

NIDays



Dusan Vukasinovic

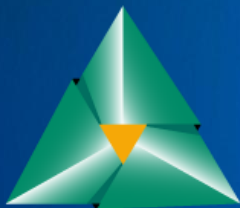
System Consultant

NI

NIDays 2014 - Program Beograd - 20.11.2014.

8:30	Registracija		
9:00	Uvodni govor I - You and NI Are Creating The Internet of Things Dušan Vukašinović National Instruments Sala: Atrijum		
10:15	Tehnička pauza/Pauza za kafu		
	Sesija 1 Sala: Atrijum		Sesija 2 Sala: Best Western Club
10:45	Novi softverski definisan instrument za automatizovani test Ion Rošca National Instruments	10:45	Poboljšajte mogućnosti Vaše DAQ aplikacije sa karticama R serije Rostislav Halaš National Instruments
11:35	Softverski definisan Radio sa FPGA čipom - pregled USRP RIO platforme Dušan Vukašinović National Instruments	11:35	Pregled najnovijih PAC (programabilni automatizacioni kontroleri) sa otvorenim firmware-om Andrej Korošec National Instruments
12:15	Ručak (Sala: Foyer, Ambient, Forum)		
13:15	Uvodni govor II - You and NI Will Solve the Engineering Grand Challenges Dušan Vukašinović National Instruments Sala: Atrijum		
14:00	Tehnička pauza		

14:15	UNO-LUX NS - 10 godina NI partnerstva Miloš Radulović UNO-LUX NS d.o.o	14:15	Radionica NI myRIO u nastavi o embedded sistemima ili LabVIEW u akviziciji podataka i DIAdem za offline procesiranje signala Andrej Korošec, Dušan Vukašinović National Instruments
14:40	Razvoj usisnog kolektora varijabilne geometrije i telemetrijske jedinice za vozilo Formule student uz korišćenje NI-cRIO i NI-PXI hardvera i LabVIEW i DIAdem softvera Predrag Mrdja, Vladimir Petrovic, Stefan Djinic Univerziteta u Beogradu		
15:05	Merni uređaj za kalibraciju strujnih transformatora baziran na PXIe-1082 sa PXIe-8108 kontrolerom i PXI-4462 AD konvertorom Dr Aleksandar Zigic Dragana Naumovic-Vuk Vladimir Poluzanski Elektrotehnički Institut Nikola Tesla		
15:30	Poređenje korisničkih interfejsa instrumenata: NI VirtualBench protiv tradicionalnih instrumenata Rostislav Halaš National Instruments		
15:50	Pauza za kafu		
16:20	Virtuelna komandno-merna jedinica Dragana Mandušić TELEOPTIK-ŽIROSKOPI	16:20	Radionica NI myRIO u nastavi o embedded sistemima ili LabVIEW u akviziciji podataka i DIAdem za offline procesiranje signala Andrej Korošec, Rostislav Halaš National Instruments
16:45	Upravljanje laboratorijskim bioreaktorom Miloš Radulović UNO-LUX NS d.o.o		
17:10	Certified LabVIEW Associate Developer (CLAD) ispit		
serbia.ni.com		Zadržavamo pravo da promenimo ili modifikujemo plan dnevnog reda	



ELSYS
EASTERN EUROPE

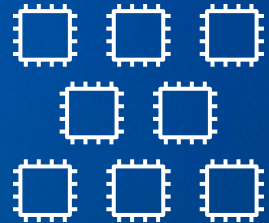
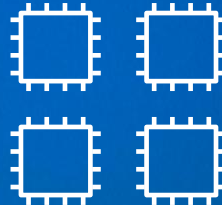
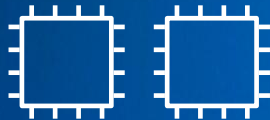
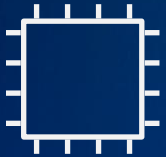
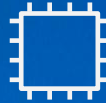


kgh

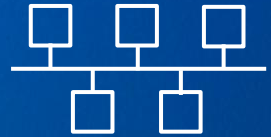
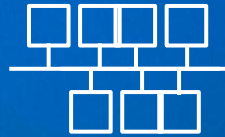
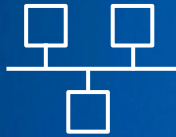
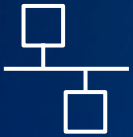


SMEITS

Moore's Law



Metcalfe's Law



Battery Life



Lead-Acid



Ni-Cd



Ni-MH



Li-ion

Wireless



1G



2G



3G



4G

Sensors



Accelerometer



Encoder



Strain



Microphone

The Internet of Things



Moore's
Law



Metcalf's
Law



Battery
Life



Wireless



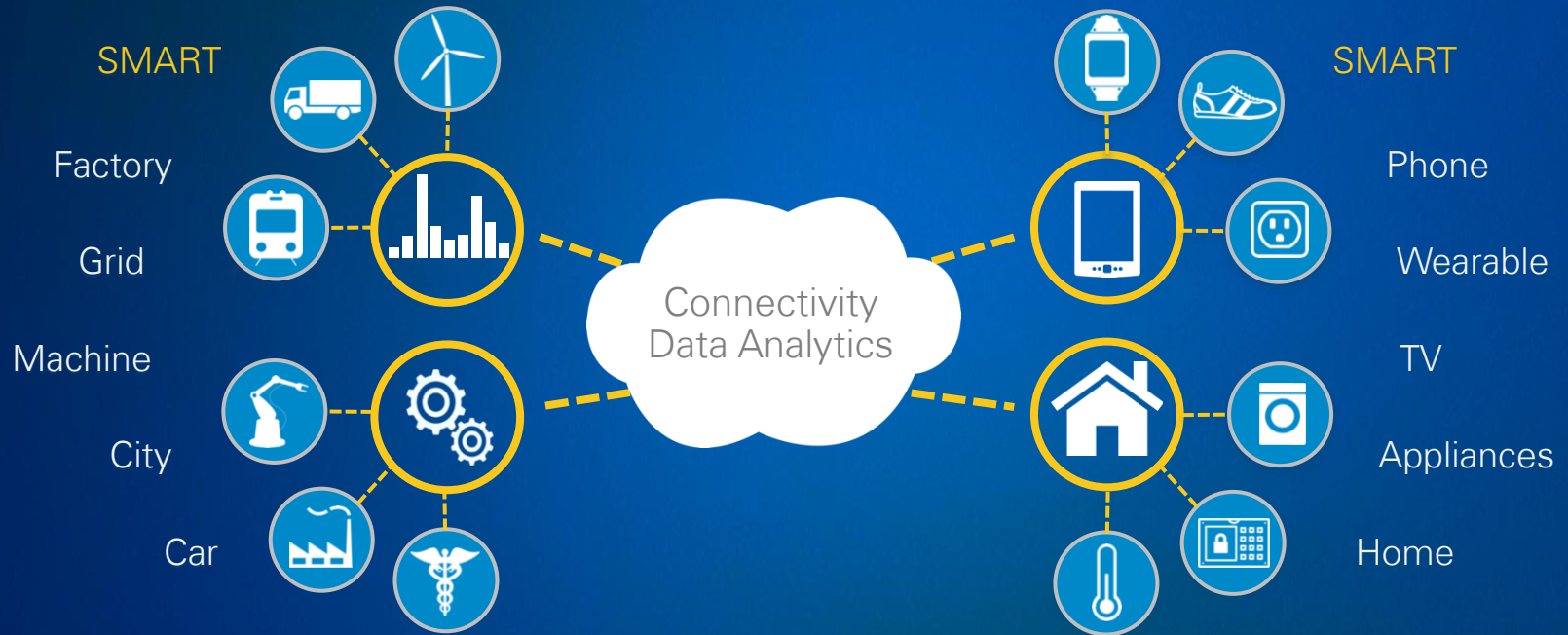
Sensors

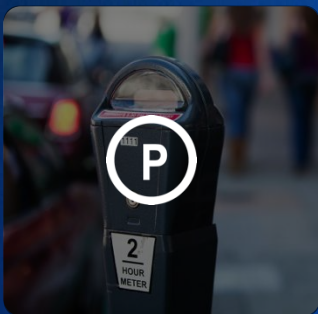
INDUSTRIAL

Internet of Things

CONSUMER

Internet of Things



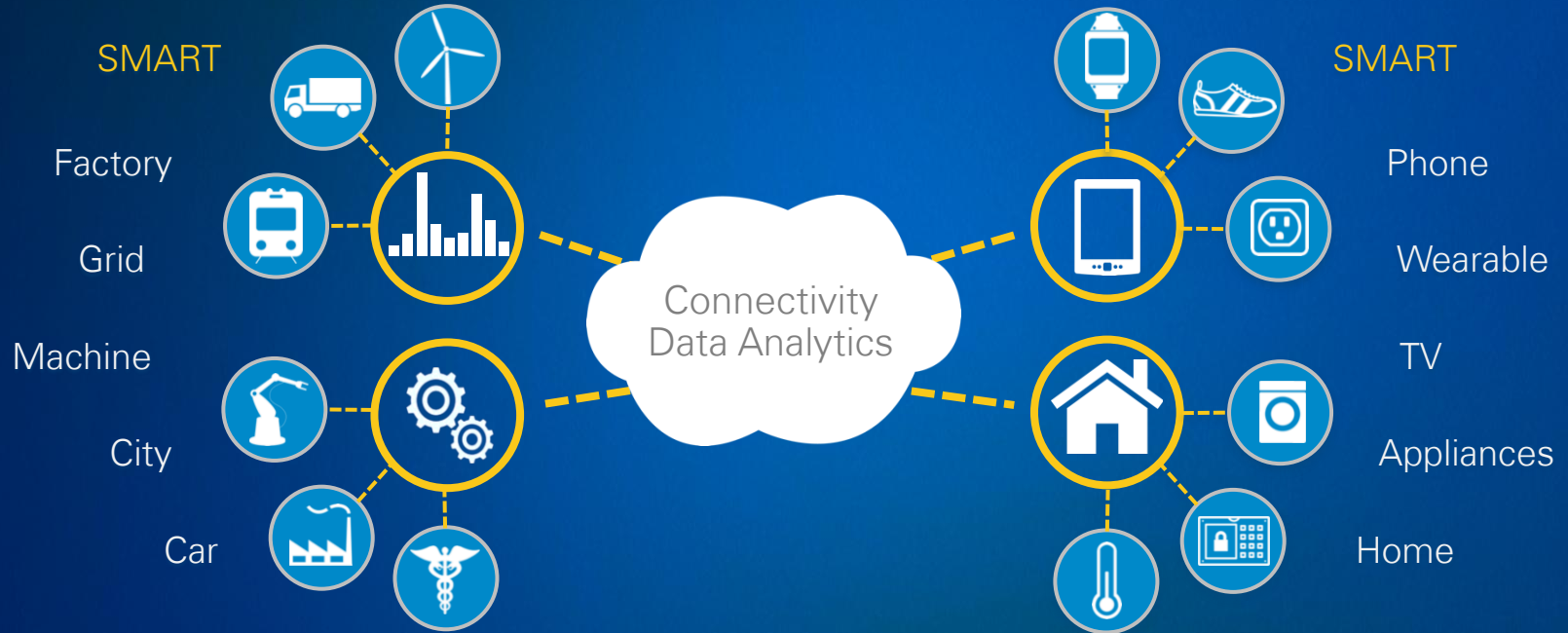


INDUSTRIAL

Internet of Things

CONSUMER

Internet of Things





You and **NI Will** Create the Internet of Things



Measurement



Test



Monitoring

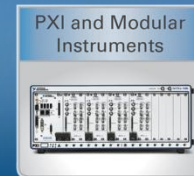


Embedded



Control

Graphical System Design



Andrej Korosec

Applications Engineer

NI

LabVIEW 2014



Almost 95% of Fortune 500

8,000 Classrooms



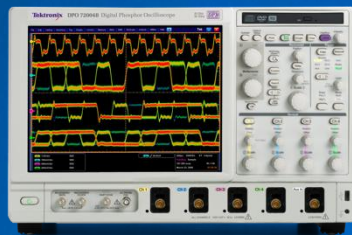


Top 20 5G Researchers



200

C Series modules



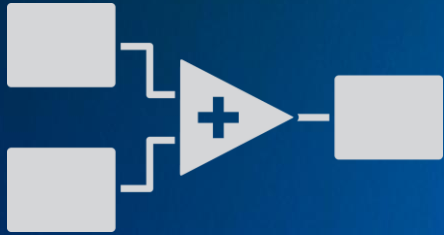
10,000

drivers



1,500

PXI modules



900

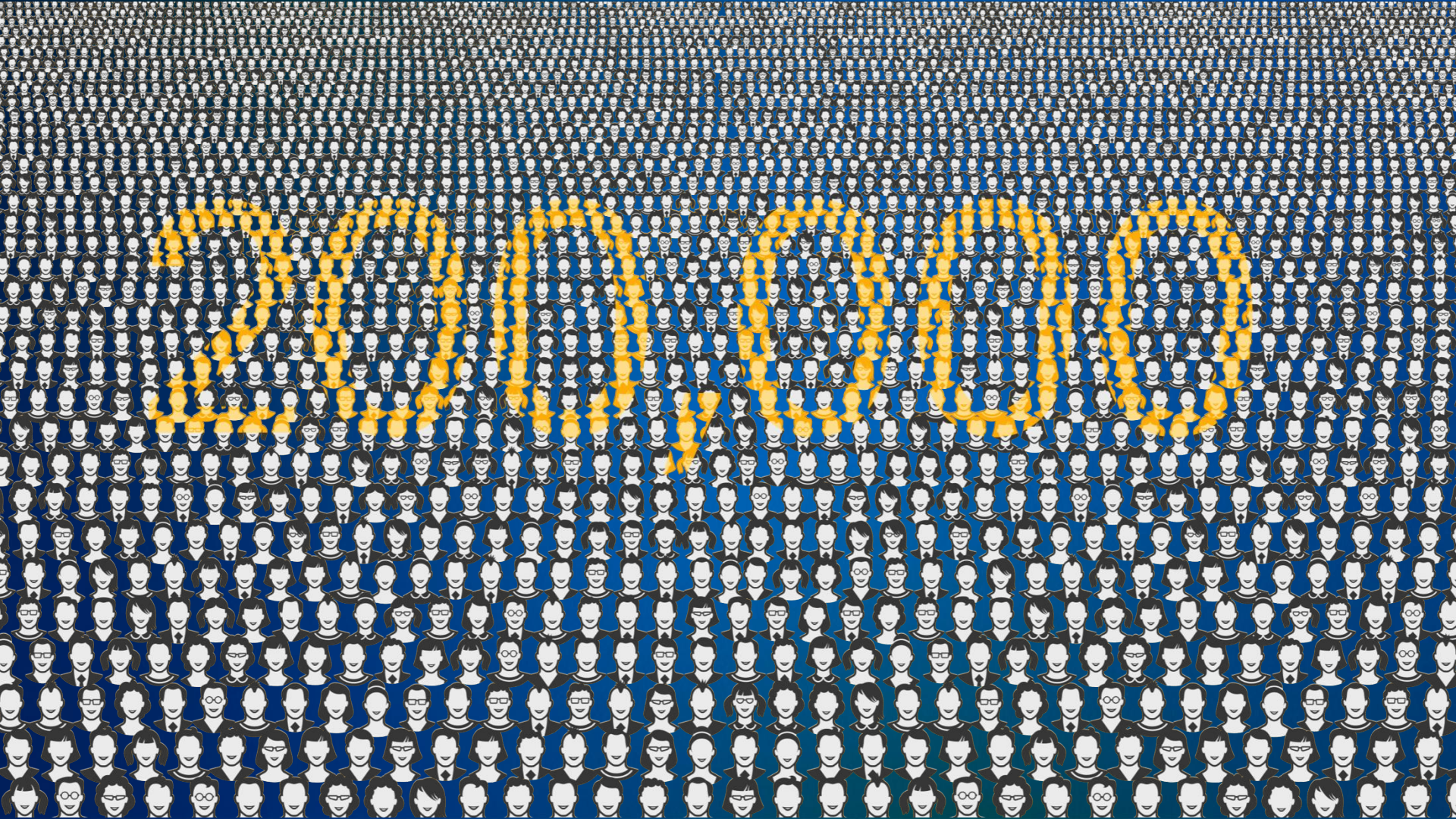
Graphical functions

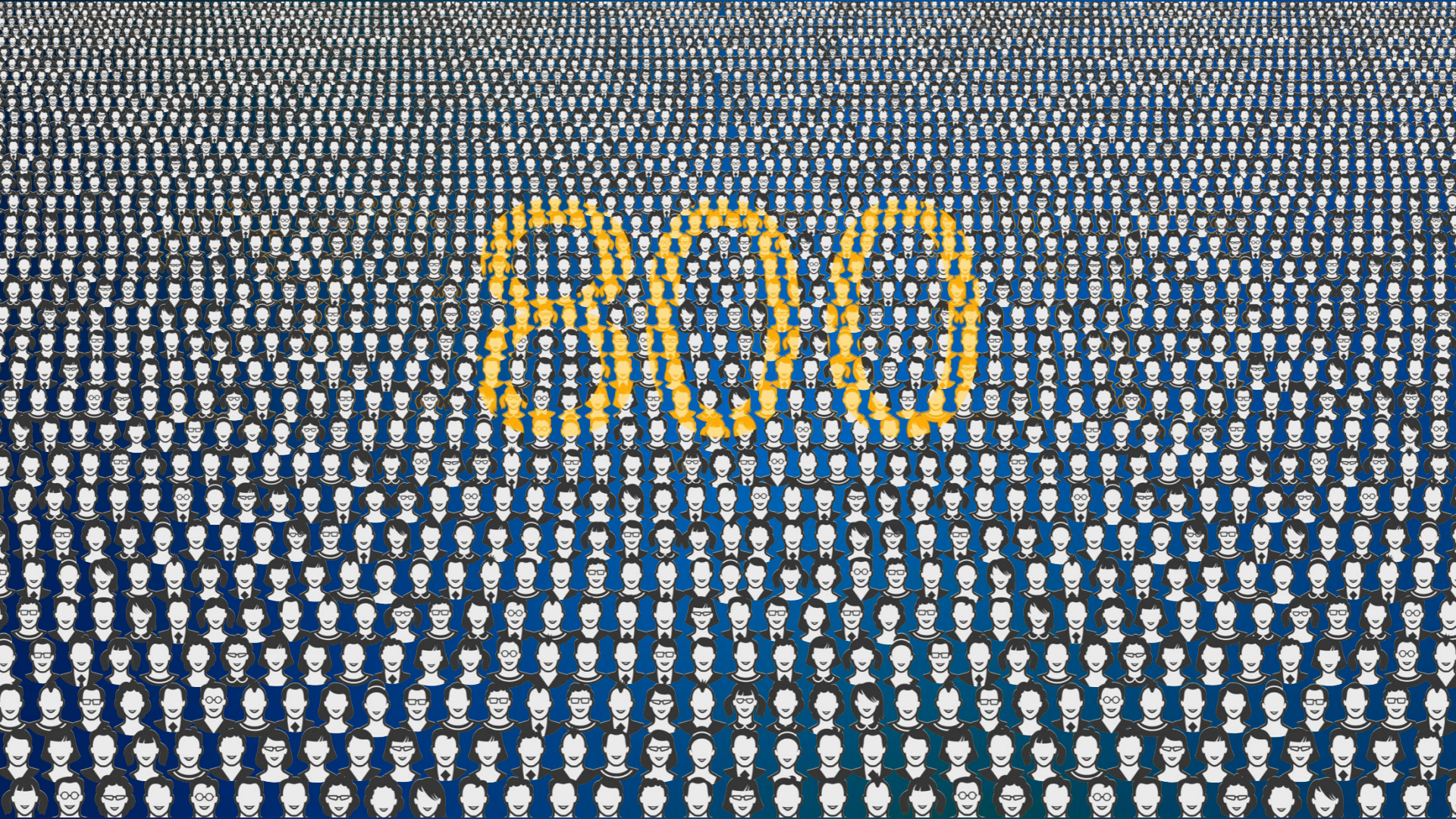
$$y=f(x)$$

800

Text-based routines







LabVIEW RIO Architecture



Processor

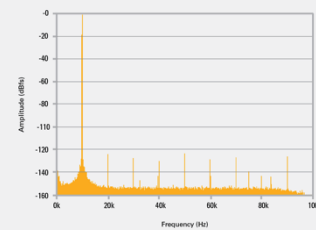
FPGA

Analog Input

Analog Output

Digital I/O

Digital I/O



Code Analysis

Unit Testing

Execution Profiling

Software Engineering Toolkits

Report Generation

Database Connectivity

Code Analysis

Unit Testing

Execution Profiling

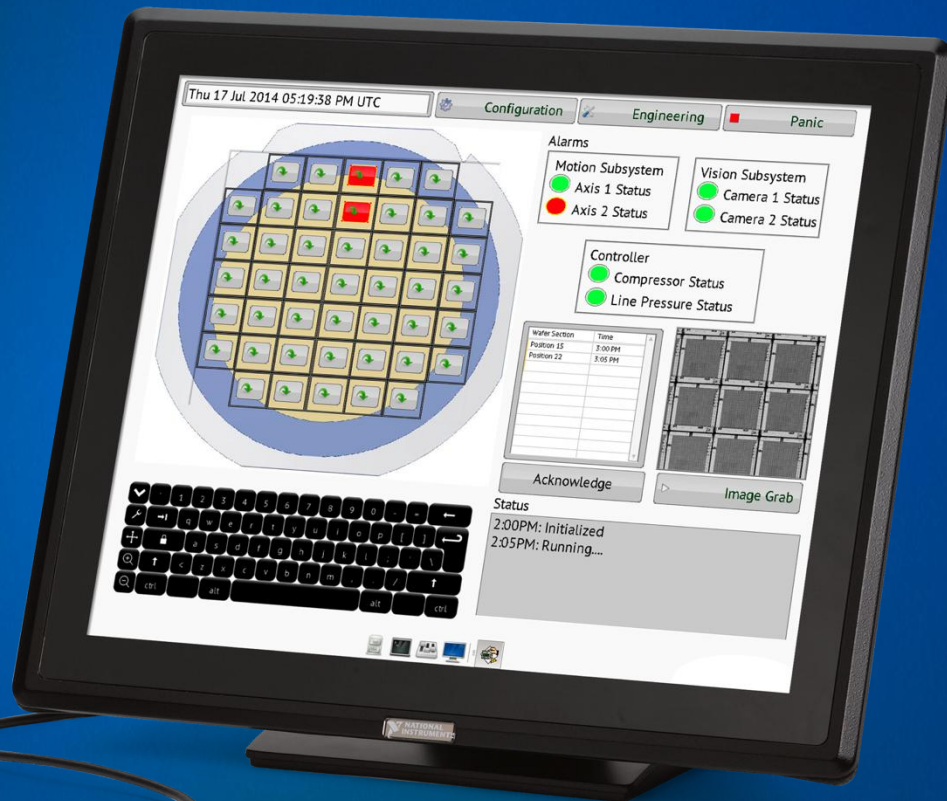
Report Generation

Database Connectivity

LabVIEW Professional Development System



Embedded HMI





LabVIEW
TOOLS NETWORK

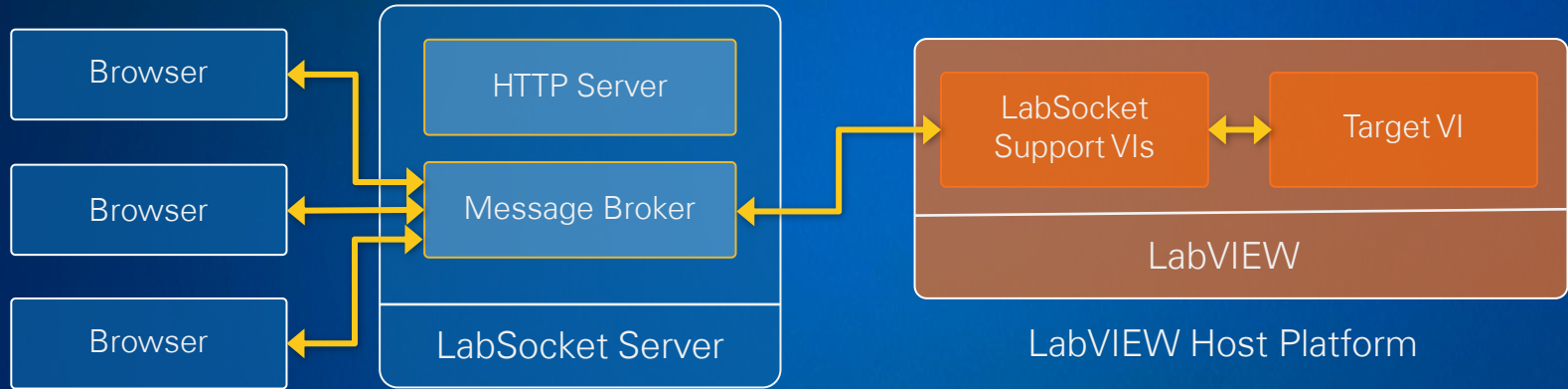


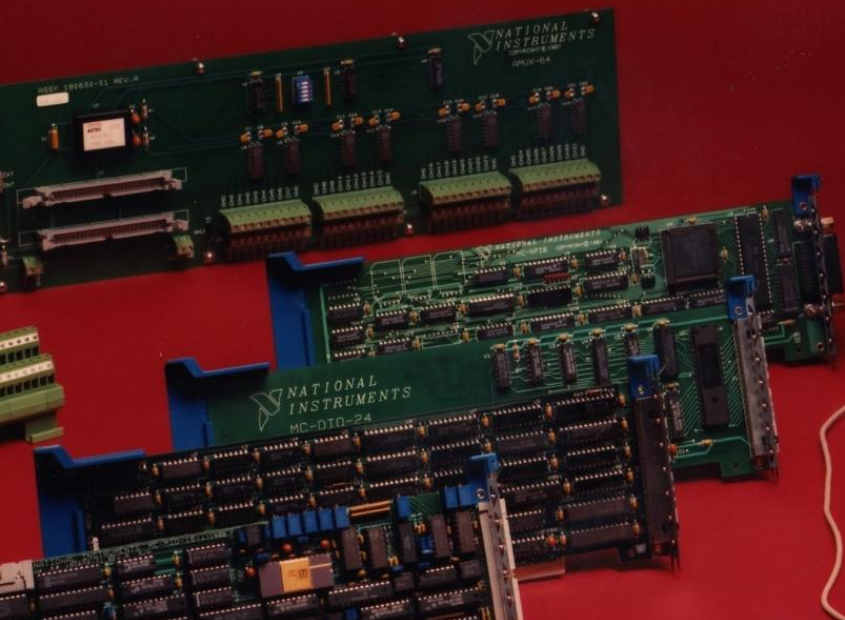


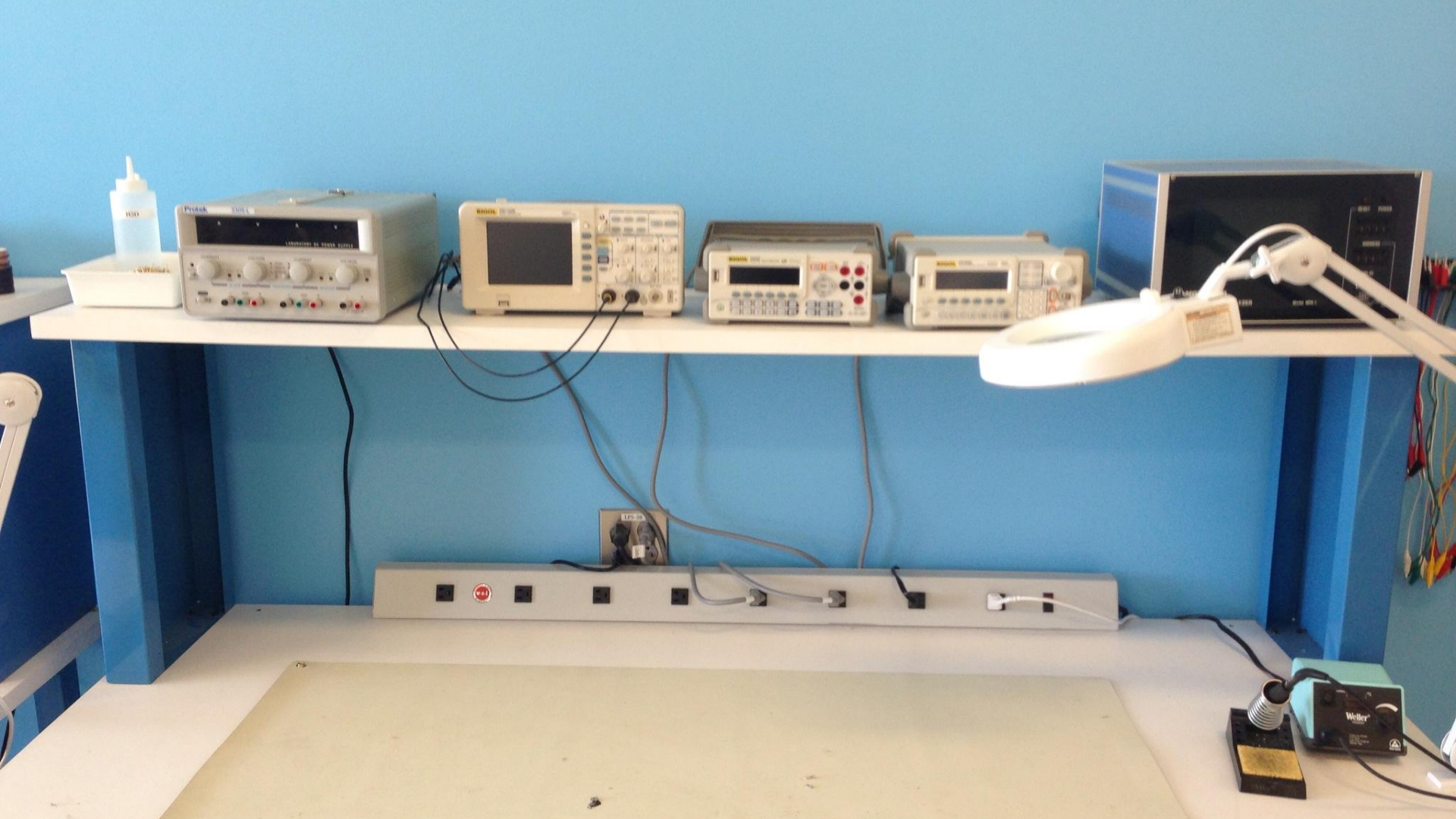
<https://>

LabSocket

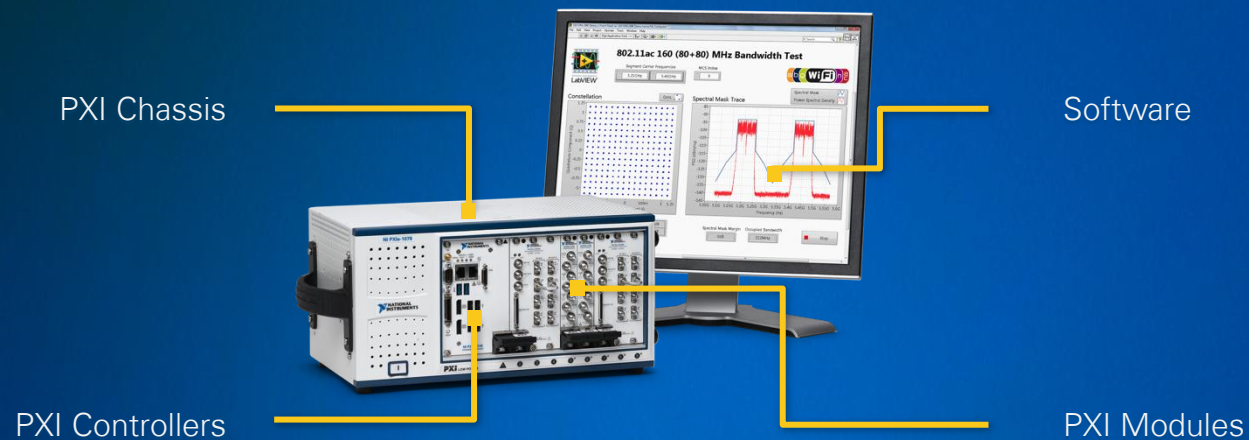
The Easy Way to Extend LabVIEW to the Web



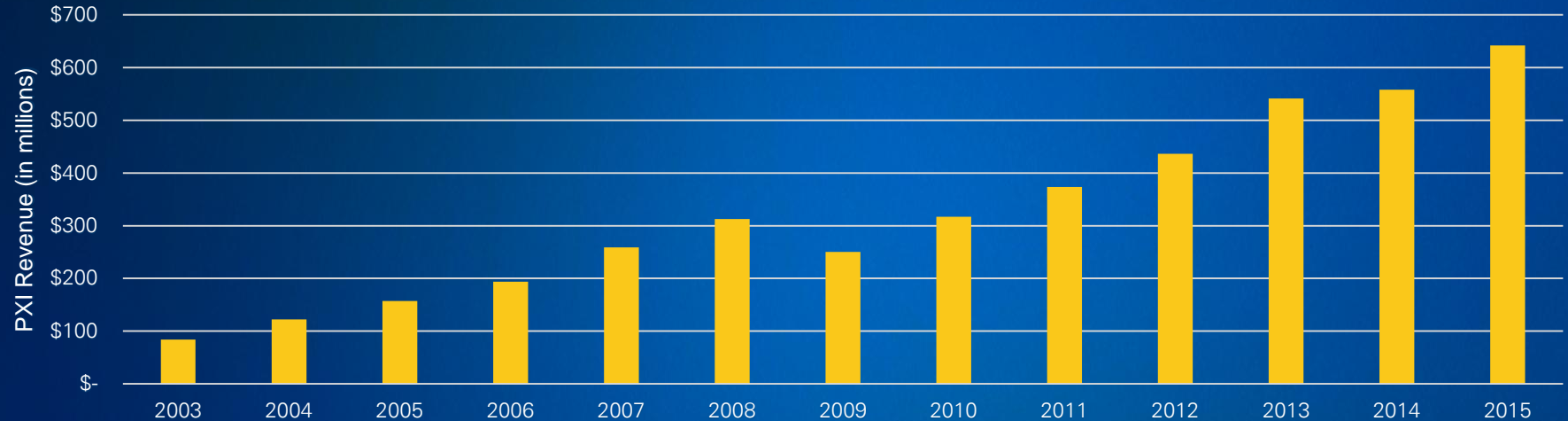








PXI Growth Continues...



Source: Frost & Sullivan, Prime Data, and NI Estimates

“The global PXI-based instrumentation market in electronic test applications is expected to experience a compound annual growth rate of 17.6% from 2013 to 2020. By 2020, this market is expected to generate over \$1,750 million.”

—Frost and Sullivan, 2014

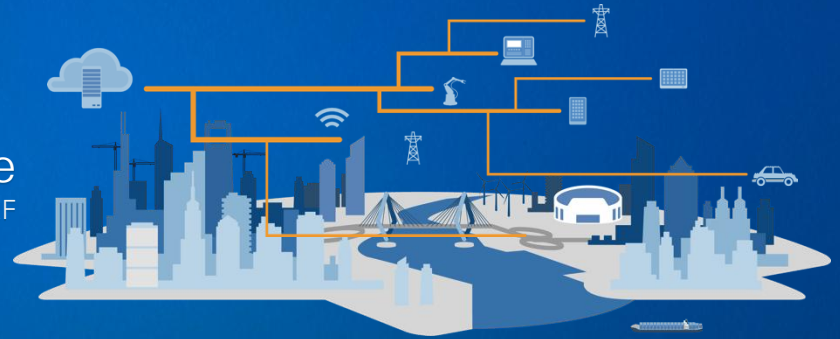
System Compare | PXI vs. Previous ATE

	PXI Tester	Reduction	Previous Solution
Cost	\$40K USD	11X	\$450K+ USD
Footprint	18 x 24 x 7 in.	15X	98 x 66 x 74 in.
Weight	30kg	66X	2000kg
Facility	600 W	16X	10 kW

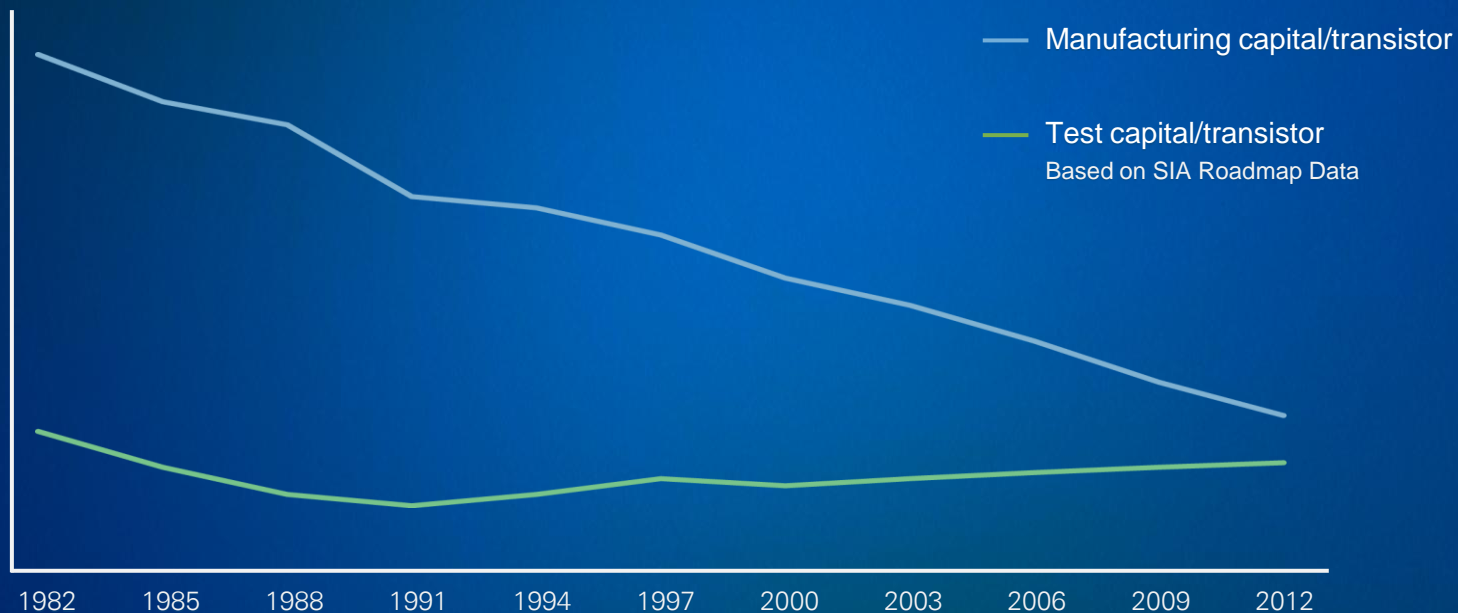
Moore's Law
Digital



More Than Moore
Analog/RF



The Economics of Silicon Manufacturing and Test



Introducing the Semiconductor Test System



RF Subsystem



RF Ports



Port Modules

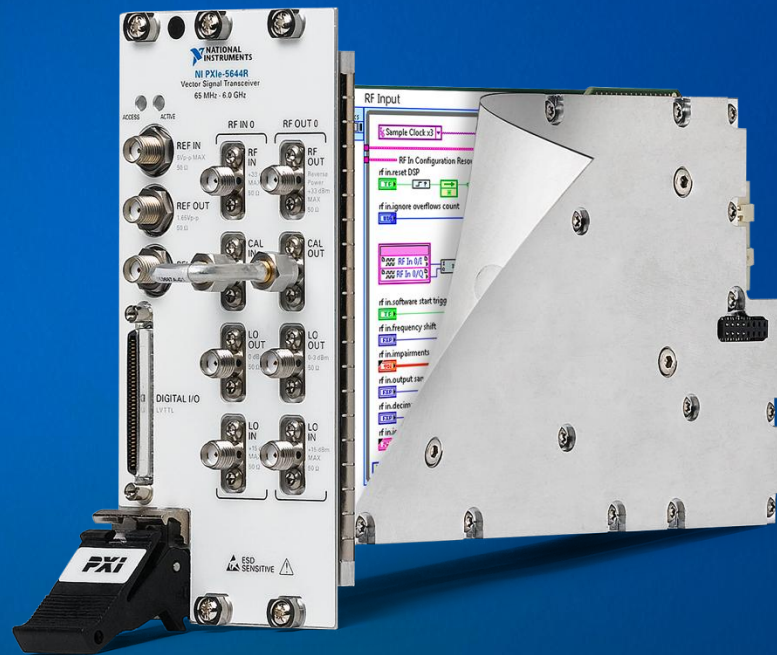


Vector Signal Transceiver



PXI Chassis

Software-Designed Instrumentation



2012 Evolution of NI PXI RF



200X Shorter

2007 NI PXI RF Instrumentation



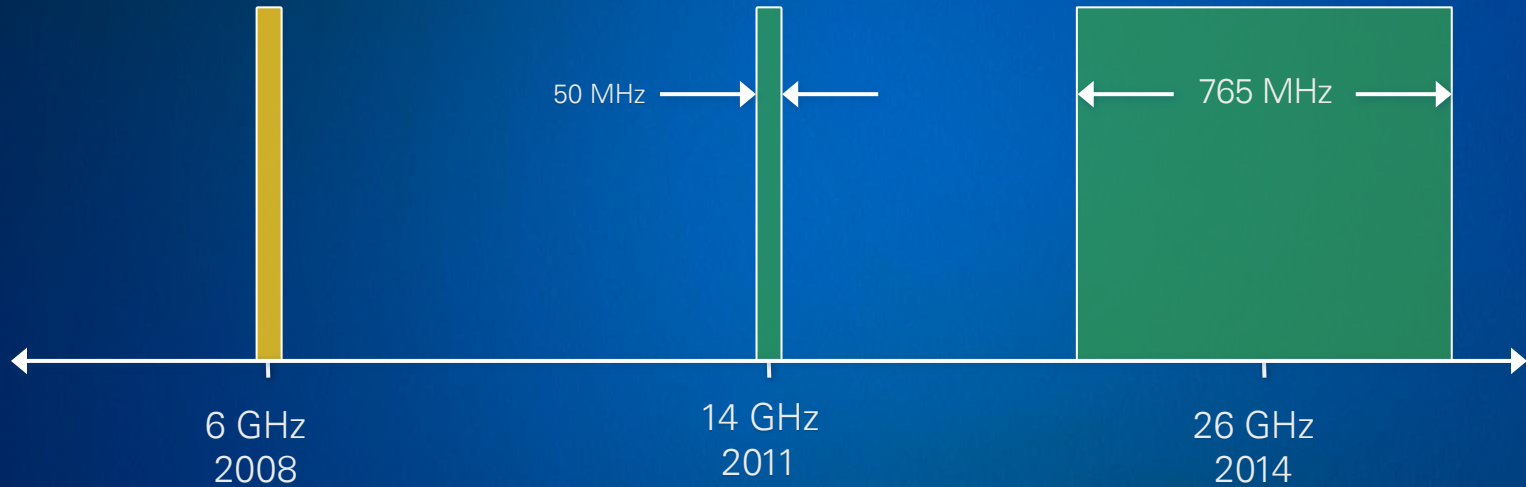
10X Shorter

Traditional Rack and Stack

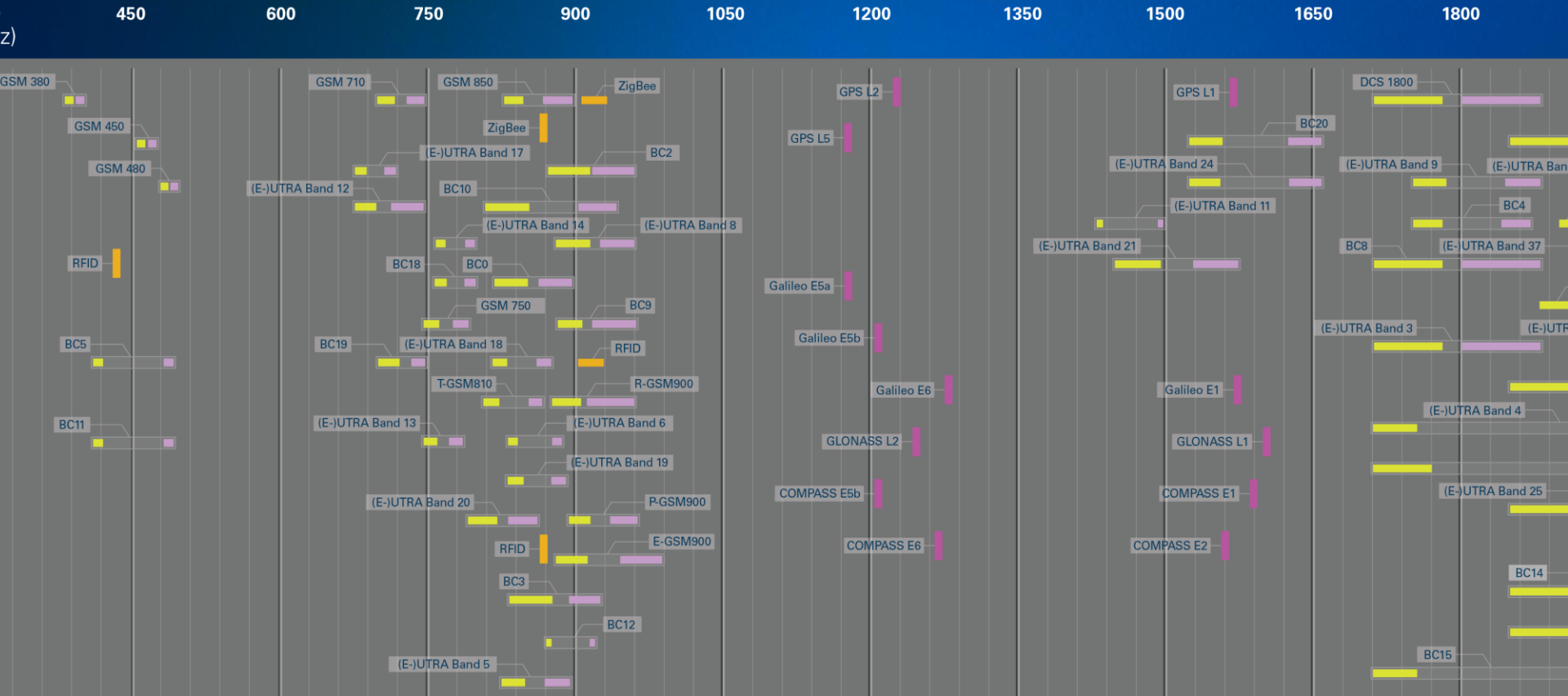


Traditional Test Time

NI Frequency and Bandwidth Coverage



United States Spectrum Allocations





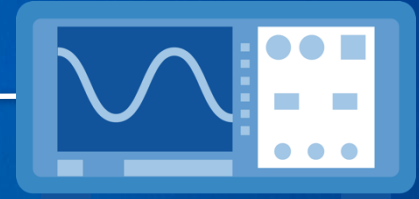
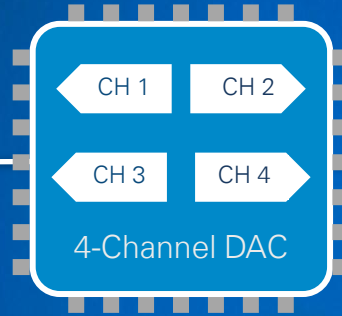
Design Engineer
Maximum instrument performance



Production Engineer
Fastest test time



NI 26.5 GHz Signal Analyzer



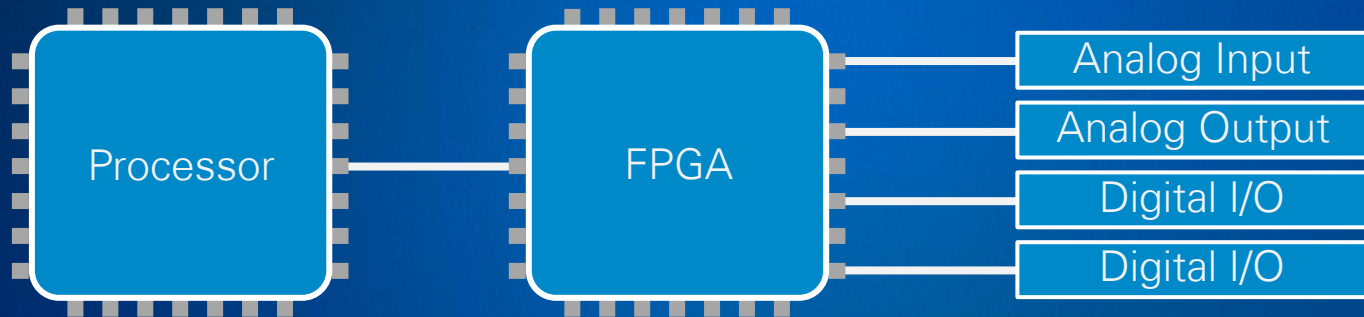
Box Analyzer







LabVIEW RIO Architecture



CompactRIO—A Decade of Innovation

World's First Software-
Designed Controller



2004

LabVIEW RIO-Based
Single-Board Computer



2008

High-Performance
Multicore Processing



2011

Linux-Based
Real-Time OS

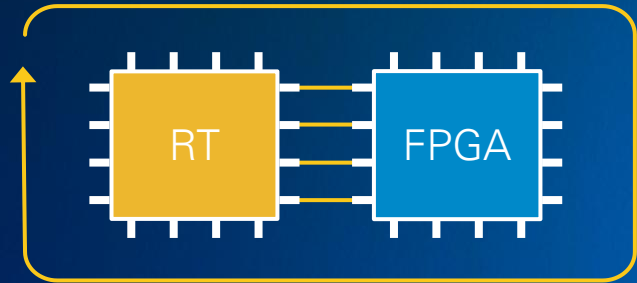


2013

LabVIEW RIO-Based
System on Module



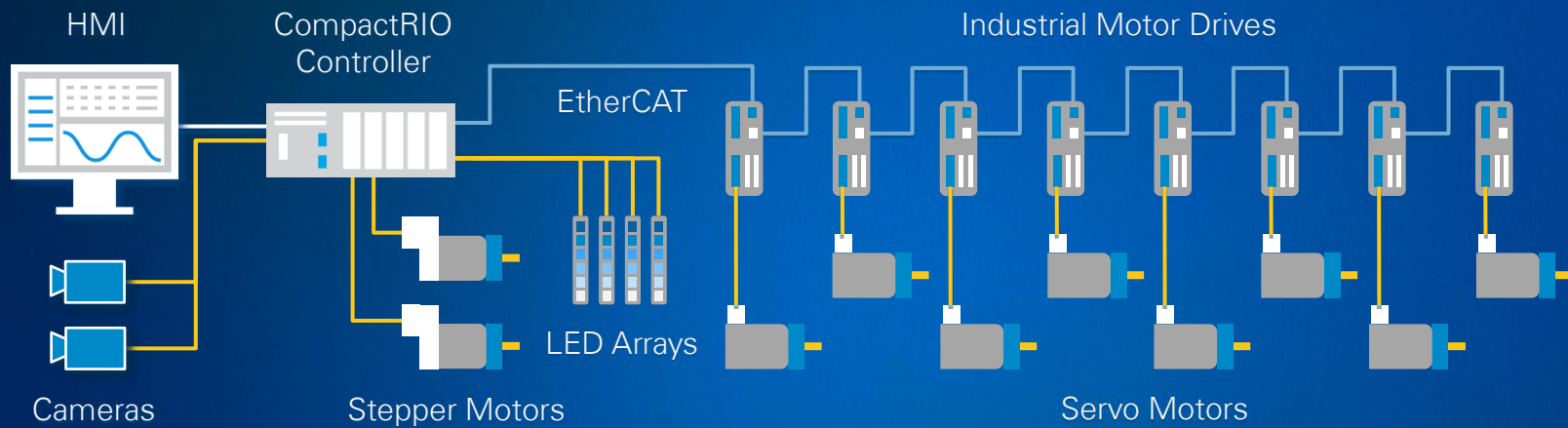
2014



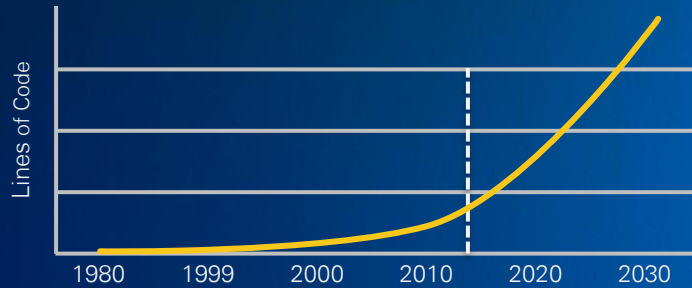
Perform Advanced Control and Analysis



Simplify Your Industrial System



Embedded Software Complexity




 100M

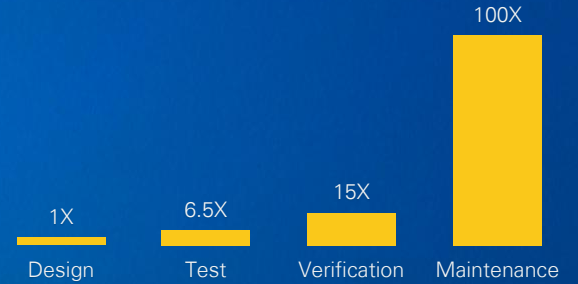
 7M

 100K

10–20 defects
for every
1,000 lines



Cost per Defect



JACOBS®

\$11 Billion+
revenue generated in 2013

70,000+
employees worldwide

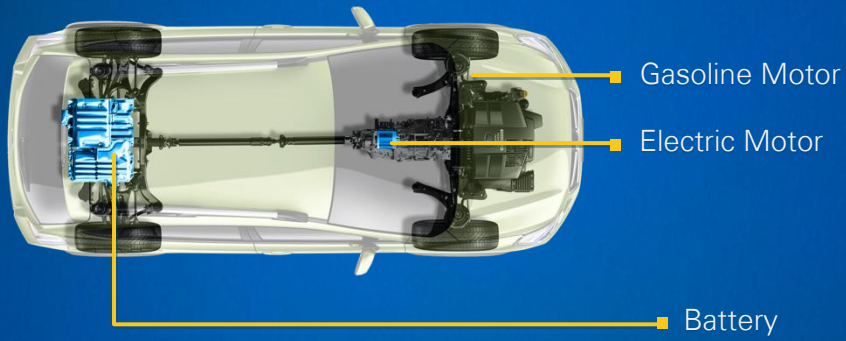
Expensive Facility Operation

Difficult to Retest

All Data is Critical







Gasoline Motor

Electric Motor

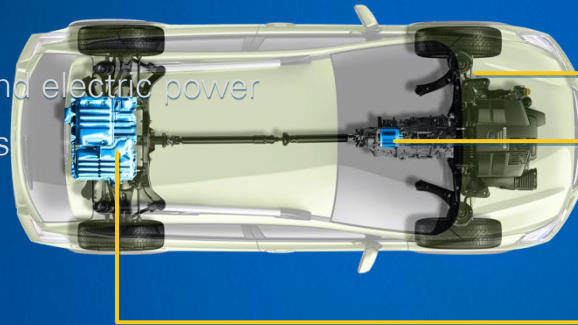
Battery

Sophistication of Test

Complex interaction of gasoline and electric power

Microsecond simulation loop rates

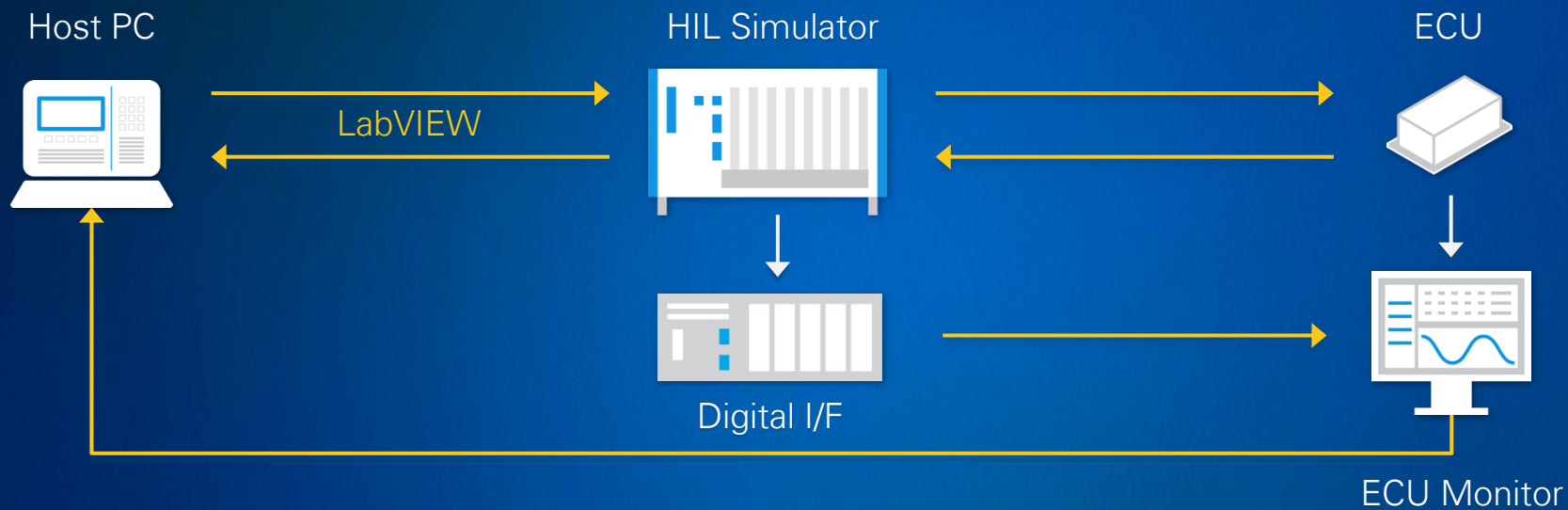
Nonlinear models



Gasoline Motor

Electric Motor

Battery



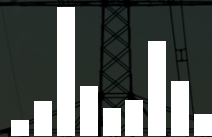
LabVIEW FPGA
JMAG Finite-Element Models
FlexRIO FPGA + DRAM

Better Test Coverage
Automated Testing
20X Reduction in Test Time





High Voltage and Current Modules



Synchrophasors and Harmonic Disturbances



Industrial Communication Protocols



nationalgrid

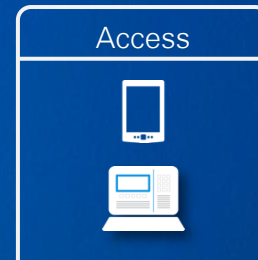
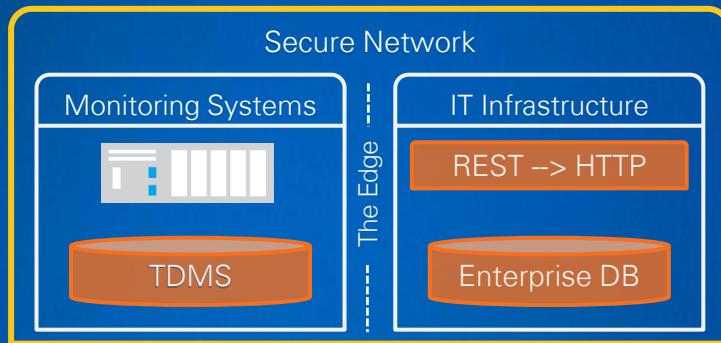
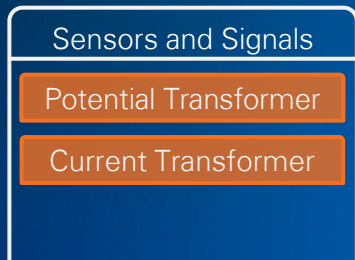
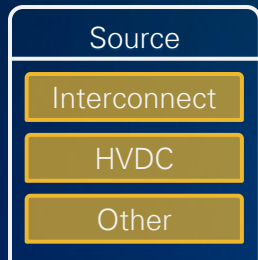


Requirements of Future Grid Instrumentation

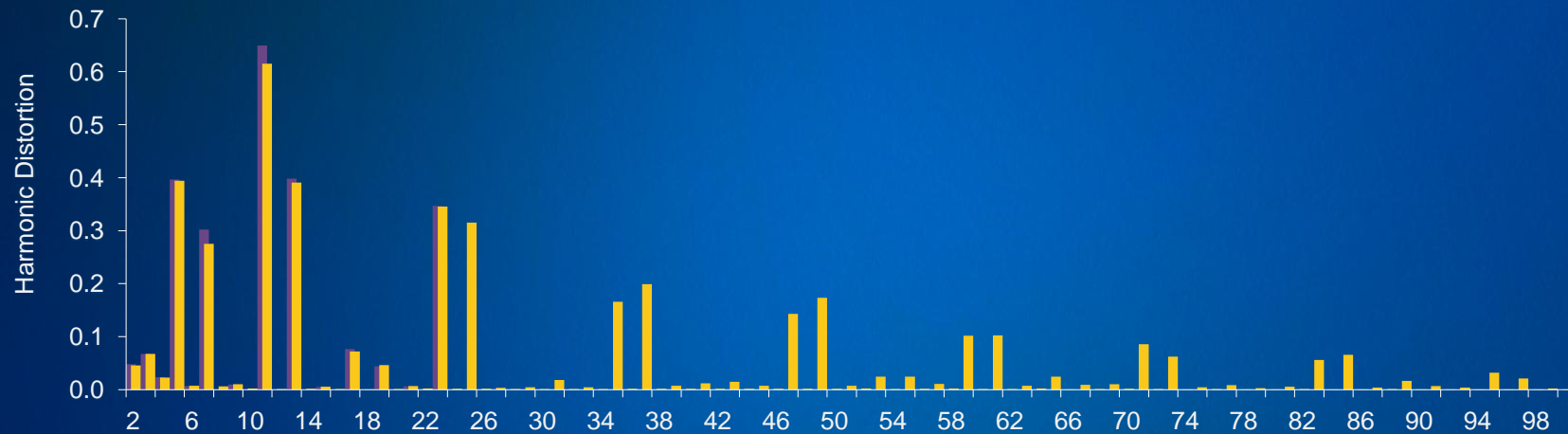
Access to Data

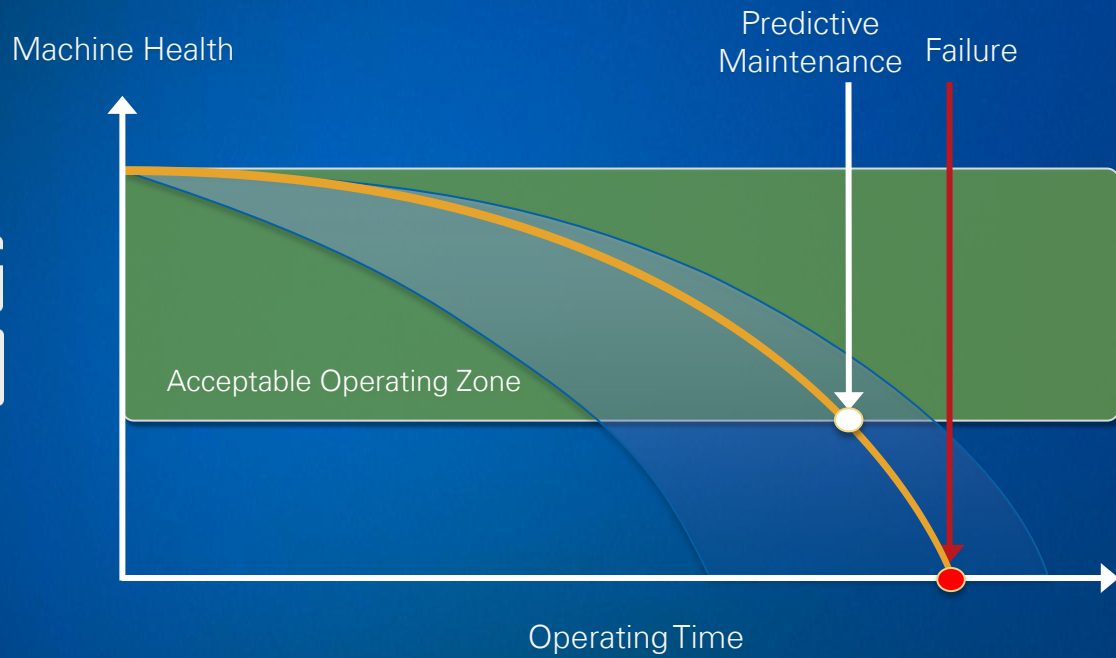
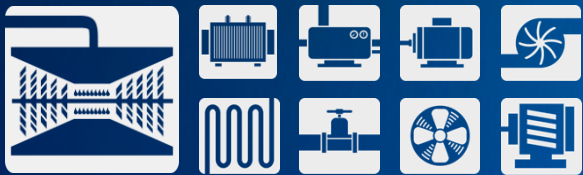
Flexibility

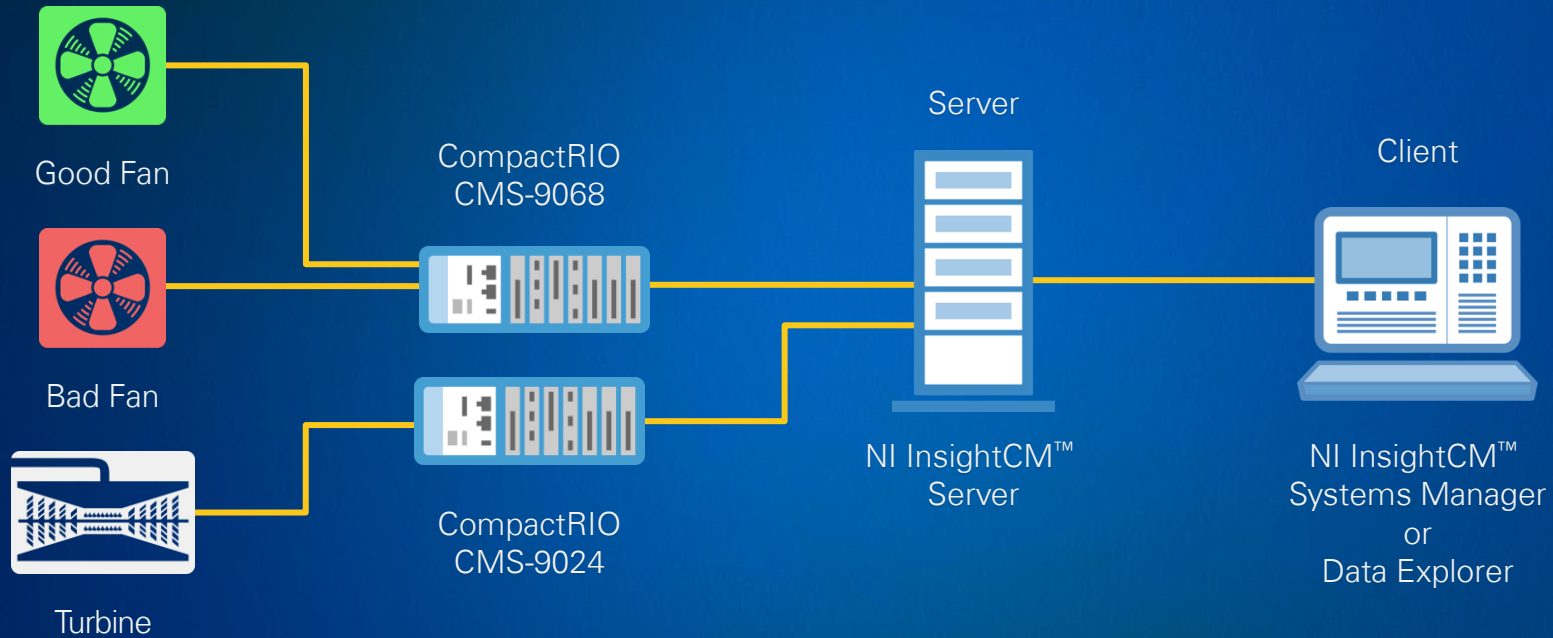
Grid Measurement Capability



Better Grid Measurements With CompactRIO







NI InsightCM™ Enterprise

Acquire Dynamic and Static Data

Analyze Waveform Data

Visualize Raw Data and Results

Generate and Manage Alarms

Manage, Mine, and Age Data

Configure, Monitor, and
Deploy Firmware to Nodes

Authenticate Users and Devices

Integrate With IT Infrastructure



NIDays



14:15	UNO-LUX NS - 10 godina NI partnerstva Miloš Radulović UNO-LUX NS d.o.o	14:15	Radionica NI myRIO u nastavi o embedded sistemima ili LabVIEW u akviziciji podataka i DIAdem za offline procesiranje signala Andrej Korošec, Dušan Vukašinović National Instruments
14:40	Razvoj usisnog kolektora varijabilne geometrije i telemetrijske jedinice za vozilo Formule student uz korišćenje NI-cRIO i NI-PXI hardvera i LabVIEW i DIAdem softvera Predrag Mrdja, Vladimir Petrovic, Stefan Djinic Univerziteta u Beogradu		
15:05	Merni uređaj za kalibraciju strujnih transformatora baziran na PXIe-1082 sa PXIe-8108 kontrolerom i PXI-4462 AD konvertorom Dr Aleksandar Zigic Dragana Naumovic-Vuk Vladimir Poluzanski Elektrotehnički Institut Nikola Tesla		
15:30	Poređenje korisničkih interfejsa instrumenata: NI VirtualBench protiv tradicionalnih instrumenata Rostislav Halaš National Instruments		
15:50	Pauza za kafu		
16:20	Virtuelna komandno-merna jedinica Dragana Mandušić TELEOPTIK-ŽIROSKOPI	16:20	Radionica NI myRIO u nastavi o embedded sistemima ili LabVIEW u akviziciji podataka i DIAdem za offline procesiranje signala Andrej Korošec, Rostislav Halaš National Instruments
16:45	Upravljanje laboratorijskim bioreaktorom Miloš Radulović UNO-LUX NS d.o.o		
17:10	Certified LabVIEW Associate Developer (CLAD) ispit		
serbia.ni.com		Zadržavamo pravo da promenimo ili modifikujemo plan dnevnog reda	

Thank you!

- Get additional resources on LabVIEW

www.ni.com/labview

- Learn about NI and Data Acquisition

www.ni.com/daq

Where to go next?

- Enroll for a instructor-led LabVIEW class

www.ni.com/training

- Attend other free seminars and workshops

<http://serbia.ni.com/dogadjaji>

- Contact our technical consultant and get a free consultation of your project and potential solutions!

Toll-free number: 06 80 204 704

National Instruments,
Instrumentacija, avtomatizacija in upravljanje procesov d.o.o.
Kosovelova 15
SI 3000 Celje, Slovenia

Contact us

Tel: + 386 3 425 4270

Fax: +386 3 425 4212

Email: ni.serbia@ni.com

Web: <http://serbia.ni.com>