Software Engineering Institute

Guide for SCAMPI Appraisals: Accelerated Improvement Method (AIM)

Gene Miluk
James McHale
Timothy A. Chick

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SEI Administrative Agent
ESC/XPK
5 Eglin Street
Hanscom AFB, MA 01731-2100

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Abstract

The Software Engineering Institute's Accelerated Improvement Method (AIM) incorporates a new version of the Team Software Process℠ (TSP ℠) The Team Software Process Plus (TSP+). TSP+ is a project-based implementation of many of the specific and generic practices of Capability Maturity Model Integration (CMMI®) for Development. Organizations using AIM for their improvement approach will be implementing similar processes with similar artifacts. Since these implementations of CMMI start from a common base, the work of appraising such organizations against a specific model scope should benefit from this commonality of approach.

This document therefore provides guidance to lead appraisers and appraisal teams unfamiliar with TSP+ when conducting Standard CMMI Appraisal Method for Process Improvement (SCAMPI℠) appraisals within organizations that use the TSP+ as a foundational operational practice. The intended benefits of this guidance are (1) to shorten the time needed to prepare and conduct such appraisals; (2) to provide information helpful for appropriate interpretations; (3) and to familiarize SCAMPI leads and appraisal teams with a powerful, proven, and available technology.

1 Audience and Purpose of this Guidance Document

This document is aimed at the lead appraiser and appraisal team for a Standard CMMI Appraisal Method for Process Improvement (SCAMPI) appraisal targeting maturity levels 2 and 3 of Capability Maturity Model Integration for Development, version 1.2 (CMMI-DEV V1.2) in an organization using the Accelerated Improvement Method (AIM) and Team Software Process Plus (TSP+) as foundational practices. Secondarily, the document is intended to guide those responsible for the preparations for such appraisals.

SCAMPI appraisals focus on the specific and generic practices of the model scope under consideration—that is, what CMMI® practices are to be looked at during the appraisal, as well as what parts of the organization are to be reviewed in the appraisal. Usually, determining how that model scope connects to the artifacts and attributes of a particular organization is unique to that organization. However, when organizations use TSP+ as the foundation of a CMMI implementation strategy, appraisal teams have an advantage because the training, standard artifacts, and practices are known and generally available. Commonality of approach and artifacts provides opportunities for streamlining the preparation and conduct of SCAMPI appraisals.

Organizing the data and artifacts in the standard AIM implementation and relating them to the appropriate practices in the CMMI model will, we believe, provide valuable assistance to those preparing for or performing a SCAMPI appraisal. This document provides such guidance, first via an overview of the base TSP+ process assets, then briefly in terms of a combined staged–continuous view of CMMI implementation, and finally practice-by-practice in the form of practice implementation indicators (PIIs) that are the expected direct artifacts of TSP usage.

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2 AIM/CMMI Overview

2.1 AIM Process Approach

The TSP-based AIM approach combines the field-proven methods of TSP with the best lessons learned when using TSP as the foundation of model-based improvement. The TSP has been used for more than a decade with a proven record of performance, starting with pilot projects prior to 2000 and with the official TSP release in November 2000. This consistent performance includes use in both government and commercial organizations. Organizations also have combined successfully the original TSP with model-based improvement methods, including the original Software Capability Maturity Model and transitioning to CMMI for Systems Engineering/Software Engineering (CMMI-SE/SW) and now CMMI-DEV V1.2.

The AIM approach first focuses on appropriate training and buy-in with senior management, then through the chain of command to middle and first-line management, and finally to the developers who staff self-directed teams on initial AIM pilot projects. Training and piloting in every organization is a must, and is a formal part of the recommended TSP introduction strategy [Humphrey 2011].[1] After the initial AIM project pilots, the focus moves to the organizational level as the use of TSP+ extends to the process group, which is responsible for CMMI implementation in an organization.

In contrast to "traditional" CMMI implementation using the Initiating, Diagnosing, Establishing, Acting and Learning (IDEAL) model and progressing maturity level by maturity level, AIM implementation proceeds project by project, instantiating those CMMI practices that apply to development projects. AIM processes directly cover the project management process areas (PAs) in CMMI maturity levels 2 and 3, excluding Supplier Agreement Management (SAM), Project Planning (PP), Project Monitoring and Control (PMC), Integrated Project Management (IPM), and Risk Management (RSKM). The engineering process areas Requirements Management (REQM), Requirements Development (RD), Technical Solution (TS), Product Integration (PI), Verification (VER), and Validation (VAL) and the support process areas Configuration Management (CM), Process and Product Quality Assurance (PPQA), Measurement Analysis (MA), and Decision Analysis and Resolution (DAR) typically begin as hybrid processes, combining AIM processes and existing CMMI processes. The remaining PAs belong to the process management category Organization Process Focus (OPF), Organizational Process Definition (OPD), and Organizational Training (OT) and form the basis of process-related activities. AIM includes establishment of an engineering process group (EPG) using the same project management disciplines to plan and manage work that are used in the development projects. The EPG uses the support process areas as appropriate. In a sense, the process management PAs are to an EPG what the engineering PAs are to development teams: The development team implements the engineering practices and the EPG implements the process management practices.

[1] Further discussion of TSP introduction strategy appears in *Leadership, Teamwork, and Trust: Building a Competitive Software Capability* by Watts S. Humphrey and James W. Over [Humphrey 2011].

In practice, the approach of creating hybrid processes has proven adaptable and has added value. The key to making this successful is a skillful combination of the domain-specific capabilities from the organization and the knowledge and experience of the AIM Coach. The AIM Coach is an SEI-trained and certified professional who, among other responsibilities, guides the project through the proper adoption of the AIM methodologies.

2.1.1 Overview of AIM Process Assets

AIM embodies the next generation of TSP process assets. While the overall structure of those assets is unchanged from previous generations, AIM includes a new version of TSP assets designed to maximize CMMI compatibility.

Use of TSP processes to support an engineering process group serves as an example of how to adapt the standard TSP assets to a new organization and a new domain. This acknowledges previous organizations that successfully combined TSP and CMMI, especially within multiple groups at the Naval Air Systems Command (NAVAIR), and reflects the SEI's own internal use of the TSP [Wall 2007].

2.2 AIM Process Elements

The TSP is defined by a set of process elements that includes

- *scripts* to define and guide specific work processes
- *forms* to capture specific information generated by enacting one or more scripts or that are otherwise required by some part of the process
- *role specifications* to guide individuals on a project in performing critical but often non-scripted (and possibly non-scriptable) activities
- *other assets* such as the TSP introduction strategy, checklists, guidelines, and specifications not related to roles
- *training courses* and *authorization activities* in the TSP and PSP technologies

These assets are summarized in the table below. Note that the following descriptions and tables in this section are updated from those listed in Section 5 of the TSP+ Launch Notebook, and are presented in the order they appear in that document.[2]

2.2.1 Scripts

Script Abbreviation	TSP+ Script Name (please see the TSP+ Launch Notebook)	Page Reference
POPS	Overall process operations, the initiating process improvement script	3
POPS7	Process group formation	5
TOPS	Team operations, overall guidance for TSP introduction	6
TOPS4	Post launch TSP and TSPm team operation	7
ANA	Impact analysis	8

[2] The TSP+ Launch Notebook is available to SEI Partners with a TSP license. For more information on becoming an SEI Partner and obtaining a TSP license, see www.sei.cmu.edu/partners.

Script Abbreviation	TSP+ Script Name (please see the TSP+ Launch Notebook)	Page Reference
CHECKPOINT	Checkpoint assessment	10
CMAUDIT	Configuration management audit	12
CYCLE	Cycle	14
DAR	Decision analysis and resolution	16
DEV	Overall development and enhancement process	18
HLD	High-level design	19
IMP	Implementation	21
IMP6	Unit test and test development (step 6 in script IMP)	22
INS	Inspection process (two pages)	23
LAU	Team launch	26
LAUm	Multi-team launch	27
LAU1	Launch meeting 1: launch overview and kickoff	29
LAU1A	Multi-team launch meeting 1A: strategy presentation	30
LAU2	Launch meeting 2: roles and goals	31
LAU3	Launch meeting 3: strategy, process, support	32
LAU3A	Multi-team leadership meeting 3A	35
LAU4	Launch meeting 4: overall team plan	36
LAU5	Launch meeting 5: quality plan	38
LAU5B	Multi-team planning manager role meeting	39
LAU5C	Multi-team quality manager role meeting	40
LAU6	Launch meeting 6: detailed next-phase plans	41
LAU6B	Multi-team planning manager meeting, plan consolidation	43
LAU7	Launch meeting 7: risk assessment	44
LAU7A	Multi-team leadership meeting to plan the management meeting	46
LAU8	Launch meeting 8: management meeting preparation	47
LAU9	Launch meeting 9: wrap-up management meeting	49
LAUPM	Launch postmortem meeting: postmortem on the launch	50
LTL	Leadership team launch	51
LTL1	LTL meeting 1: business goals	52
LTL2	LTL meeting 2: leadership team goals	53
LTL3	LTL meeting 3: team oversight strategy	54
LTL4	LTL meeting 4: role team assignments	55
LTL5	LTL meeting 5: role team goals and responsibilities	56
LTLPM	LTL postmortem meeting	57
MAINT	Overall maintenance and enhancement process	58
MTG	General meeting process	59
PM	Project postmortem	60
PMTD	Postmortem test defects	62
PREP	Preparation script for a multi-team launch or relaunch	63
PREPT	Team launch preparation	64

2.2.2 Forms

Form Abbreviation	Form and Instructions Name	Page Reference
CCR	Configuration Change Request	3
CHECKTMDR	Checkpoint Team Member Data Review	6
CIBPS	Project Configuration Item Baseline, Plan, and Status	11
CIR	Configuration Identification Release	13
DAR	Decision Analysis and Resolution	15
DEFECT	Defect Reporting Form	18
GOAL	Team Goals	20

2.2.3 Roles

Role	Description	Page Reference
Test Manager	Test Manager responsibilities	24
Process Group	Process Group responsibilities	26
Role Manager Team	Role Manager Team responsibilities	28
Lead Role Manager	Lead Role Manager responsibilities	30

2.2.4 Other

Grouping/Name	Description	Notes
Preparation checklists		
PREPL	Preparation for launch	
PREPR	Preparation for relaunch	
Launch guidance		
Launch coach	Launch guidelines for the TSP coach	
Marketing	Launch guidelines for the marketing management presentation	
Other attendees (2)	Launch guidelines for the TSP coach	One for launches, one for re-launches
Senior Management	Launch guidelines for the senior management presentation	
Team leader (2)	Launch guidelines for the team leader	
Team members (2)	Launch guidelines for team members	
Other pre-launch assets		
Initial contact letter	TSP launch preparation	
Preparation package cover letter	TSP launch preparation material	
Preparation package instructions	TSP launch preparation material	
Default guidelines		
Planning guidelines	SEI-provided benchmark planning metrics	
Quality guidelines	SEI-provided benchmark quality metrics	
Executive assets		
Plan assessment check-list	Team plan review questions; a quick start for an executive reviewing a TSP team's plan	These assets can be found in *Winning with Software* [Humphrey 2002].
Quarterly review checklist	Project review questions; a quick start for senior managers to probe the status of a TSP project	
TSP introduction strategy	A generic procedure and timeline for TSP implementation in an organization	
Other specifications and assets		
NOTEBOOK	Storage for project artifacts	
STATUS	Management status report	
SUMMARY	Project analysis report	
TSP workbook (individual and consolidated)	Automated individual and team (consolidated) plans and actuals for size, effort, defects, and schedule; functionally equivalent versions of items under Forms, above, are included in the TSP Workbook	Excel-based; provided by the SEI as part of the licensed TSP product suite
Checkpoint review	A review of the project to date conducted by the TSP coach or other process expert	
Weekly meeting minutes	Minutes from weekly team meetings	

2.2.5 Training

Grouping/Name	Description	Notes
Training and authorization		
SEI training records	SEI-maintained records of everyone reported by SEI-authorized instructors to have finished any of the training classes listed below	
Introduction to Personal Process	Training for team members who are not software engineers (2 days)	
PSP for Engineers	Training for software developers (10 days)	
TSP Executive Seminar	Executive briefing on PSP and TSP, including benefits and the TSP introduction strategy (1 day)	
Leading Development Teams	Training for people managing TSP teams (3 days)	
PSP Instructor Training	Training to become a PSP instructor (5 days)	Offered only through the SEI or, in Mexico, Tec de Monterrey; prerequisite is successful completion of *PSP for Engineers*
TSP Launch Coach Training	Training to become a TSP coach (5 days)	Offered only through the SEI or, in Mexico, Tec de Monterrey; prerequisite is successful completion of *PSP Instructor Training*
TSP coach observation	Observation and mentoring of TSP coach during the coach's first TSP launch (4 or 5 days)	Offered only through the SEI or, in Mexico, Tec de Monterrey; successful completion necessary for SEI authorization

3 Detailed PA Appraisal Guidance

The following material will provide in detail a CMMI practice-by-practice analysis of the artifacts and the approach taken by AIM. Explanations and cautions are provided to help those who are unfamiliar with AIM. At a minimum, this guidance can provide an appraiser with a starting list of artifacts to request and an opening line of questioning, phrased for the AIM methodology.

3.1 Project Management Processes

Project planning and project monitoring and control are strongly implemented in the TSP and AIM. The planning process is well defined and executed in the AIM launch process. The goal of the launch is to provide each individual and the team as a whole with detailed development plans for this cycle or iteration. This is accomplished in the launch meetings by developing a clear understanding of the requirements and a "conceptual design" for the product. The conceptual design lists the parts of the product to be developed and describes how they will operate separately and as an integrated product. The plan is developed based on the requirements and conceptual design. The approach used by AIM and TSP for planning differs from the classic MS-Project, WBS (work breakdown structure), or Gantt-chart approach. The AIM approach follows the concepts of Lean Six Sigma and establishes a set of "value chain activities" and work products. Thus each individual has a set of tasks and work products that represent the work to be done and the products to be developed. This list of tasks and activities is presented in order of execution. Thus task one is worked first, task two second, and so forth. This list of tasks represents the WBS and is carefully established and maintained (monitored and controlled) as the project executes.

In addition to focusing on value chain activities, the planning process employs "inch pebble" decomposition. Each task is 8-10 hours of duration. This inch pebble decomposition allows for earned value tracking and load balancing and early warning on a near-real-time basis.

3.1.1 Project Planning (PP)

The following table lists the elements of the Project Planning process area employed in the AIM approach.

TSP Reference	CMMI Feature	CMMI PA: PP Project Planning Description	Direct Artifact	Guidance
	PP SG 1	Estimates of project planning parameters are established and maintained.		
LAU3, LAU6	PP SP 1.1	Establish a top-level work breakdown structure (WBS) to estimate the scope of the project.	STRAT form, SUMS form in the TSP tool Completed SUMS (Size Summary) form. The SUMS form provides the list of work products and associated attributes necessary to complete the current iteration. For multiple-iteration projects a completed STRAT (Strategy) form. The STRAT form provides a high-level view of the multiple iterations that may be necessary to complete the project. Possibly a filled-out TASK form On projects with multiple iterations the STRAT form will represent the high-level WBS and estimates for the overall project. The SUMS will be developed for each separate iteration and represents the detailed WBS and estimates for that iteration. This is an implementation of “Rolling Wave” project planning. An alternate practice is to simply use the SUMS form in the TSP tool to represent the high-level WBS and estimates for the overall project, usually during meeting 4 of the team’s launch. The team would then determine what will be implemented during the current iteration, resulting in a “new” SUMS for each separate iteration, usually completed by the end of meeting 6 of the launch. A TASK form may also be created for both the overall plan and the current iteration.	Typically TSP projects do not produce the artifacts that one would expect to see from a traditional Microsoft Project Plan (i.e., Gantt chart, PERT chart). It will save time and energy if the appraisers become familiar with the TSP planning methodology. The equivalent data and analysis is available with TSP. At a minimum, teams will have a representation of the TSP SUMS (Size Summary), which represents a WBS in terms of components, products, or features. Most TSP tools will have more. The items in the SUMS are work products that should be produced by the team to complete the project. Typically there will be a process (set of tasks) used to develop the work products. It is this set of tasks for each work product that comprise the task list making up form TASK. The SUMS and form TASK combine to create the equivalent of a very detailed WBS.

TSP Reference	CMMI Feature	CMMI PA: PP Project Planning Description	Direct Artifact	Guidance
LAU3, LAU4, LAU6, PROBE	PP SP 1.2	Establish and maintain estimates of the attributes of the work products and tasks.	SUMS form, TASK form Completed SUMS form (plan and actual base, modified, added, and reused size for each component). Completed STRAT form. Completed TASK form. PROBE estimation method is either built in the tool, or is used to generate estimates. Historical data is used as available.	Need to understand PROBE (Proxy Based Estimation). Even if they see a two-column SUMS sheet, there is a WBS hierarchy represented in SUMS.
LAU3, STRAT	PP SP 1.3	Define the project life-cycle phases upon which to scope the planning effort.	Forms STRAT, SUMS, and TASK in the TSP tool The iterations are initially defined for the entire project on the STRAT form, then are expanded for each iteration in the TSP tool (on the SUMS form). Alternatively, some organizations will create an initial SUMS, in place of form STRAT, which represents the project life cycle. The iteration plan (STRAT) represents the overall project life cycle over multiple iterations. Within each iteration, the tasks associated with each work product will usually represent a development life cycle for that product. Each task is associated with a phase in form TASK (the current SEI TSP tool allows for creation of custom processes).	Embedded in the TSP is the concept of an iterative and incremental development process (cyclical). Each project will develop the detailed description (strategy) for the increments and iterations needed for that project. Appraisers should ask to see an explanation of the project's cycles/development strategy. Each iteration may represent an execution of the development life cycle.
LAU3, LAU4, LAU6, PROBE	PP SP 1.4	Estimate the project effort and cost for the work products and tasks based on estimation rationale.	TASK form The TASK form records effort estimate for each task in the next iteration (near-term detailed plan). Overall plan (high-level plan) has high-level estimates.	The TSP does not include dollar cost estimation. For most software projects, effort estimates correspond directly to cost.
LAUX, WEEK	PP SG 2	A project plan is established and maintained as the basis for managing the project.		

TSP Reference	CMMI Feature	CMMI PA: PP Project Planning Description	Direct Artifact	Guidance
	PP SP 2.1	Establish and maintain the project's budget and schedule.	SCHED, WEEK forms in the TSP tool SCHED form has weekly EV (Earned Value) schedule (baseline, planned, actual, and predicted). So does EV graph in TSP Excel tools, and the WEEK form. The WEEK form in the Excel tool also has milestones.	Become familiar with the planning tools and approach used in the TSP. Don't expect to see Gantt charts (although the information is there in most TSP tools to produce a Gantt if needed, but TSP teams do not find a need for this). Schedule is tracked and managed through EV and milestones at the overall project level, and at component level.
LAU7	PP SP 2.2	Identify and analyze project risks.	IRTL (Issues and Risks Tracking Log) form Launch meeting 9 presentation risk section and the IRTL (Issue and Risk Tracking Log), and IR-Week (Issue and Risk Weekly Summary)	Launch meeting 7 largely involves risk and risk planning. Risks are recorded, assigned, tracked, and updated in IRTL. Risks are presented to management in meeting 9 and subsequent regularly held management meetings. The team manages risks as part of its weekly team meeting.
Specification NOTEBOOK, almost all TSP scripts exit criteria	PP SP 2.3	Plan for the management of project data.	Project Notebook, form LOGCI Project NOTEBOOK (or its equivalent) The Support Manager role has been expanded to include responsibility for CM for the project. This includes project data as configuration Items. See the CM PA.	Notebook Specification defines the project data that is managed and secured. Form LOGCI lists the CIs including PP CIs.
LAU3	PP SP 2.4	Plan for necessary resources to perform the project.	The people resources are in the TSP plan. Other resources are documented in the Support plan on form INV. Talk to Support Manager for affirmation. TSP+ provides very detailed individual and iteration plans on the "inch pebble" level (tasks approx. 8 hours).	The launch planning process provides a comprehensive understanding of the resource necessary for the project.

TSP Reference	CMMI Feature	CMMI PA: PP Project Planning Description	Direct Artifact	Guidance
	PP SP 2.5	Plan for knowledge and skills needed to perform the project.	Required TSP training includes training for planning skills. In addition: • Initially (level 2) the Support Manager uses form INV to capture project-specific training needs in LAU3 step 8. (Other training forms may or may not be used.) • Form TRNM (Training Matrix) captures standard TSP course training prerequisites by role for a TSP team. • For level 3 (after formation of the Process Group). The PG role of Training Manager is established with the resultant training forms: TRNM, TRNOJT (On-the-Job Training), TRNR (Training Request), TRNWR (Training Waiver).	Strong link to the OT PA.
PREPL, PREPR, Launch Prep Packages, STATUS	PP SP 2.6	Plan the involvement of identified stakeholders.	RSIM (Relevant Stakeholder Involvement Matrix) form Launch preparation guidelines for the senior manager, product manager, team leader, and team members. LAU meeting minutes Form RSIM (Relevant Stakeholder Involvement Matrix) documents what stakeholders/roles need to be involved in which scripted activities. ROLES tab in the TSP Excel tool defines team roles. Form SRAM Stakeholder Role Assignment Matrix) is used for assigning roles identified in the RSIM to individuals.	The RSIM (Relevant Stakeholder Involvement Matrix) provides a comprehensive listing of stakeholders and their involvement in the TSP processes. In particular for PP each of the launch meetings is detailed. Involvement is categorized as R, A, C, and I (Responsible, Accountable, Consulted, Informed). The TSP has two key stakeholder roles: the business leader (senior manager) and the product owner (marketing manager). All business goals and expectations are funneled through the business leader (e.g., schedule, resource, milestones). All product goals are funneled through the product owner (features, priorities). These are the only stakeholders authorized to give goals and direction to the project.

TSP Reference	CMMI Feature	CMMI PA: PP Project Planning Description	Direct Artifact	Guidance
	PP SP 2.7	Establish and maintain the overall project plan content.	TSP Tool Estimate and Actual columns in SUMS, SUMP, SUMQ, Task. Usually in TSP tool.	Typically, the TSP tool used will provide the mechanism to establish and maintain the plan. Plan is tracked and updated at least weekly by each individual and the team. The Planning Manager role ensures the plan is established and maintained.
	PP SG 3	Commitments to the project plan are established and maintained.		
LAU, LAU9	PP SP 3.1	Review all plans that affect the project to understand project commitments.	Meeting 9 presentation, Meeting 9 minutes, individual and team plans Individuals will have developed their own detailed plans for their activities in the iteration.	Team and team leader present the plan to stakeholders during launch meeting 9. Feedback is incorporated in the plan by the team. Because the people who do the work plan the work, that review is built in.
LAU3, LAU6, LAU8, PREPL	PP SP 3.2	Reconcile the project plan to reflect available and projected resources.	Each individual plan shows a comprehension of the available time and task estimates. Alternate plans are developed, if needed. Alternatives are recorded in the launch meeting 9 presentation and management's decision in meeting 9 minutes.	A TSP project starts with allocated resources. During the launch, the team may determine that the resources allocated are not adequate. Then, the team generates alternate plans, balancing schedule, scope, and resources.
LAU, LAU1, LAU9	PP SP 3.3	Obtain commitment from relevant stakeholders responsible for performing and supporting plan execution.	Individuals develop their own detailed personal plans based on historical data and estimates for the current iteration. Meeting 9 presentation and meeting 9 minutes	The team members are relevant stakeholders and their commitment is obtained throughout the launch process, because they produce the plan. The business leader and product owner commitment is received during launch meeting 9.
	PP GG 2	The process is institutionalized as a managed process.		
	PP GP 2.1	Establish and maintain an organizational policy for planning and performing the project planning process.	Policy will be specific to each organization.	This issue to be addressed by the AIM Implementation Guide.

TSP Reference	CMMI Feature	CMMI PA: PP Project Planning Description	Direct Artifact	Guidance
	PP GP 2.2	Establish and maintain the plan for performing the project planning process.	The planning process is defined in detail in the TSP launch meetings and associated forms and scripts. Launch Schedule Agenda PREPL checklist filled out Attendee list (usually in meeting 9 presentation)	Schedule, agenda, attendees for launch and relaunch
	PP GP 2.3	Provide adequate resources for performing the project planning process, developing the work products, and providing the services of the process.	Launches are typically 3-4 days PREPL filled out (schedule, facilities, attendees in TSP tool)	Although launches typically take 3-4 days, development will not begin until a satisfactory plan is developed by the team and approved by the management.
	PP GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the project planning process.	RSIM coach role ROLEMX role matrix PREPL filled out (looking for launch coordinator, team lead, and coach). Although responsibility for designated activities during the launch are shared, ultimate responsibility for the launch rests with the coach.	The planning process is executed in the series of launch meetings 1-9. Responsibility for the success of the launch rests with the coach (see RSIM). Management is responsible for identifying team members who will participate in the launch process and be part of the team.
	PP GP 2.5	Train the people performing or supporting the project planning process as needed.	TSP team members must have required PSP or team member training. PREPL filled out (looking for training for management, team members, team leader) The TSP coach guides the team through the launch process. There is a formal SEI training and authorization process for TSP coaches.	The TSP has training requirements for TSP team members. All SEI-authorized PSP/TSP courses address the principles for PP needed for the given role (leader, member, developer, etc.). There is a comprehensive SEI training and authorization process for TSP coaches.

TSP Reference	CMMI Feature	CMMI PA: PP Project Planning Description	Direct Artifact	Guidance
	PP GP 2.6	Place designated work products of the project planning process under appropriate levels of control.	The planning manager is responsible for placing all project planning artifacts into the project notebook. The “project notebook” is a term used in TSP to refer to the collection of artifacts describing the project, its activities, and the results. The content of the project notebook is defined in specification NOTEBOOK. The support manager is responsible for developing a plan for the management of all project data identified in the specification NOTEBOOK. This is usually accomplished by designating a specific project folder on a drive or using a web-based file-sharing system; levels of control are handled by setting access permissions.	Informal configuration management may be considered appropriate for all items identified in Specification NOTEBOOK. It is up to the team to determine where and how these items will be stored and who will have access to them during launch preparation. Items for formal configuration and data management are planned during launch preparation, CM processes are observed, and planning CIs are entered in form LOGCI.
	PP GP 2.7	Identify and involve the relevant stakeholders of the project planning process as planned.	RSIM Launch scripts PREPL filled out, LAU9 meeting report	The launch process identifies the major planning stakeholders. RSIM provides a comprehensive set of stakeholders and involvement.
	PP GP 2.8	Monitor and control the project planning process against the plan for performing the process and take appropriate corrective action.	PREPL, PREPR shows launch is planned. Launch meeting minutes in form MTG for each meeting. Combine this with launch artifacts. Weekly meeting minutes	The team launch process produces the plan. The coach is responsible for seeing that the planning process embedded in the launch is on track and followed.
	PP GP 2.9	Objectively evaluate adherence of the project planning process against its process description, standards, and procedures; address noncompliance.	Checkpoint report See the role of the PG (Process Group) Coaching Manager. Coaching Manager report TSP coach involvement prelaunch (PREPL/PREPR filled out), during the launch (LAU meeting minutes), and after (LAUPM).	The TSP coach will perform a Checkpoint to evaluate process and work products. During the launch, the coach guides process fidelity for PP. As the project executes, the team leader and planning and process managers objectively evaluate. When the Process Group (PG) is formed the Coaching Manager role will objectively evaluate the launch process and artifacts for each launch.

TSP Reference	CMMI Feature	CMMI PA: PP Project Planning Description	Direct Artifact	Guidance
	PP GP 2.10	Review the activities, status, and results of the project planning process with higher level management ; resolve issues.	Launch meeting 9 presentation. You may also ask for checkpoint reports and management status reports.	
	PP GP 3.1	Establish and maintain the description of a defined project planning process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the launch processes, which are the main planning processes. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	See the role of the PG Support Manager and PG Process Manager.
	PP GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the project planning process to support the future use and improvement of the organization's processes and process assets.	The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	Guidelines to appraisers: The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.1.2 Project Monitoring and Control (PMC)

The following table lists the elements of the Project Monitoring and Control (PMC) process area employed in the AIM approach.

TSP Reference	CMMI Feature	CMMI PA: PMC Project Monitoring and Control Description	Direct Artifact	Guidance
	PMC SG 1	Actual performance and progress of the project are monitored against the project plan.		
WEEK	PMC SP 1.1	Monitor the actual values of the project planning parameters against the project plan.	Minutes of the weekly team meeting where the planning data is reviewed and monitored The TSP tool tracks estimated and actual size, effort, defects and schedule. See the Actual columns in forms TASK, SUMS, SUMP, SUMQ, SCHED, EV. Management status reports and action items generated from associated status meetings	Appraisers should become familiar with the TSP's PROBE (Proxy Based Estimation). Estimates for size, effort, and defects are an integral part of the TSP and the launch process. The data collection mechanisms in TSP collect actual data for size, effort, schedule, and defects. The actuals are recorded daily and reported weekly.
	PMC SP 1.2	Monitor commitments against those identified in the project plan.	Minutes of the weekly team meeting where plan status, including commitments, are monitored Internal and External commitments are tracked as milestones in the TSP tool. The WEEK form in the tool Cycle PM reports	The team lead and planning manager role share responsibility for ensuring commitments are reviewed.
WEEK	PMC SP 1.3	Monitor risks against those identified in the project plan.	IRWEEK and IRTL forms in the TSP tool Risks are reviewed during weekly team meetings and status reporting to management.	Risks are monitored in the team meetings. In script WEEK step 5, Goal and Risk Reports the individual and team risks are reviewed and updated.
	PMC SP 1.4	Monitor the management of project data against the project plan.	LOGCI (Configuration Item log), LOGCCR (Configuration change request log), CCR (Configuration Change Request), CIBS (Configuration Item Baseline, Plan and Status) See the CM Project NOTEBOOK. Role reports in the team meeting minutes	The Support Manager role has the responsibility for the configuration management system for the team. This includes project data. See the Support Manager role. The Planning Manager has the responsibility to monitor the management of the project data. See the Planning Manager roles and responsibilities.

TSP Reference	CMMI Feature	CMMI PA: PMC Project Monitoring and Control Description	Direct Artifact	Guidance
	PMC SP 1.5	Monitor stakeholder involvement against the project plan.	RSIM (Relevant Stakeholder Involvement Matrix) and the filled out ROLE form Checkpoint, Role reports in team meetings Management and customer status presentations and meeting minutes	The coach, team members and team roles monitor stakeholder involvement through weekly meetings, role reports, status meetings, checkpoint and postmortems. Internal stakeholder involvement can be seen in the individual team member plans and weekly meeting minutes. Two primary stakeholders (business and product owner) involvement can be seen in launch meeting 1 and 9 artifacts, in STATUS meeting reports. Also, stakeholder evaluation reports from postmortems.
WEEK, PM, Checkpoint, REL	PMC SP 1.6	Periodically review the project's progress, performance, and issues.	WEEK form in tool, weekly meeting minutes, relaunch, PM reports, Checkpoint reports, and STATUS reports	It would be helpful if the appraisers could become familiar with the TSP planning methodology and tools used by the organization.
	PMC SP 1.7	Review the accomplishments and results of the project at selected project milestones.	Within a development cycle, the STATUS reports and minutes For iterative development across multiple development cycles: PM reports and relaunch status reports	Appraiser guidance: For single-cycle projects project STATUS presentations and meetings and PM (Postmortem) Iteration (cycle) reviews are built in to the TSP (cycle PM and relaunch). These are considered milestone reviews for TSP projects.
	PMC SG 2	Corrective actions are managed to closure when the project's performance or results deviate significantly from the plan.	Earned value is used in determining the effectiveness of corrective actions. Corrective actions are tracked to closure by creating additional tasks or changes in schedule performance.	Appraisers should familiarize themselves with the TSP tracking capabilities and the use of the TSP tool for analysis of planning data. The TSP methodology and tool provide exacting performance management capabilities. Activities in the plan are broken into tasks of 8 hours or less. This level of granularity makes for very accurate weekly earned value analysis. Defects and defect injection rates are estimated and measured. Schedule variances are measured in days.
WEEK	PMC SP 2.1	Collect and analyze the issues and determine the corrective actions necessary to address the issues.	Issues are tracked on IRTL and IRWEEK. Team and Individual plans Team meeting minutes	Issues and risks are discussion items in the weekly meeting. Issues are surfaced in the weekly meeting, documented in IRTL, and assigned to someone for resolution (guided by team role).

TSP Reference	CMMI Feature	CMMI PA: PMC Project Monitoring and Control Description	Direct Artifact	Guidance
	PMC SP 2.2	Take corrective action on identified issues.	Issues are tracked on IRTL and IRWEEK. Depending on the corrective action being taken, tasks may be added to individual plans to track and monitor the action to closure.	Issues and risks are discussion items in the weekly meeting. Issues are surfaced in the weekly meeting, documented in IRTL, and assigned to someone for resolution (guided by team role). Issues and risks are also discussed in management status meetings.
	PMC SP 2.3	Manage corrective actions to closure.	Issues are tracked on IRTL and IRWEEK.	Issues and risks are discussion items in the weekly meeting. Issues are surfaced in the weekly meeting, documented in IRTL, and assigned to someone for resolution (guided by team role).
	PMC GG 3	The process is institutionalized as a defined process.		
	PMC GP 2.1	Establish and maintain an organizational policy for planning and performing the project monitoring and control process.	Policy will be specific to each organization.	This issue to be addressed by the AIM Implementation Guide.
	PMC GP 2.2	Establish and maintain the plan for performing the project monitoring and control process.	Weekly meeting agendas, team calendars, postmortem agendas, relaunch agendas. Planning manager's TSP plan, Team leader plan, Coach plan	PMC in many ways is built into the TSP methodology, including data collection, analysis, and proactive attention to trends, deviations, and changing circumstances. The PMC plan includes activities by the coach, planning manager, team lead and the individual team members. This takes place in weekly meetings, cycle PMs, relaunches, status meetings, and checkpoints, and are all integral to the TSP.
	PMC GP 2.3	Provide adequate resources for performing the project monitoring and control process, developing the work products, and providing the services of the process.	ROLE form in the TSP tool (assigned roles)	Team leader and all team members are responsible. TSP is a process for self-directed teams. The team plans, tracks, and resolves most issues. Role managers manage different aspects of the project (e.g., planning, quality, support).

TSP Reference	CMMI Feature	CMMI PA: PMC Project Monitoring and Control Description	Direct Artifact	Guidance
Role specs	PMC GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the project monitoring and control process	ROLE form in the TSP tool (assigned roles)	Team leader and all team members are responsible. TSP is a process for self-directed teams. The team plans, tracks, and resolves most issues. Role managers manage different aspects of the project (e.g., planning, quality, support).
	PMC GP 2.5	Train the people performing or supporting the project monitoring and control process as needed.	LOGTRNM (Team Member Training Log) TRNM (Training Matrix) of necessary training TSP team members must have required training (min. Fundamentals) PREPL filled out (looking for training for management, team members, team leader) The TSP coach guides the team through the launch process and throughout the development cycle. There is a formal SEI training and authorization process for TSP coaches.	The TSP has training requirements for TSP team members. At a minimum, PSP Fundamentals or TSP Team Member training will provide practitioners with the principles for PP and PMC. There is a comprehensive SEI training and authorization process for TSP coaches.
	PMC GP 2.6	Place designated work products of the project monitoring and control process under appropriate levels of control.	LOGCI for project notebook The Support manager role is responsible for CM for the project. The work products from the PMC will be CIs in form LOGCI and placed under appropriate control. The project notebook Typically, you would have to look at the CM system supported by the project or organization.	Configuration and data management are planned during launch preparation, CM processes are observed, and planning CIs are entered in form LOGCI. Typically team and individual plans, status presentation, and meeting minutes will be put under the appropriate level of control by the Support Manager using CM process.
	PMC GP 2.7	Identify and involve the relevant stakeholders of the project monitoring and control process as planned.	LAU9 presentation to management, management status reports, status meeting agendas RSIM (Relevant Stakeholder Involvement Matrix)	
Coach, team leader, team member role specifications	PMC GP 2.8	Monitor and control the project monitoring and control process against the plan for performing the process and take appropriate corrective action.	Team meeting minutes. Planning manager role reports. Status presentations and meeting minutes. IRTL (Issue/Risk Tracking Log), Coach feedback and Checkpoint	The coach, team leader, and role managers together monitor PMC against its plan.

TSP Reference	CMMI Feature	CMMI PA: PMC Project Monitoring and Control Description	Direct Artifact	Guidance
	PMC GP 2.9	Objectively evaluate adherence of the project monitoring and control process against its process description, standards, and procedures; address noncompliance.	The TSP coach objectively evaluates the PMC process while working with the team. The Coach will formalize this in the Checkpoint review.	As the project executes, the Coach will objectively evaluate the PMC process as part of the coaching activity. The Coach will formalize this in the Checkpoint review, producing the Checkpoint Report. The PG Coaching Manager reviews checkpoints from each project for compliance.
	PMC GP 2.10	Review the activities, status, and results of the project monitoring and control process with higher level management ; resolve issues.	Management status meeting presentations and minutes Checkpoint management review Launch meeting 9 presentation	Monitoring the project's status against the plan is a strength of the TSP+ process. This includes weekly earned value tracking, schedule tracking, and quality tracking on a very detailed level.
WEEK	PMC GP 3.1	Establish and maintain the description of a defined project monitoring and control process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the launch processes, which are the main planning processes, and Script WEEK, which is the basis for PMC.	See the PG Support Manager and PG Process Manager roles.
	PMC GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the project monitoring and control process to support the future use and improvement of the organization's processes and process assets.	The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	Guidelines to appraisers: The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.1.3 Integrated Project Management + IPPD (IPM)

The following table lists the elements of the Integrated Project Management + IPPD (IPM) process area employed in the AIM approach.

TSP Reference	CMMI Feature	CMMI PA: IPM Integrated Project Management + IPPD Description	Direct Artifact	Guidance
	IPM SG 1	The project is conducted using a defined process that is tailored from the organization's set of standard processes.		
PREPL, LAU, Pr M Role	IPM SP 1.1	Establish and maintain the project's defined process from project startup through the life of the project.	The project's defined process is the tailored version of the OSSP for the project. This will include forms, scripts, specifications and any approved deviations. Typically this will be the Project Notebook with Deviations (Form SPDR Standard Process Deviation Request).	In LAU3 (launch meeting 3) STEP 6 and 7, the Process Manager leads the team in establishing the PDP (Projects defined process) and is responsible for maintaining it throughout the project. The TSP+ materials refer to the PDP as the PSSP (Project's Set of Standard Processes)
LAU Planning and Quality Guidelines	IPM SP 1.2	Use the organizational process assets and measurement repository for estimating and planning the project's activities.	Estimates and project plans are in the TSP tool. Form SUMS has size estimates and quality estimates. Form TASK has effort estimates.	Each of the project's work products is listed in SUMS with size estimates based on historical data (see PROBE). SUMS can be seen as the product tree. Associated with each work product will be a development process, which is the set of tasks necessary to produce that work product. This combination produces a comprehensive set of tasks necessary to develop the products and complete the project. LAU4 step 5 explicitly directs reference to organizational and project historical data.
LAU3 step 7 INV form Support Manager Role	IPM SP 1.3	Establish and maintain the project's work environment based on the organization's work environment standards.	Form INV (filled-in from LAU3 step 8) TASK plan for support manager role	The project's support manager is responsible for the project's work environment. Form INV is used to establish what is needed. The role of the Process Group Support Manager is responsible for working with the project support managers to ensure the work environment is maintained across the organization.

TSP Reference	CMMI Feature	CMMI PA: IPM Integrated Project Management + IPPD Description	Direct Artifact	Guidance
LAU3, LAU4, LAU5, LAU6, LAU7, WEEK	IPM SP 1.4	Integrate the project plan and the other plans that affect the project to describe the project's defined process.	The TSP tool provides both individual and team plans. The individual plans are integrated to form the team plan.	It would be helpful if appraisers would become familiar with the TSP planning process and tools.
WEEK Weekly minutes STATUS Team leader and process manager roles	IPM SP 1.5	Manage the project using the project plan, the other plans that affect the project, and the project's defined process.	Team meetings minutes, form IRTL (individual and team) form WEEK Management presentations and meeting minutes STATUS Individual and team workbooks contain actual data/progress against the plan	Team members track and manage their individual plans. The team with direction of the team leader manages the Team Plan.
LAUPM, PM, Role Manager Guidelines	IPM SP 1.6	Contribute work products, measures, and documented experiences to the organizational process assets.	The PAL, Data Repository	The PG (Process Group) Process Asset and Data repository Manager is responsible for setting up the organization's PAL and data repository.
	IPM SG 2	Coordination and collaboration of the project with relevant stakeholders is conducted.		
PREPL, PREPR, Preparation Guidelines, LAU1, LAU9	IPM SP 2.1	Manage the involvement of the relevant stakeholders in the project.	RSIM Launch scripts PREPL filled out, LAU9 meeting report Team meeting minutes Status meeting presentations and minutes	The launch process identifies the major planning stakeholders. RSIM provides a comprehensive set of stakeholders and involvement. Involvement is tracked by reports in team meetings.

TSP Reference	CMMI Feature	CMMI PA: IPM Integrated Project Management + IPPD Description	Direct Artifact	Guidance
LAU3, WEEK	IPM SP 2.2	Participate with relevant stakeholders to identify, negotiate, and track critical dependencies.	IRTL Milestones in plan Team meeting minutes Status presentations and minutes Filled-in from STRAT	Internal dependencies are reflected in the development strategy and the task order. Milestones can also be used to track/identify internal and external dependencies. They may also be tracked as risks. Internal dependencies are also communicated every week. Three questions asked in a weekly meeting are (1) What did you do last week? (2) What will you do this week? (3) Is there anything blocking you? In the TSP, critical dependencies are identified and tracked in (1) the risk (IRTL) and IRWEEK, and (2) development strategy (risk based, dependency based, business value based, architecture based). Critical dependencies are explicitly referenced in LAU3 step 4, LAU4 step 8, LAU6 step 5.
	IPM SP 2.3	Resolve issues with relevant stakeholders.	IRTL, TASK, WEEK	Most issues are tracked in the IRTL (Issue and Risk Tracking Log). Some could also be tracked as tasks and/or milestones. Reviews and inspections are identified as tasks in the plan. These are assigned to internal and external reviewers when needed. Review artifacts are captured at least in task completion, time logs, and defect logs.
	IPM SG 3	The project is managed using IPPD principles.		
PREPL, LAU1, PREPR, LAU1, LAU2 Senior management and marketing discussion guidelines	IPM SP 3.1	Establish and maintain a shared vision for the project.	LAU1 Business and Product goals and success criteria	Look for business and product goal presentations from launch meeting 1.
Role Manager Teams	IPM SP 3.2	Establish and maintain the integrated team structure for the project.	PREP	Look for Role Teams

TSP Reference	CMMI Feature	CMMI PA: IPM Integrated Project Management + IPPD Description	Direct Artifact	Guidance
PREP	IPM SP 3.3	Allocate requirements, responsibilities, tasks, and interfaces to teams in the integrated team structure.		Prep script for TSPm.
PREP	IPM SP 3.4	Establish and maintain integrated teams in the structure.		Role manager teams, team roles, team goals
TSPm Role Manager Team Responsi-bilities	IPM SP 3.5	Ensure collaboration among interfacing teams.		
	IPM GG 2	The process is institu-tionalized as a ma-naged process.		
	IPM GP 2.1	Establish and maintain an organizational poli-cy for planning and performing the inte-grated project man-agement process.	Policy will be specific to each organization.	This issue to be addressed by the Implementation Guide.
	IPM GP 2.2	Establish and maintain the plan for performing the integrated project management process.	Launch schedule and agenda PREPL checklist filled out Launch attendee list (usually in meeting 9 presentation) Team meeting schedule and agendas	All team members plus the coach are present for the launch meetings where the majority of IPM takes place.
	IPM GP 2.3	Provide adequate resources for perform-ing the integrated project management process, developing the work products, and providing the services of the process.	PREPL filled out (sche-dule, facilities, attendees for different meetings)	Launch schedule, team meeting schedule, status meeting schedule with atten-dees Individual plans with sche-dule and tasks including role tasks
	IPM GP 2.4	Assign responsibility and authority for per-forming the process, developing the work products, and provid-ing the services of the integrated project management process.	ROLEMX role assignment matrix PREPL filled out (looking for launch coordinator, team lead, and coach)	The coach is responsible for ensuring the TSP process is followed. The planning man-ager, team lead, and team members have responsibili-ties assigned in the scripts and roles.

TSP Reference	CMMI Feature	CMMI PA: IPM Integrated Project Management + IPPD Description	Direct Artifact	Guidance
	IPM GP 2.5	Train the people performing or supporting the integrated project management process as needed.	TSP team members must have required PSP or team member training TRNM (Training Matrix) LOGTRNM (Log of Team Member Training) PREPL filled out (looking for training for management, team members, team leader) There is a comprehensive SEI training and authorization process for TSP coaches.	The TSP has training requirements for TSP team members. All SEI-authorized PSP/TSP courses address the planning principles needed for the given role (e.g., leader, member, developer). The TSP coach guides the team through the launch process. There is a formal SEI training and authorization process for TSP coaches.
Support manager role and role teams	IPM GP 2.6	Place designated work products of the integrated project management process under appropriate levels of control.	LOGCI of the project notebook if the notebook is put under formal CM otherwise appropriate level of control. The Support Manager role is responsible for CM for the project. The work products from the launch will be CIs in form LOGCI and placed under appropriate control. The project notebook may be under informal configuration control. Typically, you would have to look at the CM system supported by the project or organization (a protected folder on a drive, or full CM with CVS).	Configuration and data management are planned during launch preparation, CM processes are observed, and planning CIs are entered in form LOGCI. Formal or informal CM methods may be appropriate.
	IPM GP 2.7	Identify and involve the relevant stakeholders of the integrated project management process as planned.	RSIM (Relevant Stakeholder Involvement Matrix) PREPL filled out, LAU9 meeting report Team meetings presentations and minutes Status meetings presentation and minutes	
	IPM GP 2.8	Monitor and control the integrated project management process against the plan for performing the process and take appropriate corrective action.	PREPL, PREPR shows launch is planned. Launch meeting minutes in form MTG for each meeting Combine this with launch artifacts. Weekly meeting minutes	The coach is responsible for ensuring that the planning process embedded in the launch is on track and followed.

TSP Reference	CMMI Feature	CMMI PA: IPM Integrated Project Management + IPPD Description	Direct Artifact	Guidance
	IPM GP 2.9	Objectively evaluate adherence of the integrated project management process against its process description, standards, and procedures; address noncompliance.	See the role of Coaching Manager. TSP coach involvement pre-launch (PREPL/PREPR filled out), during the launch (LAU meeting minutes) and after (LAUPM).	During the launch, the coach guides process fidelity for PP and IPM. As the project executes, the team leader, and planning and process managers objectively evaluate. When the Process Group (PG) is formed the Coaching Manager role will objectively evaluate the launch process and artifacts. The PG Process Manager is responsible for ensuring that each Project Process Manager has the team using the correct processes.
	IPM GP 2.10	Review the activities, status, and results of the integrated project management process with higher level management ; resolve issues.	Launch meeting 9 presentation. You may also ask for checkpoint reports and management status reports. Weekly meeting minutes Management STATUS report and minutes	
	IPM GP 3.1	Establish and maintain the description of a defined integrated project management process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the launch processes, which are the main planning processes. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	See the PG Support Manager and PG Process Manager roles.
	IPM GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the IPM process to support the future use and improvement of the organization's processes and process assets.	The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.1.4 Risk Management (RM)

The following table lists the elements of the Risk Management (RM) process area employed in the AIM approach.

TSP/PSP Reference	CMMI	CMMI PA: RSKM Risk Management	Direct Artifact	Guidance
	RSKM SG 1	Preparation for risk management is conducted.		
LAU7, ITL, WEEK, TL role, Plng Mgr role	RSKM SP 1.1	Determine risk sources and categories.	Form ITL (Issue/Risk Log) and Instructions	The instructions for the ITL form provide an initial set of sources and categories.
LAU7, ITL, TL role	RSKM SP 1.2	Define the parameters used to analyze and categorize risks, and the parameters used to control the risk management effort.	Form ITL (Issue/Risk Log) and Instructions LAU7 step 3	Launch Meeting 7 is designed to lead the project through a risk assessment. See Script LAU7.
LAU7, ITL, WEEK	RSKM SP 1.3	Establish and maintain the strategy to be used for risk management.	Form ITL (Issue/Risk Log) and Instructions LAU7 step 3	Risk management strategy is described in the forms and scripts.
	RSKM SG 2	Risks are identified and analyzed to determine their relative importance.		
LAU7, ITL, TL role, TM role	RSKM SP 2.1	Identify and document the risks.	Form ITL (Issue/Risk Log) and Instructions LAU7 step 3, ITL (IRTL in SEI workbooks)	While all risks at a threshold will be assigned, appraisal teams should understand that risks may be assigned to individual team members, or to a team role.
LAU7, ITL, TL role, TM role, other roles	RSKM SP 2.2	Evaluate and categorize each identified risk using the defined risk categories and parameters, and determine its relative priority.	Form ITL (Issue/Risk Log) and Instructions LAU7 step 3, ITL (IRTL in SEI workbooks)	The ITL and instructions have priority formulated as the risk/likelihood combination. Therefore HH (high likelihood and high impact) would be the highest priority, etc.
	RSKM SG 3	Risks are handled and mitigated, where appropriate, to reduce adverse impacts on achieving objectives.		
LAU7, ITL, TL role, TM role, other roles	RSKM SP 3.1	Develop a risk mitigation plan for the most important risks to the project, as defined by the risk management strategy.	LAU7 step 4, ITL (IRTL in SEI workbooks) or equivalent	LAU7 step 4 requires that a risk plan be developed for all risks that are high or medium priority (HH,HM,MH,MM).
WEEK, ITL	RSKM SP 3.2	Monitor the status of each risk periodically and implement the risk mitigation plan as appropriate.	WEEK, ITL (IRTL in SEI workbooks)	See: Script WEEK step 5.
	RSKM GG 2	The process is institutionalized as a managed process.		
	RSKM GP 2.1	Establish and maintain an organizational policy for planning and performing the risk management process.	Policy will be specific to each organization.	This issue to be addressed by the Implementation Guide.

TSP/PSP Reference	CMMI	CMMI PA: RSKM Risk Management	Direct Artifact	Guidance
	RSKM GP 2.2	Establish and maintain the plan for performing the risk management process.	Schedule and agenda for the launch and the team meetings. Launch meeting 7 is dedicated to risk and risk management. PREPL checklist (filled out) Attendee list (usually in meeting 9 presentation) Script WEEK	Planning and execution of the launch includes planning for risk management in meeting LAU7; weekly meetings have a standard step to evaluate & update risks. The team meetings are attended by all on the team and have a schedule and agenda. Risks are part of the management status meetings; see Specification STATUS.
	RSKM GP 2.3	Provide adequate resources for performing the risk management process, developing the work products, and providing the services of the process.	PREPL filled out	Time and resources for Risk Management are planned for in the launch and the weekly meetings and status meetings. Tasks may also be found in individual plans for work associated with the execution of a risk mitigation plan.
	RSKM GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the risk management process.	Team Lead role is specifically charged with responsibility; may delegate as shown in ITL (IRTL in SEI workbooks)	The team lead is responsible for leading the team through the risk assessment in LAU7 and leading the team through the team and management meetings.
	RSKM GP 2.5	Train the people performing or supporting the risk management process as needed.	TSP TL Training instructs on LAU7 OJT for TL and the team as necessary	TSP Team leader training
	RSKM GP 2.6	Place designated work products of the risk management process under appropriate levels of control.	LOGCI if the decision is made to put the project notebook under formal CM. Otherwise the project notebook will be put under appropriate level of control. The Support Manager role is responsible for CM for the project. The work products from the launch will be CIs in form LOGCI and placed under appropriate control. The project notebook Typically, you would have to look at the CM system supported by the project or organization (a protected folder on a drive, or full CM with CVS).	Configuration and data management are planned during launch preparation, CM processes are observed, and planning CIs are entered in form LOGCI. Formal or informal CM methods will be chosen.

TSP/PSP Reference	CMMI	CMMI PA: RSKM Risk Management	Direct Artifact	Guidance
	RSKM GP 2.7	Identify and involve the relevant stakeholders of the risk management process as planned.	RSIM Launch scripts PREPL filled out, LAU9 meeting report	The launch process identifies the major planning stakeholders. RSIM provides a comprehensive set of stakeholders and involvement.
TSP Coach role TSP TL role	RSKM GP 2.8	Monitor and control the risk management process against the plan for performing the process; and take appropriate corrective action.	PREPL, PREPR shows launch is planned. Launch meeting minutes in form MTG for each meeting Combine this with launch artifacts. Weekly meeting minutes Checkpoint Team meeting schedule	The team launch process produces the plan, including the risk plan. The coach is responsible for seeing that the risk planning process embedded in the launch is on track and followed.
	RSKM GP 2.9	Objectively evaluate adherence of the risk management process against its process description, standards, and procedures; address noncompliance.	Checkpoint report TSP Coach involvement pre-launch (PREPL/PREPR filled out), during the launch (LAU meeting minutes) and after (LAUPM). See the role of the PG (Process Group) Coaching Manager. Coaching Manager report	The TSP Coach will perform a Checkpoint to evaluate process and work products. During the launch, the coach guides process fidelity for RSKM. As the project executes, the team leader, and planning and process managers, objectively evaluate. When the Process Group (PG) is formed the Coaching Manager role will objectively evaluate the launch process and artifacts for each launch.
STATUS spec TL role	RSKM GP 2.10	Review the activities, status, and results of the risk management process with higher level management ; resolve issues.	STATUS report to higher level management	
	RSKM GP 3.1	Establish and maintain the description of a defined risk management process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the launch processes, which are the main planning processes. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	See the PG Support Manager and PG Process Manager roles.

TSP/PSP Reference	CMMI	CMMI PA: RSKM Risk Management	Direct Artifact	Guidance
	RSKM GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the RSKM process to support the future use and improvement of the organization's processes and process assets.	The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group. See OPF, OPD.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.2 Engineering Processes

The engineering PAs include Requirements Management (REQM), Requirements Development (RD), Technical Solution (TS), Product Integration (PI), Verification (VER), and Validation (VAL). Each organization adopting AIM will have its own domain and environment that will need to be reflected in the engineering processes, tools, and methods used by the organization. This will necessitate a flexible approach for AIM implementation. The AIM implementation guidance will describe the recommended procedure for working with the organization to adapt and integrate the appropriate engineering methods, tools, and processes into the organization's standard process. This integration will establish the standard process for the organization as well as assuring CMMI compliance.

The guidance documents that follow were developed from the PSP/TSP and were not augmented with tools, methods, and procedures representation any single development domain or customer use case. There are practices and direct artifacts missing or only partially fulfilling CMMI expectations. This is understandable as the organization will have made or will need to make implementation decisions specific to the organization's development domain and environment. For example, the configuration management system can be implemented by simple manual methods or by employing a fully automated CM system.

3.2.1 Requirements Management (REQM)

The following table lists the elements of the Requirements Management (REQM) process area employed in the AIM approach.

TSP/PSP Reference	CMMI Feature	CMMI PA: REQM Requirements Management	Direct Artifact	Guidance
	REQM SG 1	Requirements are managed and inconsistencies with project plans and work products are identified.		Appropriate development methodolog(ies) will need to be adopted by the organization. These methodologies may have their own artifacts that will need to be substituted for those referenced in the TSP+. Overall comments for REQM: 1) Scripts REQ and ANA point to SRS and ERS that currently have no specifications or samples. 2) Processes are very high-level and probably cannot be directly implemented without consulting support or utilizing existing processes. 3) See the AIM roles of (a) Senior Management providing business direction (b) Marketing/Customer Representative providing product specifications, and (c) Customer Interface Manager providing detail specifications

TSP/PSP Reference	CMMI Feature	CMMI PA: REQM Requirements Management	Direct Artifact	Guidance
Scripts REQ, ANA	REQM SP 1.1	Develop an understanding with the requirements providers on the meaning of the requirements.	Market study results, SRS, ERS, impact analyses, or equivalents are called out by REQ and/or ANA. Also, where marketing goals in LAU1 are very close to actual requirements, the LAU1 presentation and SUMS may or may not reflect this understanding.	TSP has no standard examples or specifications for the SRS, ERS, market study results, and impact analysis. This may be specific to each installation—for example, feature lists, use cases, and impact statements. The SUMS may provide an understanding of requirements but this is not clear. There is no set of criteria in AIM for evaluating/accepting good requirements.
Scripts LAU1, LAU9	REQM SP 1.2	Obtain commitment to the requirements from the project participants.	Launch and relaunch plans (esp. LAU9 presentations in launches), and impact analyses	During the launch, detailed individual and team plans are generated by the team members for the coming iteration. The launch process and coach activities are designed to ensure that the plan accurately relates to the requirements, thus the launch/relaunch creates very committed participants (team and management).
Customer Interface and Team Leader role specifications Other role specifications as necessary	REQM SP 1.3	Manage changes to the requirements as they evolve during the project.	SRS changes, impact analyses, changed individual and team plans (either minor replans or relaunches) WEEK reports showing Customer Interface role report of changed/changing requirements	Same caveat as 1.2 above. The requirements probably will be under formal configuration management. The CM processes will apply.
Customer Interface role specification	REQM SP 1.4	Maintain bi-directional traceability among the requirements and work products.	The organization will need to develop a method for maintaining bi-directional traceability. Script REQ calls for the establishment and maintenance of bi-directional traceability between test plans and SRS, SRS and ERS.	The organization will need to develop a mechanism for bi-directional traceability. SUMS and TASK may work for bi-directional traceability if there is a concerted effort during the launch/relaunch to line up the SUMS with requirements, but this normally is not an ideal solution. Bi-directional traceability is best accomplished with a requirements management tool.
Customer Interface and Planning role specifications, other role specifications	REQM SP 1.5	Identify inconsistencies between the project plans and work products and the requirements.	When requirements changes trigger replanning and relaunching, inconsistencies are documented and addressed in the changed plans (TASK, SCHED, SUMS, etc.).	Same caveat as 1.2 and 1.3 above.

TSP/PSP Reference	CMMI Feature	CMMI PA: REQM Requirements Management	Direct Artifact	Guidance
	REQM GG 2	The process is institutionalized as a managed process.		
	REQM GP 2.1	Establish and maintain an organizational policy for planning and performing the requirements management process.	Policy is not addressed in AIM.	This issue to be addressed by the Implementation Guide.
Scripts REQ, ANA, LAU, REL; form INV	REQM GP 2.2	Establish and maintain the plan for performing the requirements management process.	Scripts REQ and ANA, and LAU and REL, form INV	The requirements plan is embedded in the launch, launch prep, and the role of Customer Interface Manager.
Scripts LAU2, LAU6, TASK; form showing REQM tasks	REQM GP 2.3	Provide adequate resources for performing the requirements management process, developing the work products, and providing the services of the process.	Customer interface role plan from LAU3, LAU4, and LAU6, recorded in TASK & SCHEDULE	
Scripts PREPL/PREPR, LAU2; form TEAM (showing Customer Interface role)	REQM GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the requirements management process.	PREPL/PREPR, LAU2 role assignments, Team Leader, and Customer Interface role RSIM (Relevant Stakeholder Involvement Matrix)	
	REQM GP 2.5	Train the people performing or supporting the requirements management process as needed.	Aspects of REQM in TSP training OJT for Customer Interface Manager	After establishment of the PG the role of the PG Customer Interface Manager (CIM) will coordinate activities of the team CIM.
	REQM GP 2.6	Place designated work products of the requirements management process under appropriate levels of control.	LOGCI for SRS or equivalent The Support Manager role is responsible for CM for the project. The work products from the launch may be CIs in form LOGCI and placed under configuration control or they could be put under less formal control. The project notebook Typically, you would have to look at the CM system supported by the project or organization (a protected folder on a drive, or full CM with CVS).	Configuration and data management are planned during launch preparation, CM processes are observed and planning CIs are entered in form LOGCI.
Filled-in form WEEK (Customer Interface role report)	REQM GP 2.7	Identify and involve the relevant stakeholders of the requirements management process as planned.	RSIM (Relevant Stakeholder Involvement Matrix) for ANA, SRS Customer Interface Role	

TSP/PSP Reference	CMMI Feature	CMMI PA: REQM Requirements Management	Direct Artifact	Guidance
Filled-in form WEEK (Customer Interface role report)	REQM GP 2.8	Monitor and control the requirements management process against the plan for performing the process and take appropriate corrective action.	Filled-in WEEK forms showing Customer Interface role reports, replans, plans resulting from relaunches.	The launch and the weekly meetings form the basis for monitoring the REQM activities.
TSP Checkpoint	REQM GP 2.9	Objectively evaluate adherence of the requirements management process against its process description, standards, and procedures; address noncompliance.	Checkpoint report TSP coach involvement pre-launch (PREPL/PREPR filled out), during the launch (LAU meeting minutes) and after (LAUPM). See the role of the PG (Process Group) Customer Interface Manager. Coaching Manager report	The TSP Coach will perform a Checkpoint to evaluate process and work products During the launch, the coach guides process fidelity for REQM. As the project executes, the team leader, planning and process managers objectively evaluate. When the Process Group (PG) is formed the Coaching Manager role will objectively evaluate the launch process and artifacts for each launch.
Specification STATUS, Quarterly Review Checklist	REQM GP 2.10	Review the activities, status, and results of the requirements management process with higher level management and resolve issues.	TASK plans that show the REQM activities should be included in the customer interface role activities. These can be reviewed with upper management.	The STATUS specification does not address review of REQM activities explicitly; however, as a practical matter, these activities are typically included in TASK plans that are regularly reviewed.
Scripts REQ, ANA	REQM GP 3.1	Establish and maintain the description of a defined requirements management process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the launch processes, which are the main planning processes. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	See the PG Support Manager and PG Process Manager roles.
Project NOTEBOOK	REQM GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the requirements management process to support the future use and improvement of the organization's processes and process assets.	SRSs, ERSs, impact analyses, PIPs, and data contained in the project NOTEBOOK regarding requirements management activities The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.2.2 Requirements Development (RD)

The following table lists the elements of the Requirements Development (RD) process area employed in the AIM approach.

TSP/PSP Reference	CMMI Feature	CMMI PA: RD Requirements Development Description	Direct Artifact	Guidance
	RD SG 1	Stakeholder needs, expectations, constraints, and interfaces are collected and translated into customer requirements.	The Script ANA references ERS (Enhancement Requirement Study), MRE (Market Requirements Elicitation) and SRS(System Requirements Specification)	Appropriate development methodolog(ies) will need to be adopted by the organization. These methodologies will have their own artifacts that may need to be substituted for those referenced in the TSP+. TSP+ stresses the need for clear, understandable requirements as a basis for planning. The specific activities and artifacts generated will generally be site-specific. The launch meeting 1 preparation and script provide for the business objective and the customer/product objective to be given to the team. The team may then decide to plan for more elicitation and validation activities (before/during or after the launch) The TSP+ provides for the Customer Interface Manager role on the TSP+ team.
Scripts REQ and ANA	RD SP 1.1	Elicit stakeholder needs, expectations, constraints, and interfaces for all phases of the product life cycle.	Market requirements studies, minutes and other documentation from elicitation meetings, prototypes	Other locally defined forms of captured requirements are acceptable. TSP+ does not contain standard formats, templates, or examples for these items, or detailed methods for doing these.
Scripts REQ and ANA	RD SP 1.2	Transform stakeholder needs, expectations, constraints, and interfaces into customer requirements.	Software Requirements Specifications (SRS)	Other locally defined forms of transformed requirements (e.g., according to IEEE 830-1998) are acceptable. No standard format, template, examples, or detailed methods are given for the SRS.
	RD SG 2	Customer requirements are refined and elaborated to develop product and product-component requirements.		

TSP/PSP Reference	CMMI Feature	CMMI PA: RD Requirements Development Description	Direct Artifact	Guidance
Scripts REQ and ANA	RD SP 2.1	Establish and maintain product and product-component requirements, which are based on the customer requirements.	The TSP+ in Script ANA produces an Impact Analysis Report.	The form and content of the Impact Analysis Report is not specified in TSP+. Same comment as SP1.2. This level of the requirements hierarchy should be traceable from the lowest to the highest levels (ref REQM SP1.4).
Script HLD	RD SP 2.2	Allocate the requirements for each product component.	Impact Analysis Report	The form and content of the Impact Analysis Report are not specified in TSP+. Other locally defined forms of allocated requirements (e.g., UML) are acceptable. SUMS can be designed to help. No standard format, template, examples, or detailed methods are given for allocating requirements in the SDS.
Script HLD	RD SP 2.3	Identify interface requirements.	System Design Specification (SDS)	Same comment as SP2.2. No standard format, template, examples, or detailed methods are given for identifying interface requirements for the SDS.
	RD SG 3	The requirements are analyzed and validated, and a definition of required functionality is developed.		
Operational Specification Template (PSP) Scripts REQ and ANA	RD SP 3.1	Establish and maintain operational concepts and associated scenarios.	Filled-in Operational Specification Template (OST) from PSP, possibly part of the Software Design Specification (SDS)	Another form of operational scenario (e.g., UML use case) can and often does substitute for the OST.
Functional Specification Template (PSP)	RD SP 3.2	Establish and maintain a definition of required functionality.	Filled-in Functional Specification Template (FST), possibly part of the Software Design Specification (SDS) Functional Design Specification is from PSP	Other forms of functional specification (e.g., a defined local set of UML diagrams) can and often do substitute for the FST and SDS.
Scripts REQ and ANA	RD SP 3.3	Analyze the requirements to ensure that they are necessary and sufficient.	Filled-in TSP Inspection reports for SRS ERS, FST and OST are PSP concepts, so there may not be defect log entries from them.	"Necessary and sufficient" are part of the review/inspection process. TSP+ does not provide specific criteria to define "necessary and sufficient."

TSP/PSP Reference	CMMI Feature	CMMI PA: RD Requirements Development Description	Direct Artifact	Guidance
All LAU and REL scripts	RD SP 3.4	Analyze the requirements to balance stakeholder needs and constraints.	Form GOAL (documenting management and customer needs and constraints) and all alternative plans generated during the launch; form IRTL in the TSP Excel workbook documenting issue and risks associated with potentially conflicting needs and constraints; LAU9 presentation summarizing alternative plans	This activity occurs repeatedly on a project, and at a minimum is recorded in the management presentation in meeting 9 of the launch. If no single plan meets all stakeholder needs and constraints, alternative plans are developed and presented to management at that meeting. As a project progresses and requirements are developed and made specific, they interact with other stakeholder needs, and constraints and problems are resolved during relaunches.
Scripts LAU9, REQ, and ANA	RD SP 3.5	Validate requirements to ensure the resulting product will perform as intended in the user's environment.	The management presentation in meeting 9 validates management requirements. Customer requirements are validated by developing prototypes and reviewing SRS, results of elicitation activities. OST, ERS, and SDS documents (artifact is reviewed defect logs)	Specifications for SRS, ERS, OST and SDS documents should include validation criteria. There are no standard formats, templates, examples, or detailed implementation methods for any of these items.
	RD GG 2	The process is institutionalized as a managed process.		
	RD GP 2.1	Establish and maintain an organizational policy for planning and performing the requirements development process.	Policy will be specific to each organization.	Policy will be addressed by the implementation guide.
	RD GP 2.2	Establish and maintain the plan for performing the requirements development process.	Scripts REQ and ANA, and LAU and REL, form INV Launch preparation and checklist Task plan for RD tasks	RD activities can be part of launch preparation, as well as activities during the launch. RD activities can also be put into the task plans to be performed during the cycle.
	RD GP 2.3	Provide adequate resources for performing the requirements development process, developing the work products, and providing the services of the process.	Customer interface role plan from LAU3, LAU4, and LAU6, recorded in TASK & SCHEDULE	See the Customer Interface Manager role, senior management, and product management input to meeting 1. The launch process and the tasks and resources in the TSP plan.
	RD GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the requirements development process.	PREPL/PREPR, LAU2 role assignments, Team Leader and Customer Interface roles	

TSP/PSP Reference	CMMI Feature	CMMI PA: RD Requirements Development Description	Direct Artifact	Guidance
	RD GP 2.5	Train the people performing or supporting the requirements development process as needed.	On-the-job training provided to customer interface role by TSP Coach or Team Leader as an adjunct to the role description.	Elements of RD training are provided in Fundamentals and Advanced. Typical TSP teams augment RD/REQM processes with their own local knowledge.
	RD GP 2.6	Place designated work products of the requirements development process under appropriate levels of control.	LOGCI for SRS or equivalent The Support Manager role is responsible for CM for the project. The work products from the launch will be CIs in form LOGCI and placed under appropriate control. The project notebook Typically, this information would appear in the CM system supported by the project or organization (a protected folder on a drive, or full CM with CVS).	Configuration and data management are planned during launch preparation, CM processes are observed, and planning CIs are entered in form LOGCI.
	RD GP 2.7	Identify and involve the relevant stakeholders of the requirements development process as planned.	RSIM (Relevant Stakeholder Involvement Matrix) for ANA, SRS Role Assignment Matrix ROLEMX Customer Interface Role	
	RD GP 2.8	Monitor and control the requirements development process against the plan for performing the process and take appropriate corrective action.	Filled-in WEEK forms showing customer interface role reports, replans, plans resulting from relaunches	The launch and the weekly meetings form the basis for monitoring the RD activities.
	RD GP 2.9	Objectively evaluate adherence of the requirements development process against its process description, standards, and procedures, and address noncompliance.	Checkpoint report TSP Coach involvement pre-launch (PREPL/PREPR filled out), during the launch (LAU meeting minutes), and after (LAUPM)	The TSP Coach will perform a Checkpoint to evaluate process and work products. During the launch, the Coach guides process fidelity, including RD. As the project executes, the Team Leader, and Planning and Process managers objectively evaluate. When the Process Group (PG) is formed the Coaching Manager role will objectively evaluate the launch process and artifacts for each launch.

TSP/PSP Reference	CMMI Feature	CMMI PA: RD Requirements Development Description	Direct Artifact	Guidance
	RD GP 2.10	Review the activities, status, and results of the requirements development process with higher level management; resolve issues.	TASK plans that show the RD activities should be included in the Customer Interface role activities. These can be reviewed with upper management.	The STATUS specification does not address review of RD activities explicitly; however as a practical matter, these activities are typically included in TASK plans that are regularly reviewed.
	RD GP 3.1	Establish and maintain the description of a defined requirements development process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the launch processes, which are the main planning processes. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	See the PG Support Manager and PG Process Manager roles.
	RD GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the requirements development process to support the future use and improvement of the organization's processes and process assets.	SRSs, ERSs, impact analyses, PIPs, and data contained in the project NOTEBOOK regarding requirements management activities The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.2.3 Technical Solution (TS)

The following table lists the elements of the Technical Solution (TS) process area employed in the AIM approach.

TSP/PSP Reference	CMMI Feature	CMMI PA: TS Technical Solution	Direct Artifact	Guidance
	TS SG 1	Product or product-component solutions are selected from alternative solutions.		Appropriate development methodolog(ies) will need to be adopted by the organization. These methodologies will have their own artifacts that will need to be substituted for those referenced in the TSP+.
Design Manager role	TS SP 1.1	Develop alternative solutions and selection criteria.	The DAR script and form can be used in documenting the alternative solutions and selection criteria.	The Design Manager should ensure that alternative solutions are developed as appropriate. DAR activities should be planned for and tracked in the team's plan.
Design Manager role	TS SP 1.2	Select the product-component solutions that best satisfy the criteria established.	The DAR script and form can be used to identify the solution that best satisfies the established criteria. Tasks showing the plan and actual for implementing the best solution	See Current scripts REQ, ANA, and HLD that call for documenting the design in the ERS and/or SRS. DAR forms should be used to capture the reasoning behind solution selection.
	TS SG 2	Product or product component designs are developed.		
Scripts HLD, IMP Design Manager role	TS SP 2.1	Develop a design for the product or product component.	Engineering Requirements Specification (ERS) Software Design Specification (SDS) PSP design templates	Each organization must decide on design methodology with associated tools and artifacts. While the Design Manager role has explicit responsibility for design standards and procedures for the team, there is no guidance for these (the weaknesses), with the low-level exception of the PSP design templates. No standard format, template, examples, or detailed methods are given for the ERS or SDS.
Scripts HLD, IMP Design manager role	TS SP 2.2	Establish and maintain a technical data package.	ERS, SDS PSP design templates	Each organization must decide on design methodologies and artifacts for the technical data package. The Design Manager role will take the lead. The collection of filled-in templates at the appropriate level of the design comprises the technical data package. Above the level of the PSP design templates, there is no similarly detailed guidance. No standard format, template, examples, or detailed methods are given for the ERS or SDS.

TSP/PSP Reference	CMMI Feature	CMMI PA: TS Technical Solution	Direct Artifact	Guidance
Script HLD	TS SP 2.3	Design product-component interfaces using established criteria.	ERS	Each organization must decide on design methodologies. Script HLD calls for documenting "(hardware-) software-system interfaces" in the ERS, but there is no other guidance for capturing interfaces or establishing criteria for their design. No standard format, template, examples, or detailed methods are given for the ERS.
Support Manager role	TS SP 2.4	Evaluate whether the product components should be developed, purchased, or reused based on established criteria.	The DAR script and form can be used to document the evaluation criteria and resulting decision of whether the product components should be developed, purchased, or reused. This may also be addressed as part of the launch process, and thus captured in the STRAT and INV forms.	The Support Manager has explicit responsibility for advocating reuse, but there is no other guidance in this area. The DAR process should be used to evaluate the decision on whether to develop, purchase, or reuse components. This is partly addressed by the team's strategy developed during launch meeting 3. Depending on the development phase and the nature of the component, the responsibility associated with this evaluation could fall on either the support, design, or implementation managers.
	TS SG 3	Product components, and associated support documentation, are implemented from their designs.		
Script HLD, IMP Implementation Manager role	TS SP 3.1	Implement the designs of the product components.	Detailed designs (from higher levels of the product hierarchy), code (at the lowest levels), review logs, test cases, test results	There are no real problems here unless no design is produced, or a design is produced and the implementation fails to follow it.
Scripts DEV, ANA, and MAINT Script LAU3	TS SP 3.2	Develop and maintain the end-user documentation.	Preliminary User Manual (DEV), or changes to same (ANA and MAINT) Forms SUMS, TASK, LOGT, LOGD (entries for installation, user, and maintenance manuals) and final outputs from these activities	While there is no specific guidance in the scripts for developing and maintaining documentation, the TSP plans and the final results will speak for themselves. Documentation will show up in SUMS and tasks in the individual and team workbooks.
	TS GG 2	The process is institutionalized as a managed process.		
	TS GP 2.1	Establish and maintain an organizational policy for planning and performing the technical solution process.	Policy is not addressed in AIM.	This issue to be addressed by the Implementation Guide.

TSP/PSP Reference	CMMI Feature	CMMI PA: TS Technical Solution	Direct Artifact	Guidance
	TS GP 2.2	Establish and maintain the plan for performing the technical solution process.	Scripts HLD and IMP, and LAU and REL, form SUMS	See the Design Manager role activities and plan.
	TS GP 2.3	Provide adequate resources for performing the technical solution process, developing the work products, and providing the services of the process.	Design Manager role plan from LAU3, LAU4, and LAU6, recorded in TASK and SCHEDULE	Design activities during the launch and tasks in the plan.
	TS GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the technical solution process.	PREPL/PREPR, LAU2 role assignments, Team Leader, and Design Manager roles	See the Design Manager role.
	TS GP 2.5	Train the people performing or supporting the technical solution process as needed.	PSP training, as well as on-the-job training provided to Design Manager role by TSP Coach or Team Leader as an adjunct to the role description	Design templates from PSP training map fairly well to component-level technical solution requirements. Typical TSP teams augment HLD and IPM processes with their own local knowledge. There is no guidance or reference on alternative solutions or evaluation criteria.
	TS GP 2.6	Place designated work products of the technical solution process under appropriate levels of control.	LOGCI for SRS or equivalent The Support Manager role is responsible for CM for the project. The work products from the launch will be CIs in form LOGCI and placed under appropriate control. Other artifacts will be placed under informal control. The project notebook Typically, this information would appear in the CM system supported by the project or organization (a protected folder on a drive, or full CM with CVS).	Configuration and data management are planned during launch preparation. CM processes are observed and planning CIs are entered in form LOGCI.
Design Manager role	TS GP 2.7	Identify and involve the relevant stakeholders of the technical solution process as planned.	RSIM (Relevant Stakeholder Involvement Matrix) for ANA, SRS Role Assignment Matrix ROLEMX	Customer Interface role, Design Manager, and possibly the Team Leader interact with design stakeholders and report to the team weekly (and fill in WEEK forms).
	TS GP 2.8	Monitor and control the technical solution process against the plan for performing the process; and take appropriate corrective action.	Filled-in WEEK forms showing Design Manager role reports, replans, and plans resulting from relaunches	

TSP/PSP Reference	CMMI Feature	CMMI PA: TS Technical Solution	Direct Artifact	Guidance
	TS GP 2.9	Objectively evaluate adherence of the technical solution process against its process description, standards, and procedures; address noncompliance.	Checkpoint report TSP Coach involvement pre-launch (PREPL/PREPR filled out), during the launch (LAU meeting minutes) and after (LAUPM)	The TSP Coach will perform a Checkpoint to evaluate process and work products. During the launch, the Coach guides process fidelity including TS. As the project executes, the Team Leader, and Planning and Process Managers objectively evaluate. When the Process Group (PG) is formed the Coaching Manager role will objectively evaluate the launch process and artifacts for each launch.
	TS GP 2.10	Review the activities, status, and results of the technical solution process with higher level management ;resolve issues.	TASK plans that show the TS activities should be included in the Design Manager role activities. These can be reviewed with upper management.	The STATUS specification does not address review of TS activities explicitly; however as a practical matter, TS activities are typically included in TASK plans that are regularly reviewed.
	TS GP 3.1	Establish and maintain the description of a defined technical solution process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the launch processes, which are the main planning processes. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	See the PG Support Manager and PG Process Manager roles.
	TS GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the technical solution process to support the future use and improvement of the organization's processes and process assets.	SRSs, ERSs, impact analyses, PIPs, and data contained in the project NOTEBOOK regarding requirements management activities The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.2.4 Product Integration (PI)

The following table lists the elements of the Product Integration (PI) process area employed in the AIM approach.

TSP/PSP Reference	CMMI Feature	CMMI PA: PI Product Integration	Direct Artifact	Guidance
	PI SG 1	Preparation for product integration is conducted.		Appropriate development methodolog(ies) will need to be adopted by the organization. These methodologies will have their own artifacts that may need to be substituted for those referenced in the TSP+ and this document.
Script HLD, TEST, TEST2 Test manager role	PI SP 1.1	Determine the product-component integration sequence.	Integration plan as described in TEST2	No template for the integration plan is provided.
Script LAU3	PI SP 1.2	Establish and maintain the environment needed to support the integration of the product components.	Scripts LAU3 and TEST2, and the Support Manager role description. Site specific artifacts regarding environment	The Support Manager role should have responsibility for ensuring that an adequate integration environment is available when needed. Scripts LAU3 and TEST2, and the Support Manager role description, should describe explicitly the integration environment. While the integration environment is not called out explicitly, it is necessary to the project and will be addressed by the Test Manager role and the Support Manager role.
Script HLD, TEST, TEST2 Test Manager role	PI SP 1.3	Establish and maintain procedures and criteria for integration of the product components.	Integration plan as described in TEST2	No template is provided.
	PI SG 2	The product component interfaces, both internal and external, are compatible.		
Script HLD, TEST, TEST2 Test Manager role	PI SP 2.1	Review interface descriptions for coverage and completeness.	Results of integration plan review as described in Script TEST2 Interfaces specifically addressed in TEST2 step 2 in the integration plan	Refer to TS SP 2.3, which calls for creation of interface descriptions. The expectation is that interfaces are described and inventoried. No template is provided.

TSP/PSP Reference	CMMI Feature	CMMI PA: PI Product Integration	Direct Artifact	Guidance
Scripts REQ, HLD, TEST2	PI SP 2.2	Manage internal and external interface definitions, designs, and changes for products and product components.	Engineering Requirements Specification (ERS)	The organization will need to make a decision about which design methodologies to employ. The handling of interfaces should be made concise, with clear identification of artifacts in order to establish clear CMMI compliance. Currently, no template, specification, or criteria for the ERS and SDS are in TSP+. Also, there is no particular direction for handling interface changes, nor is there any way to know (e.g., through an index or inventory) what all the interfaces are or where they reside.
	PI SG 3	Verified product components are assembled and the integrated, verified, and validated product is delivered.		
Scripts IMP6, TEST, TEST1, TEST2 Form TESTLOG	PI SP 3.1	Confirm, prior to assembly, that each product component required to assemble the product has been properly identified and functions according to its description, and that the product-component interfaces comply with the interface descriptions.	Filled-in TESTLOG showing unit and build tests run, defect logs showing component defects in UT or earlier, time logs of relevant activities (especially IMP6 activities), PSP test reports, the Integration Test Package	The organization must adopt appropriate methodologies here. The TSP+ has the following that may be used as a partial solution: INS script, especially in the Inspection Briefing, could list interfaces as a focus area of a design inspection. TSP scripts do not explicitly require PSP Test Reports (in IMP6) or the PSP design templates (in IMP) that would completely specify functions and interfaces, and confirmations thereof. These artifacts are likely to be weak in this area, as there are no clear direct artifacts, especially regarding interfaces. The Integration Test Package (TEST2) is not well defined.

TSP/PSP Reference	CMMI Feature	CMMI PA: PI Product Integration	Direct Artifact	Guidance
Script TEST2	PI SP 3.2	Assemble product components according to the product integration sequence and available procedures.	Integration Plan, Integration Test Package	The organization must follow its procedures and methodology. The TSP+ provides a partial solution, however, again, there is a need for templates for these artifacts. Neither the Integration Plan nor the Integration Test Package, referenced in script TEST2, are well defined.
Script IMP6, TEST2	PI SP 3.3	Evaluate assembled product components for interface compatibility.	Integration Plan, Integration Test Package	The organization must adopt appropriate methodologies here. The TSP+ may provide a partial solution, however, again, there is a need for templates. Also, IMP6 specifies an interface test, but there is no clear guidance for structuring or recording test results. These artifacts are likely to be weak in this area, as there are no clear direct artifacts, especially regarding interfaces. Neither the Integration Plan nor the Integration Test Package, referenced in script TEST2, are well defined.
Scripts TEST1, TEST2, TEST3	PI SP 3.4	Package the assembled product or product component and deliver it to the appropriate customer.	Built, integrated, or system-tested product or components in the configuration management system Time and Defect Logs showing that the TEST scripts have been executed	This could be implemented differently on every project and in every organization. No specific criteria currently exist for customer delivery.
	PI GG 3	The process is institutionalized as a defined process.		
	PI GP 2.1	Establish and maintain an organizational policy for planning and performing the product integration process.	No policies in TSP	The Implementation Guide will help address this.
	PI GP 2.2	Establish and maintain the plan for performing the product integration process.	Script TEST2, form SUMS, form TASK	PI activities should be tasks in the plan.
	PI GP 2.3	Provide adequate resources for performing the product integration process, developing the work products, and providing the services of the process.	Specific tasks in individual and consolidated work plans from LAU3, LAU4, and LAU6, recorded in TASK & SCHEDULE	PI activities and resources will be in the individual, team, and role plans, including the Test Manager and Support Manager roles.

TSP/PSP Reference	CMMI Feature	CMMI PA: PI Product Integration	Direct Artifact	Guidance
	PI GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the product integration process.	PREPL/PREPR, LAU2 role assignments, Team Leader and Test, Design, and Implementation roles	See the team leader and test, design, and implementation roles.
	PI GP 2.5	Train the people performing or supporting the product integration process as needed.	PSP training, as well as on-the-job training, provided to role managers for product integration by TSP Coach or Team Leader as an adjunct to the role description	There is no guidance or reference on specific training in integration practices.
	PI GP 2.6	Place designated work products of the product integration process under appropriate levels of control.	LOGCI for integration work products The Support Manager role is responsible for CM for the project. The work products from the launch will be CIs in form LOGCI and placed under appropriate control. Other artifacts will be placed under informal control. The project notebook Typically, this information would appear in the CM system supported by the project or organization (a protected folder on a drive, or full CM with CVS).	Configuration and data management are planned during launch preparation. CM processes are observed and planning CIs are entered in form LOGCI.
Relevant role managers (Design, Test, Implementation) See PIP ALL-2.	PI GP 2.7	Identify and involve the relevant stakeholders of the product integration process as planned.	RSIM (Relevant Stakeholder Involvement Matrix) for ANA, SRS, other appropriate work products Role Assignment Matrix ROLEMX	The Customer Interface role, Design Manager, Test Manager, and possibly the team leader interact with stakeholders and report to the team weekly (filled-in WEEK forms).
	PI GP 2.8	Monitor and control the product integration process against the plan for performing the process and take appropriate corrective action.	Filled-in WEEK forms showing role reports and integration tasks, replans, and plans resulting from relaunches	

TSP/PSP Reference	CMMI Feature	CMMI PA: PI Product Integration	Direct Artifact	Guidance
	PI GP 2.9	Objectively evaluate adherence of the product integration process against its process description, standards, and procedures; address noncompliance.	Checkpoint report TSP Coach involvement pre-launch (PREPL/PREPR filled out), during the launch (LAU meeting minutes) and after (LAUPM)	The TSP Coach will perform a Checkpoint to evaluate process and work products. During the launch, the Coach guides process fidelity, including PI. As the project executes, the Team Leader and Planning and Process Managers objectively evaluate. When the Process Group (PG) is formed the Coaching Manager role will objectively evaluate the launch process and artifacts for each launch.
	PI GP 2.10	Review the activities, status, and results of the product integration process with higher level management ; resolve issues.	TASK plans that show the PI activities included in various role and team member activities. These can be reviewed with upper management.	The STATUS specification does not address review of PI activities explicitly; however, as a practical matter, PI activities are typically included in TASK plans that are regularly reviewed.
	PI GP 3.1	Establish and maintain the description of a defined product integration process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the processes, scripts, and forms. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	See the PG Support Manager and PG Process Manager roles.
	PI GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the product integration process to support the future use and improvement of the organization's processes and process assets.	Actual integration plans, PIPs, and data contained in the project NOTEBOOK regarding integration activities SRSs, ERSs, impact analyses, PIPs, and data contained in the project NOTEBOOK regarding requirements management activities The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.2.5 Verification (VER)

The following table lists the elements of the Verification (VER) process area employed in the AIM approach.

PSP/TSP Reference	CMMI Feature	CMMI PA: VER Verification Description	Direct Artifact	Guidance
	VER SG 1	Preparation for verification is conducted.		Appropriate development methodolog(ies) will need to be adopted by the organization. These methodologies will have their own artifacts that will need to be substituted for those referenced in the TSP+. The engineering process areas will generally be a hybrid of those in AIM and the appropriate methods for the domain and the project.
Scripts REQ, HLD, IMP, IMIP6	VER SP 1.1	Select the work products to be verified and the verification methods that will be used for each.	Filled-in TASK plans showing review, inspection, and/or test activities for each specific work product Also in test plans, system test plan, integration test plan, and acceptance test plan where appropriate	AIM and TSP+ take a very rigorous approach to verification. While there may appear to be no distinct selection process to determine which work products are subjected to which verification methods, the selection is embedded with the choice of processes (scripts) applied to each work product. Verification and/or test activities are part of the process. The selection of work products and methods are developed by the team, with the Coach, Process Manager, and Quality Manager. Work products (e.g., SRS, ERS, SDS, components, and test and integration plans) and their associated defined processes specify the types of verification methods applied to each. The verification activities then become tasks in an individual's TASK list. Note: The TSP Excel tool autofilter can create a list of all TASK plan entries of a given type (e.g., review, inspection, test).
Script LAU3, Test and Support Manager role specifications	VER SP 1.2	Establish and maintain the environment needed to support verification.	Filled-in form INV as called for in LAU3 steps 8 (development tools and facilities); individuals' TASK plans and LOGT entries related to this; test plans that document the environment	The test and support roles have responsibility for specifying and building/obtaining the verification environment as part of the overall development environment (which *is* explicitly called out). There is no explicit direction for establishing the verification environment in the test scripts. Look to the Quality and Support Manager roles and responsibilities.

PSP/TSP Reference	CMMI Feature	CMMI PA: VER Verification Description	Direct Artifact	Guidance
Scripts TESTx, REQ, HLD, IMP, IMP6	VER SP 1.3	Establish and maintain verification procedures and criteria for the selected work products.	Unit test plans, build plans, integration plans, system test plan	The scripts provide directives for establishing verification procedures and criteria. However, template or detailed criteria for build, integration, and system test plans are not provided. The organization and Coach will need to augment what is in TSP+.
Quality Manager role specification	VER SG 2	Peer reviews are performed on selected work products.	Individual and team plans include tasks for peer reviews.	The TSP quality manager role has explicit responsibility to prepare, conduct, and perform data analysis of peer reviews (script and form INS).
Scripts LAU5, INS Quality Manager role specification	VER SP 2.1	Prepare for peer reviews of selected work products.	SUMP and SUMQ (plans and actuals for inspection yields, defects, defect densities); inspection preparation activities reflected in TASK plans, LOGT entries	LAU5 produces the quality plan (SUMP and SUMQ), which plans and later tracks the execution and effectiveness of all similar (REQ, HLD, DLD, CODE) reviews. The first three steps of script INS are preparation.
Script INS Quality Manager role specification	VER SP 2.2	Conduct peer reviews on selected work products and identify issues resulting from the peer review.	Filled-in INS forms; TASK plans, LOGT and LOGD entries related to these activities	Reviews and inspections along with results are a very important component to the performance of TSP+.
Scripts INS, PM Quality Manager role specification	VER SP 2.3	Analyze data about preparation, conduct, and results of the peer reviews.	Filled-in INS forms, specifically capture/recapture calculations; SUMP/SUMQ quality data; PM results dealing with inspection effectiveness; filled-in WEEK form with Quality Manager report on previous week's inspection activities.	TSP+ provides postmortem structure for analyzing conduct and results.
	VER SG 3	Selected work products are verified against their specified requirements.		
Scripts TESTx, REQ, HLD, IMP, IMP6 Form TESTLOG Quality and Test Manager role specifications	VER SP 3.1	Perform verification on the selected work products.	Filled-in TESTLOG, unit test results, build results, integration results, system test results; LOGT and LOGD entries resulting from these activities	There is no standard TSP+ template or format for test results beyond the TESTLOG.
Script PM Quality and Test Manager role specifications	VER SP 3.2	Analyze the results of all verification activities.	Filled-in WEEK forms with Test and Quality role reports; SUMP/SUMQ analyses; PM results	The TSP+ provides postmortem structure for analyzing conduct and results.

PSP/TSP Reference	CMMI Feature	CMMI PA: VER Verification Description	Direct Artifact	Guidance
	VER GG 2	The process is institutionalized as a defined process.		
See PIP ALL-1.	VER GP 2.1	Establish and maintain an organizational policy for planning and performing the verification process.	Policy is not addressed in AIM.	This issue to be addressed by the Implementation Guide.
Script LAU3	VER GP 2.2	Establish and maintain the plan for performing the verification process.	Scripts TESTx, REQ, HLD, IMP, IMP6, form SUMS, form TASK	Verification activities are tasks in the individual and team plans. In addition to role plans, the Quality Manager, Process Manager, and Support Manager may have verification-related activities.
See PIP ROLE-1.	VER GP 2.3	Provide adequate resources for performing the verification process, developing the work products, and providing the services of the verification process.	Specific tasks in individual and consolidated work plans from LAU3, LAU4, and LAU6, recorded in TASK and SCHEDULE	The TSP+ planning process includes verification activities and resources.
See PIP ROLE-1.	VER GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the verification process.	PREPL/PREPR, LAU2 role assignments, Team Leader, and Test and Quality Manager roles	See the Quality Manager role, with support from the coach and the process manager.
	VER GP 2.5	Train the people performing or supporting the verification process as needed.	PSP training for personal reviews is directly applicable.	PSP training provides specific unit test instruction and individual and peer review. However, further aspects of testing are not addressed. There is no guidance or reference on specific training in integration, system, or acceptance test practices.

PSP/TSP Reference	CMMI Feature	CMMI PA: VER Verification Description	Direct Artifact	Guidance
See PIP CM-1.	VER GP 2.6	Place designated work products of the verification process under appropriate levels of control.	LOGCI for items under formal configuration management The Support Manager role is responsible for CM for the project. The work products from the launch will be CIs in form LOGCI and placed under appropriate control. Other artifacts will be placed under informal control. The project notebook Typically, this information would appear in the CM system supported by the project or organization (a protected folder on a drive, or full CM with CVS).	Configuration and data management are planned during launch preparation. CM processes are observed and planning CIs are entered in form LOGCI.
Relevant role managers (Design, Test, Implementation) See PIP ALL-2	VER GP 2.7	Identify and involve the relevant stakeholders of the verification process as planned.	RSIM (Relevant Stakeholder Involvement Matrix) Role Assignment Matrix ROLEMX	See the Quality manager role
Test and Quality Manager role specifications	VER GP 2.8	Monitor and control the verification process against the plan for performing the process and take appropriate corrective action.	Filled-in WEEK forms showing quality manager role reports, replans, plans resulting from relaunches	See the Individual weekly status review, quality manager role report
	VER GP 2.9	Objectively evaluate adherence of the verification process against its process description, standards, and procedures; address noncompliance.	Checkpoint report and postmortem report The Coach, Team Lead, and Process Manager review Quality Manager reports and verification results.	The TSP Coach will perform a Checkpoint to evaluate process and work products. During the launch, the Coach guides process fidelity, including VER. As the project executes, the Team Leader, and Planning and Process Managers objectively evaluate. The Coach will perform a formal objective evaluation in the Checkpoint and the PM. When the Process Group (PG) is formed the Coaching Manager role will objectively evaluate the launch process and artifacts for each launch.
Quarterly Review Checklist and add VER focus	VER GP 2.10	Review the activities, status, and results of the verification process with higher level management ; resolve issues.	Weekly and management status reports TASK plans that show the verification activities included in various role and team member activities. These can be reviewed with upper management.	Verification activities are critical to quality and cost of quality. These activities and results normally are of particular interest to management.

PSP/TSP Reference	CMMI Feature	CMMI PA: VER Verification Description	Direct Artifact	Guidance
	VER GP 3.1	Establish and maintain the description of a defined verification process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the processes, scripts, and forms. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	See the PG Support Manager and PG Process Manager roles.
	VER GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the verification process to support the future use and improvement of the organization's processes and process assets.	NOTEBOOK regarding verification activities The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.2.6 Validation (VAL)

The following table lists the elements of the Validation (VAL) process area employed in the AIM approach.

TSP/PSP Reference	CMMI Feature	CMMI PA: VAL-Validation Description	Direct Artifact	Guidance
	VAL SG 1	Preparation for validation is conducted.		Appropriate development methodolog(ies) will need to be adopted by the organization. These methodologies will have their own artifacts that will need to be substituted for those referenced in TSP+.
Team Leader and Customer Interface role specifications; scripts REQ and ANA	VAL SP 1.1	Select products and product components to be validated and the validation methods that will be used for each.	Prototypes to resolve important specification questions	There are multiple places throughout the TSP+ life cycle where validation selection could take place, but none are currently specified. For example, in REQ or ANA, the SRS could record the selection, or in TEST3 the selection could be made while developing the system test procedures (probably the selection is made *de facto* here in the absence of any other choices). A usability test is an example of a validation selection, which can occur early during prototype testing or late during system usability tests. The organization should make clear how products/components are selected for validation and the validation method chosen.
Script LAU3, Customer Interface and Support Role Manager specifications	VAL SP 1.2	Establish and maintain the environment needed to support validation.	Filled-in form INV as called for in LAU3 steps 8 (development tools and facilities); individuals' TASK plans and LOGT entries related to this; test plans that document the validation environment	The Customer Interface and Support roles have responsibility for specifying and building/obtaining the validation environment as part of the overall development environment (which *is* explicitly called out). There is no explicit direction for establishing the validation environment.

TSP/PSP Reference	CMMI Feature	CMMI PA: VAL-Validation Description	Direct Artifact	Guidance
Scripts DEV, MAINT, REQ, ANA, TEST3 Customer Interface Manager and Test Manager role specifications	VAL SP 1.3	Establish and maintain procedures and criteria for validation.	System Test Plan (called for in TEST3) including usability tests	The Customer Interface Manager clearly has responsibility for advocating the customer point of view, while the Test Manager has responsibility for developing and executing these tests internally. External tests (e.g., on-site customer acceptance tests) probably would reside with the Customer Interface role, or perhaps the Team Leader. There is no standard template or criteria for validation test procedures, nor is there specific guidance for the Customer Interface and Test Managers to develop such procedures and criteria.
	VAL SG 2	The product or product components are validated to ensure that they are suitable for use in their intended operating environment.		Two TSP activities, prototyping and system testing, seem to address the intent of validation. However, the direction in the existing TSP process assets is sparse and scattered.
Scripts REQ, ANA, TEST3 Forms TESTLOG, LOGT, LOGD, TASK Customer Interface and Test Manager role specifications	VAL SP 2.1	Perform validation on the selected products and product components.	Prototypes used to validate important specification questions; outputs of other validation activities identified by the Customer Interface role	Direction in the specified scripts is extremely high level, and only partially addresses validation issues in the form of usability tests. There is no standard template or criteria for recording prototype results or outcomes. There is no clear delineation in TESTLOG between validation and other kinds of system tests.
Scripts REQ, ANA, TEST3, WEEK, PM Customer Interface Manager and Test role specification.	VAL SP 2.2	Analyze the results of the validation activities.	PM results WEEK form – the Customer Interface Role manager reports on the status of requirements development	The weekly team meeting and postmortem activities, while clearly providing a venue for such analyses, provide no specific guidance to the relevant role managers. There is no standard template or criteria for validation data analysis.

TSP/PSP Reference	CMMI Feature	CMMI PA: VAL-Validation Description	Direct Artifact	Guidance
	VAL GG 3	The process is institutionalized as a defined process.		
	VAL GP 2.1	Establish and maintain an organizational policy for planning and performing the validation process.	No policies in TSP+	This will be addressed in the AIM implementation guide.
Script LAU3	VAL GP 2.2	Establish and maintain the plan for performing the validation process.	Scripts DEV, MAINT, REQ, ANA, TEST3, form SUMS, form TASK	The validation activities that are identified during the launch have an established and maintained plan.
	VAL GP 2.3	Provide adequate resources for performing the validation process, developing the work products, and providing the services of the process.	Specific tasks in individual and consolidated work plans from LAU3, LAU4, and LAU6, recorded in forms INV, TASK & SCHEDULE	Validation activities will be in the individual task plans, including the role plan.
	VAL GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the validation process.	PREPL/PREPR, LAU2 role assignments, Team Leader and Customer Interface Manager role	
	VAL GP 2.5	Train the people performing or supporting the validation process as needed.	PSP training, as well as on-the-job training provided to role managers for validation by TSP Coach or Team Leader as an adjunct to the role description	There is no guidance or reference on specific training in validation practices in the TSP+.
	VAL GP 2.6	Place designated work products of the validation process under appropriate levels of control.	LOGCI for items under formal configuration management The Support Manager role is responsible for CM for the project. The work products from the launch will be CIs in form LOGCI and placed under appropriate control. Other artifacts will be placed under informal control. The project notebook Typically, this information would appear in the CM system supported by the project or organization (a protected folder on a drive, or full CM with CVS).	Configuration and data management are planned during launch preparation. CM processes are observed and planning CIs are entered in form LOGCI.
Relevant role managers (Customer Interface) See PIP ALL-2.	VAL GP 2.7	Identify and involve the relevant stakeholders of the validation process as planned.	RSIM (Relevant Stakeholder Involvement Matrix) Role Assignment Matrix ROLEMX	See the Quality Manager role.
	VAL GP 2.8	Monitor and control the validation process against the plan for performing the process and take appropriate corrective action.	Filled-in WEEK forms showing Quality Manager role reports, replans, plans resulting from relaunches	See individual weekly status review, quality manager role report.

TSP/PSP Reference	CMMI Feature	CMMI PA: VAL-Validation Description	Direct Artifact	Guidance
	VAL GP 2.9	Objectively evaluate adherence of the validation process against its process description, standards, and procedures; address noncompliance.	Checkpoint report and postmortem report The Coach, Team Lead, and Process Manager review Customer Interface and Quality Manager reports and validation results	The TSP Coach will perform a Checkpoint to evaluate process and work products. During the launch, the coach guides process fidelity, including VAL. As the project executes, the Team Leader, and Planning and Process Managers objectively evaluate. The Coach will perform a formal objective evaluation in the checkpoint and the PM. When the Process Group (PG) is formed, the Coaching Manager role will objectively evaluate the launch process and artifacts for each launch.
	VAL GP 2.10	Review the activities, status, and results of the validation process with higher level management ; resolve issues.	TASK plans that show the VAL activities included in various role and team member activities. These can be reviewed with upper management.	VAL activities are typically included in TASK plans that are regularly reviewed.
	VAL GP 3.1	Establish and maintain the description of a defined validation process.	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the processes, scripts, and forms. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	See the PG Support Manager and PG process manager roles.
	VAL GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the validation process to support the future use and improvement of the organization's processes and process assets.	NOTEBOOK regarding verification activities. The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.3 Process Management Processes

3.3.1 Organizational Process Focus (OPF)

The following table lists the elements of the Organizational Process Focus (OPF) process area employed in the AIM approach.

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Focus Description	Direct Artifact	Guidance
	OPF SG 1	Strengths, weaknesses, and improvement opportunities for the organization's processes are identified periodically and as needed.		TSP+ now includes provisions for the formation and management of the Process Group (PG).
POPS, POPS7, Process Group Roles and Responsibilities, LAU1	OPF SP 1.1	Establish and maintain the description of the process needs and objectives for the organization.	It is management's responsibility to determine the needs and objectives of all TSP teams, including the PG. Management presents needs and objectives to the team during meeting 1, thus the organization's process needs and objectives should be documented in management's meeting 1 presentation to the PG, as it is the PG's responsibility to change, establish, maintain, and improve the organization's stated needs and objectives.	In some cases the PG Team Lead may help management in the development and articulation of the organization's process needs and objectives for the organization.
Process Group Roles and Responsibilities	OPF SP 1.2	Appraise the organization's processes periodically and as needed to maintain an understanding of its strengths and weaknesses.	Appraisal results Checkpoint, postmortems The PG Team is responsible for periodically appraising the organizations processes.	Appropriate classes of SCAMPIs should be a feature of the AIM strategy, necessarily culminating in a SCAMPI A if a level rating is desired.

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Focus Description	Direct Artifact	Guidance
PIP, LOGPIP, LOGSPDR, SPDE, PM	OPF SP 1.3	Identify improvements to the organization's processes and process assets.	Filled-in PIPs (Process Improvement Proposals) Completed Process Deviation Evaluations (SPDE) The PG Team Lead has the responsibility to Identify priority areas for improvement.	The TSP emphasizes this from a personal and project perspective. The Process Manager is responsible at the team level for processing PIPs (Process Improvement Proposals) and otherwise focusing on team process improvements. The PG Team Lead and the PG Process Manager extends this imperative to the organization level. As part of the team postmortem (PM) process the team is responsible for evaluating all approved Standard Process Deviation Request against the OSSP and providing this evaluation (SPDE) to the process group.
	OPF SG 2	Process actions that address improvements to the organization's processes and process assets are planned and implemented.		
POPS, POPS7	OPF SP 2.1	Establish and maintain process action plans to address improvements to the organization's processes and process assets.	The PG TSP plan will include actions to address improvements to the organizations process assets. See POPS 7 for establishing the PG.	The PG will have a TSP plan that will include the action plans for improving the organization's processes and process assets.
PSP and TSP training records; TSP launch preparation artifacts (e.g., meeting minutes, team assignment memos) See PIP OPF-2.	OPF SP 2.2	Implement process action plans.	The PG TSP plan and tool will show the implementation of the action plan. The PIP evaluations	Typically there are many artifacts resulting from a particular TSP implementation. PIP evaluation and implementation (e.g., changing process elements via the ODP process) should be part of the PG team and handled as a TSP project.
	OPF SG 3	The organizational process assets are deployed across the organization and process-related experiences are incorporated into the organizational process assets.		

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Focus Description	Direct Artifact	Guidance
PREPT, LAU3, Process Manager Roles and Responsi-bilities	OPF SP 3.1	Deploy organiza-tional process assets across the organization.	Checkpoint for each project will evaluate the process and assets used for the project. Each project will tailor the OSSP, creating the PSSP (Project Specific Software Process). The PSSP will be in the project notebook. (CMMI calls this the PDP projects defined process.) Deviations request and approved waivers will be recorded in form SPDR. The Team TSP plan will reflect the tasks and work products consistent with the PSSP. During team preparations for a launch or relaunch the team will either estab-lish the project's set of standard processes from the current OSSP, or if a PSSP already exists, re-view any changes or up-dates to the OSSP since the last launch or relaunch for incorporation into the existing PSSP.	The innovations are deployed across the organization project by project in the launch and relaunch process. The process manager role for each project is responsible for ensuring that the project uses the appropriate process and process assets. LAU3 steps 6 and 7.
PREPT, LAU3, CYCLE	OPF SP 3.2	Deploy the organi-zation's set of standard processes to projects at their startup and deploy changes to them as appropriate throughout the life of each project.	During each launch (or re-launch) in LAU3 steps 6 and 7, the process man-ager leads the team in creating the development process (PSSP). The Process Manager will also update the processes if changes must be made between launches.	In general, changes to the PSSP will only occur at the beginning of each TSP cycle. They may change within a cycle, but this usually only oc-curs if the current process is determined to be unusable.
Checkpoint	OPF SP 3.3	Monitor the im-plementation of the organization's set of standard processes and use of process assets on all projects.	TSP Checkpoint results The role of the PG Coach-ing Manager is responsible for reviewing Checkpoint results from all the coach-es and reviewing launch artifacts. The PG coach will report results. The PG Team Lead re-views the Process Manag-er reports from WEEK minutes. PM results for each project for proper implementation	

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Focus Description	Direct Artifact	Guidance
	OPF SP 3.4	Incorporate process-related work products, measures, and improvement information derived from planning and performing the process into the organizational process assets.	The PAL (Process Asset Library)	The PG role of Process Asset and Data Repository Manager is responsible for establishing and maintaining the PAL.
	OPF GG 2	The process is institutionalized as a managed process.		
	OPF GP 2.1	Establish and maintain an organizational policy for planning and performing the organizational process focus process.	Policy will be specific to each organization.	This issue to be addressed by the Implementation Guide.
POPS, Process Group Roles and Responsibilities Process Manager Roles and Responsibilities	OPF GP 2.2	Establish and maintain the plan for performing the organizational process focus process.	The PG TSP will include OPF activities, the Process Manager role, the Support Manager role, the Coach role, the Team Lead role, and the Process Asset and Data Repository Manager role. In addition to the PG the Process Managers for each team will ensure that the appropriate process and process assets are employed for the project.	The major responsibility for OPF resides with the PG and the specialized roles. The PG plan will be monitored and controlled using the PMC process.
LAU	OPF GP 2.3	Provide adequate resources for performing the organizational process focus, developing the work products, and providing the services of the process.	The PG TSP Plan	The TSP launch and plan for the PG provides for adequate resources for the OPF activities.
RSIM, SRAM	OPF GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the organizational process focus.	The roles in the PG plan and the SRAM (Stakeholder Role Assignment Matrix)	The PG role specifications and the SRAM for the PG will identify OPF responsibility.

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Focus Description	Direct Artifact	Guidance
POPS, TRNM, LOGTRNM	OPF GP 2.5	Train the people performing or supporting the organizational process focus as needed.	TRNM (Training Matrix) and LOGTRNM (Team Member Training Log) and SRAM	
LOGCI	OPF GP 2.6	Place designated work products of the organizational process focus under appropriate levels of control.	LOGCI (Configuration Item Log) will contain the OPF work products and appropriate levels of control; see CM PA.	.
SRAM, RSIM, LAU	OPF GP 2.7	Identify and involve the relevant stakeholders of the organizational process focus as planned.	PG project notebook PG TSP Plan RSIM (Relevant Stakeholder Involvement Matrix)	
STATUS, WEEK	OPF GP 2.8	Monitor and control the organizational process focus against the plan for performing the process and take appropriate corrective action.	Filled-in WEEK form and weekly meeting minutes from the PG team plan Minutes from PG management reviews	
CHECKPOINT, CYCLE	OPF GP 2.9	Objectively evaluate adherence of the organizational process focus against its process description, standards, and procedures, and address noncompliance.	Checkpoint for the PG team	The PG functions as a TSP team so there will be a launch and a TSP plan. In addition there will be a coach, Checkpoint review, and postmortem review. It is assumed that the PG coach will have a direct line to management in order to help maintain objectivity.
STATUS	OPF GP 2.10	Review the activities, status, and results of the organizational process focus with higher level management ; resolve issues.	PG Management meeting minutes	The PG will conduct status reviews, just like any other TSP project.
Process Group roles and responsibilities	OPF GP 3.1	Establish and maintain the description of a defined organizational process focus.	Individual and team plans include tasks for peer reviews	The PG Process Manager working with the PG Support Manager, and PG Process Asset and Data Repository Manager will establish and maintain the description of the organizational process focus.

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Focus Description	Direct Artifact	Guidance
Process Group roles and responsibilities	OPF GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the organizational process focus to support the future use and improvement of the organization's processes and process assets.	The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group. This includes appropriate work products and measurement results and improvement information for the OPF process.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager who will be responsible for the design and development of the PAL

3.3.2 Organizational Process Definition + IPPD (OPD)

The following table lists the elements of the Organizational Process Definition + IPPD (OPD) process area employed in the AIM approach.

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Definition + IPPD	Direct Artifact	Guidance
	OPD SG 1	A set of organizational process assets is established and maintained.		
POPS, Process Group roles and responsibilities	OPD SP 1.1	Establish and maintain the organization's standard processes.	The OSSP (Organization Set of Standard Processes) The PG Process manager and the PG Support Manager are responsible for establishing and maintaining the OSSP. TSP Process Notebook TSP Launch Preparation Package	The direct artifact should be some form of the organization's TSP Process notebooks. This forms the organization's OSP. Projects are tailored from this notebook. CMMI appraisers should review the TSP process notebooks to include scripts, forms, templates, checklists, and specifications.
CYCLD, DEV, MAINT	OPD SP 1.2	Establish and maintain descriptions of the life-cycle models approved for use in the organization.	The OSSP Script CYCLE, DEV, and MAINT in the Organizational Process Notebook(s)	For standard TSP these are described in scripts CYCLE, DEV, and MAINT. Organizations may have more life cycles (e.g., Agile, RUP) reflected in the OSSP or the project notebook(s). A CMMI start-up package should include documentation of the existing life cycle(s).
PSSPE	OPD SP 1.3	Establish and maintain the tailoring criteria and guidelines for the organization's set of standard processes.	The PG Process Manager is responsible for the OSSP, including Tailoring Guidelines. A minimum set of tailoring criteria is included as part of script PSSPE (Projects Set of Standard Processes Establishment). The PG may determine that additional criteria are needed in order to meet the organizational process needs and objectives.	
Process Group roles and responsibilities	OPD SP 1.4	Establish and maintain the organization's measurement repository.	The organization's Measurement Repository TSP workbooks (filled-in) PM results, Checkpoints	The PG role of Process Asset and Repository Manager is responsible for setting up the Measurement repository.
Process Group roles and responsibilities	OPD SP 1.5	Establish and maintain the organization's process asset library.	The Organizations PAL	The PG role of Process Asset and Data Repository Manager is responsible for the PAL.

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Definition + IPPD	Direct Artifact	Guidance
Process Group roles and responsibilities, Support Manager roles and responsibilities, LAU3, PREPL, PREPR	OPD SP 1.6	Establish and maintain work environment standards.	The PG Support Manager role establishes and maintains the organizational work environment standards. LAU3 step 8 reviews the work environment and lists needed items. The Support Manager role is responsible for maintaining a productive work environment including environment standards PREPL/PREPR call out work environment requirements (facilities and tools) for the launch.	
	OPD SG 2	Organizational rules and guidelines, which govern the operation of integrated teams, are provided.	See TSPm (TSP multi-team) material for IPPD.	
	OPD SP 2.1	Establish and maintain empowerment mechanisms to enable timely decision making.	See TSPm material for IPPD.	
	OPD SP 2.2	Establish and maintain organizational rules and guidelines for structuring and forming integrated teams.	See TSPm material for IPPD.	
	OPD SP 2.3	Establish and maintain organizational guidelines to help team members balance their team and home organization responsibilities.	See TSPm material for IPPD.	
	OPD GG 2	The process is institutionalized as a managed process.		
	OPD GP 2.1	Establish and maintain an organizational policy for planning and performing the organizational process definition process.	Policy will be specific to each organization.	This issue to be addressed by the Implementation guide.
LAU	OPD GP 2.2	Establish and maintain the plan for performing the organizational process definition process.	The PG's Process Group) TSP Plan will include the plans for the PG Process Manager, PG Support Manager, and the PG Process Asset and Data repository Manager.	
LAU	OPD GP 2.3	Provide adequate resources for performing the organizational process definition process, developing the work products, and providing the services of the process.	The PG plan, see above, and the PG Support Managers INV and support plan	

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Definition + IPPD	Direct Artifact	Guidance
RSIM, SRAM, ROLE	OPD GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the organizational process definition process.	The PG TSP plan will have the role assignment also in form ROLE and SRAM.	
TRNM, LOGTRNM	OPD GP 2.5	Train the people performing or supporting the organizational process definition process as needed.	TRNM (Training Matrix) and LOGTRNM PSP and TSP training records for both full- and part-time PG members	
LOGCI, NOTEBOOK	OPD GP 2.6	Place designated work products of the organizational process definition process under appropriate levels of control.	OSSP, PAL, Measurement and other OPD work products will be configuration items in the CM system. Form LOGCI. As with any other TSP team, the informally controlled items will reside in the project notebook.	The OPD work products OSSP, PAL, and Measurement Repository will all be CIs in the CM system and placed under appropriate levels of control.
RSIM, RSAM	OPD GP 2.7	Identify and involve the relevant stakeholders of the organizational process definition as planned.	RSIM PG TSP Plan	
WEEK, PM	OPD GP 2.8	Monitor and control the organizational process definition process against the plan for performing the process and take appropriate corrective action.	PG TSP Plan monitored using PMC Filled-in WEEK form and weekly meeting minutes from the PG team	The main mechanism for monitoring and controlling is the PMC of TSP plans. See the management meetings and presentations. In some ways Checkpoint and PM also.
CHECKPOINT	OPD GP 2.9	Objectively evaluate adherence of the organizational process definition process against its process description, standards, and procedures; address noncompliance.	PG Checkpoint	The main mechanism for objective evaluation is the Checkpoint.
STATUS	OPD GP 2.10	Review the activities, status, and results of the organizational process definition process with higher level management ; resolve issues.	PG management reviews	
CIBPS	OPD GP 3.1	Establish and maintain the description of a defined organizational process definition process.	The OSSP will include the organizational process definition process. The OSSP will be defined using the CIBPS (Configuration Item Baseline, Plan, and Status) form and maintained using the CM process.	The PG Process Manager working with the PG Support Manager, and PG Process Asset and Data Repository Manager will establish and maintain the description of the organization's process definition process using the established CM process.

TSP Reference	CMMI Feature	CMMI PA: Organizational Process Definition + IPPD	Direct Artifact	Guidance
Process Group roles and responsibilities	OPD GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the OPD process to support the future use and improvement of the organization's processes and process assets.	The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager who will be responsible for the design and development of the PAL.

3.3.3 Organizational Training (OT)

The following table lists the elements of the Organizational Training (OT) process area employed in the AIM approach.

TSP/PSP Reference	CMMI Feature	CMMI PA: Organizational Training Description	Direct Artifact	Guidance
	OT SG1	A training capability, which supports the organization's management and technical roles, is established and maintained.		
Specification TRN Process Group roles and responsibilities, TRNM	OT SP 1.1	Establish and maintain the strategic training needs of the organization.	The Process Group role of Training Manager is responsible for defining the training needs of the organization. The Training Matrix (TRNM) is used to capture the immediate needs of the organization's projects and the long-term business objectives of the organization.	See Process Group Roles—Training Manager.
INV, PREPT, TRNR, TRNM, LAU3	OT SP 1.2	Determine which training needs are the responsibilities of the organization and which will be left to the individual project or support group.	The Support Manager role for the project will develop the project's training needs and record those on form INV. Form TRNM (Training Matrix) lists the training required for the primary roles with the project and organization. Form TRNR (Training Request) is used to document who is responsible for funding the training for the given need.	During launch preparations (PREPT) the Team Leader will meet with the Training Manager to ensure that all training requirements have been met and obtain a list of all outstanding training requirements and a schedule for all mandatory training so that the team can account for training requirements in its project plan. See LAU3 steps 7 and 8 for Process and Support Manager, respectfully, eliciting and recording project training needs. Training responsibility is determined during the training request and approval process. See the PG Training Manager role.
Process Group roles and responsibilities	OT SP 1.3	Establish and maintain an organizational training tactical plan.	The Process Group's Training Manager is responsible for developing the organizational training tactical plan.	This is the responsibility of the Training Manager.

TSP/PSP Reference	CMMI Feature	CMMI PA: Organizational Training Description	Direct Artifact	Guidance
POPS7, TOPS, PREPL Process Group roles and responsibilities, TRN	OT SP 1.4	Establish and maintain a training capability to address organizational training needs.	The PG training manager will develop the training capability based on the TRNR (Training Requests), and standard training in the TRNM (Training Matrix) and TRNOJT (On-the-Job Training). The TSP Introduction Strategy addresses the capability for PSP and TSP, and those training records are available.	The PG Training Manager addresses the broader ongoing training capability needs of the organization. The PSP/TSP training capability is covered in the TSP Introduction Strategy as part of "building internal capability" for supporting PSP developers on TSP teams.
	OT SG2	Training necessary for individuals to perform their roles effectively is provided.		
TRNSI, TRNSUR, SUMTRNS, TRNR,	OT SP 2.1	Deliver the training following the organizational training tactical plan.	TRNSI (Training Sign In), TRNSUR (Training Survey Form), TRNR (Training Requests) and SUMTRNS (Training Summary Survey)	The PG Training Manager is responsible for establishing the training needs, the training plan and delivery, documentation, and evaluation of training.
LOGTRN, LOGTRNM, TRNSI, TRNSUR, TRNOJT, LOGTRN	OT SP 2.2	Establish and maintain records of the organizational training.	Forms: LOGTRNM (Team Member Training Log), TRNSI (Training Sign In), Tactical Training Plan, TRNSUR (Training Survey), TRNOJT (On-the-Job Training), LOGTRN (Training Request Log) Course rosters and evaluations for the PSP and TSP courses	The PG Training Manager is responsible for maintaining these records.
Process Group roles and responsibilities	OT SP 2.3	Assess the effectiveness of the organization's training program.	Form TRNSUR, the training surveys and their analysis (form SUMTRNS) PSP course feedback forms, TSP launch evaluation forms, TSP Checkpoint results, PM results	The PG Training Manager is responsible for ensuring that the training is assessed and appropriate actions taken.
	OT GG 2	The process is institutionalized as a managed process.		
	OT GP 2.1	Establish and maintain an organizational policy for planning and performing the organizational training process.	Policy will be specific to each organization.	This issue to be addressed by the Implementation Guide.

TSP/PSP Reference	CMMI Feature	CMMI PA: Organizational Training Description	Direct Artifact	Guidance
Process Group roles and responsibilities	OT GP 2.2	Establish and maintain the plan for performing the organizational training process.	The PG training manager will establish and maintain a TSP plan for performing the Organizational Training activities.	The organizational training activities are mainly the responsibility of the PG Training Manager; however, others may contribute. The plan will be a TSP plan, including the necessary activities and work products.
Process Group roles and responsibilities	OT GP 2.3	Provide adequate resources for performing the organizational training process, developing the work products, and providing the services of the process.	PG Training Manager's TSP plan Training plan	Either external (SEI or SEI Partner) or internal (SEI-authorized) instructors are specified by the TSP Introduction Strategy; see the training matrix. Training records document instructor resources, and training preparation materials document room and computer resource needs.
Process Group roles and responsibilities	OT GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the organizational training process.	The PG plan will have a Training Manager role assigned.	
LOGTRNM, TRNM	OT GP 2.5	Train the people performing or supporting the organizational training process as needed.	Training records for PG Training Manager and others supporting training should be documented in the individual's training records. The need for such training should be captured in the training matrix (TRNM).	The PG Training Manager may have specific training requirements that will be documented in the training matrix.
Process Group roles and responsibilities, TRN	OT GP 2.6	Place designated work products of the organizational training process under appropriate levels of control.	The training work products will be configuration items in the CM system. See CM. It is the responsibility of the Training Manager to determine the appropriate configuration controls needed to maintain all training products.	The PG Training Manager will help define the appropriate handling of organizational training work products using the CM procedures. It is assumed that course and training material will use the CM procedures and that training records will be placed under informal configuration control similar to those items called out in the project notebook specification.
TRNM, SRAM, RSIM	OT GP 2.7	Identify and involve the relevant stakeholders of the organizational training process as planned.	Training Matrix, training plan, TSP PG Training Manager plan	

TSP/PSP Reference	CMMI Feature	CMMI PA: Organizational Training Description	Direct Artifact	Guidance
WEEK, STATUS	OT GP 2.8	Monitor and control the organizational training process against the plan for performing the process and take appropriate corrective action.	The PG Training Manager plan is monitored and controlled using the same PMC procedures as all the TSP plans.	The PG, including the PG Manager, will review and monitor the plans weekly.
CHECKPOINT	OT GP 2.9	Objectively evaluate adherence of the organizational training process against its process description, standards, and procedures; address noncompliance.	PG Checkpoint report Noncompliances are listed in the report and reviewed and tracked to closure by the TSP Coach assigned to coach the PG.	The Process Group is a TSP team. As such, it has a coach, launch, plan, and a workbook. The work of the PG will have the same Checkpoint performed as the projects. This includes review of the forms, processes, and work products associated with training.
STATUS	OT GP 2.10	Review the activities, status, and results of the organizational training process with higher level management ; resolve issues.	The PG plan, as with all TSP plans, will be regularly reviewed with management.	
Process Group roles and responsibilities	OT GP 3.1	Establish and maintain the description of a defined organizational training process.	The OSSP will include the organizational training process.	The PG Training Manager working with the PG Support Manager, PG Process Manager and PG Process Asset and Data Repository Manager will establish and maintain the description of the organization's defined training process.
Process Group roles and responsibilities	OT GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the OT process to support the future use and improvement of the organization's processes and process assets.	The Process Asset Library and associated collection mechanisms The organizational infrastructure (including the PAL and the measurement repository) is developed by the Process Group; see OPF, OPD.	The TSP+ has been expanded to include a PG Process Asset and Data Repository Manager.

3.4 Support Processes

3.4.1 Configuration Management (CM)

The following table lists the elements of the Configuration Management (CM) process area employed in the AIM approach.

TSP/PSP Reference	CMMI Feature	CMMI PA: CM Configuration Management Description	Direct Artifact	Guidance
	CM SG 1	Baselines of identified work products are established.		
	CM SP 1.1	Identify the configuration items, components, and related work products that will be placed under configuration management.	Filled-in forms CIBPS and LOGCI (Log of Configuration items) Critical items identified during LAU3 and LAU6	Scripts CM and CMR define creating and reviewing the CIBPS with individual items logged in LOGCI. Also, the PREPT checklist should call for identifying existing artifacts, especially those already under CM.
	CM SP 1.2	Establish and maintain a configuration management and change management system for controlling work products.	Script CM and associated forms and scripts establish a CM system. During preparation (checklist PREPT) Support Manager ensures that it is adequate for team needs.	Script CM and associated forms and scripts establish a CM system. During preparation (checklist PREPT), the Support Manager ensures that it is adequate for team needs.
	CM SP 1.3	Create or release baselines for internal use and for delivery to the customer.	Script TEST3 calls for creating a release from system test to the customer. Filled-in forms CIR should document release requests. Forms CIBPS should document all baselines, including releases.	Script TEST3 calls for creating a release from system test to the customer. Filled-in forms CIR should document release requests. Forms CIBPS should document all baselines, including releases.
	CM SG 2	Changes to the work products under configuration management are tracked and controlled.		
	CM SP 2.1	Track change requests for the configuration items.	Filled-in CCR forms (ref. *Introduction to the Team Software Process*, App. B) Filled-in CCRs and LOGCCR documents change requests to controlled items	Filled-in CCR forms (ref. *Introduction to the Team Software Process*, App. B) Filled-in CCRs and LOGCCR documents change requests to controlled items.
	CM SP 2.2	Control changes to the configuration items.	Filled-in forms CCR (especially approval section) and new entries in form CIBPS document changes made to configuration items. CCB minutes may capture additional relevant information.	Filled-in forms CCR (especially approval section) and new entries in form CIBPS document changes made to configuration items. CCB minutes may capture additional relevant information.
	CM SG 3	Integrity of baselines is established and maintained.		

TSP/PSP Reference	CMMI Feature	CMMI PA: CM Configuration Management Description	Direct Artifact	Guidance
	CM SP 3.1	Establish and maintain records describing configuration items.	Filled-in forms CIBPS, LOGCI, LOGCCR	
	CM SP 3.2	Perform configuration audits to maintain integrity of the configuration baselines.	Filled-in forms LOGCI showing CI audit status, INV showing discrepancies, and the CM audit summary presented in the management STATUS briefing	
	CM GG 3	The process is institutionalized as a defined process.		
	CM GP 2.1	Establish and maintain an organizational policy for planning and performing the configuration management process.	No policies in TSP	This issue to be addressed by the Implementation Guide.
	CM GP 2.2	Establish and maintain the plan for performing the configuration management process.	Script SCM and the support role description and implementation in Support Manager's TASK plan Execution of scripts CM/CMR and checklist PREPT as reflected in the Support Manager's and other team members' TASK plans	
	CM GP 2.3	Provide adequate resources for performing the configuration management process, developing the work products, and providing the services of the process.	Support role is assigned during LAU2. Needed CM tools are identified during LAU3 step 8 and recorded on INV. These items are planned for during LAU4 and LAU6. Checklist PREPT shows preparation for tools and storage resources; form INV will record any additional items needed by the team.	
	CM GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the configuration management process.	Support role is assigned in LAU2 and has responsibility for CM activities and resources. Support Manager role as documented by filled-in ROLE matrix; CM plan as documented in the Support Manager and other team members' plans, especially by TASK entries for CCB meetings Filled-in form CIBPS shows CI owners, form LOGCCR shows product owners	Resolve difference (if any) between CI owners and product owners.

TSP/PSP Reference	CMMI Feature	CMMI PA: CM Configuration Management Description	Direct Artifact	Guidance
	CM GP 2.5	Train the people performing or supporting the configuration management process as needed.	Support Manager role mentioned briefly in TSP Coach training Support Manager training is on-the-job by the TSP Coach per checklist PREPT. Additional training needed by team members should be captured on form INV.	CM training in PSP and TSP is minimal.
	CM GP 2.6	Place designated work products of the configuration management process under appropriate levels of control.	Script SCM, form CCR, role manager description, plus lists of CIs Filled-in forms CIBPS, LOGCI, CCR, LOGCCR, and CIR under appropriate configuration controls	CM process and tools generally will be organization specific There is a need for the major CM scripts (as now defined) and filled-in artifacts under appropriate configuration control (e.g., forms CIBPS, LOGCI, CCRs, LOGCCR, CIR and CM audit results) or the equivalent.
	CM GP 2.7	Identify and involve the relevant stakeholders of the configuration management process as planned.	Support Manager reports to team weekly on CM activities (WEEK minutes) Filled-in form RSIM identifies relevant stakeholders for forms CMBPRS, CIR, CMAUDIT, LOGCCR, LOGCI Weekly status of relevant role managers demonstrates involvement.	
	CM GP 2.8	Monitor and control the configuration management process against the plan for performing the process and take appropriate corrective action.	The Support role reports to the team weekly on significant CM activities. Artifacts from CM activities (records of new and changed baselines, builds made, configuration audits, etc. The CM forms and TASK entries for new CM scripts, as well as weekly support manager reports	
	CM GP 2.9	Objectively evaluate adherence of the configuration management process against its process description, standards, and procedures; address noncompliance.	The TSP Coach reviews support role activities and documents findings in TSP Checkpoint results. Results of relevant Support Manager Checkpoint activities (see CM items in Questions section of Support Manager role specification), and filled-in CM forms and logs	Checkpoints produce an artifact showing that role manager questions were evaluated and appropriate actions taken for resolution where necessary.
	CM GP 2.10	Review the activities, status, and results of the configuration management process with higher level management ; resolve issues.	Management STATUS report section showing configuration audit results, including discrepancies not otherwise resolved from forms ITL (Issue/Risk Tracking Log)	

TSP/PSP Reference	CMMI Feature	CMMI PA: CM Configuration Management Description	Direct Artifact	Guidance
	CM GP 3.1	Establish and maintain the description of a defined configuration management process.	Script SCM and support role description	
	CM GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the configuration management process to support the future use and improvement of the organization's processes and process assets.	Standard postmortem results from enacting script PM Project notebook	

3.4.2 Process and Product Quality Assurance (PPQA)

The following table lists the elements of the Process and Product Quality Assurance (PPQA) process area employed in the AIM approach.

TSP/PSP Reference	CMMI Feature	CMMI PA:PPQA Process and Product Quality Assurance	Direct Artifact	Guidance
	PPQA SG 1	Adherence of the performed process and associated work products and services to applicable process descriptions, standards, and procedures is objectively evaluated.		The TSP+ approach to process adherence centers on the Coach role and the Checkpoint. Objectivity is achieved by independence of the Coach from the project, and the review of forms and scripts marked as "R," for "responsible," in the RSIM (Relevant Stakeholder Involvement Matrix). An example Checkpoint report format is provided showing how the forms and scripts from the RSIM can be used as a checklist for PPQA purposes. The PG Process Manager role is to ensure objectivity and conformity of the project's process managers in objectively evaluating process conformance.
Coach roles and responsibilities CYCLE, CHECKPOINT, CHECKTMDR, Checkpoint report guideline	PPQA SP 1.1	Objectively evaluate the designated performed processes against the applicable process descriptions, standards, and procedures.	TSP+ checkpoint results Postmortem report	See the example Checkpoint report. The Checkpoint includes a quantitative review of individual and team performance as well as a process evaluation. In the Checkpoint script, step 5 (role review) and step 6 (process review) in conjunction with discussions from step 3 (team review) and step 7 (individual discussions) are the main vehicle for objective evaluation of processes. It is important to note that many of the CMMI practices (especially generic practices) are accomplished by the role assignments in the TSP+. Care was taken to ensure that there would be comprehensive coverage for CMMI generic practice 2.9 across the all the Process Areas by incorporating role reviews.

TSP/PSP Reference	CMMI Feature	CMMI PA:PPQA Process and Product Quality Assurance	Direct Artifact	Guidance
INS, DEV, MAINT	PPQA SP 1.2	Objectively evaluate the designated work products and services against the applicable process descriptions, standards, and procedures.	Defect logs of personal reviews of designs and code, inspection reports, unit test results	Personal reviews are done by the producer of an artifact; inspections are performed by their peers. On a typical TSP project, all code, designs, requirements, and externally distributed documents are inspected. Defect logging, quality planning, and analysis are hallmarks of TSP.
	PPQA SG 2	Noncompliance issues are objectively tracked and communicated, and resolution is ensured.		Defects are logged and tracked to closure in form LOGD. Process noncompliances are logged in the Checkpoint report and tracked in the Checkpoint process.
WEEK, STATUS, CHECKPOINT, CYCLE	PPQA SP 2.1	Communicate quality issues and ensure resolution of noncompliance issues with the staff and managers.	Defect logs, issues in ITL (IRTL in TSP Excel workbook), TSP Checkpoint results Issues are reported to management in the STATUS report.	Quality issues are communicated to staff and mangers by the Issue/Risk Tracking log, the STATUS report in regular management meetings and weekly team meetings, as well as by the presentation of Checkpoint results. See the Quality manager role and Process manager role.
	PPQA SP 2.2	Establish and maintain records of the quality assurance activities.	Defect logs, ITL, Checkpoint results	
	PPQA GG 2	The process is institutionalized as a managed process.		
	PPQA GP 2.1	Establish and maintain an organizational policy for planning and performing the process and product quality assurance process.	No policies in TSP+	There are no policies in TSP. This issue will be addressed by the Implementation Guide.
LAU, TASK	PPQA GP 2.2	Establish and maintain the plan for performing the process and product quality assurance process.	Coach TSP plan and individual TSP plans including role tasks	Individual plans have tasks for the assigned roles. The Coach will have a separate TSP plan for coaching and Checkpoint activities. Reviews, inspections, and the Checkpoint will be scheduled and tasks in the respective TSP plan, TSP Checkpoints and coaching plan established (LAU8). See the Process, quality, and test manager role (LAU2)

TSP/PSP Reference	CMMI Feature	CMMI PA:PPQA Process and Product Quality Assurance	Direct Artifact	Guidance
LAU2, ROLE	PPQA GP 2.3	Provide adequate resources for performing the process and product quality assurance process, developing the work products, and providing the services of the process.	TSP Coach, Team Leader, and several roles (process, quality, and test) are assigned to these functions in LAU2 form ROLE (role matrix).	Individual plans have tasks for assigned roles. Individual plans have tasks for reviews, inspections, and testing. The Coach's plan has tasks for the Checkpoint.
Role specifications, RSIM, LAU2, SRAM	PPQA GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the process and product quality assurance process.	TSP Coach, Team Leader, and several roles (process, quality, and test) are assigned to these functions in LAU2 (role matrix).	Role descriptions (including that of the Coach) and resulting plans show clear responsibility and authority.
LOGTRNM, TRNM	PPQA GP 2.5	Train the people performing or supporting the process and product quality assurance process as needed.	PSP training covers how to perform checklist-based reviews. TSP coach training covers Checkpoints and inspections.	The Implementation Guide will provide guidance. The Implementation Guide will include QA guidance for the Process Group.
PREPT Support Manager role specification	PPQA GP 2.6	Place designated work products of the process and product quality assurance process under appropriate levels of control.	Project NOTEBOOK contains ITL, defect logs, and Checkpoint reports. The Support Manager is responsible for developing a plan for the management of all project data identified in the specification NOTEBOOK. This is usually accomplished by designating a specific project folder on a drive or using a web-based file-sharing system. Levels of control are handled by setting access permissions.	Informal configuration management may be considered appropriate for all items identified in the specification NOTEBOOK. It is up to the team to determine where and how these items will be stored and how they will have access to them during launch preparation.
RSIM SRAM	PPQA GP 2.7	Identify and involve the relevant stakeholders of the process and product quality assurance process as planned.	Forms RSIM, SRAM, ROLE	The RSIM lists the responsible party for each script and form. See PPQA forms LOGD, CHECKPOINT, CHECKMDR, The Coach is clearly identified and responsibilities for PPQA activities including the checkpoint are listed. Management, the Team Leader, and the team, especially certain roles, have activities that are reflected in the plan, tracking data, and test and Checkpoint results.

TSP/PSP Reference	CMMI Feature	CMMI PA:PPQA Process and Product Quality Assurance	Direct Artifact	Guidance
	PPQA GP 2.8	Monitor and control the process and product quality assurance process against the plan for performing the process and take appropriate corrective action.	Individual plans, the team plan, and the Coach plan are monitored and controlled through the normal TSP PMC process. Within the Process Group, the role of Coaching Manager is responsible for performing oversight for the coaching activity. This includes monitoring and controlling the Checkpoint. The status of activities is reflected in the plan, tracking data, SUMMARY presentations, and test and checkpoint results. Plans for individual reviews, formal inspections, unit tests, and Checkpoints comprise the plans, monitored through weekly meeting reports, management STATUS reports, and Checkpoint reports.	The activities for SP 1.2 are the reviews, inspections, and tests that are tasks in the appropriate plan. These are monitored and controlled using the same PMC process used for all TSP plans. The activities for SP 1.1 are mainly focused on the Coach's Checkpoint activities. These are reflected in the Coach's plan and monitored using the same PMC process used for all TSP plans.
Process Group roles and responsibilities	PPQA GP 2.9	Objectively evaluate adherence of the process and product quality assurance process against its process description, standards, and procedures; address noncompliance.	Within the Process Group, the role of Coaching Manager is responsible for performing oversight for the coaching activity. This includes objective evaluation of the Checkpoint activities and work products. The PG Coaching Manager will develop reporting and tracking mechanisms.	The PG Coaching Manager is responsible for objective evaluation of the coaches and the Checkpoint (PPQA) activities and work products The PG Process Manager is responsible for ensuring that each Project Process Manager performs objective evaluation of the project's processes.

TSP/PSP Reference	CMMI Feature	CMMI PA:PPQA Process and Product Quality Assurance	Direct Artifact	Guidance
STATUS CHECKPOINT	PPQA GP 2.10	Review the activities, status, and results of the process and product quality assurance process with higher level management ; resolve issues.	TSP Checkpoint results and quarterly management reviews (STATUS presentations) of project issues STATUS reports specifically address QA issues Checkpoint results presented to management.	The Checkpoint has built-in management review in its process (script Checkpoint, step 10).
Process Group roles and responsibilities	PPQA GP 3.1	Establish and maintain the description of a defined process and product quality assurance process.	Checkpoint scripts (process) will be in the OSSP.	The PG role of Process Manager is responsible for establishing and maintaining the OSSP.
Process Group roles and responsibilities	PPQA GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the process and product quality assurance process to support the future use and improvement of the organization's processes and process assets.	Process Asset Library and Data repository TSP Checkpoint results, inspection reports, unit test results, issues in ITL (IRTL in the TSP Excel tool), project management artifacts reflecting QA activities and stored in the project NOTEBOOK.	The PG role of Process Asset and Data Repository Manager is responsible for establishing and maintaining the organization's Process Asset Library and Data Repository.

3.4.3 Measurement and Analysis (M&A)

There is a sophisticated measurement and analysis system incorporated into the TSP+. The Implementation guide will describe this system and how it should be adapted to satisfy the CMMI practices

TSP/PSP Reference	CMMI Feature	CMMI PA: Measurement and Analysis (MA) Description	Direct Artifact	Guidance
	MA SG 1	Measurement objectives and activities are aligned with identified information needs and objectives.		
	MA SP 1.1	Establish and maintain measurement objectives that are derived from identified information needs and objectives.	Standard Measurement objectives are embedded in the TSP. Management can add or modify objectives in the PG (Process Group) launch or the project launch in meeting 1. Individual and consolidated workbooks TSP WEEK Form TSP NOTEBOOK Specification TSP STATUS Specification	Measurement objectives of the TSP are known and extensively discussed in the literature. The consolidated workbook shall be considered the project plan, and the individual workbooks, the individual plans. The measurement objectives are inherent to the TSP process. Management may identify additional objectives during the launch/re-launch meeting 1. In addition, management can give direction to PG to add or modify measurement objectives.
	MA SP 1.2	Specify measures to address the measurement objectives.	Instructions for forms SUMS, LOGT, LOGD, TASK, and SCHED TSP-related measures shall be collected and stored in the workbooks. Examples of TSP-related measures collected in the workbooks are earned value, time on tasks, defects by phase, planned vs. actual hours, and product size.	TSP utilizes four basic measures (estimated and actual values for product or component size, time in phase, defects injected/found by phase, and completion date) Familiarity with the TSP embedded measurement system, which is very helpful to appraisers, is well documented in the PSP/TSP books
	MA SP 1.3	Specify how measurement data will be obtained and stored.	Forms SUMS, LOGT, LOGD, TASK, and SCHED. Records of individual decisions about project NOTEBOOK storage.	Data collection and storage mechanisms, specified in the plan for each project. Data collected in the individual workbooks. Consolidated workbook of weekly individual data stored in a team location with appropriate configuration management controls.

TSP/PSP Reference	CMMI Feature	CMMI PA: Measurement and Analysis (MA) Description	Direct Artifact	Guidance
	MA SP 1.4	Specify how measurement data will be analyzed and reported.	Individual and consolidated workbooks, particularly charts and graphs Script PM and WEEK, forms WEEK, SUMP, SUMQ, and the NOTEBOOK and STATUS specifications	The Chart Controls portion of the PROJECT Tab in the electronic TSP workbooks provides charts and analysis of the measure.
	MA SG 2	Measurement results, which address identified information needs and objectives, are provided.		
	MA SP 2.1	Obtain specified measurement data.	Individual and consolidated workbooks Filled-in forms SUMS, LOGT, LOGD, and TASK	Data collected by practitioners in their individual workbooks One of the purposes of the planning manager role is to ensure that the members of the team follow the process in collecting and reporting actual data in real time. (The coach plays a role here as well.)
	MA SP 2.2	Analyze and interpret measurement data.	Analysis in individual and consolidated workbooks Management presentations Checkpoint and postmortem analysis Forms WEEK (and any associated charts and graphs), SUMP, SUMQ, and actual NOTEBOOK data and STATUS presentations.	In general actuals shall be compared to planned to see if the variance is within acceptable tolerance. The data analysis completed in support of the projects shall be in the workbooks, the checkpoints and cycle/project postmortem. The analysis reported during the weekly status meetings with management. In addition to the information presented off the PROJECT Tab of the workbook, the project established goals shall also be reported.
	MA SP 2.3	Manage and store measurement data, measurement specifications, and analysis results.	Individual and team workbooks including weekly summary data (form WEEK), PM results, and of actual NOTEBOOK and STATUS presentations.	Generally, all data collected (both base and derived), the resulting analysis as reported to management shall be stored in accordance with the project plan or some organizational directive. The data is stored and daily backups of the server files are maintained by the system administrators according to good configuration management practices.

TSP/PSP Reference	CMMI Feature	CMMI PA: Measurement and Analysis (MA) Description	Direct Artifact	Guidance
	MA SP 2.4	Report results of measurement and analysis activities to all relevant stakeholders.	PM results, and minutes for weekly meetings, STATUS presentations, and any other stakeholder meetings at which data has been presented.	Project statuses are communicated on a weekly basis to management during weekly meetings. Other management oversight meetings are scheduled as appropriate (e.g. milestone, checkpoint, and postmortem). See scripts STATUS, WEEK, CHECKPOINT, PM and CYCLE.
	MA GG 2	The process is institutionalized as a managed process.		
	MA GP 2.1	Establish and maintain an organizational policy for planning and performing the measurement and analysis process.	No policies provided in AIM	The organization must develop its policies.
	MA GP 2.2	Establish and maintain the plan for performing the measurement and analysis process.	Individual process scripts sometimes describe what data is collected and how it is analyzed (e.g. the WEEK and PM scripts say “review this” but not how to do it). In-depth discussion of the measures and derived measures is available in the TSP Books.	The measurement plan is embedded in the standard business rhythm of the AIM project (e.g. the launch process and scripts, the data collection associated with the workbooks, and the preparation and delivery of the weekly status and management review meetings).
	MA GP 2.3	Provide adequate resources for performing the measurement and analysis process, developing the work products, and providing the services of the process.	Launch records showing the team leader and various team role assignments	Scheduled events have resources associated with them, such as the launch, weekly meetings, and management meetings.
	MA GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the measurement and analysis process.	Team leader and role manager descriptions, especially the planning, process, and quality managers Form RSIM and SRAM	See Relevant Stakeholder Involvement Matrix and the Stakeholder Role Assignment Matrix.

TSP/PSP Reference	CMMI Feature	CMMI PA: Measurement and Analysis (MA) Description	Direct Artifact	Guidance
	MA GP 2.5	Train the people performing or supporting the measurement and analysis process as needed.	PSP/TSP training records	TSP and AIM training The TSP has training requirements for TSP team members. All SEI-authorized PSP/TSP courses address the principles for measurement needed for specific roles (e.g., leader, member, developer) Comprehensive SEI training and authorization for TSP coaches.
	MA GP 2.6	Place designated work products of the measurement and analysis process under appropriate levels of control	Stored project notebook using appropriate configuration management practices	The planning manager is responsible for placing all project planning artifacts into the project notebook. The content of the project notebook is defined in specification NOTEBOOK. The support manager is responsible for developing a plan for the management of all project data identified in the specification NOTEBOOK. This is usually accomplished by designating a specific project folder on a drive or using a web-based file-sharing system; levels of control are handled by setting access permissions.
	MA GP 2.7	Identify and involve the relevant stakeholders of the measurement and analysis process as planned.	RSIM Launch scripts PREPL filled out, LAU9 meeting report	RSIM provides a comprehensive set of stakeholders and involvement.
	MA GP 2.8	Monitor and control the measurement and analysis process against the plan for performing the process and take appropriate corrective action	Launch meeting minutes, workbooks, and launch meeting 9 Weekly meeting minutes Management meeting minutes	M&A is embedded in the AIM business rhythm. Collection of data is monitored closely by the coach, planning manager, and the team leader. Management monitors M&A by reviewing project data weekly/

TSP/PSP Reference	CMMI Feature	CMMI PA: Measurement and Analysis (MA) Description	Direct Artifact	Guidance
	MA GP 2.9	Objectively evaluate adherence of the measurement and analysis process against its process description, standards, and procedures; address noncompliance.	Checkpoint report See the role of the PG (Process Group) Coaching Manager. Coaching Manager report TSP coach involvement pre-launch (PREPL/PREPR filled out), during the launch (LAU meeting minutes), and after (LAUPM) TSP checkpoint results	The TSP coach will perform a Checkpoint to evaluate process and work products, including M&A During the launch, the coach guides process fidelity for M&A. As the project executes, the team leader and planning and process managers objectively evaluate. When the Process Group (PG) is formed the Coaching Manager role will objectively evaluate the launch process and artifacts for each launch.
	MA GP 2.10	Review the activities, status, and results of the measurement and analysis process with higher level management ; resolve issues.	Actual weekly status presentations to management, meeting minutes, and management reports	
	MA GG 3	The process is institutionalized as a defined process.		
	MA GP 3.1	Establish and maintain the description of a defined measurement and analysis process.	The OSSP will contain the standard processes, which include M&A/ The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)	The TSP+ role of Process Group Support Manager is responsible for establishing and maintaining the OSSP. The OSSP will contain the launch processes, which are the main planning processes along with associated data collection and reporting. The Launch Notebook (PREPL, PREPR, LAU1-9, WEEK)
	MA GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the measurement and analysis process to support the future use and improvement of the organization's processes and process assets.	Project NOTEBOOKS (includes weekly SUMS, SUMP, SUMQ, WEEK project status, SUMMARY reports and PM results) Lessons Learned and Process Improvements.	It is the responsibility of all project personnel to including management to report lessons learned and/or process improvements associated with MA activities. This information shall be reported to the process group. All projects shall report process improvements on a PIP Form. In particular projects need to use their postmortem time as an opportunity for process improvement and lessons learned.

3.4.4 Decision Analysis and Resolution (DAR)

The following table lists the elements of the Decision Analysis and Resolution (DAR) process area employed in the AIM approach.

TSP/PSP Reference	CMMI Feature	CMMI PA: Decision Analysis and Resolution Description	Direct Artifact	Guidance
	DAR SG 1	Decisions are based on an evaluation of alternatives using established criteria.		The TSP+ provides an elementary DAR framework. The essence of DAR is embedded in the TSP+ DAR form The organization may need to develop or provide additional guidance.
	DAR SP 1.1	Establish and maintain guidelines to determine which issues are subject to a formal evaluation process.		The organization needs to establish DAR guidelines. Often the PG will facilitate.
	DAR SP 1.2	Establish and maintain the criteria for evaluating alternatives and the relative ranking of these criteria.	Form DAR	
	DAR SP 1.3	Identify alternative solutions to address issues.	Form DAR	
	DAR SP 1.4	Select the evaluation methods.	Form DAR	
	DAR SP 1.5	Evaluate alternative solutions using the established criteria and methods.	Form DAR	
	DAR SP 1.6	Select solutions from the alternatives based on the evaluation criteria.	Form DAR	
	DAR GG 3	The process is institutionalized as a defined process.		
	DAR GP 2.1	Establish and maintain an organizational policy for planning and performing the decision analysis and resolution process.		See the Implementation Guide
	DAR GP 2.2	Establish and maintain the plan for performing the decision analysis and resolution process.	See the instructions for DAR. See tasks in plan.	
	DAR GP 2.3	Provide adequate resources for performing the decision analysis and resolution process, developing the work products, and providing the services of the process.	TSP+ Plan	
	DAR GP 2.4	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the decision analysis and resolution process.	TSP+ plan see task for DAR	

TSP/PSP Reference	CMMI Feature	CMMI PA: Decision Analysis and Resolution Description	Direct Artifact	Guidance
	DAR GP 2.5	Train the people performing or supporting the decision analysis and resolution process as needed.	TSP+ training	The PG will usually develop and provide training on the OSSP
	DAR GP 2.6	Place designated work products of the decision analysis and resolution process under appropriate levels of control.	LOGCI project notebook	
	DAR GP 2.7	Identify and involve the relevant stakeholders of the decision analysis and resolution process as planned.	RSIM DAR form	
	DAR GP 2.8	Monitor and control the decision analysis and resolution process against the plan for performing the process and take appropriate corrective action.	Weekly meeting minutes Management meetings Status of DAR Tasks in Plan	
	DAR GP 2.9	Objectively evaluate adherence of the decision analysis and resolution process against its process description, standards, and procedures; address noncompliance.	Checkpoint	
	DAR GP 2.10	Review the activities, status, and results of the decision analysis and resolution process with higher level management ; resolve issues.	Management Meeting Minutes and presentations	
	DAR GP 3.1	Establish and maintain the description of a defined decision analysis and resolution process.	Script DAR DAR instructions Form DAR	
	DAR GP 3.2	Collect work products, measures, measurement results, and improvement information derived from planning and performing the DAR process to support the future use and improvement of the organization's processes and process assets.	Process Asset Library and Data repository TSP Checkpoint results, inspection reports, unit test results, issues in ITL (IRTL in the TSP Excel tool), project management artifacts reflecting QA activities and stored in the project NOTEBOOK	The PG role of Process Asset and Data Repository Manager is responsible for establishing and maintaining the organization's Process Asset Library and Data Repository.

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13. ABSTRACT (MAXIMUM 200 WORDS)

The Software Engineering Institute's Accelerated Improvement Method (AIM) incorporates a new version of the Team Software Process (TSP) The Team Software Process Plus (TSP). TSP+ is a project-based implementation of many of the specific and generic practices of Capability Maturity Model Integration (CMMI) for Development. Organizations using AIM for their improvement approach will be implementing similar processes with similar artifacts. Since these implementations of CMMI start from a common base, the work of appraising such organizations against a specific model scope should benefit from this commonality of approach.

This document therefore provides guidance to lead appraisers and appraisal teams unfamiliar with TSP+ when conducting Standard CMMI Appraisal Method for Process Improvement (SCAMPI) appraisals within organizations that use the TSP+ as a foundational operational practice. The intended benefits of this guidance are (1) to shorten the time needed to prepare and conduct such appraisals; (2) to provide information helpful for appropriate interpretations; (3) and to familiarize SCAMPI leads and appraisal teams with a powerful, proven, and available technology.

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