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CEMILAC_SYSGP_IV&VR_14

IV&V RECOMMENDATION
for <LRU/SYSTEM Name>
for
<Platform Name>

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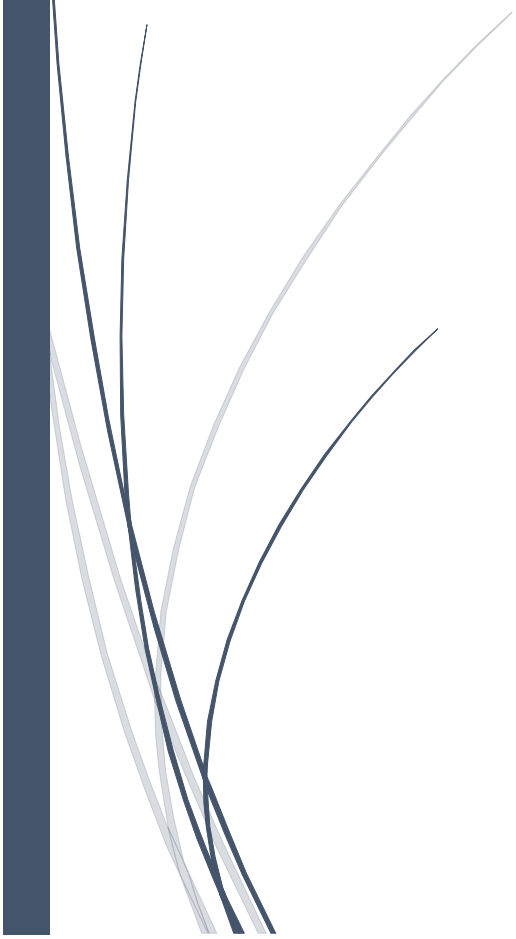

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Title:	**Project/System :**
IV&V RECOMMENDATION for <LRU/SYSTEM Name>for <Platform name>	< Project/System Name>
	LRU/System Part No.
	<No.>
	Critical Level
	<A/B/C/D/E>

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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.

Contents

1. Purpose& Scope

This document describes the IV&V activities carried out for <*System name*>, <*CSCI Name*>, <*Software version*> at each phase and provides recommendations for scope of clearance of the software and limitations, if any.

Details about the Software for which IV&V is carried out.

a) New software

OR

b) Incremental software

1.1. Identification

a) System Identification:
b) Software Identification:
c) Application Software Version:
d) RTOS Version
e) BSP version

1.2. System Overview

A brief description of top level functions of the system including all its CSCIs.

1.3. Software Overview

A brief description of top level functions of the current CSCI in the scope of this report.

1.4. Documents Referred

List of documents, MoMs, Technical notes, Reports that were used to generate this IV&V report.

PSAC/ SCP, SVP/ IVVP, SCMP, SQAP, SRD, FRS, ICD, SARAD, SDD, System integration/ HSI/ CSCI/ Unit level test procedures and Test results, VDD etc.

2. Software Criticality Level

Software criticality Details with allocation of criticality to components.

Note : In case the complete CSCI is verified with same criticality level, the following table is not necessary.

Level A	Level B	Level C	Level D
<List of Software Components that	*<List of Software Components that*	*<List of Software Components that*	*<List of Software Components that*

implement safety Critical functions>	*implement Mission Critical functions>*	*implement Major functions>*	*implement Minor functions>*

3. IV&V activities:

<For first clearance of the software >
The following IV&V activities are performed as per the *<IVVP/ SVP>*.

<For clearance of software changes>

- *Problem report / user feedback / change request*
- *Details of the previously cleared software (version, checksum, dependencies on external systems or hardware configuration)*
- *Details of new functionality added/ deleted/ modified*
- *Impact Analysis of the new/ changed functionality*
- *Details of the delta IV&V applicable to the changed software*

3.1 Software Planning Review

- *Certification plan including the milestones, documents, approvals, types of clearances etc.*
- *Verification plan with methodologies, tools etc.*
- *Configuration management and QA as per the design organisation's internal practices and policy.*

3.2 Software Requirements Review and Analysis:

- *Summary of completeness and consistency of all requirements/ changed requirement w.r.t system/ functional requirements.*
- *Reference of Checklists used*
- *Details of Observations found in review and analysis, and their closure status.*
- *Bidirectional traceability*

3.3 Software Design:

- *Summary of correctness, completeness and suitability of design w.r.t requirements.*
- *Reference of Checklists used*
- *Algorithm/ model validation status and conclusion*
- *Details of Observations found in review and analysis, and their closure status.*
- *Bidirectional traceability*

3.4 Software Code Analysis:

Sl No	Document	Reference
	Source Code	*Version and Checksum*
	Libraries/ COTS	*Reference*
	Other interacting CSCIs, FPGAs, CPLDs (within the LRU)	*Versions and Checksum*

- *Summary of Code walkthrough report for correctness and completeness w.r.t design.*
- *Summary of Code quality analysis*
- *Details of Observations found in review and analysis, and their closure status.*

3.5 Static and Dynamic testing:

- *Summary of Static & Dynamic test reports, complexity, data flow, control flow, along with tools used and the configuration setting of the tools.*
- *Details of Observations found Timing and memory analysis of software and effect with previous build*
- *Bidirectional traceability to SRD, SDD & ICD*

3.6 Hardware software integration testing:

- *Summary of hardware software integration test reports (either complete or regression test cases).*
- *Bidirectional traceability to Functional requirements*
- *Details of Observations found in review of test cases and test results*

3.7 BSP/OS/Drivers validation:

Conclusion from tests/ analysis carried out for COTS items and the acceptability of OEM documentation/ certification.

4. Deviation from software plans/ IA

- *List of activities in software plans or IA (in case of change evaluation) that could not be performed, along with reasons for non-compliance.*

5. Configuration Identification:

- RTOS version identification
- BSP version identification
- Application CSCIs version with checksum
- Hardware configuration with LRU name, part number, hardware version

- Test rig/ ATE software, simulators used with associated databases
- Dependencies and compatibility, if any (To external system, software, aircraft configuration etc, and set specific data such as calibration, look up tables, characterization etc)
- Software Checksum verification and loading utilities

6. Open problems from previous build

List of observations/ lacunae which are carried forward from previous build that are yet to be resolved, and the justification for keeping them open.

7. Open problems in present build

List of observations/ lacunae which are found during IV&V of the present build that are not resolved, impact of the open points and the justification for keeping them open. References to SPRs.

8. Limitations

Operational/ maintenance related limitations that may arise due to the current build of software, and the implications of these limitations.

9. Recommendations:

Satisfactory/unsatisfactory status of the software in view of effect on safety and performance. Recommendations for clearance in terms of flight envelop, aircraft type, aircraft configuration, system configuration and mission type.

Abbreviations:

ATE	Automatic Test Equipment
BSP	Board Support Package
COTS	Commercial Off the Shelf
CPLD	Complex Programmable Logic Device
CSCI	Computer Software Configuration Item
FPGA	Field Programmable Gate Array
FRS	Functional Requirement Specification
HSI	Hardware Software Integration
IA	Impact analysis
ICD	Interface Control Document
IVVP	Independent Verification and Validation Plan
LRU	Line Replaceable Unit
OEM	Original Equipment Manufacturer
RTOS	Real Time Operating System

SARAD	System Architecture and Requirement Allocation Document
SPR	Software Problem Report
SCMP	Software Configuration Management Plan
SCP	Software Certification Plan
SRD	Software Requirement Document
SDD	Software Design Document
SQAP	Software Quality Assurance Plan
SVP	Software Verification Plan