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CEMILAC_SYSGP_PSAC_01

Plan for Software Aspect of Certification of <LRU/System Name> for <Platform Name>

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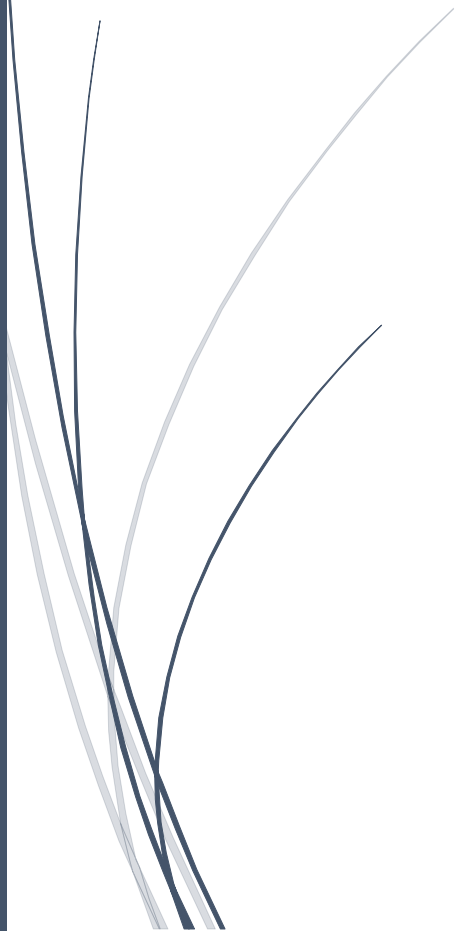

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Title:	**Project/System :**
Plan for Software Aspects of Certification **of** **<LRU/SYSTEM Name>for <Platform name>**	**<System/Project Name>** **LRU/System Part No.:** <No.> **Software Criticality Level :** DO-178C Level <A/ B/ C/ D>

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Disclaimer:

This document is a guidance document. Applicable section / table rows may be considered. Any additional details may be added. Any not applicable section/ table rows may be deleted. The template is very general and vary with process to process followed by Development Agency. The document may be fine-tuned with the TAA for finalization.

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Amendment History

Issue, Rev. No.	Issue, Rev Date	Change Request Ref.	Brief Description of Amendment	Affected Pages/ Section	Changed By	Change Effective Date
01, 00		NA	Initial Issue	NA	NA	Initial

Table of Contents

1. Introduction

The Plan for Software Aspects of Certification (PSAC) is the primary means used by the certification authority for determining whether an applicant is proposing a software life cycle that is commensurate with the rigor required for the level of software being developed.

1.1 Purpose

The purpose of this document is to provide the details on Plan for Software Aspects of Certification (PSAC) for the project <LRU_NAME>. This document provides the planning data defined in DO-178C, Section 11.1. The certification authority uses the PSAC for a project as the primary means for certification.

1.2 Scope

This document describes the software life cycle for the project <LRU_Name>, its development process, and all integral processes. It summarizes or references the software development, verification, configuration management, and quality assurance activities for the project <Project>.

1.3 Applicable documents

Define the list of all applicable documents in following sections:

1.3.1 External Documents

Define the list of all applicable documents of external origin, relevant for this project.

1.3.2 Internal Documents

Define the list of all applicable documents of internal origin, relevant for this project.

1.4 Part Number and Nomenclature

Define the details of all software components having unique part number and nomenclature to identify them through the software development life cycle.

1.5 Acronyms and Abbreviations

Define all the abbreviations and acronyms with their expanded names in this section.

2 System Overview

This section provides an overview of the system, including a description of its functions.

2.1 Functional Allocation to the Complex Hardware

This section briefly describes those system functions which are carried out by the complex electronic hardware such as FPGA/ CPLD/ ASIC.

2.2 Functional Allocation to the Software

This section briefly describes those system functions which are responsibility of the software.

2.3 Architecture

This section provides the information regarding the hardware architecture and software architecture of the system and the suitability / compatibility among these.

2.4 Programmable Devices Used

This section lists the programmable devices used in the system, like, processors, microcontrollers, FPGA, CPLD etc. The list of software components is mapped to the devices.

2.5 Hardware/Software Interfaces

This section describes the hardware-software interfaces, i.e. where, when and how inputs to the software are available from the hardware and outputs of the software are taken by the hardware.

2.6 System Failure Conditions

This section lists the various failure conditions of the system and the potential failures contributed by the software functions.

2.7 Safety Features

This section provides overview of the safety features incorporated in the system.

3 Software Overview

This section briefly describes the software functions, states and modes with emphasis on the proposed safety and partitioning concepts.

3.1 Resource sharing

Mention if any time-sharing, memory sharing or bus sharing envisaged between various software components.

3.2 Redundancy

Mention if any redundancy is available in the system and software components.

3.3 Fault tolerance

List the features available in the software for robustness, prevention of fault propagation and recovery or degraded performance in case of failures.

3.4 Timing and scheduling strategies

Mention the strategies used to meet the timing constraints given in the technical specifications. Give the scheduling strategies if multiple tasks are expected or multiple timing requirements are specified for algorithms.

4 Certification Considerations:

4.1 Criticality of the system

This section states the proposed software level(s) and summarizes the justification provided by the system safety assessment process

4.2 Summary of the certification basis

This section provides a summary of the software certification basis, including the means of compliance. The summary explains how the objectives of each software life cycle process will be satisfied, and specifies the organizations to be involved, the organizational responsibilities, for the life cycle and certification liaison processes.

4.3 Potential software contributions to failure conditions

This section provides a summary to identify and describe potential software contributions which may be responsible for arising failure conditions and it may not perform its intended functions

5 Software Life Cycle

This section defines the software life cycle to be used and includes a summary of each software life cycle and its processes for which detailed information is defined in their respective software plans.

5.1 Software Planning Process

5.1.1 Objectives and Activities

This section lists the objectives pertaining to Planning process and the activities associated with completing the objectives.

5.1.2 Integral Processes

This sectional brings out the verification, Quality Assurance, configuration management and certification activities associated with the Planning process.

5.2 Software Requirement Process

5.2.1 Objectives and Activities

This section lists the objectives pertaining to Requirement process and the activities associated with completing the objectives.

5.2.2 Integral Processes

This sectional brings out the verification, Quality Assurance, configuration management and certification activities associated with the Requirement process.

5.3 Software Design Process

5.3.1 Objectives and Activities

This section lists the objectives pertaining to Design process and the activities associated with completing the objectives.

5.3.2 Integral Processes

This sectional brings out the verification, Quality Assurance, configuration management and certification activities associated with the Design process.

5.4 Software Coding Process

5.4.1 Objectives and Activities

This section lists the objectives pertaining to Coding process and the activities associated with completing the objectives.

5.4.2 Integral Processes

This sectional brings out the verification, Quality Assurance, configuration management and certification activities associated with the Coding process.

5.5 Software Integration Process

5.5.1 Objectives and Activities

This section lists the objectives pertaining to Integration process and the activities associated with completing the objectives.

5.5.2 Integral Processes

This sectional brings out the verification, Quality Assurance, configuration management and certification activities associated with the Integration process.

5.6 Software Testing Process

5.6.1 Objectives and Activities

This section lists the objectives pertaining to Testing process and the activities associated with completing the objectives.

5.6.2 Integral Processes

This sectional brings out the verification, Quality Assurance, configuration management and certification activities associated with the testing process.

6 Software Life Cycle Data

This section specifies the software life cycle data that will be produced and controlled by the software life cycle processes. This section also describes the relationship of the data to each other or to other data defining the system, the software life cycle data to be submitted to the certification authority, the form of the data, and the means by which software life cycle data will be made available to the certification authority.

Sl. No.	Document Name	Config Control level (CC1/ CC2)	SOI Level	Ref of DO 178 C (11.1 to 11.22)	Role of Certification Authority (Review/ Approval)

7 Schedule

This section describes the means the applicant will use to provide the certification authority with visibility of the activities of the software life cycle processes so reviews can be planned. It brings out which of the objectives are demonstrated for verification at what stage of the lifecycle (in terms of SOIs, analyses, reviews and testing).

7.1 Master Project Schedule

Define project schedule which provides the certification authority with visibility of the activities of the software life cycle process so reviews can be planned.

7.2 Stages of Involvement schedule

Define the schedule for following Stages of Involvement:

SPR – SOI #1	Software Planning Review
SDR – SOI #2	Software Development Review
SVR – SOI #3	Software Verification Review
FSCR – SOI #4	Final Software Certification Review

8 Additional Considerations

This section describes specific features that may affect the certification process,

8.1 Alternative methods of compliance

Mention if any alternate methods for compliance to DO-178C is proposed.

8.2 Tool qualification

8.2.1 Development tools

Mention the requirement and plan for development tool qualification.

8.2.2 Verification Tools

Mention the requirement and plan for development tool qualification.

8.3 Previously developed software

Mention whether any previously developed software (which has undergone DO-178C qualification for any level) is part of the present version.

8.4 Option-selectable software

Mention if any part of the software is invoked based on selection from external source (other systems/ operator/ aircraft configuration etc.)

8.5 User-modifiable software

Mention if any part of the software is modifiable by the user.

8.6 Deactivated Code

Defines the details of deactivated code, which shall be not used during normal operation. And to be ensured during entire life cycle

8.7 COTS software

Mention if any externally developed software is components are used in the build of the software.

8.8 Field-loadable software

Mention if any externally developed software or components are used in the build of the software.

8.9 Multiple-version dissimilar software

Mention if any multiple versions of software development is planned.

8.10 Parameter Data Items

Mention the details of parameter data item if used in the build of the software.

8.11 Product Service History

Mention if the software is already being used in the field and feedback / evolution of the software throughout its deployment.

8.12 Deviations and modifications to plans

Mention how the changes to the plan documents are approved and incorporated in the processes.

9 Supplier Oversight

This section describes the means of ensuring that supplier processes and outputs will comply with approves software plans and standards.

Appendix A Objectives Checklist

<Define the objectives list from Table A1 to A10 (As applicable for Software Critical Level) from DO178 C Standard for the purpose of compliance and to generate evidence for each objective to submit with SAS for obtaining clearance from certification authority>.