EDUCATION SERVICES

HELIX PLATFORM ESSENTIALS FOR AEROSPACE AND DEFENSE

COURSE DESCRIPTION

The Helix Platform Essentials for Aerospace and Defense course provides engineers with a fast, cost-effective way to acquire the skills necessary to develop safety-critical applications with Helix Platform.

After this course, participants will be able to perform the following:

- Take a requirement specification to a working application
- Develop, test, and debug safety-critical applications with the Helix Platform real-time operating system (RTOS)
- Accelerate the development and configuration of ARINC 653 safety-critical systems
- Use Helix Platform–specific Wind River Workbench facilities to configure Helix Platform applications
- Build applications within partitions, and use ARINC ports for I/O from partitions
- Use core tools efficiently: debugger, Wind River System Viewer.

PRODUCTS SUPPORTED

- Wind River Helix Virtualization Platform (version SR-0640)

COURSE FORMAT

- This four-day expert-led course consists of lectures and lab sessions.
- Attendees use Helix Platform to gain experience with the topics presented.
- Participants examine and exercise simulated network topologies in hands-on labs.
- Participants receive individual guidance from an expert engineer who has extensive experience with Wind River technologies.

AUDIENCE

- Application developers creating standards-based safety-critical applications
- Developers who primarily use C and need to develop partition-based applications using the features of the Helix Platform and VxWorks 7 partition operating system

PREREQUISITE SKILLS

Course title:	**Helix Platform Essentials for Aerospace and Defense**
Duration:	Four days
Format:	Instructor-led lectures and hands-on lab sessions; instructor-led Live Remote delivery available
Content:	Getting Started with Helix Platform; Helix Platform Hypervisor Architecture; Helix Platform Hypervisor (Static Configuration with XML and Helix Hypervisor Project); Partitions; Processes; Intra-partition Communication; Inter-partition Communication; Health and Error Management; System Architecture; Helix Platform Shared Memory;Helix Platform Debugging; System Viewer in Helix Platform

- One year of C or C++ programming experience

PREREQUISITE COURSES

- None

RELATED COURSES

- None

SYLLABUS

GETTING STARTED WITH HELIX PLATFORM

- Helix Platform overview
- ARINC 653 overview
- The specification
- System overview
- Creating a system
- Booting and connecting host and target
- XML editors

- Hands-on lab
- Key references
- **LAB: Getting Started with Helix Platform (Static Configuration with a Hypervisor Project)**

HELIX PLATFORM HYPERVISOR ARCHITECTURE

- Architectural design
- Memory translations
- Virtual machines and devices
- Booting Helix Platform

HELIX PLATFORM HYPERVISOR (STATIC CONFIGURATION WITH XML AND HELIX HYPERVISOR PROJECT)

- Architectural design
- Host tools
- Memory pools
- Booting and loading
- Key references
- Hands-on
- **LAB: Developing a Helix Platform System (Static Configuration with a Hypervisor Project)**

PARTITIONS

- Partitions introduction
- Essentials
- Key references

PROCESSES

- Time in ARINC 653
- Introduction to processes
- Essentials
- Key references
- **LAB: Scheduling Helix Platform Processes**

INTRA-PARTITION COMMUNICATION

- Intra-partition communication introduction
- Essentials
- Hands-on lab
- Key references
- **LAB: Communication Within a Partition**

INTER-PARTITION COMMUNICATION

- Inter-partition communication introduction
- Essentials
- Hands-on lab
- Key references
- **LAB: Communicating Between Partitions**

HEALTH AND ERROR MANAGEMENT

- Introduction to health monitoring
- Process-level error handling
- Partition and module-level error handling
- Hands-on lab
- Key references
- **LAB: Monitoring the Health of Processes**

SYSTEM ARCHITECTURE

- Overview
- Concept review
- Partition OS space
- Module OS space
- Helix Platform
- Key references

HELIX PLATFORM SHARED MEMORY

- Shared memory features
- Technical details
- System configuration
- Key references

HELIX PLATFORM DEBUGGING

- Debugger overview
- Debug access architecture
- VxWorks guest debugging configuration
- System mode debugging configuration
- Debugging
- Key references
- Hands-on lab
- **LAB: Debugging Guests**

SYSTEM VIEWER IN HELIX PLATFORM

- Introduction
- Configuring System Viewer
- Settings for application mode connections
- Settings for system mode connections
- Instrumenting a VxWorks guest
- Using System Viewer
- Key references
- Hands-on lab
- **LAB: Using System Viewer**

OPTIONAL APPENDIXES

- Comparing VxWorks 653 3.0.1.1 and Helix Platform SR0640
- Embedded RTOS overview
- Helix Platform certification
- Miscellaneous certification elements
- Helix Platform XML primer

GLOBAL REACH OF WIND RIVER EDUCATION SERVICES

With more than 30 years of experience delivering software for the intelligent edge, Wind River provides education services in every region of the world. Our private classes can be tailored to your needs by adding or removing topics from multiple courses. If you have more specific project challenges, Wind River Mentoring provides coaching by experienced engineers to help you integrate Wind River solutions into your environment. And when you're too busy to attend a whole class, our Wind River Learning Subscription provides around-the-clock access to advanced and specialized topics on demand. All of our education services are led by expert engineers who are closely connected to the Wind River technical community for access to specific expertise.

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