

AUTOMOTIVE PROFILE FOR VXWORKS

Powering billions of intelligent devices, VxWorks® is the world's most widely deployed real-time operating system (RTOS). Leading global innovators choose VxWorks to differentiate their platforms with best-of-breed capabilities, reduce development and certification costs, and accelerate time-to-market.

Proven in aerospace and defense, automotive, and other safety- and security-critical applications, VxWorks delivers unrivaled deterministic performance and sets the standard for a rich, scalable, and future-proof operating environment for the Internet of Things (IoT). VxWorks with Automotive Profile for VxWorks provides car manufacturers and their Tier 1 suppliers an AUTOSAR-compliant, ISO 26262-certifiable platform for automotive safety-critical applications—from advanced driver assist systems (ADAS) to piloted and autonomous driving.

BENEFITS

Safety First

Automotive Profile delivers advanced safety partitioning capabilities that enable ISO 26262-certifiable consolidation of multiple applications with different levels of safety criticality onto a single hardware platform while maintaining their time- and space-based separation and isolation—all without introducing risk to other software components or impacting compliance. Certifiable to various Automotive Safety Integrity Levels (ASILs), Automotive Profile provides a reliable, robust solution for safety-critical ADAS and autonomous functions.

Streamlined AUTOSAR Integration

Automotive Profile has been engineered in conformance with the AUTOSAR standards and methodology. It supports standardized connectivity and functional interfaces to other automotive software components, enabling simpler, cheaper, and faster interoperability and integration.

Robust Security for the Connected Car

Automotive Profile includes a range of security capabilities to protect vehicle functions from unauthorized access and attacks, including prevention of tampering or execution of unauthorized code, leveraging Intel® Platform Trust Technology (fTPM) and ARM® TrustZone®-based secure boot.

Lower Costs, Space, Weight, and Power Consumption

Modern vehicles incorporate more than 125 dedicated electronic control units (ECUs). These ECUs account for significant bill-of-materials and warranty costs; take up increasing amounts of space; draw power; and add weight that decreases the vehicle's energy efficiency. Automotive Profile enables reliable consolidation of a large number of software-driven functions on a smaller number of more powerful ECUs.

TTTECH SELECTS VXWORKS

TTTech is a leading supplier of networking solutions based on time-triggered technology and modular safety platforms. TTTech helped Audi create a new ADAS platform featuring innovative functions, such as piloted driving and parking. To develop safety-related ECUs based on networked multi-core system-on-chips (SoCs) for ADAS and camera-based automotive vision applications, TTTech selected the VxWorks RTOS to host safety-critical software components side by side with non-critical ones in a single system architecture conformant to the ISO 26262 safety standard.

WIND RIVER AUTOMOTIVE SOLUTIONS

Advanced Software Solutions to Enable Automotive Innovation

- 30+ years of leadership in secure software development and integration
- Complete portfolio of automotive services, software, and tools
- 70+ automotive clients across six continents
- 300+ dedicated automotive engineers worldwide

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HOW TO PURCHASE

Visit www.windriver.com/company/contact, call 800-545-9463, or write to inquiries@windriver.com to connect with the Wind River Automotive Solutions sales team.

KEY FEATURES

Automotive Profile enhances the VxWorks 7 Core Platform with the following additional capabilities:

Safety

VxWorks with Automotive Profile delivers a real-time operating system that is ISO 26262-certifiable up to ASIL-D. The RTOS incorporates time and space partitioning functionality to enable consolidation of multiple applications with different levels of safety criticality on the same hardware platform. The time-partitioning scheduler ensures critical applications get a guaranteed time frame to execute. VxWorks real-time processes (RTPs) provide the space partitioning required to protect safety-critical applications from being affected by lower-criticality applications.

Security

It is imperative for automotive security-critical systems to be able to prevent the injection and execution of malicious code into the system by only allowing authenticated (signed) binaries to run. The Secure Boot function verifies binaries at every stage of the boot-up process. If a component fails to pass signature verification, boot will stop. Other security features implemented in Automotive Profile include the following:

- Wind River® SSL Secure Sockets Layer protocol
- Wind River SSH Secure Shell protocol
- Wind River Cryptography Libraries
- Wind River IPsec and IKE Internet Protocol Security suite and Internet Key Exchange
- Wind River Wireless Security

Connectivity

- **Automotive Open System Architecture (AUTOSAR) integration:** VxWorks with Automotive Profile provides an AUTOSAR-compatible run-time environment that has been developed in accordance with the AUTOSAR process and specifications to streamline connectivity to other software components and systems.
- **Wind River SocketCAN:** Controller Area Network (CAN) is a communications protocol widely used in real-time control applications. SocketCAN provides a uniform interface where multiple sockets can be opened at the same time to listen and send frames to CAN identifiers (IDs).

Device Manageability

The following features of Automotive Profile enable remote device manageability:

- Wind River Web Services: HTTP, XML, and GSOAP
- WebCLI
- Wind River SNMP Simple Network Management Protocol
- Wind River Web Server
- MIBway for Wind River Web Server
- MCE
- cURL

