

VxWorks and HVP

Generic Roles and Responsibilities (RR)

**PROPRIETARY**

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**Table of Contents**

[1 Introduction 6](#_Toc42592607)

[1.1 Scope 6](#_Toc42592608)

[1.2 Relationship to Other Plan Documents 6](#_Toc42592609)

[1.3 Applicable Documents 7](#_Toc42592610)

[1.4 Readership 7](#_Toc42592611)

[1.5 Glossary and Acronyms 7](#_Toc42592612)

[2 Roles and Responsibilities 8](#_Toc42592613)

[2.1 Project Team Roles 8](#_Toc42592614)

[2.1.1 Engineering Manager (Development, and Testing) 8](#_Toc42592615)

[2.1.2 Product Architect 8](#_Toc42592616)

[2.1.3 Security Architect 9](#_Toc42592617)

[2.1.4 Technical Feature Owner (Technical/Domain/Component Lead) 10](#_Toc42592618)

[2.1.5 Gate Keeper (Check with Kitty/Martin) 10](#_Toc42592619)

[2.1.6 Build Lead 10](#_Toc42592620)

[2.1.7 Developer (Development Engineer) 11](#_Toc42592621)

[2.1.8 Test Lead 11](#_Toc42592622)

[2.1.9 System Tester (System Test Engineer) 12](#_Toc42592623)

[2.1.10 Security Tester (Security Test Engineer) ?? check with Rodger, Kitty 12](#_Toc42592624)

[2.1.11 Validator 13](#_Toc42592625)

[2.1.12 Product Manager 14](#_Toc42592626)

[2.1.13 Engineering Program Manager (EPM) 14](#_Toc42592627)

[2.1.14 Software Configuration Management Lead (AKA CM Lead) 15](#_Toc42592628)

[2.1.15 Software Quality Assurance Lead 15](#_Toc42592629)

[2.2 Independence of Roles 16](#_Toc42592630)

[2.3 Training Plan 16](#_Toc42592631)

[3 Plan Review and Approval 17](#_Toc42592632)

**List of Tables**

[Table 1: Applicable Documents 7](#_Toc11311851)

# Introduction

## Scope

This document describes the program release roles and responsibilities as established by the Wind River VxWorks and HVP Program releases.

## Relationship to Other Plan Documents

Other generic plan documents describe lifecycle activities that must be undertaken by certain roles having certain responsibilities. These roles and responsibilities are described in this document.

The activities for the Wind River VxWorks and HVP program releases are described in the following documents:

* Wind River VxWorks and HVP Generic Software Development Plan
* Wind River VxWorks and HVP Generic Software Configuration Management Plan
* Wind River VxWorks and HVP Generic Software Quality Assurance Plan
* Wind River VxWorks and HVP Overall Product Test Strategy ?? check with Kitty
* Wind River VxWorks and HVP Generic Software Validation Plan
* Wind River VxWorks and HVP Generic Software Training Plan
* Wind River VxWorks and HVP Generic Software Documentation Plan

The Software Development Plan (SDP) describes the software development lifecycle activities.

The Software Quality Assurance Plan (SQAP) specifies the activities for quality assurance during the lifecycle of the program release.

The Software Configuration Management Plan (SCMP) describes the processes that will be used to meet configuration management objectives of the program release.

The Overall Product Test Strategy (PTS) describes the program release level test strategy, including the overall goals and activities of the product testing – including the interaction, coverage and integration of the team-specific development and test documents. ?? check with Kitty

The Software Validation Plan (VP) describes the strategy that will be used to meet validation objectives of the program release.

The Training Plan (TP) describes the strategy that will be used to meet training objectives of the program release.

The Documentation Plan (DP) describes the strategy that will be used to meet documentation objectives of the program.

## Applicable Documents

Table 1 lists all documents referenced in this plan.

| Reference | Title |
| --- | --- |
|  | Wind River VxWorks and HVP Generic Software Quality Assurance Plan |
|  | Wind River VxWorks and HVP Generic Software Configuration Management Plan |
|  | Wind River VxWorks and HVP Generic Glossary |
|  | Wind River VxWorks and HVP Generic Training Plan |

Table 1: Applicable Documents

## Readership

This document is intended for use by the designees to review the competencies and organization needed to fulfill the roles for the program. Team members shall use the Roles and Responsibilities (this document) to obtain their roles and responsibilities during the release.

## Glossary and Acronyms

For a list of terms and acronyms used in this document, refer to the Glossary document [Ref.3].

# Roles and Responsibilities

## Project Team Roles

The following roles and responsibilities shall be defined within the project team.

### Engineering Manager (Development, and Testing)

The Engineering Manager shall be responsible for:

* Budgeting and acquiring project resources
* Managing resources and schedules
* Deciding on training needs and acquiring resources for training

The Engineering Manager shall have the following competencies:

* Shall understand the company budget and acquisition policies
* Shall be able to communicate effectively
* Shall be competent in managing resources efficiently
* Shall understand the company project management process
* Shall understand quality, competencies, organizational and management requirements of the applicable standards

### Product Architect

The Product Architect shall be responsible for the technical leadership of the software development lifecycle.

The Product Architect shall:

* Design the overall software architecture
* Design the adoption and integration with the product’s upstream source(s)
* Derive and document Epics from requirements
* Own the Requirements
* Establish and maintain traceability to and from system level requirements
* Ensure the specifications and software requirements are under change and configuration management including state, version and authorization status
* Ensure consistency and completeness in the Software Requirements with reference to user requirements and final environment of the product
* Develop and maintain the software requirement documents
* Verify the test approach written by the Test Lead
* Specify and document test objects

The Product Architect shall have the following competencies:

* Shall be experienced in the application’s domain
* Shall understand the overall role of the system and the environment of the product
* Shall be competent in requirements engineering
* Shall understand analytical techniques and outcomes
* Shall understand all the constraints imposed by the hardware platform, the operating system and the interfacing systems
* Shall be competent in engineering appropriate to the product
* Shall be competent in the implementation language and supporting tools
* Shall understand the relevant parts of the appropriate standards

### Security Architect

The Product Security Architect is the security expert with in-depth knowledge of the product architecture and a central contact person for all the product security related questions. The Security Lead role could be performed by a Product Architect or Principal Technologist.

The Security Architect shall:

* Lead the team through the execution of the security practices and managing the product’s security needs.
* Ensure the security strategy is aligned with the product objectives
* Participate in Threat Analysis and other security related activities e.g., defect root analysis, resolution of security defects
* Establish security practices within the product
* Ensure Secure Coding and Development Standards are followed
* Ensure high - quality standards for security
* Help guide security objectives and requirements (architecture and implementation) for product features
* Ensure the vulnerability management plan is in place

The Security Architect shall have the following competencies:

* Shall be experienced in the security domain
* Shall understand the overall role of the system and the environment of the product
* Shall be competent in security requirements engineering
* Shall understand analytical techniques and outcomes
* Shall understand all the constraints imposed by the hardware platform, the operating system and the interfacing systems
* Shall be competent in the implementation language, security testing and supporting tools
* Shall understand the relevant parts of the appropriate standards e.g., IEC 62443

### Technical Feature Owner (Technical/Domain/Component Lead)

The Technical Feature Owner shall be responsible for the technical aspects of the software development lifecycle.

The Technical Feature Owner shall do the following for their respective feature group:

* Design the respective software architecture and required HLDs
* Ensure the implementation and documentation of the Epic/feature group’s stories
* Derive sprint-level stories
* Ensure the feature group’s work is under change and configuration management
* Own the Feature Test Plan for the assigned Feature
* Verify the test approach for the Epic/feature group’s user stories written by the Test Lead
* Ensure that IP and Encryption review process has been followed

The Feature/Technical Lead shall have the following competencies:

* Shall be competent in requirements engineering
* Shall understand analytical techniques and outcomes
* Shall understand all the constraints imposed by the hardware platform, the operating system and the interfacing systems
* Shall be competent in engineering appropriate to the product domain
* Shall be competent in the implementation language and supporting tools
* Shall understand the relevant parts of the appropriate standards

### Gate Keeper (Domain Lead) (Check with Kitty/Martin)

The Gatekeeper shall be responsible for monitoring code reviews. A Gatekeeper is nominated into a role by agreement between the Technical Feature owner(s) and Architect after having shown good judgment in development, technical reviewing and technical contributions.

The Gatekeeper shall do the following to monitor code inspection/review:

* Ensure the code is reviewed and that adequate testing has been done
* Assess appropriateness of the change in the project realm (component/subsystem)
* Assess the risk to existing project stability and functionality

The Gatekeeper shall have the following competencies:

* Shall be competent in the skills of a developer
* Shall be competent in the components of the system for which they have been nominated as Gatekeeper

### Build Lead

The Build Lead shall be responsible for:

* Coordinating Release Build schedules with the Engineering Program Manager as well as the Development, Information Development and Test teams
* Day-to-day coordination of Release Builds with Release Engineering
* Initiating and monitoring of Release Builds following the Release Build Process

The Build Lead shall have the following competencies:

* Shall be competent in with the CM system (Git)
* Shall be fluent in the scripting languages and tools used by the Release Build process

### Developer (Development Engineer)

The Developer shall:

* Design and document software
* Implement and document the source code
* Specify and document test objects
* Integrate code as required
* Execute the Feature Test Plan (i.e., implementing, executing, reporting, fixing, and automating test cases)

A Developer shall have the following competencies:

* Shall be competent in engineering appropriate to the product domain
* Shall be competent in design principles
* Shall be competent in design analysis and design test methodologies
* Shall understand all the constraints imposed by the hardware platform, the operating system and the interfacing systems
* Shall be competent in the implementation language and supporting tools

### Test Lead

The Test Lead shall provide expertise for verifying and testing the software. The Test Lead also provides expertise in setting up the test harness and tools.

The Test Lead shall:

* Prepare the Overall Product Test Strategy?? Check with Kitty
* Specify and document the approach and methods used for verification and testing
* Specify and document the verification and testing tools
* Specify and document the configurations and the scope of testing
* Specify and document the product regression testing strategy
* Oversee the testing activities defined in the Feature Test (Verification) Plan/Release Test Strategy documents, including verification testing for issues raised by the test team?? Check with Kitty
* Oversee product regression testing
* Review verification results, including test results and code coverage data
* Prepare the Test Report (verification testing)

The Test Lead shall have the following competencies:

* Shall be competent in software requirements and code verification
* Shall be competent in the use of the verification tools
* Shall be competent in various verification approaches/methodologies and be able to identify the most suitable method or combination of methods in the given project context
* Shall have analytical thinking ability and good observation skills
* Shall understand the relevant parts of the appropriate standards

### System Tester (System Test Engineer)

The Tester shall perform the testing part of the verification testing activities as described in the Release Test Strategy.

The Tester shall:

* Define and run test cases according to methods defined by the Release Test Plan
* Report detected errors in the Defect Management system (e.g., Jira)
* Specify and document contents of test cases in the Software Test (Verification) Plan/Test Strategy
* Specify and document methods for test vector specification
* Ensure traceability of test objectives against the specified software requirements and of test cases against the specified test objectives
* Ensure that the planned tests are implemented, and specified tests are carried out
* Identify deviations from expected results and record them in test reports
* Communicate deviations with relevant change management body for evaluation and decision
* Prepare the Software Test Report

A Tester should have the following competencies:

* Shall be competent in software requirements and code verification
* Shall be competent in the use of the verification tools
* Shall have analytical thinking ability and good observation skills
* Shall understand the relevant parts of applicable standards

### Security Tester (Security Test Engineer) ?? check with Roger, Martin and Kitty

The Security Tester (also known as Security Validator) is a Security Test Lead / Engineer for validating the product and demonstrating that the product meets the security objectives and implements the defined security requirements. This role could be filled by a Test Manager or Test Lead.

The Security Tester shall:

* Drives performance of any internal security testing (e.g.  Fuzz, Penetration) based on the security requirements. ?? check with Roger, Martin and Kitty
* Specify and document contents of test cases in the Security Test Plan ?? check with Roger, Martin and Kitty
* Define and run test cases according to methods defined by the Security Test Lead
* Report detected errors to the Security Test Lead
* Ensure traceability of security test objectives against the specified security related requirements and of test cases against the specified security test objectives
* Ensure that the planned security tests are implemented, and specified tests are carried out
* Identify deviations from expected results and record them in test reports
* Communicate deviations with relevant change management body for evaluation and decision
* Prepare the Security Test Report

A Tester should have the following competencies:

* Shall be competent in security requirements and code verification
* Shall be competent in the use of the security test tools
* Shall have analytical thinking ability and good observation skills
* Shall understand the relevant parts of applicable standards (e.g., IEC 62443)

### Validator

The Validator shall have the knowledge to demonstrate that the product meets the requirements and the customer needs. The validation could be performed by the Technical Feature Owner or Product Architect for the program release.

The Technical Feature Owner shall:

Prepare and perform a Feature level validation to stakeholders (i.e. demo) as a condition of Feature Acceptance

The Product Architect shall prepare and perform a Product level validation to stakeholders (i.e. PRT) as a condition of Release Acceptance

Check with Martin and Kitty

The Validator shall:

* Prepare the Validation Plan
* Specify and document the configuration and the scope of the validation
* Specify and document the validation strategy
* Verify the software requirements against the intended environment/use
* Capture deviations from the Validation Plan
* Prepare the Validation Report

The Validator shall have the following competencies:

* Shall be competent in various validation approaches/methodologies and be able to identify the most suitable method or combination of methods in the context of the project
* Shall be capable of deriving the types of validation evidence required from the given specifications as applicable
* Shall have analytical thinking ability and good observation skills
* Shall have overall software understanding and perspective including the understanding of the project environment

### Product Manager

The Product Manager (PM) shall be responsible for managing the entire product line life cycle from strategic planning to tactical activities.  PM provides cross-functional leadership and bridges organizational gaps between different functional groups, most often between engineering, marketing, sales, and support.

The Product Line Manager shall:

* Lead product vision and be responsible for product definition and specifications
* Manage the product under PDLC (Product Development Life Cycle)
* Be responsible for product roadmap
* Manage product backlog and perform backlog grooming with engineering
* Prioritize items in product backlog to achieve product line goals
* Review and ensure product deliverables meet requirements and quality
* Be the interface with partners (technical perspective) and open source communities
* Create presentation material to be leverage for internal communications and external  product briefings

The Product Manager shall have the following competencies:

* Shall prove good management and understanding of a successful product throughout its lifecycle
* Shall have a solid technical background with understanding and/or hands-on experience
* Shall prove strong problem solving, communication and management skills
* Shall be skilled at working effectively with cross functional teams

### Engineering Program Manager (EPM)

The Program (Release) Manager shall be responsible for planning and managing project activities. The Program (Release) Manager directs and supervises the project team. The Program (Release) Manager tracks performance against plan, and reviews project deliverables.

The Program (Release) Manager shall have the following competencies:

* Shall be competent in program management tools
* Shall be competent in maintaining an efficient customer interface
* Shall be able to communicate effectively
* Shall understand release tracking and control
* Shall understand program release management processes
* Shall understand analytical techniques and outcomes
* Shall understand the overall role of the system and the environment of application

### Software Configuration Management Lead (AKA CM Lead)

The Software Configuration Management (SCM) Lead shall be responsible for the Build and configuration management strategy throughout the software development lifecycle.

The SCM Lead shall:

* Set up and implement a strategy to track critical lifecycle data throughout the software development lifecycle

The SCM Lead shall have the following competencies:

* Shall be competent in the implementation language and supporting tools
* Shall be competent in configuration management
* Shall understand the relevant parts of the appropriate standards

### Software Quality Assurance Lead

Software Quality Assurance Lead (SQA Lead) shall conduct audits by reviewing processes, talking to project team members, and analyzing quality records. The SQA Lead shall plan and document Quality Assurance Activities in the Wind River VxWorks and HVP Generic Software Quality Assurance Plan [Ref.1].

The SQA Lead seeks objective evidence whether the audited activities comply with the requirements based on the following documents:

* Software Configuration Management Plan
* Software Quality Assurance Plan
* Software Development Plan

The SQA Lead shall verify that problem reports are resolved. If an issue cannot be resolved by the SQA Lead, the issue shall be escalated to Senior Management.

The SQA Lead shall have the following competencies:

* Shall know the internal development processes
* Shall be able to carry out internal quality audits
* Shall have overall program release process understanding
* Shall be competent to follow-up and check closure of actions and problems
* Shall understand quality, competencies, organizational and management requirements of the applicable standards

## Independence of Roles

The following requirements specify the level of independence of the different roles involved in the development and certification of the product.

The following rules for minimum independence shall be complied with:

1. The Test Lead and Technical Feature Owner (Requirements Manager/Designer/Implementer) shall be separate persons.
2. The Technical Feature Owner and Developer should not perform the system or release testing of their own software components.
3. The Test Lead, Tester, Developer, Technical Feature Owner reports status on the Stories/requirements to the scrum master/EPM. The Validator and SQA Lead shall not report through EPM.
4. The security tester and the system tester shall be separate persons.

## Training Plan

Specific training needs shall be identified based on team experience and previous trainings. A Training Plan [Ref.4] shall be written and a training record is kept to track process training and other required training.

# Plan Review and Approval

This document shall be modified and controlled as specified in the Wind River Generic Software Configuration Management Plan [Ref.2].

The document shall be modified and controlled and any recommended changes to this document shall be reviewed and approved prior to every program release.  The Engineering Manager/Engineering Program Manager shall make the necessary updates and submit the plan for internal review (with key stakeholders) and approval.