

# Platform for Safety Critical ARINC 653

To be competitive in the aerospace and defense market, device manufacturers must deliver increasingly complex products at or below budget, on increasingly demanding schedules. These business objectives must be met without any compromise in performance. Devices must be reliable, durable, efficient, and safe. In aerospace and defense applications, human lives are always at stake.

Developing safety-critical applications is expensive, risky, and time-consuming. The current trend is to consolidate applications into a single portable, modular, and reusable computing platform—but most legacy systems were designed to support a single isolated application on a dedicated microprocessor. As a result, engineers are forced to invest time and brainpower in creating a multiple-application foundation, instead of developing outstanding applications.

In avionics and other safety-critical markets, an outstanding application doesn't just get the job done. It gets the job done safely and with absolute reliability, time after time. Developers need a solution that reduces cost and risk while providing a durable foundation for future application development. They also need a vendor that's as responsive and reliable as the products they create.

### Reduced risk produces better products

Wind River Platform for Safety Critical ARINC 653 delivers the foundation your products need to meet stringent government and industry mandates. It is completely ARINC 653 Supplement 1 compliant and provides robust partitioning in time and space to ensure fault containment in accordance with strict Integrated Modular Avionics (IMA) requirements.

Wind River's ARINC 653 platform comes with a fully integrated, Eclipse-based development suite designed to support development and certification of applications to meet RTCA/DO-178B Level A. The suite is backed by a comprehensive set of certification artifacts, available as an additional option, that supports all DO-178B Level A requirements. These certification artifacts are provided on a hyperlinked, browseable DVD to simplify safety verification and auditing.

Whether your application is legacy or new, Platform for Safety Critical ARINC 653 enables you to optimize your development process. Having a certifiable ARINC 653 COTS solution spares the risk of creating and certifying an OS and related tools for each new project.

### An optimized, integrated development suite works across the enterprise

Platform for Safety Critical ARINC 653 integrates an Eclipse-based development suite, including tools created specifically for developers of IMA applications that require DO-178B certification. The suite consists of a project facility to aid in definition of application resources, an integrated simulation tool, and an XML configuration tool to easily define the static configuration records required for ARINC 653 applications.

The DO-178B qualified XML configuration tool suite allows developers to make changes to application and/or system configuration information without rebuilding the entire system. Changes to independent applications can be made without the need to retest or recertify other applications or underlying OS in the system. This significantly reduces the time to initial certification, as well as the cost of change and maintenance throughout the device life cycle. In addition, this tool fully complies with the DO-297 IMA Development Guidance and Certification Issues Document, enabling intellectual property and security separation between the platform provider, application developer, and system integrator.

### Development Suite

GNU Compiler	System Viewer
DO-178B Qualified Verification Tools	Wind River Workbench
Integrated Simulator	XML Configuration Suite

### Software Partners

Ada 95/2005 Compilers for VxWorks	ARINC 664 Compliant Stack
DO-178B Certification Services	Simulation Platform

### OS

DO-178B Level A/B/C/D Certification Evidence*
VxWorks
BSP Developer's Kit

\* Optional: Not bundled with platform

### Hardware Partners

COTS Boards
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### Services

Training and Installation	Platform Customization	
System Design	HW/SW Integration	Design Services

Wind River Platform for Safety Critical ARINC 653 Components

Unique to this platform are three high-performance tools that aid in the deployment of certified applications. They allow developers to measure CPU use by individual applications or all applications; report memory usage of various areas of the operating system, including heaps, stacks, ports, and health monitoring data; and monitor traffic across sampling and queuing ports. Along with the operating system, the interfaces to these tools are DO-178B qualified, enabling testing of the exact deployment environment for certification.

### An intelligent licensing model simplifies budgets

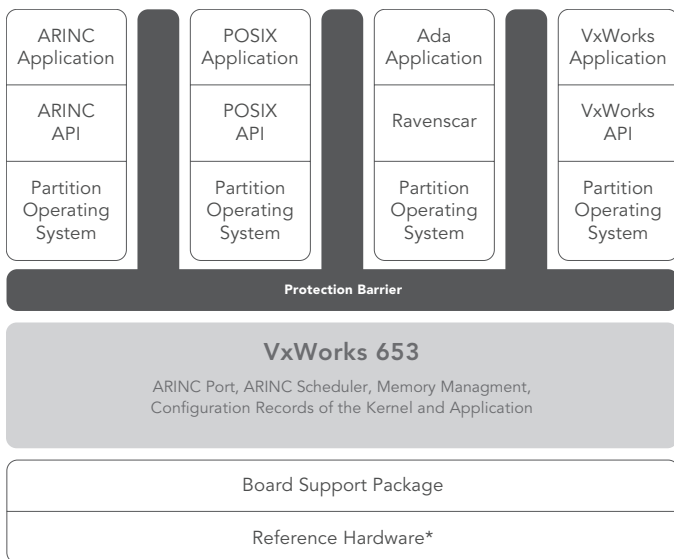
Wind River Platform for Safety Critical ARINC 653 is available to companies under an Enterprise License Agreement: subscription-based licensing that gives businesses unprecedented flexibility in project budgeting and ease in license management across the enterprise. Two modes of licensing (production license or production-license-free) offer the option of capturing license fees in R&D or manufacturing.

### A proven and reliable partner enables success

The right technology partner can greatly increase your odds of succeeding in a highly competitive marketplace. As the industry leader in Device Software Optimization, Wind River has met and exceeded the requirements of our customers and their markets for over 20 years. More than 4,000 businesses have leveraged our skills, experience, and expertise to deploy and support more than 350 million devices successfully. A vibrant, publicly traded company, Wind River is positioned to stay the course with established device manufacturers and new companies alike.

### Commercial-grade services and support speed time-to-market

Platform for Safety Critical ARINC 653 includes full access to Wind River's worldwide support organization, with 24/7 product support available through multiple channels. Customers can leverage the education credits included with the platform to bring engineering teams up to speed on the latest DSO technologies and tools. Wind River also offers a specialized Aerospace & Defense Services Practice—our team of engineers has extensive experience delivering design, integration, and optimization services tailored to the needs of your industry.



\* Optional

Integrated Modular Avionics Design with VxWorks 653

## WIND RIVER

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## Benefits

- Standards compliance maximizes portability and reusability in a feature-rich solution
- Multiple APIs reduce the need to rewrite legacy applications
- Reduced effort: Static configuration allows for minor changes without rebuilding or retesting previously certified components
- Reduced risk: Legacy applications can retain current operating system interface with minimal changes
- Support for applications that are not certified (full Ada run-time or C++)
- Support for applications that do not require certification
- High-performance kernel minimizes overhead
- Each application runs on an MMU-controlled virtual CPU, fully insulated from other applications

## Features

- Complete ARINC 653-1 compliance—the only fully compliant COTS solution
- MMU-based partition-level operating system (POS) supports Ada, ARINC, POSIX, and VxWorks applications simultaneously
- Extensible, Eclipse-based development environment
- DO-178B qualified XML configuration tool, fully conformant with DO-297
- Additional built-in tools support for testing certified applications
- True “what you test is what you deploy” debugging support—no need to rebuild applications for flight testing
- Ability to reconfigure different versions of a partition-level operating system
- Mode-based scheduling of all applications, invoked at run-time
- Support for integration of in-house, proprietary operating systems
- Ability to dynamically change the run-time environment to support unique testing and application requirements
- Integrated Ada 95 and Ada 2005 language support (available as an optional component from Wind River partners)
- Complete DO-178B Level A/B/C/D certification evidence is available
- Long-term support and product upgrades