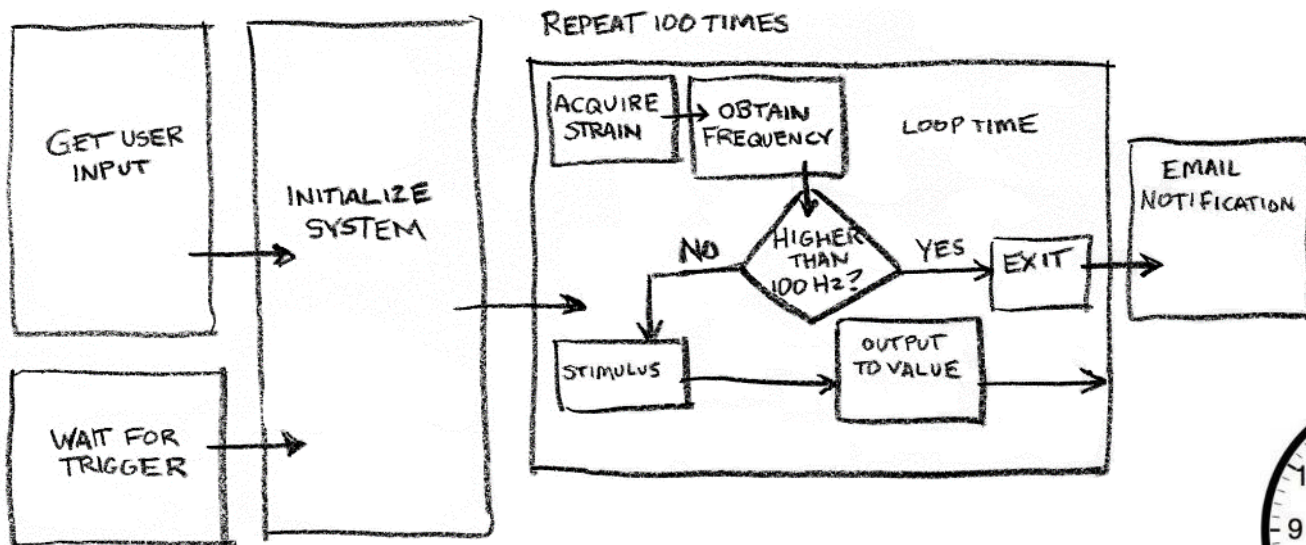




# What's New in LabVIEW 2015

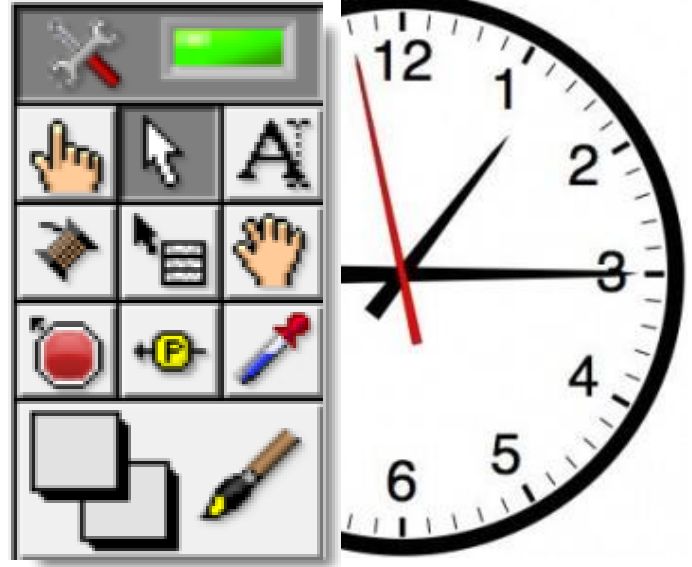
Write Code Faster. Write Faster Code.

# Pressure to Decrease the Time from Idea to Solution



# How do you spend your time in LabVIEW?

- ❑ Dropping elements
- ❑ Configuring elements
- ❑ Wiring elements
- ❑ Architecting code
- ❑ Developing algorithms
- ❑ Documenting code
- ❑ Debugging code
- ❑ Optimizing code
- ❑ Running deployed code



# How do you spend your time in LabVIEW?

- ❑ Dropping elements
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- ❑ Optimizing code
- ❑ Running deployed code

**Write  
Code  
Faster.**

**Write  
Faster  
Code.**

# LabVIEW™ 2015

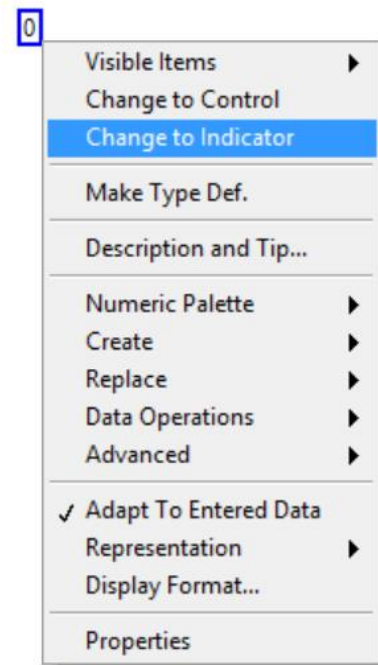




**Write Code Faster.**

# Configuring Elements through Right-Click Shortcuts

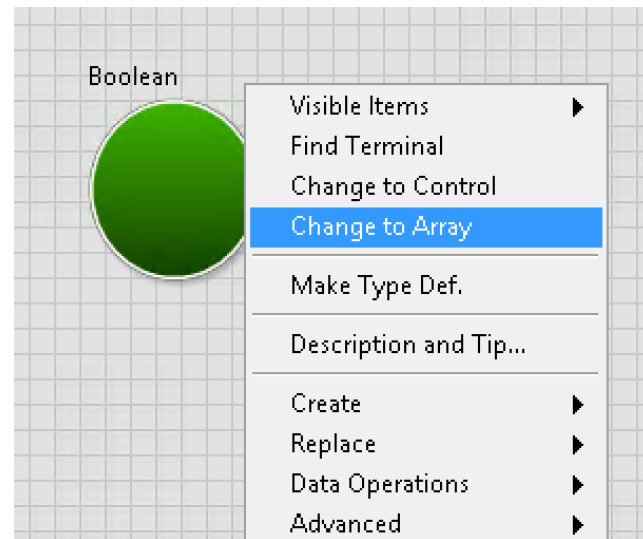
- Replace common tasks with right-click shortcuts
  - “Change to Indicator”
  - “Make Current Value Default”
  - “Delete Chart History”
- Popular requests on Idea Exchange
- Each shortcut required NI R&D development



# 7 New Right-Click Plugins

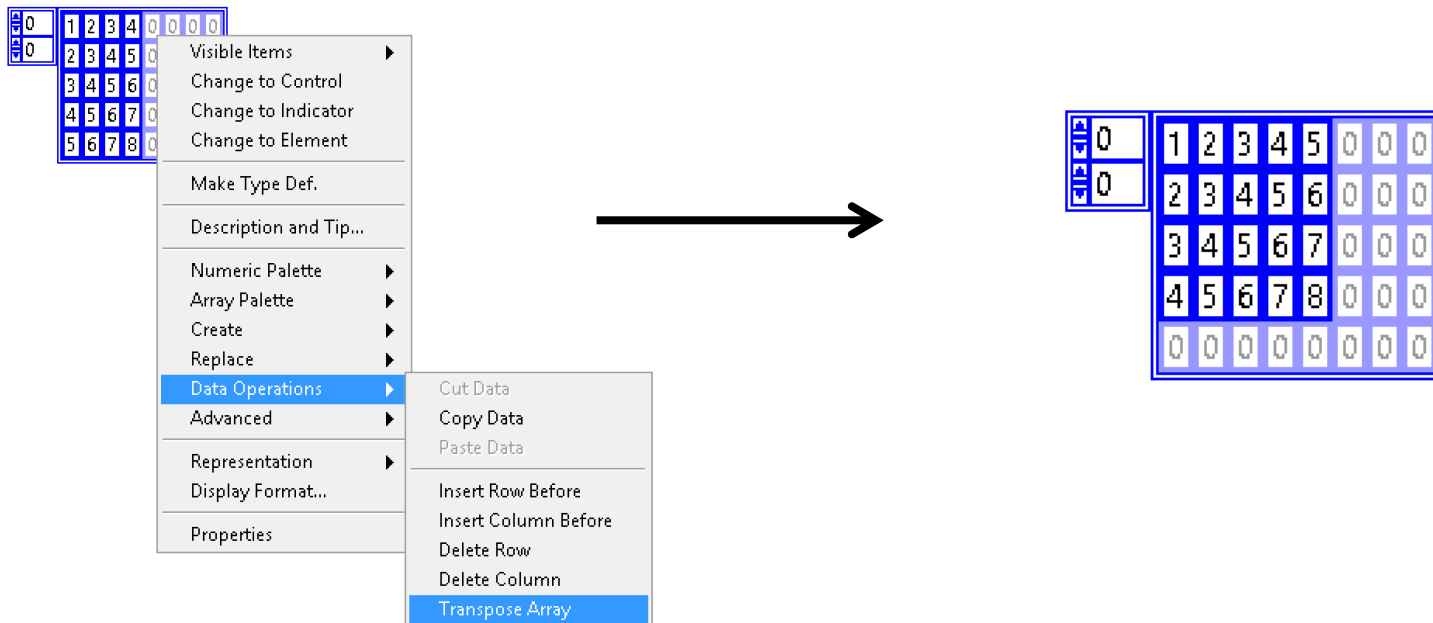
Included in LabVIEW 2015

- Change to Array or Element
- Empty Listboxes
- Explore
- Remove and Rewire Objects
- Size Array Constants To Contents
- Transpose 2D
- Create >> All Controls and Indicators



# Right-Click Plug-Ins

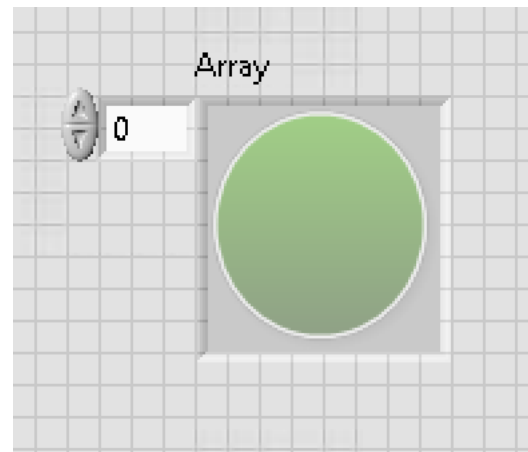
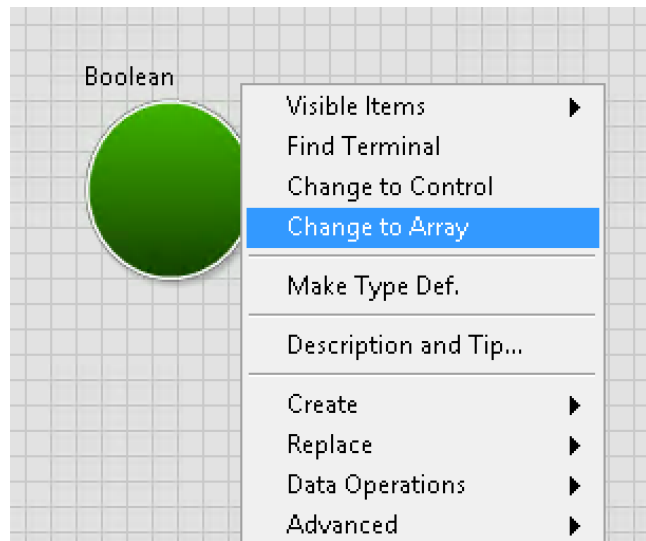
## Transpose 2D Array





# Right-Click Plug-Ins

Change to Array or Element



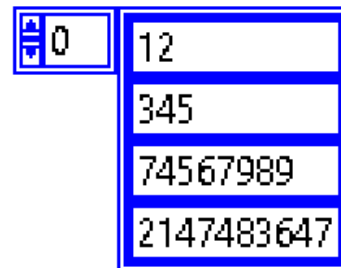
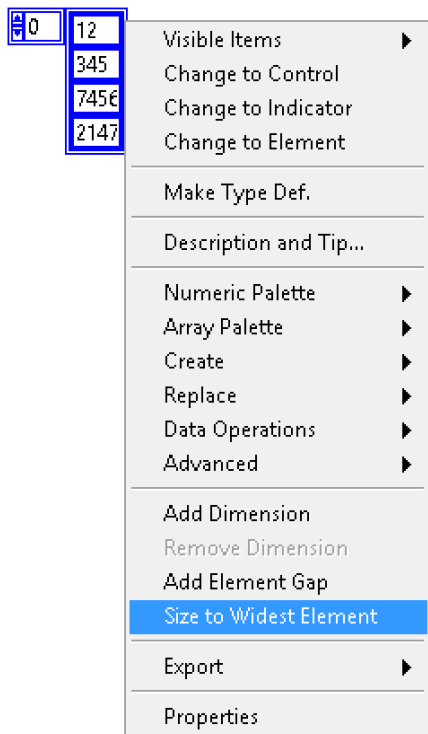
# Right-Click Plug-Ins

## Remove and Rewire Objects



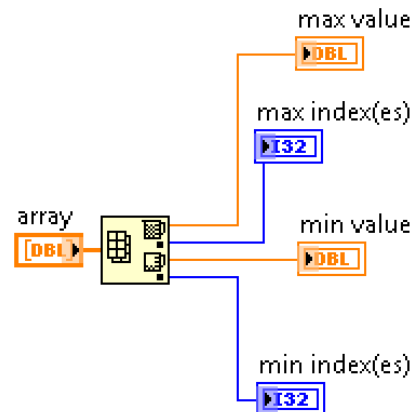
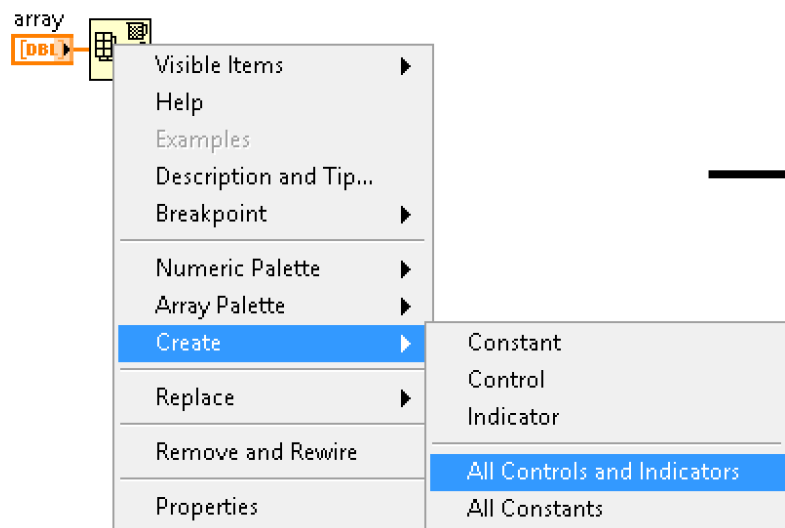
# Right-Click Plug-Ins

## Size Array Constants to Contents



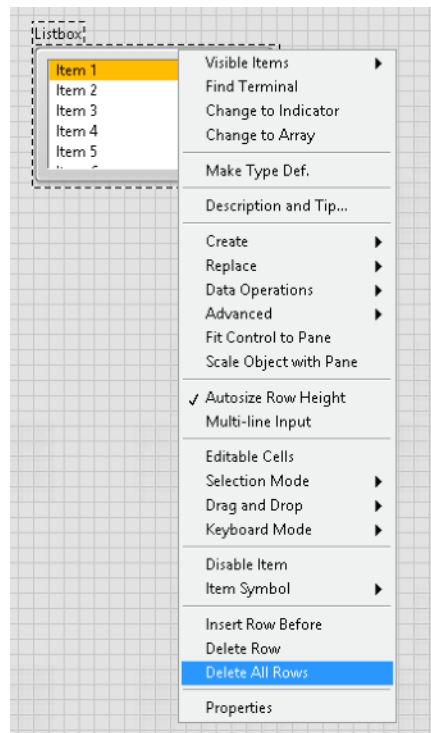
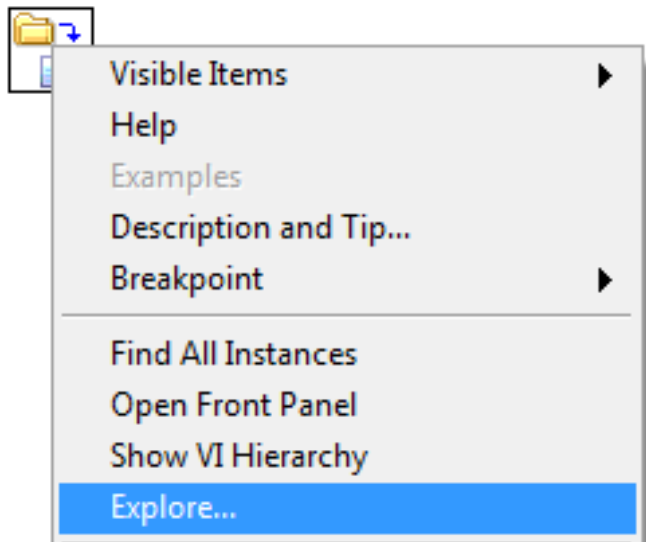
# Right-Click Plug-Ins

## Wire All Unwired Terminals



# Right-Click Plug-Ins

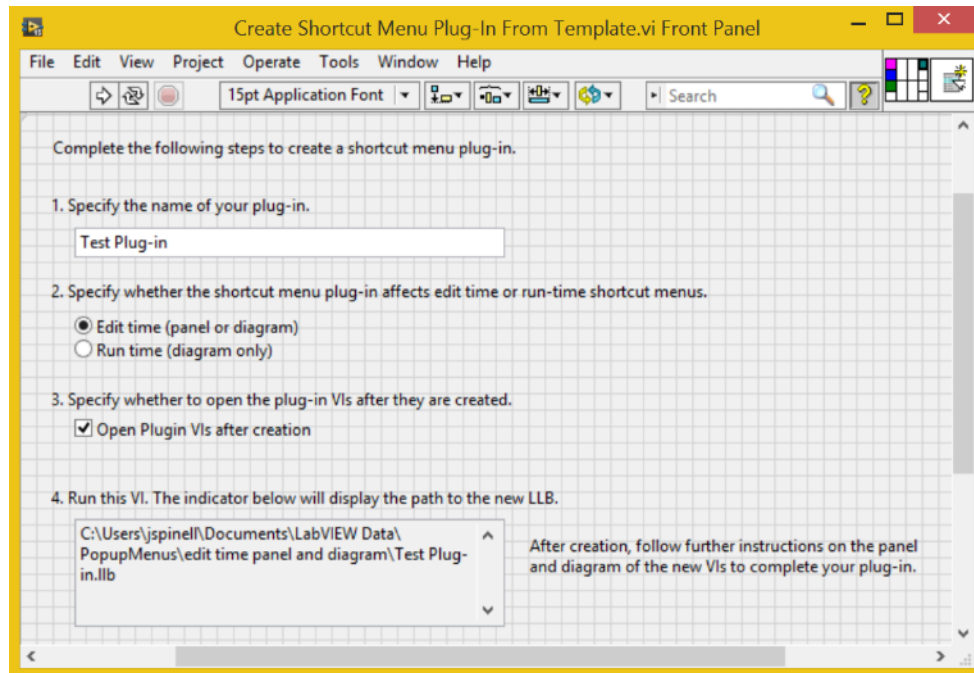
## Explore and Empty Listboxes



# Extend LabVIEW with Your Own Shortcuts

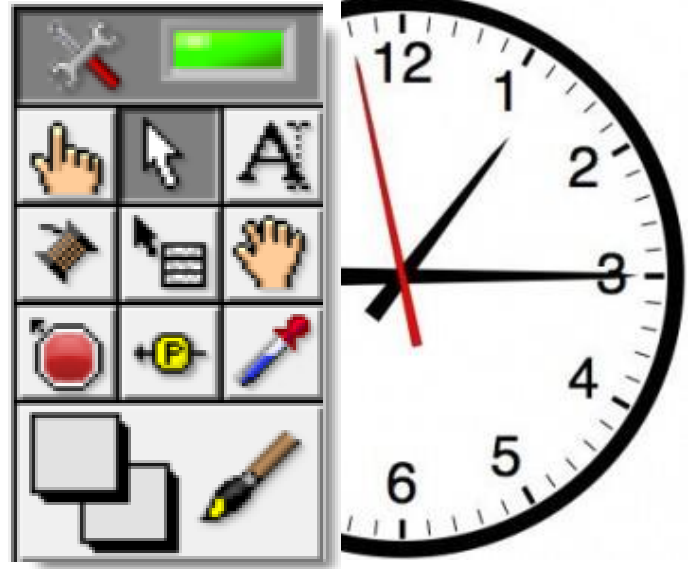
## Create Shortcut Menu Plug-in From Template in LabVIEW 2015

- Automate common repeated tasks by using a template VI to write your own plug-ins
- Extend the LabVIEW environment with VI Scripting
- Share and download plug-ins at [ni.com/lvmenus/](http://ni.com/lvmenus/)
- All Right-Click Shortcuts previously required NI R&D development



# How do you spend your time in LabVIEW?

- ✓ *Dropping elements*
- ✓ *Configuring elements*
- ✓ *Wiring elements*
- ❑ **Documenting code**
- ❑ **Debugging code**
- ❑ Architecting code
- ❑ Developing algorithms
- ❑ Optimizing code
- ❑ Running deployed code

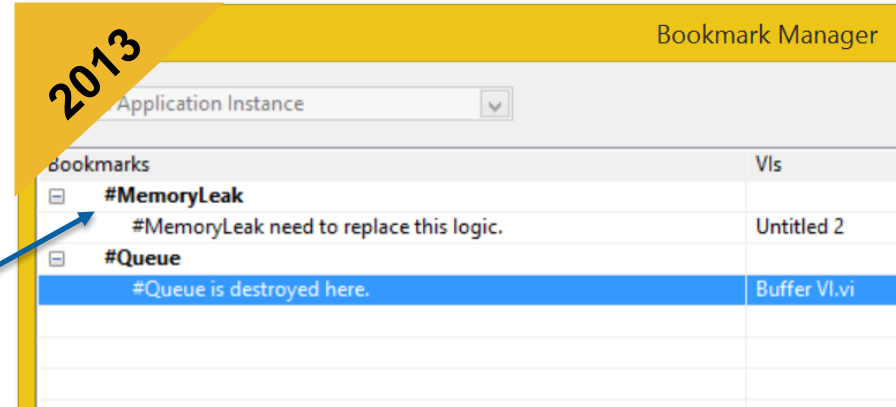


# Document VIs Faster

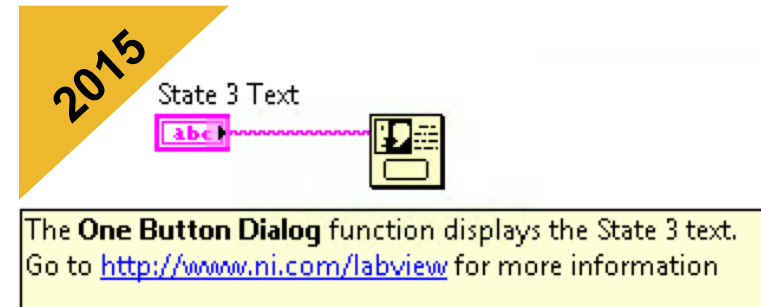
## Hyperlinks in Free Labels

- Quickly link to comments through hashtags viewable in the Bookmark Manager

#MemoryLeak need to replace this logic.



- Native hyperlink support on front panels and block diagrams

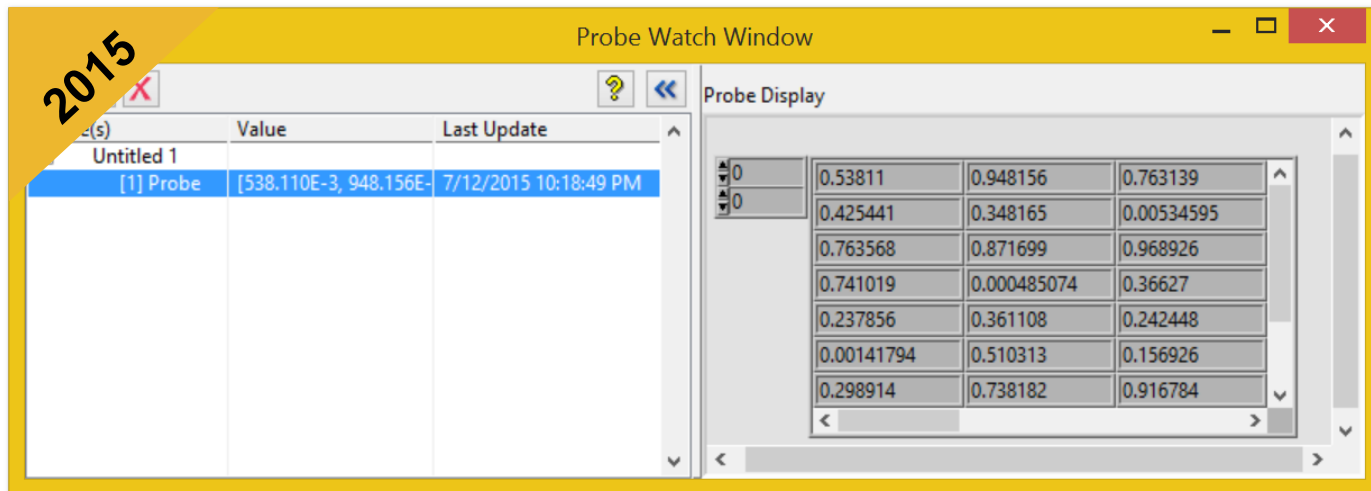




# Debug VIs Faster

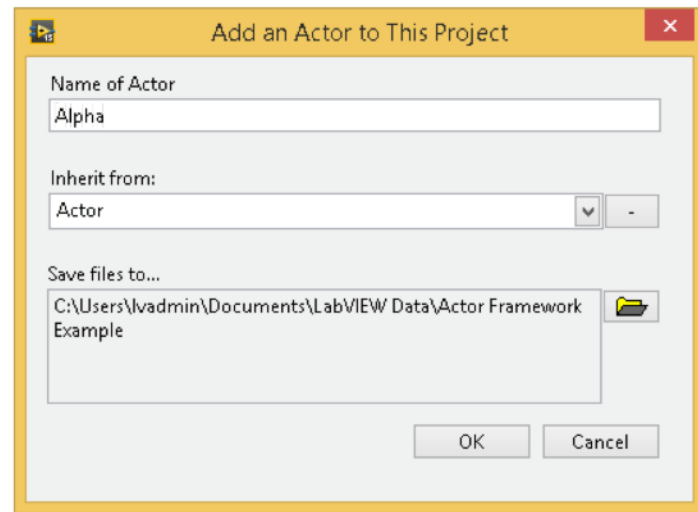
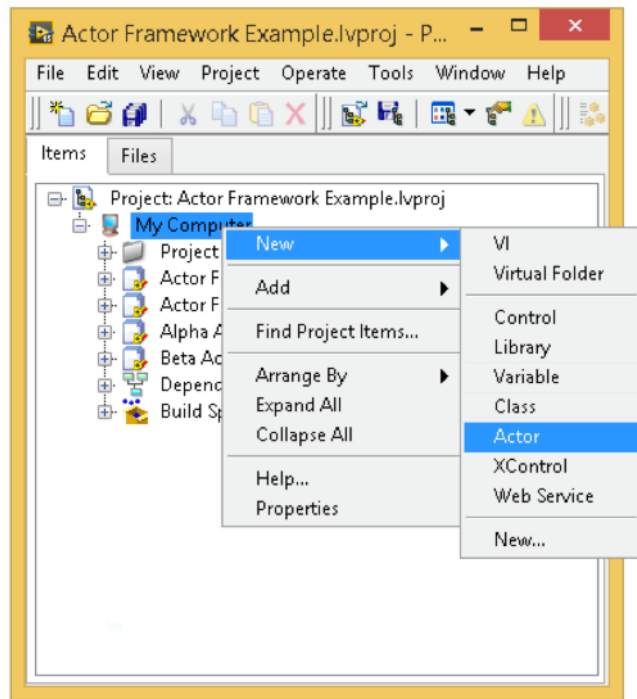
## Smarter Probes

- Automatically scaled view of strings and arrays



# Create Advanced Architectures Faster

Natively Create Actor Framework Actors and Messages



# LabVIEW Tools Network

The App Store for Engineers and Scientists

LabVIEW  
TOOLS NETWORK

- Download 300+ Free and Paid Add-Ons
- More than 4,000,000 downloads
- [ni.com/labviewtools](http://ni.com/labviewtools)

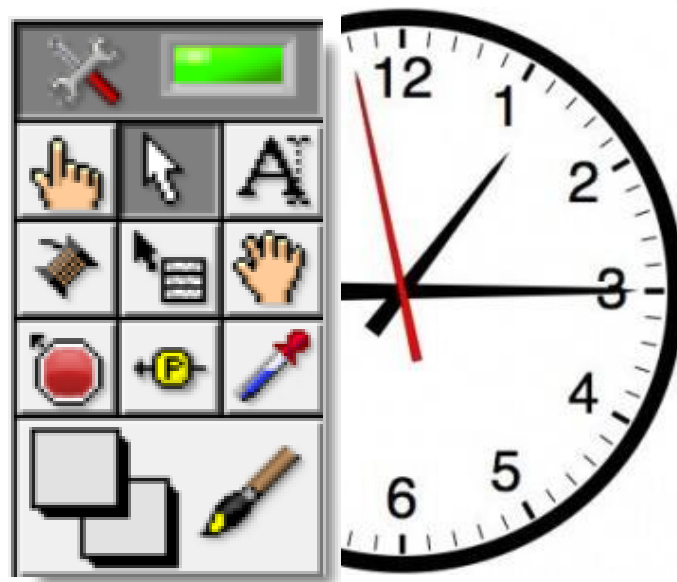


# How do you spend your time in LabVIEW?

- ✓ *Dropping elements*
- ✓ *Configuring elements*
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- ✓ *Architecting code*
- ✓ *Developing algorithms*
- *Optimizing code*
- *Running deployed code*

**Write  
Code  
Faster.**

**Write  
Faster  
Code.**



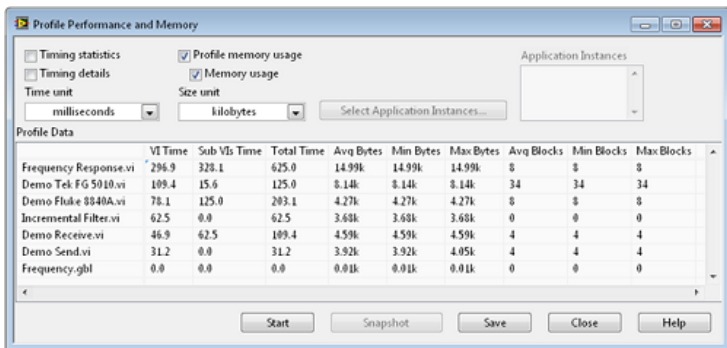
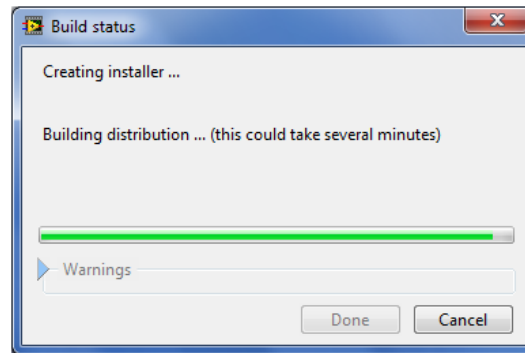


**Write Faster Code.**

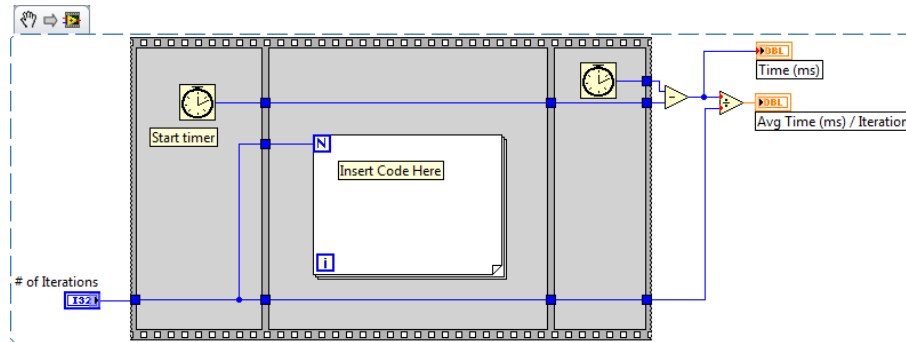
# LabVIEW Without Limits

Internal R&D architectural effort to improve:

- Load Times
- Memory Usage
- Application Build Time
- Execution Speed

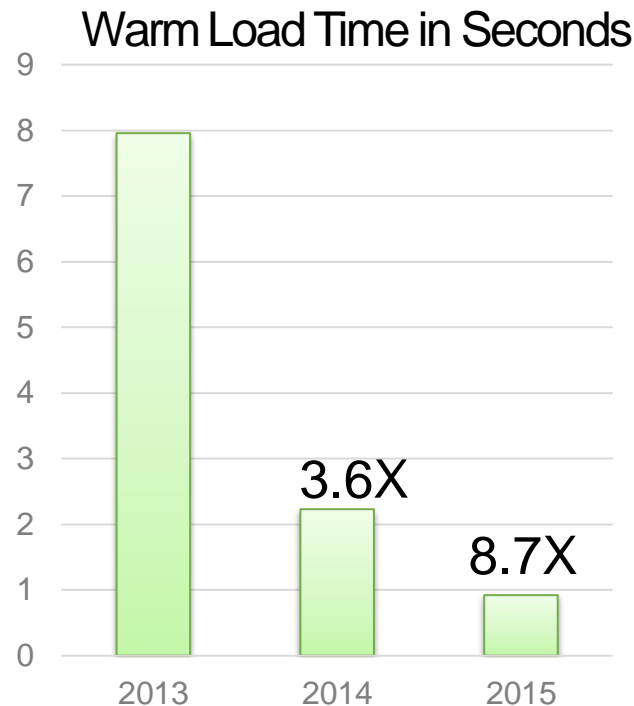


Profile Data	VI Time	Sub VIs Time	Total Time	Avg Bytes	Min Bytes	Max Bytes	Avg Blocks	Min Blocks	Max Blocks
Frequency Response.vi	296.9	328.1	625.0	14.99k	14.99k	14.99k	8	8	8
Demo Tel-FG 5010.vi	109.4	15.6	125.0	8.14k	8.14k	8.14k	34	34	34
Demo Flake 0040A.vi	78.1	125.0	203.1	4.27k	4.27k	4.27k	8	8	8
Incremental Filter.vi	62.5	0.0	62.5	3.68k	3.68k	3.68k	0	0	0
Demo Receive.vi	46.9	62.5	109.4	4.59k	4.59k	4.59k	4	4	4
Demo Send.vi	31.2	0.0	31.2	3.92k	3.92k	4.05k	4	4	4
Frequency.gbl	0.0	0.0	0.0	0.01k	0.01k	0.01k	0	0	0



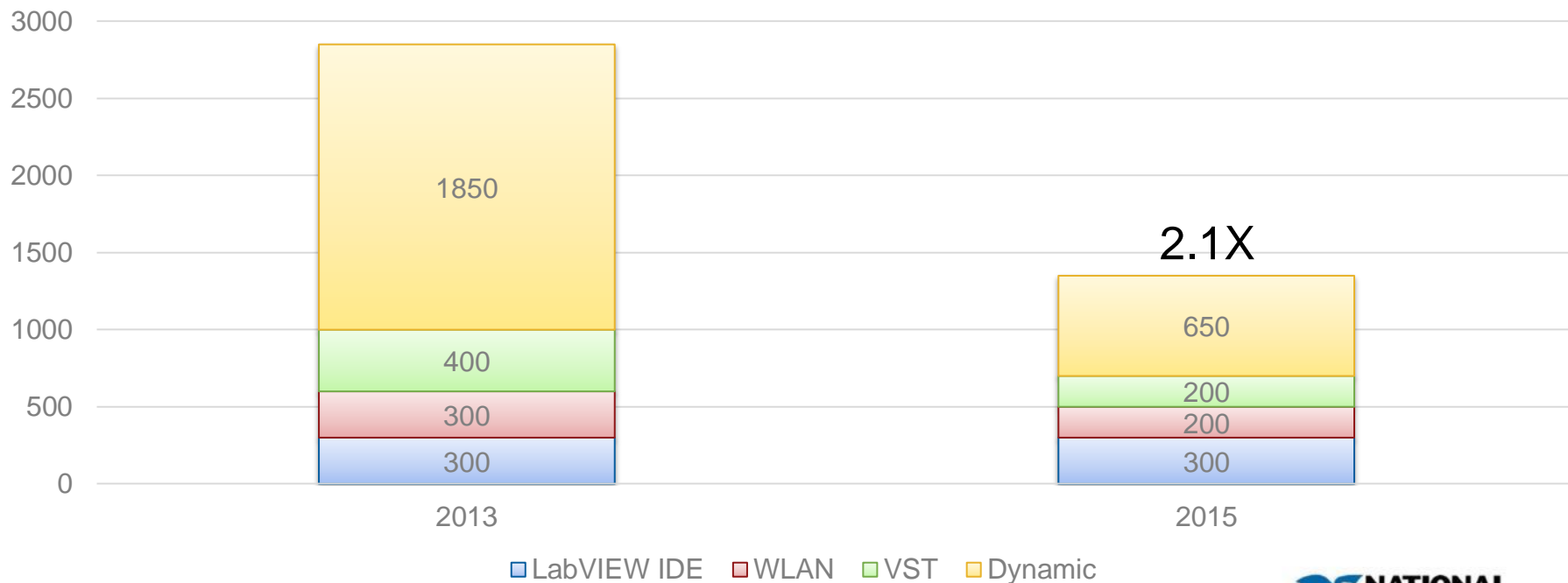
# Open Code Faster

- Faster LabVIEW IDE launch times
- 8X faster load times of large packed project libraries
- Open code without searching for missing VIs from NI modules, toolkits, and drivers



# Use Less Memory – Footprint in MB

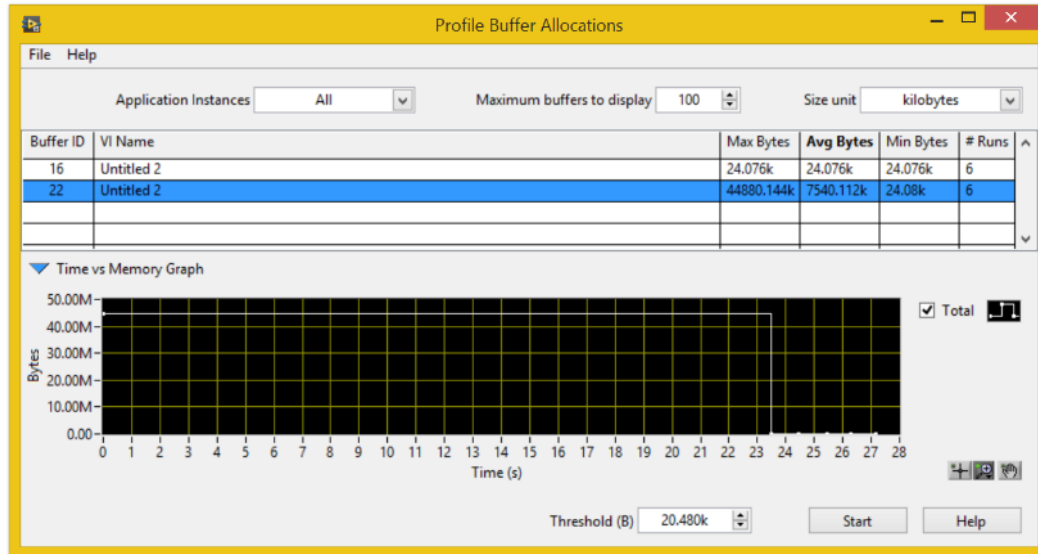
LabVIEW 2015 applications are built to use less dynamic memory





# Optimize Memory Usage Faster

- New Profile Buffer Allocations tool
  - Visualize and identify large memory allocations in VIs
- Tools > Profile > Profile Buffer Allocations...*



# LabVIEW Real-Time Module

Flexibility to meet your IIoT application needs

## Run Faster with Updated NI Linux Real-Time kernel

- On average 11% faster benchmarked loop rates for single point I/O applications
- Enhanced security feature support

## Download New Packages to Integrate with the Web

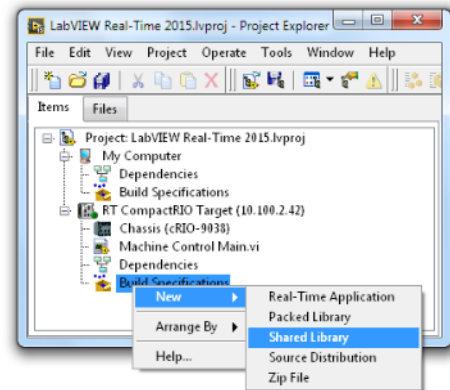
- Packages on the NI-Red repository help connect targets to web applications
- Tools to work with existing php, node.js, and json-c applications and improved Python support

## Build Reusable Shared Libraries

- New LabVIEW Real-Time shared library support
- Built using LabVIEW Application Builder



**BETTER**



# LabVIEW FPGA Module

Develop, Debug and Compile Faster

## Develop Your Code Faster with High Quality IP

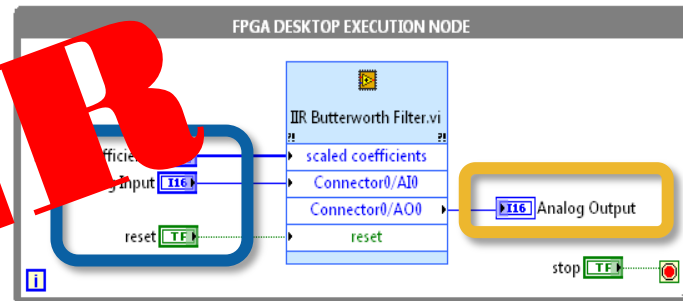
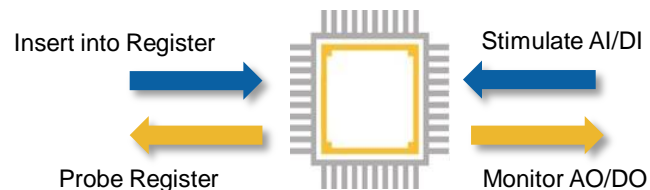
- Floating-point PID VI for higher precision control
- SPI and I2C VIs for communication with peripherals
- Motor simulation with ANSYS

## Validate Your Designs Faster

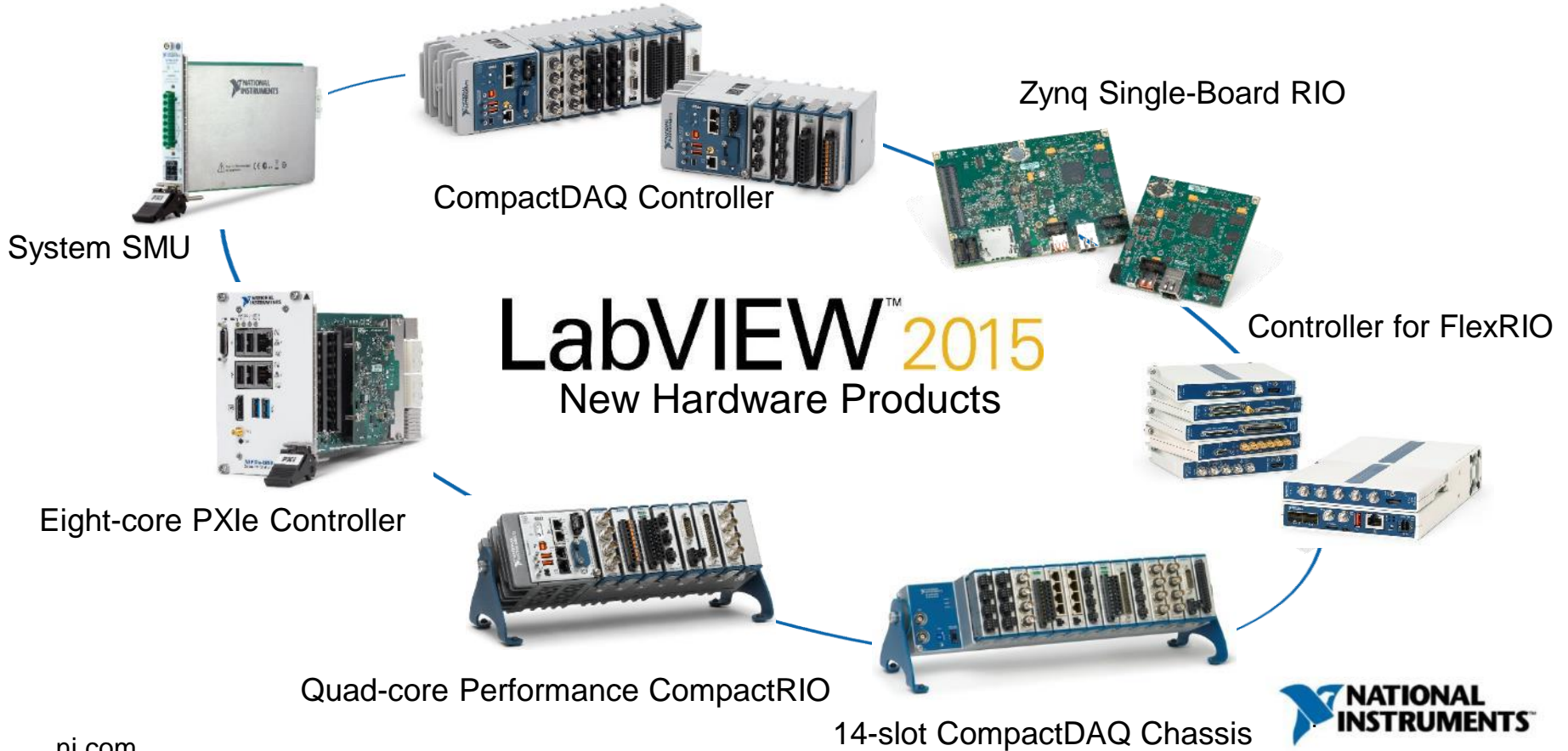
- Create test benches at the Design Execution Node
- New examples working with analog and digital stimuli

## Compile Your Code Faster

- LabVIEW FPGA Compile Cloud Service included with SSP
- Offload LabVIEW FPGA compilations to the cloud
- Compile up to 5 designs in parallel

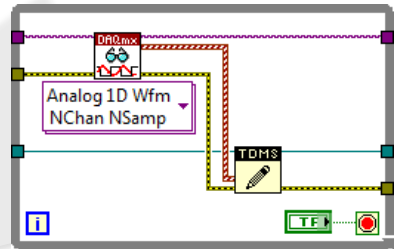


# Integration with the Latest Hardware Products



# High-Performance CompactDAQ Controllers

Starting at \$4,499



## Simplify System Complexity

- Integrated PC and signal conditioning
- Built in RS232, and other ports
- Removable SD card storage

## Easy Measurements and Logging

- Familiar experience with Windows 7
- Easy streaming and logging with DAQmx
- Port code from existing systems

## High-Performance

- 1.91 GHz Atom Quad-Core Processor
- Option for Linux Real-Time for ultimate reliability

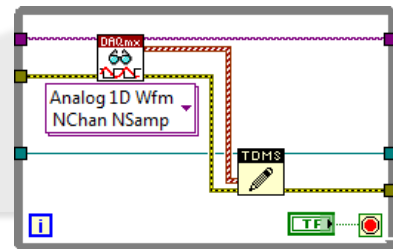
	Pricing*		
cDAQ-9136 WES7	\$ 4,499	€ 4,930	¥ 594,000
cDAQ-9137 WES7	\$ 4,999	€ 5,480	¥ 660,000

\* For Linux RTOS, price increases \$500



# CompactDAQ 14-Slot USB 3.0 Chassis

Priced at \$1,850



## Easily Scale Your Application

- 14 slots for high channel count needs
- Supplement existing systems with additional I/O

## Easy Measurements and Logging

- Familiar experience with Windows 7
- Easy streaming and logging with DAQmx
- Port code from existing systems

## Higher Data Throughput

- Supports USB 3.0 Super-Speed
- Data streaming rates more than 250 MB/s
- Backwards compatible with USB 2.0

# High Voltage System SMU

PXIe-4137

## High Power

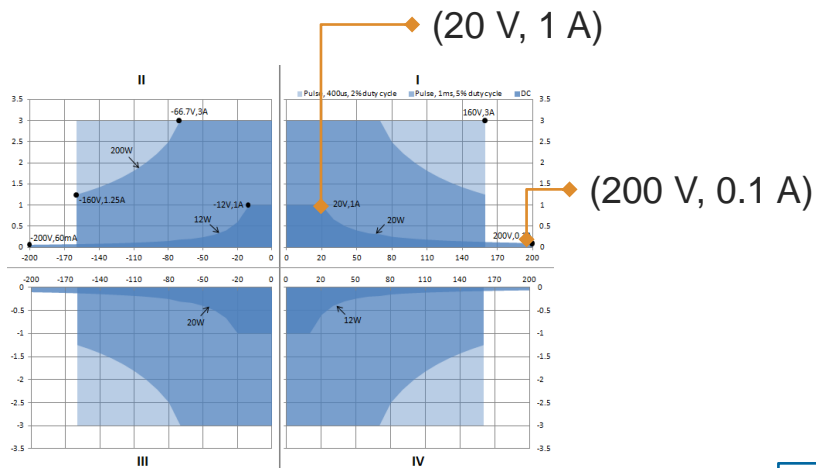
- 200 V
- 1 A DC (3 A Pulse)
- 20 W (500 W Pulse)

## High Precision

- 100 fA
- 100 nV

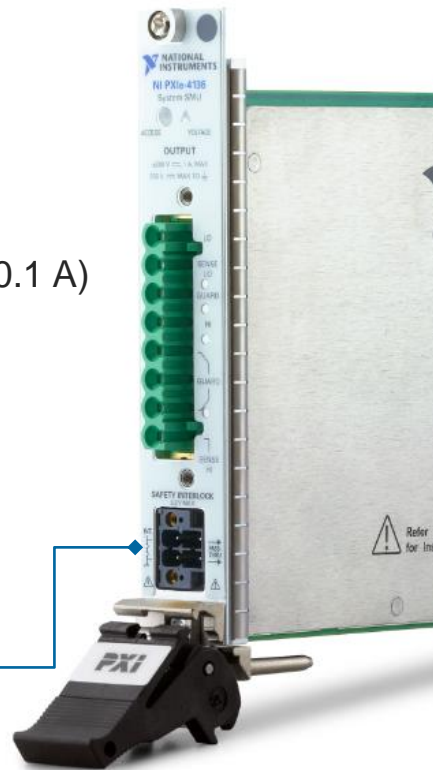
## High Speed:

- Sampling 1.8 MS/s
- Update: 100 kS/s



NI SourceAdapt™ Technology  
Extended Range Pulsing  
Hardware timing & triggering

Safety Interlock



# NI PXIe-8880 Embedded Controller

Industry's First Embedded Controller with Intel Xeon Technology

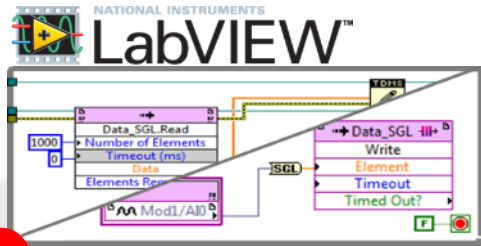
## Highest PXIe Performance and Throughput

- Intel® Xeon® E5-2618L v3 processor
- 2.3 GHz (base) and 3.4 GHz (Turbo Boost)
- 8 Physical and 16 Logical CPU Cores
- 8 GB DDR4 1866 MHz RAM (standard); 24 GB max
- Up to 24 GB/s System Bandwidth (each direction)
- 240 GB, 1.8 in. SSD Hard Drive





# New Performance CompactRIO



## LabVIEW System Design

Program with LabVIEW for real-time and  
LabVIEW FPGA modules  
Quickly port existing LabVIEW applications

## High Throughput and Performance

Up to a Quad Core Intel Atom 1.91 GHz processor  
Xilinx Kintex-7 FPGAs with up to 325k logic cells  
16 DMA FIFO channels for data streaming

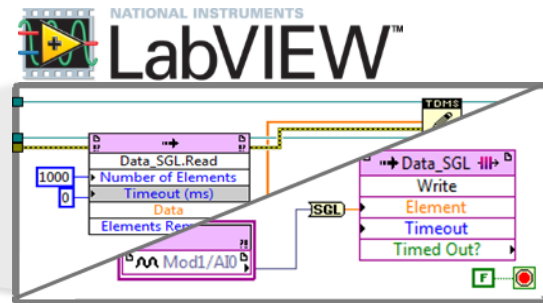
## Simplify System Complexity

Embedded UI driven by NI Linux Real-Time  
Integrate vision with FPGA co-processing  
Removable SDHC data storage

## Community and Code Reuse

NI Linux Real-Time Operating System  
Integrate existing applications and libraries  
Develop, debug, and deploy C/C++ code

# New! Single-Board RIO with Zynq and Linux



## Reuse Existing Designs

- Form, fit, function replacement for existing Single-Board RIO systems
- Quickly port existing LabVIEW applications

## High Throughput and Performance

- Dual-Core ARM 667 MHz processor
- Xilinx 7 Series FPGA fabric with 85k logic cells
- 16 DMA FIFO channels for data streaming

## New Features to Improve Your System

- Improved C Series module support
- Gigabit Ethernet, power over RMC, USB device over RMC, and RTC battery

## Community and Code Reuse

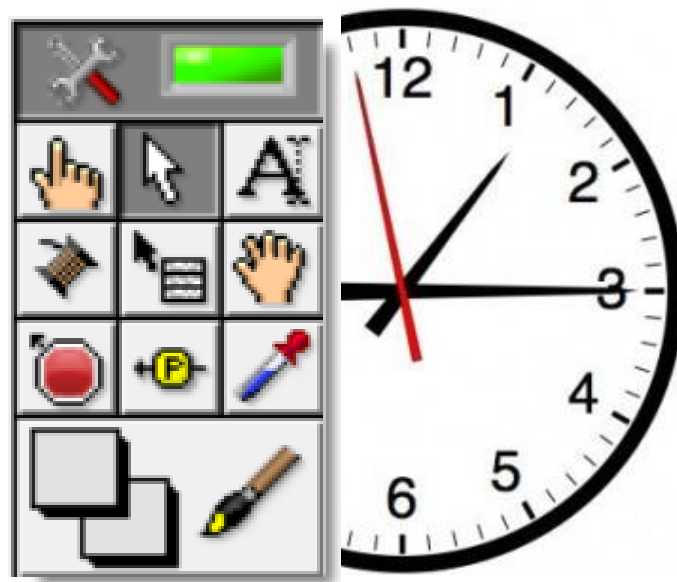
- Unlock ecosystem with NI Linux Real-Time OS
- Integrate existing applications and libraries
- Develop, debug, and deploy C/C++ code

# How do you spend your time in LabVIEW?

- ✓ *Dropping elements*
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- ✓ *Optimizing code*
- ✓ *Running deployed code*

**Write  
Code  
Faster.**

**Write  
Faster  
Code.**



# LabVIEW Editions

## Full Edition

Make advanced control applications through included PID and Fuzzy Logic palettes

## Professional Edition

Trace low-level bugs, validate coding practices, and manipulate data through the now included:

- VI Analyzer Toolkit
- Unit Test Framework Toolkit
- Desktop Execution Trace Toolkit
- Database Connectivity Toolkit
- Report Generation Toolkit



# What is a LabVIEW Suite?



- Combination of LabVIEW Professional and application software
- Single P/N and distribution created for a specific application area
- Each LabVIEW Suite now comes with a one year Training and Certification Membership
- Distributed on USB 3.0 with appropriate drivers

Now Included: One Year Unlimited Training and Certification Access

# LabVIEW Suites



## LabVIEW Automated Test Suite

Includes TestStand and Switch Executive



## LabVIEW Embedded Control and Monitoring Suite

Includes LabVIEW Real-Time and FPGA modules



## LabVIEW HIL and Real-Time Test Suite

Includes VeriStand and LabVIEW Real-Time and FPGA modules

# Standard Service Program (SSP)

## Technical Support

Solve problems quickly with phone and email support from degreed engineers in your region

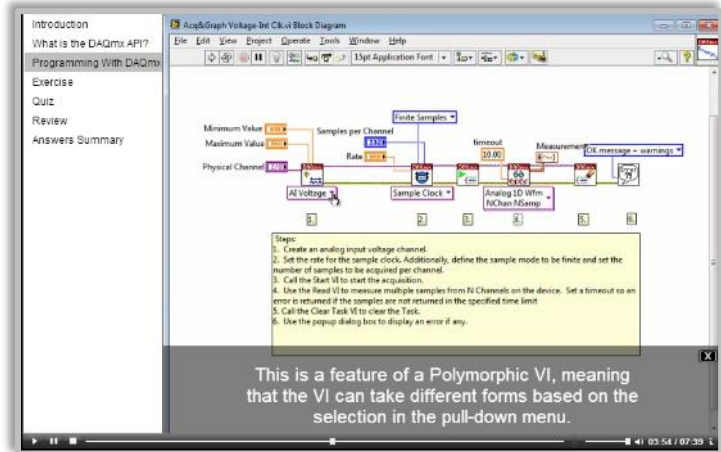


## Access the Latest Version

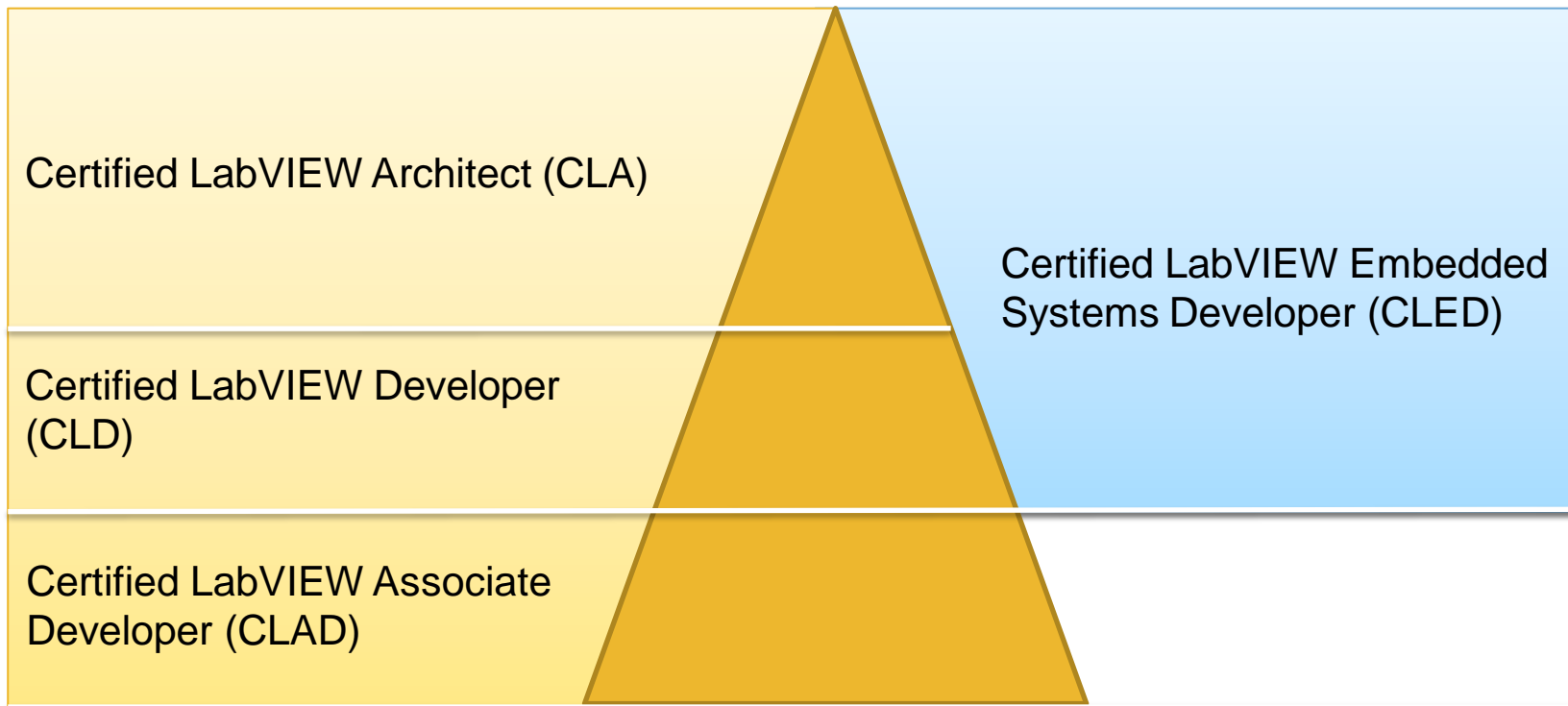
Upgrade to 2015 when you are ready with online access to download any current or past version of LabVIEW

## Online Training

Learn LabVIEW at your own pace with general and advanced course offerings in multiple languages



# Accelerate Growth Through Certifications

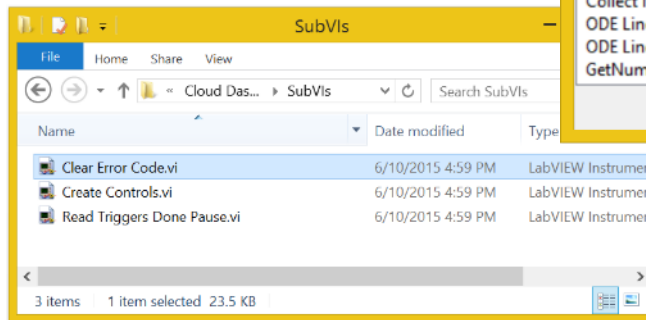
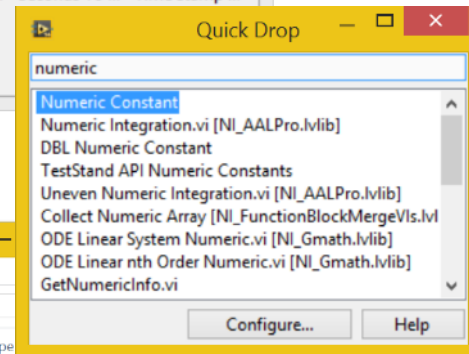
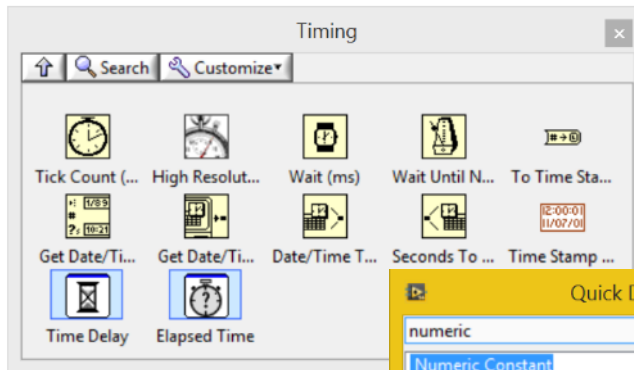




# Appendix – Other Resources

# Finding Elements in the IDE

- Palettes
  - Browse
  - Search
  - Pin
- Quick Drop <Ctrl + Space>
- Drag and drop from explorer



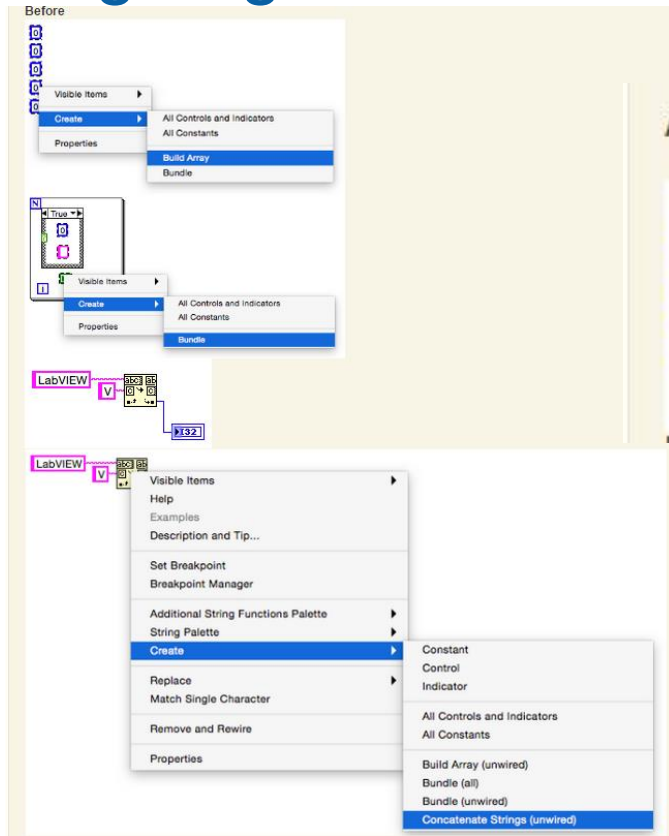
# DEMO – Customizing Palettes

- User Libraries: <LabVIEW>/user.lib
  - Restart to effect change
- Tools > Advanced > Edit Palette Set...
  - Restore to Default Settings when you make a mess
- Add favorite VIs to Favorites Palette
  - All-time faves or just for the current project
  - NI VIs or your own

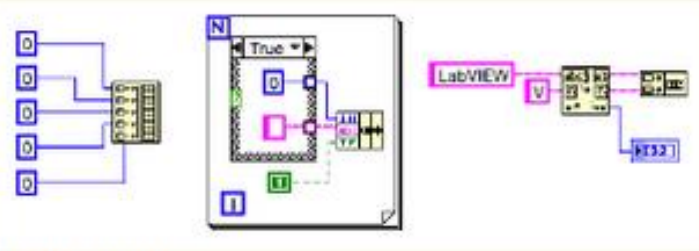
# Introducing: Right-click Menu plug-ins!

- **New feature of LabVIEW 2015**
- Write G code to augment LabVIEW right-click menus
  - Edit-time panel and diagram right-click menus
  - Run-time diagram right-click menus
  - NOT run-time panel right-click menus (you already have these!)
- “Augmenting” the menus can mean:
  - Adding new menu entries
    - Including new pull-rights
  - Removing/replacing existing menu entries
  - Manipulating menu entries (enable/disable, check/uncheck, etc.)

# Introducing: Right-click Menu plug-ins!



After

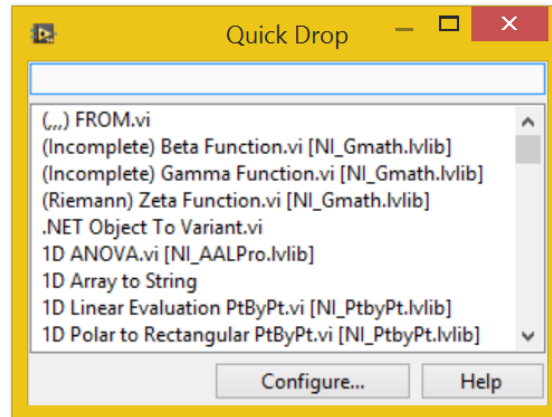


ptions of LabVIEW from LabVIEW 2015 and later.  
r editing environment. (This can be done programmatically  
tion property.)

abVIEW, you can add it to  
Menus\ <choose subdirectory>

# Quick-Drop Keyboard Shortcuts


- <Ctrl + Space>
- VI Scripting extension point for custom editor scripts
  - Ctrl+W – auto wire
  - Ctrl+I – insert VI and rewire
- Free and open to the community
  - Create custom shortcuts
  - Share shortcuts online
  - Download shortcuts



 List of Community Quick Drop Keyboard Shortcuts VERSION 50 


Created on: Feb 12, 2010 2:39 PM by [Darren](#) - Last Modified: May 21, 2015 2:16 PM by [Alex5](#)

The following is a list of community-contributed [Quick Drop Keyboard Shortcuts](#) for LabVIEW 2009 and later. If the shortcut has a default key specified, it is shown in parenthesis after the name:

-  Find Static Events (S)
-  VI Server Rename (B)
-  Create Object from Terminal (Q)
-  Commands for "Create" Menu Options (A)
-  Rename LVOOP FP Object Labels (Z)
- LVOOP Assistant
- Change To/From Array (A)
- Selective Wire Cleanup (B)
- Paste to Array Constant/Control (E)
-  Clean All Wires (W)








# Quick-Drop Keyboard Shortcuts

## List of Community Quick Drop Keyboard Shortcuts

VERSION 52 

Created on: Feb 12, 2010 2:39 PM by [Darren](#) - Last Modified: Aug 18, 2015 2:37 PM by [Darren](#)

The following is a list of community-contributed [Quick Drop Keyboard Shortcuts](#) for LabVIEW 2009 and later. If the shortcut has a default key specified, it is shown in parentheses after the name:

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-  VI Server Rename (B)
-  Create Object from Terminal (Q)
-  Commands for "Create" Menu Options (A)
- Rename LVOOP FP Object Labels (Z)
- LVOOP Assistant
- Change To/From Array (A)
- Selective Wire Cleanup (B)
- Paste to Array Constant/Control (E)
-  Clean All Wires (W)
-  Create Place VI Contents VI (G)
-  Insert State Into JKI State Machine (J)
-  **Align front panel controls to connector pane pattern (A)**
-  Toggle "Visible Items -> Radix/Display Style" (X)
-  VI Snippet Quick Drop Plugins (U)
-  Align & Compress BD/FP Objects (A)
-  Colour Up Structure (Q)
- Alphabetize Case Structure Cases
-  Better Move(Shift) Block Diagram Objects (C, S, X, and Z)
-  Reset Origin (O)
-  **Restart LabVIEW (Q)**
-  Replace or insert (w)
-  **Show VI in Windows Explorer (F)**

# Darren's Quick-Programming Tips