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# **HANDS-ON: INTRODUCTION TO LABVIEW FPGA AND COMPACTRIO**

# NI CompactRIO Reconfigurable Embedded System

## Reconfigurable FPGA Circuitry

Custom hardware reliability, optimization  
Flexible timing, triggering, synchronization

## VxWorks Real-Time OS

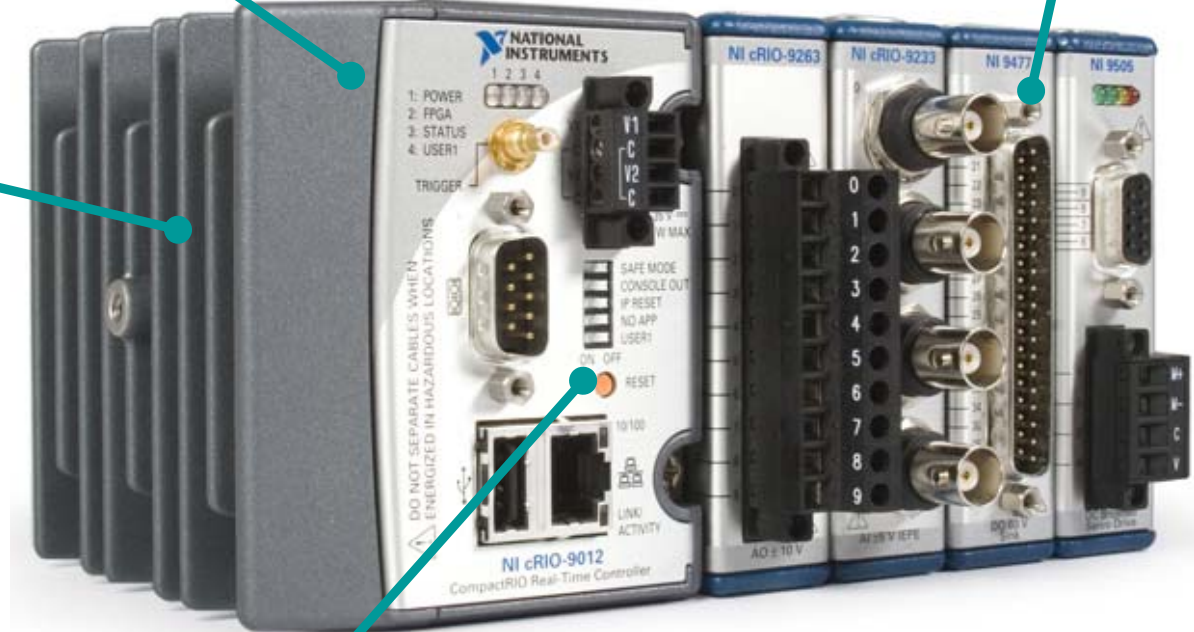
400 MHz PowerPC  
Reliable embedded control,  
analysis,  
and logging

## Extreme Durability

-40 to 70 °C temperature range  
50 g shock  
Industrial certifications

179.6 mm (7.07 in)

88.1 mm (3.47 in)



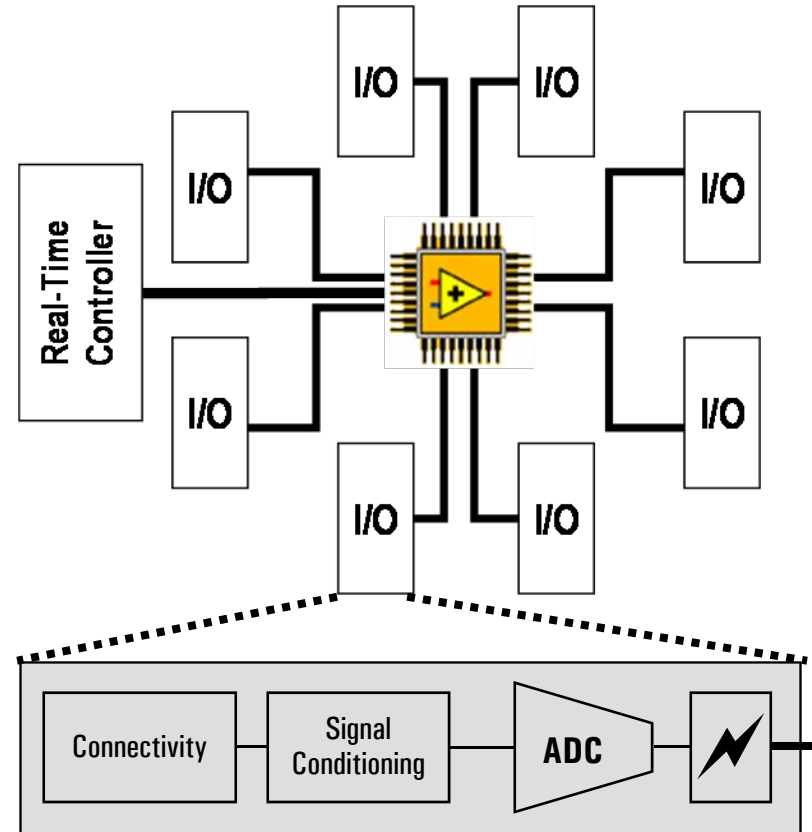
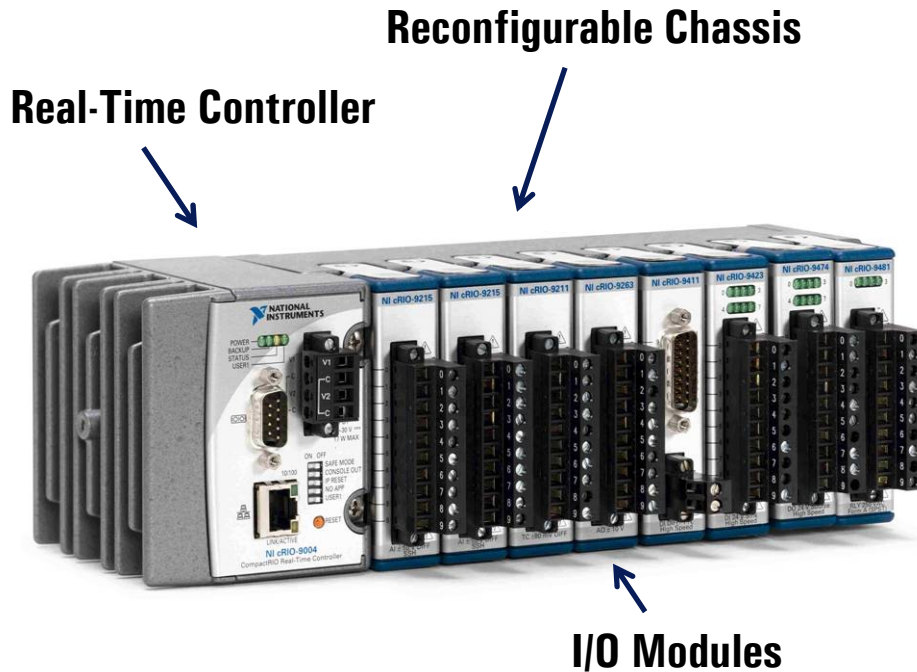
## Isolated Industrial I/O

Signal conditioning for  $\pm 80$  mV to  $\pm 250$  V  
Junction box integrated into module

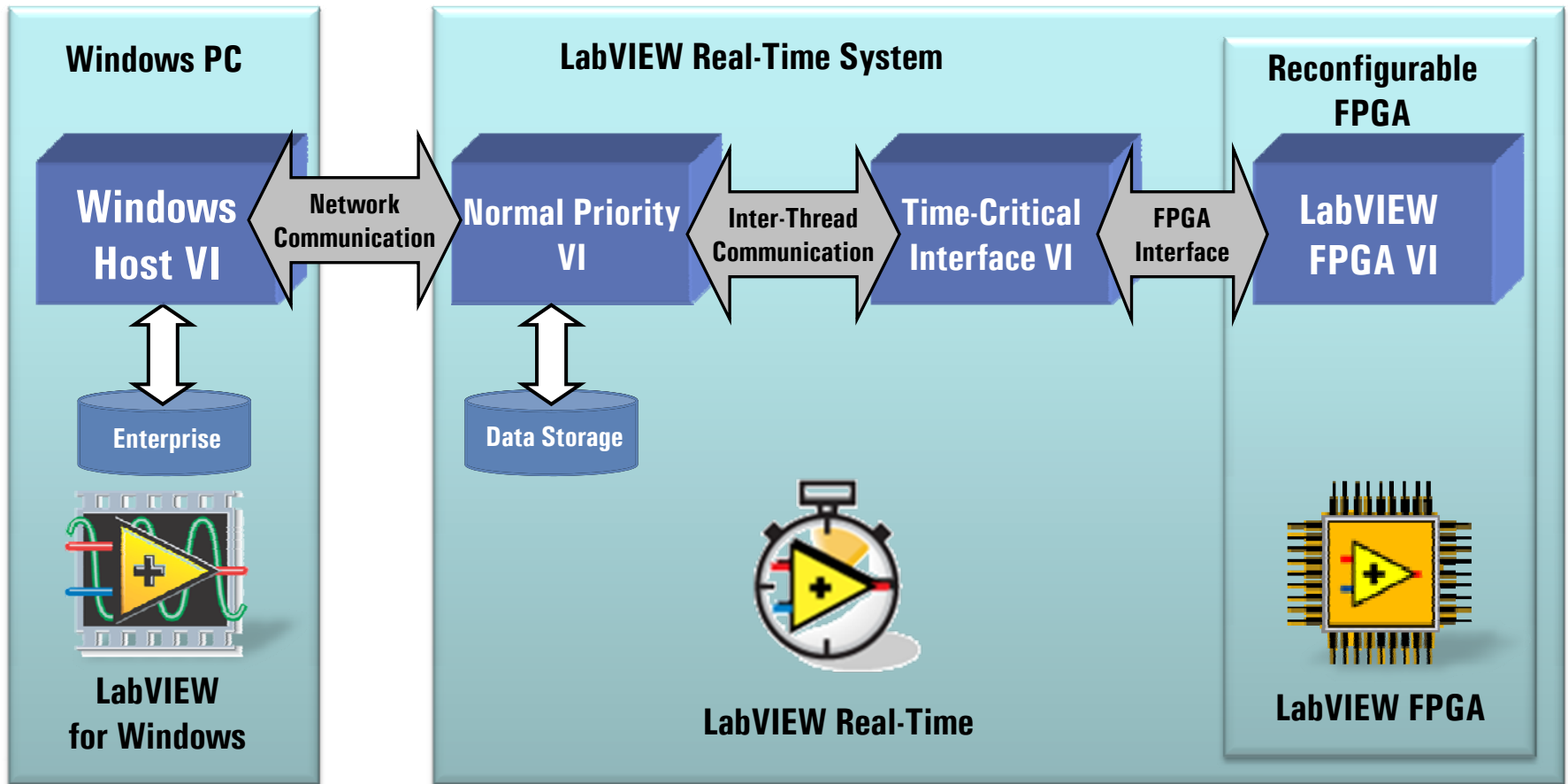
## Small Size, Low Power Consumption

179.6 by 88.1 mm (7.07 by 3.47 in)  
9 to 35 VDC power<sup>1</sup>, 6 W typical

# NI CompactRIO Reconfigurable Embedded System



# CompactRIO System Architecture



# Typical RIO System Three VIs



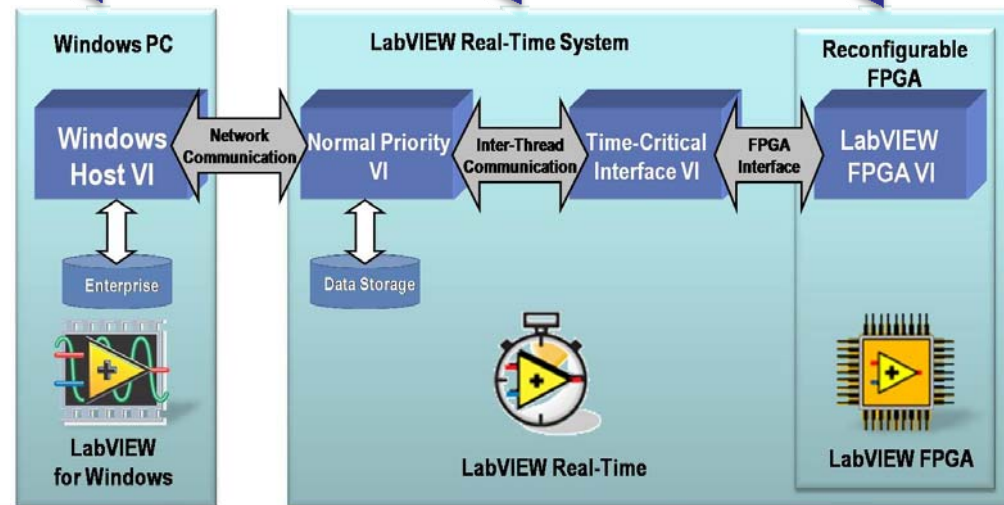
LabVIEW FPGA VI



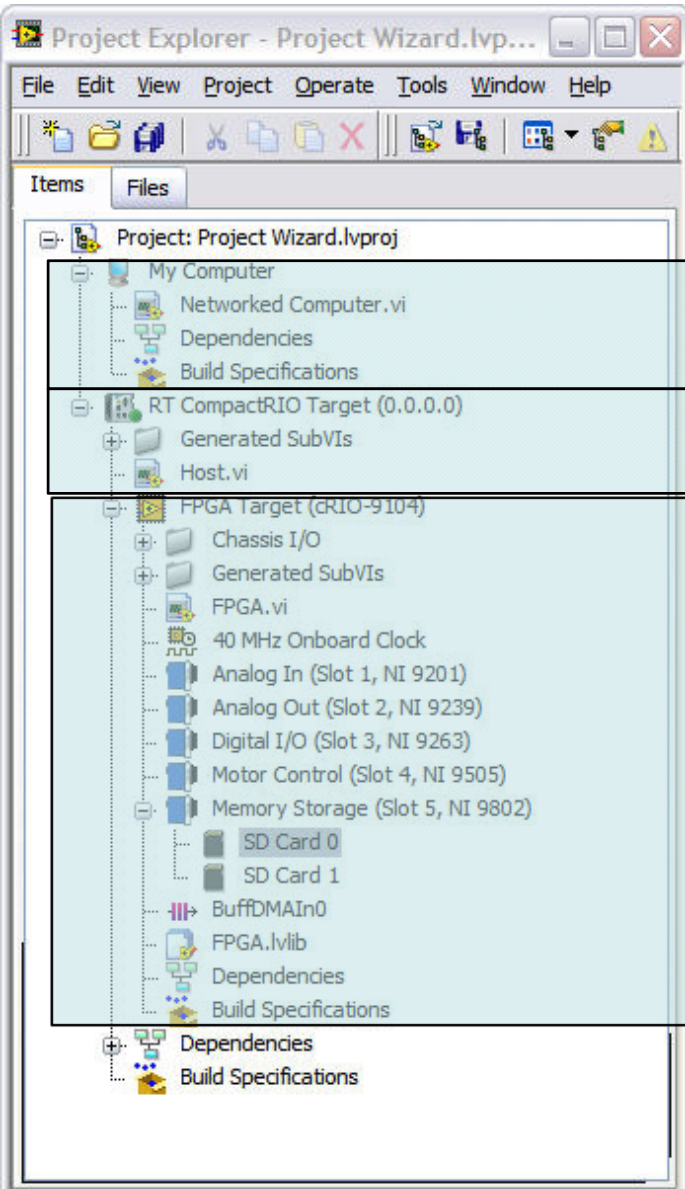
LabVIEW Real-Time VI



Windows VI (optional)



# Manage cRIO with LabVIEW Project



- Host Computer Networked (Shared Variables)



- Real-Time System (Processor-based)



- FPGA + I/O modules
- Onboard Processing and Control
- Direct I/O access

