

5 Embedded Trends for Innovating Faster



Building Next-Generation Control and Monitoring Systems

Challenges in Embedded System Innovation

30,000+ Customers



Complexity of Systems

Differentiation

Time to Market

2012 Embedded Systems Outlook

Latest Trends and Technologies for Embedded Control and Monitoring

Letter from NI CEO and Co-founder Dr. T

- His vision for NI in embedded



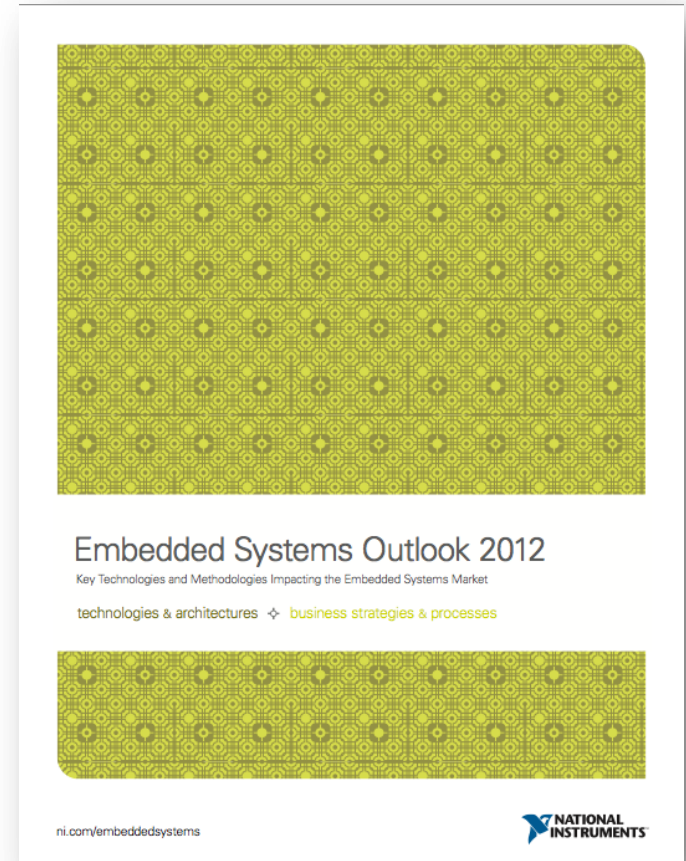
Technology and Architecture Trends

1. Embedded platforms
2. Reconfigurable computing
3. Mobile devices and the cloud



Business and Process Trends

4. Innovating with small teams
5. Future proofing through software



1. Embedded Platforms



“To do for embedded what the PC did for the desktop.”

Integrated HW/SW

HW/SW Standards

Ecosystem

Energy



Transportation



Life Sciences



Industrial Control



NI RIO Hardware and NI LabVIEW

Processor

FPGA

I/O

I/O

I/O

I/O



NI Single-Board RIO



NI CompactRIO



PC RIO/NI R Series



PXI RIO/NI FlexRIO



NI Embedded Technology Partners

NI RIO Hardware and LabVIEW



NATIONAL INSTRUMENTS

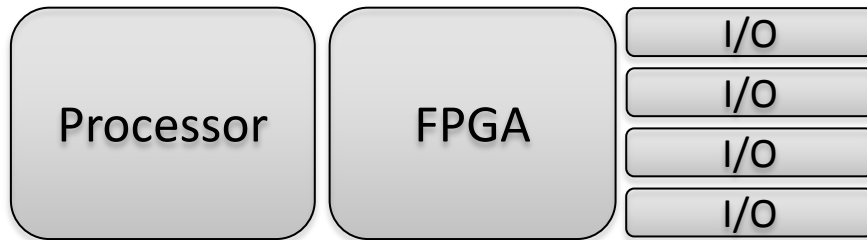
Alliance Partner Network

NEW Electronic Design Specialty

A global network that provides comprehensive engineering design services to extend RIO hardware and LabVIEW software



2. Reconfigurable Computing



Multicore Processing | **Programmable Logic** | **Complexity**

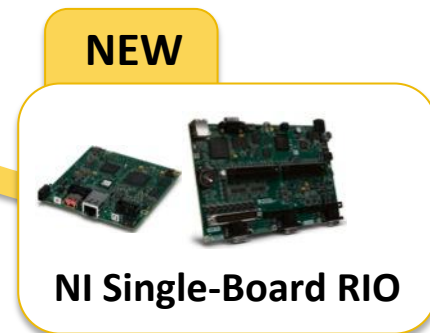
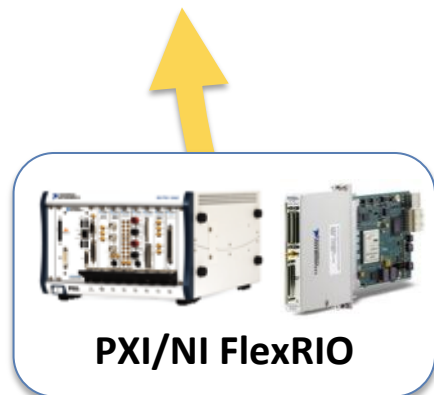
“NI clearly is leading in the progress of combining the two key programmable platforms in one solution, which is the combination of a processor and an FPGA.”

Ivo Bolsens, CTO, Xilinx



“LabVIEW enables someone to do in six months what would typically take two to three years if they were to go handwrite their own code.”

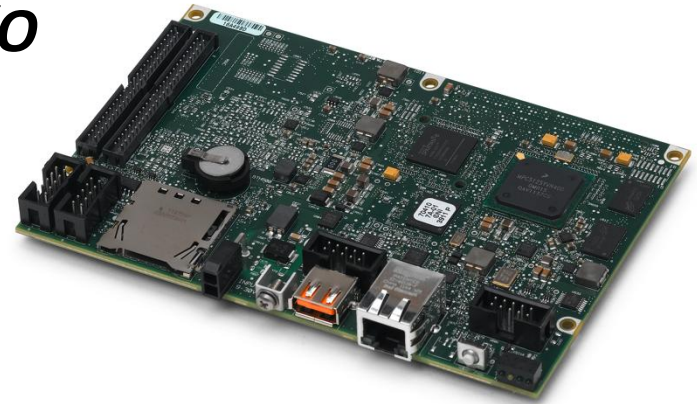
Michelle Tinsley, General Manager, Intel



NEW 4 NI Single-Board RIO Devices

Half the Size, Half the Cost, and More I/O

- NI RIO architecture on a single board
- Xilinx Spartan-6 FPGA
- RIO Mezzanine Card (RMC) connector
- Cost optimization for OEM applications



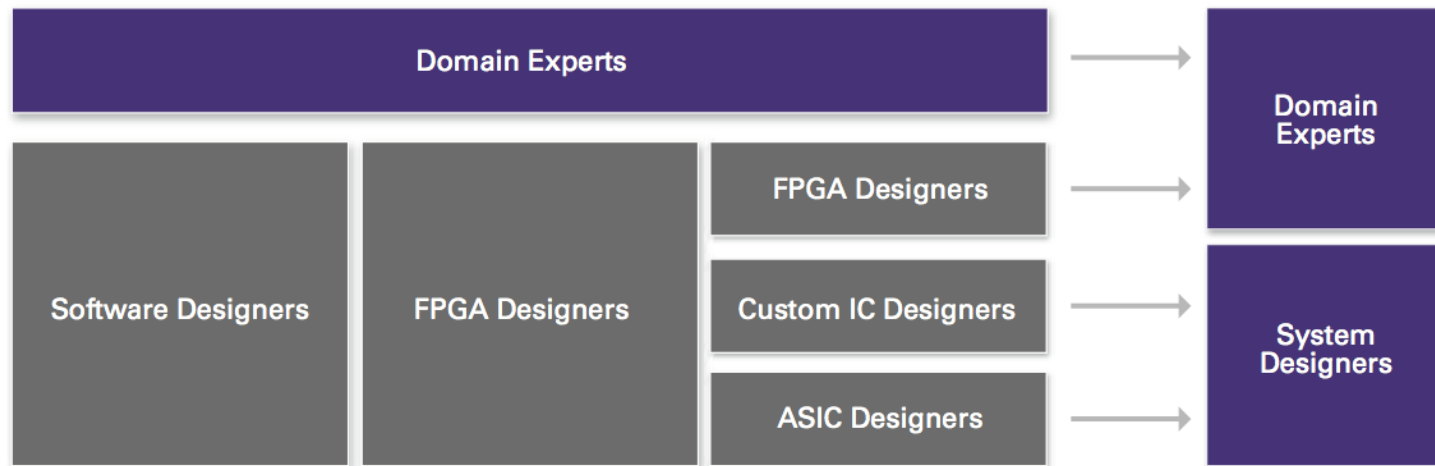
	Processor Speed	CAN, USB, SDHC	FPGA	Digital I/O	Analog Input	Analog Output	RMC	Operating Temp
sbRIO-9623	400 MHz	-	LX25	100	16 ch, 12-bit	4 ch, 12-bit	✓	-40 to 70 °C
sbRIO-9626	400 MHz	✓	LX45	100	16 ch, 16-bit	4 ch, 16-bit	✓	-40 to 70 °C
sbRIO-9633	400 MHz	✓	LX25	28	16 ch, 12-bit	4 ch, 12-bit	-	-40 to 70 °C
sbRIO-9636	400 MHz	✓	LX45	28	16 ch, 16-bit	4 ch, 16-bit	-	-40 to 70 °C

3. Mobile Devices and the Cloud



Fragmentation | **Remote Data Access** | **System Security**

4. Innovating With Smaller Teams



“Innovation initiatives that were once handled by dozens a decade ago are now run by only handfuls...less apparently enables more.”

—Michael Schrage, Harvard Business Review Blog Network

Domain Expertise | Customer Intimacy | Greater Efficiency

¹Harvard Business Review Blog Network; “Smart Innovators Value Smaller Teams Over Better Processes,” blog entry by Michael Schrage, December 13, 2011, http://blogs.hbr.org/schrage/2011/12/quiet-but-unsubtle-innovation.html?referral=00563&cm_mmc=email_-_newsletter_-_daily_alert_-_alert_date&utm_source=newsletter_daily_alert&utm_medium=email&utm_campaign=alert_date

Developing an Embedded Fire Suppression System for FedEx Express



“Leveraging our strategic partnership with NI and its technologies, our **small team** was able to propose and win business at FedEx Express, delivering a high-quality solution in **half of the time** and at about **50 percent of the cost** of our competition.”

—Jeremy Snow, President, Ventura Aerospace

Delivering Mobile Phone Coverage to Rural Areas With a Green, Off-Grid Energy Solution



“The **LabVIEW graphical programming** environment helps with **rapid development and deployment**. If we had undertaken the same programming challenges in a text-based language, we wouldn’t be anywhere near where we are now in the development cycle.”

—Dr. Mike Rendall, Diverse Energy Ltd.

Creating a Clinically Approved Liver Dialysis Machine Using LabVIEW and CompactRIO



“The combination of **LabVIEW** and **CompactRIO** hardware significantly contributed to the **deployment success** of our **new liver dialysis machine**. NI technologies helped us deliver the first system **within just seven months**.”

—Catherine Schreiber, Hepa Wash

Conserving Energy and Reducing Costs With a Street Light Monitoring System Based on LabVIEW and NI Single-Board RIO



“Using **NI LabVIEW** and **NI Single-Board RIO** resulted in a **highly flexible** and **customizable system** that reduced energy costs by 25 percent and maintenance costs by as much as 40 percent.”

—Nasrathulla Khan, [MIR Energy Solutions Pvt. Ltd.](#)

5. Future Proofing Through Software

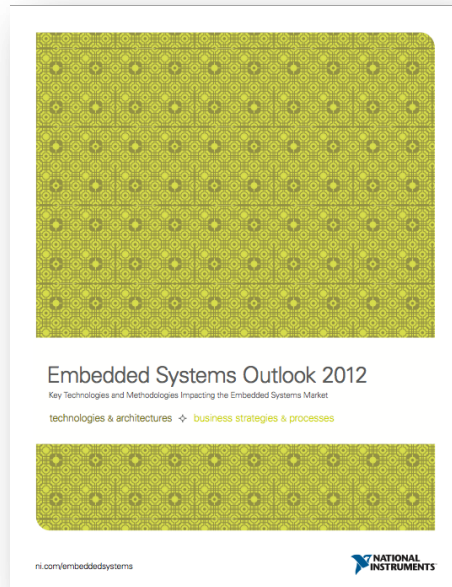


Software-First

| In-Field Updates

| Long-Term Support

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