



CONFERENCE PROGRAM

AUGUST 3-5, 2010

AUSTIN, TEXAS | NI.COM/NIWeek

NIWeek
WORLDWIDE GRAPHICAL SYSTEM DESIGN
CONFERENCE

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Dear Colleague,

Welcome to NIWeek 2010! Over the next few days, you and more than 3,000 fellow innovators, educators, engineers, scientists, and NI developers will explore the exciting technologies that are helping make the world a better place.

NIWeek gives you opportunities to network with others who are not waiting for the future to come – they are making it a reality now. From increasing efficiencies in countless design, test, and control applications to developing emerging technologies and educating future innovators, people like you are using graphical system design, virtual instrumentation, and modular hardware to revolutionize the way the world works.

NIWeek 2010 offers more than 250 interactive technical sessions and hands-on workshops, demonstrations of the latest NI products, continuing education units and certification exams, a massive exhibition floor, and keynote presentations from some of today's brightest minds.

With all this at your fingertips, remember to enjoy the sights and sounds of Austin, the "Live Music Capital of the World." And be sure to visit ni.com/niweekcommunity for detailed information on what NIWeek 2010 has to offer and to stay connected throughout the year.

Thank you to all our sponsors, exhibitors, and attendees for participating in our 16th annual NIWeek – the world's leading graphical system design conference and exhibition.

Sincerely,

James Truchard
President, CEO, and Cofounder
National Instruments



The NIWeek keynote presentations give attendees a first glimpse at new, cutting-edge innovations from National Instruments as well as an opportunity to learn about customers and real-world solutions using tools from NI. Kick-start each day of the conference with new product demonstrations by engineers and leaders from National Instruments and customer presentations in multiple application areas from industry to academia.

TUESDAY, AUGUST 3

8:30–10:00 a.m. Ballroom G



Dr. James Truchard, President, CEO, and Cofounder, [National Instruments](#)
Join Dr. James Truchard, who has served as CEO of National Instruments for 34 years and who coined the award-winning NI LabVIEW graphical programming software, to kick off your NIWeek experience. Listen as he discusses the latest technologies, including timing and synchronization, streaming digital signal processor (DSP) design, and software-defined radios, to optimize graphical system designs around the world.



John Graff, Vice President of Marketing and Customer Operations and Vice President of Data Acquisition and Instrument Control, [National Instruments](#)
With more than 23 years of experience at National Instruments, John Graff directs an integrated team of marketing and sales professionals who educate and support thousands of customers worldwide. Watch him and NI R&D engineers as they unveil the latest products and technologies and explain why now, more than ever before, is the time to solve the world's most advanced and complex problems.

KEYNOTE PRESENTATIONS

WEDNESDAY, AUGUST 4

8:30–10:00 a.m. Ballroom G



Jeff Kodosky, Cofounder and Business and Technology Fellow, [National Instruments](#)
Join Jeff Kodosky, coinventor and “Father of LabVIEW” with more than 30 patented LabVIEW technologies, as he shares his vision for tackling challenging timing problems with LabVIEW, the future of graphical system design, and the possibilities it presents for engineers and scientists.



John Pasquarette, Vice President of Software Product Marketing, [National Instruments](#)
In his 20 years with National Instruments, John Pasquarette has worked on many areas of the company's software platform as LabVIEW has expanded from a virtual instrumentation tool into embedded design and development, math and signal processing, and advanced control. Watch as John and NI R&D engineers explore cutting-edge products and technologies that enable new applications and change the way engineers and scientists design, build, and test complex systems.

THURSDAY, AUGUST 5

8:30–10:00 a.m. Ballroom G



Ray Almgren, Vice President of Software, Education, and Training, [National Instruments](#)
As a 23-year NI veteran, Ray Almgren is the visionary behind the company's efforts to create dynamic, hands-on engineering and science education that empowers the innovators of tomorrow. Join Ray and student teams from around the world as they showcase innovative solutions using graphical system design that tackle socially relevant engineering challenges.



Dr. Michio Kaku, Theoretical Physicist, [City College of New York](#)
Physicist, professor, and author Dr. Michio Kaku holds the Henry Semat Professorship in Theoretical Physics at the City College of New York and the Graduate Center of the City University of New York. He also has taught physics at Harvard and Princeton. He is the cofounder of string field theory and has written doctorate-level textbooks that are required reading at many of the world's leading physics laboratories. Dr. Kaku has appeared on the *Larry King Show*, *60 Minutes*, *20/20*, and *Good Morning America* and hosted numerous documentaries on the Discovery Channel, Science Channel, and BBC about the future. He has also interviewed more than 300 top scientists to provide the most accurate description of the next 20 years. His best-selling science books include *Hyperspace*, *Visions*, *Parallel Worlds*, *Beyond Einstein*, *Einstein's Cosmos*, and *Physics of the Impossible*.

CONFERENCE INFORMATION

On-Site Check-In Hours

| | | | |
|-------------------|---------------------|---------------------|---------------------|
| Sunday, August 1 | 7:30 a.m.–5:00 p.m. | Wednesday, August 4 | 7:30 a.m.–6:00 p.m. |
| Monday, August 2 | 7:00 a.m.–7:00 p.m. | Thursday, August 5 | 7:30 a.m.–1:00 p.m. |
| Tuesday, August 3 | 7:30 a.m.–6:00 p.m. | | |

Daily Continental Breakfast

8:00–10:00 a.m. Ballroom Foyer

Daily Lunch

11:30 a.m.– 1:00 p.m. Exhibition Hall

Lunch is provided for full-conference attendees and Expo Plus Pass holders. Conference name badges are required for admission.

Afternoon Breaks

Enjoy refreshments between sessions on the third floor outside Room 18.

Exhibition Hall Hours

| | | | |
|-------------------|----------------------|---------------------|----------------------|
| Monday, August 2 | 5:30–7:30 p.m. | Wednesday, August 4 | 10:00 a.m.–5:00 p.m. |
| Tuesday, August 3 | 10:00 a.m.–7:30 p.m. | Thursday, August 5 | 10:00 a.m.–1:00 p.m. |



NATIONAL INSTRUMENTS CAMPUS TOUR

Visit National Instruments headquarters to tour the manufacturing facilities and view the results of more than three decades of innovation. Discover how NI has integrated its campus into a native Texas landscape that promotes the NI culture. Also learn how NI reduces its environmental impact and creates a better world for employees, customers, and fellow global citizens.

Shuttle runs from the Austin Convention Center to National Instruments.

Thursday, August 5 10:00 a.m.–12:30 p.m. Austin Convention Center Registration Area



VISIT THE NI STORE

Take the NIWeek experience home with you. Visit the NI Store, located near the dining area in the Exhibition Hall, to purchase NI merchandise including stylish men’s polos and other apparel. The store accepts American Express, MasterCard, and VISA.

Open during Exhibition Hall hours.

SOCIAL MEDIA @NIWeek

STAY CONNECTED AT NIWeek

NIWeek offers online networking opportunities so you can keep in touch with colleagues, NI developers, and thousands of new friends during the conference and beyond. Join the NIWeek Community at **ni.com/niweekcommunity** to experience the following:

- Get real-time conference updates
- Watch videos of expo floor demos
- Read blog posts about conference activities
- Download code from top NIWeek demos
- Network with attendees
- Get access to session presentations



ni.com/community

Visit the NI Developer Community to share LabVIEW feature ideas, download example code, learn about cutting-edge technologies, and connect with a worldwide community of LabVIEW and other NI product experts who work on similar applications.



facebook.com/labview

Want to be friends? Stay up to date on the latest news, case studies, events, and resources by “liking” National Instruments, LabVIEW, or NIWeek on Facebook. Also, it is a great way to reconnect with fellow developers.



twitter.com/labview

Broadcast brief messages to colleagues and other attendees from your laptop or mobile phone and receive valuable conference information from National Instruments staff. Remember to type *#niweek* in your message to send updates to the entire NIWeek Community on Twitter.



youtube.com/labview

View videos contributed by NI staff and other NIWeek attendees of cool product demonstrations from the NIWeek exhibition as well as interviews with NI leadership and industry experts.



bit.ly/NILinked

Make a lot of new contacts at NIWeek? Build your network of connections on LinkedIn and exchange information, ideas, and professional opportunities.

EVENING ACTIVITIES

By attending NIWeek, you have multiple opportunities to meet product experts, share best practices with engineers working on similar applications, and exchange programming tips with LabVIEW Champions. Network and relax with fellow NIWeek attendees at the following events:



NIWeek KICKOFF HAPPY HOUR

Start your NIWeek experience with an evening of drinks, music, and networking with NI sales engineers, National Instruments Alliance Partners, the NI R&D team, LabVIEW Champions, other NIWeek attendees, and exhibitors.

Monday, August 2 5:30–7:30 p.m. Exhibition Hall



NI COMMUNITY BLOCK DIAGRAM PARTY

Enjoy food, drinks, music, and good company at one of the hottest parties in downtown Austin! Share best practices and ideas with fellow engineers and scientists from around the world. Also meet with industry leaders in design, control, and test to discuss the latest innovations in technology.

Tuesday, August 3 5:00–7:30 p.m. Exhibition Hall



ANNUAL NIWeek CONFERENCE PARTY

Put engineering and learning about the latest technological advancements aside and unwind Austin-style at this popular conference event. Enjoy Texas cuisine, cold drinks, and a memorable evening with thousands of new friends. Dance the night away to the musical stylings of one of Austin’s coolest cover bands or simply kick back and listen to the hits you know and love.

Transportation provided by Canon Communications.

Wednesday, August 4 7:00–10:30 p.m. The Bob Bullock Texas State History Museum (Museum tours not available.)

NETWORKING ACTIVITIES

TEXAS DAY NETWORKING LUNCHEON

Texas Day attendees can join fellow Texans for a luncheon in the Exhibition Hall Café. At reserved tables, attendees are seated in industry and product groups with fellow NI customers, NI engineers, and experts. Explore a variety of topics, discuss industry news, and gain firsthand knowledge on technology and insights for best practices to tackle your projects, applications, and business challenges. Designed to expand your skills in the area of your choice, tables are organized around key Texas industries and common applications in test, measurement, and control. Industry topics include energy, semiconductor, military/aerospace, RF and wireless test, and academia.

Tuesday, August 3 11:30 a.m.–1:00 p.m. Exhibition Hall Café

PEER2PEER ROUNDTABLES

Network with your peers and NI developers and discuss best practices and challenges within your application, job position, or industry. Grab your lunch and meet at the designated tables in the dining area of the Exhibition Hall at noon. Roundtable topics vary by day.

| | | | |
|---------------------|----------------|----------------|--|
| Tuesday, August 3 | Table 1 | Noon–1:00 p.m. | Data Management Luncheon |
| | Tables 2 and 3 | Noon–1:00 p.m. | NI LabWindows™/CVI Developers |
| | Tables 4 and 5 | Noon–1:00 p.m. | NI TestStand Developers |
| Wednesday, August 4 | Table 1 | Noon–1:00 p.m. | Automotive Networks and NI-XNET Overview |
| | Tables 2 and 3 | Noon–1:00 p.m. | LabVIEW for Medical Device Test and Design |
| | Tables 4 and 5 | Noon–1:00 p.m. | LabVIEW Leaders Lunch |
| | Table 6 | Noon–1:00 p.m. | Acoustic Engineering and Analysis |
| Thursday, August 5 | Table 1 | Noon–1:00 p.m. | Vibration Analysis and Condition Monitoring Best Practices |
| | Tables 2 and 3 | Noon–1:00 p.m. | LabVIEW Design Pattern Best Practices and Challenges |

A new era, a new ESC

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Entering into its 21st year in Boston, ESC brings together systems architects, design engineers, suppliers, analysts, and media from across the globe. With cutting edge product demonstrations, visionary keynotes, and hundreds of essential training classes, ESC is the ideal conference for the embedded design community to learn, collaborate, and recognize excellence.

ESC Boston 2010 Tracks Include:

- Aerospace and Military
- Designing with Open Source Software, including Linux and Android
- Developing for Windows Embedded
- Graphics, Display and Lighting
- Industrial, Automation, and Robotics
- Medical
- Multicore and Virtualization
- Multimedia and Signal Processing
- Networking, Connectivity, and Embedded Internet
- Programmable Logic
- Project Management
- Real Time System Development
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- Software Debugging Techniques
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Freescale lets you embed green intelligence into every design. Think fuel-efficient, low-emissions automobiles. Or home appliances that reduce energy consumption during peak hours. Or smart meters that speed the flow of energy from wind and sun to the power grid. Here's to a smarter, greener world. freescale.com/energy

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| 100 kHz to 26.5 GHz | broadband coverage | dual use: military & commercial |
| wideband/narrowband IFs | speed/dynamic range | user measurement options |
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| six user configurations | user flexibility | solution tailored to user needs |
| modular PXI/PXIe solution | incremental technology upgrade | increase performance over time/obsolescence mitigation |

26.5 GHz ○ 26.5 GHz ○ 26.5 GHz ○ 26.5 GHz ○ 26.5 GHz



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SPECIAL EVENTS

In addition to a variety of technical sessions, NIWeek gives you multiple opportunities to meet industry experts and academic leaders, learn about engineers in the NI Community, and enhance your product knowledge and expertise throughout the conference during the following special events:

BIG PHYSICS SYMPOSIUM **NEW**

Join engineers and scientists from major labs around the world in sharing success stories and new technologies for control, measurement, and diagnostics.

ACADEMIC FORUM

Experience NIWeek with fellow educators and students to learn more about what's new in NI hardware and software for academia.

BUSINESS FORUM **NEW**

Learn and discuss industry best practices to better manage automated testing and how to make a larger impact in your organization.

COMMUNITY EXCHANGE **NEW**

Get connected with innovative thought leaders and learn about cutting-edge technologies driven by the NI Community.

GRAPHICAL SYSTEM DESIGN ACHIEVEMENT AWARDS

Recognize the most innovative user applications based on National Instruments software and hardware.

INDUSTRY EXPERTS PANEL

Participate in an interactive discussion on the top technical hurdles and most promising solutions to move world energy production to clean, sustainable technologies.

TRAINING AND CERTIFICATION

Gain in-depth product knowledge, learn best practices for developing applications, and validate your skills.

BIG PHYSICS SYMPOSIUM

Held in conjunction with NIWeek, the Big Physics Symposium brings together scientists and researchers from major labs around the world and specialized vendors to share success stories, challenges, and new technologies. Join other engineers and scientists in networking and learning best practices and instrumentation strategies that can be applied in control, measurement, and diagnostics.



KEYNOTES

COTS Technology for Measurement, Diagnostics, and Control

Commercial off-the-shelf (COTS) systems take advantage of innovations in the computer industry to meet measurement and control needs. Examine rapid application development through various models of computation, multicore, and field-programmable gate array (FPGA) systems for instrumentation and interoperability between software and hardware platforms.

Dr. James Truchard, CEO, [National Instruments](#)

Monday, August 2 8:30–9:00 a.m. Room 8A/B/C

Fusion-Enabled Fission Nuclear Energy: Green, Plentiful, and Sustainable

Successful implementation of fusion and fission can usher in an era of green and nuclear energy. Learn about the underlying technical ideas and details of the crucial innovations and how they make the hybrid a near-term project when direct production of net fusion energy remains a distant dream.

Dr. Swadesh Mahajan, Senior Research Scientist,
[The University of Texas at Austin](#)

Monday, August 2 1:00–1:30 p.m. Room 8A/B/C

TECHNICAL SESSIONS

Thomson Scattering Diagnostics on COMPASS Tokamak

Thomson scattering diagnostics measure profiles of electron temperature and density inside the tokamak during the plasma shot. Explore how ELCOM built a 120-channel digitizer system for Thomson scattering diagnostics with complete timing and synchronization and minimum skew and jitter.

Dr. Daniel Kaminsky, Division Director, [ELCOM](#)

Monday, August 2 9:00–9:30 a.m. Room 8A/B/C

Detection of Fast Transients in Superconducting Magnets Using the Entube Sensor

As one of the main U.S. technological contributions at CERN, the Superconducting Magnet Program at Lawrence Berkeley National Laboratory is working to develop high-performance superconducting-focusing quadrupoles to upgrade the Large Hadron Collider (LHC). Learn how the data acquisition setup and analysis were implemented and ways the arrangement could be used to prevent power transmission and detect motor faults.

Dr. Juan Lizarazo, Senior Scientist Engineer Associate,
[Lawrence Berkeley National Labs](#)

Monday, August 2 9:30–10:00 a.m. Room 8A/B/C

Rapid Application Development Environment for Software Infrastructure at CERN

CERN developed a Rapid Application Development Environment (RADE) based on LabVIEW to create applications with a tool that provides full integration into the CERN accelerator control software infrastructure. Learn about RADE experiences during commissioning of the Large Hadron Collider.

Dr. Alessandro Raimondo, Industrial Controls Engineer, [CERN](#)

Monday, August 2 10:30–11:00 a.m. Room 8A/B/C

BIG PHYSICS SYMPOSIUM

Using the LabVIEW FPGA Module in Accelerator Instrumentation

The Beam Instrumentation Group at the Spallation Neutron Source measures loss, charge, and position of the particle beam that produces the neutrons. Learn about the development experience and how to maintain a beam accounting system that uses FPGAs programmed directly with Xilinx tools, LabVIEW FPGA, and CompactRIO hardware.

Dr. Willem Blokland, Engineer, [Oak Ridge National Lab](#)

Monday, August 2 11:00–11:30 a.m. Room 8A/B/C

Requirements and Challenges of a Common Interfacing and Control Strategy

Diverse and complex operation scenarios require an array of technologies ranging from huge unmanned transport vehicles to sophisticated 2D and 3D vision and measurement devices. Gain an overview of remote handling (RH) requirements and challenges.

Ignazio Piacentini, CEO, [ImagingLab](#)

Monday, August 2 1:30–2:00 p.m. Room 8A/B/C

New Technologies for Timing, Triggering, and Synchronization

Most physics applications, from accelerators to tokomaks, involve many channels spread over long distances that require precise timing and synchronization with minimum skew and jitter. Explore new timing and synchronization technology that uses Ethernet for deterministic data transfer and timing network and automatically compensates for transmission delays.

Adam Ullrich, Group Manager, [National Instruments](#)

Monday, August 2 2:00–2:30 p.m. Room 8A/B/C

Using the NI Hardware Platform on a Linux OS

The need for diagnostic and control instrumentation to run on Linux has become the norm for physics experiments. Learn about a novel approach to run COTS hardware on different Linux distributions and the results of running a data acquisition system.

Dr. Al Vrancic, Chief Architect, [National Instruments](#)

Monday, August 2 2:30–3:00 p.m. Room 8A/B/C

New Tools and Technologies for Control, Measurement, and Diagnostics Applications

Learn about the new programmatic interface to automatically turn NI hardware into an EPICS Channel Access Server. Also discuss the latest NI FlexRIO adapter modules that can help you quickly implement FPGA algorithms for time-of-flight measurements and beam positioning instrumentation.

Thierry Debelle, Senior Systems Engineer,
[National Instruments](#)

Monday, August 2 3:30–4:00 p.m. Room 8A/B/C

Using the NI Platform for a High-Power Ultrafast Laser

Lasers are research-oriented tools that many nonspecialists need to use in a simple and safe way. Learn how NI hardware and software platforms can interface with the components of a laser chain to drive main functions, monitor major settings, and store them for later analysis.

Jean-Francois David, Engineer, [Arcale](#)

Monday, August 2 4:00–4:30 p.m. Room 8A/B/C

ACADEMIC FORUM

Participate in the NIWeek Academic Forum along with hundreds of fellow educators, researchers, and graduate students to learn more about what’s new in National Instruments hardware and software for academia. Attend sessions delivered by your peers to understand how they use NI technology to advance and improve their classrooms, labs, and engineering educations.



KEYNOTE

Technologies to Do Engineering

Join Ray Almgren and Dave Wilson as they demonstrate the latest tools that enable educators and students to do engineering. Also look at several programs from K–12 and higher education that are improving the learning experience and inspiring the next generation of innovators through a hands-on design approach that gives them the tools to meet the world’s greatest challenges.

Ray Almgren, Vice President of Software, Education, and Training, and Dave Wilson, Director of Academic Marketing, [National Instruments](#)

[Monday, August 2](#) [11:30–1:00 p.m.](#) [Ballroom A](#)

| Schedule | | Location | Monday, August 2 |
|--------------------|--|-----------------------------------|-----------------------------------|
| UT Lab Tours | | The University of Texas at Austin | 8:30–11:15 a.m. |
| Technical Sessions | | Ballrooms B and C | 9:00–11:00 a.m. 1:00–5:45 p.m. |
| Lunch Keynote | | Ballroom A | 11:30 a.m.–1:00 p.m. |

ACADEMIC FORUM – UT LAB TOURS

Tour some of the cutting-edge labs at The University of Texas at Austin to see work in various application areas and how NI technology is used to further academic research.

Mechanical Engineering Dynamic Systems and Controls Lab

The goal of this junior/senior-level undergraduate laboratory core course is to provide practical hands-on experience in modeling, analysis, simulation, and control of engineering systems. Emphasis is given to developing and using experimental techniques in LabVIEW for simulation, data analysis, and data acquisition. Watch a demonstration of a novel vision-based control experiment using a webcam and USB data acquisition.

Electrical and Computer Engineering
Wireless Networking and Communications Group (WNCG)

The WNCG is an interdisciplinary center for research and education in wireless networking, communications, and related industry applications. The Wireless Communications lab course takes an experimental approach to wireless digital communication. Theory in the classroom is translated directly into practice with the help of the NI PXI RF platform and LabVIEW Modulation Toolkit. The course emphasizes physical layer concepts rather than implementation considerations. Specific topics covered include bandwidth, sampling, complex baseband equivalent representation, upconversion, downconversion, narrowband signals, channel estimation, and software-defined radio principles.

Biomedical Engineering Instrumentation and Senior Design Labs

Visit the new Biomedical Engineering Building and see the new Undergraduate Teaching Lab and Senior Design Lab. Students use LabVIEW software, the NI Educational Laboratory Virtual Instrumentation Suite (NI ELVIS), and PXI modular instruments to learn the basics of instrumentation for recording and displaying electrophysiological signals including pressure, flow, temperature, ultrasonics, and bioelectric signals. Also, students use the equipment to develop a biomedical system for a one-semester senior design project.

Tour participants should meet in the registration area for transportation.

[Monday, August 2](#) [8:30–11:15 a.m.](#) [The University of Texas at Austin](#)



ACADEMIC FORUM

CLAD Testing for Academic Forum

As an Academic Forum attendee, take the official test to become a Certified LabVIEW Associate Developer during the NIWeek Academic Forum.

Brad Armstrong, Product Manager, [National Instruments](#)
Monday, August 2 9:00–11:00 a.m. Ballroom B

NI Multisim and NI ELVIS

Get hands-on training with the industry-leading circuits teaching platform using Multisim and NI ELVIS.

Sandra Tso, Product Manager, [National Instruments](#)
Monday, August 2 9:00–10:00 a.m. Ballroom C

Incorporating LabVIEW into the First-Year Student Experience

First-year engineering students at Purdue University take an introductory problem-solving course that uses computers. The course has traditionally been taught using The MathWorks, Inc. MATLAB® software, but an experimental section used LabVIEW to introduce design and computing concepts. Explore quantitative and qualitative results of the pilot course.

Gregory Bucks, Graduate Assistant, and
William Oakes, Associate Professor of Engineering Education and Director of EPICS, [Purdue University](#)
Monday, August 2 1:00–1:45 p.m. Ballroom B

Undergraduate Controls Course with LabVIEW and NI Single-Board RIO

Discuss the use of LabVIEW and NI Single-Board RIO in an undergraduate controls course and learn how the LabVIEW Control Design and Simulation and LabVIEW MathScript RT modules were used extensively for homework, lab exercises, and in-class demonstrations.

George Anwar, Lecturer, [University of California, Berkeley](#)
Monday, August 2 1:00–1:45 p.m. Ballroom C

Multidiscipline Teaching with the NI ELVIS Ecosystem
Explore a range of third-party plug-in modules from leading companies such as Quanser, Emona, and Freescale for the NI ELVIS platform. Learn how educators are providing a dynamic learning environment with NI ELVIS and plug-in modules for understanding concepts including circuits, biomedical, green energy, microprocessors, controls, and telecommunication.

Sandra Tso, Product Manager, [National Instruments](#)
Monday, August 2 2:15–3:00 p.m. Ballroom B

Student Design Showcase Winners

Learn about the student category finalists of the Graphical System Design Achievement Awards. Discover how student teams incorporated LabVIEW and graphical system design to tackle socially relevant engineering challenges.

Mark Walters, Product Manager, [National Instruments](#)
Monday, August 2 2:15–3:00 p.m. Ballroom C

Digital Circuits Laboratory Projects with LabVIEW FPGA
LabVIEW FPGA offers a completely new approach to the design, simulation, and implementation of digital circuits and systems on an FPGA development board. Learn how to apply LabVIEW FPGA in all aspects of an introductory digital circuits course and laboratory including combinational and sequential logic, state machines, and controller data path systems.

Ed Doering, Professor, [Rose-Hulman Institute of Technology](#)
Monday, August 2 3:00–3:45 p.m. Ballroom B

Zen, PID Control, and the Art of Lock Picking: Individual USB Data Acquisition Devices in a Controls Laboratory
Explore the development and implementation of a new mechanical engineering controls laboratory course built around the integration of individual control experiments, LabVIEW, and student-owned USB data acquisition devices. The focus of the course is to build physical intuition of controls through a series of lab experiences with simple, hands-on thermal, optical, and mechanical experiments.

Scott Banks, Professor, and
Gregory Sawyer, Professor, [University of Florida](#)
Monday, August 2 3:00–3:45 p.m. Ballroom C

Hands-On: Design in the Freshman to Senior Engineering Curriculum
Discover how enabling engineering students to engage in the hands-on design experience in lecture, laboratory, and capstone design courses builds motivation and experience. Also gain insight into fundamental principles to accelerate learning.

Dr. William Kaiser, Professor,
[University of California, Los Angeles](#)
Monday, August 2 4:15–5:00 p.m. Ballroom B

Bridge Structural Health Monitoring: Learning Experiences with PASCO and NI CompactDAQ
Monitoring the health of aging bridges is one of the most important topics in infrastructure engineering. Learn about a new teaching tool that involves small-scale bridge models and sensors developed by PASCO, NI CompactDAQ, and LabVIEW. Students can access the experiment and data over the Web using LabVIEW remote panels.

Chaojun Huang, Graduate Student,
Srivishnu Vemuru, Graduate Student, and
Satish Nagarajaiah, Professor of Civil and Mechanical Engineering, [Rice University](#)
Monday, August 2 4:15–5:00 p.m. Ballroom C

Teaching LabVIEW in the Technical School
Discover how one professor implemented a LabVIEW course at a two-year technical college to offer future electronics technicians the most widely used engineering software, LabVIEW.

Tom Reid, Professor, [Anoka Technical College](#)
Monday, August 2 5:00–5:45 p.m. Ballroom B

Panel Discussion: The Future of Electronics Engineering Education
Join Dr. Adel Sedra, author of *Microelectronic Circuits*, and leading educators to discuss the future of electronics engineering education. Discuss the current trends and challenges and learn how to improve the learning experience to inspire the next generation of innovators.

Dr. Adel Sedra, Professor, [University of Waterloo](#)
Dr. William Kaiser, Professor, [University of California, Los Angeles](#)

Dr. Tony Ambler, Chairman of the Department of Electrical Engineering, [The University of Texas at Austin](#)
Dr. James McClellan, Professor, [Georgia Tech](#)
Dr. Delores Etter, Professor, [Southern Methodist University](#)
Monday, August 2 5:00–5:45 p.m. Ballroom C

BUSINESS FORUM

The NIWeek Business Forum sessions are designed to focus on the business issues around test system development, test engineering, and their integration into product development. Learn and discuss industry best practices to better manage your automated testing and how to make a larger impact in your organization.



The Evolution and Change of Alcatel-Lucent Wireless Test Engineering

Learn how Alcatel-Lucent successfully navigated a significant business slowdown and increased pressure from global competitors by implementing standard hardware and software platforms for all new testers. Despite a 75 percent reduction in force and an increasingly global manufacturing process, Alcatel-Lucent achieved a 5X reduction in annual capital expenses and reduced the time required to bring a new tester online by 60 percent.

David A. Huddleston, Test Manager of Software, and
James H. Mosher, Test Manager of Hardware,
[Alcatel-Lucent USA Inc.](#)

Wednesday, August 4 10:30–11:30 a.m. Room 3

Understanding the True Cost of Test

The cost of test is more than the capital equipment cost of the test system. Look at how development, deployment, and operational costs are combined to create the true cost of test. Also discuss how best to manage and reduce these costs.

Matthew Friedman, Senior Product Manager,
[National Instruments](#)

Wednesday, August 4 1:00–2:00 p.m. Room 3

The Business of Obsolescence Planning

Individual measurement products and technologies may have shorter life cycles than the application they are in. Life-cycle mismatches can be managed through a variety of sustainment strategies. Gain insight into the business side of these strategies and ways to select the approach that minimizes life-cycle costs.

Nick Warren, Group Manager, [National Instruments](#)

Wednesday, August 4 2:15–3:15 p.m. Room 3

Building Strategic Supplier Relationships

Learn why National Instruments and its suppliers place such a strategic importance on the nature of their relationship. Learn about the NI philosophy in maintaining strong supplier relationships, identify examples of that philosophy in practice, and provide supplier success stories.

Scott Christman, Global Supply Chain Director,
[National Instruments](#)

Wednesday, August 4 3:30–4:30 p.m. Room 3

Building Consensus for Change in Your Organization

Building consensus for change in an organization can be challenging. Learn how to get started with a plan and handle common hurdles. Also discuss the fundamental pieces of planning and learn how to gain alignment within your organization to achieve lasting success.

Jay Grassel, Regional Sales Manager, [National Instruments](#)

Wednesday, August 4 4:45–5:45 p.m. Room 3

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COMMUNITY EXCHANGE

From an iPhone-controlled car to a first look at the community-driven innovations in LabVIEW, the NIWeek Community Exchange shares new technologies and connects you to innovative thought leaders. Network with colleagues and members of the NI Community during these interactive sessions.



Top Five Reasons Engineers Should Give a Tweet and Use Social Media

Engineers and scientists around the world are using social networks and online communities to connect and learn with other engineers. Learn how to be successful online and why engineers should care about using social networks.

Deirdre Walsh, Community Manager, [National Instruments](#)

Tuesday, August 3 10:30–11:30 a.m. Room 11A

Popcorn Tweets: LabVIEW Goes Viral

Learn how the world’s first Twitter-powered popcorn machine, programmed in LabVIEW, became a viral video. Listen to JKI engineer Justin Goeres as he explains how he used LabVIEW and LabVIEW add-ons to create a machine that monitors Twitter for *#popcorn* Tweets, dispenses popcorn kernels, and makes real popcorn.

Justin Goeres, Engineer, [JKI](#)

Tuesday, August 3 1:00–2:00 p.m. Room 11A

LabVIEW Features from the Idea Exchange

Explore the 13 new features suggested by the community and implemented by R&D. Also learn how to get your own ideas featured in the next version of LabVIEW.

Todd Sierer, Product Manager, [National Instruments](#)

Tuesday, August 3 2:15–3:15 p.m. Room 11A

There’s an App for That

Discover how the engineers of Waterloo Labs built an iPhone application to remotely control an Oldsmobile Eighty-Eight Royale. Explore how they created an automobile control system connected by a wireless network to control the car from an iPhone, Power Wheels, a computer, and other devices as well as other DIY Waterloo Labs applications.

Will Schoettler, Engineer, [Waterloo Labs](#)

Tuesday, August 3 3:30–4:30 p.m. Room 11A

LabVIEW on TV: Confirmed, Plausible, or Busted?

Take a break and watch your favorite programming language on the big screen. Listen to the engineers behind the systems explain how NI products were used in TV shows, and view LabVIEW clips from Spike TV’s *Deadliest Warrior* and *Crash Test*, and Discovery Channel’s *Mythbusters*.

David Harding, Engineer, and
Nathan Yang, Product Manager, [National Instruments](#)

Tuesday, August 3 4:45–5:45 p.m. Room 11A

The Blogosphere’s Best

The blogosphere is full of forward-thinking and innovative engineers. Hear from the top NI bloggers on topics including LabVIEW Robotics, large application development, multicore programming, virtualization, and blogging best practices.

Emilie Kopp, Robotics Business Developer,
Darren Nattinger, Senior Software Engineer,
Christina Rogers, Senior Software Engineer, and
Elijah Kerry, Product Manager, [National Instruments](#)

Wednesday, August 4 10:30–11:30 a.m. Room 11A

LabVIEW Add-On of the Year: Product Gallery

Following the presentation of the LabVIEW Add-On of the Year Award during the NI Community *Block Diagram* Party on Tuesday night, attendees have the opportunity to learn more from the finalists and winners during Community Exchange. Gain an overview of the Compatible with LabVIEW program guidelines and view in-depth product demonstrations from the finalists and winner.

Robert Des Rosier, Engineer, [National Instruments](#)

Wednesday, August 4 1:00–2:00 p.m. Room 11A

We Are the Champions

Do you have dreams of becoming a LabVIEW champion? Learn from the top LabVIEW community members who are recognized for their leadership, expertise, and contributions to the technical community. NI LabVIEW Champions are credible technology experts from around the world who inspire others to learn and grow with LabVIEW.

Ed Dickens, Systems Engineer, [DISTek Integration](#)

James Kring, CEO, [JKI](#)

Christopher Relf, Principal Architect, [V I Engineering](#)

Nancy Hollenback, LabVIEW Instructor and Architect,
[The G Team](#)

Wednesday, August 4 2:15–3:15 p.m. Room 11A

COMMUNITY EXCHANGE

Even a Caveman Can Do It – Boost Your Car’s Horsepower with Hardware Based on LabVIEW

Watch a high school student demonstrate how he ported the LabVIEW Embedded Module for ARM Microcontrollers to custom hardware and used Multisim to create a turbo boost value control circuit. Learn how to create an analog circuit that increases boost pressure of a stock turbo by adjusting the PWM signal.

Greg Crouch, Sales Manager, [National Instruments](#)

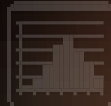
Wednesday, August 4 3:30–4:30 p.m. Room 11A

Long-Term Investment in Test: Building Common Core Test Platforms

As we build our way back from challenging economic times, many companies are investing in long-term test platforms. Gain an introduction to platform-based architectures, and learn about NI software and hardware used by industry leaders, how to implement these tools using NI software development environments, and hardware technologies including distributed/shared resources.

Christopher Relf, Principal Architect, [V I Engineering](#)

Wednesday, August 4 4:45–5:45 p.m. Room 11A

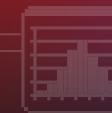


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The Graphical System Design Achievement Awards recognize the most innovative user applications based on National Instruments software and hardware. This year more than 150 authors from around the world submitted technical papers that depict their greatest achievements in graphical system design.

Visit the contest poster display, located outside Ballroom D, to learn about the finalist's applications for each of the seven application categories: Academic Research and Education, Machine Control and Monitoring, Medical Device Design and Development, Prototype and Validation Test, Robotics, Test and Measurement, and Wireless Monitoring.

Winners of each category as well as the recipients of four featured awards – Green Engineering, Humanitarian, Editor's Choice, and the 2010 Application of the Year – will be announced at the invitation-only awards dinner on Tuesday, August 3.

ACADEMIC RESEARCH AND EDUCATION

Developing an Integrated Focused Magneto-Optical Kerr Effect (MOKE) Magnetometer Using NI PXI and LabVIEW

*by S. Jain, A.O. Adeyeye, and Y. Ren,
National University of Singapore, Singapore*

Using CompactRIO for Control and Measurement in the Low-Voltage Marine Substation at the Lysekil Wave Power Research Site

by O. Svensson, Uppsala University, Sweden

MACHINE CONTROL AND MONITORING

Controlling Echogen Power Systems Waste Heat Engine with NI Software and Hardware

by Darryn R. La Zar, Wineman Technology, USA

Performing Aircraft Jet Plume Noise Measurements

Using LabVIEW Software and PXI Hardware

*by Michael James, Blue Ridge Research and Consulting, and
Dr. Kent Gee, Brigham Young University, USA*

MEDICAL DEVICE DESIGN AND DEVELOPMENT

Measuring Fetal Heart Rates Accurately and Safely Using LabVIEW and NI Hardware

*by Gan Kok Beng, Edmond Zahedi, and Mohd. Alauddin Mohd. Ali,
Universiti Kebangsaan Malaysia, Malaysia*

Using LabVIEW Software to Develop the Canary System for Early Detection and Monitoring of Tooth Decay

*by Dr. Koneswaran Sivagurunathan,
Quantum Dental Technologies, Canada*

PROTOTYPE AND VALIDATION TEST

CompactRIO and LabVIEW Deliver a State-of-the-Art Control System

by Shahzad Sarwar, Innosiv Engineering, Canada

Developing an Inertial Pipeline Inspection Gauge with LabVIEW and CompactRIO

*by Ricardo Artigas Langer, Gustavo Emmendoerfer,
and Walter Antônio Kapp, EngeMOVI,
and Winderson Eugênio dos Santos, UTFPR, Brazil*

ROBOTICS

Building a Semiautonomous Vehicle Driven by the Visually Impaired with LabVIEW and CompactRIO

*by Kimberly Wenger, Greg Jannaman, and Dr. Dennis Hong,
Virginia Tech, USA*

Designing a Robotic Device to Study Flying Insects Using LabVIEW and CompactRIO

*by Chauncey Graetzel, Steven Fry, and Bradley Nelson, ETH Zurich,
Daniel Schwyn and Holger Krapp, Imperial College, London,
and Chris Rogers, Tufts University, USA*

TEST AND MEASUREMENT

Reducing Test Time and Increasing Quality in Final Control System Tests for Wind Turbines

*by Morten Pedersen and Michael Bove,
CIM Industrial Systems A/S, Denmark*

The ISIS Proton Synchrotron – Beam Data Acquisition and Analysis Using PXI and LabVIEW

*by Bryan Jones and Sarah Whitehead,
ISIS Science and Technology Facilities Council, UK*

WIRELESS MONITORING

Developing a Telemetry System for a Solar Car

by Neo Wei Ren, Nanyang Technological University, Singapore

Monitoring Atmospheric Ozone on the Global Hawk Unmanned Aeronautical Vehicle with CompactRIO

*by Laurel A. Watts and Troy Thornberry,
Cooperative Institute for Research in Environmental Sciences,
University of Colorado, Boulder, USA, and Ru-Shan Gao,
Steven J. Cicora, and David W. Fahey, NOAA, USA*

INDUSTRY EXPERTS PANEL

Maximize your NIWeek conference experience by attending the Industry Experts Panel. Learn from leading industry experts at this interactive panel discussion where you have the chance to ask direct questions regarding trends in clean energy technology.



Clean Energy Technology – The Ultimate Deployment Challenge

The world’s appetite for energy is quickly growing, making it increasingly urgent to deploy cleaner alternatives for economic, environmental, and security reasons. How can green engineers and scientists lead the way? What are the most important hurdles to overcome? How do clean energy technology breakthroughs make it from design to prototype to mass deployment and adoption? What is the role of smart grid and energy storage technologies? Listen as a panel of experts shares thoughts on this growing challenge and how engineers and scientists are at the forefront of innovative solutions.

Allan Schurr, Vice President of Strategy, [IBM Global Energy and Utilities Industry](#)

Robert Metcalfe, Inventor, [Ethernet](#), and Founder, [3Com](#)

Don Cortez, Vice President of Distribution Support, [CenterPoint Energy](#)

Karl Rábago, Vice President for Distributed Energy Services, [Austin Energy](#)

Owen Golden, Vice President of Energy, [National Instruments](#)

Wednesday, August 4 3:30–5:45 p.m. Ballroom D

TRAINING AND CERTIFICATION

Take advantage of training and certification exam offerings to supplement your NIWeek experience. Offered at the Austin Convention Center, training and certification exams help advance and validate your development skills. Visit the NI Services and Training Pavilion to register for a certification exam. Seating is limited, so register today.

TRAINING AND CONTINUING EDUCATION

Gain in-depth product knowledge and learn best practices for developing applications by attending a two-day training course that begins two days prior to NIWeek. By taking each course, you can earn 1.4 CEUs to maintain a professional status such as Professional Engineer. The following courses are offered as two-day modules from Sunday, August 1, to Monday, August 2:

- LabVIEW Core 2
- LabVIEW Performance
- Managing Software Engineering in LabVIEW
- LabVIEW FPGA
- Data Acquisition and Signal Conditioning

CERTIFICATION EXAMS

Validate your skills by taking certification exams for LabVIEW, LabWindows/CVI, and NI TestStand. During NIWeek, you can take the one-hour Certified LabVIEW Associate Developer (CLAD) exam for only \$99 USD and all other exams for \$199 USD. In addition, you can take any of the one-hour recertification exams for a special price of \$99 USD, including the new Certified LabVIEW Architect Recertification exam (CLA-R). Certification exam prep courses are offered at no cost.

| Certification Exam Prep Courses | Room | Monday, August 2 | Tuesday, August 3 – Thursday, August 5 |
|-----------------------------------|------|----------------------|--|
| Certified LabVIEW Developer (CLD) | 1 | 8:30 a.m.–12:30 p.m. | |
| Certified LabVIEW Architect (CLA) | 1 | 1:00–5:00 p.m. | |

Exam Schedule

| | | | |
|---|----|----------------------------------|--|
| Certified LabVIEW Associate Developer (CLAD) | 5C | 1:00–2:00 p.m. 3:30–4:30 p.m. | 10:30–11:30 a.m., 1:00–2:00 p.m., 3:30–4:30 p.m. |
| Certified LabVIEW Architect Recertification (CLA-R) | 5C | 1:00–2:00 p.m. 3:30–4:30 p.m. | 10:30–11:30 a.m., 1:00–2:00 p.m., 3:30–4:30 p.m. |
| Certified LabVIEW Developer Recertification (CLD-R) | 5C | 1:00–2:00 p.m. 3:30–4:30 p.m. | 10:30–11:30 a.m., 1:00–2:00 p.m., 3:30–4:30 p.m. |
| Certified TestStand Architect (CTA) | 5C | 1:00–2:00 p.m. 3:30–4:30 p.m. | 10:30–11:30 a.m., 1:00–2:00 p.m., 3:30–4:30 p.m. |
| Certified TestStand Developer (CTD) | 5C | 1:00–2:00 p.m. 3:30–4:30 p.m. | 10:30–11:30 a.m., 1:00–2:00 p.m., 3:30–4:30 p.m. |
| Certified LabVIEW Architect (CLA) | 5B | | 1:00–5:00 p.m. |
| Certified LabVIEW Developer (CLD) | 5B | | 1:00–5:00 p.m. |
| Certified LabWindows/CVI Developer (CCVID) | 5B | | 1:00–5:00 p.m. |

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TECHNICAL SUMMITS

The NIWeek technical summits give you the opportunity to focus your NIWeek experience in five targeted application areas. Attend the summit sessions to gain expertise, hear from industry leaders, and explore real-world applications using NI products.

ROBOTICS AND AUTONOMOUS VEHICLES SUMMIT

The proliferation of robotics is happening now; by 2020, robots will be part of everyday life from working in factories, construction, and maintenance to security, entertainment, and care.

ENERGY TECHNOLOGY SUMMIT NEW

Creating sustainable energy to meet worldwide demand is one of the greatest economic opportunities of the 21st century.

MILITARY AND AEROSPACE SUMMIT

As requirements for national defense and transportation become more complex, engineering applications need to evolve with market demands.

RF AND WIRELESS TEST SUMMIT

Increasing complexity in wireless devices requires test platforms to deliver fast, flexible, and accurate measurements from prototype to manufacturing.

VISION SUMMIT

From inspecting automotive parts to guiding industrial robots, machine vision has become an essential technology for ensuring quality and reducing production costs.

ROBOTICS AND AUTONOMOUS VEHICLES SUMMIT

The Robotics and Autonomous Vehicles Summit unites the world’s top roboticists, researchers, design engineers, and domain experts working on the design, simulation, prototyping, and deployment of robots and autonomous systems. With in-depth sessions and live demos on the expo floor, learn how to apply the latest technology from real-time devices, FPGAs, and graphical programming to design robotics systems faster than your peers.

KEYNOTES

Robot Evolution by Intelligent Design

Join Dr. Dennis Hong – recently named one of the “top 10 young geniuses shaking up science” by *Popular Science* – as he guides you through a whirlwind tour of some of the most advanced and exciting robotics projects at Virginia Tech. From novel robotic locomotion mechanisms in the STriDER robot, to the Blind Driver Challenge vehicle, to humanoids like DARwIn and CHARLI, Hong’s demonstrations and technical insight will inspire your own robotics projects.

Dr. Dennis Hong, Associate Professor, [Robotics and Mechanism Laboratory \(RoMeLa\)](#)
Tuesday, August 3 10:30–11:30 a.m. Room 17A

The Future of Ground Robotic Systems

Listen to Jim Overholt, chief roboticist of the U.S. Army, share success stories from the Department of Defense, including the computer-assisted robotics manipulator (CARMAN) and computer-assisted teleoperation (CATO) projects, and offer insight into current autonomous competitions and laboratory projects. Learn about deployed systems and how the U.S. Army plans to take advantage of the rapidly evolving IT market to embed intelligence and autonomy into future programs.

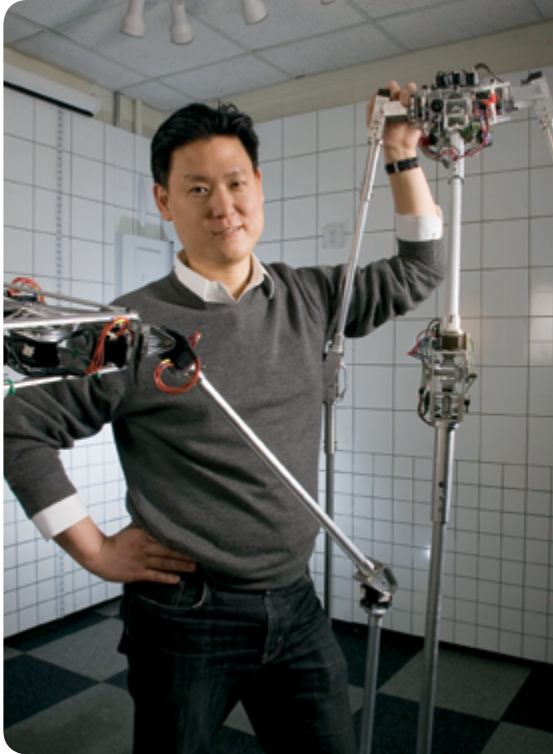
Dr. Jim Overholt, Chief Roboticist, [U.S. Army Tank-Automotive Research Development and Engineering Center \(TARDEC\) Joint Center for Robotics \(JCR\)](#)
Wednesday, August 4 10:30–11:30 a.m. Room 17A

TECHNICAL SESSIONS

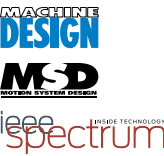
Hands-On: Introduction to LabVIEW for Embedded Design with the LabVIEW Robotics Starter Kit

Learn how to use LabVIEW graphical programming and the NI Single-Board RIO embedded control system to program a mobile robot.

Aashish Mehta, Engineer, [National Instruments](#)
Tuesday, August 3 1:00–2:00 p.m. Room 18C
Wednesday, August 4 10:30–11:30 a.m. Room 18C



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ROBOTICS AND AUTONOMOUS VEHICLES SUMMIT

Biomimetic Mobile Robot Design with NI Single-Board RIO

Discover how NI Single-Board RIO and LabVIEW were used for the prototyping and deployment of a robotic cheetah that will push the envelope for high-speed mobile robots.

Sangbae Kim, Assistant Professor, [Massachusetts Institute of Technology \(MIT\)](#)

Tuesday, August 3 1:00–1:30 p.m. Room 17A

Autonomous Ground Vehicles for Space Applications

Learn about the design of an autonomous rover based on LabVIEW and CompactRIO for exploring the moon. The design includes navigation, path planning, and collision avoidance capability.

Dr. Robert Bishop, Opus Dean of Engineering, [Marquette University](#)

Tuesday, August 3 1:30–2:00 p.m. Room 17A

Design and Control of Complex Mechanical Systems

Learn about embedded control of mechanically complex marionettes and three key technical hurdles to automate the production of complex motion sequences: real-time embedded motion control, coordination of high-degree-of-freedom systems, and abstraction-based motion specifications.

Magnus Egerstedt, Professor, [Georgia Tech](#)

Tuesday, August 3 2:15–2:45 p.m. Room 17A

Prototyping for Life Science Automation

Learn how Rice University and the National Center for Macromolecular Imaging at Baylor College of Medicine are collaborating on a prototype system with LabVIEW and NI hardware for automated grid preparation for electron cryomicroscopy to improve image quality, repeatability, and throughput.

Dr. Marcia O’Malley, Professor, [Rice University](#)

Tuesday, August 3 2:45–3:15 p.m. Room 17A

Vision Tracking for Automated Sewing

Examine studies in automated sewing in which fabric position feedback is based on a thread tracking vision system prototyped with LabVIEW and NI vision tools. Also learn about an experimental project in flex tracking.

Wayne Book, Professor, [Georgia Tech](#)

Tuesday, August 3 3:30–4:00 p.m. Room 17A

Dependable Control System for Field Robot Platforms

Field robots working in tough outdoor environments require a dependable control system, and powerful hardware and easy software development are keys for successful development and deployment. Learn about the development of a military robot platform and an autonomous electric golf cart using NI tools.

Dr. Sung Chul Kang, Engineer, [KIST Cognitive Robotics Center](#)

Tuesday, August 3 4:00–4:30 p.m. Room 17A

LabVIEW for Every Robot

Explore how a solid LabVIEW architecture can scale from simple LEGO MINDSTORMS® NXT robots to custom reconfigurable I/O (RIO)-based autonomous vehicles.

Dr. David Barrett, Director of SCOPE, [Olin College](#)

Tuesday, August 3 4:45–5:45 p.m. Room 17A

Rapid Manipulator Development with CompactRIO and LabVIEW

Using LabVIEW and the CompactRIO platform, Square One Systems Design has substantially expedited the product development cycle. Discover how NI products allow the company to quickly shift between different projects and investigate new concepts.

Wesley Womack, Senior Technology Officer, [Square One Systems Design](#)

Wednesday, August 4 1:00–1:30 p.m. Room 17A

ROBOTICS AND AUTONOMOUS VEHICLES SUMMIT

Teaching a Walking Robot to See

Gain insight into the process of adding vision to a compact controller based on CompactRIO for a six-legged walking robot using the MoviMED AF1501 analog frame grabber. See visual feedback for an operator and implement navigation tasks via vision processing. Also discuss mechanical and control design for the robot.

Markus Tarin, President, [MoviMED](#)

Wednesday, August 4 1:30–2:00 p.m. Room 17A

First Responder Robots: The Emergence of Unmanned Systems for Firefighting, Law Enforcement, and Disaster Response Applications

From assisting SWAT and EOD teams to providing overhead surveillance for firefighters, unmanned ground vehicles (UGVs) and unmanned aircraft systems (UASs) are finding their way to the front lines at home. Discuss the potential for unmanned systems to aid firefighters, police officers, and disaster response personnel in daily missions.

Kyle Snyder, Director of Knowledge Resources, and Lindsay Voss, Engineer, [Association for Unmanned Vehicle Systems International \(AUVSI\)](#)

Wednesday, August 4 2:15–2:45 p.m. Room 17A

Autonomous Robotic Mail Courier for Residential Applications

Discover an autonomous “mail courier” robot controlled by LabVIEW that transports mail to a user-specified location upon reception at the mailbox. The robot negotiates adverse weather and surface conditions as well as path obstructions. Also, dead reckoning, RFID, and accelerometers provide localization and orientation data for stability and motion control of the robot.

John Bird, Professor, [Virginia Tech](#)

Wednesday, August 4 2:45–3:15 p.m. Room 17A

RIO Robots Save Lives

Vecna Technologies has pioneered the world of military rescue robotics with the BEAR robot. Learn how CompactRIO and LabVIEW were used to create an extremely sophisticated prototype faster than with traditional tools.

Andrew Allen, Engineer, [Vecna Technologies](#)

Wednesday, August 4 3:30–4:00 p.m. Room 17A

Using Synthetic Neural Models to Augment Traditional Control Systems

For the last 15 years, researchers at The Neurosciences Institute have developed progressively more capable synthetic neural models (SNM), also known as brain-based devices (BBD), to augment digital control systems in real-world environments. Discuss the value of these models in solving complex control problems.

Jim Snook, Engineer, [The Neurosciences Institute](#)

Wednesday, August 4 4:00–4:30 p.m. Room 17A

Critical Robotics and Autonomous Technologies Panel Discussion

Hear leading robotics industry and research experts share their thoughts on the most critical up-and-coming technologies for ensuring success in the growing robotics market. Gain valuable insight into strategies from Intel, The Korea Institute of Science and Technology, Microsoft, National Instruments, and more.

Dr. David Barrett, Director of SCOPE, [Olin College](#)

Dr. Dennis Hong, Associate Professor, [RoMeLa](#)

Kamal Youcef-Toumi, Professor, [MIT](#)

Dr. Robin Murphy, Director, [Texas A&M Center for Robot-Assisted Search and Rescue](#)

Moderated by Dan Kara, President, [Robotics Trends](#)

Wednesday, August 4 4:45–5:45 p.m. Room 17A

ENERGY TECHNOLOGY SUMMIT

A new industrial revolution is transforming energy production to cleaner, more sustainable technologies. Join leaders from traditional and renewable energy industries as they exchange lessons learned in the field and insights into the future of energy technology. Attend the Energy Technology Summit sessions to learn powerful techniques and best practices for designing, prototyping, and deploying clean energy systems.



KEYNOTES

Technologies to Bring the Smart Grid to Life

Listen to Ken Murphy from CenterPoint Energy as he shares insight into the technologies bringing the smart grid to life in Houston, Texas – the nation’s third largest city. Understand why CenterPoint is investing hundreds of millions of dollars into new technologies for automated power generation, distribution, and advanced metering. Also learn how smart grid technology fits into the big picture and why it is critical for a clean energy future.

Ken Murphy, Director of Smart Grid Implementation, [CenterPoint Energy](#)

Tuesday, August 3 10:30–11:00 a.m. Room 16B

Powering a Smarter Planet

Join Allan Schurr – recently named one of the “top 100 movers and shakers of the smart grid” by Greentech Media – as he introduces some of the critical innovations transforming the energy grid to enable greater efficiency, reliability, and security. Imagine a smarter planet that is more instrumented and interconnected, in which advanced embedded system technology allows mass adoption of clean energy. Gain insight that will inspire you to use your graphical system design skills and join the smart energy revolution.

Allan Schurr, Vice President of Strategy, [IBM Global Energy and Utilities Industry](#)

Wednesday, August 4 1:00–2:00 p.m. Room 16B

Enernet: Internet Lessons for Solving the Energy Crisis

Listen to Robert Metcalfe, a pioneer of the Internet, as he shares lessons from 64 years of Internet history and explains how they may guide us in meeting world needs for cheap and clean energy. While the laws of thermodynamics and government policy are important, it is better to view the energy challenge as a networking problem.

Robert Metcalfe, Inventor, [Ethernet](#), and Founder, [3Com](#)

Wednesday, August 4 2:15–3:15 p.m. Room 16B

TECHNICAL SESSIONS

Testing Siemens Wind Turbine Control Systems

Validation of embedded software is vital for high-reliability control systems. A new real-time control hardware-in-the-loop (HIL) test system for Siemens wind turbines has been developed using LabVIEW and NI R Series. Learn about HIL test strategy, architecture, implementation, and best practices.

Vagn Riis-Vestergaard, Systems Architect, [CIM Industrial Systems](#)

Peter August Simonsen, Engineer, [Siemens Wind Power A/S](#)

Tuesday, August 3 1:00–2:00 p.m. Room 16B

Implementing Wide-Area Power Quality Monitoring with LabVIEW

Wide-area electrical power measurement and analysis is critical for optimizing real-time grid operations and improving reliability. Learn about cutting-edge synchronized phasor measurement unit technology and key takeaways from 15 years of implementing distributed power quality analyzers based on LabVIEW.

Daniel Kaminsky, Engineer, [ELCOM](#)

Tuesday, August 3 2:15–3:15 p.m. Room 16B

Smart Grid Component Testing and Analysis

Testing smart grid components is crucial to deploying safe and reliable infrastructure. See how NI hardware and LabVIEW are used at PG&E to test energy and smart grid systems including substation harmonic analysis, load simulation on a 500 kW electrolytic battery, and arc flash energy measurement.

Daniel Kaufman, Engineer, [PG&E](#)

Tuesday, August 3 3:30–4:00 p.m. Room 16B

Fuel Cell and Energy Storage Characterization

Energy storage systems are key technologies for a clean energy future. Learn about the fast-growing market and understand the structure and function of batteries, fuel cells, and ultracapacitors. Discover how to control energy storage systems while analyzing their performance using multichannel potentiostat electronics.

Eugene Smotkin, Founder, [NuVant Systems](#)

Tuesday, August 3 4:00–4:30 p.m. Room 16B

Wind Turbine Prognostics and Health Management

Health monitoring and predictive maintenance technology is essential for lowering wind turbine operating costs. Learn about health assessment analysis techniques for wind turbines including a multiregime approach to segmenting data.

Dr. Jay Lee, Director of Center for Intelligent Maintenance Systems, [University of Cincinnati](#)

Tuesday, August 3 4:45–5:15 p.m. Room 16B

Smart Grid and Renewable Energy Technology: Directions and Challenges

The National Renewable Energy Lab (NREL) leads the way in developing clean energy technologies. Listen to Bill Kramer as he discusses instrumentation, test, control, and monitoring projects at NREL. Get behind the scenes of smart grid power electronics and wind, solar, and energy storage developments. Learn how you can apply your software and engineering skills to develop new products and systems in this technology area.

Bill Kramer, Senior Research Engineer, [NREL](#)

Wednesday, August 4 10:30–11:00 a.m. Room 16B

Electrical Substation Monitoring and Control

Utility companies are challenged to reduce energy losses, increase reliability, and manage peak loads, particularly in subtransmission and distribution networks. Acquiring baseline data from the entire grid is an important first step. Learn how NexGen uses NI hardware and software to implement monitoring and control systems at electrical substations across the state of Rajasthan in Northern India.

Jaswinder Singh, Project Manager, [NexGen Consultancy](#)

Wednesday, August 4 11:00–11:30 a.m. Room 16B

MILITARY AND AEROSPACE SUMMIT

The Military and Aerospace Summit unites industry and research experts from the fields of advanced research, flight research, defense and commercial aerospace test, ground vehicles, RADAR, and unmanned vehicles. Hear directly from industry experts and system developers about the latest technological advances, and learn about the tools engineers are using to design, develop, and implement systems in an evolving market.



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TECHNICAL SESSIONS

Structural Test System for Space Vehicles

Explore three new integrated test systems designed and installed for NASA's Orion Space program. These integrated systems include high channel count of strain, torque, and pressure readings; pressurization of the test article; and synchronization and presentation of audio, video, and test data from the test facility.

Josh Rouse, Engineer, and
Russel Blake, Engineer, [G Systems](#)

Tuesday, August 3 10:30–11:30 a.m. Room 17B

Rugged Portable MILSPEC PXI/PXI Express Chassis

More capable PXI modules make field test and diagnostics of military systems possible. Learn about Logic Instrument's TetraRPC PXI, which is a self-contained PXI chassis with integral display and a keyboard for NI integrators and developers who need to field deployable solutions in harsh or rugged environments.

Donald McCook, Vice President, [Logic Instrument USA](#)

Tuesday, August 3 1:00–2:00 p.m. Room 17B

Developing a Large-Scale Microphone Array for Aircraft Jet Plume Noise Source Characterization

Examine the design of a 150-channel, 96 kHz measurement array and data acquisition system deployed for a full-scale test on an F-22 jet plume. Discover how Blue Ridge Research and Consulting developed the portable near-field acoustic holography system to measure the magnitude, directivity, spectral content, and spatial distribution of the noise emitted from a jet.

Michael James, Vice President, [Blue Ridge Research and Consulting](#)

Tuesday, August 3 2:15–3:15 p.m. Room 17B

MILITARY AND AEROSPACE SUMMIT

Development of a Sonic Boom Measurement System at JAXA

Discover how the Japan Aerospace Exploration Agency (JAXA) developed a measurement system for sonic boom using NI PXI and LabVIEW and verified the system using measurements in a flight test with an actual supersonic aircraft conducted in Sweden.

Yusuke Naka, Researcher, [JAXA](#)

Tuesday, August 3 3:30–4:30 p.m. Room 17B

Ground Control Systems for Launch Vehicles Based on LabVIEW

SpaceX has used systems based on LabVIEW for launch vehicles and test sites since its founding in 2002. Discuss the ground station for the Falcon family of launch vehicles, which controls all interactions between the pad and launch vehicle, in-flight telemetry, and data acquisition.

Trip Harriss, Engineer, [SpaceX](#)

Tuesday, August 3 4:45–5:45 p.m. Room 17B

Hardware Abstraction Layers (HALs) Using LabVIEW Object-Oriented Programming (OOP)

Explore a user-defined, instrument-centric HAL using LabVIEW OOP. Learn how to field an instrument reuse library that can grow with changing needs and instrument trends and continue to protect against costly maintenance in the inevitable event of hardware obsolescence with object-oriented design patterns.

Joe Helms, Engineer, [Harris Corporation](#)

Wednesday, August 4 10:30–11:30 a.m. Room 17B

Creating a Multichannel, Phase-Coherent, RF Record and Playback SIGINT Platform

Cal-Bay Systems implemented a COTS-based multichannel, phase-coherent, RF record and playback signals intelligence (SIGINT) platform to capture and play back large blocks of an RF spectrum in the field for offline analysis. Learn about the technologies used to record and analyze RF signals in real time across multiple antennas for several hours.

Steven Seiden, Managing Director, [Cal-Bay Systems Inc.](#)

Wednesday, August 4 1:00–2:00 p.m. Room 17B

STORMS Biometric RADAR

Learn about a unique biometric RADAR that can extract information about gait (walking), postural sway (standing), and breathing. The system was rapidly and cost-effectively developed using NI PXI modular instruments and LabWindows/CVI in conjunction with a third-party DSP board and intermediate frequency (IF) receiver and transmit/receive modules.

Gabriel Lissade, Engineer,
Robert J. Adams, DSP and Controls Technology Director, and
Vinh Adams, CEO, [VAWD Applied Science and Technology](#)

Wednesday, August 4 2:15–3:15 p.m. Room 17B

NI Requirements Gateway – A Power User's Session

NI Requirements Gateway is used heavily in the defense/aerospace industry. Learn how to use NI Requirements Gateway more efficiently to manage your projects including how to customize NIRG to use your own SRS documents and create reports and coverage statements in your documentation and code.

Mike Rakolta, Functional Lead, and
Christopher Relf, Principal Architect, [V I Engineering](#)

Wednesday, August 4 3:30–4:30 p.m. Room 17B

Using NI Products to Develop Level C and D Full-Flight Simulators

COTS technology can serve as an innovative method to create lower-cost, adaptable level C and D full-flight simulators. See example systems and learn about the hardware and software technologies used to develop a complete system including rehosting existing software flight models, maintenance, and upgrade plans for the life of the simulator.

Terry Keenan, CEO, [Keenan Simulation Corporation](#)

Wednesday, August 4 4:45–5:45 p.m. Room 17B

RF AND WIRELESS TEST SUMMIT

Learn about next-generation RF and wireless test technology and listen to top industry experts as they explain wireless trends, emerging instrumentation technologies, and innovative test techniques at the RF and Wireless Test Summit. Also gain a better understanding of a range of technologies including FPGAs, WiMAX, LTE, multiple input multiple output (MIMO), software-defined radio, and multiconstellation GNSS.



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TECHNICAL SESSIONS

Teaching Old RF Dogs a New Trick: Making the Transition to PXI RF Instruments

While switching from traditional rack-and-stack instruments to PXI produces significant benefits, any transition presents inherent challenges. Gain insight into the benefits and challenges of adopting PXI in an RF power amplifier characterization lab. Discuss measurement correlation, trade-offs of rack-and-stack instruments, and lessons learned. Also examine the benefits of the transition, which resulted in a 90 percent reduction in characterization time for Triquint Semiconductor.

Gary Shipley, Engineer, [Triquint Semiconductor](#)

Tuesday, August 3 10:30–11:30 a.m. Room 19A

Adding an FPGA Target to Your RF Instrument

Can you imagine using an RF vector signal analyzer with an FPGA? Peer-to-peer streaming makes it possible. Learn how to implement real-time fast Fourier transforms (FFTs), on-the-fly demodulation, and a frequency domain trigger using PXI RF signal analyzers with NI FlexRIO.

Ryan Verret, Product Manager, [National Instruments](#)

Tuesday, August 3 1:00–2:00 p.m. Room 19A

Reducing Test Costs in a High-Mix Manufacturing Environment

Learn how Digi International, a leading supplier of WLAN, 802.15.4, and custom ISM-band radios, reduced test cost by improving test throughput by 25 to 40 percent. Walk through a series of test system architecture best practices.

Elias Faraklas, Principal Hardware Engineer, [Digi International](#)

Tuesday, August 3 2:15–3:15 p.m. Room 19A

RF AND WIRELESS TEST SUMMIT

Make a Good RF Measurement Even Better

Modern RF instruments have impressive measurement capabilities, but the accuracy of a measurement is only as good as the test setup. Learn best practices for improving accuracy, uncertainty, and repeatability of common RF measurements.

Steve Tenney, Development Manager, [National Instruments](#)

Tuesday, August 3 3:30–4:30 p.m. Room 19A

NI Technology Enables High-Throughput RADAR Component Testing

Autoliv Inc., a manufacturer of automotive safety equipment, approached Avera to create a tester for RF RADAR components that enable vehicle blind spot detection and automated cruise control. Discover how Avera used NI TestStand and PXI to develop a system that merges parallel and batch testing for efficient synchronization, eliminating unit under test (UUT) loading time.

Matt Jecz, Test System Architect, [Avera](#)

Tuesday, August 3 4:45–5:45 p.m. Room 19A

The Changing Face of GNSS and Satellite-Based Navigation

Discover how new GNSS signals, such as GLONASS, improve accuracy in today's navigation receivers and how you can use RF record and playback techniques to capture multiconstellation signals and play them back to the receiver in the lab.

Steve Bateman, Vice President of Product Development, and Thomas Morley, Product Manager, [Novatel Inc.](#)

Wednesday, August 4 10:30–11:30 a.m. Room 19A

Testing FM Transmitters Better, Faster, and Cheaper Using the NI PXI Platform

Learn why coherent sampling and power level is critical for PXI, and why software solutions are better than hardware solutions. Also compare the time, cost, and performance on an FM transmitter UUT against Rohde & Schwarz and Audio Precision testing solutions.

Ross Kulak, Systems Engineer, and Min Xu, Software Engineer, [Texas Instruments](#)

Wednesday, August 4 1:00–2:00 p.m. Room 19A

Introduction to Cognitive Radio and Interference Alignment

Learn about a new cognitive radio and innovative spectrum sensing algorithm from Virginia Tech. Also gain an overview of interference alignment research, which involved producing a real-world prototype of this technology with NI products, at The University of Texas at Austin.

Michael Steiner, Graduate Student, [Virginia Tech](#)

Sriram Vishwanath, Professor, and Dr. Prasanth Anthapadmanabhan, Professor, [The University of Texas at Austin](#)

Wednesday, August 4 2:15–3:15 p.m. Room 19A

Under the Hood of an LTE MIMO-OFDM Downlink Prototype

Gain insight into the requirements for prototyping an over-the-air 3GPP LTE MIMO downlink and the relevant PHY characteristics of the LTE standard. Also find out how next-generation FPGA tools enable a new approach to communications system design.

Ian Wong, Senior Engineer, [National Instruments](#)

Wednesday, August 4 3:30–4:30 p.m. Room 19A

Testing MIMO in 802.11n

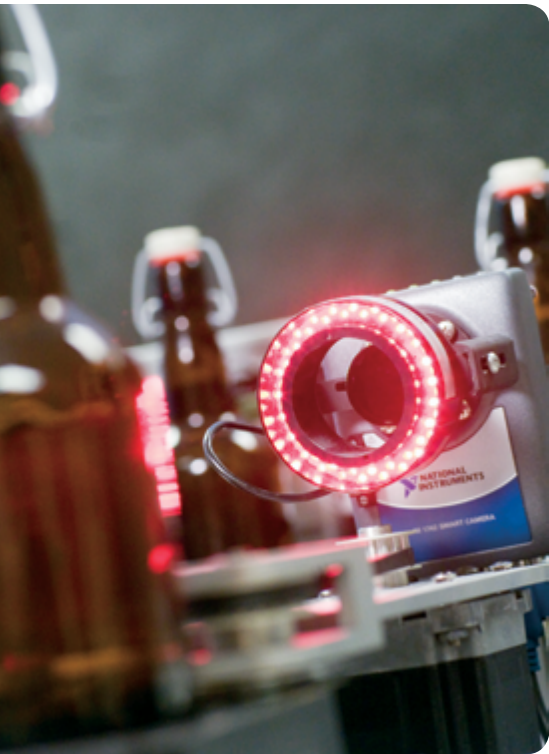
802.11n systems achieve higher data rates with MIMO. Learn about beamforming, spatial streams, and special MIMO measurements required for 802.11n.

Dan Lyons, Senior RF Systems Engineer, [National Instruments](#)

Wednesday, August 4 4:45–5:45 p.m. Room 19A

VISION SUMMIT

Attend one of the most comprehensive vision session lineups in North America at the NIWeek Vision Summit. Participate in hands-on workshops and technical sessions presented by NI developers, industry experts, and academic professionals to learn how to get started with machine vision, and gain insight into the latest technologies, best practices, new products, and real-world solutions.



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KEYNOTES

There’s No Accounting in Machine Vision

Join imaging expert Nigel Holmes as he reveals how Federal-Mogul uses machine vision to reduce scrap and lower the cost of end-of-line inspection. Explore how visual inspection can be justified financially from an equipment and operations standpoint. Also examine featured case studies to gain valuable information to help convince your organization to expand its use of machine vision.

Nigel Holmes, Vision Systems Development Manager, [Federal-Mogul](#)

Tuesday, August 3 10:30–11:30 a.m. Room 19B

Similarity Measurements for Space Time and 3D Visual Quality Assessment and Inspection

Learn how computer algorithms can see images from a human’s perspective and how recent advances impact automated inspection, whereby perceptually relevant quality indices are used to discover flaws in 2D images, video, and 3D stereoscopic range images of manufactured objects.

Dr. AI Bovik, Director of the Laboratory for Image and Video Engineering, [The University of Texas at Austin](#)

Wednesday, August 4 10:30–11:30 a.m. Room 19B

TECHNICAL SESSIONS

Hands-On: NI Vision Builder for Automated Inspection

Explore the features of NI Vision Builder for Automated Inspection (AI) by using an NI Smart Camera to acquire and process images.

Evan Dozier, Engineer, [National Instruments](#)

| | | |
|---------------------|------------------|----------|
| Tuesday, August 3 | 10:30–11:30 a.m. | Room 18A |
| Wednesday, August 4 | 10:30–11:30 a.m. | Room 18A |
| Wednesday, August 4 | 4:45–5:45 p.m. | Room 18A |
| Thursday, August 5 | 10:30–11:30 a.m. | Room 18A |

Vision Applications for Roll-to-Roll Processes

Discover how 3M manufacturing uses high-performance vision solutions on its continuously running, complex roll-to-roll systems. Learn how to meet challenges with multicamera architectures and memory management using object-oriented design and highly parallel application code.

John Ramthun, Senior Design Engineer, [3M](#)

Tuesday, August 3 1:00–2:00 p.m. Room 19B

Techniques for Vision-Based Robot Guidance

An NI Smart Camera mounted on a custom end effector controls a six-axis industrial robot for the U.S. Air Force Automated Aircraft Ground Refueling program. Review the lessons learned and the advances in developing vision-based guidance applications with a nonfixed camera using LabVIEW.

Cory Dixon, Robotics Engineer, [Stratom Inc.](#)

Tuesday, August 3 2:15–3:15 p.m. Room 19B

Three New Camera Technologies

Examine cutting-edge image sensor technologies including contact image sensor technology for inspection of large surfaces; near-infrared sensors as they apply to food, photovoltaic, and industrial inspection; and new scientific CMOS breakthroughs that achieve high performance with extremely low noise.

Lou Fetch, Project Manager, [Performance Automation](#)

Don Pancza, Account Manager, [Goodrich/Sensors Unlimited](#)

Butch Moomaw, Product Manager, [Hamamatsu Corporation](#)

Tuesday, August 3 3:30–4:30 p.m. Room 19B

Vision Builder AI and LabVIEW

Build vision applications with an easy-to-use menu-driven environment and learn how to integrate them directly with LabVIEW. Explore how the LabVIEW integration methods compare as the product developers reveal new features in Vision Builder AI.

Brad Buchanan, Staff Software Engineer, and

Kyle Voosen, Group Manager, [National Instruments](#)

Tuesday, August 3 4:45–5:45 p.m. Room 19B

VISION SUMMIT

Vision at Mach 1

Slow downtime with high-speed still photography. Join imaging expert Robert Tait as he discusses amusing and practical applications that use stroboscopy to capture clear images at extremely high speeds. See examples involving bullets and water droplets, and discover how you can use these techniques for industrial monitoring to observe the centripetal acceleration of a spinning steam turbine.

Robert Tait, Optical Engineer, [GE Global Research Center](#)

Wednesday, August 4 1:00–2:00 p.m. Room 19B

A Peek Inside New NI Vision Algorithms

Learn about the new algorithms in the NI Vision Development Module. Discover how you can use new metrology and segmentation tools for quality and process control applications in the food and pharmaceutical industries and for detecting cosmetic defects in consumer products.

Dinesh Nair, Principal Architect, [National Instruments](#)

Wednesday, August 4 2:15–3:15 p.m. Room 19B

Using NI Vision for Offline In-Mill Testing

Kimberly-Clark uses offline vision systems to inspect nonwoven fabrics and tissue for process monitoring and product release. Discover how the company used NI vision to measure features that affect consumer perception and product performance. Learn how calibration, equipment design, and user interfaces lead to successful adoption of these applications in production environments.

Steve Rocke, Senior Research Scientist, [Kimberly-Clark](#)

Wednesday, August 4 3:30–4:30 p.m. Room 19B

When to Use FPGAs in Imaging

Gain practical knowledge on using FPGAs for imaging applications with specific examples and demonstrations from experienced NI engineers. Explore the PXI NI FlexRIO platform and LabVIEW FPGA, and find out when it is appropriate to use this parallel processing architecture versus other high-performance systems.

Brent Runnels, Senior Systems Engineer, [National Instruments](#)

Wednesday, August 4 4:45–5:45 p.m. Room 19B

ADVANCED TECHNICAL SESSIONS

The advanced technical sessions discuss some of the most sophisticated applications of evolving technology in industry and academia. Targeted at those with proficiency in their respective topics, these sessions feature knowledge-sharing from leading experts in their fields. Advanced technical sessions include the following:

- 51 Beyond 40 MHz – Designing for High Throughput in LabVIEW FPGA
- 54 An Insider’s View of How NI SoftMotion Uses LabVIEW to Create Open Control Architectures
- 55 LabVIEW WSN Under the Hood
- 57 Best Practices for Memory Management and LabVIEW Code Optimization
- 57 Case Studies in LabVIEW Parallel Programming Performance
- 58 Full Speed Ahead – Maximize the Performance of NI TestStand
- 59 LabVIEW Classes – The State of the Art
- 59 LabVIEW Compiler Under the Hood – Understanding the Optimizations in 2010
- 59 LabVIEW Graphical Scripting
- 62 DAQ Advanced: Real Developers Use Property Nodes
- 63 Precision Linear Measurements of RF Components
- 63 Inside the SC Express Modules – Analog Designs and Technologies
- 64 NASA Hearing Aid Analysis and Audio Test Architectures with NI
- 66 Switching Configurations for Large Test Systems
- 67 Testing Next-Generation Multimedia Devices

HANDS-ON TECHNICAL SESSIONS

NIWeek hands-on technical sessions give attendees the chance to interact directly with the latest technologies and the experts who developed them. In these popular forums, you have the opportunity to learn how to use these tools and how to work with them more efficiently. Attend the following technical sessions to get hands-on experience:

- 51 CompactRIO and LabVIEW FPGA Intermediate
- 51 Deploying and Replicating Your Embedded System
- 52 Reusing FPGA IP in Embedded Systems
- 53 Using Web Services with Your Embedded System to Publish Data Remotely
- 54 CompactRIO High-Speed Acquisition
- 55 Develop Powerful Motion Control Applications with CompactRIO
- 55 Introduction to CompactRIO and LabVIEW Real-Time
- 56 Wireless Sensor Networks
- 58 Data Management and Reporting
- 58 How to Build a LabVIEW Add-On
- 59 Introducing LabVIEW
- 61 Software Engineering
- 62 Acquire and Process Sound and Vibration Signals
- 62 Build an Automated Test System from Scratch
- 63 Introduction to Data Acquisition
- 64 NI FlexRIO and LabVIEW FPGA
- 65 NI VeriStand
- 66 Structural Test

SOUND AND VIBRATION SESSIONS

Attend the following sound and vibration sessions to view demos of the latest NI hardware and software technologies for noise, vibration, and harshness; condition monitoring; and audio test. Also take the opportunity to experiment with some of these new tools at the hands-on sessions.

- 38 Developing a Large-Scale Microphone Array for Aircraft Jet Plume Noise Source Characterization
- 39 Development of a Sonic Boom Measurement System at JAXA
- 54 *Hands-On: CompactRIO High-Speed Acquisition*
- 55 Practical Application of a Reference Architecture for Local Machine Control
- 55 Understand High-Speed Data Acquisition with CompactRIO
- 56 Using CompactRIO and LabVIEW for Online Signal Processing and Data Recording
- 56 Wireless Condition Monitoring of Rotating Equipment in Research Reactors
- 62 Distributed Monitoring with USB DAQ and Wi-Fi
- 64 NASA Hearing Aid Analysis and Audio Test Architectures with NI
- 65 Nondestructive Resonance Inspection
- 66 *Hands-On: Structural Test*
- 67 Testing Audio Device Quality: Why Buy Headphones That Cost \$300 USD?
- 67 Testing Next-Generation Multimedia Devices

STRUCTURAL TEST AND MONITORING SESSIONS

The importance of structural test and monitoring continues to grow as structures become older, bigger, and more complex. Engineers, scientists, researchers, and professors interested in structural measurements should attend the following sessions:

- 38 Structural Test System for Space Vehicles
- 56 Using CompactRIO and LabVIEW for Online Signal Processing and Data Recording
- 63 Inside the SC Express Modules: Analog Designs and Technologies
- 64 Top Considerations for Optical Sensing
- 64 Introduction to Optical Sensing
- 64 Introducing SC Express – High-Performance Sensor Measurements
- 65 Perform Any Test on Any Structure
- 65 Real-Time Structural Health Monitoring: The New Paradigm in Infrastructure Management
- 66 Strain Gage Measurement Techniques
- 66 *Hands-On: Structural Test*
- 66 Synchronizing Scalable Sensor Measurement Systems
- 67 Using Honeywell Pressure, Load, and Torque Sensors with Data Acquisition Systems
- 67 Wireless Monitoring of Real-World Structures

UT STRUCTURAL LAB TOUR NEW

Tour the Ferguson Structural Engineering Laboratory, one of the largest structural research facilities in the world. With a range of equipment and instrumentation, researchers conduct large-scale studies of civil engineering structures. Researchers use NI hardware and software tools in their testing, and are working with NI to research and develop wireless monitoring solutions for highway bridges.

Tour participants should meet in the registration area for transportation.

Thursday, August 5 1:00–3:00 p.m. J.J. Pickle Research Campus

CAN'T MISS LabVIEW SESSIONS

For more than 20 years, LabVIEW has revolutionized the development of test, measurement, and control applications. Attend the following technical sessions to learn about the new features in LabVIEW and tips and tricks for using LabVIEW in real-world applications:

- 51 Architect Real-Time Systems with Confidence: Best Practices for LabVIEW Real-Time Development
- 51 Beyond 40 MHz – Designing for High Throughput in LabVIEW FPGA
- 52 Introduction to LabVIEW FPGA
- 59 LabVIEW Classes – The State of the Art
- 59 LabVIEW Compiler Under the Hood – Understanding the Optimizations in 2010
- 59 LabVIEW Graphical Scripting
- 60 LabVIEW UI Tips and Tricks
- 61 Tips and Tricks to Speed LabVIEW Development
- 61 What's New in LabVIEW

WATERLOO LABS
NEW

Waterloo Labs is a group of engineers that builds DIY engineering projects and shares them with the world over YouTube. The first three projects received more than 800,000 views on YouTube and more than 10 million views through media attention from around the world. The project “Drive a Car with an iPhone” using LabVIEW and CompactRIO appeared in *Make Magazine* and *Popular Science* as well as on CNN, the BBC, VOX TV in Germany, and more than 50 local television broadcasts across the U.S. and Canada. Check out these applications and more from Waterloo Labs on the Exhibition Hall floor and during the Community Exchange session.





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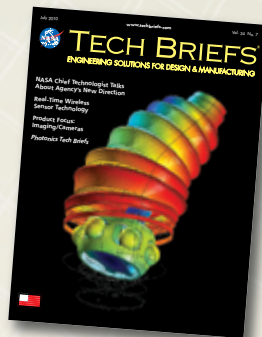
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TECHNICAL TRACKS

EMBEDDED DESIGN TRACK

Architect Real-Time Systems with Confidence: Best Practices for LabVIEW Real-Time Development

How can you program your LabVIEW Real-Time applications for optimal performance, maximum reliability, and minimal jitter? Learn some best practices for real-time design, development, and deployment.

Michael King, Engineer, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 17A

Advanced: Beyond 40 MHz – Designing for High Throughput in LabVIEW FPGA

Reaching the full potential of FPGA hardware requires a different mind-set in LabVIEW FPGA. Find out how to make the FPGA conduct work on every clock cycle.

Jim Lewis, Engineer, and
Newton Petersen, Engineer, [National Instruments](#)

Thursday, August 5 2:15–3:15 p.m. Room 19B

Calm Your Jitters with LabVIEW Real-Time

Gain an understanding of what a real-time OS is, when a real-time system is necessary, and how to use the LabVIEW Real-Time Module to develop reliable, stand-alone applications. Learn about important real-time concepts including determinism and jitter.

Casey Weltzin, Product Manager, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 15

Hands-On: CompactRIO and LabVIEW FPGA Intermediate

Learn several ways to customize CompactRIO with LabVIEW FPGA programming. Attendees should have basic knowledge of LabVIEW and LabVIEW Real-Time.

Matt Spexarth, Product Manager, [National Instruments](#)

Tuesday, August 3 3:30–4:30 p.m. Room 18B

Wednesday, August 4 2:15–3:15 p.m. Room 18B

Custom Design 101 with CompactRIO Modules and NI Single-Board RIO

Find out how to build and create custom NI C Series modules, accessories, breakout boards, or connectors for NI CompactRIO, NI Single-Board RIO, and NI FlexRIO. See application-oriented examples based on NI proof-of-concept reference designs you can use in custom integration.

Robert Jackson, Senior Product Manager, and
John Harvey, Engineer, [National Instruments](#)

Joe Spinozzi, Senior Director of Operations, [Cyth Systems](#)

Wednesday, August 4 1:00–2:00 p.m. Room 16A

Cycle Accurate Simulation of LabVIEW FPGA Designs Using ModelSim

Learn how to use ModelSim to debug LabVIEW FPGA at the cycle-by-cycle level. Attendees should have knowledge of HDL.

Kristin Hampsten, Engineer, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 17B

Hands-On: Deploying and Replicating Your Embedded System

Explore how to take your embedded system from the functional prototyping and validation stage to a long-term or multisystem deployed device.

Matt Spexarth, Product Manager, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 18B

From Prototypes to Products – Building Commercial Instruments with LabVIEW

NI hardware and graphical system design tools enable rapid prototyping in the R&D lab and serve as an excellent platform for commercial products. Learn how to overcome the challenges of commercial software development and avoid rewrites in text-based languages by seamlessly evolving your prototype LabVIEW applications into shipping products.

James Kring, CEO, and
Omar Mussa, Engineer, [JKI](#)

Tuesday, August 3 1:00–2:00 p.m. Room 16A

TECHNICAL TRACKS

EMBEDDED DESIGN TRACK

Implementing Mission-Critical Distributed Systems

Distributed systems for mission-critical applications require special design considerations. The NI Compact FieldPoint and CompactRIO platforms running the LabVIEW Real-Time and LabVIEW Datalogging and Supervisory Control (DSC) modules offer convenient features; however, some operations require custom-coding solutions. Find out which features are appropriate and when custom solutions are worth the investment.

Jeremy Marquis, Engineer, [G Systems](#)

Wednesday, August 4 2:15–3:15 p.m. Room 16A

Introduction to LabVIEW FPGA

Learn the basics, view a demo, and see applications using the LabVIEW FPGA Module.

Donovan Buck, Engineer, [National Instruments](#)

Wednesday, August 4 3:30–4:30 p.m. Room 16A

LabVIEW Embedded Tips and Tricks

As one of the earliest adopters of the LabVIEW Embedded Module for ARM Microcontrollers, Boston Engineering developed a unique portfolio of tips and tricks through a combination of LabVIEW embedded projects and a close relationship with NI developers. Gain insight into proper LabVIEW embedded programming and debugging techniques.

Jason Burns, Engineer, [Boston Engineering](#)

Tuesday, August 3 10:30–11:30 a.m. Room 16A

LabVIEW FPGA for Defense and Space Applications

FPGAs save months of development time compared to ASIC solutions, but their sensitivity to radiation constrains their space usage to a complex, triple-redundant form. Explore the use of LabVIEW FPGA for programming a new Single-Event-Upset Immune Reconfigurable FPGA from Xilinx called Virtex-5QV, making LabVIEW FPGA more applicable in satellite and space applications.

M. Brett McMickell, Engineer, [Honeywell Engineering and Technology](#)

Delfin Rodillas, Senior Manager of Aerospace and HPC Architectures and Applications, [Xilinx](#)

Tuesday, August 3 3:30–4:30 p.m. Room 16A

Machines That Work: Advanced Motion Control

Learn how to use LabVIEW programming to replace standard control algorithms included with NI SoftMotion using your own custom-build controller to achieve enhanced performance.

Javier Gutierrez, Product Manager, [National Instruments](#)

Tuesday, August 3 2:15–3:15 p.m. Room 11B

Precision Control Using LabVIEW Real-Time and LabVIEW FPGA

Atomic force microscopy (AFM) is used for imaging, sensing, and manipulating matter at very small scales in nanotechnology, biotechnology, and semiconductor research. Learn about precision control techniques for AFMs based on the LabVIEW Real-Time and LabVIEW FPGA modules.

Kamal Youcef-Toumi, Professor, [MIT](#)

Thursday, August 5 2:15–3:15 p.m. Room 11B

Hands-On: Reusing FPGA IP in Embedded Systems

Learn how to build, find, and reuse FPGA IP on your next embedded system, and examine NI IPNet, Xilinx tools, and third-party websites for sources of reusable IP.

Matt Spexarth, Product Manager, [National Instruments](#)

Wednesday, August 4 10:30–11:30 a.m. Room 18B

Simple TCP/IP Messaging Beyond LabVIEW

Discover how the power of simple TCP/IP messaging (STM) in a distributed embedded system with a C++-based host application was used to develop a medical device. The host application consists of a LabVIEW real-time server and a C++ remote client.

Julien Parouty, Consultant, [Genexis LLC](#)

Thursday, August 5 1:00–2:00 p.m. Room 16A

There’s an App for That

Learn how the engineers of Waterloo Labs built an iPhone application to remotely control an Oldsmobile Eighty-Eight Royale. Discover how they created an automobile control system connected by a wireless network to control the car from an iPhone using Power Wheels, a computer, and other devices. Also explore other DIY Waterloo Labs applications.

Will Schoettler, Engineer, [Waterloo Labs](#)

Thursday, August 5 10:30–11:30 a.m. Room 16A

The Right Development Process for LabVIEW FPGA Success

There are many wrong ways to approach LabVIEW FPGA design, which can create undesirable results. Learn the right process for successful designs in LabVIEW FPGA.

Dan Eaton, Engineer, [National Instruments](#)

Thursday, August 5 2:15–3:15 p.m. Room 19A

Using LabVIEW and the mbed Microcontroller for Rapid Prototyping

Software simulations using LabVIEW are effective ways to quickly prototype control systems that include hardware integration. Learn how to combine an mbed microcontroller with LabVIEW tools to provide a simple and low-cost method to make your LabVIEW programs interact with the real world. Also explore the LabVIEW Embedded Module for ARM Microcontrollers for developing prototypes running on Cortex-M3 microcontrollers.

Jamie Brettle, Product Manager, [National Instruments](#)

Simon Ford, Technical Lead, [ARM](#)

Thursday, August 5 2:15–3:15 p.m. Room 16A

BUILD YOUR OWN EMBEDDED SYSTEM TRACK

The Build Your Own Embedded System (BYOES) track is a series of hands-on sessions that focuses on prototyping an embedded system based on NI Single-Board RIO. BYOES track registrants will take home a fully configured and programmed NI Single-Board RIO embedded system at the end of the conference.

TECHNICAL TRACKS

EMBEDDED DESIGN TRACK

Hands-On: Using Web Services with Your Embedded System to Publish Data Remotely

Learn how to use Web services to build remote user interfaces and publish data on the Web. These user interfaces can be displayed on a variety of physical media, including smart phones, tablets, netbooks, PCs, and embedded displays.

Matt Spexarth, Product Manager, [National Instruments](#)

Tuesday, August 3 2:15–3:15 p.m. Room 18B

Using Xilinx IP and Coregen in LabVIEW FPGA

As FPGA-based designs become more complex, the need for higher-level building blocks, such as memory controllers or video decoding, is imperative. Discover what IP is available and how to take advantage of Coregen within LabVIEW FPGA. Coregen is the Xilinx standard generation and delivery mechanism for Xilinx and third-party IP.

Keith Nesrsta, Field Applications Engineer, [Xilinx](#)

Tuesday, August 3 4:45–5:45 p.m. Room 16A

What’s New in LabVIEW FPGA

See the latest features in LabVIEW FPGA including compiling in the cloud, new IP, build specifications, and simulation.

Rick Kuhlman, Product Manager, [National Instruments](#)

Wednesday, August 4 4:45–5:45 p.m. Room 16A

TECHNICAL TRACKS

INDUSTRIAL MEASUREMENTS AND CONTROL TRACK

Advanced: An Insider’s View of How NI SoftMotion Uses LabVIEW to Create Open Control Architectures

Examine the underlying architecture of the LabVIEW NI SoftMotion Module and how NI R&D uses the distributed nature of LabVIEW to create an open control architecture that is easy to use and offers powerful customization. Experience the key elements of the NI SoftMotion architecture including the NI SoftMotion Engine, API communication, and the mechanisms used to interface with hardware.

Kiran Sreekantham, Engineer, and
Dustin Wells, Group Manager, [National Instruments](#)

Tuesday, August 3 3:30–4:30 p.m. Room 13A/B

Best Practices for Delivering Distributed Data to Remote Clients

As technology evolves, devices, data, and clients are growing more distributed. Systems can consist of tens to thousands of measurement systems that need to be accessed anytime and from anywhere. Learn about existing and future technology for acquiring, aggregating, accessing, and displaying data from distributed devices to remote clients.

Nicholas Butler, Product Manager, and
Caroline Tipton, Product Manager, [National Instruments](#)

Wednesday, August 4 10:30–11:30 a.m. Room 12B

Best Practices for Designing Scalable Motion Control Applications on NI Real-Time Hardware Platforms

Learn how to realize motion control applications and deploy them to the hardware platform of your choice. Experience how the LabVIEW NI SoftMotion Module simplifies the design of multiaxis motion applications and see how you can use the same tools to integrate EtherCAT-based drives into your control application.

Marc Christenson, Systems Engineer, [Sisu Devices](#)

Christian Fritz, Product Manager, [National Instruments](#)

Tuesday, August 3 4:45–5:45 p.m. Room 13A/B

Choosing RIO Expansion for High-Channel-Count Systems

Learn about three expansion options for control and measurement systems based on CompactRIO to fit your requirements whether they are open connectivity, deterministic communication, or high-speed streaming waveform data.

Irene Bearly, Product Manager, and
Nate Holmes, Product Manager, [National Instruments](#)

Thursday, August 5 2:15–3:15 p.m. Room 13A

Choosing the Right Technology for Your Wireless Application

Wireless measurement devices can provide the same quality and accuracy as traditional wired measurement systems but with increased flexibility and lower costs. Examine different wireless technologies, including Wi-Fi and IEEE 802.15.4, and learn how to choose between range, throughput, power, and other options based on your application requirements.

Nicholas Butler, Product Manager, and
Charlie Stiernberg, Product Manager, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 11B

Hands-On: CompactRIO High-Speed Acquisition

Work with an NI systems engineer to develop a CompactRIO data-logger application. Learn best practices for acquiring data on CompactRIO from a variety of channel types and how to log, process, and transfer the data from CompactRIO back to a host.

Jeff Tipps, Engineer, [National Instruments](#)

Tuesday, August 3 4:45–5:45 p.m. Room 18B
Wednesday, August 4 4:45–5:45 p.m. Room 18B

Connect LabVIEW to Any PLC

Do you need to add custom functionality to your programmable logic controller system? NI offers connectivity to industrial protocols such as EtherNet/IP, PROFIBUS, and FOUNDATION Fieldbus. View demos and new industrial communications products.

Irene Bearly, Product Manager, and
Dirk Wieprecht, Engineer, [National Instruments](#)

Wednesday, August 4 1:00–2:00 p.m. Room 13A/B

Hands-On: Develop Powerful Motion Control Applications with CompactRIO

Learn about motion application development for CompactRIO from simple single-axis to complex-coordinated trajectories and gain firsthand experience with the LabVIEW NI SoftMotion Module.

Eric Reid, Engineer, [National Instruments](#)

Tuesday, August 3 1:00–2:00 p.m. Room 18B
Wednesday, August 4 3:30–4:30 p.m. Room 18B

Hands-On: Introduction to CompactRIO and LabVIEW Real-Time

Learn how to quickly build and deploy embedded control and data acquisition applications using graphical programming with CompactRIO and LabVIEW Real-Time. Also explore new LabVIEW Real-Time features that increase flexibility and integration with the FPGA when programming in CompactRIO Scan Mode.

Eric Reid, Engineer, [National Instruments](#)

Tuesday, August 3 10:30–11:30 a.m. Room 18B
Wednesday, August 4 1:00–2:00 p.m. Room 18B

Advanced: LabVIEW WSN Under the Hood

Explore the benefits and capabilities of programming wireless measurement nodes with the LabVIEW WSN Module Pioneer. Take a detailed look at the LabVIEW WSN execution model and how the embedded applications can perform custom analysis and decision making and improve battery life.

Corby Bryan, Engineer, [National Instruments](#)

Thursday, August 5 2:15–3:15 p.m. Room 15

TECHNICAL TRACKS

INDUSTRIAL MEASUREMENTS AND CONTROL TRACK

Practical Application of a Reference Architecture for Local Machine Control

Explore the use of an enhanced NI reference architecture for local machine control to implement a process control system that performs a flush-and-fill process of a liquid-cooled computer. The system provides a basis for analyzing the advantages and disadvantages of using the reference architecture.

Nate Lim, Engineer, and
Steve Masullo, Engineer, [PVI Systems Inc.](#)

Wednesday, August 4 2:15–3:15 p.m. Room 13A/B

The Secret of Tuning – Advanced Control Strategies for Servo Systems

Servo systems provide fast command response, outstanding disturbance rejection, and highly repeatable motion. Discuss advanced servo algorithms such as observers, high-order filters, and multiple feed-forward paths. Also learn how to configure and tune your system including the roles of automatic and manual tuning methods.

Doug Frater, OEM Account Manager, and
George Ellis, Director of Technology Planning, [Kollmorgen](#)

Thursday, August 5 1:00–2:00 p.m. Room 17A

Understand High-Speed Data Acquisition with CompactRIO

View a high-speed waveform architecture for CompactRIO and learn how to integrate it with other CompactRIO devices performing measurements at different rates.

Jeff Tipps, Engineer, and
Alan Armstead, Engineer, [National Instruments](#)

Thursday, August 5 1:00–2:00 p.m. Room 15

TECHNICAL TRACKS

INDUSTRIAL MEASUREMENTS AND CONTROL TRACK

Using CompactRIO and LabVIEW for Online Signal Processing and Data Recording

Learn how you can perform online signal processing of “trapped” data records using LabVIEW FPGA and LabVIEW Real-Time for waveform acquisition, acquisition triggering, signal processing, and recording to Technical Data Management Streaming (TDMS) files. See condition monitoring, prognostics, and motor current signature analysis examples.

Preston Johnson, Sound and Vibration Segment Manager, and Mike Grace, Machine Monitoring Business Development Manager, [National Instruments](#)

Wednesday, August 4 10:30–11:30 a.m. Room 13A/B

What’s New with CompactRIO

Learn about the new hardware and software features for CompactRIO and how they can increase your design capabilities and efficiency.

Arves Stolpe, Product Manager, [National Instruments](#)

Tuesday, August 3 1:00–2:00 p.m. Room 13A/B

What’s New with Web-Enabled HMIs and LabVIEW

Learn how Web services can enable local and remote human machine interfaces (HMIs). Gain an introduction to tools for publishing data from embedded LabVIEW Real-Time targets and options for displaying this data on thin clients.

Robert Jackson, Product Manager, [National Instruments](#)

Thursday, August 5 1:00–2:00 p.m. Room 19A

Wireless Condition Monitoring of Rotating Equipment in Research Reactors

Research reactor design limits an engineer’s ability to efficiently monitor plant equipment, and signal measurement locations can be difficult for technicians to access. Learn how to acquire these measurements to provide information for continuous monitoring and predictive maintenance of rotating equipment by applying CompactRIO with wireless communication.

Brent Shumaker, Software Engineer, [AMS](#)

Thursday, August 5 10:30–11:30 a.m. Room 13A

Hands-On: Wireless Sensor Networks

Explore how to configure and program an NI WSN using LabVIEW. Walk through ways to set up the network, extract data, and embed LabVIEW code onto measurement nodes for local decision making.

Nicholas Butler, Product Manager, [National Instruments](#)

Tuesday, August 3 10:30–11:30 a.m. Room 18D

Tuesday, August 3 4:45–5:45 p.m. Room 18D

Wednesday, August 4 3:30–4:30 p.m. Room 18D

A Closer Look at 32-Bit versus 64-Bit with LabVIEW 2010 and Windows 7

Listen as NI and Microsoft experts discuss Windows 7 and 64-bit technology for solving complex technical challenges. Whether you are porting a system to a new version of Windows or starting new development on the OS, it is important to understand which OS and version best suits your needs.

Robert Doi, Director, [Microsoft](#)

Armando Valim, Product Manager, [National Instruments](#)

Wednesday, August 4 10:30–11:30 a.m. Room 16A

Adjustable Bandwidth FIR Filters: From Design to Implementation

Explore a class of adjustable bandwidth finite impulse response (FIR) filters based on the Farrow structure so the bandwidths can be tuned by several parameters. The project demonstrates a complete DSP algorithm design process with LabVIEW, including floating-point algorithm prototyping, fixed-point simulation, hardware emulation, and onboard execution.

James McClellan, Professor, [Georgia Tech](#)

Thursday, August 5 1:00–2:00 p.m. Room 12B

Advanced: Best Practices for Memory Management and LabVIEW Code Optimization

Explore the LabVIEW execution engine and learn how to use those principles to improve your performance and memory usage.

Daniel Hedges, Engineer, [National Instruments](#)

Wednesday, August 4 3:30–4:30 p.m. Room 12A

Best Practices for Software Development in LabVIEW

Examine software engineering practices and tools you can use to improve the quality and reliability of LabVIEW applications. Topics include requirements management, ensuring proper style guidelines, conducting code reviews, and tools for static and dynamic code analysis.

Elijah Kerry, Product Manager, [National Instruments](#)

Tuesday, August 3 2:15–3:15 p.m. Room 12B

TECHNICAL TRACKS

SOFTWARE DEVELOPMENT TECHNIQUES TRACK

Beyond the Basics: LabVIEW Debugging Techniques

Most users are familiar with basic LabVIEW debugging features such as highlight execution, break points, stepping, and error handling; however, more advanced technologies and techniques are helpful for larger, more complex applications. Learn about custom probes, remotely debuggable executables, probe to disk, conditional debugging code, and the LabVIEW Desktop Execution Trace Toolkit.

Tycho Castberg, Senior Engineer, [National Instruments](#)

Thursday, August 5 2:15–3:15 p.m. Room 12A

Building Commercial Software and Add-Ons through Licensing and Activation Technology

Have you ever wondered what it takes to build a commercial software product or LabVIEW add-on? Licensing and activation technologies can play a big role in enabling professional deployment of software applications. With new features in LabVIEW, it may be easier than you think.

Sohum Misra, Software Engineer, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 12B

Case Studies in LabVIEW Parallel Programming Performance

LabVIEW is a flexible and natural environment for parallel programming. With features such as the parallel For Loop, it becomes even easier to fully use modern multicore machines. However, getting the best performance may require an understanding of what LabVIEW is doing and how your CPU architecture can affect performance. Look at several parallel programs and investigate how you can modify them to achieve better scalability and performance.

Rob Dye, Principal Architect, [National Instruments](#)

Tuesday, August 3 10:30–11:30 a.m. Room 12A

TECHNICAL TRACKS

SOFTWARE DEVELOPMENT TECHNIQUES TRACK

Combine Real-Time Processing and a UI on One Controller with Virtualization

Learn how to run LabVIEW Real-Time in parallel with Windows XP or Red Hat Linux on a single PXI or industrial controller. Also explore new features in the NI Real-Time Hypervisor including interOS shared memory and flexible CPU core allocation.

Casey Weltzin, Product Manager, [National Instruments](#)

Wednesday, August 4 4:45–5:45 p.m. Room 12A

Completing Your RIO System with Custom Hardware: A Case Study Using Multisim

With Multisim, you can easily and quickly define custom circuitry to augment your current NI Single-Board RIO system. Using the new Circaflex daughter card from Cyth Systems as a case study, explore best practices in codesigning a biomedical embedded system with a printed circuit board (PCB) prototype using NI Single-Board RIO and Multisim.

Bhavesh Mistry, Engineer, [National Instruments](#)

Tuesday, August 3 1:00–2:00 p.m. Room 12A

Hands-On: Data Management and Reporting

Learn how to effectively harness LabVIEW data storage technologies to document test data using the TDM data model. Discover how to use TDMS VIs to save structured data for loading into Microsoft Excel or for mining, analyzing, and reporting in DIAdem.

Derrick Snyder, Product Manager, [National Instruments](#)

Tuesday, August 3 2:15–3:15 p.m. Room 18C

Thursday, August 5 10:30–11:30 a.m. Room 18C

Demystifying the Cloud

People are talking about the cloud, but do you really understand how it could impact you? Hear from the experts at Microsoft as they talk about real-world engineering examples using cloud technology and where the technology is headed in the future.

Matt Rogers, Product Manager, [Microsoft](#)

Caroline Tipton, Product Manager, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 19B

Developing Web-Based User Interfaces for Measurement and Automation Systems

Engineers and scientists expect to control remote measurement and automation systems through Web browsers. Examine new NI tools for developing light, Web-based applications through graphical programming and how to combine them with LabVIEW RESTful Web services to provide powerful, flexible solutions for monitoring systems based on LabVIEW via the Web.

Diya Mukherji, Engineer, [National Instruments](#)

Wednesday, August 4 3:30–4:30 p.m. Room 12B

Finding and Analyzing Technical Data Files Using LabVIEW and NI DataFinder

Engineers and scientists spend more time searching through post-test data for useful information than performing the actual test. Observe how NI DataFinder technology and the new API for LabVIEW offer Internet-like search to index, search, find, and report post-test data across channels, files, and network locations.

Caroline Tipton, Product Manager, [National Instruments](#)

Thursday, August 5 1:00–2:00 p.m. Room 19B

Advanced: Full Speed Ahead – Maximize the Performance of NI TestStand

Learn how to squeeze every last bit of performance out of your NI TestStand test system as well as top best practices for improving NI TestStand performance.

Evan Prothro, Engineer, and

Jonathan Cotton, Engineer, [National Instruments](#)

Wednesday, August 4 1:00–2:00 p.m. Room 11B

Hands-On: How to Build a LabVIEW Add-On

Walk through the process of building a LabVIEW add-on and how to package an add-on with the VI Package Manager to plug into the LabVIEW palettes. Also learn about commonly used APIs and how to add licensing and activation to your product.

Chris Bolin, Partner Program Engineer, [National Instruments](#)

Michael Aivaliotis, Senior Software Architect, [JKI](#)

Tuesday, August 3 3:30–5:30 p.m. Room 18C

Hands-On: Introducing LabVIEW

Learn about the new features in LabVIEW.

Jeffrey Phillips, Product Manager, [National Instruments](#)

Tuesday, August 3 10:30–11:30 a.m. Room 18C

Wednesday, August 4 2:15–3:15 p.m. Room 18C

Wednesday, August 4 4:45–5:45 p.m. Room 18C

Introduction to the TDMS File Format

Collecting measurement data, saving it for reuse, and sharing it with others can be challenging. Explore the benefits of TDMS as a file standard versus other storage techniques, and learn data-saving best practices to get the most out of your test data.

Derrick Snyder, Product Manager, [National Instruments](#)

Tuesday, August 3 1:00–2:00 p.m. Room 11B

Advanced: LabVIEW Classes – The State of the Art

Join LabVIEW developers who know the LabVIEW basics and are interested in learning more. Discuss new development techniques and new LabVIEW features that extend the LabVIEW OOP model.

Stephen Mercer, Engineer, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 12A

Advanced: LabVIEW Compiler Under the Hood – Understanding the Optimizations in 2010

The LabVIEW compiler is an evolving part of the graphical development environment. A host of optimizations have been made to the LabVIEW compiler to increase run-time performance. Explore how you can take advantage of these changes to optimize your LabVIEW applications.

Jeffrey Phillips, Product Manager, [National Instruments](#)

Tuesday, August 3 3:30–4:30 p.m. Room 12A

TECHNICAL TRACKS

SOFTWARE DEVELOPMENT TECHNIQUES TRACK

LabVIEW Design Patterns and SMOReS

Learn how to select, use, and create design patterns to meet common challenges when engineering applications in G. Also examine the design patterns that go beyond the basics of state machines to ensure scalability and code maintainability.

Norman Kirchner, Engineer, [National Instruments](#)

Wednesday, August 4 10:30–11:30 a.m. Room 12A

Advanced: LabVIEW Graphical Scripting

Learn ways to programmatically script a LabVIEW VI and examine how the LabVIEW R&D team and lead users successfully automate code generation with this powerful tool.

Trevor Christman, Engineer, [National Instruments](#)

Tuesday, August 3 2:15–3:15 p.m. Room 12A

LabVIEW GUI Design 2.0

Discuss user interface design techniques and how to apply them to LabVIEW in this interactive presentation. Learn about conforming to Windows OS standards, user interactions, XControls, and .NET, as well as unique ways to display data.

Jonathan Cohn, Engineer, [Bloomy Controls](#)

Wednesday, August 4 4:45–5:45 p.m. Room 12B

LabVIEW OOP Design Patterns for Large Systems

LabVIEW object-oriented capabilities present new possibilities for large applications built on loosely coupled, event-driven components and frameworks. Find out how to reuse components across several applications by employing proven software engineering techniques such as inheritance, dynamic methods, dependency injection, and user events.

James Kring, CEO, [JKI](#)

Thursday, August 5 1:00–2:00 p.m. Room 12A

TECHNICAL TRACKS

SOFTWARE DEVELOPMENT TECHNIQUES TRACK

LabVIEW UI Tips and Tricks

Discuss techniques for creating attractive and usable front panels with native LabVIEW features and tools you already know how to use.

Simon Hogg, Product Manager, [National Instruments](#)

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| Tuesday, August 3 | 4:45–5:45 p.m. | Room 12B |
| Thursday, August 5 | 2:15–3:15 p.m. | Room 12B |

New Features and Best Practices for Network Data Transfer

Sending and receiving data over a network connection is a basic requirement for any distributed system, but it can become a difficult task. In addition to new features in the shared variable, cover new methods for lossless, high-throughput streaming of waveform data over the network.

Jason Reding, Group Manager, [National Instruments](#)

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| Wednesday, August 4 | 1:00–2:00 p.m. | Room 12A |
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NI TestStand Operator Interface Development in Practice

Learn best practices on how to architect and develop NI TestStand operator interfaces using LabVIEW software and see how toolkits can simplify operator interface development by abstracting common functionality.

Morten Pedersen, Engineer, [CIM Industrial Systems A/S](#)

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| Thursday, August 5 | 1:00–2:00 p.m. | Room 11A |
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Development and Deployment of Large LabVIEW Applications

Learn best practices to shorten your build time, simplify deployment, and make your code more modular in LabVIEW.

Miko Hadikusuma, Engineer, [National Instruments](#)

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| Wednesday, August 4 | 2:15–3:15 p.m. | Room 12A |
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Practical Applications of Web Services in LabVIEW

Gain in-depth knowledge for building Web services into your applications and deploying them to your target machines, including the basics of Web services, how to build and deploy as part of a .exe installation, pitfalls in designing Web services, and communicating between Web services and LabVIEW .exes.

John Lokanis, Engineer, [F5 Networks](#)

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| Wednesday, August 4 | 2:15–3:15 p.m. | Room 12B |
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Raw Data to Results: Proper Data Management Techniques

See how you can move quickly from raw data collection to usable engineering results with NI software for managing measurement data, mining, analysis, and reporting. Explore different data management strategies and ways to use the latest NI software features to expand your approach to multiple groups or departments within your organization.

Derrick Snyder, Product Manager, [National Instruments](#)

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| Wednesday, August 4 | 2:15–3:15 p.m. | Room 11B |
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Reduce Test System Obsolescence and Long-Term Maintenance with the ATML Standard

Learn about the Automatic Test Markup Language (ATML) and NI solutions for reducing obsolescence and long-term maintenance using this standard.

Derrick Snyder, Product Manager, [National Instruments](#)

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| Tuesday, August 3 | 4:45–5:45 p.m. | Room 14 |
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Saving Time with Automated Postprocessing Using LabVIEW and DIAdem

Learn how to set up and move data from LabVIEW into DIAdem via TDM and TDMS files to generate professional results reports. Automate repetitious data workflow tasks using DIAdem scripting to save time.

Brian Banacki, Engineer, and

Joe Gerhardstein, Principal Engineer, [Sirius XM Satellite Radio](#)

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| Thursday, August 5 | 1:00–2:00 p.m. | Room 16B |
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Hands-On: Software Engineering

Get hands-on experience with revision control; Subversion; NI Requirements Gateway; and the LabVIEW VI Analyzer, LabVIEW Unit Test Framework, and LabVIEW Desktop Execution Trace toolkits.

Elijah Kerry, Product Manager, [National Instruments](#)

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| Wednesday, August 4 | 1:00–2:00 p.m. | Room 18C |
| Wednesday, August 4 | 3:30–4:30 p.m. | Room 18C |

State Machine versus State Machine

Do you start all LabVIEW components with the producer-consumer design pattern, or do you use a full-featured state machine? Watch two Certified LabVIEW Architects face off over who has the best state machine and which features are essential for your template.

Nancy Hollenback, LabVIEW Instructor and Architect, [The G Team](#)

Justin Goeres, Senior Engineer and Product Manager, [JKI](#)

Norman Kirchner, Engineer, [National Instruments](#)

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| Tuesday, August 3 | 10:30–11:30 a.m. | Room 12B |
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Team-Based Development and Source Code Control

Find out how to integrate source code control into LabVIEW to track changes and coordinate work among teams of developers.

Elijah Kerry, Engineer, [National Instruments](#)

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| Tuesday, August 3 | 4:45–5:45 p.m. | Room 12A |
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Testing Your Custom .m Files for Determinism with the LabVIEW MathScript RT Module

The LabVIEW MathScript RT Module has been optimized to run your custom .m files deterministically on NI real-time hardware platforms. Learn how to test for jitter in your applications with MathScript, and see the improved MathScript interactive window for .m file development.

Jeffrey Phillips, Product Manager, [National Instruments](#)

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| Thursday, August 5 | 10:30–11:30 a.m. | Room 11A |
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TECHNICAL TRACKS

SOFTWARE DEVELOPMENT TECHNIQUES TRACK

Tips and Tricks to Speed LabVIEW Development

Participate in an interactive presentation that covers a variety of simple ways to help you write faster LabVIEW code. Review simple and advanced techniques to easily improve VI performance.

Darren Nattinger, Engineer, [National Instruments](#)

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| Tuesday, August 3 | 3:30–4:30 p.m. | Room 12B |
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Using the C Interface for LabVIEW FPGA

Discover how to develop ANSI C-based applications that communicate with the LabVIEW FPGA interface on a desktop or real-time system.

Adri Kruger, Product Manager, and

PJ Tanzillo, Product Manager [National Instruments](#)

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| Tuesday, August 3 | 2:15–3:15 p.m. | Room 16A |
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What’s New in LabVIEW

Examine the latest LabVIEW features and ways you can use them to improve your productivity and the performance of test, control, and design applications.

Jeffrey Phillips, Product Manager, [National Instruments](#)

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| Tuesday, August 3 | 1:00–2:00 p.m. | Room 12B |
| Wednesday, August 4 | 1:00–2:00 p.m. | Room 12B |

What’s New in LabWindows/CVI 2009 and Beyond

Explore the new features of LabWindows/CVI 2009 and the LabWindows/CVI 2009 Real-Time Module to increase your productivity and application reliability. Learn how to take advantage of the latest technologies, such as FPGA-based hardware, and share feedback with LabWindows/CVI developers.

Luis Gomes, Engineer, and

Adri Kruger, Product Manager [National Instruments](#)

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| Tuesday, August 3 | 10:30–11:30 a.m. | Room 11B |
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TECHNICAL TRACKS

TEST AND DATA ACQUISITION TRACK

Achieve Hardware Independence with an Object-Oriented HAL

System readiness is increased when reliance on specific hardware is reduced or removed. HALs are used in test systems to decouple the test application from the instrument hardware. Examine a recommended approach for the design and implementation of an object-oriented HAL in LabVIEW.

Arun Veeramani, Product Support Engineer, National Instruments

Wednesday, August 4 2:15–3:15 p.m. Room 14

Hands-On: Acquire and Process Sound and Vibration Signals

Explore the technology needed to acquire sound and vibration signals from real-world accelerometers and microphones. Learn how LabVIEW can take you from raw data to analysis in minutes.

Brooks Campbell, Engineer, National Instruments

Wednesday, August 4 2:15–3:15 p.m. Room 18D

Thursday, August 5 10:30–11:30 a.m. Room 18D

Hands-On: Build an Automated Test System from Scratch

Explore ways to develop an automated test system from start to finish and how to use NI TestStand to quickly sequence your measurements. Also discover ways to use LabVIEW to easily communicate with measurement instruments.

Peter Flores, Engineer, National Instruments

Tuesday, August 3 2:15–4:15 p.m. Room 18A

Wednesday, August 4 1:00–3:00 p.m. Room 18A

Creating High-Speed Data Record and Playback Systems

Learn how to architect high-speed data record and playback applications such as RF record and playback, IF/baseband streaming, and high-channel-count data acquisition. Understand how to use high-throughput PXI Express instruments, chassis, and controllers to create systems with up to 6.4 GB/s of total system throughput.

Chetan Kapoor, Product Manager, National Instruments

Wednesday, August 4 2:15–3:15 p.m. Room 15

DAQ Advanced: Real Developers Use Property Nodes

Do you dream about retriggerable tasks and exporting sample clocks, or are you constantly using NI Spy for debugging? Learn tips and tricks from NI hardware and software engineers for solving the most challenging data acquisition problems.

Daniel Domene, Group Manager, National Instruments

Tuesday, August 3 3:30–4:30 p.m. Room 11B

DC Source Demonstrations: Do You Have the Power?

Providing power to your DUT is not always as simple as it sounds. Accuracy, transient response time, integrated measurements, and output speed are important considerations. View product demonstrations that address these demanding application requirements and learn about programmable power supplies, source measure units (SMUs), and methods for cabling and fixturing.

Travis White, Product Manager, National Instruments

Tuesday, August 3 3:30–4:30 p.m. Room 14

Distributed Monitoring with USB DAQ and Wi-Fi

Learn how LabVIEW protects people from environmental noise in Mexico City, how to architect distributed data acquisition systems, and new approaches to visualizing data in LabVIEW.

Professor L. Sanchez, Center for Computing Research, National Polytechnic Institute

Tuesday, August 3 10:30–11:30 a.m. Room 15

Evaluating the Latest Intel Microarchitecture for Test, Measurement, and Control Applications

The latest microprocessor architecture from Intel, Nehalem, includes new features such as Intel Turbo Boost Technology, an integrated memory controller, hyperthreading, and advanced power management. Gain an understanding of the details regarding these new features and how they impact various test, measurement, and control applications.

Chetan Kapoor, Product Manager, and

Sarah Schlonsky, Product Manager, National Instruments

Wednesday, August 4 4:45–5:45 p.m. Room 15

Five RF Measurements Everyone Should Know

With the rapid integration of wireless connectivity into many devices, chances are you will be taking RF measurements soon. Learn how to use the software-defined PXI platform to take five common RF measurements, including phase noise, noise figure, and power.

David Hall, Product Manager, National Instruments

Thursday, August 5 1:00–2:00 p.m. Room 14

Advanced: Precision Linear Measurements of RF Components

Gain insight into new RF instrumentation and measurements required to precisely characterize the linear operating parameters of RF devices. Walk away with an understanding of the appropriate measurements, calibration, terminology, and practices to improve accuracy and test times using new RF instruments from NI.

Steve Tenney, Development Manager, National Instruments

Thursday, August 5 2:15–3:15 p.m. Room 14

Hack Your Car with NI CAN Interfaces and LabVIEW

Learn the details of automotive diagnostics (OBD-II) and the controller area networking used in every production car since 2008. Discover how to use LabVIEW and NI USB controller area network (CAN) interfaces to gain hidden data from your car, read diagnostic trouble codes, and build custom automotive diagnostic applications.

Noah Reding, Product Manager, National Instruments

Wednesday, August 4 10:30–11:30 a.m. Room 15

HIL and Real-Time Testing Techniques

Real-time testing applications require greater reliability and determinism than a typical stimulus-response test system. Examine several of these applications and the architectures and technologies used to develop them.

Torsten Blochwitz, Project Manager, ITI GmbH

Chris Washington, Senior Product Manager, National Instruments

Thursday, August 5 10:30–11:30 a.m. Room 13B

TECHNICAL TRACKS

TEST AND DATA ACQUISITION TRACK

Advanced: Inside the SC Express Modules – Analog Designs and Technologies

Explore the SC Express modules and learn about the analog design decisions that enable high-performance conditioned measurements. Also discover technologies, such as delta-sigma analog-to-digital converters (ADCs), ratiometric bridge measurements, and unique designs to increase accuracy in thermocouple measurements.

Shea Clymer, Group Manager, and

Shea Sultzer, Engineer, National Instruments

Thursday, August 5 2:15–3:15 p.m. Room 13B

Remote Measurements with NI C Series Hardware

Take measurements remotely with C Series technology and Ethernet. C Series modules are rugged, compact measurement modules that combine ADC technology, signal conditioning, and connectivity, all in the same package. Learn how to deploy the collection of more than 50 modules over Ethernet.

Brett Burger, Product Manager, and

Charlie Stiernberg, Product Manager, National Instruments

Tuesday, August 3 10:30–11:30 a.m. Room 14

NI X Series Multifunction DAQ: Customer Successes and New Products

X Series multifunction DAQ devices offer high-performance analog, digital, and counter circuitry on a single device, and NI-STC3 timing and synchronization technology to manage these subsystems. Learn about customer successes with X Series and the latest products.

Sam Freed, Product Manager, National Instruments

Tuesday, August 3 2:15–3:15 p.m. Room 14

Hands-On: Introduction to Data Acquisition

Interact with NI engineers, ask questions, and learn the basics of using LabVIEW to take measurements from NI DAQ devices.

Seth Berry, Engineer, and

John Passiak, Engineer, National Instruments

Tuesday, August 3 1:00–2:00 p.m. Room 18D

Wednesday, August 4 1:00–2:00 p.m. Room 18D

TECHNICAL TRACKS

TEST AND DATA ACQUISITION TRACK

Top Considerations for Optical Sensing

Several methods can be used for optical measurements. Fiber Bragg grating (FBG) is a proven technology with the ability to perform highly accurate strain measurements. Explore the new LabVIEW driver for FBG-based measurements, top considerations for FBG measurements, and new application areas.

Nathan Yang, Product Manager, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 14

Introduction to Optical Sensing

Optical sensing provides benefits that help engineers perform previously difficult or impossible measurements. Topics include a comparison of electrical and optical measurements, the benefits of optical sensing, an overview of various optical sensing technologies, and a how-to guide for optical measurements with LabVIEW.

Nathan Yang, Product Manager, [National Instruments](#)

Wednesday, August 4 4:45–5:45 p.m. Room 13A/B

Introduction to PXI and PXI Express

Learn about the latest technical features of the PXI and PXI Express platforms. Understand what makes these platforms ideal for high-bandwidth applications and tight synchronization, enabling 1,500 different instruments. Also take a sneak peek at new products and user solutions.

Sarah Schlonsky, Product Manager, and
Patrick Webb, Product Manager, [National Instruments](#)

Tuesday, August 3 2:15–3:15 p.m. Room 15

Introducing SC Express: High-Performance Sensor Measurements

Discover the high-performance PXI Express NI DAQ modules with integrated signal conditioning for scalable sensor measurement systems. Learn how SC Express offers increased accuracy, maximum throughput, and tight synchronization for sensor measurements.

Elizabeth Smith, Product Manager, [National Instruments](#)

Wednesday, August 4 10:30–11:30 a.m. Room 14

Model-Based Simulation and Prototyping of an Electric Vehicle

Discover Dynacar, a new tool built with LabVIEW that integrates with physical hardware for rapid prototyping vehicle control applications. The dynamic model is based on a detailed modeling of longitudinal and lateral dynamics with front axle, vehicle body, and rear-axle approaches. Driver input is taken into account to evaluate system response.

Alberto Pena, Researcher, [Tecnalia](#)

Wednesday, August 4 1:00–2:00 p.m. Room 15

Moving Beyond Test System Efficiency to Test Data Management

Learn about a standardized PXI and LabVIEW test platform that reduces system cost and increases test throughput. Test specifications and results are managed using a custom global database that improves test parameter maintainability and data analysis efficiency, and real-time monitoring provides feedback to the manufacturing process to quickly resolve production issues.

Randy Sparks, Manager of Automated Test Development,
[Knowles Electronics](#)

Tuesday, August 3 1:00–2:00 p.m. Room 14

Advanced: NASA Hearing Aid Analysis and Audio Test Architectures with NI

Learn about hearing aid technology, what NASA is doing to protect the next generation of astronauts, and how it will impact real-world hearing aids. Review the software architecture and analysis algorithms created in LabVIEW.

Jeff Schmitt, President, [ViAcoustics](#)

Wednesday, August 4 3:30–4:30 p.m. Room 11B

Hands-On: NI FlexRIO and LabVIEW FPGA

Learn about the new features of the LabVIEW FPGA Module that enhance the NI FlexRIO product family for test applications.

Mallori Martin, Engineer, [National Instruments](#)

Tuesday, August 3 3:30–4:30 p.m. Room 18D

Wednesday, August 4 10:30–11:30 a.m. Room 18D

NI FlexRIO and LabVIEW FPGA for Test Applications

Explore ways to use NI modular instruments, NI FlexRIO FPGAs, peer-to-peer (P2P) data streaming, and LabVIEW FPGA for accelerating and enabling new test applications. Focus on programming for new PXI Express NI FlexRIO FPGA adapter modules with DSP-focused Xilinx Virtex-5 FPGAs using new features in the LabVIEW FPGA Module.

Ryan Verret, Product Manager, [National Instruments](#)

Wednesday, August 4 3:30–4:30 p.m. Room 13A/B

Hands-On: NI VeriStand

Test-drive NI VeriStand software to learn how it can help reduce the development time and risk of your real-time testing application. Also discover how you can use LabVIEW and NI TestStand to add more functionality to NI VeriStand.

Chris Washington, Senior Product Manager,
[National Instruments](#)

Tuesday, August 3 1:00–2:00 p.m. Room 18A

Tuesday, August 3 4:45–5:45 p.m. Room 18A

Wednesday, August 4 3:30–4:30 p.m. Room 18A

Nondestructive Resonance Inspection

Gain an overview of resonance inspection techniques through an introduction of software architecture for interactive impact testing. Understand how to acquire and analyze useful frequency response data.

Doug Bendele, Engineer, [National Instruments](#)

Tuesday, August 3 1:00–2:00 p.m. Room 15

Optimize Your Test System and Reduce Test Time Using LabVIEW and NI TestStand

Discover how to optimize the performance of your test system by implementing parallel test using NI TestStand.

Manooch Hosseini, Engineer, [National Instruments](#)

Tuesday, August 3 4:45–5:45 p.m. Room 11B

TECHNICAL TRACKS

TEST AND DATA ACQUISITION TRACK

Perform Any Test on Any Structure

NI is revolutionizing the world of structural test with ease of use and new measurement capabilities. See how G Systems uses NI tools to solve challenging structural test applications, and explore reference architectures and other case studies.

Nathan Yang, Product Manager, [National Instruments](#)

Josh Rouse, Engineer, [G Systems](#)

Thursday, August 5 2:15–3:15 p.m. Room 16B

Plan for Success with Automated Test

Whether you are writing a test architecture or using off-the-shelf products such as NI TestStand, complications may arise. Discuss the common pitfalls of test frameworks and how a good design allows for reliable test execution and flexibility to expand with the needs of a changing product or production environment.

Elaine Ramundo, Engineer, [Bloomy Controls](#)

Thursday, August 5 2:15–3:15 p.m. Room 11A

Power Measurements 101

Applications for power are widespread, but some of the more popular requirements today include device and appliance test in addition to smart grid research and development. Learn power basics and how to make some of the most common power measurements with NI tools.

Brett Burger, Product Manager, [National Instruments](#)

Thursday, August 5 2:15–3:15 p.m. Room 17A

Real-Time Structural Health Monitoring (SHM): The New Paradigm in Infrastructure Management

Through advances in sensors, digitizers, communication, and software, SHM has become an effective tool for making accurate and timely remote evaluations of civil structures. Review the use of an SHM system developed using NI products that assists civil engineers in infrastructure damage detection and efficient emergency response.

John Keech, Engineer, and
Tino Mihajlovik, Engineer, [Digitexx Data Systems](#)

Wednesday, August 4 1:00–2:00 p.m. Room 14

TECHNICAL TRACKS

TEST AND DATA ACQUISITION TRACK

Real-Time Testing with NI VeriStand

NI VeriStand is a software environment for configuring real-time testing applications. While no programming knowledge is required to use NI VeriStand, you can use a variety of NI and third-party environments to add custom functionality. Gain an introduction to NI VeriStand and learn how you can use it to create real-time testing applications more efficiently.

Chris Washington, Senior Product Manager, [National Instruments](#)

Tuesday, August 3 10:30–11:30 a.m. Room 13A/B

Smart Phones for Smarter Data Acquisition

You probably carry around more computing power in your pocket today than you had on your desktop 10 years ago. Learn how to harness the capabilities of the iOS and Android to acquire measurement data on a mobile computing platform and share it with your colleagues over the Internet.

Charlie Stiernberg, Product Manager, and
Joe Friedrichsen, Engineer, [National Instruments](#)

Wednesday, August 4 3:30–4:30 p.m. Room 14

Standard or Custom: Emulate and Test Any Protocol with LabVIEW FPGA

Reduce cost and time using NI FlexRIO products for implementing custom protocols that require demanding hardware and software development. Use the flexibility of FPGAs to emulate a variety of protocols, including SPI, I²C, Synchronous Data Link Control (SDLC), and High-Level Data Link Control (HDLC), with different time domains on a single system.

Raajit Lall, Product Manager, [National Instruments](#)

Thursday, August 5 1:00–2:00 p.m. Room 17B

Strain Gage Measurement Techniques

Learn best practices to take the stress out of strain measurements. Compare technologies such as foil gauges and vibrating wires, and focus on foil strain gages to learn tips, tricks, and top considerations to improve your measurements.

Nathan Yang, Product Manager, [National Instruments](#)

Wednesday, August 4 3:30–4:30 p.m. Room 15

Hands-On: Structural Test

Structural test is defined as submitting a structure made of many parts through various conditions to validate a design, which involves a combination of high-performance measurements with powerful control. Get hands-on experience with structural sensors including strain gages, accelerometers, and thermocouples with the SC Express family of PXI Express modules and NI CompactDAQ.

Jack Arnold, Systems Engineer, [National Instruments](#)

Tuesday, August 3 2:15–3:15 p.m. Room 18D
Wednesday, August 4 4:45–5:45 p.m. Room 18D

Advanced: Switching Configurations for Large Test Systems

Switching can become challenging in test systems that incorporate multiple instruments and hundreds of channels. Discuss best practices for creating high-reliability switching systems in a short development cycle, focusing on common challenges including connectivity, maintenance, and programming.

Jordan Dolman, Product Manager, [National Instruments](#)

Wednesday, August 4 4:45–5:45 p.m. Room 11B

Synchronizing Scalable Sensor Measurement Systems

Learn how to build synchronized scalable data acquisition and sensor measurement systems on the PXI Express platform. Discover how recent innovations in hardware and software technologies simplify the synchronization of measurements across different sensor types using SC Express, DSA, and X Series devices. Also learn about different synchronization methods and the trade-offs associated with them.

Adam Dewhirst, Engineer, and
Daniel Domene, Group Manager, [National Instruments](#)

Wednesday, August 4 4:45–5:45 p.m. Room 14

Testing Audio Device Quality: Why Buy Headphones That Cost \$300 USD?

New audio devices offer noise-cancelling capabilities, advanced encoding/decoding algorithms, and 5.1 or 7.1 digital audio surround-sound technologies. Learn how key measurements can identify a high-quality device and how the latest digital audio technologies are improving today’s audio devices.

Jack Arnold, Systems Engineer, [National Instruments](#)

Tuesday, August 3 3:30–4:30 p.m. Room 15

Advanced: Testing Next-Generation Multimedia Devices

Testing multimedia devices requires advanced digital video analysis tools for the latest standards including 1080p/60 Hz Full HD video, 7.1 channel embedded audio, 3D content, and streaming video. Gain background knowledge for digital video testing and view a demo of NI VideoMASTER for digital video testing.

Birger Schneider, Managing Director, [National Instruments](#)

Thursday, August 5 10:30–11:30 a.m. Room 16B

Using Honeywell Pressure, Load, and Torque Sensors with Data Acquisition Systems

Learn the importance of using high-quality pressure, load, and torque sensors, including the correct selection, design, and installation for the application. Gain an overview of sensing technology and the value of using quality outputs from sensors combined with ease of connectivity and setup to modern data acquisition systems.

Brian Duffy, Global Applications Engineering Manager, [Honeywell](#)

Tuesday, August 3 4:45–5:45 p.m. Room 15

Using PXI and LabVIEW for Characterizing Power Management ICs

ON Semiconductor has chosen the NI PXI platform to reduce the cost and increase the flexibility of its semiconductor validation tests. Learn how engineers are saving space and lowering the cost of test systems on power management ICs and more.

Amiri McCain, Engineer, [ON Semiconductor](#)

Tuesday, August 3 2:15–3:15 p.m. Room 13A/B

TECHNICAL TRACKS

TEST AND DATA ACQUISITION TRACK

Using Simulation as a Test Development Platform

Test developers depend on physical prototypes to develop and debug test programs, causing significant schedule delays. Furthermore, test development can be impeded by insufficient design for test. Find out how Medtronic is implementing an initiative that could achieve up to a 60 percent reduction in test development time using a new combination of design tools.

Jaena Hylander, Engineer, [Medtronic Inc.](#)

Darrell Teegarden, Engineer, [Mentor Graphics](#)

Wednesday, August 4 10:30–11:30 a.m. Room 11B

What’s New in Instrument Control

Learn about new features in LabVIEW and the Virtual Instrument Software Architecture (VISA), including the latest drivers for connected instruments and usability improvements that can help you get started with your applications quickly. Discuss new products and features for GPIB that can reduce your setup time and cost.

Murali Ravindran, Senior Product Manager, [National Instruments](#)

Thursday, August 5 1:00–2:00 p.m. Room 13B

Wireless Monitoring of Real-World Structures

Explore how you can use real-world monitoring to track behavior and detect damage in structures. Researchers are developing a wireless monitoring system for highway bridges that will be capable of supporting multiple sensors with sufficient computing power to process sensor data. View initial results of wireless communication tests along with challenges of structural monitoring.

Jeremiah Fasl, Engineer, [The University of Texas at Austin](#)

Richard Lindenberg, Senior Associate, [Wiss, Janney, Elstner Associates Inc.](#)

Thursday, August 5 10:30–11:30 a.m. Room 19A

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- Presentation on Tuesday, 4:45 pm, room 19A:
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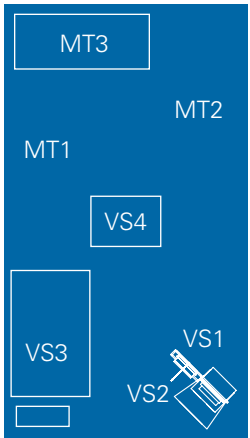
EXHIBITION HALL HOURS

10:00 a.m.–5:00 p.m.

10:00 a.m.–1:00 p.m.

PRODUCT SHOWCASE

Visit the National Instruments Product Showcase to see demonstrations of the latest NI hardware and software products, talk to NI developers, and discover ways to incorporate NI products into your design, test, and control applications.



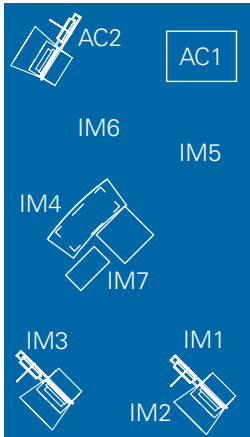
CONTROL

Vision

- VS1 Roller Skate Inspection Station
- VS2 Vision-Guided Ball Balancer
- VS3 Automated Aircraft Ground Refueling
- VS4 Beer Bottle Inspection Station

Motion

- MT1 Gears of Death
- MT3 Flying Dart Board



INDUSTRIAL MEASUREMENTS

- IM1 Microphone Array Beamforming
- IM2 MPPT on a Photovoltaic Cell
- IM3 Wireless Sensor Networks
- IM4 Monitoring Distributed Assets
- IM5 NI C Series Wall
- IM6 Solar Monitoring
- IM7 Monitor Vibration and Voltage Outputs

Advanced Control

- AC1 ImagingLab Multirobot 3D Scanning Machine
- AC2 Advanced Control for Resonance Cancellation

AUTOMATED TEST AND DATA ACQUISITION

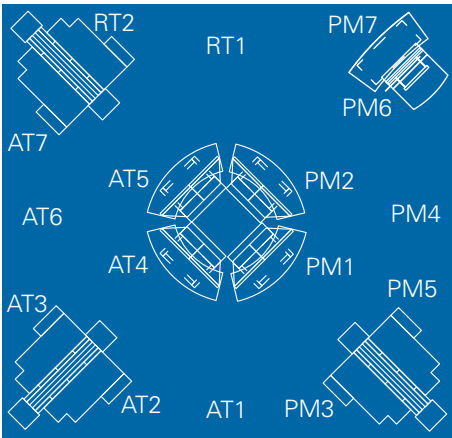
- AT1 GSO Bench_Prod: A Systems Integration Solution
- AT2 Testing 3D Blu-ray Disc Players
- AT3 Semiconductor Characterization
- AT4 Expandable High-Density Switching
- AT5 Multichannel Audio Test
- AT6 Data Management, Visualization, and Synchronization with DIAdem
- AT7 Digital Protocol Emulation

Real-Time Test

- RT1 NI FlexRIO Adapter Modules
- RT2 NI HIL Test Platform

Physical Measurements

- PM1 Testing Digital Audio
- PM2 X Series Multifunction DAQ
- PM3 Optical Sensing
- PM4 Civionics: The Modern Approach
- PM5 Structural Testing with SC Express
- PM6 Sound Power Analysis
- PM7 Ethernet Data Acquisition



PRODUCT SHOWCASE

DESIGN

Prototyping

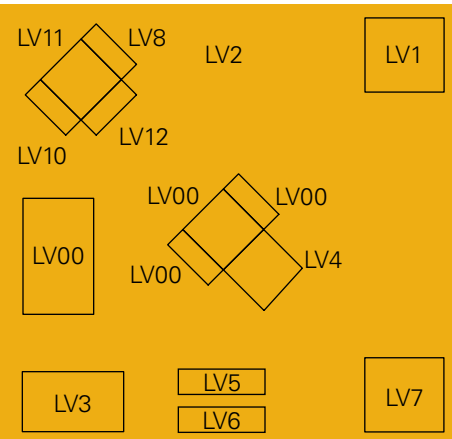
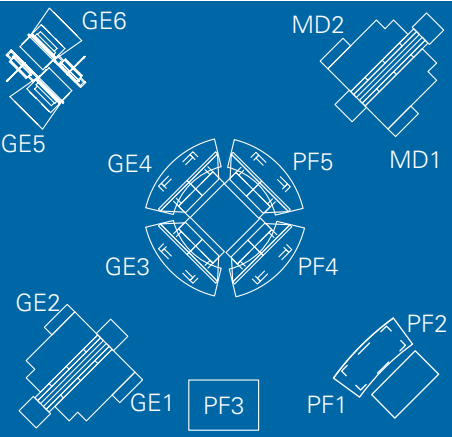
- PF1 Intel Rockbot
- PF2 RIO and Custom Hardware
- PF3 LabVIEW FPGA: Reuse External IP
- PF4 LabVIEW: Rapid Control Prototyping
- PF5 Circuit Simulation and Prototyping

Medical

- MD1 NDT and Ultrasonic Imaging
- MD2 NI Medical Device Prototyping

Embedded

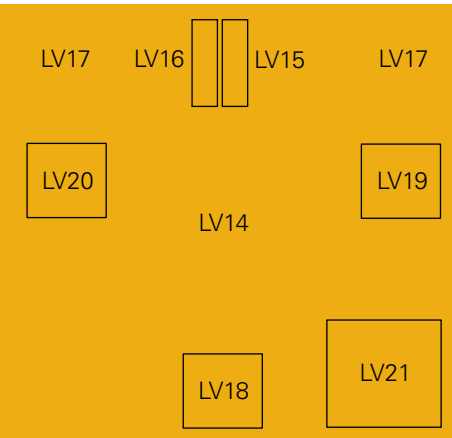
- GE1 Connectivity to Any Network
- GE2 Deployment Curve
- GE3 Combining Design and Test
- GE4 Connectivity to Any LabVIEW Network
- GE5 High-Performance Computing
- GE6 MCU Project Board and NI ELVIS II



LabVIEW ZONE: COMMUNITY

- LV1 Measurements Made Easy
- LV2 Medical Device for Diabetes Research
- LV3 One-ARM'd Basketball-Shooting Robot
- LV4 Popcorn Tweets Powered by LabVIEW
- LV5 Make Your Mark
- LV6 LabVIEW Coding Challenge
- LV7 LabVIEW: As Seen on Television
- LV8 Lock Picking

- LV9 Gait Analysis Using NI Vision
- LV10 Measuring Intrinsic Muscle Strength
- LV11 Hybrid Biking
- LV12 LabVIEW Continuum
- LV13 Do Engineering Anywhere, Anytime



LabVIEW ZONE: PRODUCT

- LV14 Try LabVIEW
- LV15 LabVIEW Engineer-O-Meter
- LV16 Monitor Your Health
- LV17-1 Real-Time Test with NI VeriStand
- LV17-2 Test-Drive LabVIEW Add-Ons
- LV17-3 Fast, Flexible, Accurate Measurements

- LV18 Keynote Demo 1
- LV19 Platform for Science Instrument
- LV21 CHARLI Humanoid Robot

TECHNOLOGY THEATER

Visit the Technology Theater for interactive technical sessions, demonstrations, and activities featuring the latest products and technological innovations from National Instruments and industry experts.

| | | |
|---------------------|------------------|--|
| Tuesday, August 3 | 11:00–11:30 a.m. | Build an EEG Machine with LabVIEW and Data Acquisition |
| | Noon–12:30 p.m. | The Time for Windows 7 64-Bit Is Now |
| | 1:30–2:00 p.m. | Lessons Learned in Cowboy Engineering with Waterloo Labs |
| | 2:30–3:00 p.m. | Goodwill Industries of Central Texas (GICT) – Computer Electronics Recycling Program |
| | 6:00–7:00 p.m. | Challenge the Champions |
| Wednesday, August 4 | 11:00–11:30 a.m. | Remotely Controlled Wind Tunnel Lab via the Internet |
| | Noon–12:30 p.m. | Integrating Test Program Development with System Design |
| | 1:30–2:00 p.m. | Understanding Intel Atom: The Anatomy of Low-Power Intel Architecture |
| | 2:30–3:00 p.m. | LabVIEW on TV: Confirmed, Plausible, or Busted? |
| | 3:30–4:00 p.m. | Data Acquisition for a Bridge Collapse Test |
| Thursday, August 5 | 11:00–11:30 a.m. | Extreme-Speed HIL on NI Real-Time Platforms |
| | Noon–1:00 p.m. | LabVIEW Coding Challenge Finals |

Build an EEG Machine with LabVIEW and Data Acquisition

The first electroencephalogram was performed in 1912. Learn how to build your own EEG machine with LabVIEW and data acquisition hardware.

[Presented by National Instruments](#)

Challenge the Champions

Sign up to participate in an interactive trivia competition that puts a team of NIWeek contestants against the LabVIEW Champions for bragging rights and prizes.

[Presented by National Instruments](#)

Data Acquisition for a Bridge Collapse Test

See explosive video on how engineers at the Ferguson Structural Engineering Laboratory successfully collapsed and measured a 120 ft bridge tested to failure.

[Presented by National Instruments and The University of Texas Ferguson Structural Engineering Laboratory](#)

Extreme-Speed HIL on NI Real-Time Platforms

Learn how to quickly develop high-fidelity physical plant models that run on NI real-time platforms with orders of magnitude faster than conventional approaches. View applications in automotive, aerospace, and power.

[Presented by Maplesoft](#)

TECHNOLOGY THEATER

Remotely Controlled Wind Tunnel Lab via the Internet

View a live demo of a LabVIEW and CompactRIO system with remote panels that allows schools and universities to access research-grade wind tunnels via the Internet.

[Presented by National Instruments and MechNet](#)

The Time for Windows 7 64-Bit Is Now

Understand why the 64-bit OS version of Windows 7 is ideal for specialized computing tasks and applications that demand enormous amounts of memory and performance gains.

[Presented by Microsoft](#)

Understanding Intel Atom: The Anatomy of Low-Power Intel Architecture

Learn about Intel’s exciting Intel Atom Microarchitecture and understand the path to System on a Chip (SOC), and explore the benefits and use cases.

[Presented by Intel](#)

Goodwill Industries of Central Texas (GICT) – Computer Electronics Recycling Program

GICT integrated electronic recycling program diverts more than 250 tons of obsolete electronics from landfills each month. Learn about this award-winning program including the Goodwill Computer Museum.

[Presented by Goodwill Industries of Central Texas](#)

Integrating Test Program Development with System Design

Mentor Graphics’ SystemVision SVX multidomain collaboration environment connects LabVIEW with popular system simulation environments. Learn how SystemVision SVX integrates comprehensive test program development with detailed system design.

[Presented by Mentor Graphics](#)

LabVIEW Coding Challenge Finals

Watch the highest scorer in the week-long LabVIEW Coding Challenge compete against a member of LabVIEW R&D in a live coding competition.

[Presented by National Instruments](#)

LabVIEW on TV: Confirmed, Plausible, or Busted?

Take a break and watch your favorite programming language on the big screen. Listen to the engineers behind the systems explain how NI products were used in TV shows, and view LabVIEW clips from *Deadliest Warrior*, *Crash Test*, and *Mythbusters*.

[Presented by National Instruments](#)

Lessons Learned in Cowboy Engineering with Waterloo Labs

See how the creators of the iPhone car-driving application found new ways to reach engineers using YouTube and Twitter. Hear about the lessons learned through their unique design process.

[Presented by National Instruments](#)

CONNECT @NIWeek LOUNGE

Take a break from the NIWeek action and relax in the Connect @NIWeek Lounge in the Exhibition Hall. The Connect @NIWeek Lounge provides wireless Internet so you can catch up on e-mail, access ni.com/niweekcommunity for real-time conference reports, and view live Twitter feeds.



Get Social Station

See the latest conference buzz on sites like Twitter and Facebook from the comfort of giant sofas and a big plasma screen TV. Also find out how you can “Like,” “Follow,” or “Friend” NIWeek to get official conference information and participate in fun activities.

Stay “In the Loop” after NIWeek

Discover how you can stay connected after NIWeek by joining the online community at ni.com/niweekcommunity, where you can find the latest code, developer blogs, technical groups, and wikis.

NIWeek Mobile Barcode Scavenger Hunt

Spice up the NI Community *Block Diagram* Party with some friendly competition. Join an *Amazing Race*-inspired scavenger hunt using mobile barcodes. Mobile barcodes are 2D codes that your smart phone’s camera can read to serve up information, or “clues,” attached to the code. Meet in the Connect @NIWeek Lounge during the NI Community *Block Diagram* Party for instructions and search the expo floor to solve puzzles, complete challenges, and win prizes. Be the first to check in at the final destination to win the grand prize.

How to participate:

1. Download a mobile barcode reader to your smart phone
2. Meet at the Connect @NIWeek Lounge at 6:35 p.m. for instructions
3. Scan barcodes using your phone’s reader to get clues
4. Solve clues to get to check points and be there first to win free stuff
5. Complete challenges along the way
6. Be the first to the final destination to win the grand prize


Tuesday, August 3

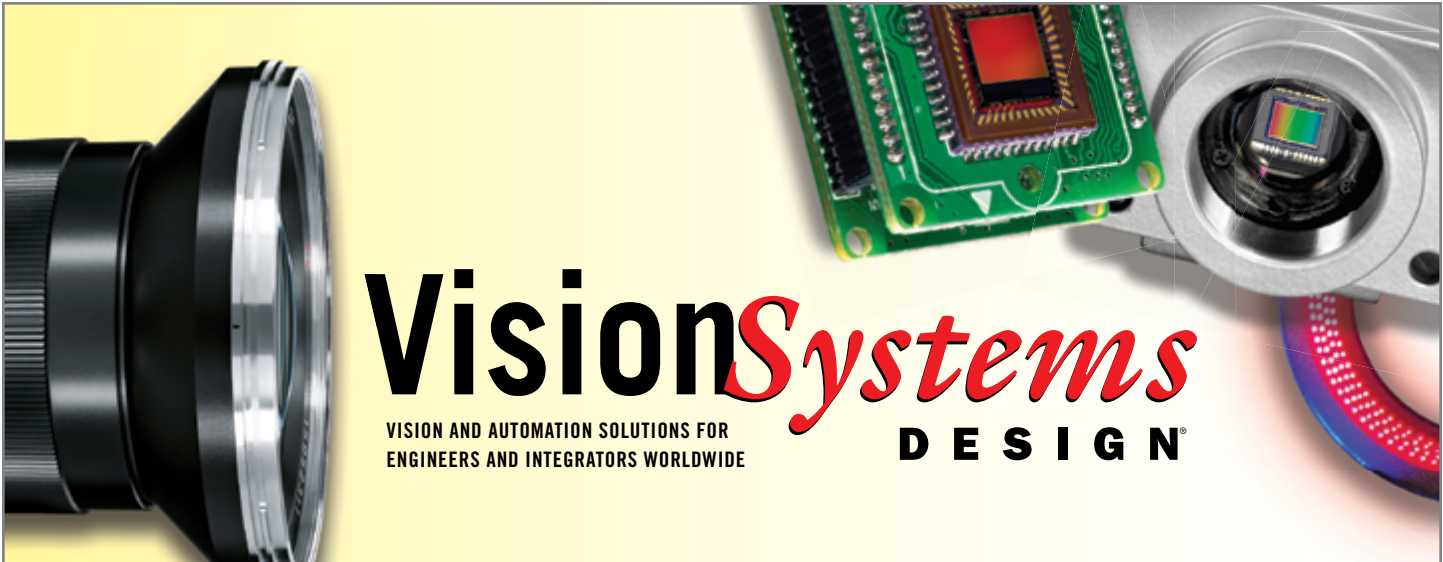
6:35–7:00 p.m.

Exhibition Hall

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MILITARY AND AEROSPACE PAVILION

The Military and Aerospace Pavilion features the NI Mobile Expo, an exhibition of the latest automated test and embedded design technologies from NI for aerospace and defense. Visit the pavilion to see demonstrations including HIL, structural test and monitoring, RF, wireless measurements, and more.



Software-Defined RF Test

Learn about the integrated NI PXI platform for RF measurements, including spectral monitoring and SIGINT, peer-to-peer data analysis with FPGAs, RF record and playback, and GPS receiver test.

Structural Test and Monitoring

See how PXI Express and LabVIEW provide instrumentation-grade I/O and industrial-grade control to perform any test on any structure.

HIL Simulation and Test

Provide stimuli to a flight controller using a joystick or autopilot on a simulated plane. View how the controller commands the control surfaces on a physical model and observe simulated flight information through a digital display.

Prototyping and Deployment with RIO

Discover how Ventura Aerospace delivered a custom embedded monitoring and fire control suppression system for FedEx Express in record time. See how NI RIO hardware supports hardware integration.

National Instruments Software Showcase

Learn how NI software tools reduce development time and improve test execution performance as exemplified by testing a jet fighter pilot helmet and its head-up display.

Parallel Test with Hybrid Instrumentation

Explore a DUT with PXI, VXI, and LXI/USB/GPIB instruments. Learn about IVI software compatibility, PXI speed advantages, and autoscheduling and parallel test with NI TestStand.

Wireless Measurements

Learn how wireless measurement devices can provide test and monitoring systems with increased flexibility and lower costs. Discover how different wireless technologies can meet a variety of remote application challenges for which a cabled solution may be impractical or impossible.

Sponsor



RF AND WIRELESS TEST PAVILION

Visit the RF and Wireless Test Pavilion to see interactive demonstrations of the fast, flexible, and accurate PXI platform from National Instruments that industry leaders are using to meet the demanding test requirements of today's RF and wireless devices.

Reduce Test Time with the PXI Platform

PXI instruments use high-performance, multicore processors to dramatically reduce test times and lower test costs. View demonstrations of multiple test systems using software-defined instrumentation to meet the time-sensitive needs for validation and production test. Also watch demonstrations that showcase the high-speed PXI Express data bus for streaming applications including multichannel RF record and playback, a test method enabled by the PXI platform that allows you to stream terabyte-sized waveforms to and from disk with NI RF vector signal analyzers and generators.

Software-Defined Instrumentation

Using RF toolkits for LabVIEW, you can define the same set of RF hardware as a MIMO receiver, a GPS simulator, an RF record and playback system, or a mobile communications tester for protocols ranging from RFID and ZigBee to GSM, WCDMA, WLAN, and WiMAX. At the RF and Wireless Test Pavilion, see how you can use this software-defined approach to meet the fast-evolving needs of the wireless industry.

Prototype, Validate, and Test on a Single Platform

The NI software-defined approach and flexible hardware architecture enable you to keep up with the constantly evolving wireless industry through tools for signal generation, analysis, visualization, and processing of standard and custom analog and digital modulation. With the RF PXI platform and LabVIEW, you can prototype, validate, and test new designs on a single platform. View live demonstrations of the latest hardware and software additions to the NI RF product family:

- Multichannel, phase-coherent RF record and playback of 50 MHz bandwidth up to 6.6 GHz
- Real-time generation and acquisition using LabVIEW FPGA and peer-to-peer streaming
- Parallel production test for land mobile radios
- Real-time GPS simulator
- Power amplifier characterization
- High-volume production test of GPS, DVB, WLAN, ZigBee, and WiMAX
- Phase-coherent MIMO test system used for 802.11n, WiMAX, and 3GPP LTE



Sponsors



ROBOTICS PAVILION

The Robotics Pavilion is an interactive exhibit demonstrating how LabVIEW graphical programming and NI embedded hardware platforms are used across the robotics landscape in academia and industry. Visit the pavilion to learn how the NI robotics platform spans from 8-year-olds working with LEGO MINDSTORMS NXT to more sophisticated robots used for applications ranging from spacecraft thrusters to solar panels.



Robotics in Action

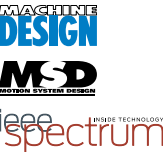
Stop by the Robotics Pavilion to see how LabVIEW and NI hardware are used in a range of robotics applications:

- Check out a variety of mobile robots from hexapods to biomimetic fish
- Test-drive the LabVIEW Robotics graphical programming environment
- See how you can use a swarm of LabVIEW Robotics Starter Kits for search and rescue
- Explore a semiautonomous vehicle that gives the blind an opportunity never thought possible: the ability to drive
- See how NI helps inspire tens of thousands of kids through programs such as the *FIRST* LEGO League (FLL) and *FIRST* Robotics Challenge (FRC)
- Learn how high school students can use CompactRIO to develop sophisticated robotics systems and expand their engineering skills

LabVIEW Robotics

Robots mean many things to many people, and NI offers intuitive and productive design tools for everything from designing autonomous vehicles to teaching robotics design principles. LabVIEW makes it easy to program complex robotics applications by providing a high level of abstraction for sensor communication, obstacle avoidance, path planning, kinematics, steering, and more. Check out the new LabVIEW Robotics software at the Robotics Pavilion.

Sponsors



Robotics Partners



VISION PAVILION

Stop by the Vision Pavilion to see machine vision solutions in action and test-drive the full line of NI vision hardware and software at the vision product hands-on station. Speak with vision industry experts, component providers, and systems integrators to get your vision applications up and running.

See Machine Vision in Action

Discover how industry experts are integrating NI vision products into complete, real-world solutions.

- Food product inspection
- Consumer goods inspection
- Image sensor testing
- Medical device surface inspection
- Body temperature scanning
- FPGA-based acquisition and image processing
- Metrology inspection
- Solar cell inspection

Meet the Experts

Speak with experts from many of the world's leading vision companies about how you can successfully employ NI vision hardware and software in your applications. Talk to NI engineers about the new features in the NI Vision Development Module and how to integrate them in your current and future projects.

Complete Your Vision System

View product demonstrations and speak with vision exhibitors about lighting, cameras, optics, and systems integration. Visit with partners and integrators about how their products and services can make your vision application come to life when combined with NI vision products.



Exhibitors

- 3M Electronic Solutions Division
- Adsys Controls Inc.
- Advanced Illumination
- Allied Vision Technologies
- Basler Vision Technologies
- Cyth Systems
- Edmund Optics
- FLIR Systems
- Graftek Imaging Inc.
- Hitachi Kokusai Electric America Ltd.
- KSE Texas Inc.
- MoviMED
- NET USA
- Norpix Inc.
- Smart Vision Lights

NI SERVICES AND TRAINING PAVILION

Every day you are challenged to do more with less. Visit the NI Services and Training Pavilion to learn more about a variety of product and professional services as well as training and certification programs to meet your needs at every stage of the application life cycle – from planning and development through deployment and ongoing maintenance.



NI Offers a Wide Range of Services

- Hardware Services** – Warranty and repair, calibration, and system assurance
- Software Services** – Software support, maintenance, and volume licensing
- Training and Certification** – Training on key software and hardware offerings and multiple certification levels

NI Services and Training Solutions Ensure Your Success

- Shorten your application development time by half
- Stay up-to-date with the latest LabVIEW features
- Keep your hardware instruments operating more efficiently and accurately with calibration

Visit the NI Services and Training Pavilion

Conveniently located near the main entrance to the Exhibition Hall floor, the NI Services and Training Pavilion is the best place to learn more about NI hardware, software, and professional services offerings as well as training and certification.

- Register to win a one-year training membership valued at \$6,000 USD
- View demos and information about calibration, technical support, and training
- Learn about professional development opportunities through training and certification at NIWeek and in your area
- Make an appointment for a demo of LabVIEW with one of our applications engineers
- Fight a giant robot, take a picture with Dr. James Truchard and Jeff Kodosky, or appear in the world's biggest atom smasher at the NI Services Green Screen Photo Booth

A Real-Time Solution...

Since 2000, Digitexx has been providing **real-time** Structural Health Monitoring systems to alert owners to potential structural damage. Our systems are designed to incorporate multiple sensor types, can be portable or permanent and manage as little as 16 to 100's of channels. If a natural or man-made event takes place on a structure and a threshold it surpassed, our system immediately alerts designated parties with the information they need to make informed decisions.



REAL-TIME APPLICATIONS

Our system architecture is flexible and can be customized for just about any structure including:

- Bridges • Buildings • Wind Turbines
- Dams & Levees • Oil Rigs & Pipelines
- Towers or Other Structures

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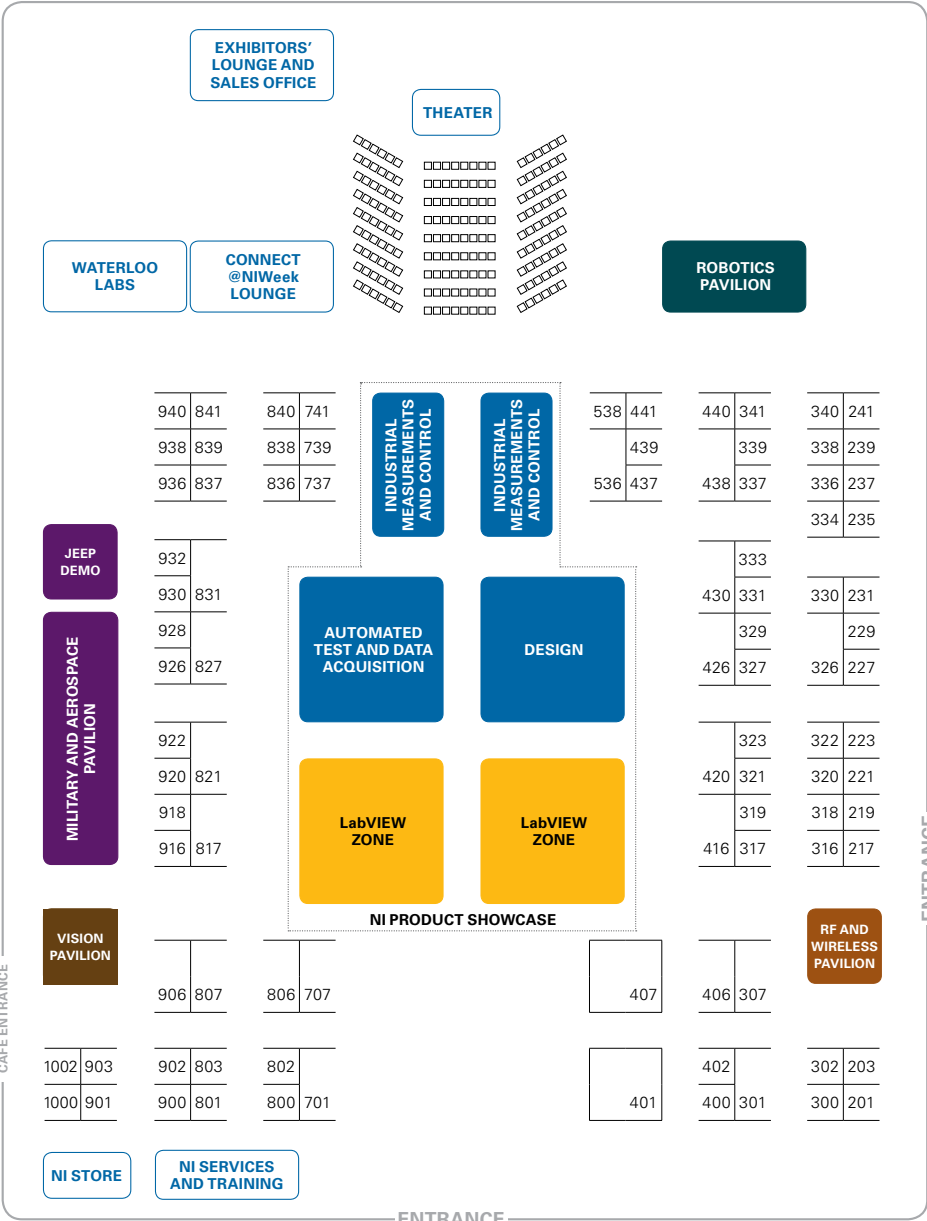
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EXHIBITORS



3M Electronic Solutions Division
Booth 900

3M Electronic Solutions Division provides interconnect solutions to electronic equipment manufacturers and assemblers. Solutions include Ultra Hard Metric Socket Connector for PICMG 2.30 CompactPCI PlusIO standard.
3m.com/electronics

ACO Pacific Inc.
Booth 237

For more than 32 years, ACO Pacific Inc. has been manufacturing stainless precision measurement microphones and systems. We have taken a quiet approach offering innovative products to worldwide markets.
acopacific.com

Adsys Controls Inc
Booth 838

Adsys Controls, an NI Alliance Partner, LabVIEW system integrator, and custom design house, specializes in advanced control systems, imaging systems, and automated test equipment.
adsyscontrols.com

Advanced Illumination
Booth 800

Advanced Illumination designs and manufactures LED lighting and electronics for machine vision, including an extensive line of standard products, plus expandable lights and smart electronics.
advancedillumination.com

AIM-USA
Booth 938

AIM-USA is a leading manufacturer of avionics embedded and test and simulation products for MIL-STD-1553A/B, ARINC429, AFDX, ARINC664, fibre channel, and MIL-STD-1760 applications.
aimusa-online.com

Alfamation
Booth 307

Founded in 1991, Alfamation is a solutions provider that challenges traditional approaches to functional test applications in the automotive, consumer electronics, telecom, and medical industries.
alfautomazione.com

Allied Vision Technologies
Booth 906

Allied Vision Technologies, with its subsidiary Prosilica, is the leading supplier of digital IEEE 1394 and GigE Vision cameras to the industrial automation and scientific imaging markets.
alliedvisiontech.com

American Reliance Inc. (AMREL)
Booth 536

AMREL manufactures rugged mobile computer solutions as well as a range of programmable air/water-cooled electronic loads (60 W to 100 kW+) and programmable linear/switching power supplies (20 W to 900 kW+).
amrel.com

AmFax Ltd.
Booth 316

AmFax designs, manufactures, and supports functional/special solutions in aerospace, defense, RF, and automotive markets, and develops RF test systems using PXI hardware and software for GSM, EDGE, WCDMA, Bluetooth, and WLAN.
amfax.co.uk

AMTEC Corporation
Booth 918

Ametc Corporation, a small business in Huntsville, Alabama, provides test and evaluation support, systems engineering, technology applications, training, automation, robotics, and manufacturing.
amtec-corp.com

Aventas Inc.
Booth 227

Texas-based Aventas represents One Stop Systems, the market leading manufacturer for PCI Express solutions, and Alta DT, the premier manufacturer for 1553 and ARINC.
aventasinc.com

Averna
Booths 407 and 401

Averna is a global test engineering solutions company and a strategic partner for innovative OEMs.
averna.com

Basler Vision Technologies
Booth 836

Basler manufacturers area and line-scan cameras using charge-coupled devices (CCD) and CMOS sensors. Interfaces include IEEE 1394, Camera Link, and gigabit Ethernet.
baslerweb.com

Beijing Zhong Ke Fan Hua M&C Technology Co. Ltd.
Booth 922

Beijing Zhong Ke Fan Hua M&C Co. Ltd. specializes in the testing and measurement field and supplies test and measurement product solutions and testing equipment.
pansino.com.cn

Benstone Instruments
Booth 320

Benstone Instruments will demonstrate our new NOVIAN sound and vibration software, which works with NI 9233/9234 modules for a 4-to-32-channel real-time analyzer.
benstone.com

Bloomy Controls Inc.
Booth 416

Bloomy Controls specializes in high-performance automated test, data acquisition, and control systems for research, validation, and manufacturing for the energy, medical, mil/aero, and semiconductor industries.
bloomy.com

Boston Engineering
Booth 916

Boston Engineering offers turnkey project development services to meet clients' immediate and long-term needs for electrical, mechanical, software, and controls engineering.
boston-engineering.com

Bruel & Kjaer
Booth 333

Brüel & Kjær will present acoustic and vibration transducers including specialty microphones, high-temperature IEPE accelerometers, signal conditioning, vibration test solutions, and an audio analyzer based on LabVIEW.
bkhome.com

Cal-Bay Systems Inc.
Booth 821

Cal-Bay is a recognized leader for test and measurement solutions when product quality is critical, serving leading companies in biomedical, mil/aero, and power generation.
calbay.com

CIM Industrial Systems A/S
Booth 1000

CIM Industrial Systems A/S is the leading LabVIEW developer company in Europe.
cim.as

Circuit Check Inc.
Booth 300

Circuit Check designs, builds, and programs high-performance functional test systems.
circuitcheck.com

Conduant Corporation
Booth 430

Conduant supplies PCI Express high-speed data recorders and specialized storage devices for recording and playback performance up to 800 MB/s.
conduant.com

Cyth Systems
Booth 707

Cyth Systems is the premier engineering firm in Southern California for designing automated test systems, machine vision systems, and embedded control systems.
cythsystems.com

Davis Calibration
Booth 837

Davis operates North America's largest network of Calibration Labs. With 29 locations, we provide custom-tailored services to help lower your total equipment costs.
daviscalibration.com

DENSO Robotics
Booth 339

DENSO Robotics offers a range of compact, 4-axis SCARA and 6-axis articulated robots for payloads up to 20 kg and reaches from 350 to 1,300 mm.
densorobotics.com

DISTek Integration
Booth 341

DISTek Integration's expertise includes embedded solutions, test, measurement, simulation, automation, HIL, and control. DISTek specializes in ANSI C, LabVIEW, NI TestStand, FPGA, real time, MATLAB, The MathWorks, Inc. Simulink®, and CANbus.
distek.com

EXHIBITORS

EXHIBITORS

Dynamic Technology Inc.

Booth 801

Dynamic Technology Inc. is an official NI calibration service provider and offers metrology services nationwide. A2LA accredited to ISO/IEC 17025, ANSI/NCSL Z540-1, and ANSI/NCSL Z540.3.
dtical.com

Edmund Optics

Booth 701

Edmund Optics is a leading supplier of optics/optical components. We design and manufacture a wide array of multielement lenses, lens coatings, imaging systems, and optomechanical equipment.
edmundoptics.com

Emona Instruments PTY Ltd

Booth 901

Emona Instruments manufactures add-on boards for the NI ELVIS II/+ platform: DATEx for wireless telecoms, FOTEx for fiber optics, HELEx for green energy, and the new SIGS-311 for EE Signals and Systems labs.
qpsk.com

Esteco

Booth 318

Esteco develops and markets modeFRONTIER, the multiobjective optimization software that can be coupled to LabVIEW to optimize process control.
esteco.com

Ettus Research Inc.

Booth 221

Ettus Research designs and builds the Universal Software Radio Peripheral (USRP), enabling engineers to rapidly create powerful, flexible, and low-cost software radio systems.
ettus.com

Fastek

Booth 439

Fastek is an engineering and solutions company that provides hardware and software services from HIL systems to production test and measurement automation.
fastekintl.com

Feedback Incorporated

Booth 831

Feedback is a manufacturer of laboratory equipment and curriculum for engineering. Visit our booth to see our new electricity/electronics boards with the NI ELVIS platform.
feedback-group.com

Fiber Sensing

Booth 223

Fiber Sensing is a world leader in the development, production, and installation of advanced monitoring systems based on optical FBG technology.
fibersensing.com

FLIR Systems

Booth 737

FLIR Systems designs, manufactures, and markets infrared imaging systems worldwide. Commercial product applications include nondestructive testing, research and development, manufacturing process control, and predictive maintenance.
flirthermography.com

FunctionSIM – ExpertControl

Booth 336

FunctionSIM is a dedicated group of engineering professionals committed to providing computer-aided solutions to mechanical and control systems product design and development.
functionsim.com

FUTEK Advanced Sensor Technology

Booth 235

Located in California, FUTEK Advanced Sensor Technology Inc. is a leading U.S. manufacturer and supplier of load cells, force sensors, torque sensors, and pressure sensors with related Instruments.
futek.com

Goodwill Industries of Central Texas

Booth 101

The Goodwill Computer Museum (GCM) is dedicated to the preservation and restoration of vintage computer equipment. View our display of historically significant artifacts and demonstrate functional legacy computer hardware. We will also display information on environmental technology and the importance of recycling end-of-life electronics.
austingoodwill.org

G Systems

Booth 400

G Systems improves test performance and saves customers money through design and integration of custom test and measurement, data acquisition, and control system solutions.
gsystems.com

G.R.A.S. Sound & Vibration

Booth 437

G.R.A.S. offers a range of acoustical devices designed and manufactured in accordance with international standards including standard measurement microphones, preamplifiers, simulators, and accessories.
gras.us

Graftek Imaging Inc.

Booth 807

Graftek Imaging provides machine vision components and turnkey solutions to help you choose the right lighting, lens, and camera for your project.
graftek.com

Hitachi Kokusai Electric America Ltd.

Booth 334

Hitachi Kokusai offers the additions of Genicam compliant GigE Vision cameras as well as analog, IEEE 1394, and Camera Link formats.
hitachikokusai.com

Honeywell Sensing and Controls

Booth 337

Honeywell offers a broad portfolio of load cells, pressure sensors, torque transducers, and more for test and measurement applications as well as plug-and-play compatibility with National Instruments equipment.
honeywellsensing.com/sensotec

ITI GmbH

Booth 338

ITI is one of the leading software and engineering companies for plant modeling and system simulation. The company develops the simulation software SimulationX.
iti.de

JET Engineering Inc.

Booth 321

JET maximizes our customer’s return on investment by using National Instruments tools and providing expert consulting, design, build, and test services.
jetinc.net

JKI Software

Booth 841

JKI, a premier provider of consulting services and commercial add-ons for LabVIEW, specializes in transforming your R&D LabVIEW code into commercial-quality, shipping products.
jkisoft.com

KSE Texas Inc.

Booth 802

KSE Texas Inc. is a private labeler and master distributor of vision system lighting such as LED, incandescent, fiber optics, and fluorescent lighting products, with an on-site lighting lab.
ksetexas.com

Lion Precision

Booth 436

Lion Precision provides high-performance noncontact displacement/position sensing systems. Capacitive and inductive sensors have ranges from 10 µm to 10 mm with nanometer resolutions.
lionprecision.com

MAC Panel Co.

Booth 926

MAC Panel, a world leader in Mass Interconnect solutions, provides industry-leading design innovation and offers wiring solutions that save customers time and money.
macpanel.com

Maintainable Software

Booth 839

Maintainable Test is a complete data management solution for manufacturing test. Our modern, Web-based software has tools for managing operations, engineering, and quality assurance.
maintainabletest.com

Maplesoft

Booth 840

Maplesoft provides high-performance software tools that manage the mathematics involved in the development of engineering system models.
maplesoft.com

Marking Systems Inc.

Booth 231

Marking Systems Inc. manufactures durable, custom product labels, insulators, and membrane switches using the latest technology in screen printing and digital printing methods.
markingsystems.com

Meggitt Sensing Systems

Booth 402

Meggitt’s Endevco, Sensorex, Vibro-Meter, and Wilcoxon Research product lines are now offered under Meggitt Sensing Systems. Since 1947, Endevco has been the most trusted provider of vibration, shock, and pressure measurement solutions.
meggitt.com

Mentor Graphics

Booth 241

Mentor Graphics is a world leader in electronic hardware/software design solutions, including accelerating test program development using a collaboration of LabVIEW and virtual prototype technology.
mentor.com

Micron Optics Inc.

Booth 928

Micron Optics is the leading provider of tunable optical technologies for measurements of FBG-based sensors deployed on civil structures, aerospace vehicles, oil wells, and more.
micronoptics.com

Mini-Circuits/Cain-Forlaw

Booth 229

Cain-Forlaw is a manufacturer’s representative offering a broad range of RF/microwave components. Mini-Circuits a global leader in design and manufacturing of RF/IF/microwave components from DC to 20 GHz.
minicircuits.com
cain-forlaw.com

Mink Hollow Systems Inc.

Booth 930

Mink Hollow Systems integrates custom off-the-shelf solutions using a mix of standard NI components, custom hardware, and LabVIEW software.
minkhollowsystems.com

MoviMED

Booth 1002

MoviMED offers innovative solutions for difficult imaging applications, including 2D and 3D, thermal imaging, and robotic vision for industrial and autonomous robots.
movimed.com

National Technical Systems

Booth 806

National Technical Systems provides integrated engineering services, technical solutions, product testing, compliance design, regulatory standards compliance testing, evaluation, project management, technical resources, engineering solutions, and managed services.
ntscorp.com

EXHIBITORS

NET USA

Booth 903

NET USA supplies high-quality cameras such as GimaGO GigE Vision, FOculus IEEE 1394, iCube USB 2.0, OEM camera boards, and miniature camera heads for medical and industrial applications.
net-gmbh.com

Norpix Inc.

Booth 323

Norpix is a developer of high-speed digital video recording software and solutions and provides turnkey solutions including software, cameras, computers, synchronization, and precision timing.
norpix.com

Olympus Controls

Booth 322

Olympus Controls is a customer-driven, solutions-focused company with the breadth and depth of experience to cover every aspect of machine automation.
olympus-controls.com

One Source Group

Booth 330

From design through delivery, One Source Group has created leading-edge efficiencies and parallel processes that allow us to meet the most aggressive schedules built exactly to specifications.
onesource-group.com

Optimation Technology

Booth 817

Optimation provides solutions and services for industrial and manufacturing applications, including process and mechanical engineering, automation, systems integration, test systems, fabrication, installation, construction, and maintenance.
optimation.us

PCB Piezotronics Inc.

Booth 441

PCB Piezotronics offers ICP and charge output accelerometers; pressure, force and torque sensors; precision condenser, prepolarized, and array microphones; and preamplifiers with TEDS.
pcb.com

PFC Flexible Circuits Limited

Booth 936

PFC designs, manufactures, and assembles flexible circuits including single and double-sided, multilayer, and rigid-flexible circuits, and specialized in fine line and impedance control.
pfcflex.com

Phase Matrix Inc.

Booth 406

Phase Matrix designs and manufactures RF/ microwave test and measurement instruments, subsystems, and components. PXI products include a family of downconverter modules, which operate from 100 kHz to 26.5 GHz.
phasematrix.com

PVI Systems Inc.

Booth 438

PVI Systems, an engineering company, offers innovative solutions, such as CLARITY-DSA, a general-purpose, scalable, turnkey data acquisition system based on the NI PXI hardware platform.
pvisys.com

PWG Systems

Booth 319

Phoenix Products Inc. is an 8(a), HUBZone, small business providing integrated automated solutions. PPI is the NI training center for North Alabama and Southern Tennessee.
pwghsv.com

Quanser

Booth 538

Quanser, the world leader in mechatronics and control, develops industry-relevant control laboratory solutions for hands-on teaching and advanced research for organizations and universities worldwide.
quanser.com

RF Test and Measurement Solutions LLC

Booth 301

RF Test and Measurement Solutions provides test engineering services, designs and implements test systems, offers hardware and software solutions, and provides LabVIEW and RF training and consulting services.
rftms.com

Robotics Trends

Booth 331

Robotics Trends is the leading media company serving the personal, service, industrial, mobile robotics, and intelligent systems marketplace through its websites, publications, and events.
roboticstrends.com

S.E.A. Datentechnik GmbH

Booth 317

S.E.A. Datentechnik GmbH develops customized and OEM solutions for component tests and test equipment, test stands, wind tunnel control software, CompactRIO modules, and software toolkits.
sea-gmbh.com

SpectraQuest Inc.

Booth 827

SpectraQuest is a leading provider of turnkey systems for education/training, condition monitoring, and research in wind energy, vibration fundamentals, kinematics and dynamics machines, controls, and machinery fault diagnosis.
spectraquest.com

Smart Vision Lights

Booth 902

Smart Vision Lights manufactures a line of LED lights that apply the benefits of high-current LEDs for industrial vision applications.
smartvisionlights.com

Symbio

Booth 803

Symbio delivers software services targeted toward advanced test systems for development and production, and founded GOOP, the tool for object-oriented LabVIEW.
symbio.com

Teclution

Booth 741

Teclution is the turnkey measurement and automation systems provider in the Middle East and provides innovative control experiments, customer-specific products and solutions, and complex system integration projects.
teclution.com

Tecnia Corporation

Booth 327

Tecnia Corporation is a multidisciplinary private and independent R&D foundation headquartered in Bilbao, Spain, with 2009 income of over \$180M and approximately 1,600 researchers.
tecnalia.info

Teledyne Microelectronics

Booth 217

Teledyne Microelectronics is a leader in innovative, custom high-density, high-reliability microelectronics packaging solutions for aerospace/defense and instrumentation markets, and a Department of Defense trusted source for microelectronics.
teledynemicro.com

Teledyne Scientific

Booth 217

Teledyne Scientific is your source for multigigasamples per second wide-bandwidth ADC, DAC, and track and holds for RF signal generators/analyzers, signal integrity testers, optical communication signal analyzers, and military and aerospace applications.
teledyne-si.com

Teledyne Microwave

Booth 219

Teledyne Microwave is a worldwide leader in the design, development, and manufacturing of microwave components, integrated microwave assemblies, and subsystems for the aerospace, defense, communications, aviation, and instrumentation markets.
teledynemicrowave.com

Teledyne Relays

Booth 219

Teledyne Relays develops subminiature RF electromechanical relays delivering high performance from DC to 8 GHz and coaxial switches DC to 33 GHz for demanding instrumentation, test, measurement, and military applications.
teledynerelays.com

Test Equity

Booth 302

Test Equity specializes in supplying quality new and refurbished electronic test equipment as well as environmental temperature chambers.
testequity.com

Texas Instruments

Booth 326

Texas Instruments, a global semiconductor company, helps customers solve problems and develop new electronics that make the world smarter, healthier, safer, greener, and more fun.
ti.com

Thermotron Product Test Solutions

Booth 340

In addition to offering a range of environmental simulation equipment, Thermotron is capable of providing complete solutions to meet electronic and mechanical functional testing requirements.
thermotron.com

Tribal Engineering

Booth 932

Tribal Engineering works with customers to find answers to engineering problems. We offer an Intelligent Control Toolkit for LabVIEW, adding AI capabilities to your controls.
tribalengineering.com

UCSD Coordinated Robotics Laboratory

Booth 239

The UCSD Coordinated Robotics Lab develops small, simple robots with enhanced agility and that can overcome large, complex obstacles using LabVIEW and NI Single-Board RIO.
robotics.ucsd.edu

Unmanned Solution Co. Ltd

Booth 940

We develop unmanned vehicles and the intelligent robot to sell to research-oriented companies.
unmansol.com

VI Service Network Co. Ltd.

Booth 203

VI Service Network provides high-quality professional services for virtual instrumentation using its expertise in RFID test, spectrum monitoring, structure monitoring, and automotive electronic tests.
vi-china.com.cn

Virginia Panel Corporation

Booth 426

Virginia Panel Corporation (VPC) provides Mass Interconnect solutions that enable simultaneous connection of multiple test and measurement signal types through one modular interface.
vpc.com

Xilinx Inc.

Booth 420

Xilinx Inc. is the worldwide leader in programmable solutions. Its award-winning silicon, software, and IP products enable designers to drastically reduce time to market in many industries.
xilinx.com

Yaskawa Electric America

Booth 739

At the core of mechatronics are servos and VFDs. These “muscle packages” from Yaskawa Electric America connect via digital or analog networks to LabVIEW.
yaskawa.com

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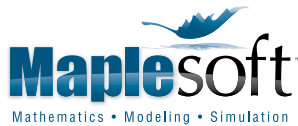
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NIWeek 2010 SCHEDULE

TUESDAY

| | 11A | 11B | 12A | 12B | 13A/B | 14 | 15 | 16A | 16B | 17A | 17B | 18A | 18B | 18C | 18D | 19A | 19B |
|----------------------|---|---|---|--|--|--|--|--|--|---|--|---|---|---|--|---|---|
| 7:45–8:30 a.m. | Breakfast | | | | | | | | | | | | | | | | |
| 8:30–10:00 a.m. | NIWeek Keynotes (Ballroom G) (p4) | | | | | | | | | | | | | | | | |
| 10:00–10:30 a.m. | Break | | | | | | | | | | | | | | | | |
| 10:30–11:30 a.m. | Community Exchange | Software Development Track | Software Development Track | Software Development Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Embedded Design Track | Energy Technology Summit | Robotics Summit | Military and Aerospace Summit | Vision Summit | Industrial Measurements and Control Track | Software Development Track | Industrial Measurements and Control Track | RF and Wireless Test Summit | Vision Summit |
| | Top Five Reasons Engineers Should Give a Tweet and Use Social Media (p24) | What's New in NI LabWindows/CVI 2009 and Beyond (p61) | Case Studies in NI LabVIEW Parallel Programming Performance (p57) | State Machine versus State Machine (p61) | Real-Time Testing with NI VeriStand (p66) | Remote Measurements with NI C Series Hardware (p63) | Distributed Monitoring with USB DAQ and Wi-Fi (p62) | LabVIEW Embedded Tips and Tricks (p52) | Technologies to Bring the Smart Grid to Life (p36) | Robot Evolution by Intelligent Design (p33) | Structural Test System for Space Vehicles (p38) | Hands-On: NI Vision Builder for Automated Inspection (p42) | Hands-On: Introduction to NI CompactRIO and LabVIEW Real-Time (p55) | Hands-On: Introducing LabVIEW (p59) | Hands-On: Wireless Sensor Networks (p56) | Teaching Old RF Dogs a New Trick: Making the Transition to PXI RF Instruments (p40) | There's No Accounting in Machine Vision (p42) |
| 11:30 a.m.–1:00 p.m. | Lunch | | | | | | | | | | | | | | | | |
| 1:00–2:00 p.m. | Community Exchange | Software Development Track | Software Development Track | Software Development Track | Industrial Measurements and Control Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Embedded Design Track | Energy Technology Summit | Robotics Summit | Military and Aerospace Summit | Test and Data Acquisition Track | Industrial Measurements and Control Track | Robotics Summit | Test and Data Acquisition Track | RF and Wireless Test Summit | Vision Summit |
| | Popcorn Tweets: LabVIEW Goes Viral (p24) | Introduction to the TDMS File Format (p59) | Completing Your Reconfigurable I/O (RIO) System with Custom Hardware: A Case Study Using Multisim (p58) | What's New in LabVIEW (p61) | What's New with CompactRIO (p56) | Moving Beyond Test System Efficiency to Test Data Management (p64) | Nondestructive Resonance Inspection (p65) | From Prototypes to Products – Building Commercial Instruments with LabVIEW (p51) | Testing Siemens Wind Turbine Control Systems (p37) | Biomimetic Mobile Robot Design with NI Single-Board RIO (p34) (1:00-1:30) | Rugged Portable MILSPEC PXI/PXI Express Chassis (p38) | Hands-On: NI VeriStand (pX65) | Hands-On: Develop Powerful Motion Control Applications with CompactRIO (p55) | Hands-On: Introduction to LabVIEW for Embedded Design with the LabVIEW Robotics Starter Kit (p33) | Hands-On: Introduction to Data Acquisition (p63) | Adding an FPGA Target to Your RF Instrument (p40) | Vision Applications for Roll-to-Roll Processes (p43) |
| 2:00–2:15 p.m. | Break | | | | | | | | | | | | | | | | |
| 2:15–3:15 p.m. | Community Exchange | Embedded Design Track | Software Development Track | Software Development Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Software Development Track | Energy Technology Summit | Robotics Summit | Military and Aerospace Summit | Test and Data Acquisition Track | Embedded Design Track | Software Development Track | Test and Data Acquisition Track | RF and Wireless Test Summit | Vision Summit |
| | LabVIEW Features from the Idea Exchange (p24) | Machines That Work: Advanced Motion Control (p52) | LabVIEW Graphical Scripting (p59) | Best Practices for Software Development in LabVIEW (p57) | Using PXI and LabVIEW for Characterizing Power Management ICs (p67) | NI X Series Multifunction DAQ Devices (p63) | Introduction to PXI and PXI Express (p64) | Using the C Interface for LabVIEW FPGA (p61) | Implementing Wide-Area Power Quality Monitoring with LabVIEW (p37) | Control of Complex Mechanical Systems (p34) (2:15-2:45) | Developing a Large-Scale Microphone Array for Aircraft Jet Plume Noise Source Characterization (p38) | Hands-On: Build an Automated Test System from Scratch (p62) (2:15-4:15) | Hands-On: Using Web Services with Your Embedded System to Publish Data Remotely (p53) | Hands-On: Data Management and Reporting (p58) | Hands-On: Structural Test (p66) | Reducing Test Costs in a High-Mix Manufacturing Environment (p40) | Techniques for Vision-Based Robot Guidance (p43) |
| 3:15–3:30 p.m. | Break | | | | | | | | | | | | | | | | |
| 3:30–4:30 p.m. | Community Exchange | Test and Data Acquisition Track | Software Development Track | Software Development Track | Industrial Measurements and Control Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Embedded Design Track | Energy Technology Summit | Robotics Summit | Military and Aerospace Summit | | Embedded Design Track | Software Development Track | Test and Data Acquisition Track | RF and Wireless Test Summit | Vision Summit |
| | There's an App for That (p24) | DAQ Advanced: Real Developers Use Property Nodes (p62) | LabVIEW Compiler Under the Hood: Understanding the Optimizations in 2010 (p59) | Tips and Tricks to Speed LabVIEW Development (p61) | An Insider's View of How NI SoftMotion Uses LabVIEW to Create Open Control Architectures (p54) | DC Source Demonstrations: Do You Have the Power? (p62) | Testing Audio Device Quality: Why Buy Headphones that Cost \$300 USD? (p67) | LabVIEW FPGA for Defense and Space Applications (p52) | Smart Grid Component Testing (p37) (3:30-4:00) | Vision Tracking for Automated Sewing (p34) (3:30-4:00) | Development of a Sonic Boom Measurement System at JAXA (p39) | | Hands On: CompactRIO and LabVIEW FPGA Intermediate (p51) | Hands-On: How to Build a LabVIEW Add-On (p58) (3:30-5:30) | Hands-On: NI FlexRIO and LabVIEW FPGA (p64) | Make a Good RF Measurement Even Better (p41) | Three New Camera Technologies (p43) |
| 4:30–4:45 p.m. | Break | | | | | | | | | | | | | | | | |
| 4:45–5:45 p.m. | Community Exchange | Software Development Track | Software Development Track | Software Development Track | Industrial Measurements and Control Track | Software Development Track | Test and Data Acquisition Track | Embedded Design Track | Energy Technology Summit | Robotics Summit | Military and Aerospace Summit | Test and Data Acquisition Track | Industrial Measurements and Control Track | | Industrial Measurements and Control Track | RF and Wireless Test Summitt | Vision Summit |
| | LabVIEW on TV: Confirmed, Plausible, or Busted? (p24) | Optimize Your Test System and Reduce Test Time Using LabVIEW and NI TestStand (p65) | Team-Based Development and Source Code Control (p61) | LabVIEW UI Tips and Tricks (p60) | Best Practices for Designing Scalable Motion Control Applications on NI Real-Time Hardware Platforms (p54) | Reduce Test Time Obsolescence and Long-Term Maintenance with the ATML Standard (p60) | Using Honeywell Pressure, Load, and Torque Sensors with Data Acquisition Systems (p67) | Using Xilinx IP and Coregen in LabVIEW FPGA (p53) | Wind Turbine Prognostics and Health Management (p37) (4:45-5:15) | LabVIEW for Every Robot (p34) | Ground Control Systems for Launch Vehicles Based on LabVIEW (p39) | Hands-On: NI VeriStand (p65) | Hands On: CompactRIO High-Speed Acquisition (p54) | | Hands-On: Wireless Sensor Networks (p56) | NI Technology Enables High-Throughput RADAR Component Testing (p41) | Vision Builder for Automated Inspection and LabVIEW (p43) |
| 5:00–7:30 p.m. | NI Community Block Diagram Party (Exhibition Hall) (p8) | | | | | | | | | | | | | | | | |

NIWeek 2010 SCHEDULE

WEDNESDAY

| | 3 | 11A | 11B | 12A | 12B | 13A/B | 14 | 15 | 16A | 16B | 17A | 17B | 18A | 18B | 18C | 18D | 19A | 19B |
|----------------------|--|--|--|---|---|---|---|---|---|---|---|---|---|--|---|---|---|--|
| 7:45–8:30 a.m. | Breakfast | | | | | | | | | | | | | | | | | |
| 8:30–10:00 a.m. | NIWeek Keynotes (Ballroom G) (p4) | | | | | | | | | | | | | | | | | |
| 10:00–10:30 a.m. | Break | | | | | | | | | | | | | | | | | |
| 10:30–11:30 a.m. | Business Forum | Community Exchange | Test and Data Acquisition Track | Software Development Track | Software Development Track | Industrial Measurements and Control Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Software Development Track | Energy Technology Summit | Robotics Summit | Military and Aerospace Summit | Vision Summit | Embedded Design Track | Robotics Summit | Test and Data Acquisition Track | RF and Wireless Test Summit | Vision Summit |
| | The Evolution and Change of Alcatel-Lucent Wireless Test Engineering (p22) | The Blogosphere's Best (p25) | Using Simulation as a Test Development Platform (p67) | NI LabVIEW Design Patterns and SMoReS (p59) | Best Practices for Delivering Distributed Data to Remote Clients (p54) | Using NI CompactRIO and LabVIEW for Online Signal Processing and Data Recording (p56) | Introducing SC Express: High-Performance Sensor Measurements (p64) | Hack Your Car with NI CAN Interfaces and LabVIEW (p63) | A Closer Look at 32-Bit versus 64-Bit with LabVIEW 2010 and Windows 7 (p57) | Smart Grid Renewable Energy Technology (p37) (10:30-11:00) | The Future of Ground Robotic Systems (p33) | Hardware Abstraction Layers Using LabVIEW Object-Oriented Programming (p39) | Hands-On: NI Vision Builder for Automated Inspection (p42) | Hands-On: Reusing FPGA IP in Embedded Systems (p52) | Hands-On: Introduction to LabVIEW for Embedded Design with the LabVIEW Robotics Starter Kit (p33) | Hands-On: NI FlexRIO and LabVIEW FPGA (p64) | The Changing Face of GNSS and Satellite-Based Navigation (p41) | Similarity Measurements for Space Time and 3D Visual Quality Assessment and Inspection (p42) |
| 11:30 a.m.–1:00 p.m. | Lunch | | | | | | | | | | | | | | | | | |
| 1:00–2:00 p.m. | Business Forum | Community Exchange | | Software Development Track | Software Development Track | Industrial Measurements and Control Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Embedded Design Track | Energy Technology Summit | Robotics Summit | Military and Aerospace Summit | Test and Data Acquisition Track | Industrial Measurements and Control Track | Software Development Track | Test and Data Acquisition Track | RF and Wireless Test Summit | Vision Summit |
| | Understanding the True Cost of Test (p22) | LabVIEW Add-On of the Year: Product Gallery (p25) | | New Features and Best Practices for Network Data Transfer (p60) | What's New in LabVIEW (p61) | Connect LabVIEW to Any PLC (p55) | Real-Time Structural Health Monitoring: The New Paradigm in Infrastructure Management (p65) | Model-Based Simulation and Prototyping of an Electric Vehicle (p64) | Custom Design 101 with CompactRIO and NI Single-Board RIO (p51) | Powering a Smarter Planet (p36) | Rapid Manipulator Development with CompactRIO and LabVIEW (p34) (1:00-1:30) | Creating a Multichannel, Phase-Coherent, RF Record and Playback SIGINT Platform (p39) | Hands-On: Build an Automated Test System from Scratch (p62) (1:00-3:00) | Hands On: Introduction to CompactRIO and LabVIEW Real-Time (p55) | Hands-On: Software Engineering (p61) | Hands-On: Introduction to Data Acquisition (p63) | Testing FM Transmitters Better, Faster, and Cheaper Using the NI PXI Platform (p41) | Vision at Mach 1 (p43) |
| 2:00–2:15 p.m. | Break | | | | | | | | | | | | | | | | | |
| 2:15–3:15 p.m. | Business Forum | Community Exchange | Software Development Track | Software Development Track | Software Development Track | Industrial Measurements and Control Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Embedded Design Track | Energy Technology Summit | Robotics Summit | Military and Aerospace Summit | | Embedded Design Track | Software Development Track | Test and Data Acquisition Track | RF and Wireless Test Summit | Vision Summit |
| | The Business of Obsolescence Planning (p22) | We Are the Champions (p25) | Raw Data to Results: Proper Data Management Techniques (p60) | Development and Deployment of Large LabVIEW Applications (p60) | Practical Applications of Web Services in LabVIEW (p60) | Practical Application of a Reference Architecture for Local Machine Control (p55) | Achieve Hardware Independence with an Object-Oriented Hardware Abstraction Layer (p62) | Creating High-Speed Data Record and Playback Systems (p62) | Implementing Mission-Critical Distributed Systems (p52) | Enernet: Internet Lessons for Solving the Energy Crisis (p36) (2:45-3:15) | First Responder Robots (p35) (2:15-2:45) | STORMS Biometric RADAR (p39) | | Hands-On: CompactRIO and LabVIEW FPGA Intermediate (p51) | Hands-On: Introducing LabVIEW (p59) | Hands-On: Acquire and Process Sound and Vibration Signals (p62) | Introduction to Cognitive Radio and Interference Alignment (p41) | A Peek Inside New NI Vision Algorithms (p43) |
| 3:15–3:30 p.m. | Break | | | | | | | | | | | | | | | | | |
| 3:30–4:30 p.m. | Business Forum | Community Exchange | Test and Data Acquisition Track | Software Development Track | Software Development Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Embedded Design Track | | Robotics Summit | Military and Aerospace Summit | Test and Data Acquisition Track | Industrial Measurements and Control Track | Software Development Track | Industrial Measurements and Control Track | RF and Wireless Test Summit | Vision Summit |
| | Building Strategic Supplier Relationships (p22) | Even a Caveman Can Do It: Boost Your Car's Horsepower with Hardware Based on LabVIEW (p25) | NASA Hearing Aid Analysis and Audio Test Architectures with NI (p64) | Best Practices for Memory Management and LabVIEW Code Optimization (p57) | Developing Web-Based User Interfaces for Measurement and Automation Systems (p58) | NI FlexRIO and LabVIEW FPGA for Test Applications (p65) | Smart Phones for Smarter Data Acquisition (p66) | Strain Gage Measurement Techniques (p66) | Introduction to LabVIEW FPGA (p52) | | RIO Robots Save Lives (p35) (3:30-4:00) | NI Requirements Gateway – A Power User's Session (p39) | Hands-On: NI VeriStand (p65) | Hands On: Develop Powerful Motion Control Applications with CompactRIO (p55) | Hands-On: Software Engineering (p61) | Hands-On: Wireless Sensor Networks (p56) | Under the Hood of an LTE MIMO-OFDM Downlink Prototype (p41) | Using NI Vision for Offline In-Mill Testing (p43) |
| 3:30–5:45 p.m. | Industry Experts Panel: Clean Energy Technology – The Ultimate Deployment Challenge (Ballroom D) (p28) | | | | | | | | | | | | | | | | | |
| 4:30–4:45 p.m. | Break | | | | | | | | | | | | | | | | | |
| 4:45–5:45 p.m. | Business Forum | Community Exchange | Test and Data Acquisition Track | Software Development Track | Software Development Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Embedded Design Track | | Robotics Summit | Military and Aerospace Summit | Vision Summit | Industrial Measurements and Control Track | Software Development Track | Test and Data Acquisition Track | RF and Wireless Test Summit | Vision Summit |
| | Building Consensus for Change in Your Organization (p22) | Long-Term Investment in Test: Building Common-Core Test Platforms (p25) | Switching Configurations for Large Test Systems (p66) | Combine Real-Time Processing and a UI on One Controller with Virtualization (p58) | LabVIEW GUI Design 2.0 (p59) | Introduction to Optical Sensing (p64) | Synchronizing Scalable Sensor Measurement Systems (p66) | Evaluating the Latest Intel Microarchitecture for Test, Measurement, and Control Applications (p62) | What's New in LabVIEW FPGA (p53) | | Critical Robotics and Autonomous Technologies Panel Discussion (p35) | Using NI Products to Develop Level C and D Full-Flight Simulators (p39) | Hands-On: NI Vision Builder for Automated Inspection (p42) | Hands On: CompactRIO High-Speed Acquisition (p54) | Hands-On: Introducing LabVIEW (p59) | Hands-On: Structural Test (p66) | Testing MIMO in 802.11n (p41) | When to Use FPGAs in Imaging (p43) |
| 5:45–7:00 p.m. | Break | | | | | | | | | | | | | | | | | |
| 7:00–10:30 p.m. | Annual NIWeek Conference Party (The Bob Bullock Texas State History Museum) (p8) | | | | | | | | | | | | | | | | | |

NIWeek 2010 SCHEDULE

THURSDAY

| | 11A | 11B | 12A | 12B | 13A | 13B | 14 | 15 | 16A | 16B | 17A | 17B | 18A | 18B | 18C | 18D | 19A | 19B |
|----------------------|---|---|---|--|--|--|--|---|--|--|---|---|--|--|---|---|--|--|
| 7:45–8:30 a.m. | Breakfast | | | | | | | | | | | | | | | | | |
| 8:30–10:00 a.m. | NIWeek Keynotes (Ballroom G) (p4) | | | | | | | | | | | | | | | | | |
| 10:00–10:30 a.m. | Break | | | | | | | | | | | | | | | | | |
| 10:30–11:30 a.m. | Software Development Track | Industrial Measurements and Control Track | Software Development Track | Software Development Track | Industrial Measurements and Control Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Embedded Design Track | Embedded Design Track | Test and Data Acquisition Track | Embedded Design Track | Vision Summit | Embedded Design Track | Embedded Design Track | Software Development Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Software Development Track |
| | Testing Your Customer .m Files for Determinism with the NI LabVIEW MathScript RT Module (p61) | Choosing the Right Technology for Your Wireless Application (p54) | LabVIEW Classes: The State of the Art (p59) | Building Commercial Software and Add-Ons through Licensing and Activation Technology (p57) | Wireless Condition Monitoring of Rotating Equipment in Research Reactors (p56) | HIL and Real-Time Testing Techniques (p63) | Top Considerations for Optical Sensing (p64) | Calm Your Jitters with LabVIEW Real-Time (p51) | There's an App for That (p53) | Testing Next-Generation Multimedia Devices (p67) | Architect Real-Time Systems with Confidence: Best Practices for LabVIEW Real-Time Development (p51) | Cycle Accurate Simulation of LabVIEW FPGA Designs Using ModelSim (p51) | Hands-On: NI Vision Builder for Automated Inspection (p42) | Hands-On: Deploying and Replicating Your Embedded System (p51) | Hands-On: Data Management and Reporting (p58) | Hands-On: Acquire and Process Sound and Vibration Signals (p62) | Wireless Monitoring of Real-World Structures (p67) | Demystifying the Cloud (p58) |
| 11:30 a.m.–1:00 p.m. | Lunch | | | | | | | | | | | | | | | | | |
| 1:00–2:00 p.m. | Test and Data Acquisition Track | | Software Development Track | Software Development Track | | Test and Data Acquisition Track | Test and Data Acquisition Track | Industrial Measurements and Control Track | Embedded Design Track | Software Development Track | Industrial Measurements and Control Track | Test and Data Acquisition Track | | | | | Industrial Measurements and Control Track | Software Development Track |
| | NI TestStand Operator Interface Development in Practice (p60) | | LabVIEW OOP Design Patterns for Large Systems (p59) | Adjustable Bandwidth FIR Filters: From Design to Implementation (p57) | | What's New in Instrument Control (p67) | Five RF Measurements Everyone Should Know (p63) | Understand High-Speed Data Acquisition with NI CompactRIO (p55) | Simple TCP/IP Messaging Beyond LabVIEW (p52) | Saving Time with Automated Postprocessing Using LabVIEW and DIAdem (p60) | The Secret of Tuning – Advanced Control Strategies for Servo Systems (p55) | Standard or Custom: Emulate and Test Any Protocol with LabVIEW FPGA (p66) | | | | | What's New with Web-Enabled HMI and LabVIEW (p56) | Finding and Analyzing Technical Data Files Using LabVIEW and NI DataFinder (p58) |
| 2:00–2:15 p.m. | Break | | | | | | | | | | | | | | | | | |
| 2:15–3:15 p.m. | Test and Data Acquisition Track | Embedded Design Track | Software Development Track | Software Development Track | Industrial Measurements and Control Track | Test and Data Acquisition Track | Test and Data Acquisition Track | Industrial Measurements and Control Track | Embedded Design Track | Test and Data Acquisition Track | Test and Data Acquisition Track | | | | | | Embedded Design Track | Embedded Design Track |
| | Plan for Success with Automated Test (p65) | Precision Control Using LabVIEW Real-Time and LabVIEW FPGA (p52) | Beyond the Basics: LabVIEW Debugging Techniques (p57) | LabVIEW UI Tips and Tricks (p60) | Choosing Reconfigurable I/O (RIO) Expansion for High-Channel-Count Systems (p54) | Inside the SC Express Modules: Analog Designs and Technologies (p63) | Precision Linear Measurements of RF Components (p63) | LabVIEW WSN Under the Hood (p55) | Using LabVIEW and the mbed Microcontroller for Rapid Prototyping (p53) | Perform Any Test on Any Structure (p65) | Power Measurements 101 (p65) | | | | | | The Right Development Process for LabVIEW FPGA Success (p53) | Beyond 40 MHz: Designing for High Throughput in LabVIEW FPGA (p51) |
| 3:15 p.m. | End of NIWeek 2010 | | | | | | | | | | | | | | | | | |

