Reducing risk and development time for multiple applications on a single platform

**WIND RIVER® PLATFORM FOR SAFETY CRITICAL ARINC 653** enables developers to accelerate the configuration, development, and debugging of applications based on **VxWORKS® AE653** – the embedded industry’s most advanced and partitioned real-time operating system (RTOS) that meets ARINC 653 and RTCA/DO-178B requirements. The environment is an enhanced suite of tools built upon Wind River’s **TORNADO® TOOLS 3** and includes features specifically designed to work with Wind River’s unique protection domain technology. The common environment supports applications written to multiple standards such as POSIX, Ada, C, and **VxWORKS**, as well as legacy applications, and is certifiable to DO-178B Level A, the highest level of DO-178B/ED-12B conformance.

With **PLATFORM SC ARINC 653**, developers get the flexibility to combine a mixture of existing applications written to different standards and other applications of differing safety and criticality. This flexible application reuse sharply accelerates development time and preserves the applications’ proven reliability and robustness. Additionally, developers can continue to use their preferred standards when creating new applications for certifiable embedded systems, minimizing changes to known development processes and controlling training costs.

**Features**
- RTCA/DO-178B Level A certification
- Temporal and Spatial partitioning IAW ARINC 653
- Full ARINC 653 API supplement 1 compliance
- Full health monitoring
- Warm/Cold restarts
- Flexible I/O model
- Multiple Applications on a single processor
- Guaranteed time and memory protection
- Partition level OS
- Complete application separation
- Based on DO-178B-compliant **VxWORKS®/Cert RTOS**
- Multitasking
- Inter-task communication
- Standard C Libraries
- Optimized Math Library
- Signals
- ARINC, Ada or C applications
- POSIX applications
- **VxWORKS®** applications
- C++ support
- **TORNADO® TOOLS 3** including simulator

**Benefits**
- Platform support for legacy applications
- Shorter time to market
- Labor-saving COTS technology
- Integrated tool suite

**Supported hosts**
- Windows 2000/NT
- Solaris
Certification required

Developers of modular safety and mission-critical systems for avionics and other highly demanding fields regularly face the challenge of integrating multiple applications onto a common operating platform. In avionics, the resulting systems have a direct bearing on airplane reliability and passenger safety, and are thus covered by – and must be certified to – the 66 objectives of the Federal Aviation Administration’s RTCA/DO-178B standard. Another challenge is that the applications being integrated are often written to different standards, making the effort to port an application to the new architecture an arduous one.

Reduces development costs

The ARINC 653-compliant COTS software in PLATFORM SC ARINC 653, being DO-178B/ED-12B-certifiable and completely documented, can help companies dramatically shorten time to market and lower development costs for these complex projects. The VxWORKS AE653 operating system, a key part of PLATFORM SC ARINC 653, fully meets the requirements of ARINC 653 supplement 1. It is a DO-178B Level A certifiable partitioned operating system that provides a unified solution for running ARINC, POSIX, VxWORKS, C, Ada, and legacy applications on a single processor.

DO-178B/ARINC 653 development

PLATFORM FOR SAFETY CRITICAL ARINC 653, is based on Wind River’s TORNADO INTEGRATED DEVELOPMENT PLATFORM. This is a complete development solution for VxWORKS projects requiring DO-178B/ED-12B certification and conformance to the ARINC 653 standard. The robust partitioning provided by PLATFORM SC ARINC 653 enables developers to integrate applications of differing safety and criticality levels onto a single processor. This saves significant time and money when developing new or expanded systems without compromising safety.

VxWORKS AE 653 RTOS

Based upon Wind River’s previously certified operating system, VxWORKS/Cert, VxWORKS AE653 provides and enforces space and time partitioning, thereby, guaranteeing kernel resources for safety critical applications. A partition level operating system (vThreads) supports each application within a domain and provides full tasking support, message queues, standard C library support, and even a C++ library. VxWORKS AE653 meets all the requirements of ARINC 653 supplement 1, including 3 levels of health monitoring, ability to cold/warm start partitions, and a flexible I/O model that can be tailored to your specific platform needs.

Full DO-178B certification documentation and compliance

This is a complete development solution for projects requiring DO-178B/ED-12B certification. It provides a certifiable version of the VxWORKS AE653 operating system and includes documents, reviews, tests cases, results, and analyses to support Level A certification, as well as source code. The hyper-linked CD-ROM certification kit contains more than 11,000 files, including all required DO-178B Level A documentation plus a Software Vulnerability Analysis that application developers can use when designing safety critical applications.

The kit facilitates easy traceability analysis from the requirements, design, code, and test phases. In fact, developers can do a complete DO-178B audit of the certification evidence using only a personal computer (PC). Gone are the piles of hard copy documents that make traceability an almost impossible task.

Long-term support

Wind River recognizes the need to provide support for PLATFORM SC ARINC 653 far beyond ordinary COTS products. Wind River’s long-term support program addresses these requirements.

Wind River services

Wind River offers expert consulting and development services, including assistance with certifying VxWORKS AE653 applications and providing certified board support packages.

For more information

To find out how PLATFORM SC ARINC 653 can move development projects forward, contact your Wind River account manager.

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