What’s New in LabVIEW 2011

Terry Stratoudakis
LabVIEW 2011 Accelerates Productivity

The ultimate system design software for measurement and control

Ultimate System Design Software

- Unique graphical programming environment
- Built-in, engineering-specific libraries
- Data analysis, visualization, and sharing

Accelerate Your Productivity

- World-class ecosystem of partners and technology alliances
- Global, active user community
- Consistent annual releases

Innovate With Confidence

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What is **LabVIEW 2011** all About?

LabVIEW is the ultimate system design software for measurement and control. LabVIEW inspires problem-solving, accelerates productivity, and empowers innovation.

**LabVIEW 2011 accelerates engineers’ productivity.**

It does this by delivering:

- Unrivaled hardware integration with multicore NI CompactRIO processors, industry’s highest-performance vector signal analyzer, and single-slot NI CompactDAQ systems
- New UI libraries, math and signal processing IP, and advanced APIs for controlling asynchronous threads and deploying executables
- Integration of .m file structures and assemblies from the latest Microsoft .NET framework
- 13 new productivity-enhancing features driven by the LabVIEW community
- Enhanced stability to meet the needs of mission-critical applications
- In-product access to a community of add-on tools from companies who have standardized on LabVIEW
ACCELERATE YOUR PRODUCTIVITY

Engineering-Specific Libraries, User-Driven Features, Built-In APIs

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Idea Exchange Features

Distributed Tools Now Work on Wires

Boolean Function Accepts Error Cluster and Error Constant in Functions Palette

Connector Pane Always Visible on Front Panel

Plot Visible Checkbox on Legend

Indication That Constant is Linked to a Type Def and Create Type Def From Block Diagram

Ignore All Missing SubVI Button
MEETING THE NEEDS OF MISSION-CRITICAL APPLICATIONS

LabVIEW Stability and Performance Improvements

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Pre-Release CAR Inflow Per Month
Quoting the Pessimists

“In fact, the transition of the older code was so smooth that I was first in doubt that I had a real beta. I am very glad that this time the efforts were focused on stability. For the way I use LabVIEW, reliability is more important than new features. The positive experience with the beta indicates that LabVIEW 2011 will indeed be a stable release.”

– Urs Lauterburg, Physics, University of Bern, Switzerland

“I’m really encouraged by this release – it was a good time to stop and concentrate on stability, and I think it’s hit the mark. I upgraded our VIE Hardware Explorer and two plug-ins (NI-DC Power and a panel from a live project) and found no real issues.”

– Christopher Relf, VI Engineering, USA

“I'm sorry, this beta was too good for my program, the only bugs found were bugs I introduced myself!”

– Albert Geven, Phillips Research, Netherlands

“The beta seems very stable. One needs to squeeze pretty hard to get some bugs out and most are cosmetic.”

– Christian Altenbach, Jules Stein Eye Institute at UCLA, USA
Error Reporting

The last time you ran LabVIEW, it did not shut down normally. The following files were automatically saved and are available for recovery.

Files with recoverable changes

<table>
<thead>
<tr>
<th>Original File Path</th>
<th>Last Backup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>C:Users\sorc\Desktop\Community Examples:Post on May 16\Show Index.vi</td>
<td>6/3/2011 2:37:49 PM</td>
</tr>
</tbody>
</table>

Finish Recovery Session

- Recover: Recover checked backup files and open for review.
- Cancel: Move backup files to the archives directory.
Launch Time Benchmarks

LabVIEW Launch Time
- Decreased footprint of nine processes to improve cold launch of LabVIEW

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cold Launch Time</th>
<th>Cold Launch Improvement (%)</th>
<th>Warm Launch Time</th>
<th>Warm Launch Improvement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Icon Editor</td>
<td>1.7 s</td>
<td>86</td>
<td>16 ms</td>
<td>73</td>
</tr>
<tr>
<td>LabVIEW Example Finder</td>
<td>6.7 s</td>
<td>56</td>
<td>2.0 s</td>
<td>35</td>
</tr>
<tr>
<td>Waveform Graph Property Page</td>
<td>4.3 s</td>
<td>26</td>
<td>1.0 s</td>
<td>0</td>
</tr>
</tbody>
</table>
Performance Improvements

- Faster application deployment
  - Behind-the-scenes object caching
  - Selective file transfers
  - Improved Packed Project Library deployment

LabVIEW Real-Time

- Edit-time
  - Loading, editing, wiring FPGA nodes
  - Up to 3x improvement

- Compile time
  - Up to 5x faster

LabVIEW FPGA

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REUSE EXISTING EXTERNAL CODE

Improved .NET and .m File Integration
Integrate With External Code

**Microsoft .NET**
- Configure LabVIEW to load CLR 4.0
- Debugging for assemblies in memory

**Custom .m File**
- Support for structures

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Search for LabVIEW Add-Ons

FIND AND INSTALL 3RD PARTY IP

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Find LabVIEW Add-Ons

• Find toolkits and third-party add-ons
• Download and install instantly
Add-On Examples

• Create and distribute multilanguage LabVIEW applications
• Directly control robots from DENSO, KUKA, and Mitsubishi
• Use hundreds of free, reusable VIs from the OpenG Community

S.E.A LTK LabVIEW Localization Toolkit
ImagingLab Robotics Library
OpenG Libraries

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LabVIEW Modules

NEW FUNCTIONALITY

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LabVIEW Real-Time Module

- API to create EPICS clients I/O servers
- PID autotuning VIs

Additional Functionality

- Deploy real-time executables as versioned components
- Create custom deployment utilities

Advanced Deployment Improvements

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LabVIEW FPGA Module

- 57 high-performance analysis functions
- ni.com/ipnet

NEW IP

- Support for Xilinx ISim
- Enhancements to Mentor Graphics ModelSim

CYCLE-ACCURATE SIMULATORS

2011 NI TECHNICAL SYMPOSIUM
Combine LabVIEW With New Hardware to Push the Limits of Your Applications

HIGH-PERFORMANCE AT LOW COST
New NI RIO Hardware

- RIO architecture
- Spartan-6 FPGA
- 400 MHz PowerPC/VxWorks
- Smallest form factor
- Open architecture through the new RIO Mezzanine Card (RMC)

- RIO architecture
- Spartan-6 FPGA
- Dual-core x86 processor
- Windows Embedded or RT OS
- Integrated HMI and connectivity
- Rich processor I/O

NI sbRIO-96xx
Lowest Cost
NI Single-Board RIO

NI cRIO-908x
Highest Performance
NI CompactRIO

2011 NI TECHNICAL SYMPOSIUM
14 GHz Vector Signal Analyzer

• Specifications
  – Frequency Range: 20 Hz to 14 GHz
  – Analysis bandwidth: 25/50 MHz with DDC
  – Noise Floor: <-154 dBm/Hz (<-165 dBm/Hz)
  – IP3: >+24 dBm (700 MHz to 3.6 GHz)
  – Phase Noise: -129 dBc/Hz (800 MHz at 10 kHz offset)
  – Form Factor: PXI Express (x4), seven slots

• Features
  – RF list mode
  – Multichannel receiver architecture
  – High-speed data streaming and peer-to-peer streaming
New Lowest Cost NI CompactDAQ

- Three new 1-slot chassis offer USB, Ethernet, and 802.11 Wi-Fi compatibility
- Support for over 50 electrical and sensor measurement modules
- Ideal design for portable and distributed measurement applications

Now use the same code for 1-, 4-, and 8-slot chassis over USB, Ethernet, and Wi-Fi
LabVIEW 2011

http://www.ni.com/labview/whatsnew