Breakout Session

Helix Virtualization Platform - Advancing Safety for Avionics with Intel® Xeon® D-1700/2700 and 11th Gen Intel® Core™ processor

Teodor Bobirnila, Wind River
Global leader in delivering software for intelligent connected systems, offering a comprehensive, edge-to-cloud software portfolio

Technology and expertise that enable the development, deployment, operations, and servicing of mission-critical intelligent systems

Wind River technology found in more than 2 billion products

Award-winning customer support, a broad partner ecosystem, and world-class professional services

Headquartered in Alameda, CA, with ~1,300 employees, including 460 in R&D and 235 in GTM

1981
Founded

~1,300
Employees Globally

1,700+
Global Customers

~$400M
2021 Revenue

20
Countries/Global Presence

2B+
Deployed Edge Devices

8
Consecutive Years Ranked As Top Workplace

250+
Ecosystem Partners

#1
Market Share in Edge Compute OS Platforms
NEW WAVE OF AI-INFUSED EDGE SOLUTIONS THAT NEED COMPUTE, DATA ANALYTICS, AI/ML, 5G AT THE INTELLIGENT EDGE
SAFETY CERTIFIABLE, MULTI-CORE, MULTI-TENANT PLATFORM FOR MIXED LEVELS OF CRITICALITY
WIND RIVER STUDIO
VIRTUALIZED OS PLATFORM

- Powered by Helix Virtualization Platform
- An evolutionary, modern platform, based on solid foundations and successful deployments of VxWorks 653 lineage

### VxWorks 653 MCE
- Support for PowerPC
- Features
  - DO-178C A certification evidence
  - IMA design
  - FACE 3.0 conformance
  - ARINC 653 extensions
  - Wind River Linux guest support

### Helix Virtualization Platform
- Support for IA64 and ARMv8
- Features
  - Certifiable (DO178C, IEC 61508, ISO26262)
  - Integrated modular avionics (IMA) design
  - FACE 3.1 support
  - ARINC 653 extensions
  - Wind River Linux and latest VxWorks guest support
PROVEN, SUCCESSFUL TRACK RECORD FOR ARINC 653 SPECIFICATIONS IN IMA

OVER 20 YEARS

experience in safety certification software products

Safety is paramount in today’s advanced avionics systems, leaving no room for undue latency, system failure, or security vulnerabilities.
MIXED CRITICALITY PARTITIONING

- Consolidate multiple operating systems and deploy mixed-criticality applications on a single edge compute platform, reducing size, weight, and power.
AIRWORTHINESS STANDARDS

- Avionics OEMs, suppliers, systems architects, and planners can rely on the features and capabilities of the real-time platform that supports Intel® Xeon® D-1700/2700 and 11th Gen Intel® Core™ processor-based platforms and adhering to industry certification standards, including ARINC 653; POSIX®; and FACE™ Technical Standard, Edition 3.1.

- The time-consuming, technically complex tasks involved in meeting airworthiness criteria can be simplified by means of processor-specific Flight Safety Evidence Packages (FSEPs) available from Intel. Embedded Intel® Xeon® D processors include airworthiness evidence packages for DO-254 DAL C and DO-254 DAL A, as well as confirmed support for the leading DO-178C certifiable real-time operating system, VxWorks.
INTELLIGENT SYSTEMS
USE CASES

Autonomous Robotics
Wind and Renewable Energy
Military Applications
Medical and Health
Commercial Aviation
Autonomous Transport
Industrial Transportation
Telco Operations
Warehouse Robotics
CASE STUDY: EVOLUTION OF EDGE SYSTEMS IN A&D

» on-prem:
Wind River enabling OCI compliant containers at the intelligent edge for VxWorks and Linux in specific subsystems

» cloud:
Wind River Studio enabling critical subsystems and a distributed edge cloud, with DevSecOps for rapid deployment and full lifecycle automation

Joint All-Domain Command and Control (JADC2) is the DOD’s concept to connect sensors from all of the military services — Air Force, Army, Marine Corps, Navy, and Space Force — into a single network.

Implementation requires a cloud-like environment connected to existing critical systems for the Joint force to share intelligence, surveillance, and reconnaissance data, transmitting across many communications networks, to enable faster decision-making.
GUEST OS AND HARDWARE SUPPORT

- **Guest OS support**
  - Support for SMP guests
    - APEX, health monitor, AMIO, shared memory, and MPFS
  - VxWorks (latest), VxWorks Cert
  - Wind River Linux
  - Bare metal
  - Non-Wind River OSes (via Professional Services)

Intel® Xeon® D-1700/2700 and 11th Gen Intel® Core™ processor-based platforms
Call of action

Wind River Studio
https://www.windriver.com/studio/tour

Helix Virtualization Platform Product Page
https://www.windriver.com/studio/edge-devices/virtualized-os

White Paper

Video: Urban Air Mobility at the Intelligent Edge
https://www.youtube.com/watch?v=GGUfzGIbPAo

Video: Digital Cockpit Flight Display Demonstration
https://www.youtube.com/watch?v=fDo2u3z3PA
Thank you for watching!
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