QNX in the heart of innovation

Kimm Krueger, Director, Asia Pacific Sales
QNX at a glance

Global presence: NA, Europe, Asia
Markets: Auto, medical, industrial, networking, consumer, mil-aero
History: 1980-2004 Privately owned
2004-2010 Harman International
2010-present Research In Motion
QNX Overview

- Founded in 1980 by Dan Dodge and Gordon Bell
  - University of Waterloo graduates
- HQs in Ottawa, Ontario – “Silicon Valley North”
- Serving in 40 countries on 6 continents
- Number of Employees: 450 and growing
- “30 year-old startup” – Strong culture of innovation

- Key to success - three principles of QNX technology
  1. Microkernel architecture: Bug resiliency, self-healing systems, rapid development, field upgradeability
  2. Industry standards: Reusable software assets, tool and application portability
  3. Pre-integrated platforms: Development-ready technology, low-risk prototypes, fast time to market
Canadian landscape
Concentrated in 6 Major Urban Regions

**CALGARY**
- Computer System Design
- Wireless Technologies
- Geomatics
- Electronic Instruments
- 2,326 Firms
- 23,000 Jobs

**VANCOUVER**
- Software Publishing and Games
- Computer Systems Design/Data Processing
- Electronic Instruments
- Microelectronics
- 2,949 Firms
- 40,100 Jobs

**KITCHENER-WATERLOO**
- Wireless Technologies
- Software Publishing
- 511 Firms
- 17,500 Jobs

**TORONTO**
- Software Publishing
- Telecom Equipment
- Microelectronics
- Electronic Instruments
- 11,196 Firms
- 138,200 Jobs

**OTTAWA**
- Telecom Equipment
- Electronic Instruments
- Software
- 8,002 Firms
- 39,700 Jobs

**MONTREAL**
- Computer System Design & Services
- Software Publishing (including Games)
- Telecom Equipment
- Microelectronics/Photonics
- 4,916 Firms
- 71,600 Jobs

**Areas of ICT Sector Concentration**
Vibrant ICT ecosystem

- Across Canada 32,700 + companies, 80% are SMEs (under 10 employees)
  - Majority are in software and computer services, specifically computer systems design
  - Approx. 3,002 ICT companies located in Ottawa

- The sector employs 556,000+ skilled workers, half of these jobs are in software development
  - 84% all workers hold a post-secondary graduate degree

- ICT sector revenues grew over 30% from CDN$129billion to CDN$168billion between 2002 to 2011;

- Top 10 largest software companies in the world have R&D operations in Canada – IBM, SAP, Microsoft
Research and Development

• ICT sector R&D expenditures totalled $5.3 billion in 2011.
  – 34.1% of all private sector R&D spending in Canada

• Generous R&D tax credits
  – Canada currently offers one of the most favorable tax treatments for R&D among the G-7.
  – Canada provides a system of tax credits and accelerated tax deductions for a wide-variety of R&D expenditures.

• Strong history of industry and academic collaboration
ACCESS TO TALENT!

• According to recent OECD report, Canada is the most educated country in the world
  – 51% of population has a degree
• Canadian universities produce 45,000 grads a year in mathematics, engineering and pure and applied science
• 95 universities and 134 colleges in Canada
• Multicultural and multilingual (200 + different languages spoken – Mandarin/Cantonese no.3 after English and French)
Academic innovation in SOFTWARE

- **U of Waterloo** – Centre for Computational Mathematics in Industry and Commerce; Institute for Computer Research & Institute for Quantum Computing; The Waterloo Institute for Health Informatics
- **U of Toronto** – Centre for Global eHealth Innovation
- **U of Saskatchewan** – Centre for High Performance Computing
- **U of Quebec** – Laboratory of Combinatorial Mathematics and Computing Science
QNX and UX

QNX has always delivered positive user experience through innovation excellence

• For device manufacturers: Superb reliability of microkernel architecture
  • Self-healing systems that intelligently recover from errors
  • Seamless sharing of networked resources for efficient product development

• For engineers: Standard-based productivity tools enabling rapid development
  • Multicore-aware, visual tools to provide maximum insight on system behavior
  • Adaptive partitioning to help ease integration phase

• For end-users: Fast and super reliable systems that “just works”
  • Resilient system repels Denial-of-Service attacks
  • Fastboot for immediate system response

• Now for consumers...
  • Seamless connectivity between automotive and mobile devices
  • Feature-rich, customizable HMIs
# QNX embedded characteristics

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<thead>
<tr>
<th>Microkernel based</th>
<th>Ultra-reliable</th>
<th>Customizable</th>
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| • Trusted kernel code is very small (1% of Linux)  
• All apps, services and drivers protected  
• Failures isolated | • Designed-in protection for memory, file system, and CPU | • Created with embedded customization in mind  
• Supports wide range of silicon and BSPs |

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<th>Hard real-time</th>
<th>Resource sensitive</th>
<th>True multi-tasking</th>
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| • Repeatable + responsive performance  
• Fast boot for immediate response after reset | • 32MB or less for HMI-based solution  
• Microkernel lets system architect trim to fit | • Versus application swapping |
<table>
<thead>
<tr>
<th>Company</th>
<th>Product/Service</th>
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<tbody>
<tr>
<td>Westinghouse</td>
<td>Nuclear power plants</td>
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<td>VISA</td>
<td>Financial server network</td>
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<td>OnStar</td>
<td>Telematics</td>
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<td>Harris</td>
<td>Software defined radio</td>
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<td>GE Transportation</td>
<td>Locomotives</td>
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<tr>
<td>Neptec</td>
<td>Space vision systems</td>
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**Mission-critical reliability**
How QNX technology touches your everyday life

- Surf the internet
- Call 9-1-1
- Use a credit
- Take a train
- Drive to work
- Visit a doctor
- Turn on a light
- Enjoy a blockbuster
Customer spotlights

- Emerson
- Siemens
- Honeywell
- GE Energy
- Omron
- Xiebackpeter
- Harris
- MPRI
- Abbott
- Harman
- Mechtronix
- Panasonic
QNX and RIM

• QNX remains independent as RIM subsidiary
  – Expanding operations in embedded markets

• QNX as RIM differentiator
  – QNX automotive market leadership
  – Pedigree in mission-critical and life-critical systems – positive brand value

• RIM benefits to QNX
  – Increased investment in core products
  – Expanded ecosystem
  – Enhanced awareness for QNX brand
1995  Byte Magazine Editor’s Choice Award of Distinction
1997  Jolt Productivity Award
1998  Financial Post Award – Canada’s 50 best-managed companies
2002  Fortune Magazine Heroes of Manufacturing designation
2003  Software Development Times 100 list

Industry recognition

2004  Embedded World Award – Embedded Software
2006  Frost + Sullivan Automotive Software Innovation of the Year
2007  Eclipse Community Award – Best Developer Tool
2007  Software Development Times 100 list
2008  Elektra Award – Embedded Systems
2008  Intel Embedded + Communications Alliance Award of Excellence
2009  Adobe MAX Award – Mobile
2010  Telematics Award – Best Telematics Component
2012  Best of CES, Car Tech – CNET

Cisco Systems – worldwide networking leader + QNX customer since 1998
Technically superior

Microkernel: Flexible, mature, stable
POSIX: Leveraging familiar standards
Unified user experience: Open GL ES, HTML 5, AIR, C/C++, QT, TAT
Clean IP: Disciplined licensing
Complements: Tight silicon alignment, comprehensive tooling
Automotive leadership

Experience: Hundreds of person years in development, support, integration
Expertise: All areas of in-car computing
Service excellence: 100 % success rate helping customers meet SOP deadlines
Commitment: Dedicated and dependable people
Increased ROI: Optimized performance on customer hardware, faster time to market
Automotive ecosystem is the industry’s biggest and broadest, giving QNX customers more options than any other vendor.
QNX CAR 2 Application Platform

- Pre-integrated software stack with production-proven QNX technologies and dozens of ecosystem partners
- Designed to enable rapid development of in-car infotainment systems
- Software foundation proven in millions of vehicles
- Rich user experience of HTML5
- Powerful multimedia framework
- Award-winning acoustic processing library for hands-free systems
- Winner of Best of CES 2012 Award, Car Tech Category
HTML5 – the next big thing

- Future of the connected car
- Addresses consumer demands for the latest mobile apps and services
- Help automakers:
  - keep their vehicles fresh with new content and features
  - customize the user experience and simplify access to mobile apps
  - leverage a huge developer community
- QNX is first to market with HTML5 automotive platform
Certified Technology

QNX Neutrino RTOS — certified to multiple standards

- Functional safety: IEC 61508 SIL3
- Security: Common Criteria EAL4+
- Medical life-cycle processes: IEC 62304

QNX strength — reliability at the core

- Microkernel architecture paves an easier path to certification
- Multicore support included in IEC 61508 SIL3 certified solution
- Innovative adaptive partitioning technology enables additional functional safety
QNX medical approval support

• An offering to help medical customers shorten time to market by assisting them with approval
• A combination of product and services
• Customers can choose components best suited to them
• Approval support includes:
  – QNX Neutrino RTOS for medical devices
  – On-site process audit
  – Training course: how to build a dependable system
  – Proven-in-use data
  – Assistance to meet compliancy requirements
Professional services

Production-proven experience

• Engineers who spend time in both services and engineering teams
• First-hand understanding of time-to-market pressures
• Wide range of in-field experience around the globe
• Proven ability to quickly align with customer teams
• Flexible support plans and services programs
QNX in Education

• Global program to educate future QNX engineers
  – Academic licenses
  – Professor training

• Program to nurture innovations and creativity
  – Sponsoring “Cool” technologies
  – Humanoid robots, Autonomous driving, Augmented reality, “Internet of Things”...
  – Application development competition for students

• Focused, strategic programs
  – Collaboration with hardware vendors
  – Promote business-academia collaborations

• Close relationship with regional governments
  – Government relationship key to success in many regions
Over 200 leading educational institutions around the world. Research projects in automotive, medical, and robotics.
Customer highlights

QNX Success Stories

Audi

The QNX-based Audi Multi Media Interface showcases QNX graphics technology on top of the solid QNX Neutrino RTOS. The MMI system connects every advanced system in the Audi A8L, Q5, and A6 vehicles.

General Motors

GM OnStar is a subscription-based communications, monitoring, and tracking service provided by General Motors. As a standard feature in all GM vehicles for North America, it uses both the QNX® Neutrino® RTOS for guaranteed performance in emergency situations and the clear hands-free quality of the QNX Aviage® Acoustic Processing Suite.

Cisco Systems

QNX Neutrino® RTOS is at the heart of Cisco’s Modular IOS and IOS-XR software, and powers many Cisco products including the Cisco CRS-1, the world’s highest capacity.
Fortna

To keep on top of the number of products shipped from the world's biggest online retailer, Amazon.com relies on a warehouse control system from Fortna. FortnaWCS system is built using QNX Software System’s industrial automation portfolio.

General Electric

The GE Mark VI Turbine Controller is a scalable workhorse control that can be applied to small systems such as an industrial steam turbine control, large gas turbine control systems, and plant controls, and uses QNX to control the precise timing required.

GE Transportation

The GE Evolution series locomotive uses the QNX® Neutrino® RTOS with QNX graphics technology for in-cab control systems, replacing traditional levers and gauges with a full graphics panel.
**Customer comments**

We chose QNX because...

**Visteon – Digital Instrument Cluster for Land Rover Range Rover**

“We see great competitive advantage in this cutting-edge technology, especially since it is built on a proven, standards-based, and extensible software platform that simplifies ongoing innovation” - Stuart Bird, Senior Manager for Visteon Software Europe

**Neptec – Space Vision System for NASA**

“(QNX Neutrino RTOS) can handle the extreme conditions found in space and ... it meets our demands for ultra-reliability” - Iain Christie, VP of Research and Development, Neptec

**Dalian Eastern Display - Connected home appliances**

“The QNX Neutrino RTOS has proven well-suited to developing IOT intelligent home appliance nodes and terminals. It will satisfy our customers’ demands for intelligent home products” - Duan Yunsheng, General manager, Dalian Eastern Display