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What's New in LabVIEW 8.20: 20th Anniversary Edition

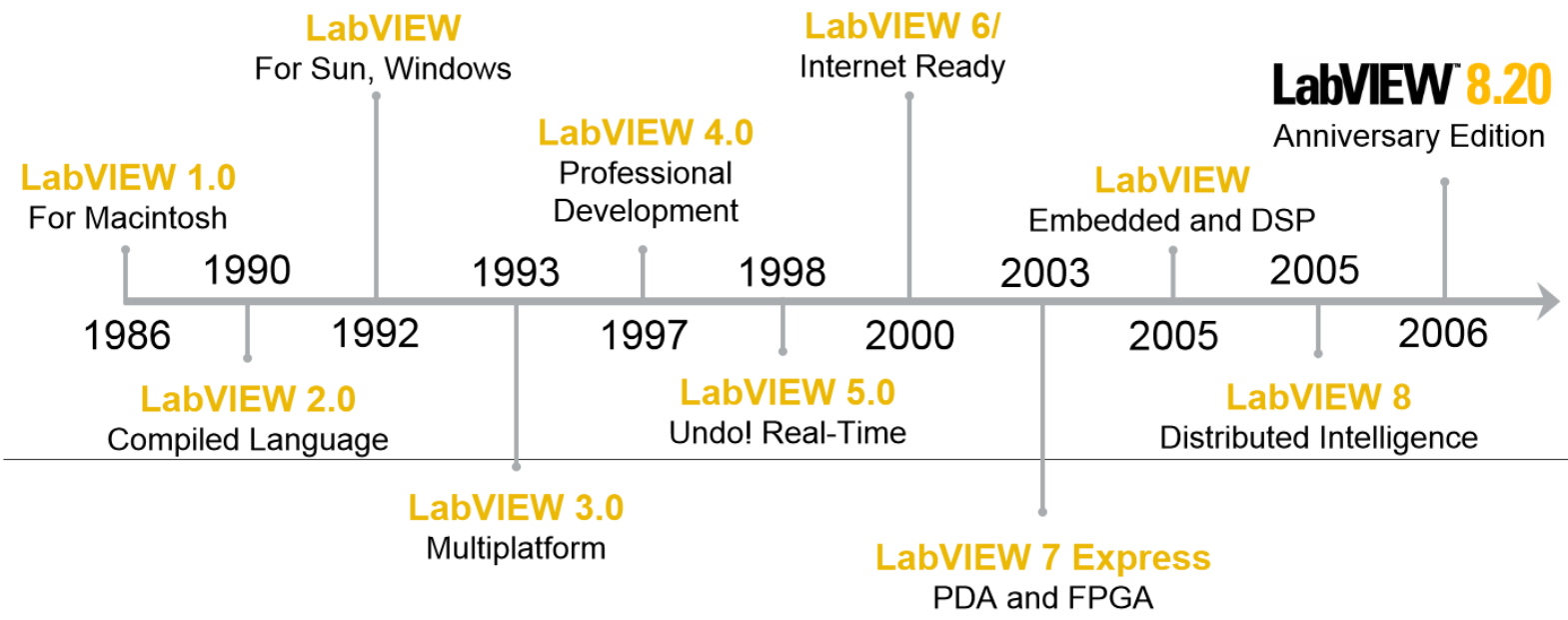


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20 Years of Innovation





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LabVIEW Development Systems

(Student, Base, Full, Professional)

Real-Time Module	DSC Module	FPGA Module	PDA Module	Embedded Module	Simulation Module	Touch Panel Module

Windows | Mac | Linux | RTOS

English | French | German | Japanese | Korean | Chinese



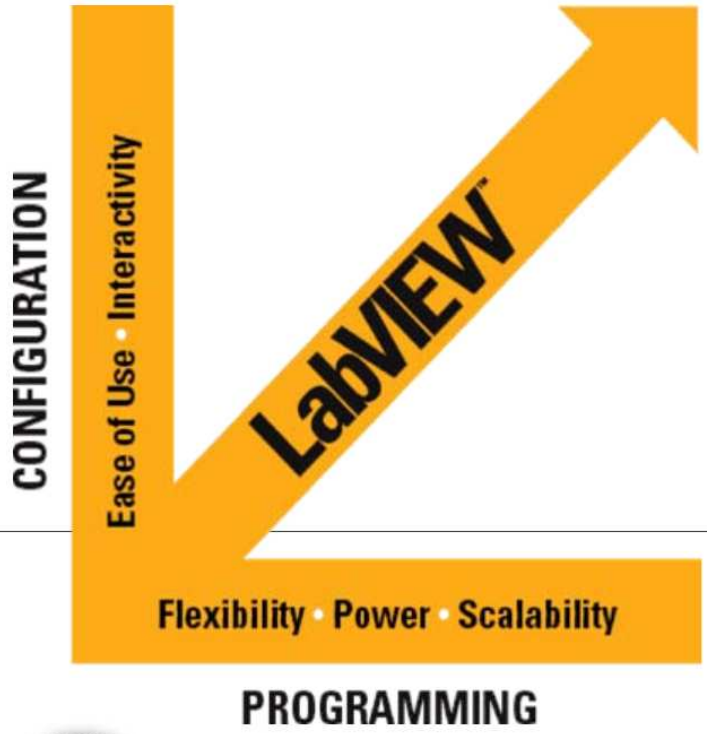
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LabVIEW 8.20

20th Anniversary Edition



Easy. Powerful. Open.

- Make common measurements **EASY** with any board, instrument or bus
- Help users build **POWERFUL** solutions with standard PC technology
- Integrate external tools and technologies with an **OPEN** platform

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Overview

Building on the innovations of LabVIEW 8

- Distributed Intelligence
- Large application development

Bridging design and test with graphical system design

- LabVIEW-based math, control & communications design
- Third-party design tool connectivity

Additional LabVIEW 8.20 features

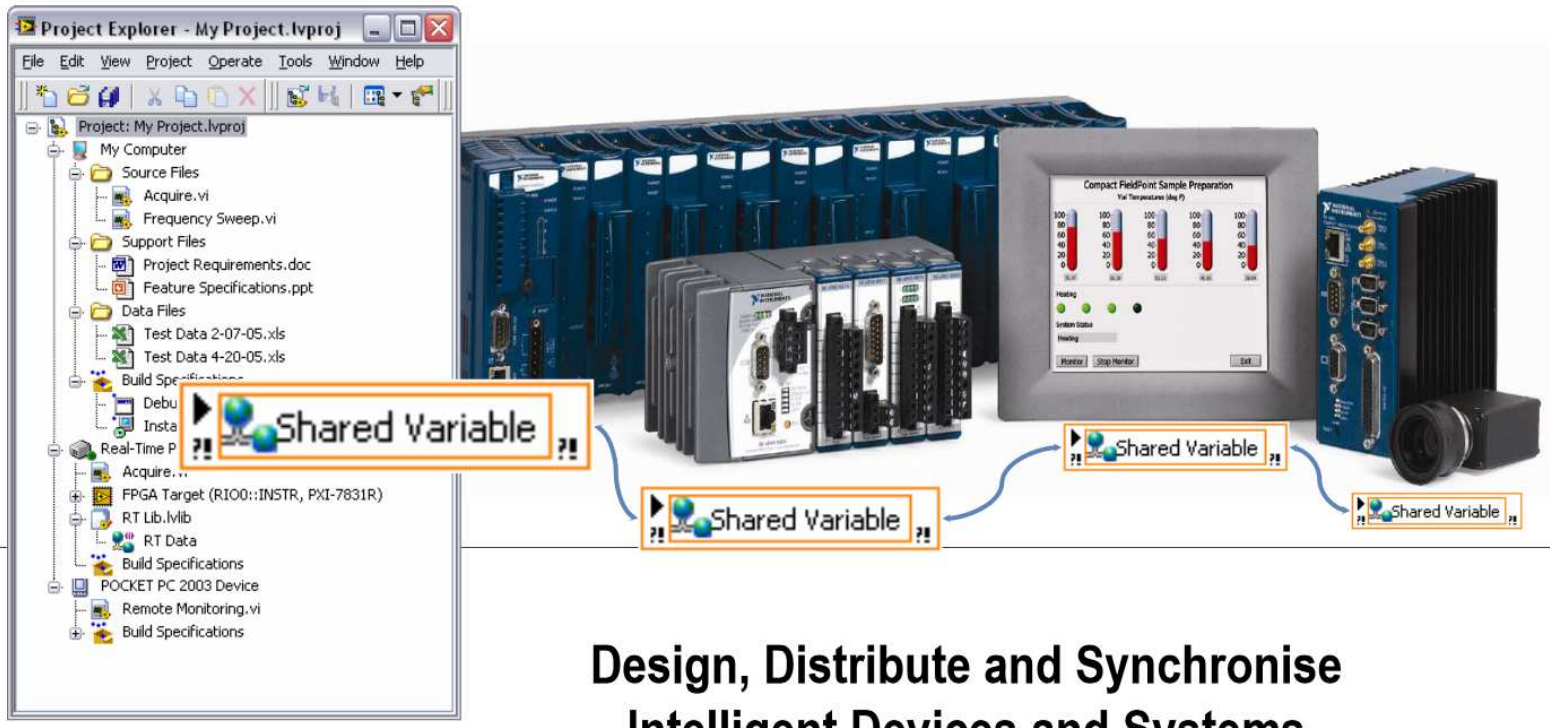


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LabVIEW 8.20

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New Targeting Technology Extends Distributed Intelligence



Design, Distribute and Synchronise Intelligent Devices and Systems

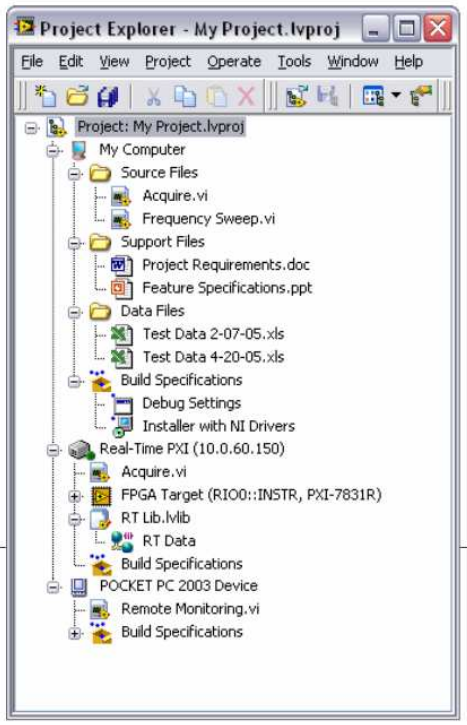
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Tools Simplify Large Application Development



LabVIEW 8.0 Advancements

- Project Explorer
- Source code control integration
- Project libraries
- Application builder enhancements

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LabVIEW 8.20

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New Targeting Technology Extends Distributed Intelligence



- FPGA Wizard
- Real-Time on the desktop
- NEW Touch Panel Module
- Shared variable on LabVIEW PDA
- LabVIEW Embedded project integration

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LabVIEW FPGA Wizard

VHDL

```
-- First we sychronize the asynchronous digital input to our clock
-- by inserting two flip flops.
SynchronizationFFs:
process( aReset, Clk )
begin
   if aReset then
      cDigitalInput_ms <= false;
      cDigitalInput <= false;
   elsif rising_edge(Clk) then
      cDigitalInput_ms <= aDigitalInput;
      cDigitalInput <= cDigitalInput_ms;
   end if;
end process SynchronizationFFs;

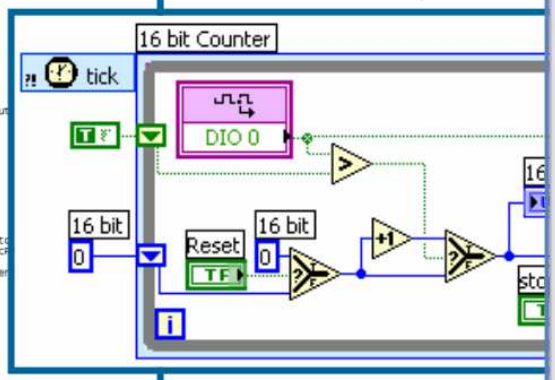
-- Then we keep track of what the digital input
-- clock cycle by inserting another flip flop
PreviousDigitalInputFF:
process( aReset, Clk )
begin
   if aReset then
      cPrevDigitalInput <= false;
   elsif rising_edge(Clk) then
      cPrevDigitalInput <= cDigitalInput;
   end if;
end process PreviousDigitalInputFF;

-- Then we have a little combinatorial logic to
cRisingEdgeDetected <= cDigitalInput and not cP

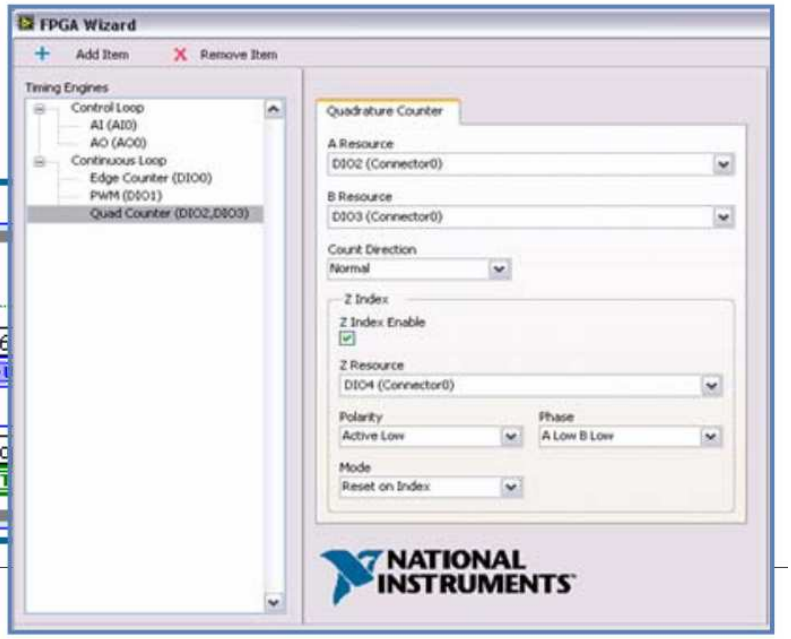
-- And finally we have a register that incremen
-- edge is detected.
CounterRegister:
process( aReset, Clk )
begin
   if aReset then
      cCountReg <= (others=>'0');
   elsif rising_edge(Clk) then
      if cRisingEdgeDetected then
         cCountReg <= cCountReg + 1;
      end if;
   end if;
end process CounterRegister;
cCount <= cCountReg;

end rtl;
```

LabVIEW 7 *Express*



LabVIEW FPGA Wizard



Create intelligent DAQ devices with custom timing and I/O



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Real-Time on a Desktop Computer

- Run real-time applications on compatible PCs
- Download NEW system validator to test compatibility
- Convert PCs into a real-time system with the Real-Time Desktop Bundle



...validated

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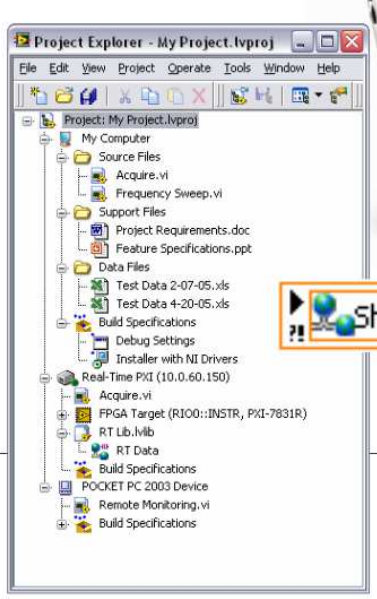
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LabVIEW PDA Module



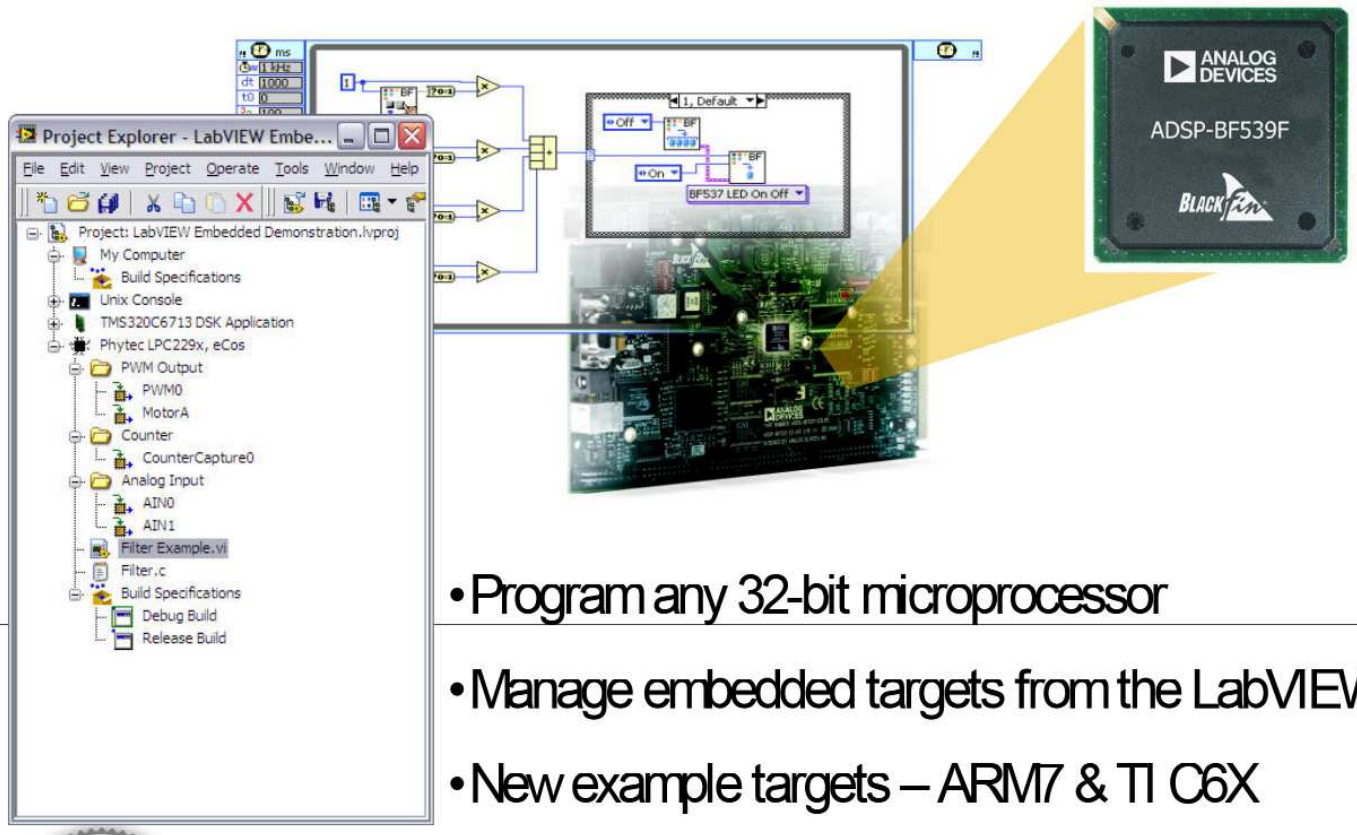
- Wireless communication with shared variable
- Portable low-cost USB DAQ





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LabVIEW Embedded Development Module



- Program any 32-bit microprocessor
- Manage embedded targets from the LabVIEW Project
- New example targets – ARM7 & TI C6X

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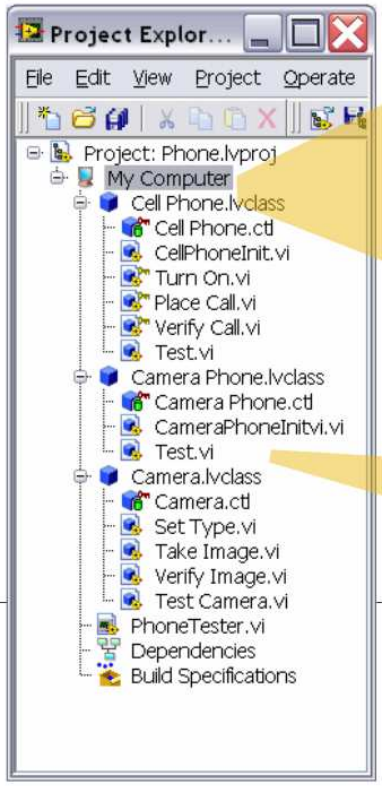
Tools Simplify Large Application Development



- Object-Oriented Programming
- DLL Import Wizard
- .NET Web Service Import Wizard
- Instrument Driver Export Wizard
- TDM Streaming API

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LabVIEW Object-Oriented Programming



Parent Class



← Classes and objects

← Encapsulation

Child Class

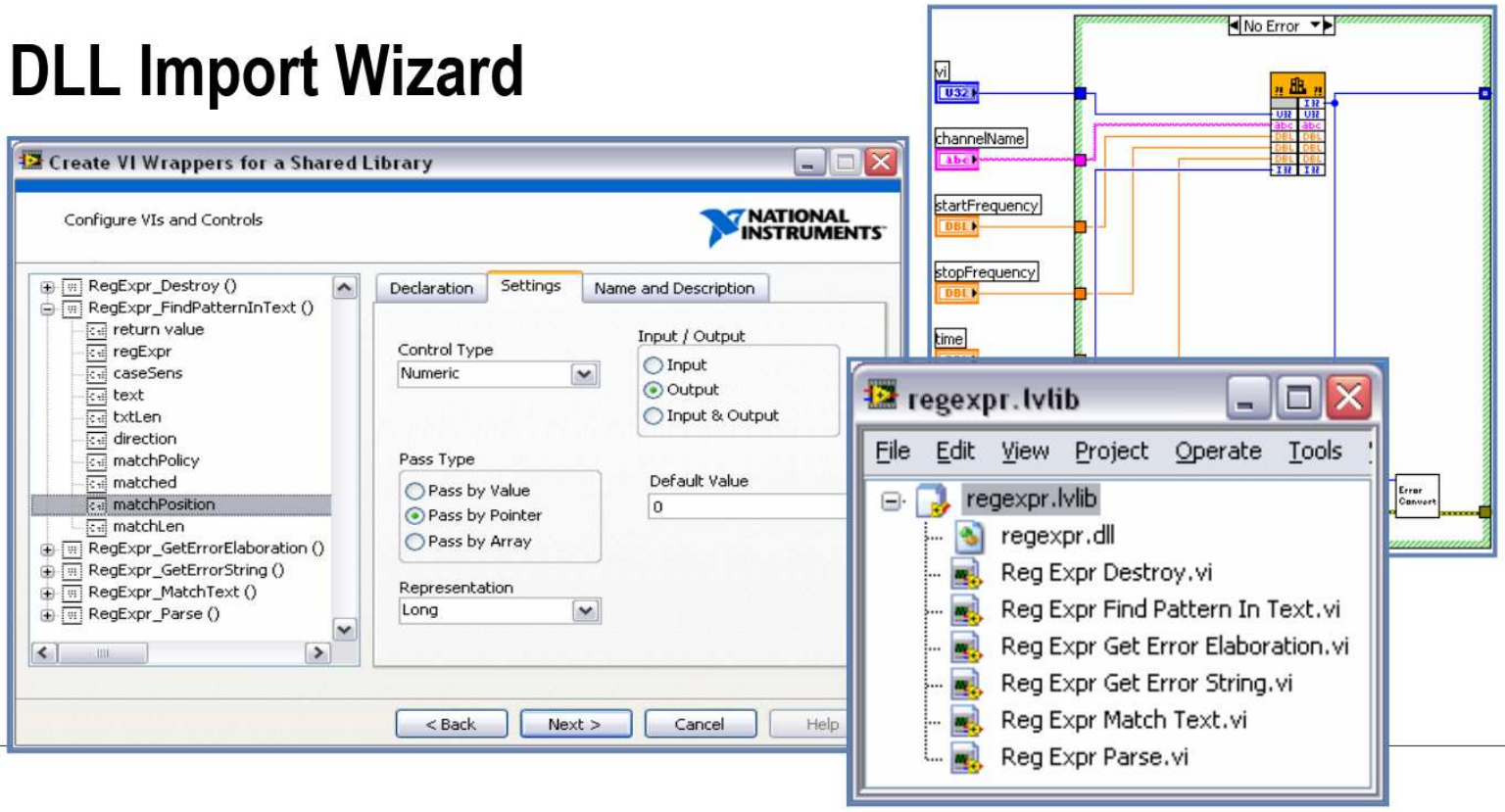


← Inheritance

For power programmers and large-scale application development

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DLL Import Wizard



Automatically generate LabVIEW interfaces to your DLLs and shared libraries

Support for: Windows (.dll), Linux (.so) , Macintosh (.framework)

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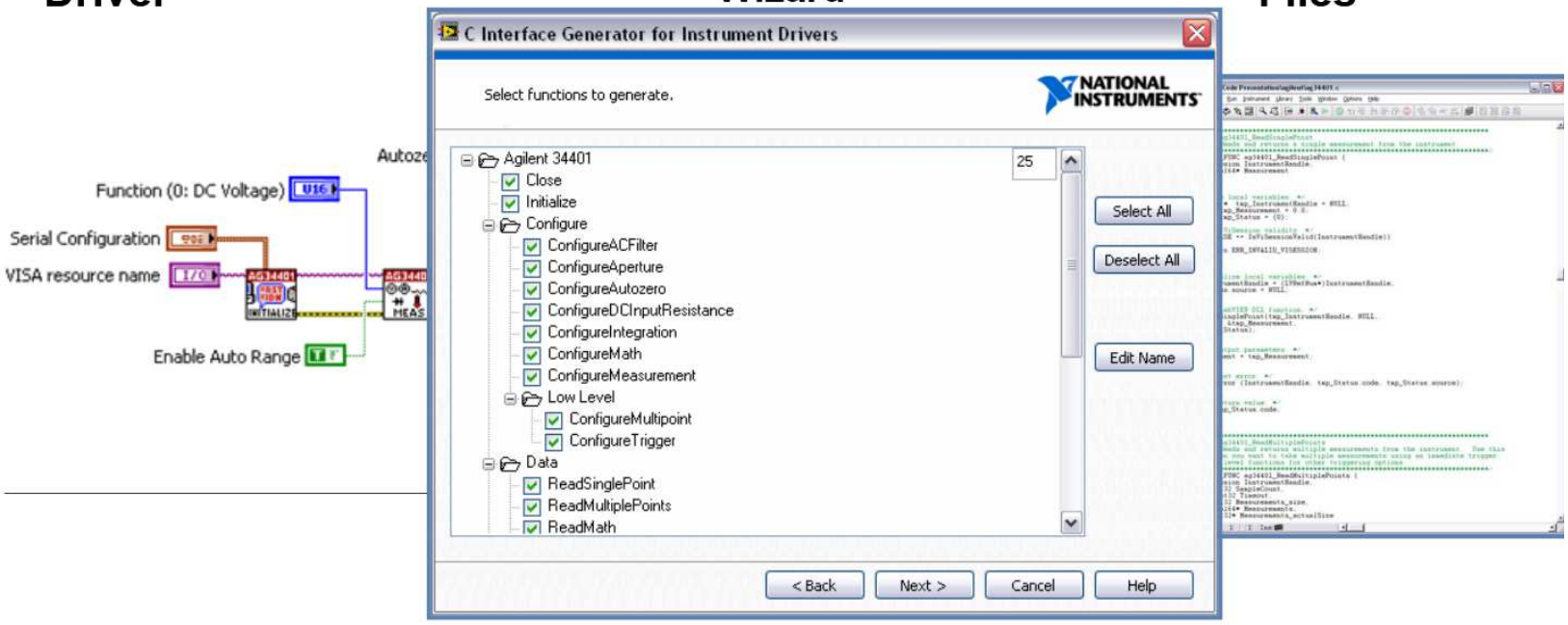
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Instrument Driver Export Wizard

Instrument Driver → **Export Wizard** → **DLL, .h, and Help Files**



Develop drivers in LabVIEW, reuse in C

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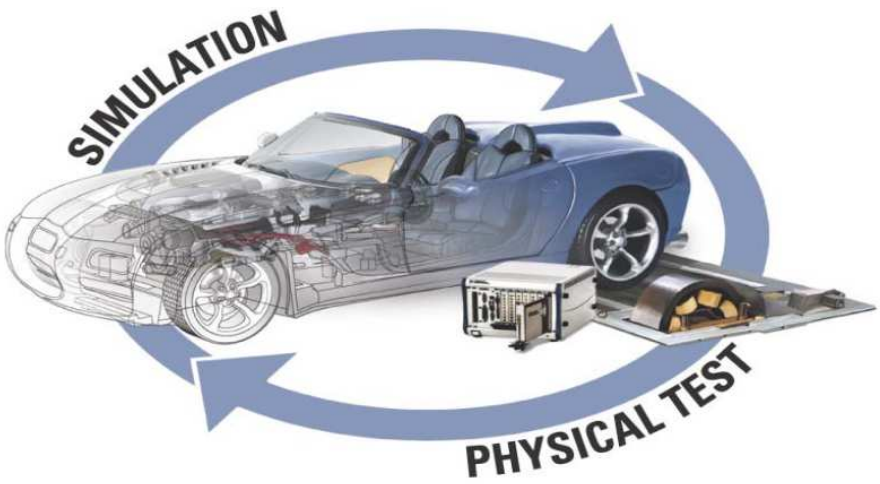
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20th Anniversary Edition

Bridging Design and Test with Graphical System Design



- Design tool connectivity
- Textual math
- Control Design & Simulation
- RF Design & Test

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Open Connectivity to Design Tools

Mathematics

The Mathworks Inc. **Matlab®**
Maplesoft **Maple**
MathSoft **Mathcad**
INRIA **Scilab**

Circuit EDA

EWB **Multisim**
ORCAD **PSpice**
Ansoft **Designer**

Control Design & HIL

The MathWorks Inc. **Simulink®**
NI **MATRIXx, SystemBuild**
Dynasim **Dymola**
Plexim **PLECS**

Embedded Software

Analog Devices **VisualDSP++**
Freescale **Code Warrior**
Wind River **Workbench**
Celoxica **DK Design Suite**
Xilinx **Sytem Generator**

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Mechanical Design

SolidWorks **SolidWorks & COSMOSWorks**
MSC **Nastran** & **Adams**
Autodesk **AutoCAD**

Increasing productivity through integrated design and test

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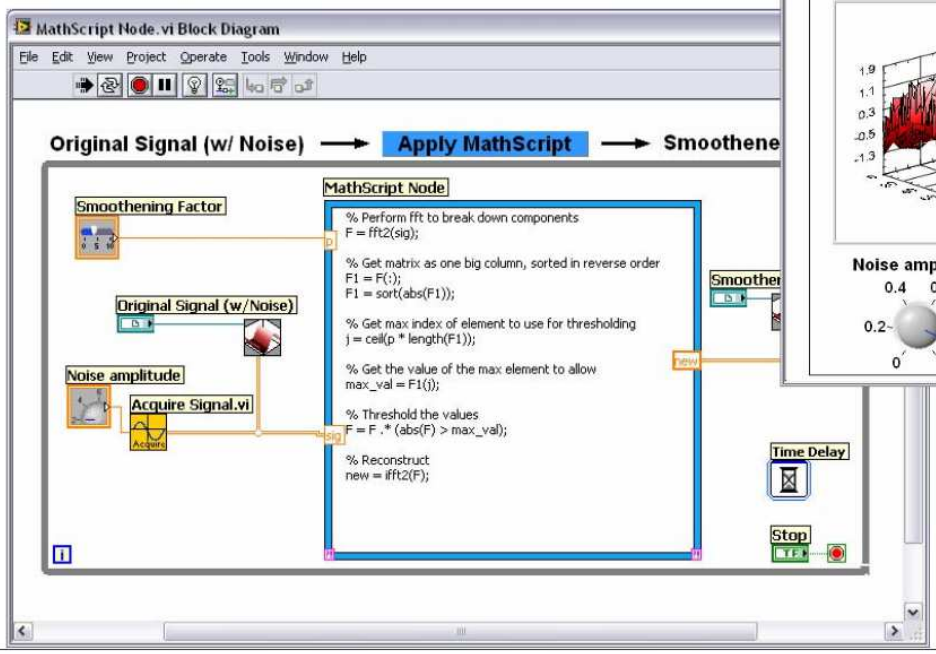
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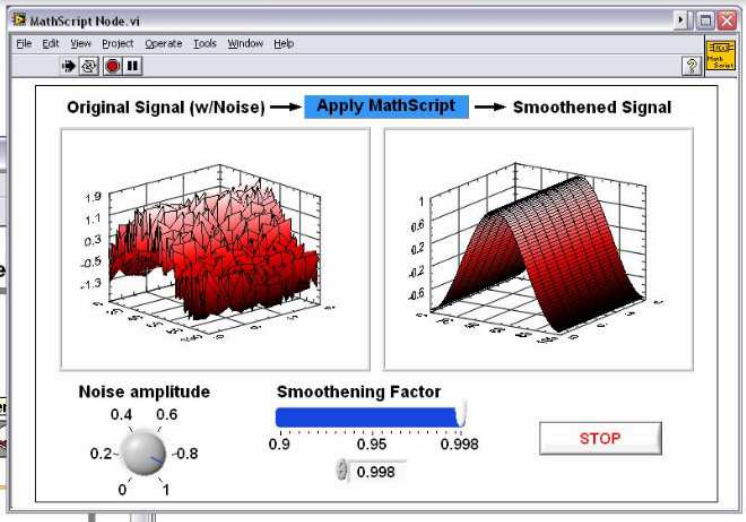
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LabVIEW MathScript



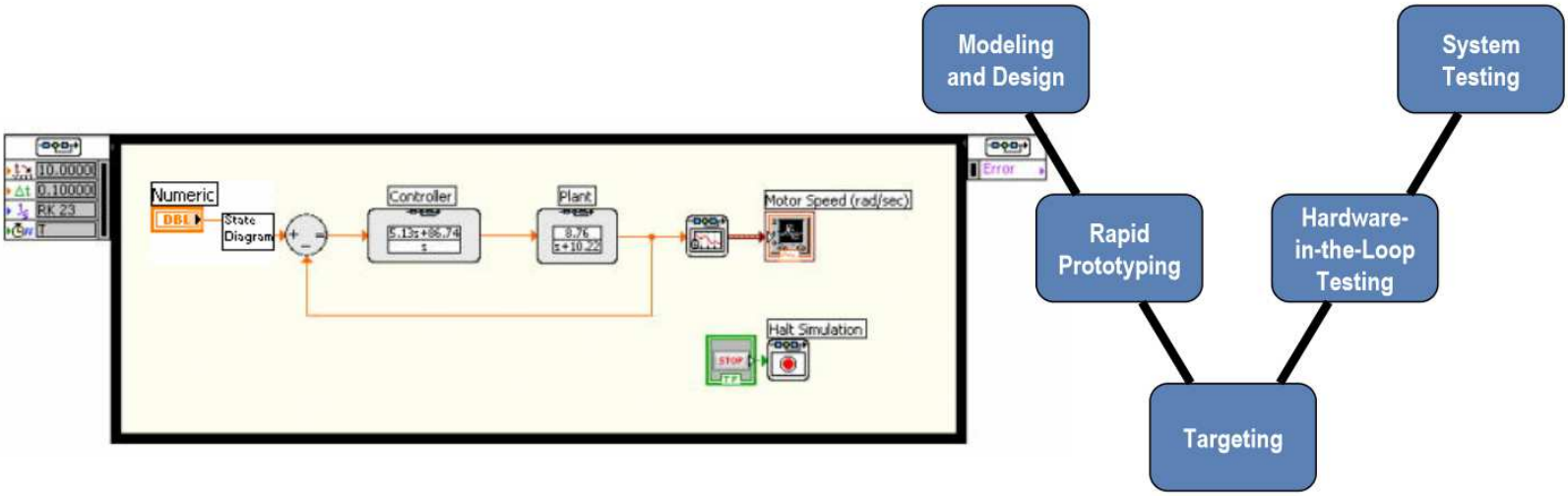


- Combine textual math & graphical programming
- Reuse many of your m-file scripts created with The MathWorks, Inc. MATLAB® software

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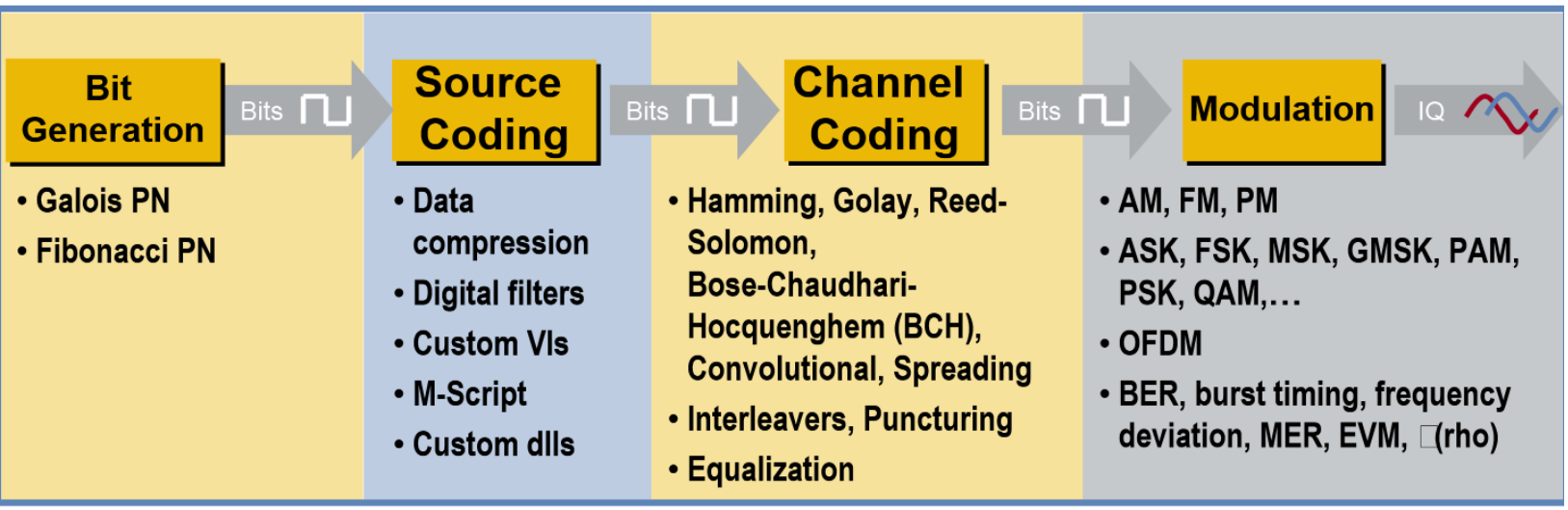
LabVIEW Control Design & Simulation



- Design, simulate, and implement dynamic control systems
- Deploy simulations to embedded targets
- Control Design Toolkit improvements
  - Use with real-time systems
  - Apply advanced Kalman filter

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LabVIEW Modulation Toolkit



- Analyse and generate analog and digital modulated signals
- Develop software defined radios
- Explore communications system theory with simulations



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Test

- Object-oriented graphical programming
- OpenGL based 3D Picture Control
- Multi-user web-based application control
- High-speed TDM data streaming
- Simplified dynamic VI calling
- Auto-backup and recovery of VIs
- DLL import wizard
- Express VI for continuous data acquisition
- LabVIEW Real-Time USB Boot Disk
- C interface export wizard for instrument drivers
- .NET Web service import wizard
- OFDM example programs

Control

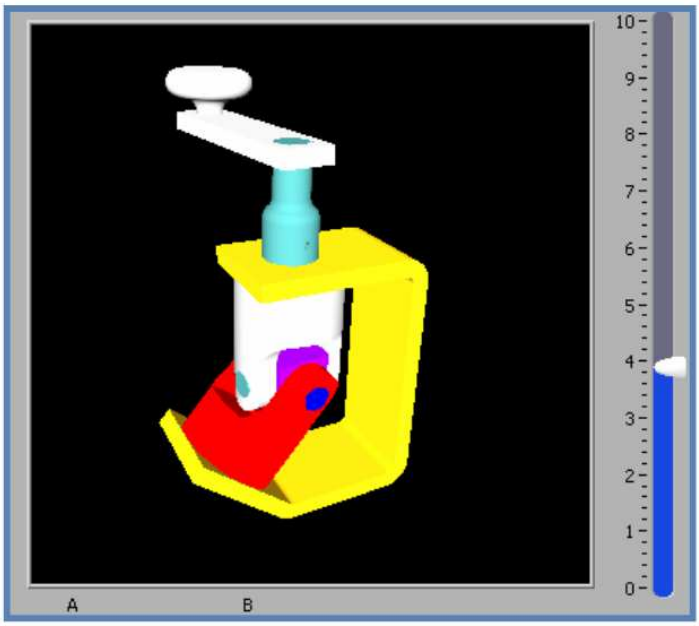
- 14x PID algorithm speed improvement
- System replication tools for real-time systems
- Faster real-time interthread communication
- Support for USB storage with LabVIEW Real-Time
- FPGA Wizard for custom DAQ board design
- New FPGA IP for math and signal processing
- 64-bit integer support with LabVIEW FPGA
- Improved memory access for LabVIEW FPGA
- LabVIEW PDA user interface improvements
- Shared variable support for LabVIEW PDA
- New Touch Panel Module for industrial displays

Design

- Textual math with MathScript
- Third-party FPGA IP integration
- LabVIEW Embedded project integration
- 9x LabVIEW Simulation performance improvement

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3D Picture Control

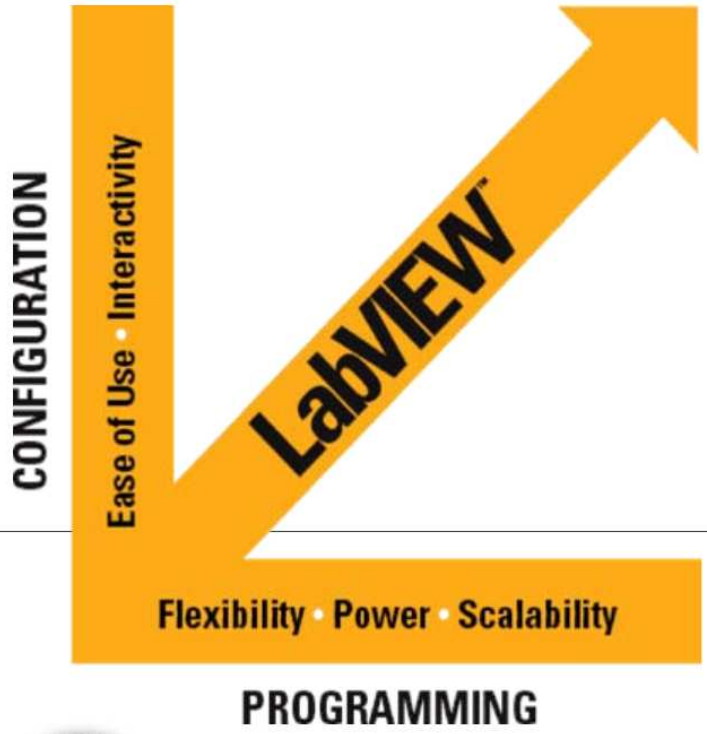


- Create 3D scenes using picture control VIs
- Control objects Motion, Size and Color using OpenGL
- Import objects from design tools (VRML, STL, ASE)

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- Help users build **POWERFUL** solutions with standard PC technology
- Integrate external tools and technologies with an **OPEN** platform

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