QNX Software Systems

Enabling safe, intuitive, connected medical devices

QNX® Software Systems provides a reliable, multi-core, realtime operating system (RTOS) for building safety-critical embedded systems, supported by field-proven development tools, feature-rich middleware, and professional services.

QNX® Neutrino® RTOS is a full-featured, multi-core operating system that meets the most demanding needs of today's cutting-edge medical devices. Flexible graphics technologies, power management features, and connectivity options help developers quickly and easily build medical devices, while advanced security and fault containment mechanisms built directly into the OS ensure systems are safe and reliable.

QNX OS for Medical is designed to help reduce the effort of building safety-critical products that must pass regulatory approval. Choosing components that are already compliant and have a known pedigree can significantly speed up the device certification process. The QNX OS for Medical is declared as being compliant to IEC, a standard for "Medical device software – Software life cycle processes", and has been validated by an independent third party. The product is supported on ARM and x86 processors.

QNX SDK for Apps and Media allows device manufacturers to build mobile-like UIs with full multimedia capabilities. It offers optimized browser performance, cutting-edge HTML5 features, consumer electronics device connectivity, and audio and video playback.

QNX Momentics® Tool Suite is a comprehensive, Eclipse-based integrated development environment with innovative profiling tools. It provides at-a-glance views of realtime interactions, memory profiles, and more, enabling shorter debug times and faster time to market.

Benefits

- **Fault tolerant filesystems** - A wide range of block and flash filesystem formats are supported along with a power-safe disk file system for data integrity and reliable storage
- **High availability** - The QNX high availability framework enables critical process monitoring and restarts without the need to reboot
- **Adaptive partitioning** - QNX adaptive partitioning offers dynamic scheduling capabilities to enforce service availability and to optimize device performance
- **Networking** - Native distributed processing supports complex distributed systems in which multiple devices seamlessly share resources and communicate without custom protocols
- **Pre-integrated protocols** - Pre-integrated protocols for networking (USB, Bluetooth, Zigbee, 802.11) and security (WEP/WPA/WP2, Radius, 802.1x, SSL, IPSec, IPv6, and NAT) reduce time to market
- **Debugging** - Shorten debug times with comprehensive, Eclipse-based development tools for code analysis and traceability

Security

The inherent security strengths of the QNX OS microkernel architecture reduce attack surfaces by running all processes, including system services, outside of the kernel in memory-protected user space. Fine-grained control of system privilege levels provides the unique ability to control settings that govern and protect which operations a process can perform, with granularity down to the system-call level. It is also possible to divide the file system into encrypted domains and randomize the address space layout for further protection against malicious intent.

Graphics / HMI

The QNX OS enables developers to build graphically rich, compelling user interfaces using built-in, high performance, OpenGL ES-based transitions. It supports multi-touch displays and gestures, and renders images from Qt, HTML5, video, and other technologies through a single compositing windowing system, which integrates multiple graphics and UI technologies into a single scene. The QNX OS has a graphics driver architecture with an API tuned for embedded and mobile devices that can efficiently handle resource constraints.

Services

QNX Professional Services provides cost-effective assistance and expertise to medical device manufacturers for developing highly reliable embedded software and meeting regulatory agency requirements.

- Flexible support programs
- Professional training
- Expert consulting
- Architectural reviews
- Software debugging
- Human-machine interfaces
- Custom engineering

IEC 62304 compliance assistance – QNX Professional Services can help pave the path to compliance. By leveraging existing data on various QNX-supported hardware platforms and QNX expertise in IEC 62304 compliance, the Professional Services team can identify the best solutions to shorten time to compliance and considerably reduce costs at the system level.

FDA consulting service – QNX Software Systems has a proven track record of successfully helping companies with FDA approvals for medical devices running the QNX Neutrino RTOS. This includes deep experience with helping customers achieve FDA 510(k) clearance. The QNX Professional Services team also provides product life cycle management services – everything from process reviews to quality system audits. What's more, service providers in the QNX ecosystem can help with the pre-market notification process as well as the more complex pre-market approval process.

Partners

QNX Software System's most fundamental technology relationships are based on the silicon sitting beneath the OS and the market-driven middleware components that sit on top of it. More than 200 industry-leading hardware and software vendors give QNX customers extended functionality and optimize the performance of their future designs.

At a Glance

Founded: 1980

Headquarters: Ottawa, Canada

Worldwide offices:

- Canada
- China
- Germany
- Japan
- Korea
- United Kingdom
- United States

Authorized distributors: Over 100 countries on 6 continents

Industry certifications

- IEC 62304 Software Life-Cycle for Medical Devices compliant
- IEC 61508 Safety Integrity Level (SIL) 3
- Common Criteria EAL 4+
- POSIX PSE52 Realtime Controller 1003.13-2003
- OpenGL ES certified conformant implementation
- ISO 9001:2008

About QNX Software Systems

QNX Software Systems Limited, a subsidiary of BlackBerry, is a leading vendor of operating systems, development tools, and professional services for connected embedded systems. Global leaders such as Audi, Cisco, General Electric, Lockheed Martin, and Siemens depend on QNX technology for vehicle infotainment units, network routers, medical devices, industrial automation systems, security and defense systems, and other mission- or life-critical applications. Founded in 1980, QNX Software Systems Limited is headquartered in Ottawa, Canada; its products are distributed in more than 100 countries worldwide. **Visit www.qnx.com**