

## SEPG v3 : Software Project Management Plan Template

This template contains the textual outline from IEEE Standard 1058.1-1997, *IEEE Standard for Software Project Management Plans*, and includes the actual IEEE requirements. In the following template, bold titles and text are taken directly from the IEEE Standard; normal text provides the template structure and headings; and the italicized text is provided as guidance only. For an empty copy of this template, see SPMP Empty Template at URL: <http://sw-eng.larc.nasa.gov/process/docslistnew.html#exref>

Title:

*Title of the software project*

Prepared by:

*Prepared by: name of the person writing the plan (not necessarily the software manager)*

Signature:

*Signature: signature of author of plan*

Date:

*Date: date plan completed*

Reviewed by:

*Reviewed by: name of the person who will review the plan. Once the plan has been written, it needs to be reviewed for technical content by a suitably experienced person. If expertise is not available locally, contact the SEPG who can provide advice or supply a suitable reviewer.*

Signature:

*Signature: signature of reviewer*

Date:

*Date: date reviewer signed*

Authorized by:

*Authorized by: name of the person who will authorize the plan (usually the line manager of the preparing organization)*

Signature:

*Signature: signature of authorizing manager*

Issuing Organization:

*Issuing Organization: organization name, building number*

# Document Revision Record

Issue Date	Description of Revision (Include reason for change if not self-evident.)	Section Affected	Prepared By	Authorized By

# 1 Introduction

This section of the SPMP shall provide an overview of the project and the product, a list of project deliverables, the plan for development and evolution of the SPMP, reference materials for the SPMP, and definitions and acronyms used within the SPMP.

## 1.1 Project Overview

This subsection of the SPMP shall provide a concise summary of the project objectives, the product to be delivered, major work activities, major work products, major milestones, required resources, and master schedule and budget. The project overview shall also describe the relationship of this project to other projects, as appropriate. This overview shall not be construed as an official statement of product requirements. Reference to the official statement of product requirements shall be provided in this subsection of the SPMP.

--

## 1.2 Project Deliverables

This subsection of the SPMP shall list all of the items to be delivered to the customer, the delivery dates, delivery locations, and quantities required to satisfy the terms of the project agreement. This list of project deliverables shall not be construed as an official statement of project requirements.

--

## 1.3 Evolution of the SPMP

This subsection of the SPMP shall specify the plans for producing both scheduled and unscheduled updates to the SPMP. Methods of disseminating the updates shall be specified. This subsection shall also specify the mechanisms used to place the initial version of the SPMP under change control and to control subsequent changes to the SPMP.

--

## 1.4 Reference Materials

This subsection of the SPMP shall provide a complete list of all documents and other sources of information referenced in the SPMP. Each document should be identified by title report number, date, author, and publishing organization. Other sources of information, such as electronic files, shall be identified in an unambiguous manner using identifiers such as date and version number. Any deviations from referenced standards or policies shall be identified and justifications shall be provided.

--

## 1.5 Definitions and Acronyms

This subsection of the SPMP shall define, or provide references to the definition of all terms and acronyms required to properly interpret the SPMP.

--

## 2 Project Organization

This section of the SPMP shall specify the process model for the project, describe the project organizational structure, identify organizational boundaries and interfaces, and define individual responsibilities for the various project elements.

### 2.1 Process Model

This subsection of the SPMP shall define the relationships among major project functions and activities by specifying the timing of major milestones, baselines, reviews, work products, project deliverables, and sign-offs that span the project. The process model may be described using a combination of graphical and textual notations. The process model must include project initiation and project termination activities.

Class:	(low-control, high-control or critical-control)	<i>State the class of the software project as derived using LMS-CP-5528. Record any justification for deviation in software class.</i>
Life cycle option used:	(A,B, C, or D)	<i>Record the life cycle to be used</i>
Development approach:	(waterfall, incremental, evolutionary, etc.)	<i>Record the development approach. The approach can be modified over successive project iterations.</i>

For information on life cycle options and development approaches, refer to Guidance on LMS Software Procedures at URL: <http://sw-eng.larc.nasa.gov/process/docslstnew.html#exref>.

### 2.2 Organizational Structure

This subsection of the SPMP shall describe the internal management structure of the project. Graphical devices such as hierarchical organization charts or matrix diagrams may be used to depict the lines of authority, responsibility, and communication within the project.

Diagram of Organizational Structure

### 2.3 Organizational Boundaries and Interfaces

This subsection of the SPMP shall describe the administrative and managerial boundaries between the project and each of the following entities: the parent organization, the customer organization, subcontracted organizations, or any other organizational entities that interact with the project. In addition, the administrative and managerial interfaces of the project support functions, such as configuration management, quality assurance, and verification and validation shall be specified in this subsection.

Administrative and Managerial Interfaces	POC
Customer	
LaRC Organizations (Parent Project, Procurement, Safety, Legal)	
Contractors	
Project Support Functions (Configuration Management, Software Quality Assurance, Verification and Validation)	

## 2.4 Project Responsibilities

This subsection of the SPMP shall identify and state the nature of each major project function and activity, and identify the individuals who are responsible for those functions and activities. A matrix of functions and activities versus responsible individuals may be used to depict project responsibilities.

*For many projects (especially smaller ones), a number of roles can be allocated to one person. Where possible, estimate the effort required from each team member.*

Function	Name/Organization	Telephone/Fax/Email
Software manager:		
Software configuration manager:		
Team members (developers):		

## 3 Managerial Process

This section of the SPMP shall specify management objectives and priorities; project assumptions, dependencies, and constraints; risk management techniques; monitoring and controlling mechanisms to be used; and the staffing plan.

### 3.1 Management Objectives and Priorities

This subsection of the SPMP shall describe the philosophy, goals, and priorities for management activities during the project. Topics to be specified may include, but are not limited to, the frequency and mechanisms of reporting to be used; the relative priorities among requirements, schedule, and budget for this project; risk management procedures to be followed; and a statement of intent to acquire, modify, or use existing software.

Objectives:
Priorities:

### 3.2 Assumptions, Dependencies, and Constraints

This subsection of the SPMP shall state the assumptions on which the project is based, the external events the project is dependent upon, and the constraints under which the project is to be conducted.

Assumptions:
Dependencies:
Constraints:

### 3.3 Risk Management

This subsection of the SPMP shall identify and assess the risk factors associated with the project. This subsection shall also prescribe mechanisms for tracking the various risk factors and implementing contingency plans. Risk factors that should be considered include contractual risks, technological risks, risks due to size and complexity of the product, risks in personnel acquisition and retention, and risks in achieving customer acceptance of the product.

- Complete the Risk Rating Sheet, SEPG Document 50 for the software project and attach it to the SPMP.
- NASA policies on risk management are provided in section 1.f of NASA Policy Directive 2820.1, May 1998, NASA Software Policies, and section 4.2 of NASA Procedures and Guidelines 7120.5, NASA Program and Project Management Processes and Requirements, April 3, 1998. NPG 7120.5 specifies the requirements for risk management on all NASA programs and projects. Note: The section headings and requirements for plan content specified in chapter 2 of NPG 8705 (under development) are provided in the table below (formerly included in 7120.5).

Heading	Description
Introduction	<i>Purpose, scope, assumptions, constraints, and policies pertaining to this plan and the project risk management process.</i>
Overview of process	<i>Overview of risk management process and data flow and how it integrates and relates to other project management activities.</i>

### 3.3 Risk Management (Continued)

Heading	Description
Organization	<i>Organization, roles, and responsibilities of the project, customer, and suppliers.</i>
Process details	<i>Risk management process and related procedures, methods, tools, and metrics for each major function in NPG 7120.5.</i>
Resources and schedule	<i>Schedule, milestones, and required resources for risk management activities.</i>
Documentation of risks	<i>Describes how risk information is documented (e.g., database and templates), retained, controlled, and used.</i>
Methodology	<i>Describe how the project will apply the program descope methodology deriving the point at which the project is no longer viable.</i>

### 3.4 Monitoring and Control Mechanisms

**This subsection of the SPMP shall define the reporting mechanisms, report formats, information flows, review and audit mechanisms, and other tools and techniques to be used in monitoring and controlling adherence to the SPMP. Project monitoring should occur at the level of work packages. The relationship of monitoring and controlling mechanisms to the project support functions shall be delineated in this subsection of the SPMP (see 3.4.3).**

Job Order(s) to which time is to be charged:
Monitoring and control mechanisms:
Problem resolution mechanism:

### 3.5 Staffing Plan

**This subsection of the SPMP shall specify the numbers and types of personnel required to conduct the project. Required skill levels, start times, duration of need, and methods for obtaining, training, retaining, and phasing out of personnel shall be specified.**

Skills and qualifications required (include start times and duration of need)	Shortfall	Plan to make up shortfall

## 4 Technical Process

This section of the SPMP shall specify the technical methods, tools, and techniques to be used on the project. In addition, the plan for software documentation shall be specified, and plans for project support functions such as quality assurance, configuration management, and verification and validation may be specified.

### 4.1 Methods, Tools, and Techniques

This subsection of the SPMP shall specify the computing system(s), development methodology(s), team structure(s), programming language(s), and other notations, tools, techniques, and methods to be used to specify, design, build, test, integrate, document, deliver, modify or maintain or both (as appropriate) the project deliverables. In addition, the technical standards, policies, and procedures governing development or modification or both of the work products and project deliverables shall be included, either directly or by reference to other documents.

Name	Version Information

### 4.2 Software Documentation

This subsection of the SPMP shall contain, either directly or by reference, the documentation plan for the software project. The documentation plan shall specify the documentation requirements, and the milestones, baselines, reviews, and sign-offs for software documentation. The documentation plan may also contain a style guide, naming conventions and documentation formats. The documentation plan shall provide a summary of the schedule and resource requirements for the documentation effort. ANSI/IEEE Standard 829-1983 [4] provides a standard for software test documentation.

- *Identify all outputs from the software development process (e.g., requirements document, design document, test plans and results), giving titles and reference numbers. Indicate which are deliverable outside the project.*

Document	Reference

### 4.3 Project Support Functions

This subsection of the SPMP shall contain, either directly or by reference, plans for the supporting functions for the software project. These functions may include, but are not limited to, configuration management; software quality assurance; and verification and validation. Plans for project support functions shall be developed to a level of detail consistent with the other sections of the SPMP. In particular, the responsibilities, resource requirements, schedules, and budgets for each supporting function shall be specified. The nature and type of support functions required will vary from project to project; however, the absence of a software quality assurance, configuration management, or verification and validation plan shall be explicitly justified in project plans that do not include them.

#### 4.3.1 Configuration and Version Management

Document or Comment	Reference
Process: <ul style="list-style-type: none"> <li>• Describe how configuration and version management will be carried out.</li> <li>• Describe the scheme for specifying and authorizing software modifications;</li> <li>• Describe the change management process.</li> </ul>	
Project library, records, and labeling: <ul style="list-style-type: none"> <li>• Describe and reference the project library and the records to be created and maintained and the item labeling scheme.</li> <li>• Identify the location of the project library and state the record retention period. Make clear references to how the source code and computer media are labeled and stored.</li> <li>• If replication is involved, record the number of copies to be delivered, the media used, number of the user guides, the copyright position, arrangements for the custody of master and backup copies, disaster recovery plans, and the period of obligation for supplying copies.</li> </ul>	
Methods and tools: <ul style="list-style-type: none"> <li>• Describe the configuration management methods and tools used.</li> </ul>	
Requirements management: <ul style="list-style-type: none"> <li>• Include the procedure for requirement management and associated updates to the SPMP. Specify how software requirements are controlled to establish a baseline for software engineering and management and how plans, products, and activities are kept consistent with the software requirements.</li> <li>• The software staff reviews the software requirements before they are incorporated into the software project.</li> <li>• The software staff uses the software requirements as the basis for software plans, products, and activities.</li> <li>• Changes to software requirements are reviewed and incorporated into the software project.</li> </ul>	

#### 4.3.2 Verification, Validation, and Testing

Document or Comment	Reference
Test schedule and process: <ul style="list-style-type: none"> <li>• State how the software and related documents will be verified/validated, including the verification and validation schedule, roles, responsibilities, organization, and resources.</li> <li>• Describe how defect control and corrective action will occur (consider ways to detect and resolve problems earlier in the life cycle when they are usually less costly such as the use of Formal Inspections).</li> </ul>	

#### 4.3.2 Verification, Validation, and Testing (Continued)

Document or Comment	Reference
Peer reviews: <ul style="list-style-type: none"> <li>• <i>Include the method used for identifying and removing defects (e.g., Formal Inspections), what products will be reviewed, and the type of reviewers needed for each (e.g., requirements author, designer, software developer, tester, customer, etc.). Include the procedure for recording review results and tracking them to closure.</i></li> </ul>	
Acceptance criteria: <ul style="list-style-type: none"> <li>• <i>Record the customer acceptance criteria for the deliverables. Provide details of how accuracy and correct operation of deliverables is to be demonstrated.</i></li> </ul>	
Methods and tools: <ul style="list-style-type: none"> <li>• <i>Describe the verification, validation, and testing methods used (e.g., test plans and procedures, Formal Inspection, technical review) and the tools employed (if applicable).</i></li> </ul>	

#### 4.3.3 Quality Assurance/Audit

Document or Comment	Reference
Means of monitoring project: <ul style="list-style-type: none"> <li>• <i>Describe how implementation of the SPMP will be monitored</i></li> <li>• <i>Describe methods to be used for reviewing all the project products and plans</i></li> </ul>	
Audit plans: <ul style="list-style-type: none"> <li>• <i>Detail the timing and nature of any software quality audits, other than those covered in the overall LaRC quality system. In particular, make reference to any quality audit or review requirements imposed by the customer or user. Consider planning an audit into the project, preferably a little before an important milestone is due.</i></li> </ul>	

#### 4.3.4 Project Control Metrics Collection and Analysis

Metric	Collection process	Person responsible for collection and analysis

## 5 Work Packages, Schedule, and Budget

This section of the SPMP shall specify the work packages, identify the dependency relationships among them, state the resource requirements, provide the allocation of budget and resources to work packages, and establish a project schedule.

### 5.1 Work Packages

This subsection of the SPMP shall specify the work package for the activities and tasks that must be completed in order to satisfy the project agreement. Each work package shall be uniquely identified;

identification may be based on a numbering scheme and descriptive titles. A diagram depicting the breakdown of activities into subactivities and tasks (a work breakdown structure) may be used to depict hierarchical relationships among work packages.

*Identify each package, showing inputs, resources, responsibilities, main tasks, outputs, verification process and time scales for each. Show which deliverables will require sign-off and who has sign-off responsibility for each.*

--

## 5.2 Dependencies

This subsection of the SPMP shall specify the ordering relations among work packages to account for interdependencies among them and dependencies on external events. Techniques such as dependency lists, activity networks, and the critical path method may be used to depict dependencies among work packages.

--

## 5.3 Resource Requirements

This subsection of the SPMP shall provide, as a function of time, estimates of the total resources required to complete the project. Numbers and types of personnel, computer time, support software, computer hardware, office and laboratory facilities, travel, and maintenance requirements for the project resources are typical resources that should be specified.

--

## 5.4 Budget and Resource Allocation

This subsection of the SPMP shall specify the allocation of budget and resources to the various project functions, activities, and tasks. An earned value scheme may be used to allocate budget and resources, and to track expenditures and resource utilization.

--

## 5.5 Schedule

This subsection of the SPMP shall provide the schedule for the various project functions, activities, and tasks, taking into account the precedence relations and the required milestone dates. Schedules may be expressed in absolute calendar time or in increments relative to a key project milestone.

--

## 6 Additional Components

Certain additional components may be required. These may be included by appending additional sections or subsections to the SPMP. However, the numbering scheme for the required sections and subsections must adhere to the format specified in this standard. Additional items of importance on any particular project may include subcontractor management plans, security plans, independent verification and validation plans, training plans, hardware procurement plans, facilities plans, installation plans, data conversion plans, system transition plans, or the product maintenance plan. If present, additional components must be developed in a format and to a level of detail consistent with the required sections of the SPMP.

Document or Comment	Reference
Installation and Acceptance Plans:	
Operational Support plan:	
Maintenance plan:	

## 7 Index

An index to the key terms and acronyms used throughout the SPMP is optional, but recommended to improve usability of the SPMP.

## 8 Appendices

Appendices may be included, either directly or by reference, to provide supporting details that could detract from the SPMP if included in the body of the SPMP.