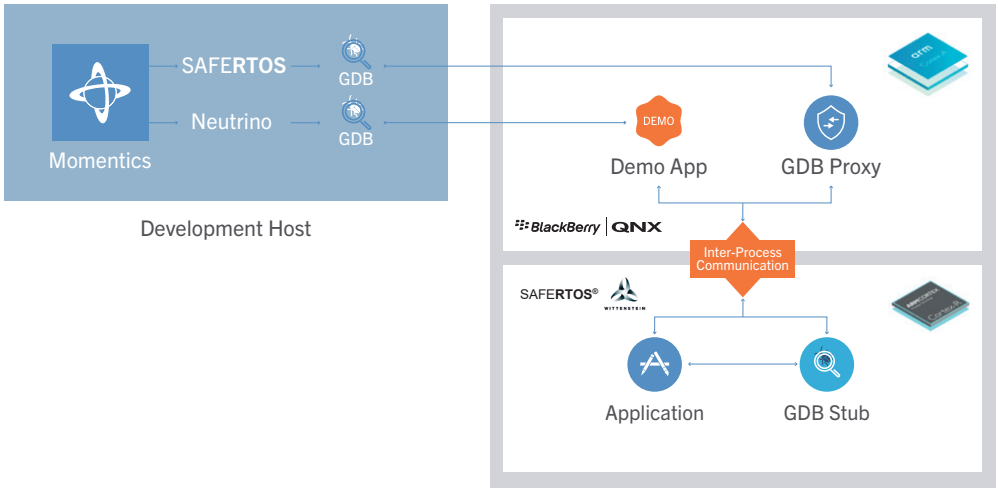
BlackBerry | QNX

WITTENSTEIN

SOLUTION BRIEF

Safety-Critical Heterogeneous Multicore Development

Development on heterogeneous system-on-chip processors presents many challenges to development teams looking to optimize their design to the available processing units. Blackberry QNX and WITTENSTEIN high integrity systems (WHIS) now offer an embedded software platform solution to address those challenges and accelerate the development and deployment of safety certified and mission-critical applications deployed on these processors.



Overview

The solution builds on the safety legacy of both the WHIS SAFE**RTOS**® and the QNX Neutrino operating system to reduce certification costs and risk while enabling development of highly reliable, mixed criticality systems. Both operating systems have been certified to ISO26262 ASIL D and IEC 61508 SIL 3 levels and offer a proven foundation on which to base future designs.

Extensions to the QNX Momentics® Tool Suite provide development and debugging features for SAFE**RTOS** tasks running on adjacent MPU cores within the SOC. Developers can leverage one IDE and a common tool suite based on open standards including Eclipse and GCC to speed up all phases of development.

QNX Momentics provides complete state and data information across ARM Cortex processors including Cortex A, Cortex R and Cortex M cores. In addition, the QNX Momentics GDB based source level debugger allows developers to:

- Concurrently debug multiple applications coded in C and C++ across heterogeneous ARM cores
- Debug multi-threaded applications with independent tracking for each thread and trace control from thread to thread
- Debug multiple processes distributed across multiple CPUs / cores and trace execution paths from one CPU to another
- Dynamically attach the debugger to any running process

A reference target image is provided for evaluation purposes, proof of concept work and as a starting point for your development project. The image seamlessly integrates both QNX Neutrino and SAFE**RTOS** as well as safe, secure inter-processor communication software for messaging between the two operating systems, sample applications, startup scripts, and development utilities.

Development teams can migrate to QNX OS for Safety, the safety certified version of our operating system that maintains full API compatibility with QNX Neutrino. Similarly, teams can prototype using FreeRTOS and convert to SAFE**RTOS** at the start of formal development.

Evaluation software can be obtained under license from either Blackberry QNX or WHIS by contacting your local sales representative.

Benefits

One integrated development environment suite based on open standards including Eclipse and GCC that enables heterogeneous multicore development	✓
Effectively optimize your product to the available processing units on modern heterogeneous multi-processor system-on-chip processors	✓
Leverage the seamless integration between SAFE**RTOS** and QNX Neutrino to accelerate the development and deployment of safety certified and mission-critical applications	✓
Build highly reliable, mixed criticality safety systems while guarding against system malfunctions, malware, and cyber-attacks through a multi-level, policy-driven security model	✓
Ramp up quickly. Draw from a large existing engineering community to staff your project. QNX Neutrino is fully POSIX compliant. SAFE**RTOS** is based on the functional model of the FreeRTOS kernel	✓

About BlackBerry QNX

BlackBerry QNX, is a leading supplier of safe, secure, and trusted operating systems, development tools, and professional services for connected embedded systems. Global leaders such as Ford, Audi, Cisco, General Electric, Lockheed Martin, and Siemens depend on BlackBerry QNX technologies for their next generation of secure vehicle software platforms, network routers, medical devices, industrial automation systems, security and defense systems, and other mission and/or life-critical applications. This includes full software lifecycle management via secure over the air software updates. Founded in 1980, BlackBerry QNX is headquartered in Ottawa, Canada, with its products distributed in over 100 countries worldwide.

About WITTENSTEIN high integrity systems

WITTENSTEIN high integrity systems is a safety systems company that produces and supplies real time operating systems and platform solutions to the Automotive, Aerospace, Medical and Industrial sectors worldwide. For more information, please visit https://www.highintegritysystems.com.

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