

# Peer Reviews (PR) Procedure

**Documented procedure**

The table below lists the recommended documented procedure for the peer reviews process.

√	Documented Procedure	References
	<p>Peer reviews are performed according to a documented procedure. (L3-97, A2)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Peer reviews are planned and led by trained <b>peer review leaders</b>.</li> <li><input type="checkbox"/> Review materials are distributed to the <b>reviewers</b> in advance so they can adequately prepare for the peer review.</li> <li><input type="checkbox"/> <b>Reviewers</b> have assigned roles in peer reviews.</li> <li><input type="checkbox"/> Readiness and completion criteria for the peer reviews are specified and enforced.               <ul style="list-style-type: none"> <li><input type="checkbox"/> Issues in satisfying these criteria are reported to the appropriate <b>managers</b>.</li> </ul> </li> <li><input type="checkbox"/> Checklists are used to identify criteria for the review of the software work products in a consistent manner.               <ul style="list-style-type: none"> <li><input type="checkbox"/> The checklists are tailored to the specific type of work product and peer review.</li> <li><input type="checkbox"/> The checklists are reviewed by the <b>checklist developers' peers</b> and <b>potential users</b>.</li> </ul> </li> <li><input type="checkbox"/> Actions identified in the peer reviews are tracked until they are resolved.</li> <li><input type="checkbox"/> The successful completion of peer reviews, including the rework to address the items identified in the peer reviews, is used as a completion criterion for the associated task.</li> </ul>	

# Intergroup Coordination (IC) Procedures

## Documented procedures

The table below lists the recommended documented procedures for the intergroup coordination process.

√	Documented Procedures	References
	<p>Critical dependencies between <b>engineering groups</b> are identified, negotiated, and tracked according to a documented procedure. (L3-89, A4)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Each critical dependency is explicitly defined, including:               <ul style="list-style-type: none"> <li><input type="checkbox"/> the item to be provided,</li> <li><input type="checkbox"/> who will provide it,</li> <li><input type="checkbox"/> when it will be provided, and</li> <li><input type="checkbox"/> the criteria for acceptance.</li> </ul> </li> <li><input type="checkbox"/> Critical dependencies are negotiated between the <b>software engineering group</b> and other <b>engineering groups</b> in the project and organization.</li> <li><input type="checkbox"/> Need dates and availability dates of critical dependency items are tied to the project schedule and the software schedule.</li> <li><input type="checkbox"/> The agreement for each critical dependency is documented, reviewed, and approved by both the <b>receiving group</b> and the <b>group responsible for providing the critical dependency item</b>.</li> <li><input type="checkbox"/> Critical dependencies are tracked on a regular basis and corrective actions are taken when appropriate.               <ul style="list-style-type: none"> <li><input type="checkbox"/> Status and actual or projected completion are compared to the plan used to coordinate intergroup commitments.</li> <li><input type="checkbox"/> Effects of late and early completions are evaluated for impacts on future activities and milestones.</li> <li><input type="checkbox"/> Actual and potential problems are reported to the appropriate <b>managers</b>.</li> </ul> </li> </ul>	
	<p>Intergroup issues not resolvable by the <b>individual representatives of the project engineering groups</b> are handled according to a documented procedure. (L3-90, A6)</p>	

# Software Product Engineering (SPE) Procedures

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**Documented  
procedures**

The CMM does not recommend that any activities be performed according to a documented procedure for the software product engineering process.

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# Integrated Software Management (ISM) Procedures, Continued

**Documented procedures, continued**

The table below lists the recommended documented procedures for the integrated software management process, continued from the previous page.

√	Documented Procedures	References
	<p>The project's software risks are identified, assessed, documented, and managed according to a documented procedure. (L3-52, A10)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A software risk management plan is documented and used to identify and manage the software risks.</li> <li><input type="checkbox"/> Contingency planning is based on the project's defined software process and is performed throughout the project's software life cycle.</li> <li><input type="checkbox"/> Alternatives for each software risk are defined, where possible, along with criteria for selecting among the alternatives.</li> <li><input type="checkbox"/> The initial release and major revisions to the software risk management plan undergo peer review.</li> <li><input type="checkbox"/> The software risk management plan is managed and controlled.</li> <li><input type="checkbox"/> Software risks are tracked, reassessed, and replanned at selected project milestones, at designated risk checkpoints, and during the planning of significant changes that affect the software project.             <ul style="list-style-type: none"> <li><input type="checkbox"/> Risk priorities and software risk management plans are reviewed and revised at these reassessment points.</li> <li><input type="checkbox"/> Information obtained from monitoring the risks is used to refine the risk assessments and software risk management plans.</li> </ul> </li> <li><input type="checkbox"/> The <b>software engineering group</b> and other <b>affected groups</b> and <b>individuals</b> are included in the communications on the software risks, the software risk management plans, and the results of risk mitigation.</li> </ul>	

# Integrated Software Management (ISM) Procedures, Continued

**Documented procedures, continued**

The table below lists the recommended documented procedures for the integrated software management process, continued from the previous page.

√	Documented Procedures	References
	<p>The critical dependencies and critical paths of the project's software schedule are managed according to a documented procedure. (L3-51, A9)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Milestones, tasks, commitments, critical dependencies, staffing, costs, and reviews are allocated in the schedule consistent with the project's defined software process.               <ul style="list-style-type: none"> <li><input type="checkbox"/> The software schedule identifies specific tasks and milestones whose completion can be objectively determined (i.e., a binary or yes/no determination).</li> </ul> </li> <li><input type="checkbox"/> Critical dependencies are defined, negotiated, and reflected in the software schedule.</li> <li><input type="checkbox"/> Schedule critical paths are defined and reflected in the software schedule.</li> <li><input type="checkbox"/> The software project's critical dependencies and schedule critical paths are tracked on a regular basis.</li> <li><input type="checkbox"/> Specific documented threshold criteria are established for each critical path which, when projected to be exceeded, require action.</li> </ul>	

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# Integrated Software Management (ISM) Procedures, Continued

**Documented procedures, continued**

The table below lists the recommended documented procedures for the integrated software management process, continued from the previous page.

√	Documented Procedures	References
	<p>The project's critical computer resources are managed according to a documented procedure. (L3-50, A8)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Estimates for the project's critical computer resources are derived based on historical experience, simulations, prototyping, or analysis, as appropriate.               <ul style="list-style-type: none"> <li><input type="checkbox"/> Sources and rationale for estimates are documented.</li> <li><input type="checkbox"/> Similarities and differences between the project and the sources for historical data in terms of application domain and design approach are assessed and recorded.</li> <li><input type="checkbox"/> The reasoning used to judge the credibility of the estimates is recorded.</li> </ul> </li> <li><input type="checkbox"/> The planned computer resources, the system requirements allocated to software, the software requirements, and/or the software design are adjusted to achieve the project's critical computer resource requirements.</li> <li><input type="checkbox"/> The available computer resources are allocated to the software components.</li> <li><input type="checkbox"/> The available capacity for the critical computer resources provides for a specified reserve capacity when the initial estimates are made.</li> <li><input type="checkbox"/> A threshold is established for each critical computer resource which, when projected to be exceeded, requires action.</li> </ul>	

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# Integrated Software Management (ISM) Procedures, Continued

**Documented procedures, continued**

The table below lists the recommended documented procedures for the integrated software management process, continued from the previous page.

√	Documented Procedures	References
	<p>The project's software effort and costs are managed according to a documented procedure. (L3-48, A7)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Software effort, cost, and staffing profile models, if used, are adapted to the project and use available historical data where appropriate.</li> <li><input type="checkbox"/> Referenced productivity and cost data are adjusted to incorporate project variables.</li> <li><input type="checkbox"/> The overall software effort and cost is allocated to individually managed tasks or stages as needed to manage the effort and cost effectively.</li> <li><input type="checkbox"/> When the software effort and cost status is reviewed and the estimates are revised, actual expenditures over time and against work completed are compared to the software development plan and used to refine the effort and cost estimates for remaining work.             <ul style="list-style-type: none"> <li><input type="checkbox"/> Parameter values of the models used in estimating software effort and costs are updated whenever major changes are made to the software requirements.</li> <li><input type="checkbox"/> Actual data on project productivity and other new software costs are used where appropriate.</li> </ul> </li> <li><input type="checkbox"/> An effort and cost threshold is established for each individually managed software task or stage which, when projected to be exceeded, requires action.</li> </ul>	

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# Integrated Software Management (ISM) Procedures, Continued

**Documented procedures, continued**

The table below lists the recommended documented procedures for the integrated software management process, continued from the previous page.

√	Documented Procedures	References
	<p>The size of the software work products (or size of changes to the software work products) is managed according to a documented procedure. (L3-47, A6)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A <b>group that is independent of the software engineering group</b> reviews the procedures for estimating the size of the software work products, and provides guidance in using historical data from the organization's software process database to establish credible estimates. <ul style="list-style-type: none"> <li><input type="checkbox"/> The <b>individuals</b> who prepare the size estimates ensure that the procedures and data used in the estimates are appropriate.</li> <li><input type="checkbox"/> When the validity of a size estimate is questioned, a <b>team of peers and experts</b> reviews the estimate.</li> </ul> </li> <li><input type="checkbox"/> A contingency factor is applied to the size estimate for each software element identified as a software risk. <ul style="list-style-type: none"> <li><input type="checkbox"/> The rationale for the contingency is documented.</li> <li><input type="checkbox"/> The risks associated with reducing or eliminating the contingency are assessed and documented.</li> </ul> </li> <li><input type="checkbox"/> Off-the-shelf or reusable software components are identified. <ul style="list-style-type: none"> <li><input type="checkbox"/> Reuse measurements account for the reuse of requirements, design, code, test plan, and test procedures, etc.</li> <li><input type="checkbox"/> The effort to modify and incorporate reusable components is factored into the size estimates.</li> </ul> </li> <li><input type="checkbox"/> Factors which could significantly affect the size of the software work products are identified and monitored closely.</li> <li><input type="checkbox"/> A size threshold is established for each managed software element which, when projected to be exceeded, requires action.</li> </ul>	

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## Integrated Software Management (ISM) Procedures, Continued

### Documented procedures, continued

The table below lists the recommended documented procedures for the integrated software management process, continued from the previous page.

√	Documented Procedures	References
	<p>Each project's defined software process is revised according to a documented procedure. (L3-43, A2)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Changes derived from the following are documented and systematically reviewed: <ul style="list-style-type: none"> <li><input type="checkbox"/> lessons learned from monitoring the software activities of the organization's projects,</li> <li><input type="checkbox"/> changes proposed by the software project, and</li> <li><input type="checkbox"/> process and work product measurement data.</li> </ul> </li> <li><input type="checkbox"/> Changes to the project's defined software process are reviewed and approved before they are incorporated.</li> </ul>	
	<p>The project's software development plan, which describes the use of the project's defined software process, is developed and revised according to a documented procedure. (L3-44, A3)</p>	

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# Integrated Software Management (ISM) Procedures

## Documented procedures

The table below lists the recommended documented procedures for the integrated software management process.

√	Documented Procedures	References
	<p>The project's defined software process is developed by tailoring the organization's standard software process according to a documented procedure. (L3-41, A1)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A software life cycle is:               <ul style="list-style-type: none"> <li><input type="checkbox"/> selected from among those approved by the organization, to satisfy the project's contractual and operational constraints;</li> <li><input type="checkbox"/> modified, if necessary, in ways permitted by the organization's tailoring guidelines and criteria; and</li> <li><input type="checkbox"/> documented according to the organization's standards.</li> </ul> </li> <li><input type="checkbox"/> The description of the project's defined software process is documented.</li> <li><input type="checkbox"/> Tailoring of the organization's standard software process for the project is reviewed by the <b>group responsible for coordinating the organization's software process activities (e.g., software engineering process group)</b> and approved by <b>senior management</b>.               <ul style="list-style-type: none"> <li><input type="checkbox"/> Waivers for deviations from the organization's standard software process are documented and are reviewed and approved by <b>senior management</b>.</li> </ul> </li> <li><input type="checkbox"/> Waivers for deviations from contractual software process requirements are documented and are reviewed and approved by <b>senior management</b> and the software project's <b>customer</b>, as appropriate.</li> <li><input type="checkbox"/> The description of the project's defined software process is managed and controlled.</li> </ul>	

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# Training Program (TP) Procedure

## Documented procedure

The table below lists the recommended documented procedure for the training program process.

√	Documented Procedure	References
	<p>The organization's training plan is developed and revised according to a documented procedure. (L3-30, A2)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"><li data-bbox="475 575 1138 636">❑ The plan uses the software projects' training needs identified in their training plans.</li><li data-bbox="475 646 1211 737">❑ The specific training to be provided is identified based on the skills needed by the organization and when those skills are needed.</li><li data-bbox="475 747 1070 808">❑ The organization's training plan is revised, as appropriate, to incorporate changes.</li><li data-bbox="475 819 1149 909">❑ The organization's training plan is reviewed by the <b>affected individuals</b> when it is initially released and whenever major revisions are made.</li><li data-bbox="475 919 1114 980">❑ The organization's training plan is managed and controlled.</li><li data-bbox="475 991 1182 1052">❑ The organization's training plan is readily available to the <b>affected groups</b> and <b>individuals</b>.</li></ul>	

# Organization Process Definition (OPD) Procedure

## Documented procedure

The table below lists the recommended documented procedure for the organization process definition process.

√	Documented Procedure	References
	<p>The organization's standard software process is developed and maintained according to a documented procedure. (L3-15, A1)</p> <p>This procedure typically specifies that:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The organization's standard software process satisfies the software policies, process standards, and product standards imposed on the organization, as appropriate.</li> <li><input type="checkbox"/> The organization's standard software process satisfies the software process and product standards that are commonly imposed on the organization's projects by their customers, as appropriate.</li> <li><input type="checkbox"/> State-of-the-practice software engineering tools and methods are incorporated into the organization's standard software process, as appropriate.</li> <li><input type="checkbox"/> The internal process interfaces between the software disciplines are described.</li> <li><input type="checkbox"/> The external process interfaces between the software process and the processes of other affected groups are described.</li> <li><input type="checkbox"/> Changes proposed for the organization's standard software process are documented, reviewed, and approved by the <b>group responsible for the organization's software process activities (e.g., software engineering process group)</b> before they are incorporated.</li> <li><input type="checkbox"/> Plans for introducing changes to the software process of ongoing projects are defined as appropriate.</li> <li><input type="checkbox"/> The description of the organization's standard software process undergoes peer review when initially developed and whenever significant changes or additions are made.</li> <li><input type="checkbox"/> The description of the organization's standard software process is placed under configuration management.</li> </ul>	

# Organization Process Focus (OPF) Procedures

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**Documented  
procedures**

The CMM does not recommend that any activities be performed according to a documented procedure for the organization process focus process.

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# Level 3 Procedure Checklists

## Overview

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**Introduction** This section describes all the explicit documented procedures in the Capability Maturity Model for maturity level 3.

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**Purpose** The purpose of the procedure checklists is to provide:

- Guidance in identifying which procedures are recommended by the CMM at level 3.
- Criteria that an organization can use to evaluate its software procedures to determine if those procedures are consistent with the CMM at level 3.
- Information that can be used to develop software procedures that are consistent with the CMM at level 3.

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**In this section** This section covers the following documented procedures:

<b>CMM Level 3 Procedures</b>	<b>See Page</b>
Organization process focus procedures	L3-Procedures-2
Organization process definition procedure	L3-Procedures-3
Training program procedure	L3-Procedures-4
Integrated software management procedures	L3-Procedures-5
Software product engineering procedures	L3-Procedures-12
Intergroup coordination procedures	L3-Procedures-13
Peer reviews procedure	L3-Procedures-14

**Note:** The CMM does not recommend that any activities be performed according to a documented procedure for the organization process focus and software product engineering processes.

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