PROFESSIONAL SERVICES
WIND RIVER VXWORKS 653 PLATFORM
SOLUTION ASSESSMENT

One of the keys to a successful project is detailed planning in the initial phase to determine project scope, define requirements and system architecture (hardware and software), identify risks and perform risk assessment, and create a detailed project plan. Wind River® Professional Services VxWorks® 653 Platform Solution Assessment experts work collaboratively with your design and program teams to interpret system requirements, architect platform system options, and provide recommendations to meet business, technical, and program goals. With each engagement, Wind River tailors activities and deliverables to fit the program's unique needs.

The following are typical major activities that can make up a VxWorks 653 Platform Solution Assessment:

- Review business and technical drivers, opportunities, and constraints
- Review functional requirements, security requirements, features, and specifications for candidate hardware/software architectures
- Prepare an initial System Requirements Specification that outlines system requirements
- Review certification requirements (e.g., DO-178C) and define appropriate processes for achieving safety certification or compliance
- Evaluate system architectures and data flow control, and provide a system recommendation (version-based if applicable) with all supporting documentation, rationale, and analysis
- Perform architectural trade-off analysis to identify cost/benefit/risk for system solutions that meet requirements
- Evaluate system reliability and failure modes and effects, and provide redundancy or backup recommendations
- Prepare partitioned system-level block diagram(s) with high-level data and control flows of the system
- Develop a prioritized roadmap that provides the following:
  - Migration strategy from existing system to VxWorks 653 Platform that achieves product roadmap goals while minimizing risks and costs
  - Scalability plans to define how the platform would scale up or scale across multiple product lines (if applicable)
  - Recommendations on infrastructure needs (e.g., tools, processes, and training) to support VxWorks 653 Platform application development, performance analysis, simulation, debugging, and test activities
  - Knowledge transfer and training

VXWORKS 653 PLATFORM ARCHITECTURE AREAS OF STUDY

Focus areas for the study can include any or all of the following:

Board Support Package

- Cache operations
- Page table setup
- Device drivers for custom hardware
- Direct access ports
- Pseudo port drivers
- System initialization
- BSP components
- Core OS vs. partition drivers
- Memory space allocation
- Booting issues (e.g., VxWorks ROM image, BIOS, U-Boot)

Partitioning

- Application partitioning
- DO-178C safety levels
- Data loader/boot loader

Scheduling

- Single vs. multiple schedules
- Task/process priorities
- PPS scheduling
- Performance estimates

Certifiable Network Stack

- Network stack optimization parameters
- Application interface to the network stack

Debugging

- Cert vs. debug build
- Agent for Certified Environment (ACE)
- JTAG debugging

Graphics

- Graphics device
- Graphics library (e.g., OpenGL)
- Third-party graphics solution integration

File System

- RAM
- Flash
- MTD driver
- Certifiability

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Testing

- Performance monitoring tools
- Target simulation
- Additional test tools (e.g., Coverity, LDRA, and VectorCast)

Health Monitoring

- Overall approach to health monitoring and health event actions
- Custom health monitoring actions
- Handling of hardware faults
- Restart behavior
- Built-in test

Application

- Application initialization
- Module configuration (XML file)
- Priority inversion/deadlock issues
- APEX vs. vThreads vs. COIL API
- Floating point support
- Ada and/or C++ support

Future Migration Options

- MILS (if security requirements are foreseen in the future)
- Multi-core
- Hypervisor

VXWORKS 653 PLATFORM SOLUTION ASSESSMENT DELIVERABLES

At the conclusion of the engagement, VxWorks 653 Platform experts present the results of the assessment. They work through questions and clarifications as needed to transfer knowledge and help your team prepare for proposal development or project execution.

The following are typical deliverables for an Solution Assessment:

- **VxWorks 653 Platform Solution Assessment Document:** The Solution Assessment Document contains system architectures, information flow control, and recommendations with supporting documentation, rationale, and analysis. It clearly describes architectures, benefits, and supporting evidence to allow program-level and business decisions to be made with confidence.
- **Risk Matrix:** This document contains an assessment of the maturity of the intended technologies and development approach. It identifies major risks and mitigation plans so that proactive activities can be undertaken to reduce program costs and schedule impact.
- **Detailed Design Phase Planning Document:** This document contains design phase task definition, work breakdown structure, and a Gantt chart. It clearly defines the design phase activities needed to produce a lower risk program.

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VALUE TO CUSTOMER

The VxWorks 653 Platform Solution Assessment approach leverages the deep safety critical systems expertise of Wind River, ensuring the foundational design of the system architecture meets short term and long term business, program, and technical goals. Professionally developed collateral will be available for release to your end customer to demonstrate that an appropriate level of due diligence was performed to develop a reasonable and dependable project plan with solid cost and schedule projections.

WIND RIVER PROFESSIONAL SERVICES

Wind River Professional Services has a strong track record of guiding our customers through the complexities of VxWorks 653 design and implementation. Certified to CMMI Level 3 across all of our global development centers, our proven engagement methodology, timely delivery, and in-depth understanding of market and technology dynamics have made Professional Services a valuable implementation partner to our customers.

Wind River Professional Services welcomes the opportunity to discuss the Solution Assessment approach as it applies to your specific needs. For further information, please contact your local Wind River sales representative by visiting www.windriver.com/company/contact/index. html, calling 800-545-WIND (9463), or sending an email to inquiries@windriver.com.

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