

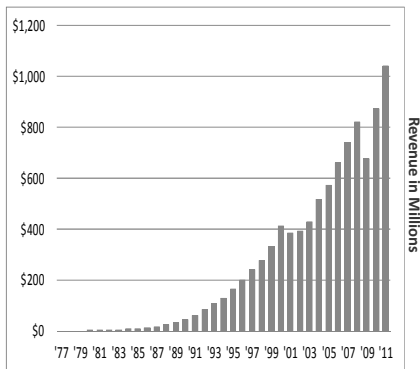
Driving Productivity and Innovation With Graphical System Design

2012 Embedded Control & Monitoring
Technology Day

National Instruments at a Glance

Leader in computer-based measurement and automation

- Long-term track record of growth and profitability
- \$1 B Revenue in 2011
- More than 6,130 employees; operations in 40+ countries
- Investment R&D 16% of revenue
- Sales to More than 30,000 companies
- No Industry >15% of Revenue



More than 30,000 companies

...including 90% of Fortune 500 manufacturing companies



Local Support around the Globe

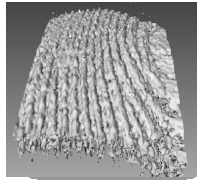
Global team of technical sales & service engineers

- Offer expert advice on industry trends
- Guide you through the NI product line
- Assist with reference and application designs



The Impact of Great Engineering ...making a difference in the world

**Saving time,
effort, and
money.**



**Improving
everyday life.**



**Averting
catastrophic
disasters.**

Engineering Challenges

- Endless technology change
 - Globalization
 - Collaboration among distributed teams
 - System integration, legacy equipment
 - Competition and deadlines
 - Fewer resources, less budget, more projects
 - Impact, making a difference
 - ...saving the planet.
-
-

[illegible]

Invest in a platform-based approach to help you more easily adapt to changing requirements and technology over time.

AND optimize for today.

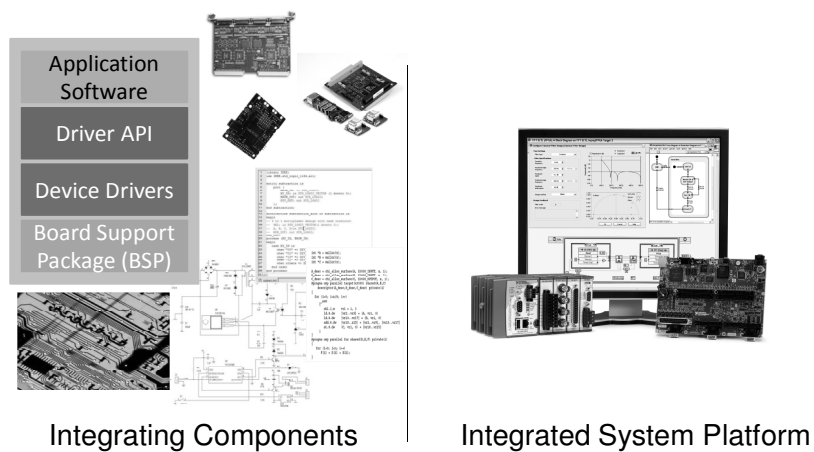
What's in a platform?

Productive software that abstracts and integrates technology and...

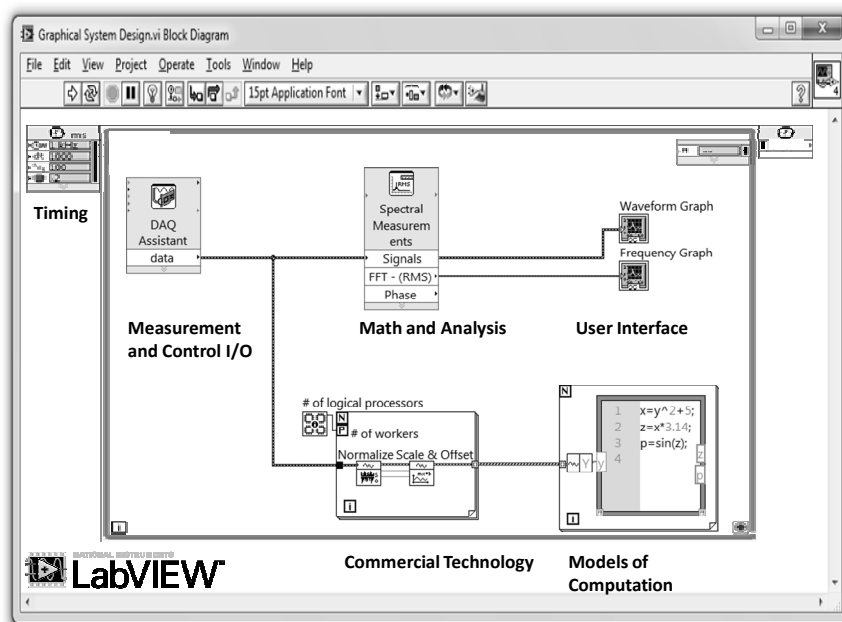
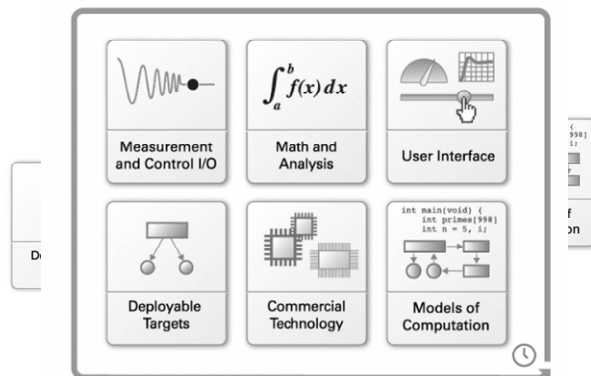
Reconfigurable, modular I/O hardware architectures that maximize access and...

Leverages continuous advancement of commercial technology

Faster System Development



The Need to Integrate the Elements of Engineering Systems

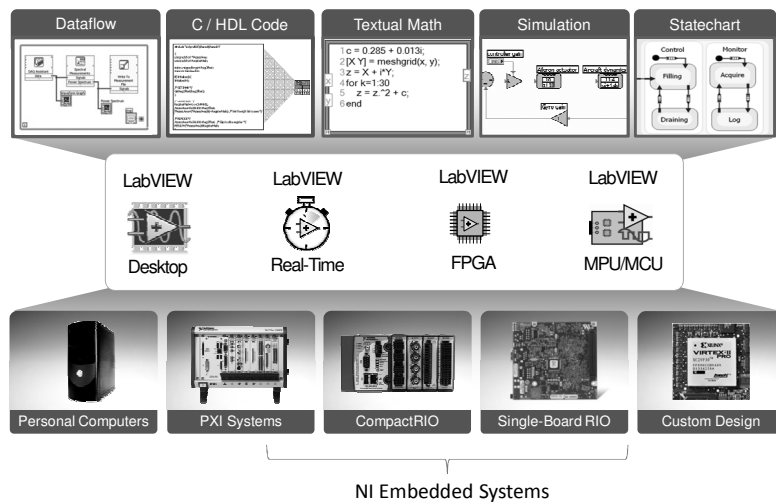


Graphical System Design

Single Platform – Infinite Systems

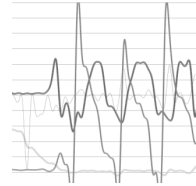


System Design to Deployment



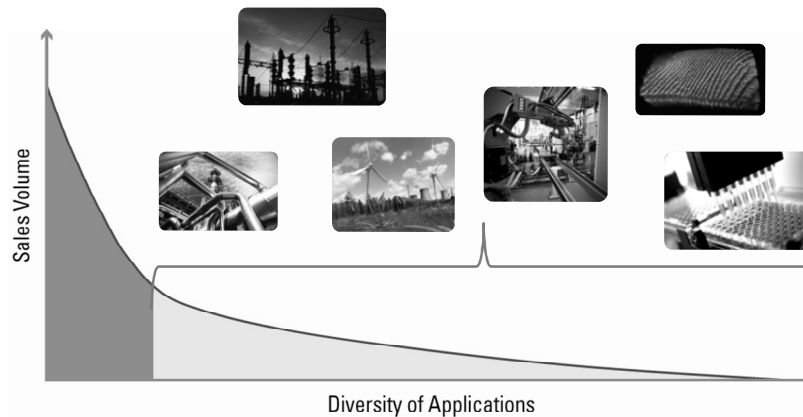
National Instruments Focus in Embedded *Industries and Applications That Require...*

- High-speed, high-resolution, and specialty **Analog** Measurements
- **Advanced algorithms** for **control** and/or **signal processing**
- Performance of **custom hardware**
- Fast **Time-to-market**
- **Low-to-mid** volumes

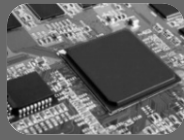


The Long Tail of Embedded

Innovation in Embedded Control & Monitoring



Design Approaches: Build versus Buy



Build

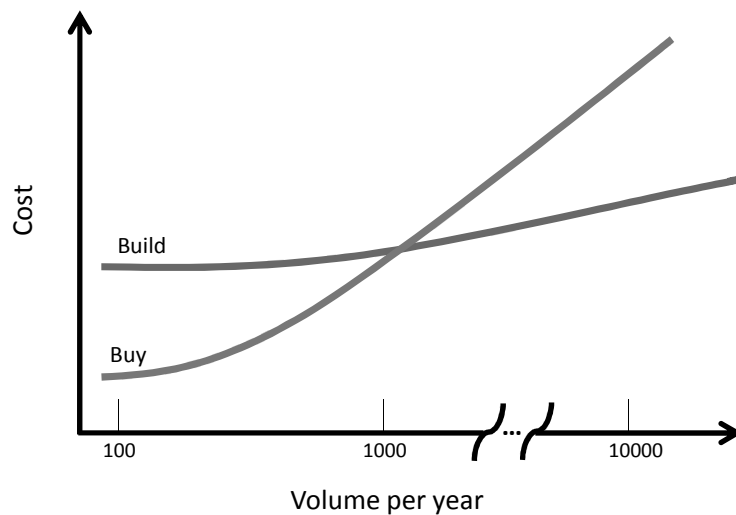
- Custom HW/SW solution
- Long lead times for new product
- Ability to get exactly what you want
- Significant resource requirements:
 - Hardware design, test, verification; software design, test, verification; mechanicals; manufacturing; etc
 - Compliance, documentation, certifications, inventory management, sustaining, etc



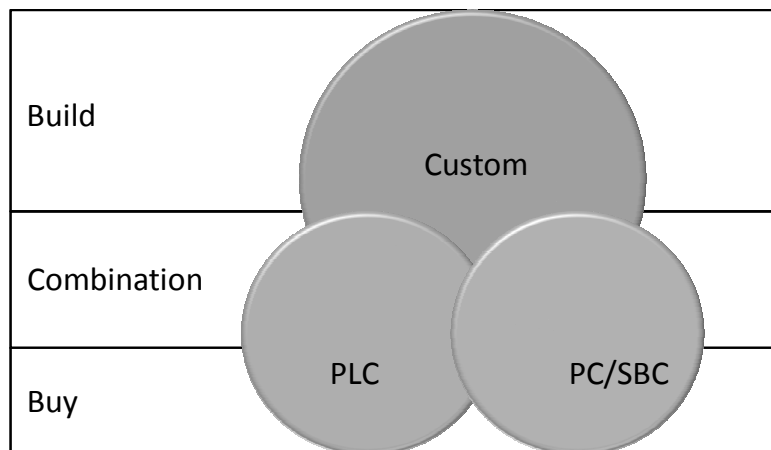
Buy

- Off-the-shelf HW/SW solution
- Use less resources because systems are pre-built
- Faster time to market
- Lower life-cycle costs
- Better responsiveness to your customers
- Often get more than you need

Design Approaches: Build versus Buy

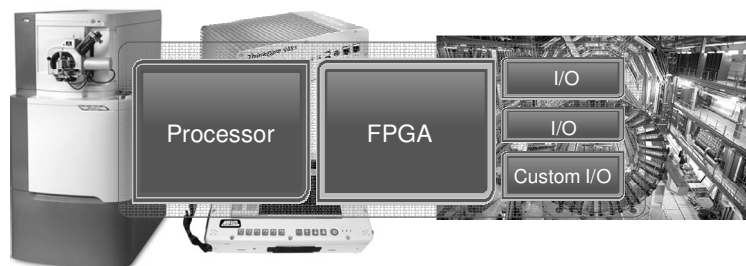


Embedded Monitoring & Control Options

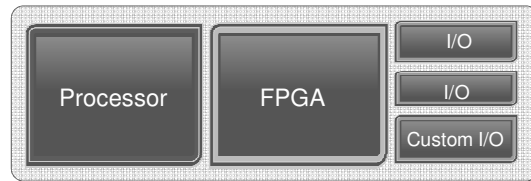


Design Approaches: Build versus Buy

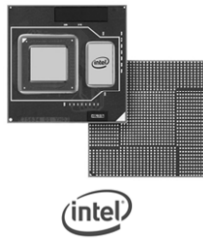
COTS Reconfigurable I/O Custom



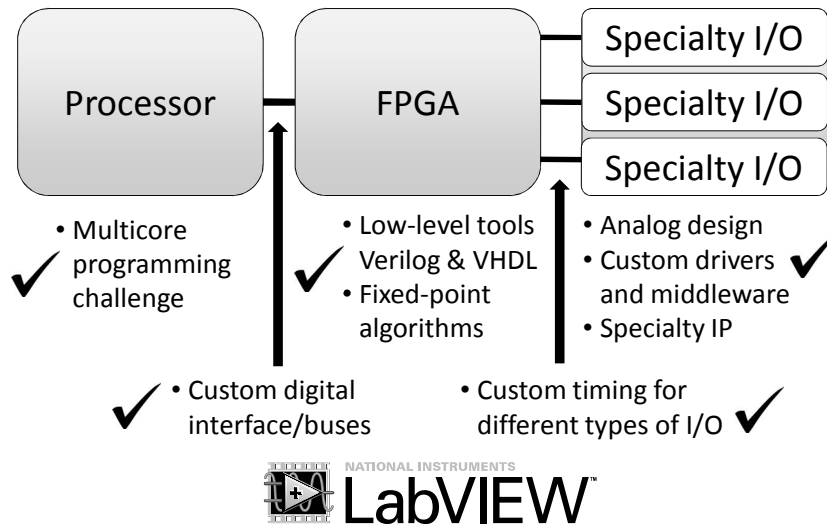
The Reconfigurable I/O (RIO) Architecture



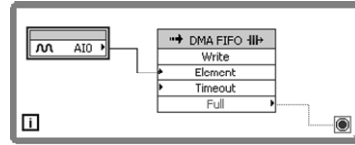
*Powerful & flexible,
but complex*



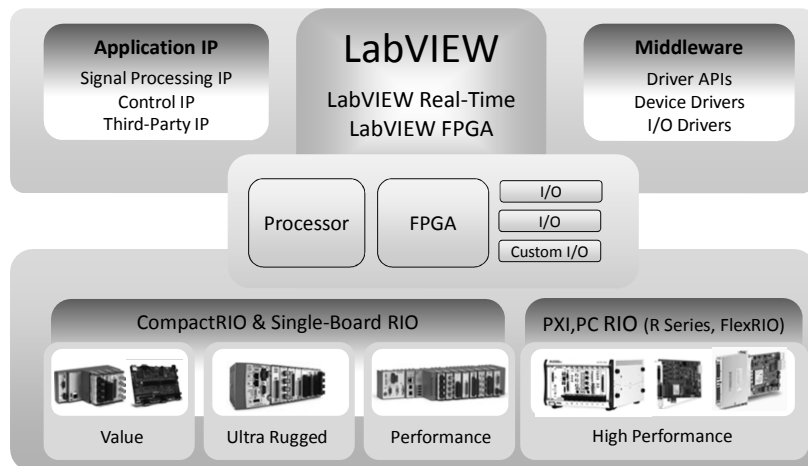
The ~~Challenge~~ Benefits of the RIO Architecture

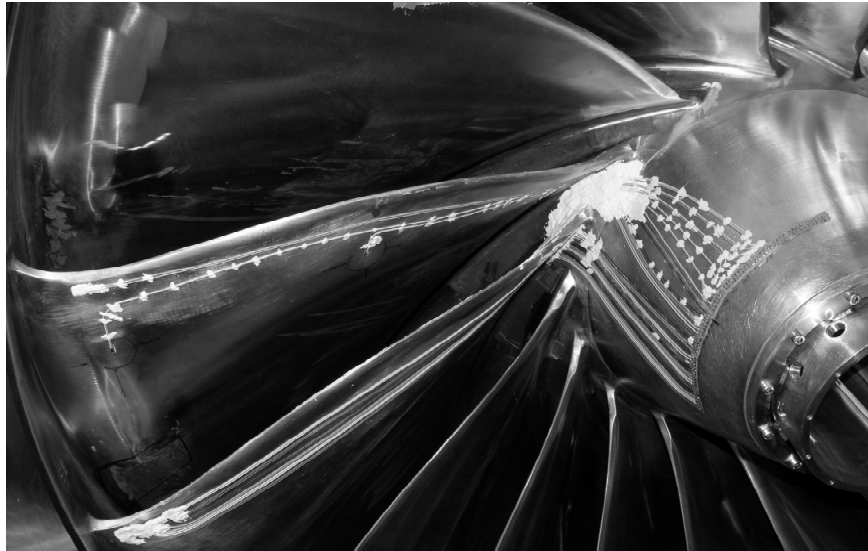


Abstraction to the Pin



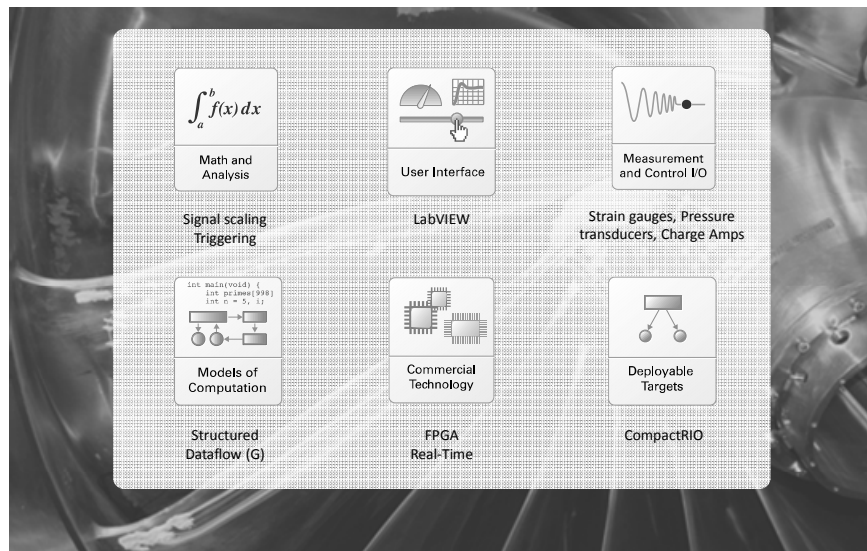
NI Reconfigurable I/O (RIO) Technology





Embedded Monitoring

Hydro Power Turbine | NTNU



Embedded Monitoring

Hydro Power Turbine | NTNU

