

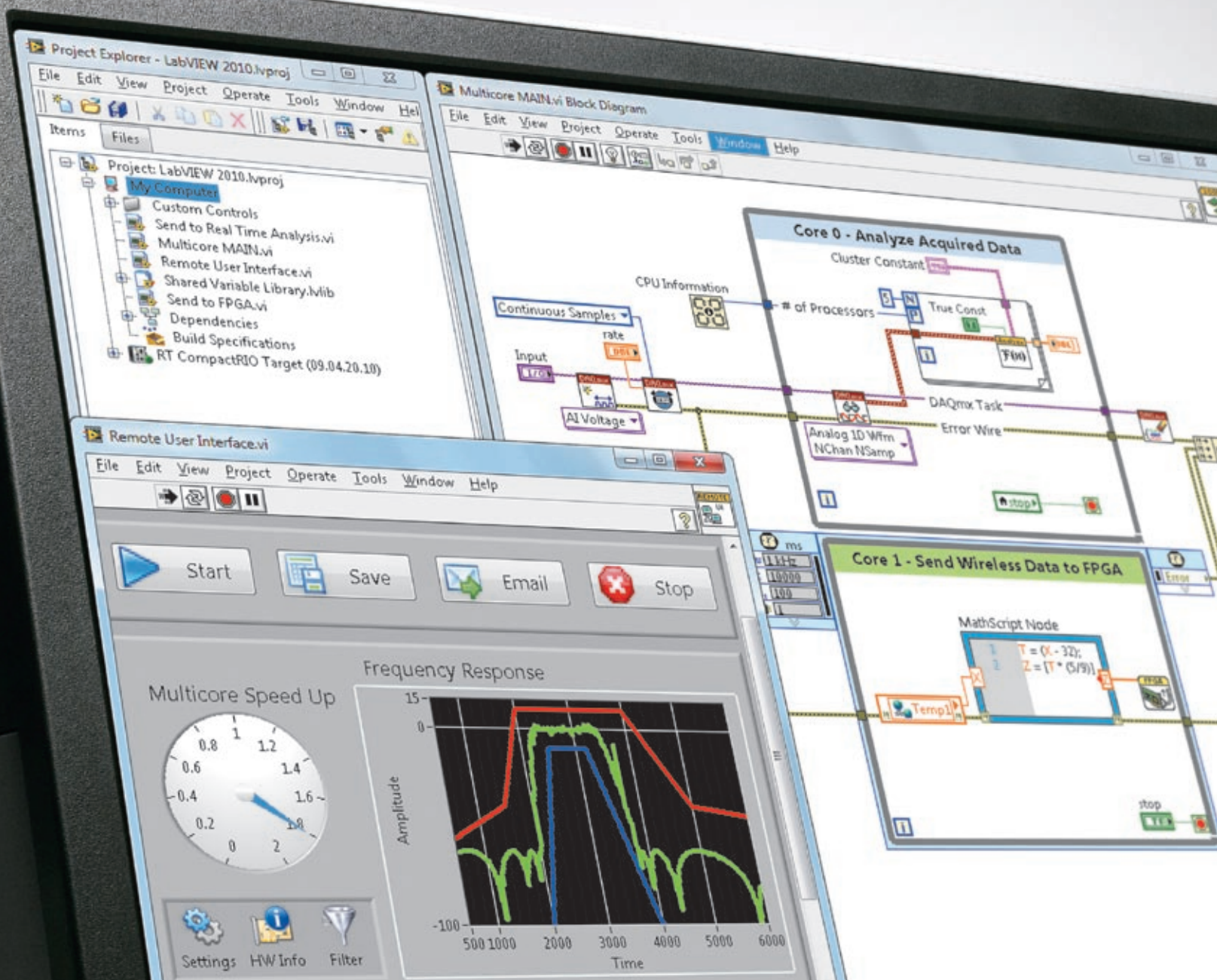
Graphical System Design Platform

NI LabVIEW

Test and Measurement

Industrial Measurements and Control

Embedded Design



The LabVIEW Story

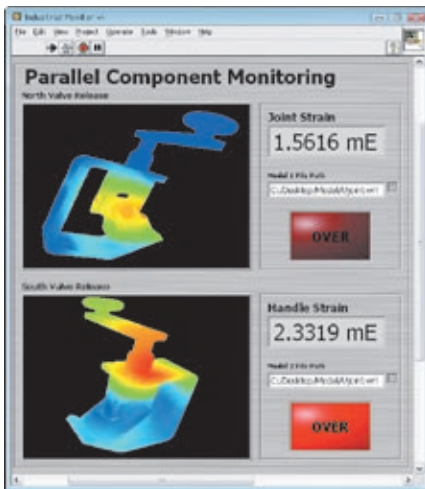
For more than 20 years, engineers and scientists around the world have depended on LabVIEW software to build cost-effective design, control, and test systems. The unique LabVIEW graphical development environment makes interfacing with any measurement device simple and features interactive assistants, code generation, and connectivity to thousands of devices for easy data gathering. Because LabVIEW connects to virtually any measurement device and design tool, you can incorporate new LabVIEW applications into existing systems without risking your application investment.

“In the first design stage of our control application programmed with LabVIEW, we have obtained a 20X processing speed-up on an octal-core processor machine over a single-core processor, while reaching our 1 ms control loop rate requirement.”

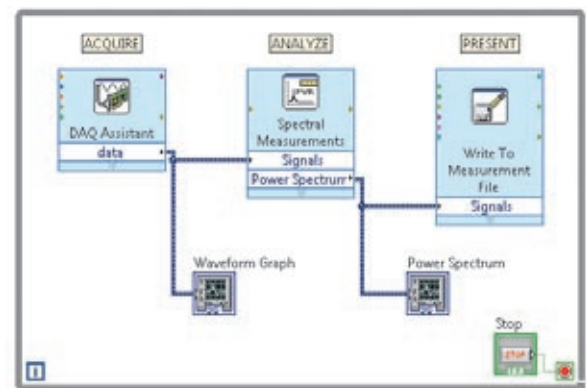
– Dr. Louis Giannone, Lead Researcher, Max Planck Institute



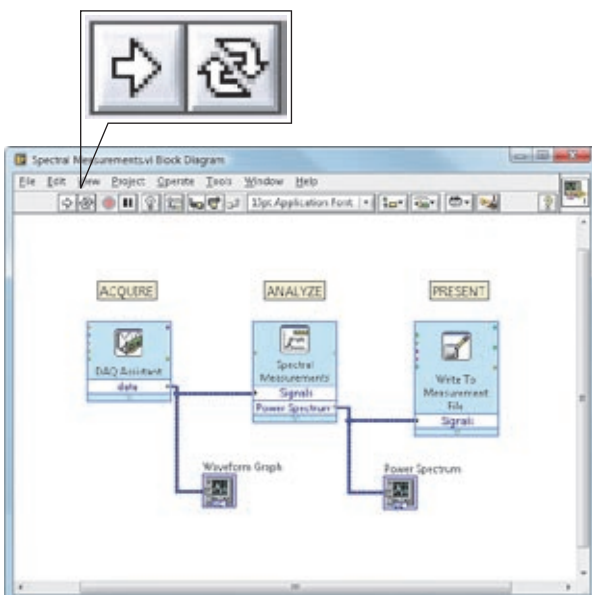
3 Easy Steps to Create Your Application



1 Design a User Interface



2 Draw Your Graphical Code



3 Run Your Program

The LabVIEW Environment

From Simple, Everyday Projects ...

Rapid Development with Express Technology

Use configuration-based Express VIs and I/O assistants to rapidly create common measurement applications without programming using LabVIEW SignalExpress.

Plug-and-Play Instrument Drivers

Access the industry's largest source of instrument drivers with more than 8,000 instrument drivers supporting models from more than 275 vendors.

Integrated Help and Example Programs

Learn LabVIEW development practices quickly with integrated help, comprehensive tutorials, and more than 500 built-in examples with thousands more on ni.com/code.

Modular and Hierarchical Design

Run LabVIEW VIs by themselves or as subVIs (subroutines) and easily scale and modularize your programs depending on your needs.

Drag-and-Drop User Interface Library

Design professional user interfaces by interactively customizing the hundreds of built-in user interface objects on the Controls palette.

Thousands of Built-In Functions

Drag and drop thousands of built-in functions and IP, including analysis and I/O, from the Functions palette to create your application. Easily customize the palette for quick access to your favorites.

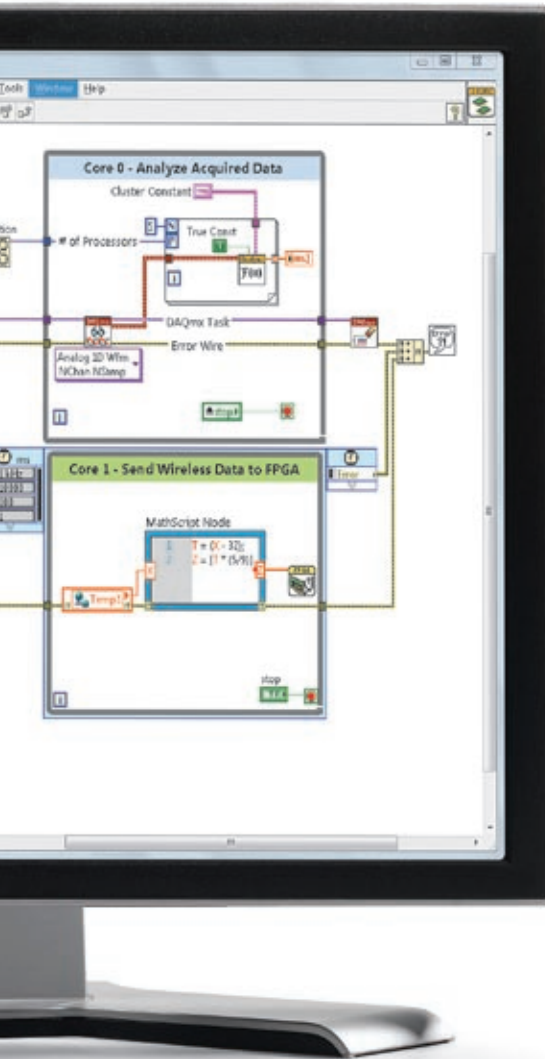
Compiled Language for Fast Execution

Develop high-performance code. LabVIEW is a compiled language that generates optimized code with execution speeds comparable to compiled C.



“Ease of use, programming capabilities, invaluable built-in functions, flexible user interfaces, comprehensive dataflow tracking features, unambiguous compilation and debugging tools, and compatibility with many hardware facilities make LabVIEW nothing short of magic!”

– Dr. Ehsan Mesbahi, Professor, School of Marine Science and Technology, Newcastle University



... to Powerful System Design

Open Language

Take advantage of existing code, easily integrate with legacy systems, and incorporate third-party software with .NET, ActiveX, DLLs, objects, TCP, Web services, XML, and more.

Simple Application Distribution

Use the LabVIEW Application Builder to create executables (EXEs) and shared libraries (DLLs) for deployment.

Multiple High-Level Development Tools

Develop faster with application-specific development tools, including the LabVIEW Statechart Module, LabVIEW Control Design and Simulation Module, and LabVIEW FPGA Module.

Professional Development Tools

Manage large, professional applications with tightly integrated software engineering tools including integrated project management, graphical debugging, and standardized source code control integration.

Target Management

Manage multiple targets, from real-time to embedded devices including FPGAs, microprocessors, microcontrollers, PDAs, and touch panels.

Object-Oriented Design

Use object-oriented programming structures to take advantage of encapsulation and inheritance to create modular and extensible code.

Algorithm Design

Develop algorithms using math-oriented textual programming or incorporate your existing .m files with the LabVIEW MathScript RT Module.

“LabVIEW has made the software development side much quicker than our past experiences in C-based programming. What most C programmers take two years to do, we can accomplish in a couple of months. We can use that time savings to get to market quicker and capitalize on our competitors' lag time.”

– Robert Stewart, Senior Vice President, Supreme Electrical Services Inc.

LabVIEW is Everywhere

LabVIEW increases your productivity in developing design, control, and test systems for a wide range of applications. With the freedom LabVIEW software and National Instruments hardware provide, engineers and scientists around the world can meet application challenges throughout the entire product development life cycle.

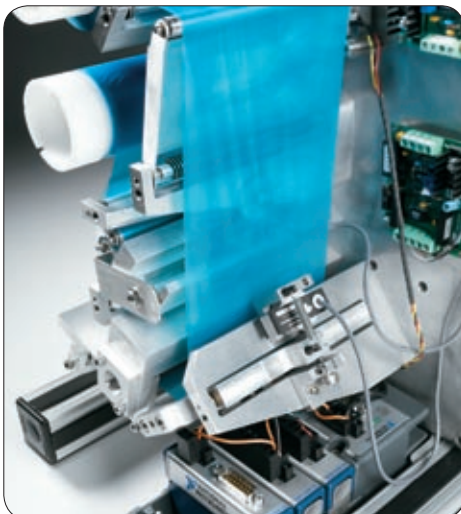
LabVIEW Graphical Development Platform for Design, Control, and Test

Development Platforms

Embedded Design and Prototyping		Industrial Measurements and Control		Automated Test and Measurement
Data Acquisition	Sound and Vibration	Image Acquisition and Machine Vision	Control Design and Simulation	Motion Control
Instrument Control		RF and Communications	Environmental Monitoring	Robotics

Computing Targets

Desktop	Industrial PC	PACs	Embedded Processors	FPGAs
				
Windows/Mac/Linux	PXI	NI CompactRIO	NI Single-Board RIO/ARM	RIO



Embedded Design and Prototyping

With LabVIEW, you can design efficiently by easily comparing real-world test data to simulation models earlier in the design process, resulting in fewer design iterations and higher-quality products. You can then quickly design, prototype, and deploy your final embedded device.

Common Applications

- Embedded system prototyping
- Control and filter design
- Medical device design
- Mechatronics design
- Algorithm engineering
- Autonomous robotic design



Industrial Measurements and Control

Engineers frequently use LabVIEW in demanding industrial applications requiring advanced I/O, industrial communications, and advanced processing. You can seamlessly integrate NI programmable automation controllers (PACs) built with LabVIEW into existing systems to achieve additional measurements and control functionality.

Common Applications

- Machine monitoring and control
- Motion control
- Data logging and supervisory control
- Machine vision
- Environmental monitoring
- Power monitoring



Automated Test and Measurement

LabVIEW helps you meet demanding requirements driven by increasing device-under-test complexity and industry pressures by easily connecting to thousands of instruments, cameras, and sensors. With LabVIEW, you can extract meaningful information with hundreds of built-in analysis functions and scale your application through integration with typical test and enterprise tools.

Common Applications

- Manufacturing test
- Military electronics test
- Validation/environmental test
- RF and communications test
- Mechanical/structural test
- Audio and video test



Teaching and Research

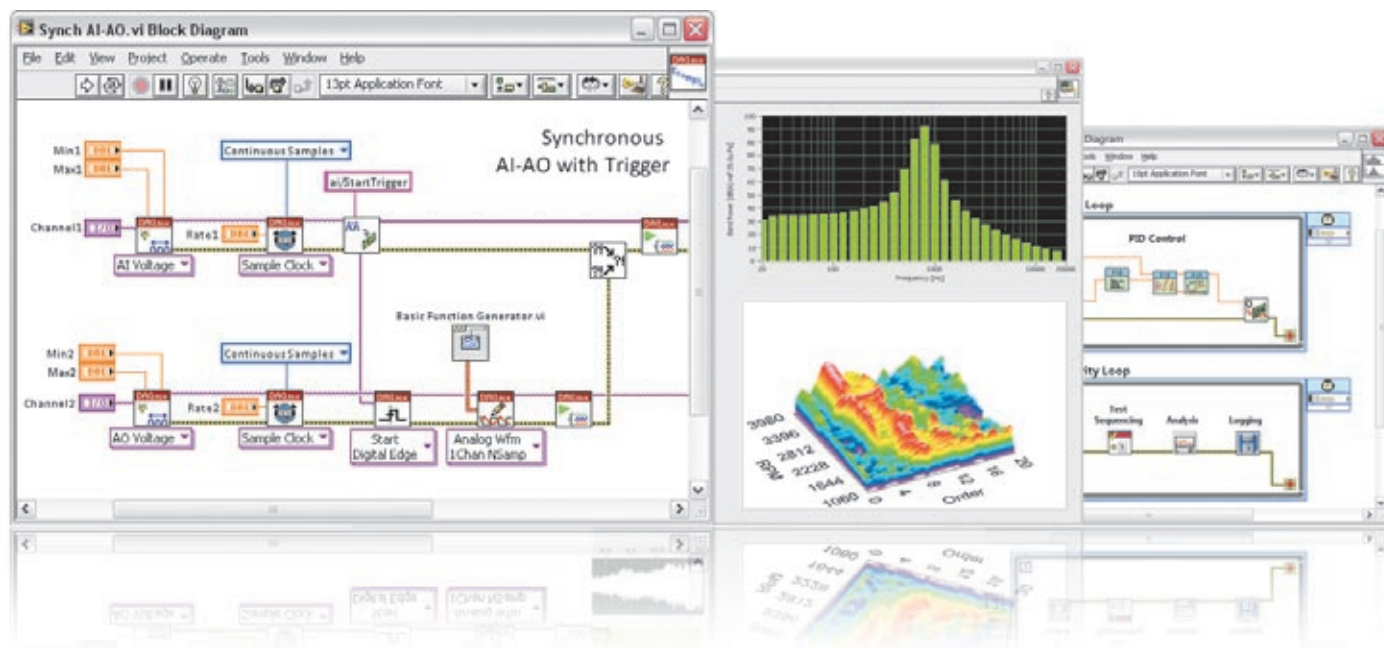
Educators and researchers have successfully integrated hands-on project-based learning with LabVIEW into a range of courses and applications. LabVIEW helps educators and researchers visualize theory with real-world signals, engineer algorithms, and take advantage of the latest multicore technologies to meet socially relevant challenges in energy, health care, and technology.

Common Applications

- Circuit design
- Control design and simulation
- Measurements and instrumentation
- Signal and image processing
- RF and communications
- Embedded systems

Try LabVIEW Today

Download and install fully functional 30-day trials of the LabVIEW graphical development environment and more than 25 add-on products. *DVDs are also available upon request.*



>> Try LabVIEW today at ni.com/trylabview

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