Appraisal

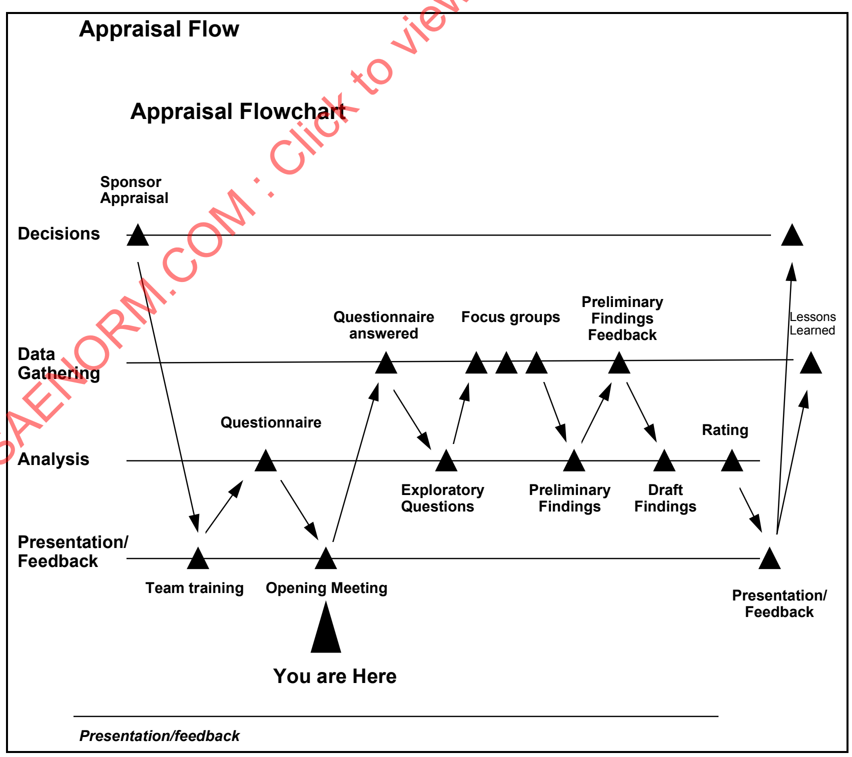
- Site:
- Sponsor:
- Product Managers
  - –
  - –
  - –
- Practitioner Focus Groups:
  - –
  - –

Slide five:

Background: Appraisal Scope, continued

- **Team Members:**
  - , lead
  - , site coordinator
  - , facilitator
  -
  -
  -

Slide six:



Slide seven:

Findings Development

- Responses from questionnaires
- Focus groups
- Stickies to process area flip charts
- Affinity diagram to NN findings
- Preliminary findings feedback
- Rating via data and consensus
- Findings via affinity diagram
- Standard Outbrief
- Throughout: Appraisal team perspective and experience

Slide eight:

Buy Stock in Post-Its™!

- Team takes notes directly onto post-its:
  - one observation per post-it
  - for practitioner sessions, can assign each person a "primary" source to capture observations from
  - different colors for each session
- Use "you are here" tags on enlarged appraisal flow schedule to help team members track their progress
- Post-its on flip charts organized by model components
  - FAs
- Affinity diagram from NNN to NN
- Feedback
- Affinity diagram from NN to 7+/- 2

Annex B

Template for Appraisal Method Final Briefing

Introduction

This set of slides is a suggested format for the final briefing. The slides are used to support the appraisal site coordinator in preparing for the On-Site period of the Appraisal Method.

Slide one:

Conduct of the Appraisal

- **Team was very responsive**
- **Arrangements well done**
- **Consensus on things to improve**
- **Collaborative and enthusiastic participation**
- **Candid information sharing**

Slide two:

Strengths

- Dedicated people!
- Historical success to build on
- “Can do” attitude
- Committed to customer satisfaction
- Technical competence
- Flexible workforce
- Lots of pockets of good practices and improvement experience

Slide three:

Strengths, continued

- Technology
  - good tools
  -
- Process
  - ISO 9000 was a good start
  -

Slide four:

Findings

- ‘Short title’ list here

Slide five:

Finding 1: (short title)

- Finding:

- Symptoms:
  - –
  - –
- Consequences:
  - –
  - –

Slide six:

Finding 2:

- **Finding:**

- **Symptoms:**
  - –
  - –
- **Consequences:**
  - –
  - –

Slide seven:

Finding 3:

Finding:

- **Symptoms:**
  - –
  - –
- **Consequences:**
  - –
  - –

Slide eight:

Finding 4:

Finding:

- **Symptoms:**
  - –
  - –
- **Consequences:**
  - –
  - –

Slide nine:

Finding 5:

Finding:

- **Symptoms:**
  - –
  - –
- **Consequences:**
  - –
  - –

Slide ten:

Finding 6:

Finding:

- **Symptoms:**
  –
  –
- **Consequences:**
  –
  –

Slide eleven:

Finding 7:

Finding:

- **Symptoms:**
  –
  –
- **Consequences:**
  –
  –

Slide twelve:

Next Steps

- Findings and Recommendations report
- Action Plan
- Pilot projects
- Improvement implementation

Slide thirteen:

Motivation

If you always do what you've always done,

You'll continue to get what you always got (or worse)...

Annex C

Example Schedule for an Appraisal

Introduction

An example On-Site schedule and labor template is provided in this annex. The basis of the example is an appraisal of three programs with three sets of practitioner groups. Templates for scheduling participants and obtaining documentation are included.

A series of 30 minute breaks are embedded into the schedules. These breaks can be used by the team as situations and requirements dictate.

Two + Five Day Appraisal Method Schedule

The following tables and figures provide an overview of a typical Two + Five day On-Site appraisal period. The typical process schedule is illustrated in Table C-1. Table C-2 illustrates the corresponding labor requirements. Figures C-1 through C-5 illustrate typical schedules for participants.

Table C-1 - Typical Two+Five Day Appraisal Schedule

Start	Finish	Who*	Description
Training Day 1			
8:30 AM	9:30 AM	All APs	Introductions, purpose, executive overview, and sponsorship statement (kickoff or opening briefing)
9:45 AM	12:00 noon	AT, others	SECM details (one break) (anyone interested may attend)
12:00 noon	1:00 PM		Lunch
1:00 PM	5:00 PM	AT, others	Appraisal Method walkthrough (two breaks) (others may attend if organization desires)
Training Day 2			(can be parallel with Day 1 starting at 1 and leaving Exploratory Question (EQ) development to On-Site Day 1 morning - 2 hrs)
8:00 AM	10:00 AM	Interviewees	Administer Questionnaires (parallel
10:00 AM	12:00 noon	F, SC, AT (opt)	Establish Data Tracking Sheet (DTS)
1:00 PM	5:00 PM	F, SC, AT	Develop EQs and detailed plans

Note: AP = Appraisal Participants
AT = Appraisal Team
ATL = Appraisal Team Leader
F = Facilitator
SC = Site Coordinator
S = Sponsor
FG = Focus Group

Table C-1 - Typical Two+Five Day Appraisal Schedule (continued)

Start	**Finish**	**Who***	**Description**
Monday			
8:30 AM	9:45 AM	All APs	Opening briefing if not performed in Training Days or some missed it
10:00 AM	12:00 noon	F, AT	Finalize EQs if not done in Training day 2
1:00 PM	5:00 PM	3 Interviews, F, AT	Interviews with product line leaders @ 1 hr each
5:00 PM	5:30 PM	AT	Post stickies to process area work sheets
Tuesday			
8:00 AM	12:00 noon	2 FGs, F, AT	Focus groups (practitioners) @ 8:45
1:00 PM	3:00 PM	1 FG, F, AT	Focus groups (practitioners) @ 1:45
3:00 PM	4:00 PM	AT	Post stickies to process area flip charts
4:00 PM	5:00 PM	AT	Do preliminary findings example
Wednesday			
8:00 AM	12:00 noon	F,SC,AT	Complete preliminary findings
1:00 PM	2:00 PM	3-5 Interviews, SC or AT	Collect feedback on preliminary findings (assumes in parallel from completion)
1:00 PM	2:00 PM	F, AT	Develop Draft Findings/Presentation
2:30 PM	3:30 PM	F, AT	Deliver Draft Findings/Presentation
4:00 PM	5:30 PM	F, AT	Discuss & adjust Final Findings Briefing
Thursday			
8:00AM	12:00Noon	F, AT	Finalize Findings
1:00 PM	2:30 PM	F, AT	Develop Final Findings Briefing
2:30 PM	4:00 PM?	F, ATL, SC	Produce Slides
Friday			
8:00 AM	9:00 AM	S, F, ATL	Recommended Executive session
9:30 AM	11:00 AM	AP	Outbrief for Sponsor and Participants
11:00 AM	12:00 noon	F, AT, SC	Lessons Learned
1:00 PM	2:00 PM	F, SC, AT	Next steps, cleanup, and good bye

Note: AP = Appraisal Participants
AT = Appraisal Team member
ATL = Appraisal Team Leader
F = Facilitator
SC = Site Coordinator
S = Sponsor
FG = Focus Group

Table C-2 - Labor Requirements for a Two + Five Day Appraisal

Role	Recommended number of people	Hours per person	Total Hours for this role
Facilitator (F)	2*	16(1)+ 40(2)	96
Appraisal Team member (AT)	4-6	56	224-336
Product Line Leaders (PL)	3-4(1 per product line)	8-10	24-40
Practitioners from across organization (P)	18-30	5-8	90-240
Site coordinator (SC)	1	40-80	40-80
Total			454-792

*Note: One to prepare and train but two are advised for the On-Site period.

Request: Please identify 1-3 examples of good process and poor practice documentation in your operations (could be plans, memos, templates, agendas, minutes, newsletters, etc.), mark them as good (+) or needing improvement (Δ), and provide them via the attached envelope or bring them to the interview session (to the extent you are able, given security constraints, etc.). Thanks!

Name: ____

Individual: Has led or experienced or been responsible for a product life cycle. Appraisal participant identified as having responsibility for or being experienced in a product life cycle. The leader should have a broad knowledge of the full life cycle.

Time Needed: 10 Hours per person (2-4 hrs in overview and model training + 2 hrs in questionnaire completion + 1 hour interview + 2 one hour feedback sessions + 1-2 hr Outbrief).

Overview: During the appraisal, the appraisal team will be using the product leader responses to the AM (SECM) questionnaire to develop a series of exploratory questions. The intended use of these questions is to develop a better understanding of the organization. Product leads are interviewed to clarify questionnaire responses and identify good practices. The responses of the leads and the practitioner focus groups are combined to develop preliminary findings. Preliminary findings are reviewed by product leaders. Those findings are then synthesized into draft findings. The draft is then reviewed by both the leaders and the practitioners to develop the final findings. These are presented to the sponsor in a session with leaders and practitioners present.

Events: Attend kickoff and overview (1 hrs) followed by model or just the model training (2 hrs).
Room: ____________ Date: ________ Time: _________
Complete the AM questionnaire prior to the On-Site period.
Room: ____________ Date: ________ Time: _________
Participate in the Opening Briefing (optional if done before as kickoff).
Attend Opening Briefing.
Room: ____________ Date: ________ Time: _________
Participate in a question and answer session. Based upon the questionnaire, the appraisal team develops a set of exploratory questions and "listen fors" for each leader. The questions will be asked to the leaders and the responses recorded. The appraisal team will consolidate the answers, along with the practitioners data, into preliminary findings. Perhaps request leader to provide any exemplary documentation.
Room: ____________ Date: ________ Time: _________
Provide feedback on the validity of the preliminary findings. Each of the preliminary findings are presented to each leader to assess:

- Is it true for your product operations?
- Do you think it is true for the organization as a whole?

Additional questions may be asked for clarification or for follow-on.
Room: ____________ Date: ________ Time: _________
Provide feedback on the draft findings. Provide feedback on whether the appraisal team captured what is happening in the organization. Assist crafting of draft into final findings for maximum impact.
Room: ____________ Date: ________ Time: _________
Participate in the final briefing. Be prepared to support findings to sponsor. Consider activities that could mitigate findings or improve practice in areas identified.

Figure C-1. Product Line Leader Appraisal Schedule

Request:	Please identify 1-3 examples of good process and poor practice documentation in your operations (could be plans, memos, templates, agendas, minutes, newsletters, etc.), mark them as good (+) or needing improvement (Δ), and provide them via the attached envelope or bring them to the interview session (to the extent you are able, given security constraints, etc.). Thanks!
Name:	____
Individual:	Practitioners - Individuals who perform or support the product life cycle process (directly or indirectly, e.g., engineering, manufacturing, shipping, delivery, training, QA, CM, marketing, logistics, field support).
Time Needed:	5-8 hours per person. 4-10 people per group.
Overview:	Through open-ended discussion with different types of practitioners, corroborating or contradictory data is gathered on product, program, and organizational practices. The responses of the individual practitioners and those of the product line leaders are combined to develop preliminary findings. The preliminary findings are then refined into draft findings with validation feedback from the leaders. The draft is reviewed by both the leaders and the practitioners to develop the final findings.
Events:	Optional: Attend Kickoff or Overview (1 hour). Optional: Model training (2 hours). Optional: Complete portion of questionnaire for appropriate process areas (1 hour). Listen, and ask clarifying questions about method or goals. If training, consider whether or not your process(es) corresponding to the model practices are performed. Room: _____________ Date: _________ Time: __________ Participate in opening Briefing (may be Kickoff/Overview). Listen, and ask clarifying questions about method or goals. Room: _____________ Date: _________ Time: __________ Participate in the focus group, consisting of a free-form discussion centered around the question, "What works or doesn't work well in your parts of the product life cycle process?" The facilitator may provide minimal direction in appropriate process areas. The responses are recorded. The appraisal team will consolidate the information gathered, along with the leads' data, into preliminary findings. Room: _____________ Date: _________ Time: __________ Provide feedback on the draft findings. Provide feedback on whether the appraisal team captured what is happening in the organization. Room: _____________ Date: _________ Time: __________ Participate in the final briefing. Be prepared to support findings to sponsor. Room: _____________ Date: _________ Time: __________

Figure C-2. Practitioner's Appraisal Schedule

Name:	____
Individual:	Appraisal Sponsor - The sponsor is the person(s) with authority to conduct and pay for an appraisal. The sponsor has a leadership role in improving the practices of the organization.
Time Needed:	4 hours per person.
Overview:	The sponsor relates the appraisal to business objectives and the improvement efforts of the organization. An initial pre-appraisal kickoff or overview session sets goals and context or motivation for performing the appraisal. At this or an opening briefing, the sponsor visibly encourages open and candid participation, and provides his/her motivation for the appraisal. At the final presentation, the sponsor accepts the results, notes that there is plenty to do, thanks the participants for their contributions, and may indicate how some or all of the appraisal results will be used in the organization's improvement efforts.
Events:	Establish appraisal goals, scope, resources, and approximate schedule. Meet with team leader or facilitator and perform pre-On-Site planning activities. Room: _____________ Date: _________ Time: __________ Attend kickoff or appraisal overview meeting or opening briefing (1 hour). Address appraisal participants as to the purpose and scope of appraisal, outline business objectives, and organizational improvement efforts. Encourage open, candid dialogue by all participants. Indicate interest in outcomes. Assure participants of safety regardless of results. Room: _____________ Date: _________ Time: __________ Optional: Executive Session (may precede or follow final session). Provides an opportunity for clarifications in detail, but still non-attributable to product lines, program(s), support elements, or individuals. Provides an opportunity to ask ancillary questions to each team member, such as, "What was your biggest insight not in the briefing?" Participate in final findings briefing. Accept results after briefing (say, "I hear you."). Thank participants for effort and outcome. Indicate how results will be used in improvement efforts (e.g., action plan part in improvement efforts, possibly what is being done or will be done to address one or more "quick win" findings). Room: _____________ Date: _________ Time: __________ Support Report Development, Action Planning, and Improvement (Post-Appraisal).

Figure C-3. Sponsor's Appraisal Schedule

Appraisal Team Leader (ATL):	The difference between the ATL and other team members is that the ATL may assume authority (if designated by sponsor at that time) by welcoming participants and acting as master of ceremonies for the opening meeting. He or she also delivers the draft findings and final findings presentations.

Figure C-4. Appraisal Team Leader's Appraisal Schedule

Appraisal Team Member:	Appraisal Team members are expected to take training, then assist with appraisal questionnaire interviews distribution, collection and analysis as requested during pre-On-Site, and from 8 AM to "whenever done" Monday through Friday of the On-Site week.

Figure C-5. Appraisal Team Member's Appraisal Schedule

Annex D

Appraisal Method Training Support

Introduction

Many of the materials provided in these annexes can be viewed as training support materials. The information provided in this annex summarizes the steps of the On-Site period for the Appraisal Method and provides an easy reference for appraisers to determine the sequence of events.

Conduct Sponsorship Meeting

Goals

- Establish a common vision of the links between appraisal and business goals
- Sponsor understands the potential appraisal outputs and outcomes
- Establish an informal contract for sponsorship and appraisal outcomes

Participants: Sponsor(s) and facilitator (optional: appraisal champion)
Duration: 30 minutes to an hour

Approach

The sponsor, facilitator, or appraisal champion (if different than the sponsor) must share information and establish a trust relationship. The facilitator describes the outputs and outcomes of an appraisal and maps them to typical business goals, such as decreased cycle time, decreased costs, increased quality, and increased productivity. The sponsor describes why he/she wants an appraisal performed, focusing on the particular business objectives or goals that the appraisal might be able to help the sponsor achieve. The facilitator proposes how the appraisal can specifically help achieve one or more of the sponsor's business goals, or why it is not an appropriate vehicle to meet any goals noted by the sponsor. The schedule and cost data in Annex C is used to assist the sponsor in understanding tailoring alternatives and tradeoffs between activities, participants, and the value to the organization. The sponsor and facilitator reach an agreement on tailoring that the facilitator provides, and the resources, role, and visible sponsorship behaviors that the sponsor provides.

- [ ] Understand what an appraisal provides (may be embedded in overview presentation):
  - Provide outputs and outcomes, with mappings to typical cycle time, cost, productivity, and quality goals.
  - Provide high level appraisal walkthrough (detailed if sponsor wants to know more), showing how different activities contribute to the appraisal outcomes, especially confidentiality rules.
- [ ] Understand explicit business goals the sponsor hopes the appraisal will help achieve.
- [ ] Reach agreement on the mapping between appraisal outcomes and business goals.
- [ ] Negotiated sponsorship and facilitation agreement:
  - Tailoring of appraisal to efficiently and effectively achieve goals.
  - Resources needed are committed to be provided.
  - Agreement reached to provide visible sponsorship.

Conduct Opening Meeting

Goals

- Visibly demonstrate senior management support for the appraisal process
- Introduce principles of process management and integration
- Review plan for the appraisal period

Participants: Senior management + Appraisal team + Leaders + Practitioners
Duration: 1.5 hour

Approach

The senior site manager begins this meeting by welcoming the appraisal team and indicating management support for the appraisal process. The appraisal team leader delivers a brief presentation on process management and the appraisal process flow. Finally, the site coordinator reviews the appraisal schedule, reminding everyone of when and where they are expected to participate.

- ❑ Senior management opening:
  - Introduce and welcome appraisal team.
  - Indicate support for appraisal and process improvement.
  - Solicit full and open support and participation.
- ❑ Briefing on model and especially process management and integration principles.
- ❑ Briefing on appraisal process flow:
  - Stress openness.
  - Emphasize establishing baseline (what you are doing well) as well as identification of things to improve.
- ❑ Repeat confidentiality rules:
  - No individuals or programs named in results.
  - May *not* disclose comments of others made at meetings.
  - Team will take notes. All notes will be treated as confidential.
- ❑ Review of appraisal schedule.
- ❑ Question and answer period.

Familiarize Team with Model and Appraisal Method

Goals

- Introduce the team to the appraisal process
- Familiarize the team with the model structures and high level content
- Prepare for the discussions with the leaders and practitioners
- Review the answers to the questionnaire

Participants: Appraisal team
Duration: 2-6 hours

Approach

This is an opportunity for the appraisal team to begin working together. It is also an opportunity to think about the application of model concepts, structures, and content in the practices to the way the organization perceives itself to function. The appraisal steps are presented in greater detail than at the opening meeting, and the team's role in each step is clarified by example or exercise.

- ❑ Team building exercise (optional).
- ❑ Model concepts, structures, and content workshop (optional).
- ❑ Review of appraisal steps:
  - Explain the flow from questionnaire to Data Tracking Sheet to Exploratory Questions and Rating.
  - Explain, with an example exercise, the conduct of leader sessions.
  - Explain, with an example exercise, the conduct of practitioner sessions.
- ❑ Review the appraisal schedule.
- ❑ Question and answer period.

Analyze Questionnaire

Goals

- Review the patterns in the answers to the questionnaire
- Develop exploratory questions
- Prepare for discussions with the leaders (optional: and with practitioners)

Participants: Appraisal Team
Duration: ~2 hours

Approach

This is where the appraisal team begins its data analysis work. The team develops exploratory questions (EQs) based on the answers to the questionnaire. Approximately 40-60 questions should be generated, then 15-30 are allocated to each product leader and up to 10 are allocated to a focus group. There is usually some overlap of questions. EQs are used when: a) there were differences between questionnaire responses of product leaders or those designated to answer as experts in a process area; or b) to spot check practices to which everyone answered "Yes."

The typical EQ is structured by the words, "Would you please describe how you or the practitioners performing this process ...," followed by the verb-object form of the name of a process area or the name of any simple practice within a process area. For example:

> *"Would you please describe how you manage configurations?"*

may be addressed to a product leader or focus group that included configuration management, parts inventory, or work in progress practitioners. The EQs may be tailored where special conditions are identified.   The object is not to have "Yes" or "No" response-type questions. When developing a question, the appraisal team is often looking for certain responses, e.g., "the plan." These responses should be recorded as "listen fors," which the moderator can use as a cue to ask additional questions if they are not mentioned. Some questions may be accompanied by a request for relevant or supporting documents. Note these "listen fors" and document requests on the EQ form for the moderator.

Once the questions are developed, they are transcribed onto an appropriate form, and copies are made for each team member. The form should include each question, any "listen fors," document requests, and space for notes. Annex G includes sample SECM EQs in the EQ format. The Generic Practice questions can be copied and attached to questions for all process areas, so that the appraisal team can ask for and listen for evidence of higher capability practice.

- ❑ Review answers to the questionnaire.
- ❑ *Brainstorm* a preliminary set of EQs, in subteams by process area.
- ❑ Organize and prioritize questions for leaders and focus groups, and add "listen fors."
- ❑ Transcribe questions onto forms and make copies for the team.
- ❑ Review the schedule.

Interview Product Leaders

Goals

- Resolve any misunderstandings from the questionnaire
- Clarify any anomalies or inconsistencies
- Focus appraisal team on process areas that need improvement

Participants: Appraisal team + leaders (sequentially, separately in parallel, or together)
Duration: 1 hour each or 2 hours if performed as focus group

Approach

The moderator will conduct the discussions. The moderator role may rotate among the appraisal team members. All other team members take notes. Any team member can ask a question, although the moderator should lead the questioning to ensure that all high-priority questions are covered. The moderator maintains eye contact and practices active listening technique. The moderator follows up on the "listen fors," and requests any documents.

- ❑ Introduce product leader(s) and the team.
- ❑ Repeat confidentiality rules:
  - No individuals, products, or programs named in results.
  - They may *not* disclose comments of others made at this meeting.
  - Team will take notes. All notes will be treated as confidential.
- ❑ Explain the purpose of this session.
- ❑ Cover the material in the exploratory questions.
- ❑ Remind leader of any document requests.
- ❑ Remind leader of the time and place for the preliminary findings review.
- ❑ Thank and excuse lead.

Consolidate Data from Interviews

Goals

- Give team members a chance to reflect on previous sessions
- Discuss any confusing or missing information
- Allocate issues, strengths, and other data to process area worksheets
- Perform adjustments to upcoming activities

Participants: Appraisal team
Duration: 15 minutes to 1 hour

Approach

These sessions give the team a chance to absorb the data they have been given in previous sessions. They begin by reviewing their notes, allocating data from sessions to process area worksheets, and then discuss any confusing or missing data. Next, they discuss changes (if any) to upcoming activities.

❑ Quietly review notes.
❑ Allocate data to process area worksheets.
❑ Discuss issues.
❑ Adjust upcoming activities.

Interview Practitioners

Goals

- Capture concerns and views from the perspective of the practitioners
- Verify information gathered from questionnaires and discussions with the leaders
- Listen for new process issues or areas of concern

Participants: Appraisal team + 1 Practitioner group (6-10 practitioners) per session
Duration: 2 hours for each session + break in between

Approach

Each Practitioner group consists of 6-10 practitioners, considered to be experts and opinion leaders in the organization in their process areas. They should be actually working on programs (i.e., not staff or management). The moderator opens and closes each session, and facilitates the discussion. The moderator role should rotate among the Appraisal team members. Appraisal team members need to let the discussion flow: they should *not* lead the discussions initially. All appraisal team members take notes during these discussions. Team members should occupy every other seat around the table in order to avoid an "us vs. them" atmosphere.

- ❑ Introduce the topic (if appropriate).
- ❑ Explain the conduct of the meeting:
  - How the operation will look to the practitioners.
  - Free-form discussion (team will not ask specific questions until later).
  - Chance to summarize the practitioners' major issues at the end.
- ❑ Repeat confidentiality rules:
  - No individuals, products, or programs named in results.
  - They may *not* disclose comments of others made at this meeting.
  - Team will take notes. All notes will be treated as confidential.
- ❑ Introduce everyone (state name and function in round robin).
- ❑ Turn meeting over to the practitioners.
- ❑ If any EQs are designated for this group, set aside 5-10 minutes per process area.
- ❑ About 20-30 minutes from the end (3-5 minutes per person), ask each practitioner:
  If you could change one thing in your organization other then your boss or your paycheck, what would it be?
  Other than the people, what do you think is this organization's major strength?
- ❑ Remind practitioners of the time and place for the next session and its content.
- ❑ Thank and excuse the practitioners.

Consolidate Data from Focus Groups

Goals

- Give team members a chance to reflect on previous sessions
- Discuss any confusing or missing information
- Allocate issues, strengths, and other data to process area worksheets
- Perform adjustments to upcoming activities

Participants: Appraisal team
Duration: 15 minutes to 1 hour

Approach

These sessions give the Appraisal team a chance to absorb the data they have been given in focus group sessions. They begin by reviewing their notes and allocating data from sessions to process area worksheets, and then discuss any confusing or missing data. Next, changes (if any) to upcoming activities are discussed.

❑ Quietly review notes.
❑ Allocate data to process area worksheets.
❑ Discuss issues.
❑ Adjust upcoming activities.

Develop Preliminary Findings

Goals

- Generate preliminary findings
- Prioritize on feedback form

Participants: Appraisal team only
Duration: 3-6 hours

Approach

In developing preliminary findings, focus on issues for the entire organization. It is important that the findings have the organizational application to preserve confidentiality, gather buy-in for change, and have maximum impact with senior management. Try to keep the business goals in mind and use the team's expertise to resolve the interpretation issues. Avoid the following:

- Issues without useful recommendations.
- Findings based on hearsay.
- Sweeping statements.

The preliminary findings are 40-60 summary statements based on corroborated evidence from interviews and focus groups. Formulating the findings is the most time-consuming part of the appraisal. At this point in the appraisal, it is not necessary to have team consensus. Nor is it useful to *wordsmith* the findings, although redundancy should be eliminated. Make sure that those who really know about process areas, programs, and product lines will provide feedback. Limit the total respondents to 3 to 7, even if some respondents only get a few process area sets of feedback items to respond to.

- ❑ In subteams of 2 to 3, use the affinity diagram technique to identify summary issues for each process area. Alternatively, brainstorm a list of findings, and organize it by process area. See paragraph 4.1.8 notes describing how the affinity diagram technique works.
- ❑ Review issues for each process area and eliminate redundant questions.
- ❑ Review list of respondents and ensure the right personnel are requested to respond.
- ❑ Transcribe list onto a feedback form and make copies for each product leader or designated respondent.

Review Preliminary Findings Feedback

Goals

- Get feedback on preliminary findings
- Collect any requested documentation
- Ask leaders for strengths and weakness

Participants: Appraisal team + leaders (sequentially, separately in parallel, or as a group)
Duration: 1 hour for each session (could be 3 to 5 hours, or 1)

Approach

Form completion approach: the product leaders and others responding to the preliminary findings, come to a combined session and complete the feedback form with a moderator (team member or site coordinator) available to ensure they don't run off with the forms, to answer questions and to clarify item intent. Next, combine all responses onto one form and come to consensus on a valid subset of preliminary findings. Purge the remaining responses from further usage.

Interview approach: the moderator conducts the session, and all other team members take notes. Any team member can ask a question, although the moderator leads the questioning to ensure that all preliminary findings are covered. When done, combine all responses onto one form and eliminate rejected preliminary findings from further consideration.

- ❑ Re-introduce leader(s) and the team (form completion: moderator only).
- ❑ Repeat confidentiality rules:
  - No individuals or programs named in results.
  - They may *not* disclose comments of others or data reviewed at this meeting.
  - Team (if interview) will take notes. All notes will be treated as confidential.
- ❑ Collect any requested documents and may also request any documents identified since last meeting.
- ❑ Explain the purpose of this session.
- ❑ If interview: State each preliminary finding and ask of each leader and respondent present:
  Is the finding true for your program?
  Is the finding true for the organization?
- ❑ About five minutes from the end ask:
  If you could change one thing in your organization other then your boss or your paycheck, what would it be?
  Other then the people, what do you think is this organization's major strength?
- ❑ Remind leader(s) of the time and place for the draft findings presentation.
- ❑ Thank and excuse lead.

Develop Draft Rating

Goals

- Establish consensus on process capability profile and maturity level rating
- Produce draft process capability profile for presentation in Final Briefing

Participants: Appraisal team
Duration: 2 hours

Approach

This activity may take place in parallel with or start before the preliminary findings are validated. The first action is to update the DTS, to reflect the data provided via the preliminary findings (invalid ones may be removed later) and any documentation reviews conducted. The profile is determined prior to synthesizing the draft findings, to help the team prioritize those findings. With an incomplete rating process, issues that have voluble supporters, but do not provide significant leverage points to the organization, could gain undue priority in the findings.

The rating algorithm for the Appraisal Method is relatively simple: process areas may be rated as not satisfied, partially satisfied, or fully satisfied at each process capability level. Based on process area satisfaction a maturity level is determined.

Process area ratings: Fully satisfied means 100% of a process area's practices are performed satisfactorily by the organization appraised, up to and including the capability level rated as fully satisfied. Partially satisfied is the rating when no one practice is rated not satisfied at the level, and at least 80% (90% for re-appraisals) of respondents' answers at this level are that the practices are performed satisfactorily, AND all lower levels are fully satisfied for this process area. Not satisfied is the rating when any practice has a valid finding against it, or less than 80% (90% for re-appraisals) of practices are reported as being performed satisfactorily on the questionnaire.

Maturity Level Ratings: The organization is rated as being at the highest maturity level for which all process areas in the maturity level are fully or partially satisfied to the equivalent process capability level, and all lower maturity levels are fully satisfied. That is, all process areas up to and including the maturity level are at least partially satisfied to the equivalent process capability level.

- ❑ Subteams propose process area process capability level ratings and team consensus builds the draft rating:
  - Review DTS and preliminary findings.
  - Apply rating algorithm.
  - Obtain team consensus on process area rating.
- ❑ Review profile as a whole to identify maturity level rating and for consistency.
- ❑ Determine presentation style for profile, maturity level, and prepare the briefing slides.

Develop Draft Findings

Goals

- Identify list of (7 ± 2) key process issues (draft findings)
- Generate draft findings briefing

Participants: Appraisal team only
Duration: 3-8 hours

Approach

Focus on issues applicable to the entire organization. It is important that the findings have the broadest possible application, both to preserve confidentiality and to have maximum impact with senior management. Limit the number of findings to 7 ± 2. This gives definite direction for process improvement without overloading limited resources. Each finding should consist of:

Finding: A single statement of the issue.
Symptoms: Observations that contribute to the finding (alternative option: **Causes**).
Consequences: Results that will get management attention, e.g., increased rework.

Preliminary findings are often found to be symptoms or consequences of a more general finding or cause. Both preliminary findings and root causes should reflect what the team has heard from the leads and the practitioners. The consequences are developed by the team to ensure management attention, and need not represent preliminary finding consequences voiced by the leaders or the practitioners. Avoid findings without useful recommendations, unsubstantiated findings, or sweeping generalizations, e.g., “No quality assurance.”

Formulating findings is the most time-consuming part of the appraisal. The team is most likely to have conflict during this time. Try to keep the reference model in mind, and use the team’s expertise to resolve disagreements.

- ❑ Use the affinity diagram technique, with the entire team, on the preliminary findings and responses, to fix data from focus groups and feedback forms, and produce draft findings (underlying factors, themes, causes for each affinity cluster - see paragraph 4.1.8 notes for technique description).
- ❑ Form subteams to *wordsmith* individual draft finding statements.
- ❑ Subteams allocate preliminary findings as symptoms or consequences.
- ❑ One subteam develops strengths slides (see paragraph 4.1.11 and Annex B).
- ❑ Review each finding with the entire team to reach consensus on wording.
- ❑ Complete briefing and produce overheads for presentation.

Present Draft Findings

Goals

- Provide leaders and practitioners with the opportunity to comment on findings
- Allow the team to judge the impact of the findings on the organization
- Build organizational momentum for process improvement

Participants: Team + Practitioners and Team + Leaders (separate sessions)
Duration: 1 hour for each of two sessions with minimum of 15 minutes between

Approach

The appraisal team leader (ATL) presents the findings in separate sessions, first to the practitioners, and then to the leaders. These groups are kept separate so that feedback and comments are not inhibited. The strengths and ratings are *not* presented at this time. In each session, the findings are first presented without interruption, so that the audience has a chance to hear all of the findings. The presenter should use the *exact* wording from the slides. The ATL then steps through each finding and asks for comments. The appraisal team members may assist the ATL in explaining any issues, but should concentrate on observing and taking notes.

❑ Welcome participants and set the context.
❑ Repeat confidentiality rules:
  - No individuals or programs named in results.
  - They may *not* disclose comments of others made at this meeting.
  - Team will take notes. All notes will be treated as confidential.

❑ Make presentation (without interruption).
❑ Repeat each finding and solicit improvements or other comments ("Did we get it right?").
❑ Remind participants of the time and place of the final presentation.

Produce Final Findings Presentation

Goals

- Refine wording for final findings presentation
- Prepare final presentation

Participants: Appraisal team
Duration: 1-4 hours

Approach

As a result of the draft findings presentation and hearing the two groups' feedback, the team will see places where the focus or wording of some of the findings needs refinement. The goal should be to maximize the acceptance of the appraisal. It is important to use the appraisal to build momentum for process improvement. This sometimes requires weakening or strengthening the wording for a finding.

The set of next steps that build on the rating and findings and could result in observable changes if performed, should also be scheduled at this time. If the organization's expectations are not satisfied, the opportunity for change may be lost for a long time!

❑ Step through each finding:
  - Review feedback from the presentations, coming to consensus on essentials of wording changes.
  - Refine findings slides.

❑ Finish briefing and rehearse appraisal team leader if needed. (See Annex B.)

Brief Sponsor (optional)

Goals

- Provide additional information (that doesn't reward or penalize any participants)
- Resolve any open issues with senior management
- Discuss next steps

Participants: Sponsor + ATL + Facilitator + whomever the sponsor wishes to attend
Duration: 1 hour

Approach

This optional session is recommended to give senior management an opportunity to ask questions and discuss any issues that they might be reluctant to raise in the open forum of the presentation. It is also an opportunity for the appraisal team leader (or the entire team) to promote follow-on activities. Remember that the confidentiality rules still apply! Do *not* let senior management use this session to fix blame for any problem or to attribute particular findings to a program or individual. A typical question that might be asked by the sponsor is: "What one thing happened, or did you hear or observe, that you couldn't find a place for in the final briefing?"

If this session occurs before the final briefing, the facilitator reminds the sponsor of the invitation to offer any thoughts during the presentation, on actions the sponsor might have pending, or be tempted to take, based on the briefing. This allows the appraisal team leader (or team) to provide some feedback on how well those actions would be received. The sponsor must understand that his/her presence is still required at the presentation or it will not be held.

Present Final Briefing

Goals

- *Visibly* present the results of the appraisal to senior management
- Build support for addressing the findings
- Review next steps

Participants: Senior management + Appraisal team + Leaders + Practitioners + Others
Duration: 1 - 1.5 hours

Approach

The appraisal team leader presents the final findings briefing. The presentation includes:

1. Appraisal scope (optional flow):
   - programs and participants (thank everyone!).
2. Rating - process area capability profile and organizational maturity level.
3. Strengths - organization's strong points.
4. Findings - final findings.
5. Next steps - findings and recommendations report, action plan, etc.

Conduct Wrap-up

Goals

- Evaluate the reference model in terms of organizational needs
- Evaluate the appraisal process
- Plan next steps

Participants: Appraisal team
Duration: 1 hour

Approach

The appraisal team uses this session to generate feedback on the reference model and pilot appraisal. These results, along with the questionnaire evaluation form from the product leaders (those taking the questionnaire or parts of it), are returned to the appraisal and/or model maintenance site for inclusion in SECM improvement efforts. Finally, the room is cleaned up, materials to be saved are stored, and other refuse is destroyed or appropriately disposed of. The team should have a brief celebration (many go out to lunch together before this exercise), and at the end say “Thank you,” and “Good-bye.”

- ❑ Each team member completes an evaluation form.
- ❑ The team records what works, what doesn’t, and what’s missing in the reference model.
- ❑ The team discusses what elements in the appraisal process worked and what did not, and what might work better if the organization conducts another appraisal.

Before the team breaks, the next steps should be scheduled and responsibilities assigned.

- ❑ Discuss next steps:
  - Findings and recommendations report.
  - Action plan.
- ❑ Schedule next steps.
- ❑ Assign next steps.

Post-On-Site Week Activities

Goals

- Document findings for future comparison
- Develop, validate, and present recommendations to mitigate findings
- Develop organization-wide sponsorship for improvement efforts
- Develop action plans to implement recommendations
- Perform action plans

Participants: Appraisal sponsor
Some members of appraisal team
Those with knowledge and skills to help with the planning and performance of improvement program(s)

Duration: Findings and Recommendations Report - approximately 2 weeks (should start before On-Site period completion)
Action planning - approximately 2 to 4 weeks, but may be longer
Action plan implementation - 11 to 35 months depending on organization maturity, extent of changes needed, and resources available

Approach

This phase is where the organization's process improvement "wheels meet the road." The findings must be documented, and the recommendations to address the findings are usually a part of the report. The report may be separate from, or included as an appendix to, the Action Plan developed to implement or deploy the recommendations. Part of the Action Plan is the list of priorities and the schedule for implementation. Often an organization needs to prototype its change mechanisms on one program or product line before trying to extend them to the organization as a whole, or establish an infrastructure, such as a process group, with resources and a change charter. Sponsorship for the appraisal must also be extended to the implementation of changes. Developing this sponsorship is non-trivial. Finally, the action plan must be turned on and allowed to run, before a re-appraisal can show that improvements have happened (or not), and permit a refocus of organizational change efforts.

A Technique for Recommendation Generation and Documentation of Findings and Recommendations

- Identify selected personnel for their knowledge in the subject area of each finding (especially those who seemed to be doing the area well or better than others, and those who seem to want things to be better: doers, not whiners.)

- With the appraisal team or a subset, review each finding and develop a common vision of the root causes if not evident in the findings statement or supporting findings (causes/consequences).

- Perform a solution generation tree diagram exercise (Tree Diagram technique or Program Decision Process Chart technique description):

  - Write the problem statement (what is to be changed from the finding).

  - Brainstorm possible solutions or actions that would eliminate or reduce its impact.

  - For each alternative, brainstorm the consequences (costs, benefits, other side effects).

  - For each consequence, come to consensus and record whether it is +, -, or blank, indicating whether it would be good (+), bad (-), or implementation-dependent ( ).

  - Collect those alternatives with mostly + or blank consequences. These are low-risk actions to eliminate or mitigate the problem!

  - Write these up as a recommendation in the format: Finding, Recommendation, Rationale (no more than 1 to 3 paragraphs of 3 to 7 short sentences).

- Brief the appropriate subset of the practitioners group and ask for improvement suggestions.

- Incorporate change requests as the team feels they are appropriate.

- Brief the product leaders (interviewees) and ask for improvement suggestions and any political sensitivities that might require better wording.

- Incorporate improvements as indicated.

- Deliver the report and brief the sponsor within a week for feedback. At the meeting, work on what will be needed for long term sponsorship of the change effort, and the desired content and format for action plans, if any.

A Technique for Action Planning

A draft training course for this technique, using the "6 Ps" ("Pretty Good Questions") approach, is available electronically from the appraisal and/or model maintenance site. The course is estimated to cover three days, with the last day spent developing the "6 Ps" for a project or team, and the first two days developing teamwork skills and learning techniques used in the last day. Useful references include Brassard's "Memory Jogger Plus+," Scholtes' "Team Handbook," Ury's "Getting to Yes," and Drexler and Sibbett's " Graphical Methods for Team Development." The general approach is:

- Identify and obtain participation of those with the knowledge, skills, and organizational influence useful to plan success and efficiency for each recommendation. (Consider participation in this of an "Archie Bunker," to ensure broad enough understanding of resistance to change.)

- Determine a standard or preferred format and review the entire set of recommendations for leverage.

- Perform detailed planning for each recommendation by appropriate subteams, then have a team of representatives of the teams produce an integrated plan and schedule.

    - Prioritize and consider the sequencing of the action plans for each finding and final recommendation set. Ask, "Which ones are least risky but provide more than nominal impact or improvement?" Make these first in priority. Ensure you pilot actions on a "friendly group" before deploying to the whole organization, but don't pilot with the same group each time. Note that the schedule routinely will be longer than anyone hopes for or expects. Consider how to shorten it, but stick to your estimates the first time.

Annex E

Site Coordination Checklist

Introduction

This checklist is used to support the appraisal site coordinator in preparing for the On-Site period of the Appraisal Method.

Preparation Tasks (prior to On-Site period)

Major events that the site coordinator is responsible for arranging are described in Table E-1. The time frames given are approximate, and are offset from the beginning of the On-Site period. The coordinator can use this list as a checklist for preparation. See also Section 3 for details.

Table E-1 - Preparation Tasks for Site Coordinator

Item	Task	Description	Time frame
1	Executive briefing to obtain sponsorship for appraisal	Briefing by site coordinator, appraisal team leader, appraisal champion, or facilitator, as appropriate, to the potential sponsor introducing the referfence model and Appraisal Method (AM) concepts.	At least six weeks prior to On-Site period.
2	Determine confidentiality requirements	Determine, with senior management, the need for non-disclosure and confidentiality of agreements.	Four to six weeks prior to On-Site period
3	Select programs or product lines (three to five)	Site coordinator, working with the sponsor and indicated resource owners, selects the programs or product lines appropriate to the appraisal purpose.	Four to six weeks prior to On-Site period
4	Select appraisal team (three to seven team members, plus one to two facilitators)	The site coordinator typically determines the pool of appraisal team members for consideration by management, unless the coordinator has been empowered to make the selection. The facilitator is usually available to help in screening candidates. Provide a copy of the reference model and AM description to the appraisal team members.	Two to six weeks prior to On-Site period; goal is to select the team in order to schedule the On-Site period.
5	Select product leaders	For each program selected, identify the integrated product development leads and talk to them about their involvement. Also, verify their availability during the appraisal week (approximately seven hours per person).	Three to four weeks prior to On-Site period
6	Determine On-Site period	Working with senior management and the facilitator, determine a week when all participants - leaders, senior management, facilitators, and appraisal team members - are available.	Two to six weeks prior to On-Site period
7	Select practitioners	Identify knowledgeable and influential practitioners in the selected product lines, support processes, and other operations in the organization. Consult the facilitator and management on the participant list.	Three to four weeks prior to On-Site period

Table E-1 - Preparation Tasks for Site Coordinator (continued)

Item	Task	Description	Time frame
8	Schedule rooms for opening and final briefing	Schedule rooms large enough to hold all anticipated participants, including appraisal participants and identified invitees.	Two or more weeks prior to On-Site period
9	Schedule rooms for interviews and focus groups	Schedule rooms large enough to hold 15-20 people for the practitioner interviews. Telecons also can work, although some participants should be local.	Two or more weeks prior to On-Site period
10	Schedule appraisal team work room	Schedule room large enough to hold the appraisal team and its work products. Preferably, this room can be locked at night, but is not in an area that will require escort of the appraisal team or facilitators.	Two or more weeks prior to On-Site period
11	Administer questionnaire	The selected leaders and any designated practitioners are provided with the AM questionnaire, or parts. The site coordinator arranges the questionnaire completion. A person from the organization familiar with the model should be accessible to clarify questions; usually, a one or two day turnaround is requested if the questionnaires are distributed.	Two weeks prior to On-Site period
12	Collect questionnaire	The site coordinator collects the completed questionnaires, makes a copy for disaster recovery purposes, and enters data to the Data Tracking Sheet (DTS), or mails questionnaires to the facilitator for DTS entry and initial analysis.	To be received by facilitator prior to On-Site period, as negotiated
13	Prepare appraisal team notebook	Prepare a binder for each appraisal team member. Tabs are often helpful: • Exploratory Question (EQ) sheets, • Each product line leader interview • Each practitioner focus group, • Preliminary findings, and • Draft findings template slides. • Options: paper for taking notes (or 3x3 colored stickie pads), copies of questionnaires, DTS, or rating template. Hand out notebooks during the team training before or at the start of the On-Site period.	One week prior to On-Site period
14	Schedule support	The following support should be provided: • A personal computer of the type most often used in the organization (usually Windows-based or Mac) and access to a fast printer for use during the week. • Photocopy access in or very near the team's work room building. • Lists of hotels and restaurants that are close by (preferably with a map), and information on carry-out or delivery service. • Flip charts, transparencies, markers, blocks of colored 3x3 stickies, and several pads of 3x5 stickies.	The facilitators may negotiate using their supplies and equipment: arrangements need to be made prior to On-Site period.

Table E-1 - Preparation Tasks for Site Coordinator (continued)

Item	Task	Description	Time frame
15	Schedule staff (Option)	If possible, provide on-call secretarial support for the last three days of the On-Site period to provide production, revision, printing, and reproduction services. In many cases the appraisal team does its own support work, but having a secretary to do these tasks can really speed up some tasks.	Two to three weeks prior to On-Site period
16	Verify senior management schedule	Verify that senior management is prepared to attend and speak at the opening and the final briefing.	Two weeks, then one week prior to On-Site period
17	Verify participant schedule	Verify that participants are available in their allotted time slots; make any revisions necessary to the schedule or participant list.	Two weeks, then one week prior to On-Site period
18	Verify team member schedule	Verify that appraisal team members have no conflicts during the On-Site period. Negotiate alternatives.	Two weeks, then one week prior to On-Site period

Instructions for Distributing Appraisal Questionnaire

The questionnaire is the first step in a data gathering process designed to provide the managers and practitioners with insight into the organization's product development practices. When determining who should fill out the questionnaire, it is important to choose individuals who will provide answers that represent the current and future organization. The SECM questionnaire has two parts: Generic Attributes and Practices-based.

Time Constraints

It typically takes around three to five hours to complete the entire questionnaire. A subject matter expert typically takes 5 to 10 minutes to fill out a single process area set of items. Questionnaire response time is reduced when the respondents have immediate access to a person who understands the model, and when the questionnaire is answered by all respondents in one sitting.

Recommended Administation Approach

To maximize the use of both the site coordinator's and respondents' time, it is recommended that one or two "appointments" be set up in a room large enough to accommodate all respondents with a suitable writing surface, e.g., a large table or several small tables. Respondents are invited to schedule themselves for one of the appointments. One appointment is optimal, because all respondents hear the answers to questions together. However, at many sites, getting the individuals needed to answer the questions at the same meeting is often difficult.

Before the individuals start filling out the questionnaires, the site coordinator introduces the respondents to the model and appraisal, distributes the questionnaire, and makes clear that the answers are to reflect their individual opinions. The site coordinator also makes clear that he/she is there to clarify terminology and concepts, and respondents are encouraged to ask questions. The site coordinator can then answer questions to the entire group assembled. The site coordinator also records any questions he/she cannot answer, and contacts the appraisal facilitator for guidance. A joint opinion on what the item means for the organization is the right approach for completing the questionnaire consistently.

After each respondent is finished, the site coordinator collects the questionnaire and, if not already filled in by the respondent, completes the "time spent" portion of the feedback form.

Annex F

Appraisal Method Scoring Charts

Introduction

This annex provides the scoring charts for developing the Focus Area rating charts during the On-Site period of the Appraisal Method. Figures F-1, F-2, and F-3, respectively, provide the charts for the Focus Area ratings in the Technical Category, Management Category, and Environment Category.

Technical Category	Level 1 Specific Practices are performed	Results are at least of marginal utility	Level 2 Specific Practices are performed	Level 2 Generic Practices are performed	Results are at least of adequate utility	Level 3 Specific Practices are performed	Level 3 Generic Practices performed	Results are of at least significant utility	Level 4 Specific Practices are performed	Level 4 Generic Practices performed	Results are at least of measurably significant utility	Level 5 Specific Practices are performed	Level 5 Generic Practices performed	Results are of optimum utility
1.1 Define Stakeholder & System Level Reqts														
1.2 Define Technical Problem														
1.3 Define Solution														
1.4 Assess and Select														
1.5 Integrate system														
1.6 Verify System														
1.7 Validate System														
	Level 1		Level 2			Level 3			Level 4			Level 5		

Figure F-1. Technical Category Scoring Chart

Management Category	Level 1 Specific Practices are performed	Results are at least of marginal utility	Level 2 Specific Practices are performed	Level 2 Generic Practices are performed	Results are at least of adequate utility	Level 3 Specific Practices are performed	Level 3 Generic Practices performed	Results are of at least significant utility	Level 4 Specific Practices are performed	Level 4 Generic Practices performed	Results are at least of measurably significant utility	Level 5 Specific Practices are performed	Level 5 Generic Practices performed	Results are of optimum utility
2.1 Plan and Organize														
2.2 Monitor and Control														
2.3 Integrate Disciplines														
2.4 Coordinate with Suppliers														
2.5 Manage Risk														
2.6 Manage Data														
2.7 Manage Configurations														
2.8 Ensure Quality														
	Level 1		Level 2			Level 3			Level 4			Level 5		

Figure F-2. Management Category Scoring Chart

Environment Category	Level 1 Specific Practices are performed	Results are at least of marginal utility	Level 2 Specific Practices are performed	Level 2 Generic Practices are performed	Results are at least of adequate utility	Level 3 Specific Practices are performed	Level 3 Generic Practices performed	Results are of at least significant utility	Level 4 Specific Practices are performed	Level 4 Generic Practices performed	Results are at least of measurably significant utility	Level 5 Specific Practices are performed	Level 5 Generic Practices performed	Results are of optimum utility
3.1 Define and Improve the SE Process														
3.2 Manage Competency														
3.3 Manage Technology														
3.4 Manage the SE Support Environment														
	Level 1		Level 2			Level 3			Level 4			Level 5		

Figure F-3. Environment Category Scoring Chart

Annex G

Individual Interview Exploratory Questions

Introduction

This annex provides the exploratory questions for conducting individual interviews during the On-Site period of the Appraisal Method.

Systems Engineering Technical Category Focus Areas

The Systems Engineering Technical Category consists of the following key Focus Areas (FAs):

1.1 Define Stakeholder and System Level Requirements
1.2 Define Technical Problem
1.3 Define Solution
1.4 Assess and Select
1.5 Integrate System
1.6 Verify System
1.7 Validate System

1.1 Define Stakeholder and System Level Requirements Exploratory Questions

1.1-1 How do you identify and analyze the needs and expectations for the system's design?

Listen For:

- operational needs
- technical feasibility
- economic feasibility
- customer/user involvement

1.1-2 How are concepts developed which satisfy those needs and expectations?

Listen For:

- customer/user involvement
- formal processes
- established methods

1.1-3 How does the program select among the system concepts?

Listen For:

- criteria evaluation
- decision rationale
- risk identification and management
- technical/cost–drivers
- consistent assessment

1.1-4 What is your role in system concept definition?

Listen For:

- awareness of role and needs of others

1.2 Define Technical Problem Exploratory Questions

1.2-1 How does the program confirm that the documented requirements accurately address the need the system is intended to satisfy?

Listen For:

- market analysis
- needs/requirements analysis
- customer needs and user expectations
- traceability
- requirements allocation

1.2-2 How are the interests of each technical discipline represented in the requirement capture effort?

Listen For:

- discipline names (i.e. the "ilities")
- coordination between groups

1.2-3 How are changes to the requirements managed?

Listen For:

- impact analysis
- documented change method/procedure (i.e., configuration management)

1.2-4 What is your role in system requirements management?

Listen For:

- awareness of role and needs of others

1.3 Define Solution Exploratory Questions

1.3-1 How is the system developed?

Listen For:

- standard methods
- inspections/formal reviews
- synthesis
- documented decision rationale
- architecture
- stepwise refinement
- interface design

1.3-2 How do related engineering groups participate in system design?

Listen For:

- allocated requirements
- configuration management

1.3-3 How does the program establish that system designs are satisfactory?

Listen For:

- "ilities"
- correctness and completeness
- design documentation
- traceability
- user beta testing

1.4 Assess and Select Exploratory Questions

1.4-1 How is the right complement of technical disciplines identified to solve a technical problem?

Listen For:

- multi–disciplinary approaches
- concurrent engineering

1.4-2 How is communication and coordination accomplished among the assembled technical disciplines?

Listen For:

- decision rationale
- integrated product teams

1.4-3 How is team leadership established?

Listen For:

- integrated product teams

1.4-4 How does the program arrive at solutions and implement them?

Listen For:

- candidates
- trade studies (i.e., trade-off analysis, decision theory, gaming, etc.)

1.4-5 How are candidate solutions analyzed to select the optimal solution?

Listen For:

- decision criteria
- analysis approach
- convergence

1.5 Integrate System Exploratory Questions

1.5-1 How is system integration performed?

Listen For:

- integration and test planning
- integration and test methods (i.e., test, simulation, analysis, inspections, etc.)
- metrics

1.5-2 How does the program prove that the integrated system satisfies the documented needs?

Listen For:

- coverage
- verification of derived requirements
- documented integration procedures and results

1.5-3 How does the program respond to issues identified during integration?

Listen For:

- inspection
- formal reviews
- documented decision rationale

1.5-4 How are system interfaces defined and managed?

Listen For:

- interface control methods
- interface control documents

1.6 Verify System Exploratory Questions

1.6-1 How is system verification performed?

Listen For:

- verification planning
- verification policies
- verification of derived requirements
- verification methods (i.e., test, simulation, analysis, inspections, etc.)
- documented verification procedures and results
- levels of verification

1.6-2 How does the program prove that the system satisfies its requirements?

Listen For:

- traceability between verification processes and requirements
- coverage

1.6-3 How does the program respond to issues identified during verification?

Listen For:

- verification regression mechanisms

1.7 Validate System Exploratory Questions

1.7-1 How is system validation performed?

Listen For:

- validation planning
- validation policies
- early validation methods
- simulation, analysis, prototyping, etc.
- documented validation procedures and results

1.7-2 How does the program prove that the system will satisfy the needs of its users?

- customer/user requirements
- coverage analysis

Systems Engineering Management Category Focus Areas

The Systems Engineering Management Category consists of the following key Focus Areas (FAs):

2.1 Plan and Organize
2.2 Monitor and Control
2.3 Integrate Disciplines
2.4 Coordinate with Suppliers
2.5 Manage Risk
2.6 Manage Data
2.7 Manage Configurations
2.8 Ensure Quality

2.1 Plan and Organize Exploratory Questions

2.1-1 Describe how planning is done on your program.

Listen For:

- coverage of technical, cost, and schedule
- system engineering management plan or technical management plan (i.e., SEMP or TMP)

2.1-2 How are estimates derived for engineering tasks?

Listen For:

- documented estimation procedures

2.1-3 How are changes in requirements reflected in the plan?

Listen For:

- review procedures
- documented change procedure

2.1-4 How is systems engineering used in the planning process?

Listen For:

- work breakdown
- participation and concurrence

2.2 Monitor and Control Exploratory Questions

2.2-1 What is tracked?

Listen For:

- coverage of technical, cost, and schedule

2.2-2 How is effort, cost, and schedule tracked?

Listen For:

- planned versus actuals comparisons
- reviews

2.2-3 How are tracking issues identified and appropriate actions initiated?

Listen For:

- reviews

2.2-4 How is process compliance verified?

Listen For:

- reviews
- documented process
- lessons learned

2.3 Integrate Disciplines Exploratory Questions

2.3-1 What role does systems engineering play in establishing intergroup relations?

Listen For:

- issue identification
- issue resolution

2.3-2 How are people made aware of issues that different disciplines face on the program?

Listen For:

- information exchange mechanisms

2.3-3 How are interdisciplinary issues addressed?

Listen For:

- tracking mechanisms
- methods for selecting the right complement of technical disciplines

2.3-4 How is communication and coordination accomplished among the assembled technical disciplines?

Listen For:

- information exchange mechanisms
- activity reporting
- regular reviews