Wind River Platform for Safety Critical DO-178B

Wind River Platform for Safety Critical DO-178B gives developers access to Wind River’s commercial off-the-shelf (COTS) platform for applications that must be certified to the stringent requirements of RTCA/DO-178B, DO-278, or EUROCAE/ED-12B (Software Considerations in Airborne Systems and Equipment Certification). With Platform for Safety Critical DO-178B, developers can take full advantage of technological advances in microprocessors with the assurance they will not have to seek separate certification for COTS software components. Platform for Safety Critical DO-178B ensures that VxWorks is certifiable to Level A, the highest level of DO-178B/ED-12B conformance.

COTS Without Compromise
The avionics market has long made use of COTS microprocessors for a variety of flight-critical applications that have a direct bearing on aircraft reliability and passenger safety. Resulting directives by the Federal Aviation Administration (FAA) to form software life-cycle and testing guidelines for the aviation industry ultimately produced the RTCA/DO-178B safety standard, a set of 66 objectives that avionics equipment manufacturers must painstakingly meet for certification.

Wind River’s DO-178B/ED-12B certifiable COTS software and complete documentation help reduce time-to-market, giving equipment manufacturers a competitive advantage and the ability to leverage additional, ready-made technology available from Wind River partners.

DO-178B Development
Platform for Safety Critical DO-178B is based on Wind River’s Tornado development platform and includes a certifiable version of the VxWorks real-time operating system (VxWorks/Cert). It is a complete development solution for VxWorks projects requiring DO-178B/ED-12B certification and includes the documentation required to support the certification process, as well as standard and certifiable kernel binaries, kernel test routines, test results, and source code. DO-278 requirements are fully addressed within the solution.

Platform for Safety Critical DO-178B provides access to the leading tools from Wind River and its partners to support development in C, C++, and Ada.

VxWorks/Cert
VxWorks has been in wide commercial use in embedded applications for more than a decade. VxWorks/Cert is a subset of VxWorks 5.4, specifically tuned for predictability, features, and certifiability under FAA guidelines for Level A

Features
Development Tools
- Tornado II
- SNiFF+ PRO
- GNU compiler
- Wind View
- DO-178B certification evidence

Run-Time Components
- VxWorks/Cert RTOS
- RTCA/DO-178B and EUROCAE/ED-12B Level A certification
- Certifiable standard C-library components, including formatted I/O
- Intertask communication mechanisms
- Exception handling
- Software signals
- Optimized math libraries
- Error handling

BSP Options
- MVME 5100, MVME 2400, MVME 5100-certified

Supported Hosts
- Windows
- Solaris

Supported Targets
- Motorola or IBM PowerPC
requirements as defined by RTCA/DO-178B. In addition, when selecting the API subset, consideration was given to the requirements of RTCA/DO-255 and ARINC 653, to allow easy migration to Wind River’s product, complying with ARINC 653 and DO-178B. Basic operating features have been strictly maintained, with the exception of functions unsuitable for airborne applications due to compromised determinism or memory fragmentation. A full set of debugging libraries is available for the certifiable kernel, allowing for debugging over a serial connection as well as verification of the final run-time system.

Certification Package
The DO-178B certification package included with Platform for Safety Critical DO-178B is unique in the industry. All the necessary documents to support DO-178B compliance are placed on a hyperlinked CD-ROM that allows for easy traceability analysis, from the requirements, design, source code, and test case phases, to analyses using a simple browser. Gone are the piles of documents normally associated with DO-178B certification and the laborious task of manually demonstrating traceability.

The Wind River certification kit is comprised of more than 11,000 files, including all required DO-178B Level A documentation, plus a software vulnerability analysis that aids application developers in proper design of safety critical applications.

Wind River Services and Long-Term Support
Wind River offers expert consulting and development services, including assistance with certifying VxWorks/Cert applications and providing certified board support packages (BSPs). And Wind River recognizes the need to provide support for Platform for Safety Critical DO-178B far beyond ordinary COTS products. Wind River’s long-term support program addresses these requirements.

For more information about the benefits of choosing the Platform for Safety Critical DO-178B, contact your local Wind River account representative.