NIWeek

WORLDWIDE GRAPHICAL SYSTEM DESIGN CONFERENCE

AUGUST 2–4, 2011

PRELIMINARY CONFERENCE PROGRAM

CONFERENCE OVERVIEW

SUNDAY, JULY 31

Training and Continuing Education	8:00 a.m.–5:00 p.m.	27

MONDAY, AUGUST 1

NI Alliance Day	8:00 a.m.–5:00 p.m.	08
Academic Forum	8:00 a.m.–5:00 p.m.	08
Big Physics Symposium	8:00 a.m.–5:00 p.m.	09
Training and Continuing Education	8:00 a.m.–5:00 p.m.	27
Certification Exams	8:30 a.m.–5:00 p.m.	27
Build Your Own Embedded System	1:00–5:30 p.m.	09
Exhibition Hall and Pavilions	5:30–7:00 p.m.	28
NIWeek Kickoff Happy Hour	5:30–7:30 p.m.	06

TUESDAY, AUGUST 2

NIWeek Keynotes	8:00–10:00 a.m.	05
Exhibition Hall and Pavilions	10:30 a.m.–7:00 p.m.	28
Technical Summits	10:00 a.m.–5:45 p.m.	10
Technical Tracks, NI Community Exchange	10:00 a.m.–5:45 p.m.	16/07
Build Your Own Embedded System	10:30 a.m.–3:15 p.m.	09
The Future of System Design Symposium	10:30 a.m.–5:45 p.m.	09
Certification Exams	10:30 a.m.–5:00 p.m.	27
Peer2Peer Roundtables	Noon–1:00 p.m.	06
NI Community *Block Diagram* Party	5:00–7:00 p.m.	06

WEDNESDAY, AUGUST 3

NIWeek Keynotes	8:00–10:00 a.m.	05
Exhibition Hall and Pavilions	10:30 a.m.–6:00 p.m.	28
Technical Summits	10:30 a.m.–5:45 p.m.	10
Technical Tracks, NI Community Exchange	10:30 a.m.–5:45 p.m.	16/07
Certification Exams	10:30 a.m.–5:00 p.m.	27
Peer2Peer Roundtables	Noon–1:00 p.m.	06
Annual NIWeek Conference Party	7:00–10:30 p.m.	06

THURSDAY, AUGUST 4

NIWeek Keynotes	8:00–10:00 a.m.	05
Exhibition Hall and Pavilions	10:30 a.m.–1:00 p.m.	28
Technical Tracks	10:30 a.m.–5:45 p.m.	16
Certification Exams	10:30 a.m.–5:00 p.m.	27
Peer2Peer Roundtables	Noon–1:00 p.m.	06

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INVITATION LETTER

Dear Fellow Innovator,

Please join me and more than 3,000 of the world's most innovative engineers, educators, and scientists for NIWeek 2011, the world's leading graphical system design conference and exhibition. The 17th annual NIWeek begins August 2 at the Austin Convention Center and includes three days of interactive technical sessions, targeted summits, hands-on workshops, and exhibitions on the latest developments for design, simulation, automation, control, and test. NIWeek also features keynote presentations and demonstrations to highlight how engineers and scientists use graphical system design to address some of the Grand Challenges for Engineering and improve everyday life.

NIWeek 2011 features a variety of opportunities to help you boost your productivity and increase your professional skills:

- **CHOOSE FROM MORE THAN 200 ADVANCED TECHNICAL PRESENTATIONS** – Attend interactive technical sessions, case study presentations, and panel discussions for beginners and advanced developers and learn how to optimize efficiency in your test and data acquisition systems; implement advanced technology for industrial design, measurement, and control; and discover emerging trends in science and industry.
- **INTERACT WITH TECHNOLOGY FROM NI AND NEARLY 300 LEADING COMPANIES** – Explore the latest products and technologies from NI and industry-leading companies through a variety of hands-on workshops and view hundreds of demonstrations on the main stage and in the exhibition hall.
- **CONNECT TO THE NI LabVIEW COMMUNITY** – Celebrate the 25th anniversary of the LabVIEW graphical programming environment. Join the LabVIEW user community in exploring the advancements in LabVIEW throughout the last 25 years including field-programmable gate array (FPGA) design, multicore processing, and real-time math as well as what the future holds for LabVIEW.
- **PARTICIPATE IN ADVANCED TRAINING SESSIONS** – Earn continuing education units (CEUs) and take software certification exams for LabVIEW, NI LabWindows™/CVI, and NI TestStand.
- **NETWORK WITH PEERS AND INDUSTRY LEADERS** – See how engineers and scientists are using NI products for their innovations during the day and join other NIWeek attendees to take in the sights and sounds of Austin, the live music capital of the world, at night!

NIWeek gives you the tools and knowledge to develop your applications faster, smarter, and more cost efficiently. Do not miss this one-of-a-kind experience. Register today at **ni.com/niweek**.

Sincerely,

Jeff Kodosky
Cofounder and Business and Technology Fellow
National Instruments

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KEYNOTE PRESENTATIONS

TUESDAY, AUGUST 2

Dr. James Truchard, President, CEO, and Cofounder, National Instruments

Join Dr. James Truchard, who has served as CEO of National Instruments for 35 years, to kick off your NIWeek experience and celebrate the 25th anniversary of LabVIEW. Listen as he discusses graphical system design and the latest innovations that will help engineers and scientists address some of the Grand Challenges for Engineering.

Eric Starkloff, Vice President of Product Marketing for Test and Industrial Embedded, National Instruments

Watch Eric Starkloff and NI R&D engineers reveal the latest products and technologies that are making the graphical system design platform a mainstream approach for engineers and scientists around the world.

WEDNESDAY, AUGUST 3

Shelley Gretlein, Director of Core Platforms – Software, National Instruments

Join Shelley Gretlein in celebrating the 25th anniversary of the LabVIEW graphical programming environment and see how engineers and scientists around the world use LabVIEW to innovate and develop world-improving applications. Also, learn how the global LabVIEW community is poised to help address some of the world's biggest engineering challenges during the next 25 years.

Jeff Kodosky, Cofounder, Business and Technology Fellow, National Instruments

Hear from Jeff Kodosky, the "Father of LabVIEW," as he shares fundamental programming concepts vital to the next 25 years of graphical system design for meeting the most demanding application challenges.

THURSDAY, AUGUST 4

Ray Almgren, Vice President, Product Marketing for Core Platforms, National Instruments

As a 24-year NI veteran, Ray Almgren leads the company's efforts to enhance science and engineering education and inspire students to pursue technical careers. Join him and students of all ages as they demonstrate how technology and hands-on learning are changing the world around us.

NETWORKING ACTIVITIES

NIWeek KICKOFF HAPPY HOUR

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

Monday, August 1 ▸ 5:30–7:00 p.m. ▸ Exhibition Hall

NI COMMUNITY *BLOCK DIAGRAM* PARTY

Enjoy food, drinks, and music as you connect with fellow engineers from around the world. Share ideas and best practices, and discuss the latest innovations in technology with industry leaders in design, control, and test.

Tuesday, August 2 ▸ 5:00–7:00 p.m. ▸ Exhibition Hall

ANNUAL NIWeek CONFERENCE PARTY

Don't miss out on an opportunity to attend a real Texas-style party! Enjoy Tex-Mex cuisine and cold drinks as you relax and hang out with new friends. Dance the night away to great music or kick back and network with all of your NIWeek friends at this popular conference event.

Transportation provided.

Wednesday, August 3 ▸ 7:00–10:30 p.m. ▸ Location to be announced

PEER2PEER ROUNDTABLES

Extend your network, expand your expertise, and take a lunch break with your peers and NI developers to discuss best practices and challenges within your application, job position, or industry. Topics include machine condition monitoring; medical device development; LabWindows/CVI applications; and building, marketing, and selling LabVIEW add-ons.

Tuesday, August 2 ▸ Noon–1:00 p.m. ▸ Exhibition Hall
Wednesday, August 3 ▸ Noon–1:00 p.m. ▸ Exhibition Hall
Thursday, August 4 ▸ Noon–1:00 p.m. ▸ Exhibition Hall

A National Instruments Alliance Partner is a business entity independent from National Instruments and has no agency, partnership, or joint-venture relationship with National Instruments.

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 friends during the conference and beyond. Join the NIWeek Community at **ni.com/niweekcommunity** to experience the following:

- *Get 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 connect 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.

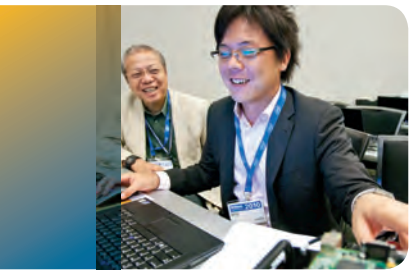
bit.ly/NILinked

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

NIWeek COMMUNITY EXCHANGE

The NIWeek Community Exchange showcases new technologies and connects you to innovative thought leaders. Network with colleagues and members of the NI Community during these interactive sessions that feature topics such as the community-driven innovations in LabVIEW 2011, the best software bloggers, and the LabVIEW Add-On of the Year.

SPECIAL EVENTS



NI ALLIANCE DAY

During NI Alliance Day, join product developers, consultants, systems integrators, and the NI sales team as we commemorate the 20th anniversary of the NI Alliance Partner program. This full-day event gives NI Alliance Partners the opportunity to network with NI sales and industry experts and learn best practices to increase customer success.

- **KEYNOTE ON PIVOTAL STRATEGIES** – Listen to top NI executives share their thoughts on NI business, markets, and strategies you can use to create opportunities for your company.
- **NI PRODUCT TRAINING** – Attend in-depth training sessions to learn how to market, sell, and use NI products. Also, discover future product initiatives and provide feedback during strategy sessions.
- **TECHNICAL TRAINING** – Learn from NI systems engineers about how to use the latest reference designs to shorten application development time and implement architectures to address application challenges.
- **BUSINESS EMPOWERMENT** – Participate in professional workshops to improve your business practices and learn how to augment your own marketing and sales activities.

Register for NI Alliance Day at **ni.com/niweek**.

ACADEMIC FORUM

The NIWeek Academic Forum provides an exclusive platform for academic professionals to share best practices in engineering education methodologies, discuss the future of engineering and research, and network with colleagues from around the world.

- **TECHNICAL SEMINARS** – View presentations from leading experts in specific engineering application areas and see how they integrate NI solutions into the learning continuum to reinforce concepts and bring objectives to life in the classroom and lab.
- **KEYNOTE ON TECHNICAL ADVANCEMENTS** – Join Dave Wilson, NI director of academic and corporate marketing, as he talks about the future of engineering education and the innovative technologies that are needed to effectively prepare students and help them address the Grand Challenges for Engineering.
- **NEW SOLUTIONS** – Preview the latest product solutions for reinforcing concepts in mechanical, electrical, biomedical, and RF and wireless communications courses.
- **LabVIEW STUDENT DESIGN SHOWCASE** – Explore and connect with student teams who have incorporated the latest NI technology solutions into their design projects.

Register for the Academic Forum at **ni.com/niweek**.

SPECIAL EVENTS

BIG PHYSICS SYMPOSIUM

The Big Physics Symposium brings together more than 80 scientists and engineers from major labs around the world including CERN, Los Alamos National Labs, ITER, and SPring8.

- **KEYNOTE ON CUSTOMIZED COTS TECHNOLOGIES** – Listen to Dr. Truchard as he shares his vision on customizing commercial off-the-shelf (COTS) technologies such as FPGAs, multicore CPUs, and graphics processing units (GPUs) for research facilities through joint industry and research facility collaboration.
- **TECHNICAL PRESENTATIONS** – Listen as your peers share success stories, explore challenges, and examine new technologies for big physics applications. Topics include: diagnostics systems based on COTS technologies, high reliability and availability systems for control needs, and analysis and results from radiation testing using NI PXI and CompactRIO platforms.
- **NETWORK WITH INDUSTRY LEADERS** – Join other engineers and scientists in sharing best practices and instrumentation strategies that can be applied in control, measurement, and diagnostics applications.

Register at **ni.com/niweek**.

THE FUTURE OF SYSTEM DESIGN SYMPOSIUM new

This new symposium brings together leading researchers, industry providers, and designers to explore the future of system design. Learn about the latest system design technologies and research including processors and FPGA convergence, high-level synthesis tools and flows, and approaches for increasing design productivity.

BUILD YOUR OWN EMBEDDED SYSTEM

The Build Your Own Embedded System (BYOES) hands-on workshop focuses on prototyping an embedded system based on CompactRIO. Learn how to use the LabVIEW Real-Time and LabVIEW FPGA modules to build a fully configured and programmed CompactRIO embedded system and take it home after the conference. Register for BYOES at **ni.com/niweek**.
There will be an additional fee for this workshop.

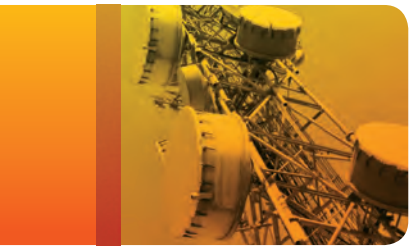
TECHNICAL SUMMITS

AEROSPACE AND DEFENSE SUMMIT

From factory to field and in-flight, COTS technology delivers vital test and data acquisition solutions, ensuring the innovation and operation of aviation and national security systems.

ENERGY TECHNOLOGY SUMMIT

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



RF AND WIRELESS TEST SUMMIT

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

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 health care.

VISION SUMMIT

From inspecting consumer goods to helping doctors perform eye surgery, vision technology is essential for improving productivity and performance in many industries.

AEROSPACE AND DEFENSE SUMMIT

For decades, COTS test platforms have evolved significantly to address complex system requirements while decreasing time to market and reducing total cost of ownership. Learn how to address the entire life cycle of aerospace and defense systems ranging from creating flexible, software-defined test systems to deploying real-time embedded systems for control, monitoring, and operation.

Who Should Attend

Test Program Managers
Test Department Managers
Test System Developers
Systems Engineers
Researchers

KEYNOTE

The State of Legacy Automated Test Systems in DoD Depots

Department of Defense (DoD) maintenance depots face a growing challenge with legacy automated test systems (ATSs), which are critical to ensuring mission success. As ATSs age, they are increasingly difficult to maintain and repair, and costly to modernize or replace. When the testers do not work properly, maintenance slows or stops and mission readiness is adversely affected. Listen as Dr. Carey presents the key issues that drive depot ATS equipment requirements and a technical strategy for modernizing DoD ATSs.

Presented by Dr. David Carey, Tobyhanna Army Depot

TECHNICAL SESSIONS

A Scalable, Common Architecture Tester for Cost-Effective, High Product Mix Testing

Aerospace/Defense manufacturers face unique challenges when developing cost-effective test system programs. While consumer electronics manufacturers traditionally support short product life cycles, aerospace/defense product life cycles are much longer. More complex aerospace/defense products create an added burden on design and supportability, with a significantly lower product volume. Learn how modular instrumentation, flexible form factor, and multiple tester configurations can be quickly tailored and adapted to meet specific program requirements.

Presented by Elbit Systems of America (ESA)

Creating a Wideband Multichannel RF Recorder for Testing Antenna Array Algorithms Using the PXI Express Platform

Because most commercial RF recording solutions have only one to two channels and don't offer synchronization for array operations, they are not sufficient for testing RF antenna array signal processing algorithms. The ECHSE system solved this challenge and is used in testing null steering antenna arrays for GPS jammer and suppression as well as for passive radar research. Learn how this system achieved performance specifications using PXI Express peer-to-peer (P2P) streaming, NI FlexRIO, and PXI Express.

Presented by Schönhofer Sales and Engineering, GmbH

Design Considerations for Building a Rugged, Portable Test System

Field testing and troubleshooting military equipment is critical for deployed aerospace/defense systems. The testers that go along with the deployed systems must be rugged and portable. Equipment normally used in a controlled, indoor environment rarely meets all of the environmental and size requirements for deployed field testers that must meet military specifications such as MIL-PRF-28800F and MIL-STD-810E. Gain real-world insight and lessons learned in using the CompactRIO platform for building rugged field test systems for military applications.

Presented by G Systems L.P.

ENERGY TECHNOLOGY SUMMIT

The theme for the summit is *designing the smart grid*. Discuss smart grid technology, development techniques, and lessons learned from the field as well as topics including renewable generation, electric vehicles, and smart grid transmission and distribution. Network with industry pioneers and deepen your understanding of reconfigurable embedded system technologies that are pushing the boundaries of the smart grid.

Who Should Attend

Engineers
Scientists
Researchers
Professors
Entrepreneurs
Industry Experts
Venture Capitalists
Executives

KEYNOTE

Digitizing the Electrical Grid: The Future of Synchrophasor Measurement Technology

Join the North American SynchroPhasor Initiative (NASPI) in helping advance the development, research, analysis, and deployment of networked phasor measurement unit (PMU) technology. PMUs are precise, high-speed instrumentation systems distributed throughout the power grid to provide a comprehensive view of the entire interconnection, enabling real-time analysis of grid stress, proactive corrective action, and improved integration of renewable and intermittent resources.

Presented by NASPI

TECHNICAL SESSIONS

Smart Grid Control Systems: Moving Toward a Self-Healing Grid

Smart embedded systems that combine instrumentation, analytics, and control will help the grid become more like the Internet: self-diagnosing and self-healing, distributed rather than centralized, and bidirectional rather than unidirectional. Learn the fundamentals of smart grid control systems and gain inside perspective from developers of microgrid and smart distribution switch applications based on CompactRIO.

Presented by Lockheed Martin and National Instruments

Improving Grid Integration With Synchronized Power Monitoring From Turbine to Substation

To validate the models for integrating wind turbine farms into the grid, CompactRIO and LabVIEW are used to acquire, in a synchronized manner, current and voltage waveforms from turbines and power substations. Learn how to architect a smart, networked power monitoring system with microsecond time synchronization, real-time signal processing and triggering, and data collection in a standard COMTRADE file format.

Presented by Hydro-Québec

Solving Renewable Intermittency: Advanced Grid Adaptive Energy Storage Control Systems

Controlling the delivery of megawatts of fluctuating green energy into the electric grid is a challenging real-time control application. Xtreme Power, a leader in utility-scale energy storage systems, uses LabVIEW Real-Time and LabVIEW FPGA to store and release captured energy at subcycle control rates. This regulates the power output of utility-scale renewable sources, such as the Oahu wind farm in Hawaii. Learn from a veteran LabVIEW architect how a distributed, messaging-based application architecture and hard real-time FPGA-to-FPGA control links provide a powerful, scalable framework for grid-tied power electronics control systems.

Presented by Xtreme Power and Richard Jennings Embedded Services LLC

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 NIWeek RF and Wireless Test Summit. Also, gain a better understanding of a range of technologies including FPGAs, multicore CPUs, LTE, multiple input, multiple output (MIMO), and time-domain network analysis.

Who Should Attend

RF Engineers
Microwave Engineers
Communications Engineers
Researchers
Professors

TECHNICAL SESSIONS

Advanced Network Analyzer Measurement Techniques

Vector network analyzers (VNAs) are some of the most complex RF instruments, but engineers can use them to perform a wide range of measurements. Learn basic VNA calibration techniques as well as more advanced measurement concepts such as time-domain measurements.

Presented by National Instruments

Advanced RF Signal Analyzer Measurement Techniques

Getting every last decibel of dynamic range for a particular measurement requires careful attention to several signal analyzer settings including reference level, local oscillator (LO) power, and intermediate frequency (IF) bandwidth. Learn about some of the fundamental trade-offs between each of these settings and their impact on measurement accuracy and repeatability. Also, gain an introduction to basic techniques that can be used to determine whether you're measuring the performance of your device under test (DUT) or the instrument itself.

Presented by National Instruments

Introduction to Testing 3GPP LTE

Gain an overview of the 3GPP LTE physical layer and learn about common RF measurements for LTE including: transmit power, adjacent channel power, and error vector magnitude (EVM). Also, learn best practices for automating LTE measurements in design validation or production test applications.

Presented by National Instruments

The Art of Benchmarking Measurement Speed: PXI Versus Benchtop Instruments

For engineers automating measurements, speed is everything. However, quantifying the measurement speed is often difficult, requiring careful attention to many settings such as averaging, number of symbols, capture period, and other factors. Learn about the trade-offs of each of these factors and best practices to optimize overall test time. Also, walk through a thorough benchmark comparison with a common rack-and-stack instrument to see how it compares to PXI.

Presented by National Instruments

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 robotics applications. With in-depth technical sessions and corresponding live demonstrations at the Robotics Pavilion 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.

Who Should Attend

Robotics Engineers
Mechatronics Engineers
Computer Scientists
Control Engineers
Embedded Design Engineers
Entrepreneurs
Engineering Professors
Students

KEYNOTES

Design Mission-Based Robot Systems With CompactRIO

Attend this dynamic keynote session by Massachusetts Institute of Technology (MIT) professor Dr. Harry Asada to learn more about mission-based, autonomous systems being designed and developed in MIT labs. Learn about the mission and requirements, view videos and results from the latest competition, and meet the winning team.

Presented by Dr. Harry Asada, Professor, MIT Robotics Department

Market Opportunities in Autonomy, Navigation, and Mobility

Dan Kara, president and CEO of Robotics Trends, presents an unbiased view of the entire robotics market. Attend the industry-day keynote to get a broad look at autonomous systems – from medical to consumer to industrial and defense. Gain insight on some of the coolest technologies, trends, and robots around the globe.

Presented by Dan Kara, President and CEO, Robotics Trends

TECHNICAL SESSIONS

Hack the Microsoft Kinect and Other Cool Robotics-Ready Sensors

Get development tips for hacking some of the coolest sensors in the consumer world. Explore the Kinect, already hacked by the open source community, to see how you can use it to communicate with LabVIEW. Also look at the Light Detection and Ranging (LIDAR) sensor included in the Neato vacuum.

Presented by Academic and Industry Experts

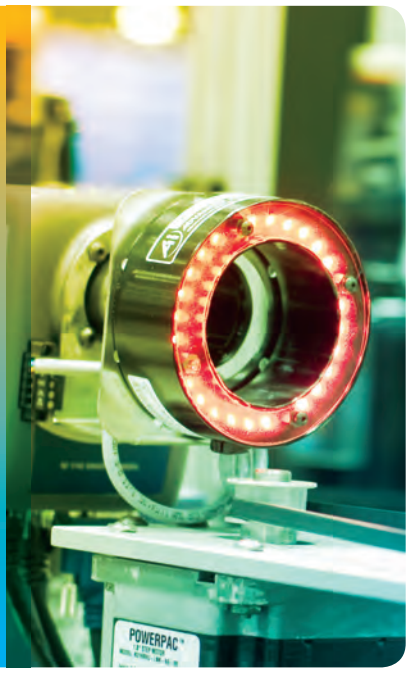
The Nitty Gritty Technical Details of the LabVIEW Robotics Module

Explore features from the LabVIEW Robotics Module and the details of their implementation using a rugged autonomous robot platform as a case study. Learn about robot data communication, hardware-abstracted I/O, FPGA sensor drivers, and teleoperation.

Presented by National Instruments

VISION SUMMIT

Expand your technical expertise by attending one of the most comprehensive conference lineups in North America at the NIWeek Vision Summit and the corresponding Vision Pavilion on the exhibition floor. Participate in sessions presented by NI developers, industry experts, and academic professionals. Learn how to get started with imaging and gain insight into the latest products and technologies.



Who Should Attend

Manufacturing Engineers
Imaging Professionals
Machine Builders
Researchers
Quality Control Engineers
Professors

KEYNOTES

How NI Technology Powers the Space Elevator

LaserMotive's first project earned $900,000 USD in the NASA-sponsored Power Beaming Challenge in the Space Elevator Games. The system can transfer power wirelessly via laser light to a remote, airborne, mobile photovoltaic receiver located 1 km away or more. Learn how a machine vision system based on NI tools automatically locates the receiver and steers the laser beam.

Presented by LaserMotive

Industry Trends and Intelligent Production Systems of the Future

Gain unbiased insight into technology trends in the vision industry, and explore techniques that are being borrowed and adapted across industries and applications. Discover how inspection systems are used to add intelligence into manufacturing processes to get closer to zero-defect manufacturing with examples using LabVIEW and NI vision products.

Presented by Björn Damm, Executive Director, Interdisciplinary Imaging and Vision Institute, RWTH Aachen University

TECHNICAL SESSIONS

3D Vision and the Kinect

Watch as we tear down the functionality of the Kinect to divulge how stereovision works. Learn how this 3D technique has become prevalent for industrial inspection, autonomous robots, and consumer electronics. Examine considerations in working with 3D vision, including calibration with tips and tricks for how you can use such a sensor setup with NI software.

Presented by National Instruments

FPGA Image Processing Case Studies

FPGAs can significantly boost accuracy and throughput of certain vision applications. Hear about how customers used NI tools in semiconductor, selective laser melting manufacturing, and Web inspection applications.

Presented by Nanometrics and Industry Experts

Panel Discussion: The Latest in Camera Technologies

Listen as industry experts from five camera companies share their views on the latest camera technologies including emerging camera buses, synchronization, bus-powered imaging protocols, and image sensors.

Presented by Industry Experts

TECHNICAL SESSIONS

EMBEDDED MONITORING AND CONTROL TRACK

Addressing Bandwidth Challenges of Embedded Industrial Applications

FPGAs are quickly becoming one of the primary solutions for addressing the technical bandwidth challenges historically solved with digital signal processors (DSPs) and microprocessors. Learn about the benefits of using FPGA-based solutions for embedded industrial applications.

Presented by Xilinx

a Advanced Motion Control for Machine Automation

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 automatic and manual tuning methods.

Presented by National Instruments

Automated Production Functional Testing Using CompactRIO

Signal.X Technologies developed an automated test system using CompactRIO as a programmable automation controller (PAC) to execute motion control, data acquisition and analysis, test sequencing, part handling, and communication to a PC and programmable logic controllers (PLCs). Learn about the reliability, efficiency, debugging tools, data management, and configuration of this environment.

Presented by Signal.X Technologies LLC

Building a Complete Data Monitoring and Storage System With CompactRIO

Building a configurable monitoring system for synchronized measurement of vibrations and other signals can be a challenge. Learn the software design considerations for engineering a data acquisition, analysis, and storage system as well as advanced software techniques, design patterns, and software architectures.

Presented by T&M Solutions BV

Building Support for Third-Party Motion Drives

Learn how to build hardware extensions for third-party and custom motor drives in the LabVIEW NI SoftMotion Module using any industrial communication protocol. Understand how to use high-level LabVIEW NI SoftMotion objects to make custom motion applications manageable. Also, review a detailed case study of the Maxon CANopen SoftMotion driver, available in the LabVIEW Tools Network

Presented by SISU Devices

a Cycle Accurate Simulation of LabVIEW FPGA Module Designs Using ModelSim

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

Presented by National Instruments

Designing High-Throughput Algorithms in LabVIEW FPGA for NI FlexRIO

Learn how to break the 40 MHz barrier in LabVIEW FPGA with techniques, tips, and tricks for compiling at up to 250 MHz and beyond. Access the full potential of your NI FlexRIO FPGA adapter modules with deterministic, low-latency, high-throughput FPGA-based processing.

Presented by National Instruments

Developing a Wind Turbine Condition Monitoring System

Green-Eye is a wind turbine condition monitoring system that measures rotational and wind speeds, power, acceleration, and temperature in off-shore commercial wind farms in Korea. A remote server is connected to Green-Eye via TCP/IP for off-loading data and real-time analysis. Learn how SM Instruments built this system using CompactRIO and the CompactRIO Waveform Reference Library.

Presented by Korea Institute of Machinery and Materials and SM Instruments

TECHNICAL SESSIONS

a Advanced Topic

EMBEDDED MONITORING AND CONTROL TRACK

Developing High-Assurance Applications

Complex systems in high-assurance industries are increasingly using FPGAs to control key functions in mission-critical applications. Learn how to use the joint workflow of LabVIEW FPGA and Mentor Graphics solutions to support development assurance requirements and satisfy some of the most stringent regulatory standards, including DO-254, IEC 61508, and recent FDA policies.

Presented by National Instruments and Mentor Graphics

a Digital Signal Processing in LabVIEW FPGA With NI FlexRIO

DSP on FPGAs requires additional considerations over host-based implementations, including fixed-point data representations, real-time performance, and efficient resource use. Learn how to achieve powerful FPGA-based DSP with a design methodology that uses various tools to maximize success and minimize design time.

Presented by National Instruments

Everything You Want to Know About NI Wireless Sensor Networks (WSNs)

Explore everything from common WSN myths to deployment tips and tricks, including an in-depth look at WSN topologies. Leave with an understanding of how NI WSNs can solve remote monitoring and control application challenges.

Presented by National Instruments

LabVIEW Embedded Tips and Tricks

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

Presented by Boston Engineering

New IP Available for Xilinx FPGAs Through Open Standards

As FPGA-based designs become more complex, and in some cases the heart of system designs, the need for easy-to-use semiconductor IP is imperative. See how Xilinx has standardized its tools and IP on open industry standards to enable an easy-to-use delivery mechanism for Xilinx, third-party ecosystem, and a customer's internally developed IP.

Presented by Xilinx

NI C Series and Beyond: How to Add Custom I/O to Your Reconfigurable I/O (RIO) Embedded System

Find out how to create and build custom C Series modules. Also, see the latest methods to customize NI Single-Board RIO and CompactRIO systems with daughtercards and expansion modules.

Presented by National Instruments

Power Measurements 101

Learn power basics as well as how to make some of the most common power measurements with NI tools including LabVIEW, NI CompactDAQ, and CompactRIO. Applications for power are widespread, but some of the more popular needs right now include appliance testing, renewable energy device monitoring, and smart grid research.

Presented by National Instruments

Selecting the Right Visualization Approach for Your Next Application

Many distributed and embedded applications require a way for an operator to visualize and interact with the system. Learn about the common visualization hardware and software architectures available and which NI tool is appropriate to shorten your time to market.

Presented by National Instruments

TECHNICAL SESSIONS

EMBEDDED MONITORING AND CONTROL TRACK

Simplifying High-Speed Waveform Acquisition on CompactRIO

FPGA programming on a CompactRIO system can get complicated quickly, especially when dealing with the high-bandwidth requirements of high-speed waveform acquisition. Learn about an architecture that provides a starting point in the FPGA with built-in performance optimization as well as a LabVIEW API experience for calling the FPGA from the LabVIEW Real-Time Module.

Presented by National Instruments

The Right FPGA Development Process

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

Presented by National Instruments

Tips and Tricks for Deploying a RIO System

Discuss the tools and gain insight into how to deploy, replicate, and protect an embedded system based on CompactRIO or NI Single-Board RIO.

Presented by National Instruments

Virtual Prototyping With SolidWorks and NI SoftMotion

Simulate a 3D CAD model of your machine within minutes and learn how to design and implement multiaxes motion trajectories with the LabVIEW NI SoftMotion Module to bring your SolidWorks model to life. You can use this interface between LabVIEW NI SoftMotion and SolidWorks to visualize machine movements, check for collisions, and size motors, all with the same LabVIEW code you deploy to actual hardware.

Presented by National Instruments

What's New With CompactRIO

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

Presented by National Instruments

MACHINE CONDITION MONITORING SESSIONS

As part of the Embedded Monitoring and Control Track, the machine condition monitoring (MCM) sessions focus on the tools and techniques used for developing MCM solutions. Learn from industry experts and the National Instruments R&D team about best practices and the latest tools to help make your MCM systems successful.

TECHNICAL SESSIONS

SOFTWARE DEVELOPMENT TECHNIQUES TRACK

a Advanced Topic

a A Cellular-Enabled, In-Vehicle CompactRIO Logger for Fuel Economy Analysis

In the trucking industry, understanding a vehicle's duty cycle and optimizing fuel economy are critical to reducing operating costs. Learn about an in-vehicle logger based on CompactRIO developed to accurately analyze and trend vehicle operating conditions. Users can monitor the loggers from a smartphone and data is also uploaded to the NI technical data cloud.

Presented by Eaton Corporation

a Advanced Error Handling in LabVIEW

Examine the challenges of implementing a full-featured error handling strategy in LabVIEW and the tools to meet some of the most common error handling needs. Discuss error classification and description; central versus specific error handling; and techniques for communicating, logging, and reporting errors.

Presented by National Instruments

A Flexible GUI for Vibration Analysis With LabVIEW

Engineers and scientists who specialize in rotating machinery vibration troubleshooting are continuously adjusting their game plan. Maximizing the troubleshooting potential of the field engineer requires a rapidly configurable software program. Explore key programming concepts involved in creating such a program with LabVIEW, including working with tree displays and subpanels.

Presented by Mechanical Solutions Inc.

Benchmarking LabVIEW Performance

Benchmarking is hard. Factors such as CPU and disk caches, compiler optimizations, and OS prefetching can affect the consistency and accuracy of results. See the techniques that the LabVIEW compiler and performance teams use to accurately benchmark LabVIEW VIs and application performance.

Presented by National Instruments

Best Practices for Developing .M File Code for Real-Time Applications

Using the LabVIEW MathScript RT Module, developers can deploy custom .m files directly to embedded hardware. As with any real-time application, the responsibility of testing for jitter and validating the deterministic behavior of the application lies with the developer. Explore techniques for developing real-time applications using the LabVIEW MathScript RT Module.

Presented by National Instruments

a Beyond State Machines: Building Modular Applications in LabVIEW

Nearly every significant LabVIEW application uses multiple loops and several pieces of hardware. Coordinating these moving pieces can create a recipe for unreadable code. Learn how to use a template for interprocess communication based on "public" and "private" events that is easy enough for intermediate developers but powerful enough for Certified LabVIEW Associate Developers.

Presented by JKI

Building Quality LabVIEW User Interfaces

Review the components of a good LabVIEW user interface and design techniques aimed to communicate the purpose and function of your application at a glance. This session is dedicated to developers who build applications for others or who work on code that will be handed off for future development and maintenance.

Presented by National Instruments

Changing Your Mindset for LabVIEW Real-Time and LabVIEW FPGA Programming

Have you used LabVIEW for your desktop and considered using LabVIEW Real-Time or LabVIEW FPGA for your next project? Learn what to expect when making the transition and how to avoid common pitfalls.

Presented by National Instruments

TECHNICAL SESSIONS

SOFTWARE DEVELOPMENT TECHNIQUES TRACK

a Custom NI TestStand Reports

Don't let your need for custom data reporting and display dissuade you from using an off-the-shelf solution. Learn several ways to tailor built-in reports for NI TestStand to even the most exact standards, and watch demos ranging from quick edits to full custom report templates.

Presented by Bloomy Controls Inc.

Developing ANSI C Applications to Communicate With FPGAs

Discover how you can start designing sophisticated ANSI C FPGA-based systems with NI RIO technology. See how LabWindows/CVI coupled with custom FPGA interface C APIs provides an ANSI C integrated development environment for creating advanced host applications for FPGA communication.

Presented by National Instruments

Developing Web-Based User Interfaces

Engineers often need to monitor remote measurement and automation systems through Web browsers. Explore the LabVIEW Web UI Builder, an NI tool for developing lightweight, Web-based applications that can be combined with LabVIEW RESTful Web services, to create powerful, flexible solutions for monitoring LabVIEW systems over the Web.

Presented by National Instruments

Introducing LabVIEW 2011

Attend this staple NIWeek session to learn about the new LabVIEW features designed to make you a better and more efficient programmer, and take a demo-heavy tour through the LabVIEW platform.

Presented by National Instruments

Introduction to Virtualization and the NI Real-Time Hypervisor

Learn how you can combine real-time processing and a user interface on the same PXI or industrial controller using NI Real-Time Hypervisor software. Also gain an overview of virtualization technology and the benefits and drawbacks of using a hypervisor.

Presented by National Instruments

LabVIEW FPGA Under the Hood

Have you ever wondered how LabVIEW FPGA actually runs LabVIEW code on an FPGA? View the LabVIEW block diagram synthesized down into basic digital logic blocks of an FPGA.

Presented by National Instruments

LabVIEW to NI DIAdem: Doing More With Your Data

You wrote a LabVIEW app that uses all the latest programming techniques and has an awesome user interface and beautiful documentation. But how do you take the data you collected and turn it into something you want to give to your boss?

Presented by Sirius|XM Satellite Radio

.NET for the LabVIEW Developer

One of the many strengths of the LabVIEW development environment is its ease of integration with other technologies such as the Microsoft .NET platform. Learn about the .NET platform and how easy integration with this environment is. Watch demonstrations with LabVIEW and Microsoft Visual Studio .NET.

Presented by The Boeing Company

Overcoming Microsoft Excel's Limitations for LabVIEW Data Analysis and Reporting

Have you ever groaned when Excel couldn't graph all the data in your file? If you're frustrated with Excel being too slow or its inability to handle the size or format of your data file, learn how to use a tool designed for engineers instead of being limited by one designed for accountants.

Presented by National Instruments

Software Engineering Best Practices for NI TestStand

Discuss recommendations on how power users perform common software engineering practices such as code reviews, documentation, requirements and bug tracking, standardization of shared code, static and dynamic validation, test plans, and release management for development in NI TestStand.

Presented by Tektronix

TECHNICAL SESSIONS

a Advanced Topic

SOFTWARE DEVELOPMENT TECHNIQUES TRACK

Software Engineering Tools for LabVIEW

As LabVIEW plays a larger role in increasingly complex systems, it's important that developers have access to software engineering tools that can help ensure application quality and reliability. Gain an overview of tools for LabVIEW that can help automate and improve some of the most time-consuming aspects of software engineering.

Presented by National Instruments

a System Components With Object-Oriented Design Patterns

See how you can design and implement stand-alone, data-driven system components using applicable Gang of Four object-oriented design patterns and the model-view-controller composite architectural pattern. Learn why interfaces are important along with a simple way to create a basic functional equivalent in LabVIEW. Follow an example from state machine design to implementation incorporating reusable libraries.

Presented by Lowell Observatory

a Team-Based Development Techniques and the Impact of Source-Only VIs

Learn configuration management best practices, including how to manage files using the Project Explorer, integration with popular source code control tools such as Subversion, and how the new source-only VI file format can help ensure that code changes do not cause a ripple effect through your application hierarchy.

Presented by National Instruments

a The LabVIEW Compiler and Memory Management Techniques

Explore the internal workings of the LabVIEW compiler and execution engine and learn how to use those principles to optimize your code for improved run-time performance and memory use.

Presented by National Instruments

a Trends in LabVIEW Object-Oriented Programming

NIWeek 2011 marks five years since object-oriented features first appeared in LabVIEW. This style of LabVIEW programming continues to show its power. Examine interesting frameworks, online resources, and good programming practices that focus particularly on new innovations since NIWeek 2010.

Presented by National Instruments

What's New in LabWindows/CVI 2010 and Beyond

Explore new features in LabWindows/CVI 2010 such as improved ANSI C developer productivity and simplified FPGA communication, and view a road map for future versions including a new compiler. Also see how multiplatform deployment support is extended with the LabWindows/CVI 2010 Real-Time Module and LabWindows/CVI 2010 Run-Time Module for Linux.

Presented by National Instruments

TECHNICAL SESSIONS

TEST AND DATA ACQUISITION TRACK

a A Seat for Life: A Custom Life Test Platform for Recaro Aircraft Seating

Recaro Aircraft Seating needed a structural life test solution that was user friendly, flexible, and easily configurable. See how G Systems and Recaro engineers developed a fully customizable control module to interface with a universal life-cycle test fixture using the CompactRIO platform and LabVIEW Real-Time for the control system.

Presented by G Systems

a ATML – Now Ready for Full Use

The mission of the Automated Test Markup Language (ATML) is to define a collection of XML schemas that allows automated test equipment and test information to be exchanged in a common format adhering to the XML standard. Learn how ATML standards can help cut life-cycle costs and improve test information exchange.

Presented by RF Test and Measurement Solutions

Building Real-Time High-Performance Computing Systems With PXI

As engineers push the limits of the single-processor computing system, the need for a scalable, high-performance computing platform with direct connections to I/O is emerging. Learn how you can use PXI to create a real-time high-performance computing system with heterogeneous computing elements and inline I/O.

Presented by National Instruments

Characterization at the Speed of Light Using PXI and High-Speed Digital I/O

See how G Systems architected an I^2C characterization system based on LabVIEW and NI TestStand software and NI PXI hardware. With this system, manufacturers can validate that all device characteristic timing and analog parameters meet the latest I^2C specifications for digital circuit designs.

Presented by G Systems

Creating High-Speed Streaming Systems With PXI

Learn how to architect high-speed data recording, processing, and playback applications incorporating NI modular instruments, hard disk arrays, and NI FlexRIO FPGA modules. Understand how to use high-throughput PXI Express chassis, controllers, and P2P technology for systems with data throughput of up to 6.4 GB/s.

Presented by National Instruments

Getting the Most Out of Your Data Using the TDMS File Standard

Collecting measurement data, saving it for reuse, and sharing it with others can be challenging because you have to balance many factors including file format size, structure and scalability, and ease of exchange. Explore the benefits of Technical Data Management Streaming (TDMS) as a file standard versus other storage techniques and learn data-saving best practices.

Presented by National Instruments

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 car produced 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.

Presented by National Instruments

Hardware-in-the-Loop and Real-Time Testing Techniques

Real-time testing applications require greater reliability and determinism than a typical stimulus-response test system. Examine these applications and review the architectures, technologies, and new tools used to develop and implement them.

Presented by National Instruments

TECHNICAL SESSIONS

a Advanced Topic

TEST AND DATA ACQUISITION TRACK

HDMI 1.4 Test: Protocol, 3D, and Streaming Video Quality

HDMI-enabled devices such as smartphones, set-top boxes, and Blu-ray Disc players provide many challenges for validation and test engineers. Gain background knowledge on HDMI technologies and learn the latest techniques for testing HDMI protocol and streaming video quality.

Presented by National Instruments

HDTV Teardown

Watch as we break down an HDTV into its basic components and then discuss the key components to test during design, validation, and production.

Presented by Alfamation

Identifying Critical Frequencies in Structures

Learn how to combine frequency analysis and the CompactRIO platform to analyze and find natural frequencies in structures. Also discover how to configure and deploy embedded data loggers. Understand the nature of the accelerometer acquisition and see how to perform the modal analysis in LabVIEW to find the resonance frequencies of a bridge.

Presented by National Instruments

a Integrating Model-Based Control into Real Life Test Cell Applications

NI VeriStand combines physical test, model control, and traditional closed-loop control into a complete system. See how this combination lets you execute tests or "drive a vehicle" on a simulated course while applying real-world loads and stimulus to the unit under test without manually generating test profiles from road data.

Presented by WTI

Introduction to the NI PXI Platform

Learn the basics of the NI PXI platform and understand why top Fortune 500 companies are embracing it to address their test, measurement, and control needs. Also take a sneak peek at new products and customer solutions.

Presented by National Instruments

LabVIEW Templates for Common DAQ Applications

Are you tired of starting from a blank VI every time you begin a new project? Do you have problems trying to scale an NI-DAQmx example into a full application? Look at some extensible LabVIEW templates for common data acquisition applications.

Presented by National Instruments

NI FlexRIO and LabVIEW FPGA for Test Applications

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

Presented by National Instruments

NI FlexRIO Out of the Box

Check out a new way to get up and running quickly with your NI FlexRIO hardware. Discuss a new LabVIEW FPGA default personality and host API that allows you to take measurements without compiling any FPGA code, providing data for better algorithm design and subsequent FPGA implementation.

Presented by National Instruments

NI VeriStand as a Test Development Platform

You can use NI VeriStand to develop real-time testing applications more efficiently and with the flexibility to customize all aspects of the framework using LabVIEW, NI TestStand, Visual Studio .NET, and other languages. Learn how to develop with the software, examine its architecture, and review customization options.

Presented by National Instruments

Optimizing DC Measurements for Speed and Stability

Learn techniques to reduce DC measurement time including tips for optimizing cabling, code, and instrument setup. With the right optimizations, engineers can significantly improve overall test time by reducing settling and aperture times within each measurement.

Presented by National Instruments

TECHNICAL SESSIONS

TEST AND DATA ACQUISITION TRACK

Organizing Your Data Across Your Enterprise With the ATML Standard

Every department within a company wants to use their own file format for data collection, analysis, and archiving. Learn how the ATML standard can help you store truly parameterized and relational data that can be easily imported into a standard database and other applications including Microsoft Office and NI TestStand.

Presented by VI Engineering Inc.

Real-Time Testing for Automotive and Avionic Systems

Efficient testing can ensure successful, error-free deployment of embedded controllers. Learn how you can use NI PXI hardware and NI VeriStand software to perform real-time tests such as hardware-in-the-loop and physical testing on automotive and avionic systems.

Presented by National Instruments

a Reducing the Cost and Time of In-System Programming Test Applications With PXI

Learn how to increase productivity and improve your ROI on ISP and functional tests by exploiting the flexibility and versatility of the modular PXI platform. See how the EZ4000, an automated ISP and testing system, is easy to operate with a smooth programming environment to add new products.

Presented by Testing House de México

Smartphones for Smarter Data Acquisition

You probably carry around more computing power in your pocket today than you had on your desktop 10 years ago. Get an introduction to the iOS and Android development environments and learn how you can build native apps to remotely view data from LabVIEW Web services.

Presented by National Instruments

Standardize Your CAN Applications With NI-XNET

XNET products for CAN, LIN, and FlexRay networks make it easy to develop a single application that you can port to different environments and platforms including PXI, PCI, NI CompactDAQ, and CompactRIO. Learn how a single API and high-performance hardware can reduce development time for automotive network communication across multiple networks and platforms.

Presented by National Instruments

Take Advantage of PXI Embedded Controllers Featuring Intel Technology

PXI embedded controllers powered by Intel processors combine leading-class performance in a compact embedded form factor. Learn how Intel provides the latest processor innovations and how NI integrates the technology into PXI embedded controllers that are designed to meet the demanding requirements of test, measurement, and control applications.

Presented by National Instruments

TECHNICAL SESSIONS

a Advanced Topic

STRUCTURAL TEST AND MEASUREMENT TRACK new

a Choose the Right Optical Sensor for Your Application

Optical sensing offers several benefits over conventional sensors and can be found in many applications including high-temperature down-hole monitoring and high-EMI physics experiments. Practical use of optical sensors is similar to electrical sensors, making it accessible for most applications. Discover the top considerations for using optical sensors and learn how to select the best one for your application.

Presented by National Instruments

a Improving Product Design With Acoustic Holography

See how you can combine acoustic holography vision and LabVIEW to build a better system to identify noisy components in structural or electronic designs.

Presented by CAE Engineering

Introduction to Fiber-Optic Sensing

Optical sensing helps engineers perform previously difficult or impossible measurements. Compare electrical and optical measurements, discuss the benefits of optical sensing, and gain an overview of various optical sensing technologies and top considerations for design.

Presented by National Instruments

a Monitoring Real-World Structures

Real-world monitoring can be used 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. See results from antenna testing at various steel bridges and case studies of real-world structural monitoring.

Presented by The University of Texas at Austin

Noise, Vibration, and Harshness Data Analysis From Heavy-Duty Truck Testing

Noise and vibration testing in heavy-duty trucks often requires a large number of data channels to capture tachometer-based torsional vibration data, linear vibration data from accelerometers, and acoustical data from microphones. Processing different data types for many files is time consuming and the risk for errors from a manual process is great.

Presented by Eaton Corporation

Top Considerations for Optical Sensing

Several methods can be used for optical measurements such as fiber Bragg grating (FBG), which 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.

Presented by National Instruments

CONFERENCE REGISTRATION

	By May 31	After May 31
Full Conference (August 2–4) Includes admission to 3-day conference and exhibition, meals, exhibition hall receptions, and evening events.	$1,095 (USD)	$1,195 (USD)
Full Conference and NI Alliance Day[1] (August 1–4) Includes full conference and NI Alliance Day.	$1,095 (USD)	$1,195 (USD)
NI Alliance Day[1] (August 1) Special day for developers, consultants, and system integrators in the NI Alliance Partner program.	$125 (USD)	$250 (USD)
Volume Discount – Full Conference (August 2–4) Covers four full-conference registrants for the price of three.	$3,285 (USD)	$3,585 (USD)
Sessions Only Includes access to keynotes, sessions, and exhibition hall booths only.	$895 (USD)	$995 (USD)
One-Day Pass Includes access to keynotes, sessions, exhibition hall, and evening event for a single day.	$600 (USD)	$600 (USD)
Expo Plus Pass Includes access to keynotes and exhibition hall plus all meals, receptions, and evening events.	$300 (USD)	$300 (USD)
Exhibition Hall Pass Includes access to keynotes and exhibition hall only.	FREE	FREE

ACADEMIC DISCOUNT

	By May 31	After May 31
Full Conference (August 2–4) Includes admission to 3-day conference and exhibition, meals, exhibition hall receptions, and evening events.	$450 (USD)	$500 (USD)
Full Conference and Academic Forum (August 1–4) Includes full conference and Academic Forum.	$450 (USD)	$500 (USD)
Academic Forum (August 1) Includes access to keynotes, sessions, and exhibition hall booths only.	$225 (USD)	$250 (USD)
Sessions Only Includes access to keynotes, sessions, and exhibition hall booths only.	$150 (USD)	$200 (USD)
One-Day Pass Includes access to keynotes, sessions, exhibition hall, and evening event for a single day.	$225 (USD)	$250 (USD)

[1]NI Alliance Day is limited to members of the National Instruments Alliance Partner program. Visit **ni.com/alliance** to learn more about the program.

- **CANCELLATION POLICY** – If you cancel your NIWeek registration by July 1, 2011, you are subject to a $95 USD cancellation fee. No cancellation refunds are available after July 1, 2011, or for no-shows.
- **HOTEL REGISTRATION** – Visit **ni.com/niweek/attend_info** to find special NIWeek rates in the downtown Austin area.
- **CONFERENCE REGISTRATION** – Register for NIWeek and NI Alliance Day at **ni.com/niweek**, or call our customer service representatives at **888 564 9335**.

TRAINING AND CERTIFICATION

Maximize your NIWeek experience by supplementing conference sessions with training and certification exams. Offered at the Austin Convention Center, training and certification exams help advance and validate your development skills.

Register today because seating is limited.

Visit **ni.com/niweek/training** or call **866 337 5918** for additional training and certification information, early-bird pricing, and enrollment information.

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, July 31, to Monday, August 1:

– *Object-Oriented Design and Programming in LabVIEW*
– *RF Application Development (condensed)*
– *Managing Software Engineering in LabVIEW*
– *NI TestStand II*
– *LabVIEW Real-Time 2*
– *LabVIEW Connectivity*

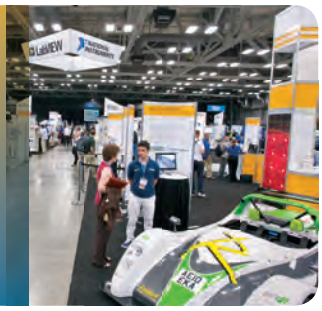
CERTIFICATION EXAMS

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 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. Certification exam prep courses are offered at no cost.

CERTIFICATION EXAM PREP COURSES	Monday, August 1	Tuesday, August 2–Thursday. August 4
Certified LabVIEW Developer (CLD)	8:30 a.m.–12:30 p.m.	
Certified LabVIEW Architect (CLA)	1:00–5:00 p.m.	

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

PAVILIONS



LabVIEW ZONE

Discover what's new in LabVIEW and get a close-up look at featured demos from the conference. Along with learning about new programming resources, interact with LabVIEW R&D personnel and systems integrators and walk away with starter code you can use.

AEROSPACE AND DEFENSE PAVILION

Discuss your applications with NI engineers presenting live demonstrations of the latest technologies for automated test and embedded design at the Aerospace and Defense Pavilion. View hardware-in-the-loop, structural health monitoring, wireless measurement, RF, and mixed-signal test demos, and gain insight into using the power of software-defined modular instrumentation to lower the cost of test and design.

RF AND WIRELESS PAVILION

Visit the RF and Wireless Pavilion to see real-world implementations of software-defined test systems designed from the highest performing RF PXI instruments in the industry. See live demos showing best-in-class RF performance and industry-leading measurement speed for protocols including GSM/EDGE, WCDMA, LTE, WLAN, WiMAX, GPS, and ZigBee. Explore the new technologies discussed at the RF and Wireless Test Summit such as MIMO, fast P2P processing using FPGAs, and pulsed S-parameters.

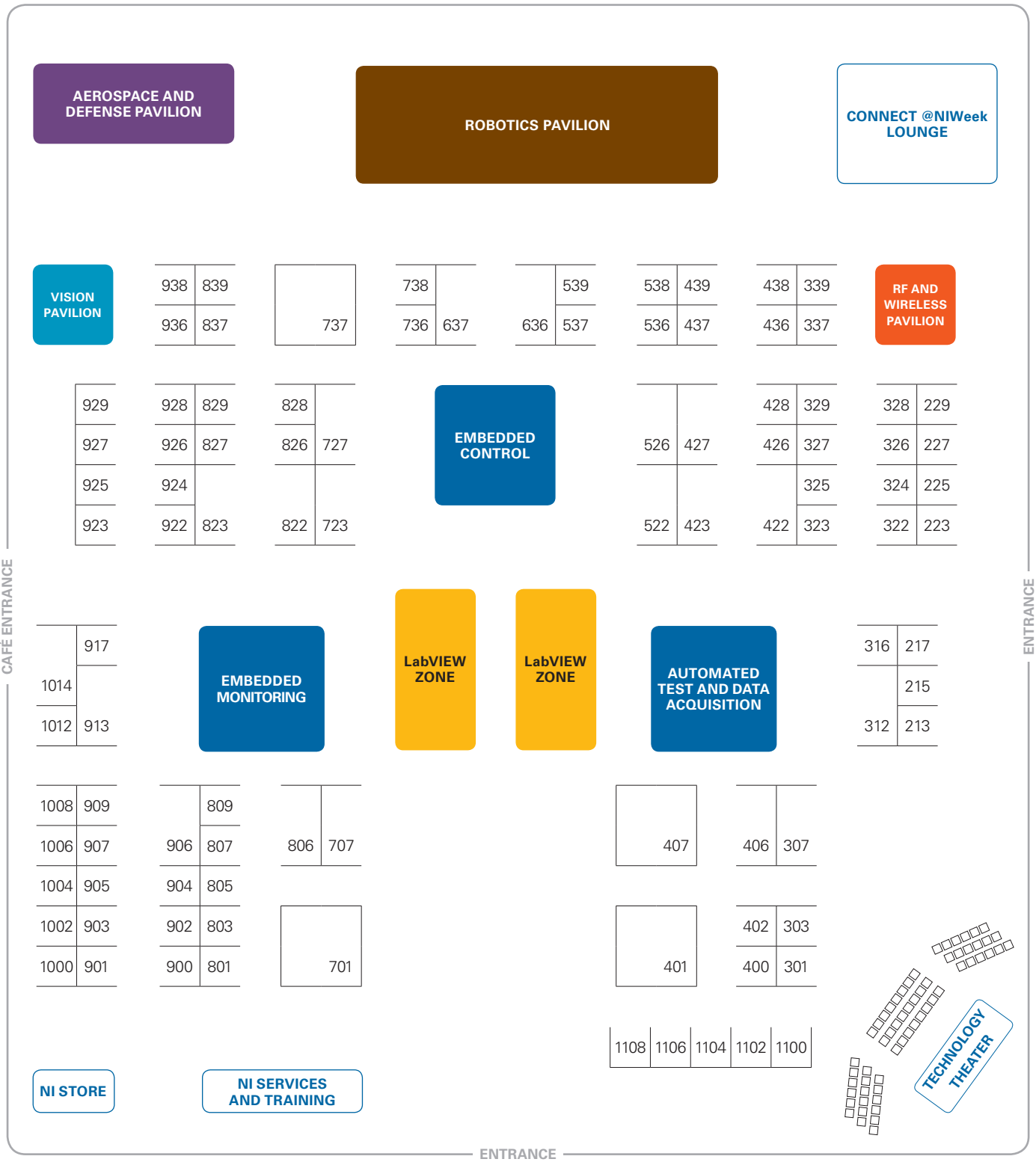
ROBOTICS PAVILION

Visit the Robotics Pavilion to learn how cutting-edge technology from National Instruments is advancing unmanned systems and mobile robotics. See how LabVIEW enables applications from competitive robots that play human sports to medical robots that are used in hospitals for telediagnosis of strokes.

VISION PAVILION

See machine vision solutions in action at the Vision Pavilion. Interact with demonstrations from integration companies that highlight a variety of vision applications. View demonstrations of the latest vision products from National Instruments including new industrial-grade smart cameras, FPGA-based vision solutions, and the latest software algorithms. Also, learn about new products from leading companies in the industry at one of the largest vision expositions in North America.

EXHIBITION HALL



EXHIBITION HALL HOURS

Monday, August 1	5:30–7:00 p.m.	Wednesday, August 3	10:30 a.m.–6:00 p.m.
Tuesday, August 2	10:30 a.m.–7:00 p.m.	Thursday, August 4	10:30 a.m.–1:00 p.m.

EXHIBITORS

CURRENT EXHIBITORS

3M Electronic Solutions Division

Adsys Controls Inc.

Advanced Illumination

Alfamation

Allied Vision Technologies

AMETEK Programmable Power Inc.

AmFax Ltd

Amtec Corporation

Averna

Bare Board Group

Basler Vision Technologies

Bloomy Controls Inc.

Boston Engineering

Brüel & Kjær

Cal-Bay Systems Inc.

CIM Industrial Systems A/S

Conduant Corporation

Cyth Systems

DeVry University

DISTek Integration

Dynamic Technology Inc.

e2v

Edmund Optics

Emona Instruments PTY Ltd

ESTECO

Ettus Research LLC

Feedback Inc.

FLIR Systems

FunctionSIM – ExpertControl

FUTEK

G Systems

G.R.A.S. Sound & Vibration

Graftek Imaging Inc.

Honeywell Sensing and Control – Sensors for Test & Measurement

IEEE Central Texas

JKI

JMAG Division, JSOL Corp.

Kollmorgen

KSE-Texas

Luna Technologies

MAC Panel Co.

Maintainable Software

Maplesoft

Meggitt Sensing Systems

Mentor Graphics

moviMED

National Technical Systems

NETUSA

One Source Group

Optimation Technology

Pansino

PCB Piezotronics Inc.

PFC Flexible Circuits Limited

Phase Matrix Inc.

PVI Systems Inc.

Quanser

RF Test and Measurement Solutions LLC

S.E.A. Datentechnik GmbH

Simex Sistemas de Inspeção Móveis Ltda

SpectraQuest Inc.

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