

The background of the image is a complex, abstract composition. On the left side, there is a curved, tunnel-like structure with a rainbow-colored gradient (yellow, green, blue) that recedes into the distance. The right side of the image is a solid blue gradient. Overlaid on the blue area are faint, technical-looking diagrams and circuit-like patterns in a lighter blue color. The text 'NIDays' is prominently displayed in the center-right, with 'WORLDWIDE GRAPHICAL SYSTEM DESIGN' in smaller text below it, and 'CONFERENCE' in large, bold text at the bottom right.

# NIDays

WORLDWIDE GRAPHICAL SYSTEM DESIGN  
**CONFERENCE**

# Frode Skulbru

Area Sales Manager, NI Norway

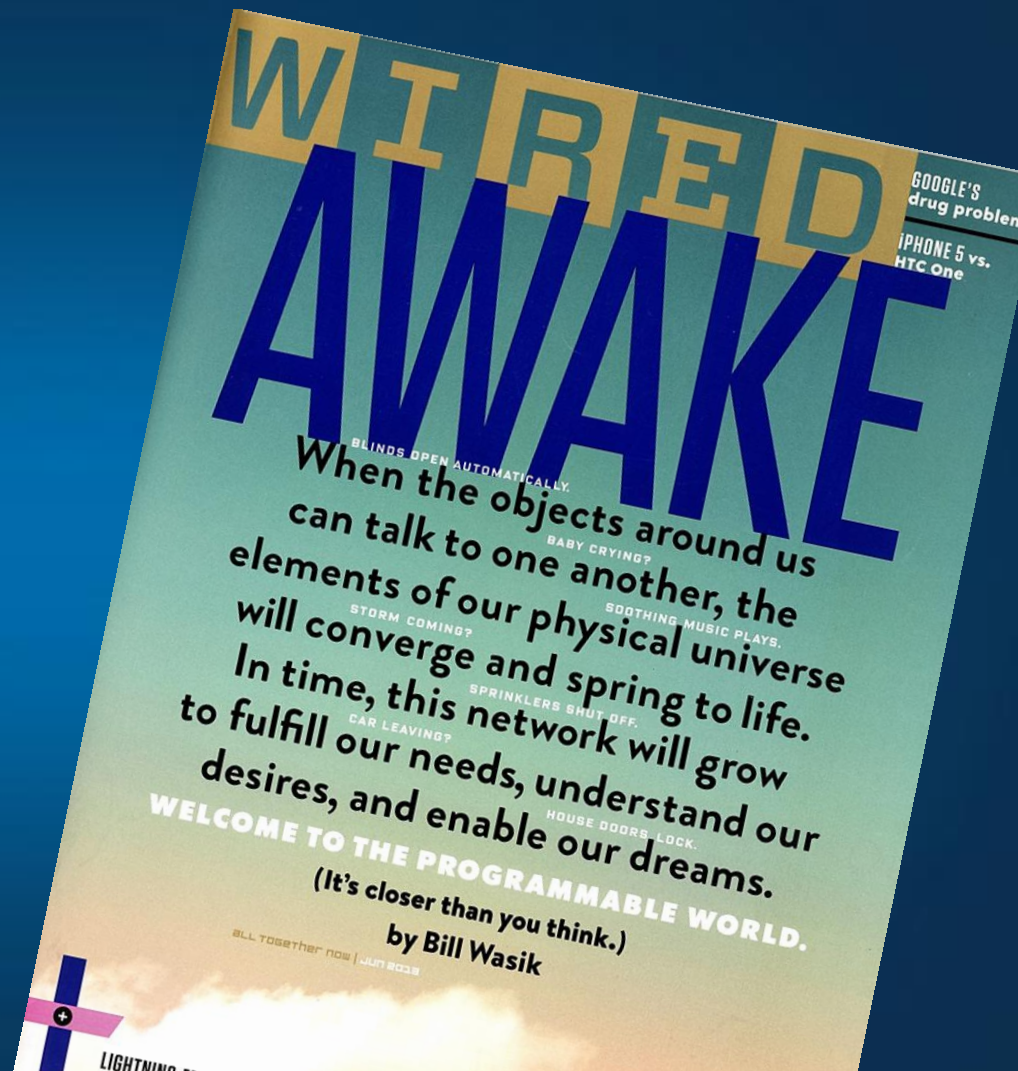
# Jamie Smith

Director of Embedded Systems

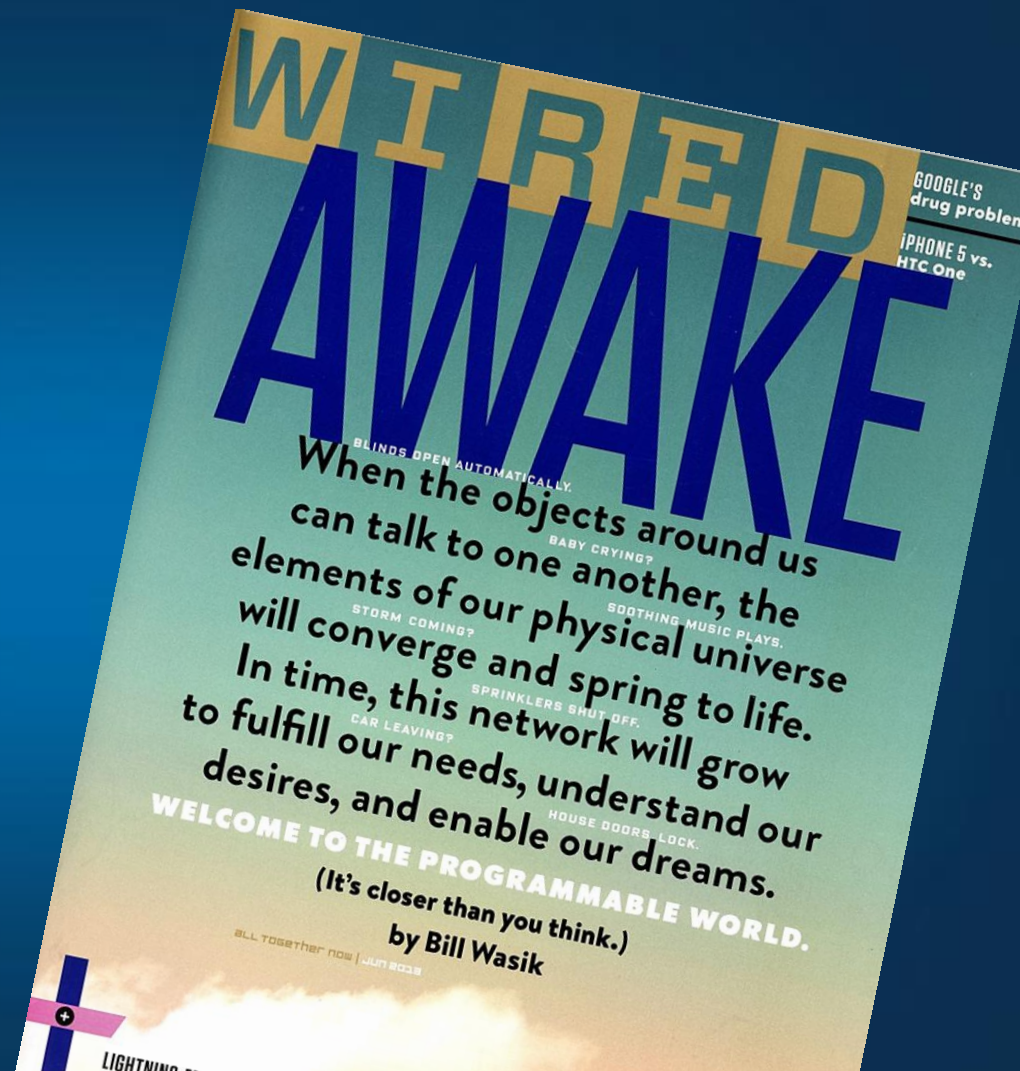
# Innovating in a Platform-Based World

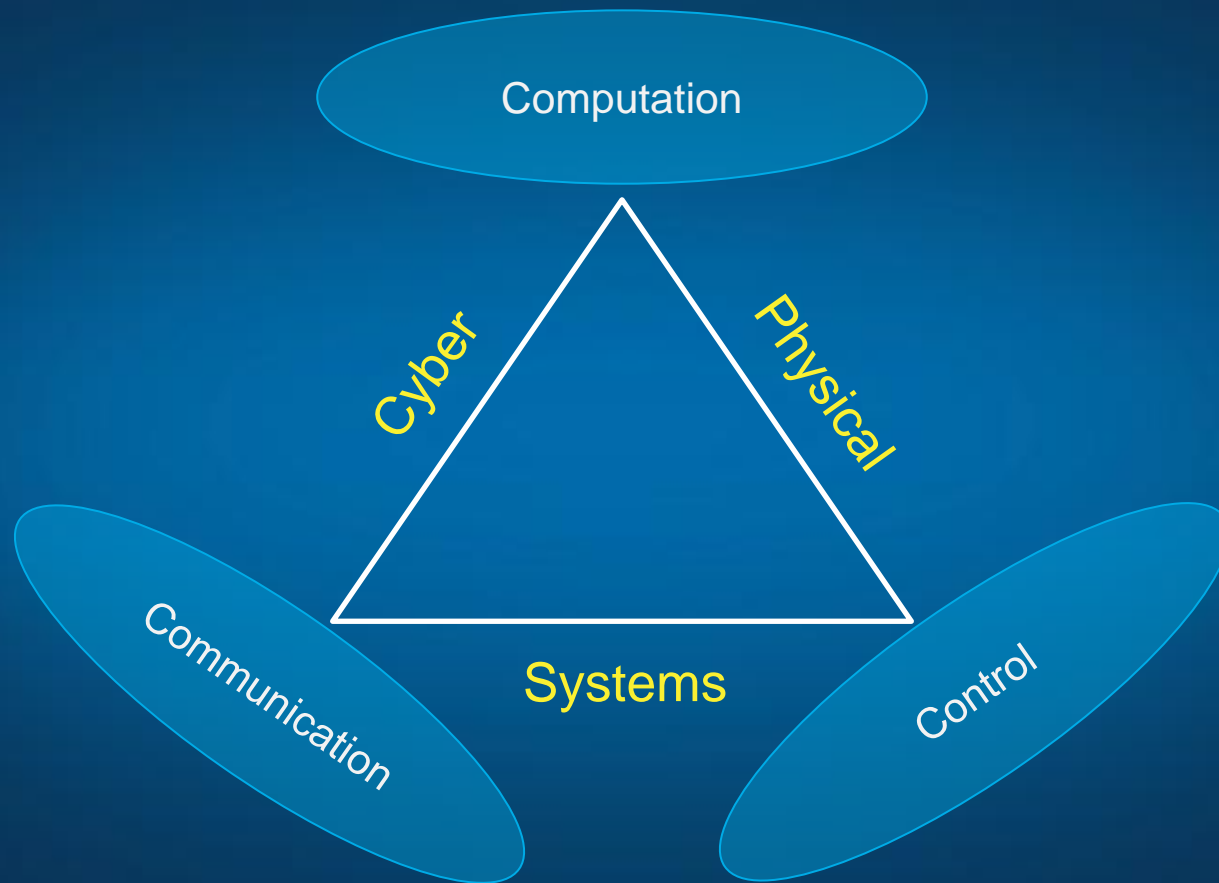


## The Programmable World



Industrie 4.0  
Internet of Things  
Big Analog Data™ Solutions  
Intelligent Systems  
Smart Factory  
M2M  
Industrial Internet





Computation

“Cyber-physical systems (CPSs) will transform entire industrial sectors, including transportation, healthcare, energy, manufacturing, and agriculture. There is an urgent need to develop design methodologies that will provide real-time, guaranteed performance.”

—Vijay Kumar, Assistant Director for Robotics and Cyber-Physical Systems,  
Office of Science and Technology Policy at the White House



Extra equipment needed.





Are You Wearing a Watch?



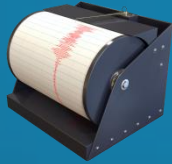
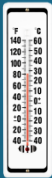
3G



# 8:30

Tuesday, 6 August

## Instruments

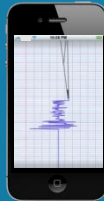


## Physical Embedded Systems

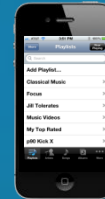




## Virtual Instruments



## Platform-Based Embedded Systems



# PC Platform



Word Processors



Gaming System



Cash Register



Photo Album



Card Playing

Windows/Intel

Laptop



Desktop



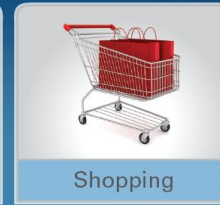
Server



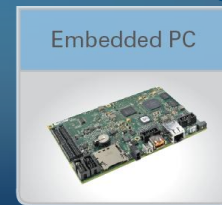
Embedded PC



# Web Platform



HTTP/HTML



# Mobile Platform



# Graphical System Design



Measurement



Test



Monitoring



Embedded



Control



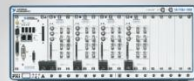
Desktops and  
Laptops



NI CompactDAQ



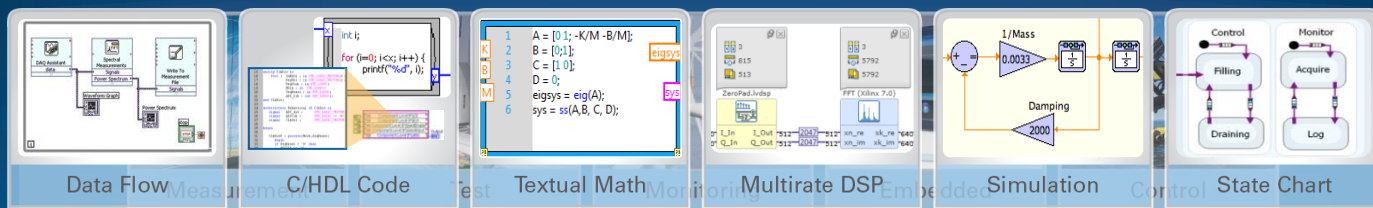
PXI and Modular  
Instruments



NI CompactRIO



# Graphical System Design



Desktops and Laptops



NI CompactDAQ



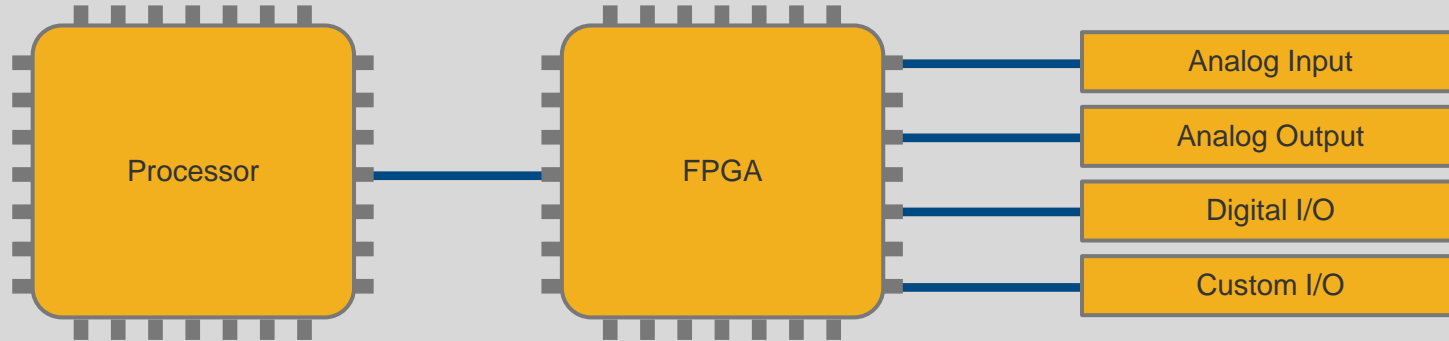
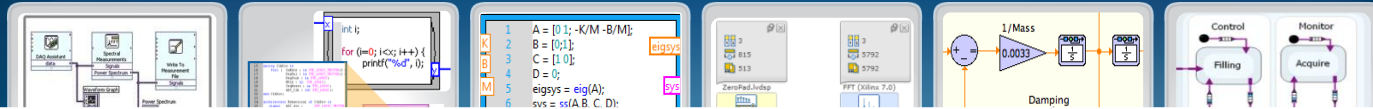
PXI and Modular Instruments



NI CompactRIO



# LabVIEW RIO Architecture



# Graphical System Design



Measurement



Test



Monitoring



Embedded



Control



Desktops and  
Laptops



NI CompactDAQ



PXI and Modular  
Instruments



NI CompactRIO







“In the past year I have been struck again and again by how important measurement is to improving the human condition.”

—Bill Gates



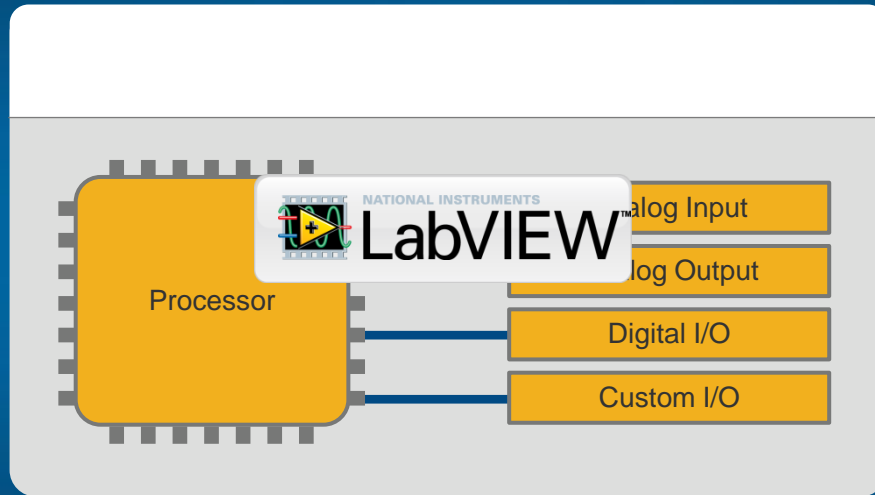
PCI Express

USB

PXI Express

Ethernet

WiFi



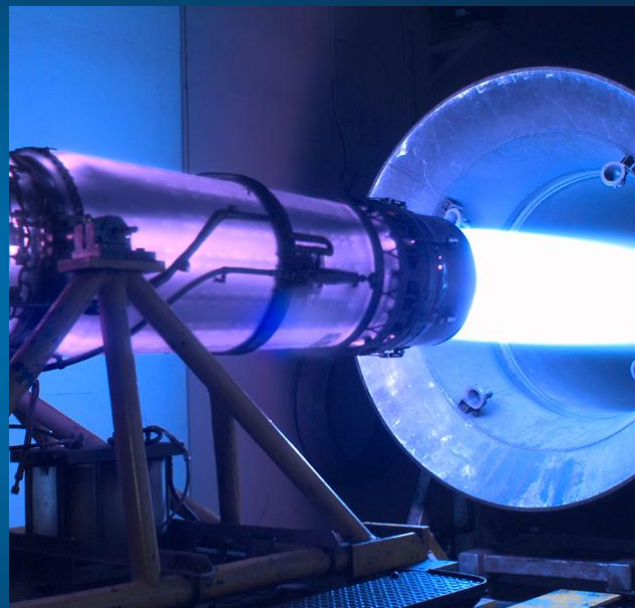
Voltage

Temperature

Strain

Acceleration

Motion



# NI CompactDAQ



# Samuli Bergstrom

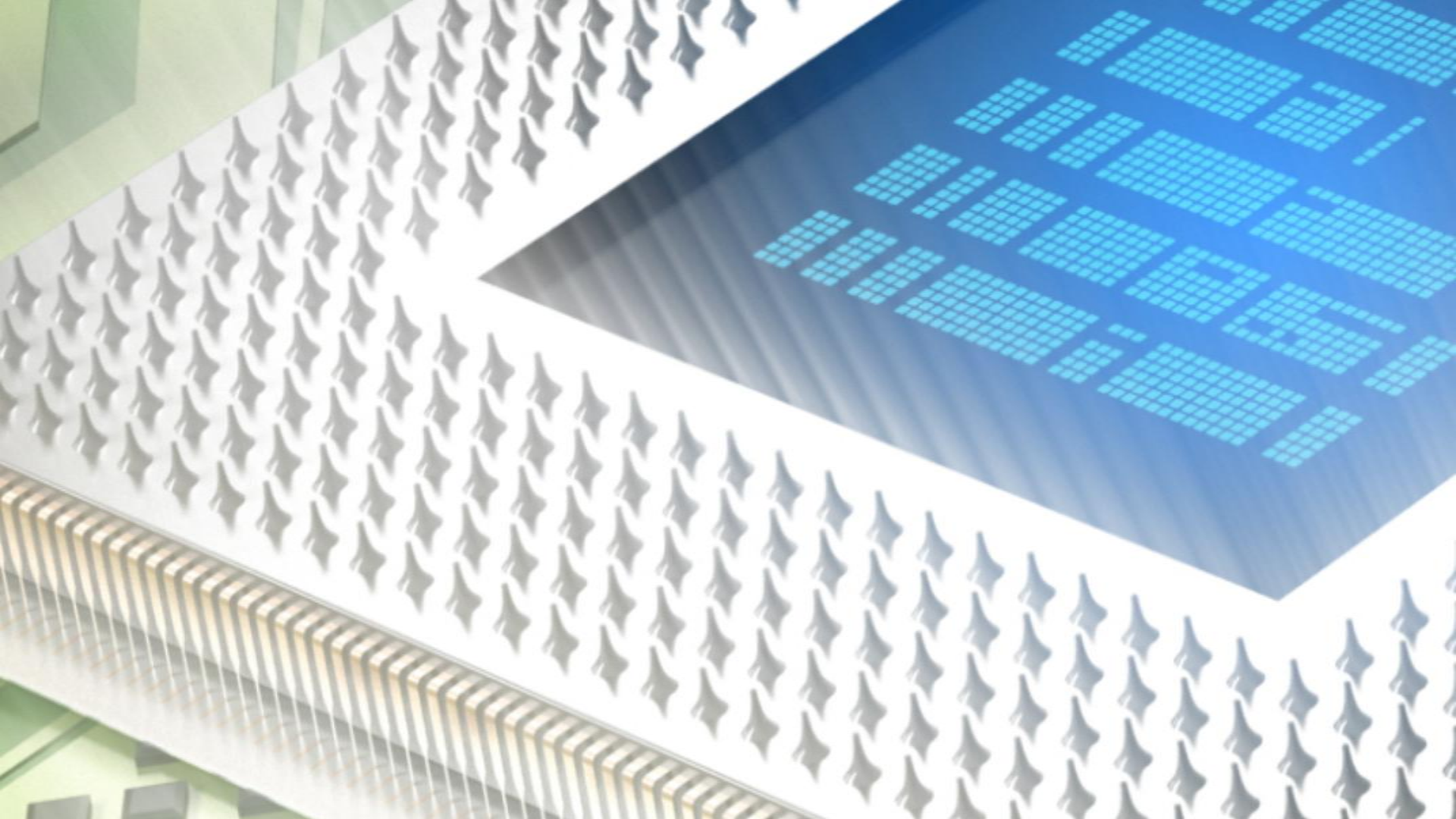
Marketing Engineer, NI



# Rugged Ethernet Chassis

NI cDAQ-9188XT







NATIONAL INSTRUMENTS

LabVIEW™

**ISA  
BUS**

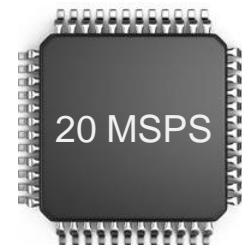
Data Bus



Processors



FPGAs



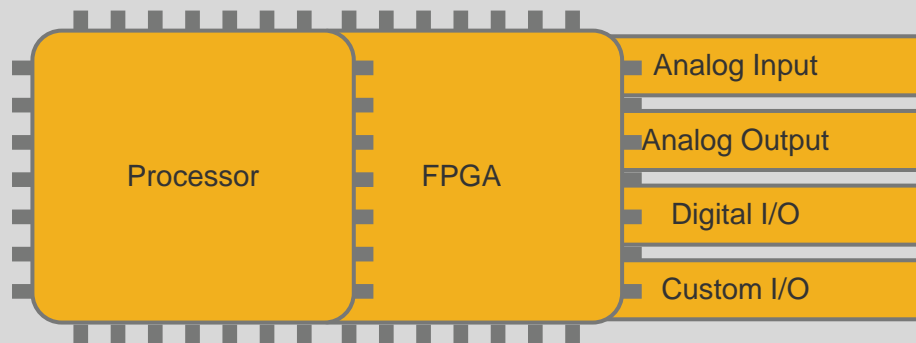
Converters

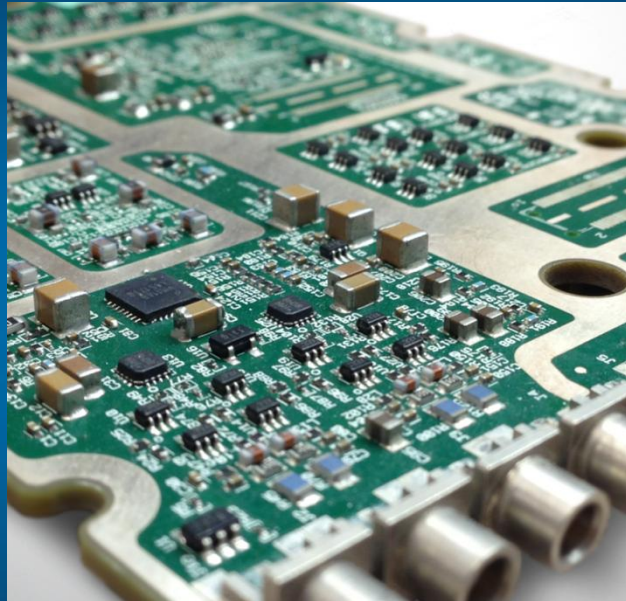




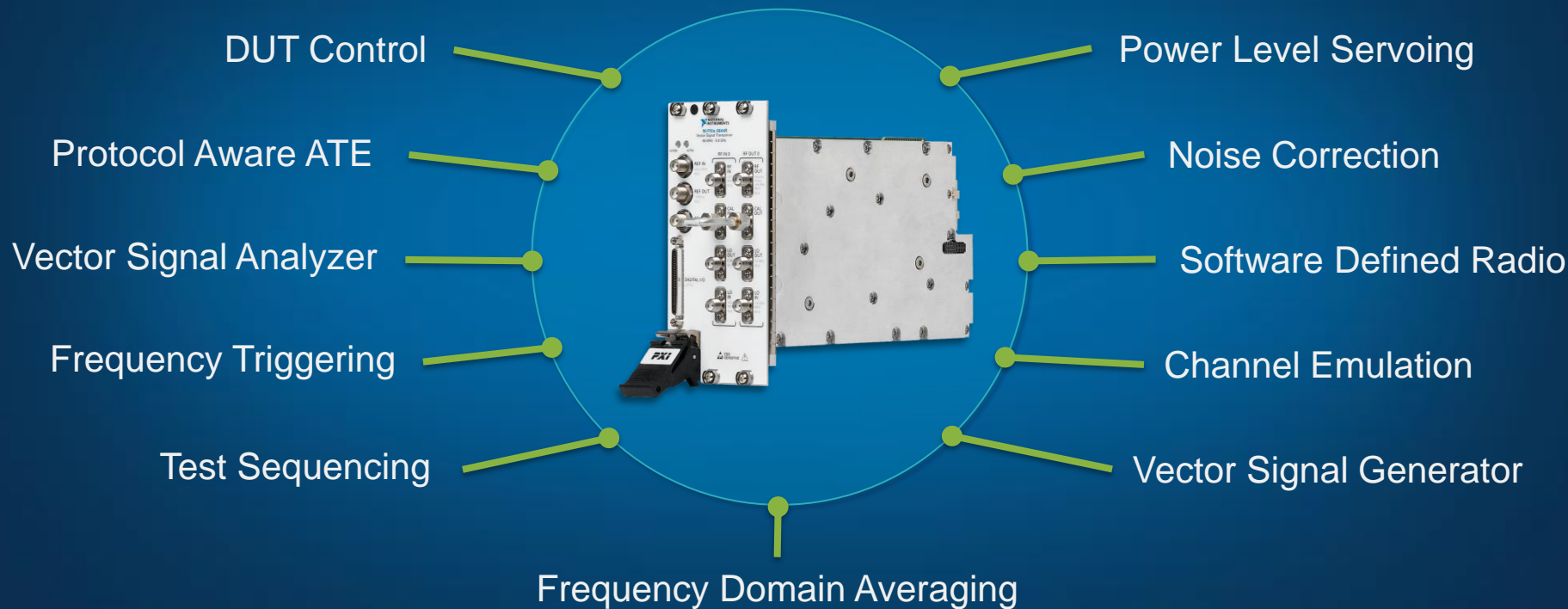
NATIONAL INSTRUMENTS

LabVIEW™



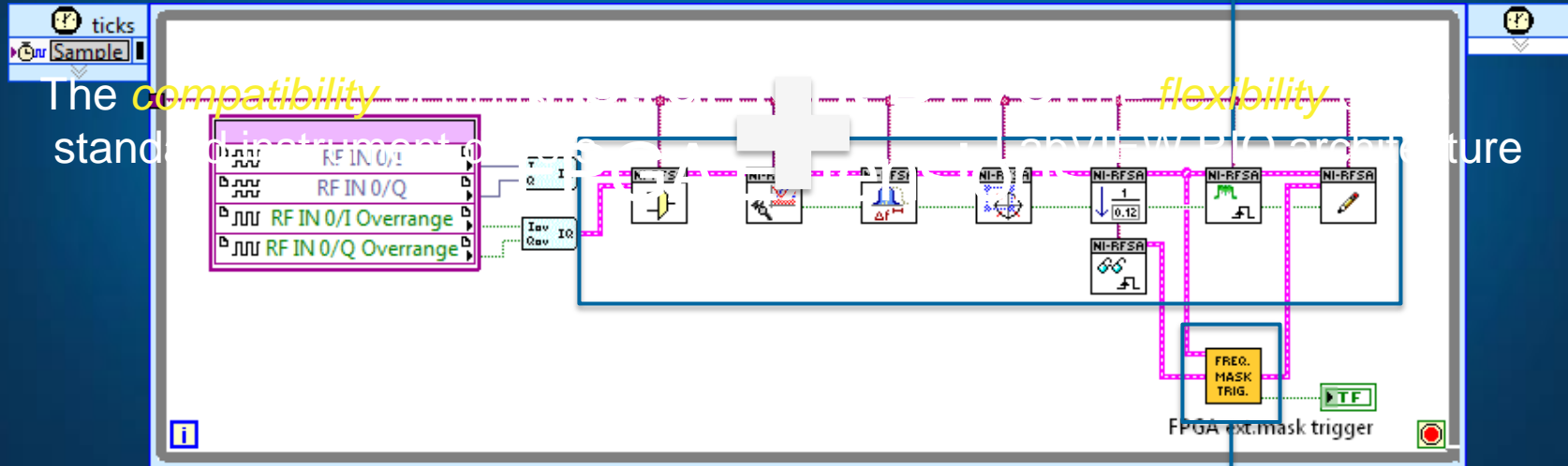


# Vector Signal Transceiver



# Two Programming Options for NI VSTs

NI Instrument Driver FPGA VIs

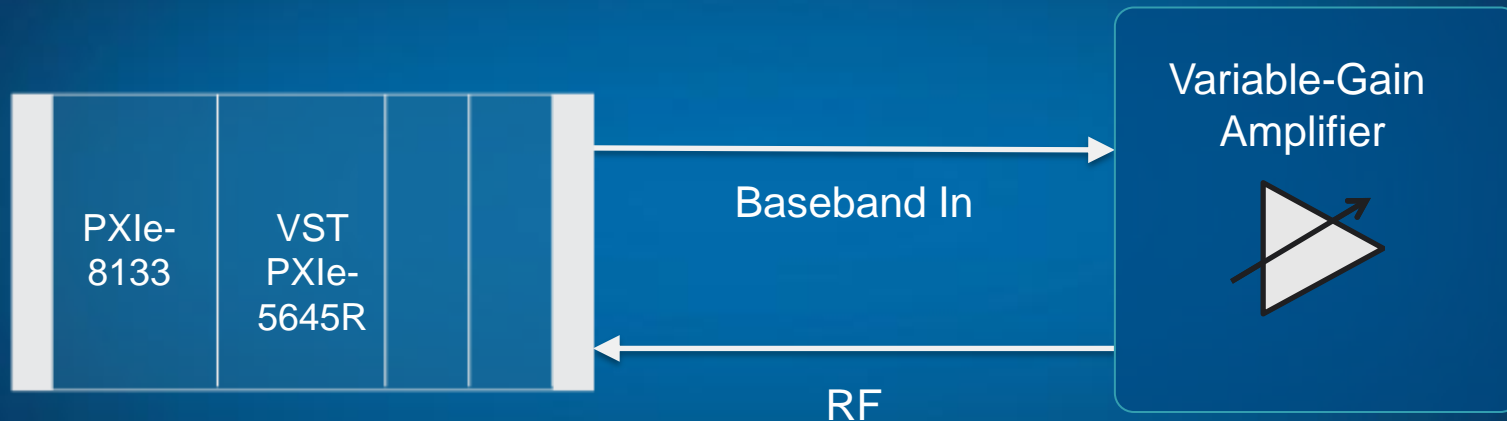


Application or User FPGA VI

**Johan Hillergren**

Marketing Engineer, NI

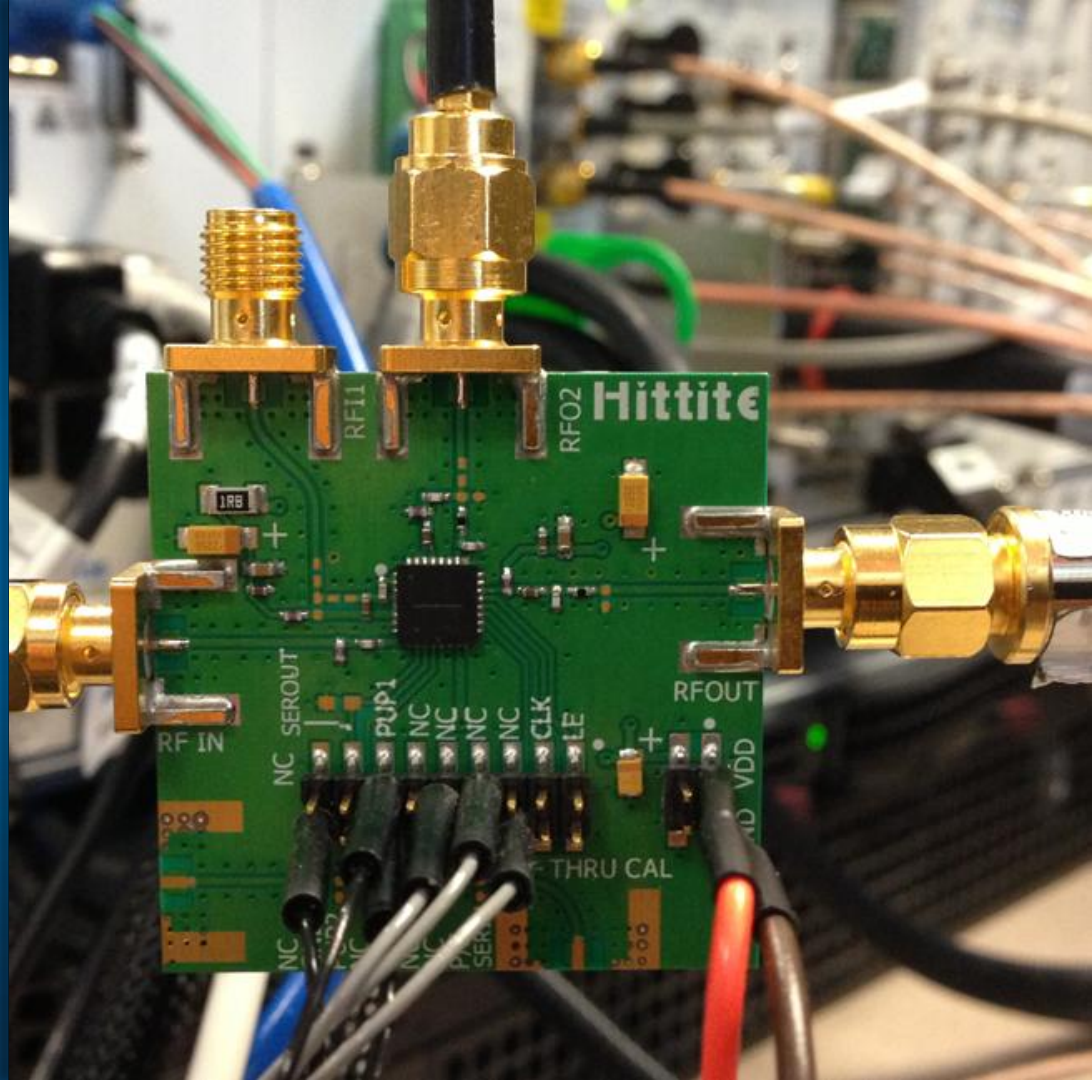
# Testing Modern RF Transmitter Front Ends



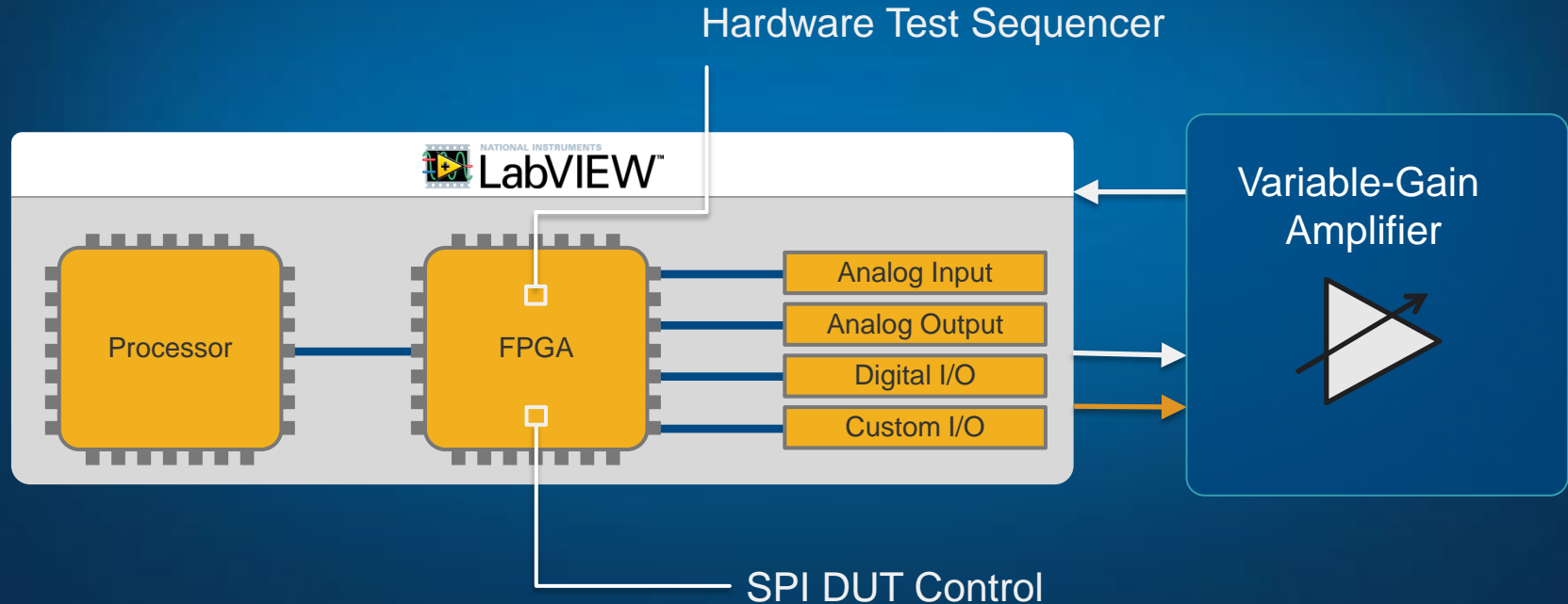


# RFIC Production Test Application

- Using instrument driver  
FPGA extensions
- 30X lower test times
- Increased test coverage



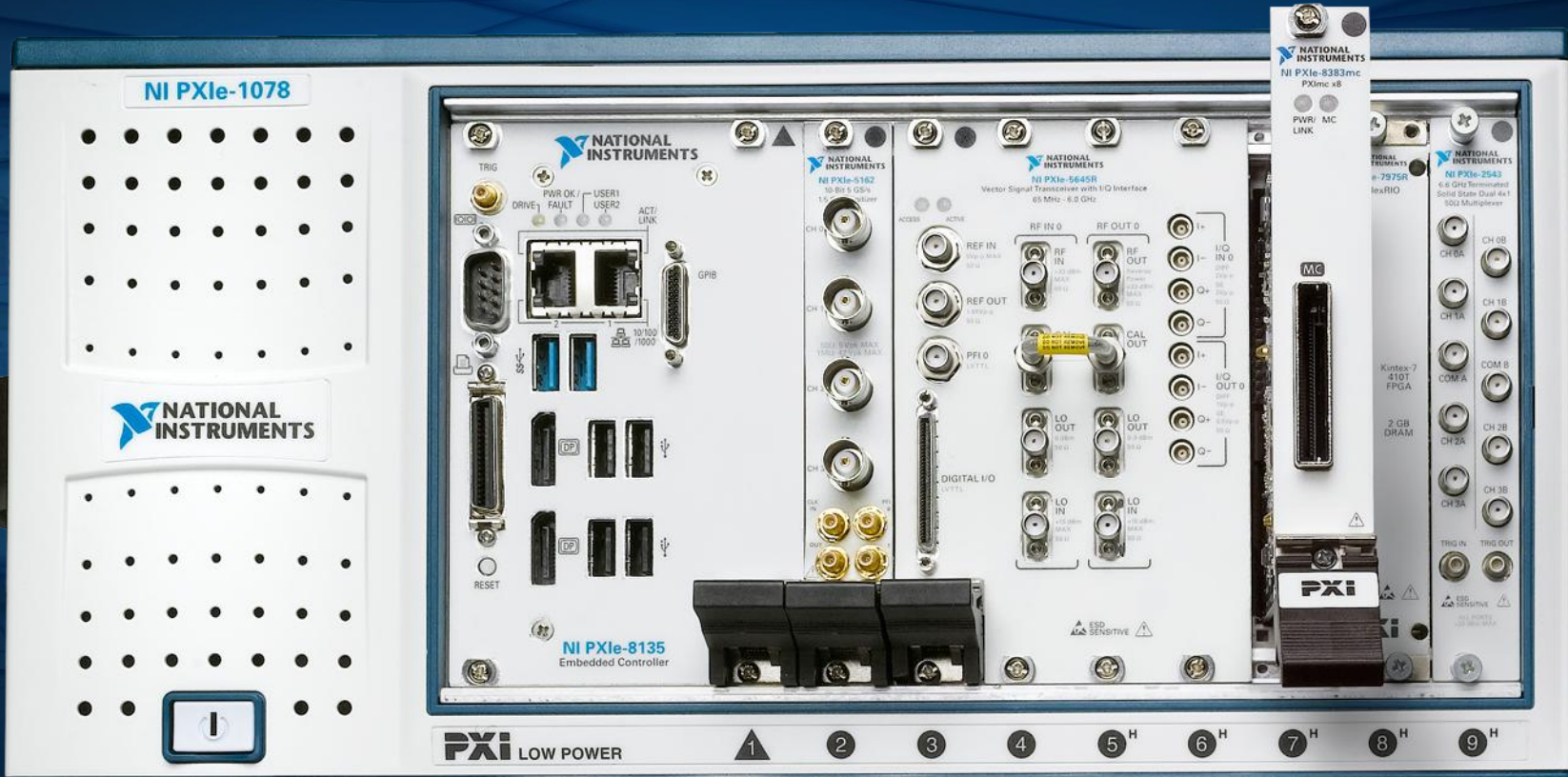
# Test System With Instrument Driver FPGA Extensions



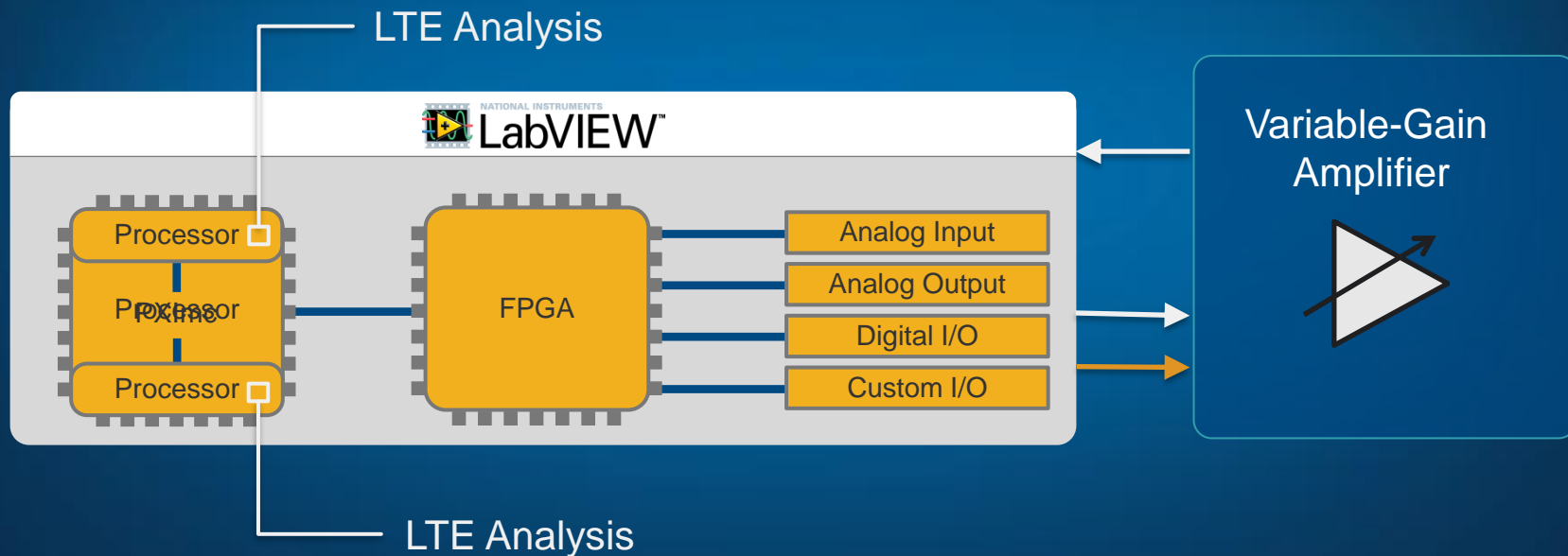


# Industry's First PXImc Adapter Module

## NI PXIe-8383mc



# Test System With PXI MultiComputing





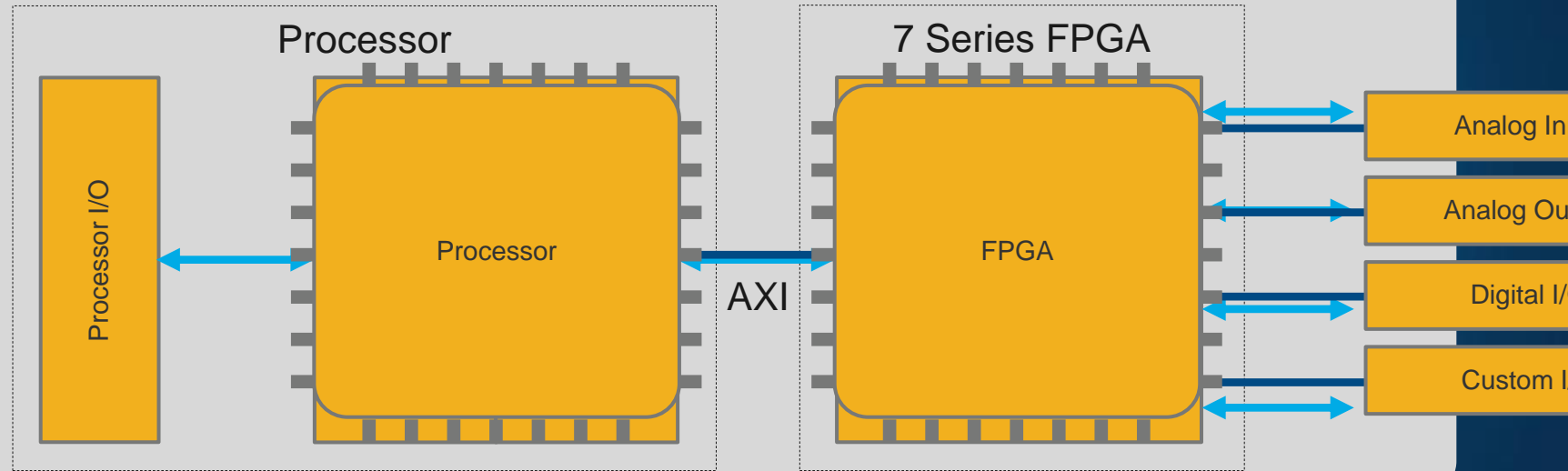




“Abbott buys laser cataract specialist OptiMedica for \$400M.”

—*optics.org*

# Zynq All Programmable SoC



# Software-Designed Controller

## NI cRIO-9068



# NI Real-Time OS History



1999

Phar Lap  
ETS



2004

RTX



2006

VxWorks



2007

NI ETS  
on  
Multicore



2009

NI Hypervisor



2013

NI Linux  
Real-Time



# Linux Community



Database

Raima  
MySQL  
SQLite  
MongoDB  
CouchDB



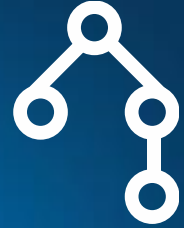
Security

OpenVPN  
IP Tables  
System Logging  
fail2ban  
denyhost



Code Reuse

C/C++  
Shell Scripting  
Python  
Ruby  
Perl



Connectivity

Isshd  
IPv6  
SNMP  
NTP  
netstat



eclipse



C/C++

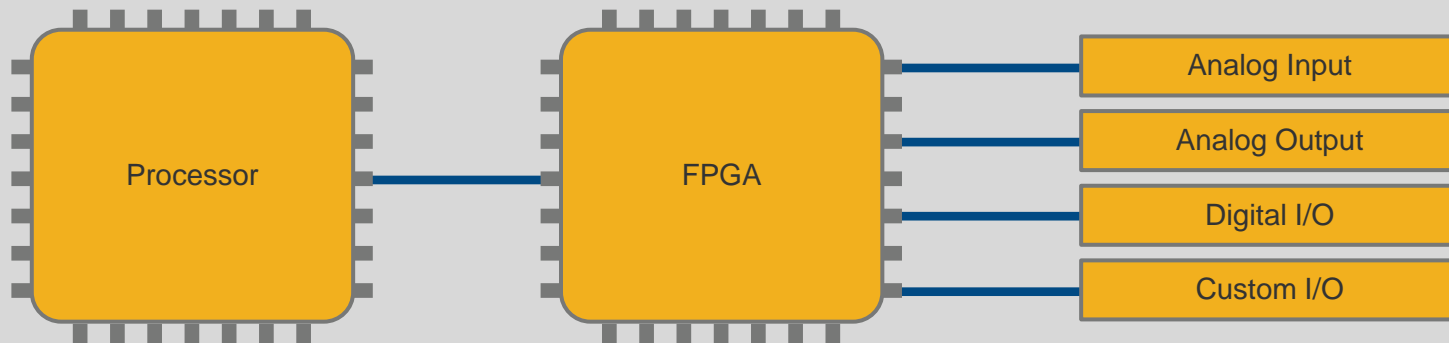


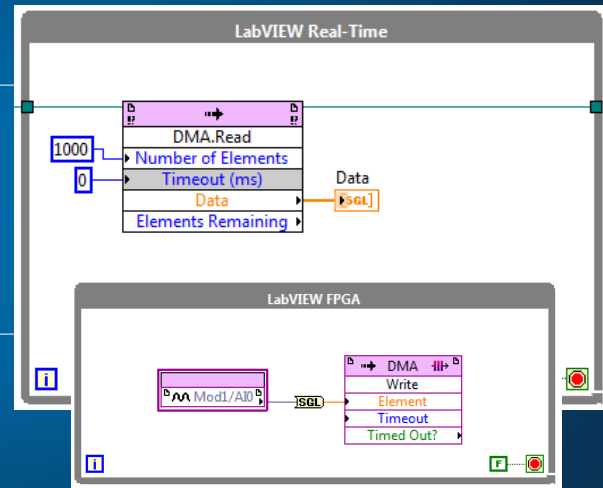
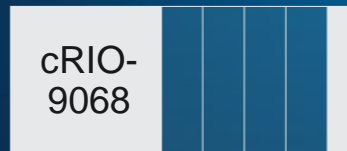
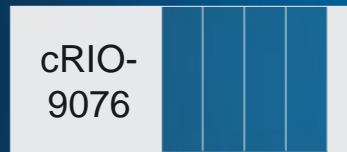
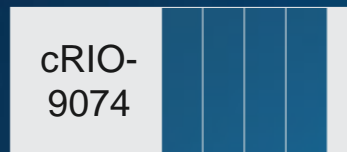
NI cRIO-9068



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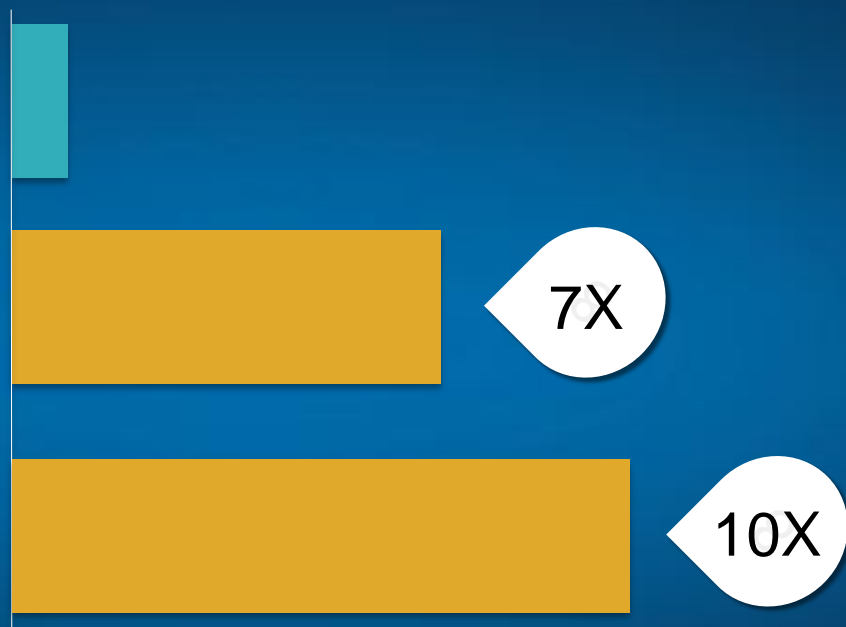
Competitor

cRIO-9074

cRIO-9068

7X

10X





# NI Compact Vision System

## NI CVS-1457 RT



# Graphical System Design



Measurement



Test



Monitoring



Embedded



Control



Desktops and  
Laptops



NI CompactDAQ



PXI and Modular  
Instruments



NI CompactRIO



# NI Supports Your Success

Through extensive services and Alliance Partner networks

Your Solution

Your Team

Engineering, Services, and More

Alliance Partners

Integration and Consulting

NI Services

Training, Calibration, Maintenance, and More

NI Products

Ecosystem and Community

Users, IP, Add-Ons, and More

A world map with a dark blue background. The landmasses are shown in a lighter blue/white color. Numerous red circular pins are scattered across the map, indicating locations. There is a high concentration of pins in North America (USA and Canada), Europe, and Australia. Smaller clusters are visible in South America, Africa, and Asia.

700+ Alliance Partners  
1,000+ Locations, 60+ Countries

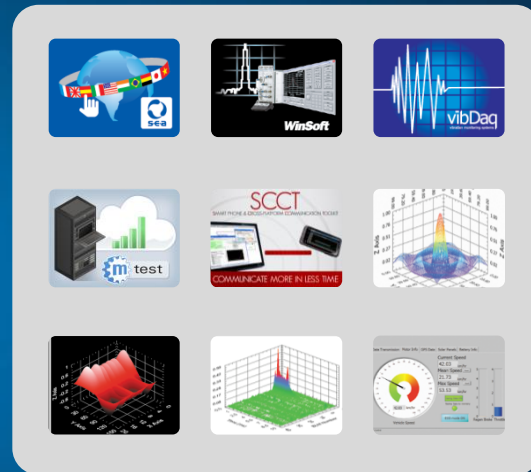
# NI Alliance Partners



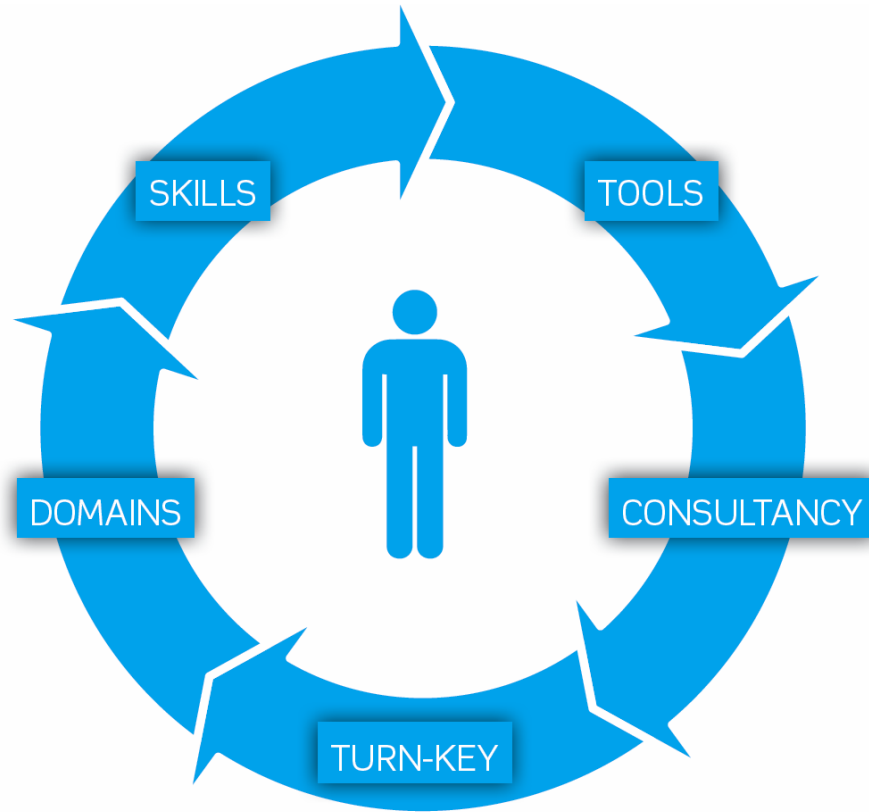
Consulting



Integration



Product Ecosystem





Devotek

**devotek**® devoted to technology



Automotive



Maritime



Industry



Oil and gas



Defence

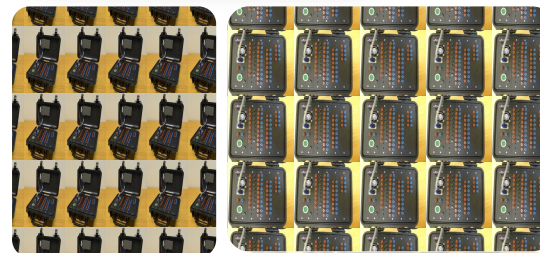
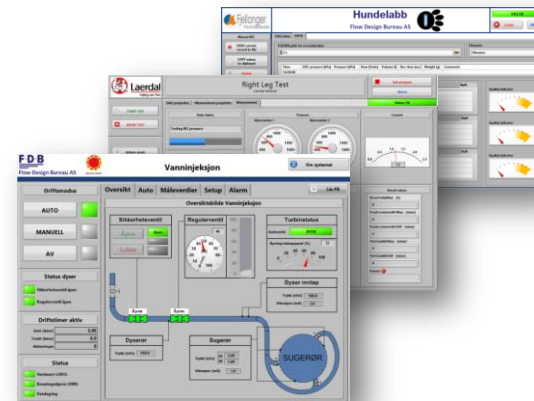
**Kongsberg Devotek is an independent  
product development specialist**

### **Our areas of expertise:**

- Systems engineering
- Mechanical development
- FEA & CFD analysis
- Manufacturing
- Testing
- Embedded development
- Dynamics & Control
- Electronic design

# Flow Design Bureau

- NI Alliance Partner (1 CLD and 1 CLAD)
- Employees:
  - Morten Kjeldsen, PhD
  - Håkon Francke, PhD
  - Jarle Vikør Ekanger, MSc, PhD-student
- What we do:
  - Awesome LabVIEW apps since 2001
  - RT and FPGA programming
  - RT control and monitoring systems
  - LabVIEW consultancy
- Example solutions:
  - FDB DAQ – General purpose DAQ application
  - FDB Mobile cDAQ/cRIO integrated in PeliCase
  - RT Hydro power condition monitoring
  - . . .



North Sea Electronics



North Sea  
Electronics

# Advanced Solutions for Harsh Environments

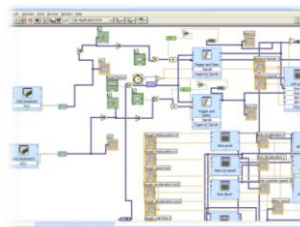
- Condition monitoring
- Real time systems
- Datalogging
- Electronics design
- High temp. electronics
- Embedded solutions



Prevas



- Founded in 1985
- Nordic leader in Embedded Systems
- Nordic leader within MES, EMI and Automation
- Management Consulting
- 600 employees – Sweden, Norway, Denmark and India.
- Listed on NASDAQ OMX



Virinco AS



Test and Quality Data Management  
In the cloud

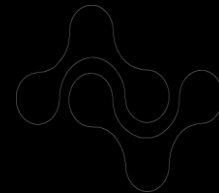
FREE  
TRIAL

Plug in with NI TestStand or LabView – Collect, store and  
analyze test data in the cloud

Support others with  
Test Data



From  
€ 90  
per month



# 6TL Engineering

# fastATE

Do not start the design  
of your ATE from  
scratch anymore!

Develop your ATE using  
intelligent high level blocks  
(modules!)



fastATE<sup>®</sup>  
Technology

6TL

Reduce the  
wiring of  
your ATE!

Same software platform  
for everything involved in  
your ATE



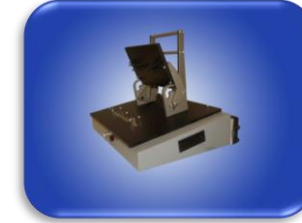
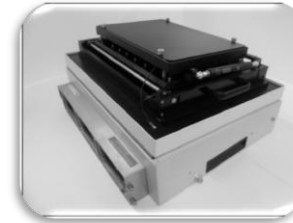
Reduce your  
overall ATE  
development  
time by 70%



INVENTING THE FUTURE OF ATE INTEGRATION



## COLUMBIA



## NI – PARTNER PRESENTATION 14H45-15H30 – TRACK B

### THE 10 MOST FREQUENTLY MADE MISTAKES, WHEN DESIGNING AND BUILDING A TURN-KEY PRODUCTION TEST PLATFORM FOR PCB'S

## COLUMBIA





COLUMBIA



Flow Design Bureau AS

[www.fdb.no](http://www.fdb.no)

North Sea  
Electronics

devotek®

Thank you!

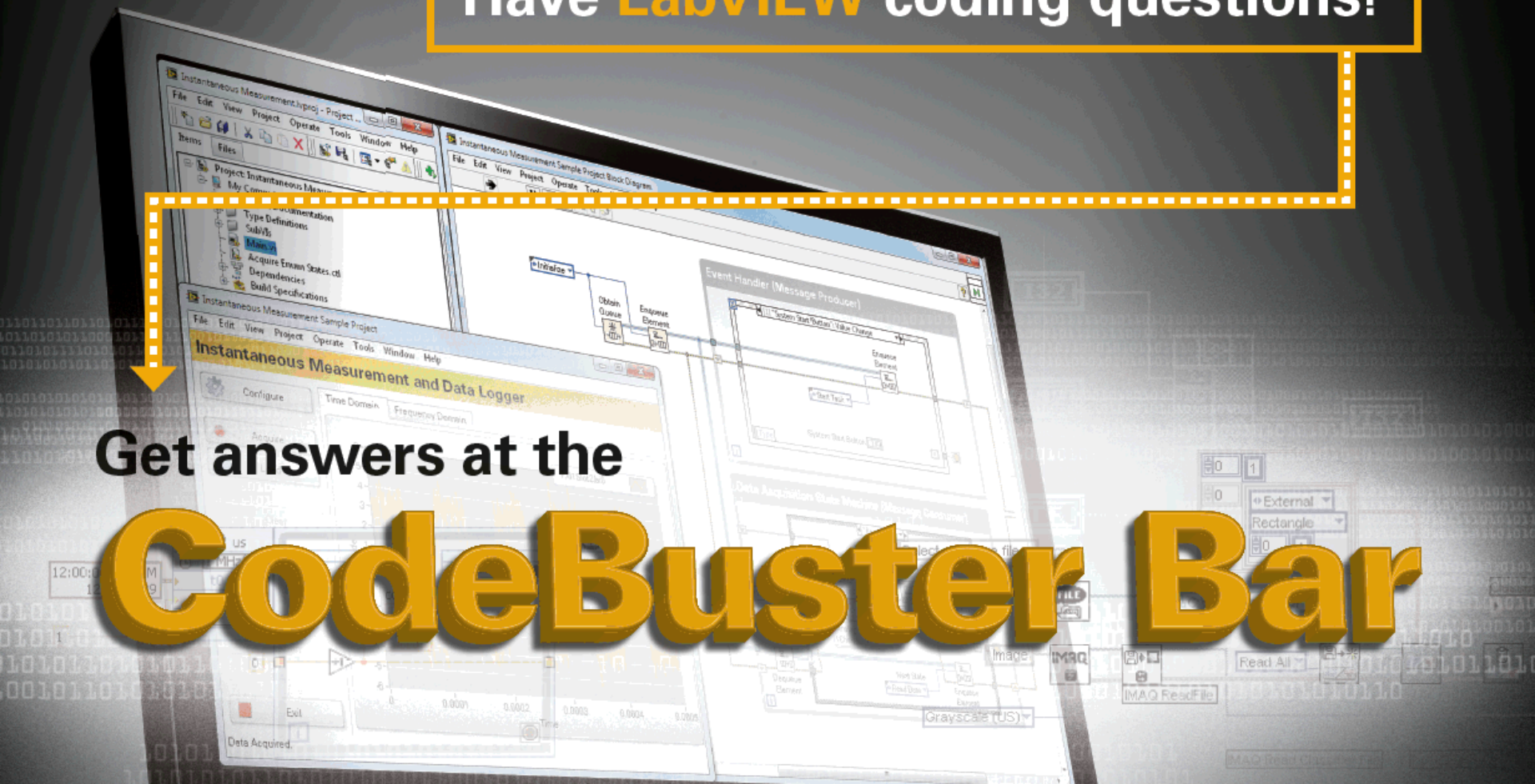




Have **LabVIEW** coding questions?

Get answers at the

**CodeBuster Bar**



**Are you ready to accept the challenge?**

**To enter, you must complete  
2 timed exercises in LabVIEW.**

## Name

--

Company

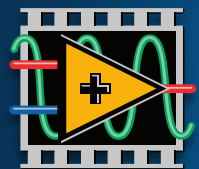
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## Begin Challenge

**Example: "From an input array double the uneven numbers, but remove duplicates from the resulting array."**







NATIONAL INSTRUMENTS

LabVIEW™ 2013





# NIDays

WORLDWIDE GRAPHICAL SYSTEM DESIGN  
**CONFERENCE**