

WIND RIVER

National Instruments Quickly Innovates with Wind River

Wind River Helps Drive Software Strategy for Embedded and Industrial Design Industry Leader



Since National Instruments (NI) was founded 30 years ago, the company has grown from a three-man operation to a multinational corporation with more than 4,800 employees. The company's entrepreneurial spirit and innovative culture are well known. NI has been named a top 100 company to work for in America by *FORTUNE* magazine for nine consecutive years.

NI provides a unified graphical system design platform that transforms the way engineers and scientists around the world design, prototype, and deploy systems for test, control, and embedded design applications.

Each year, more than 25,000 companies simplify development, increase productivity, and reduce time-to-market using NI's open graphical programming software and modular hardware. Technologies developed with NI solutions range from next-generation gaming systems to breakthrough medical devices.

"We have customers who build applications that span everything from the food industry to semiconductor manufacturing," says John Hanks, vice president of data acquisition and industrial control at NI. "Our customer base is so broad you could say we help create everything from potato chips to computer chips."

NI complements its industry-leading software and hardware with a wide array of services and support solutions that span planning and development, deployment, and maintenance. For this reason, the company's success depends upon its ability to develop solid partnerships.

Wind River—10-Year Partner

Ten years ago, NI used various platforms for its higher-performance embedded processing products. NI was growing rapidly and its engineers were moving from group to group. The company realized it needed to create alignment

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—Brian Sierer, Distributed Control Section Manager, National Instruments

Company Profile: National Instruments

- Provides a graphical system design platform for test, control, and embedded design using open graphical programming software and modular hardware
- Achieved double-digit growth for the past 30 years
- Develops more than 200 new products each year
- Headquarters in Austin, Texas; offices in more than 40 countries

Industry

- Test, data acquisition, embedded and industrial design

Solution

- Wind River Platform for Industrial Devices, VxWorks Edition
- Wind River Workbench, On-Chip Debugging Edition

Results

- Shortened development time from approximately two years to one year
- Ability to release two to five products per week, compared to one to three products per week five years ago
- Ability to quickly innovate and move into new markets
- Ability to get up-and-running faster on projects with a common toolset

around a common tool flow. NI began searching for a real-time operating system (RTOS) and a standardized set of tools with the versatility to be used across the company.

NI had several technical and business criteria in mind. On the technical side, the company required an RTOS and a strong development and debugging toolset it could use for its internal development and recommend to its customers.

"When we explored the technical criteria, the Wind River VxWorks platform came out the clear winner," Sierer says. "Wind River offered an industry-recognized RTOS and a comprehensive, robust set of tools."

Wind River also met a key NI business requirement—to find an RTOS and integrated development environment (IDE) tool supplier with whom NI could partner to extend the use of VxWorks into the NI customer base. The established Wind River brand and large VxWorks installed base lower the barrier to NI customers questioning the OS used in NI products. For the past 10 years, NI has used Wind River Platform for Industrial Devices, VxWorks Edition, and the Wind River Workbench, On-Chip Debugging Edition developer toolset.

"Our customers wanted not only access to an effective, efficient set of tools, but also world-class support from the tool vendor," says Brian Sierer, distributed control section manager at NI. "So we were looking for more than just a standard provider. We needed a collaborator who would represent us well and be around for the long haul."

Delivering Products to Market More Quickly

NI releases approximately 200 products each year. According to Hanks and Sierer, this would be challenging without common tools.

"It would be difficult to address the breadth of products without the Wind River VxWorks platform," Hanks says. "Just five years ago, we released one to three products per week compared to our current two to five products per week. To continue this growth, we must continue to produce new platforms to address new markets. Our ability to move on market opportunities is largely based on key collaborations with technology leaders, including Wind River."

As a platform company, NI must focus on developing a common set of tools that customers can apply to their own domains. For this reason, the company's R&D team focuses on how to create a platform that is highly configurable and reusable—leveraging Xilinx field-programmable gate array (FPGA) and Freescale processor technologies—and highly integrated to its high-level software tool LabVIEW. Wind River enables the company to quickly meet this business goal.

"One of our key strengths over the past several years has been our ability to quickly innovate," Sierer explains. "Wind River provides the flexible, scalable tools we need to be innovative and enter new markets. Wind River VxWorks' breadth of coverage—ranging from a desktop PC to a small embedded device—is essential to our growth strategy."

A large portion of the NI global team, including design centers in China and Romania, now has standardized on the Wind River toolset. This, and the ability to move quickly on training and collaboration, helps the company get up-and-running much faster on projects.

"Before Wind River, a product-development timeframe was up to two years," Sierer says. "With Wind River tools and NI hardware enhancements, our development cycle has decreased to about a year."

Wind River Technical Support also helps NI move quickly when problems arise. According to Sierer, the company's former tool vendor was "like a black box" when it came to support. In some cases it took more than a year to get an issue resolved.

"With Wind River, we host regular technical exchanges at each other's facilities," he says. "For example, about a year ago we ran into challenges integrating an Ethernet solution into a platform. We approached the Wind River support staff, and we walked through the source code. They candidly discussed strengths and weaknesses and gave us the information we needed to dig down, identify, and resolve the problem."

Full Speed Ahead

NI continues to build products on the Wind River VxWorks platform and using Wind River Workbench.

For example, one such product is the revolutionary CompactRIO programmable automation controller (PAC), a low-cost reconfigurable control and acquisition system designed for applications that require high performance, ruggedness, and modularity. The system, which combines an open embedded architecture with small-sized, hot-swappable industrial I/O modules, is powered by reconfigurable I/O (RIO) FPGA technology and easily programmed with LabVIEW. The NI RIO architecture in single-board form enables NI original equipment manufacturer (OEM) customers to get to market faster because they can leverage NI LabVIEW for high-level application software design while still developing software using Wind River Workbench—all within the VxWorks OS.

"Our relationship with Wind River is a key component of our entire software strategy," Hanks concludes. "In the beginning, we were looking for a collaboration that would last 10 years or more. We have already hit this milestone with Wind River, and our collaboration is still going strong."

Learn More



For additional information about the products mentioned in this case study, visit:

www.windriver.com
www.ni.com

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Wind River is the global leader in Device Software Optimization (DSO). We enable companies to develop, run, and manage device software faster, better, at lower cost, and more reliably. www.windriver.com

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