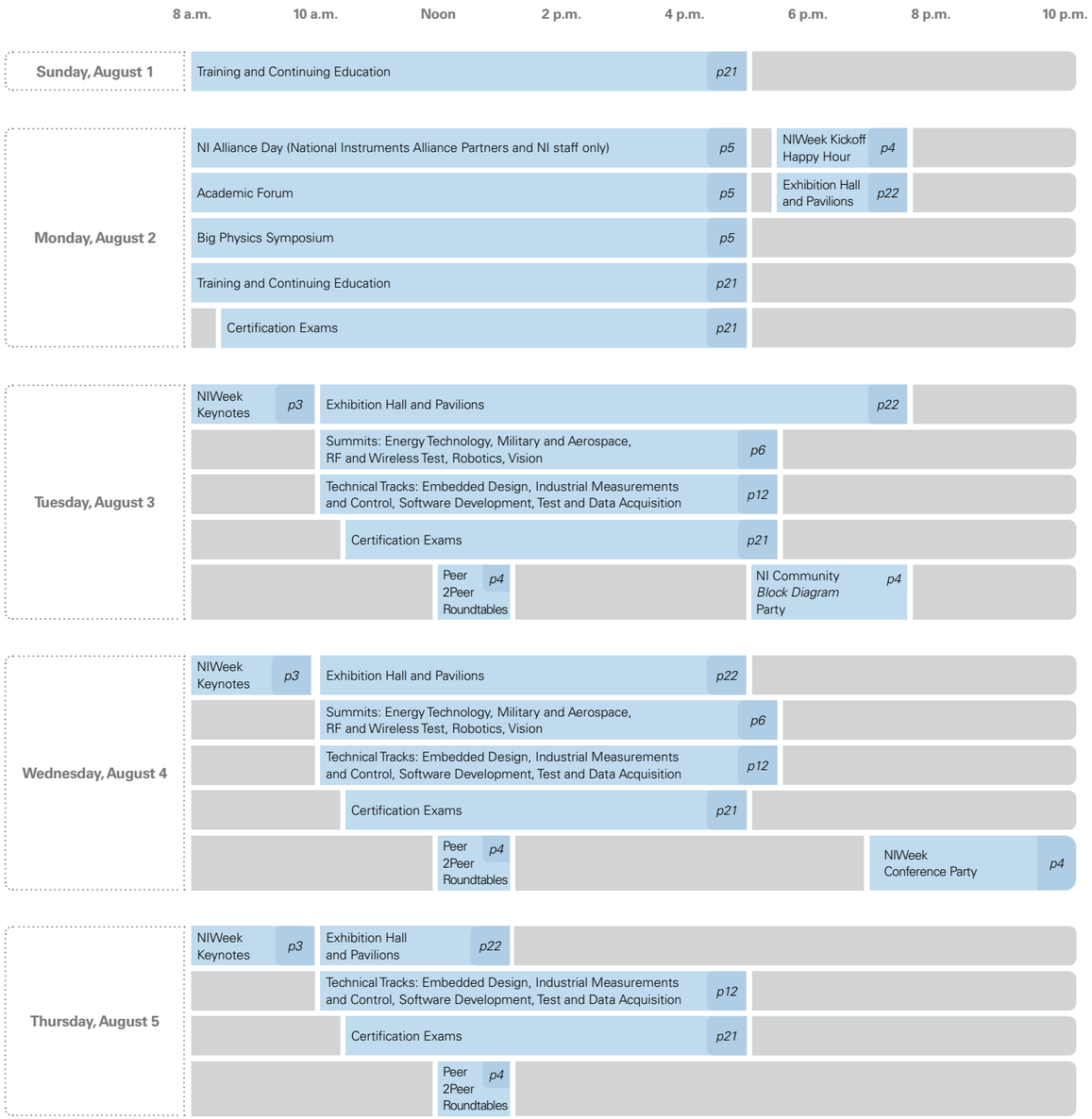
PRELIMINARY
CONFERENCE PROGRAM
AUGUST 3–5, 2010
NI ALLIANCE DAY, AUGUST 2
AUSTIN, TEXAS | NI.COM/NIWeek

NIWeek
WORLDWIDE GRAPHICAL SYSTEM DESIGN
CONFERENCE

CONFERENCE OVERVIEW



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Dear Fellow Innovator,

On August 3, thousands of the most brilliant engineers, scientists, innovators, educators, and students will gather for NIWeek 2010, the world's leading graphical system design conference and exhibition, at the Austin Convention Center in Austin, Texas.

We invite you to join us for this year's event, which will feature some of the most impressive opportunities for networking and training available in our industry.

LEARN from today's leading innovators through an incredible variety of more than 200 interactive technical sessions, panel discussions, and case study presentations for beginners and advanced developers. Find out how to optimize efficiency in your test and data acquisition (DAQ) systems; implement advanced technology for industrial design, measurement, and control; engage with emerging trends in science and industry; and much more.

EXPAND your career opportunities with training sessions for continuing education units (CEUs) and certification exams for software such as NI LabVIEW, NI LabWindows™/CVI, and NI TestStand.

EXPERIENCE the technology of nearly 300 other leading companies through their exhibits and demonstrations. Also join your peers and take in the sights and sounds of Austin, the live music capital of the world!

By joining us, you will see that NIWeek truly is the definitive industry experience that delivers the practical knowledge, tools, and connections you need to increase your productivity and take your innovation to the next level. Register today at **ni.com/niweek**.

Sincerely,

Jeff Kodosky
Cofounder and Business and Technology Fellow
National Instruments

KEYNOTE PRESENTATIONS

TUESDAY, AUGUST 3

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 coinvented the award-winning 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, National Instruments
With more than 23 years of experience at National Instruments, John Graff directs an integrated team of marketing and sales professionals that educate and support thousands of customers worldwide. Watch him and NI R&D engineers reveal 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.

WEDNESDAY, AUGUST 4

Jeff Kodosky, Cofounder and Business and Technology Fellow, National Instruments
Hear from Jeff Kodosky, the coinventor and "Father of LabVIEW," as he shares fundamental programming concepts vital to the future of graphical system design for solving your most demanding applications.

Mike Santori, Business and Technology Fellow, National Instruments
Phil Hester, Senior Vice President of Research and Development, National Instruments
Mike Santori has worked at National Instruments for 24 years and helps drive the development of key software and hardware platforms. Phil Hester, new to the National Instruments family, is a technology leader with experience in key engineering and management positions at industry-leading companies, including AMD and IBM. Watch as Mike, Phil, and NI R&D engineers present the latest NI technologies for advanced control, design, test, and DAQ applications.

THURSDAY, AUGUST 5

Ray Almgren, Vice President of Academic Marketing, National Instruments
As a 23-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

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

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.*

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

PEER2PEER ROUNDTABLE

Now, more than ever, it is essential to extend your network and expand your expertise. 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 3	Noon–1:00 p.m.	Exhibition Hall
Wednesday, August 4	Noon–1:00 p.m.	Exhibition Hall
Thursday, August 5	Noon–1:00 p.m.	Exhibition Hall

SPECIAL EVENTS

NI ALLIANCE DAY

NI Alliance Day is reserved for product developers, consultants, and systems integrators in the National Instruments Alliance Partner program. NI Alliance Partners have the opportunity to network with the NI sales team and learn how to work together 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 how to use the latest reference designs to shorten application development time and implement architectures to meet application challenges.

Business empowerment – Participate in professional workshops to improve your business practices and learn how to tap into NI marketing and sales activities to augment your own plans.

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

BIG PHYSICS SYMPOSIUM

NEW

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 scientists and engineers to network and learn best practices and instrumentation strategies that can be applied in control, measurement, and diagnostics.

ACADEMIC FORUM

The NIWeek Academic Forum provides an exclusive platform for academic professionals to share best practices on engineering education methodologies and network with colleagues from around the world.

Technical seminars – View presentations from leading experts in key thrust areas and teaching methodologies using NI products.

Keynote on technical advancements – Join NI vice president Ray Almgren as he discusses advances in the innovation and use of hands-on, project-based learning in education.

New products – Preview the latest innovations in LabVIEW, the National Instruments Educational Laboratory Virtual Instrumentation Suite (NI ELVIS), and other NI partner products used for teaching and research.

Student showcase – Explore and interact with student teams that have incorporated the latest NI technologies into their projects during the student design showcase.

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

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.

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 will have to evolve with market demands.

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 care.

VISION SUMMIT

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

ENERGY TECHNOLOGY SUMMIT NEW

A new industrial revolution is transforming energy production to more sustainable technologies. Join leaders from industry, government, and academia at the Energy Technology Summit as they share insight on the future of clean energy technology. Learn how to use cutting-edge graphical system design techniques to implement embedded monitoring, control, and test applications for smart grid, renewable energy, and energy-efficient applications.

KEYNOTE

Critical Smart Grid Technologies for the Energy Revolution

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.

Presented by IBM

TECHNICAL SESSIONS

Controlling Biomass Gasification Processes Using NI CompactRIO

Conversion of biomass fuel sources to high energy-density liquid fuels through gasification is critical for increasing the adoption of cleaner biomass fuel sources. Discover how Auburn University is building an advanced pilot-scale fluidized bed gasifier, and learn how to architect a real-time distributed process control system using CompactRIO and the NI Scan Engine.

Presented by Control-X LLC

Energy Storage System Performance Characterization for Batteries, Fuel Cells, and Ultracapacitors

Gain an overview of the fast-growing energy storage market. Learn how to control energy storage systems while analyzing performance using multichannel potentiostats. See a live demo of high-throughput fuel cell characterization using LabVIEW control software and NI instruments.

Presented by NuVant Systems Inc.

Implementing Wide-Area Power Quality Monitoring with LabVIEW

Wide-area electrical power measurement and analysis is critical for intelligently optimizing real-time grid operations and improving reliability. Gain an under-the-hood understanding of cutting-edge synchronized phasor measurement unit (PMU) technology and key takeaways from 15 years of implementing distributed power quality analyzers based on LabVIEW.

Presented by ELCOM

Who Should Attend

Engineers
Scientists
Researchers
Professors
Entrepreneurs
Industry Experts
Venture Capitalists

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.

TECHNICAL SESSIONS

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

Cal-Bay Systems implemented a commercial off-the-shelf (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.

Presented by Cal-Bay Systems Inc.

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.

Presented by Blue Ridge Research and Consulting

Hardware Abstraction Layers Using LabVIEW Object-Oriented Programming

Explore a user-defined, instrument-centric hardware abstraction layer (HAL) using LabVIEW object-oriented programming (OOP). With object-oriented design patterns, you can field an instrument reuse library that can grow with changing needs and instrument trends while continuing to protect against costly software maintenance in the inevitable event of hardware obsolescence.

Presented by Harris Corporation

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.

Presented by Keenan Simulation Corporation

Who Should Attend

Test System Developers
Systems Engineers
Researchers
Professors

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.

TECHNICAL SESSIONS

Adding an FPGA Target to Your RF Instrument

Can you imagine using an RF vector signal analyzer with a field-programmable gate array (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.

Presented by National Instruments

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

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.

Presented by Triquint Semiconductor

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

Gain insight into the benefits and challenges of adopting PXI RF instruments for FM transmitter test. Learn how Texas Instruments improved measurement time, cost, and performance using the NI PXI platform instead of a test solution based on Rohde & Schwarz and Audio Precision equipment.

Presented by Texas Instruments

Under the Hood of an LTE MIMO-OFDM Downlink Prototype

Learn about 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.

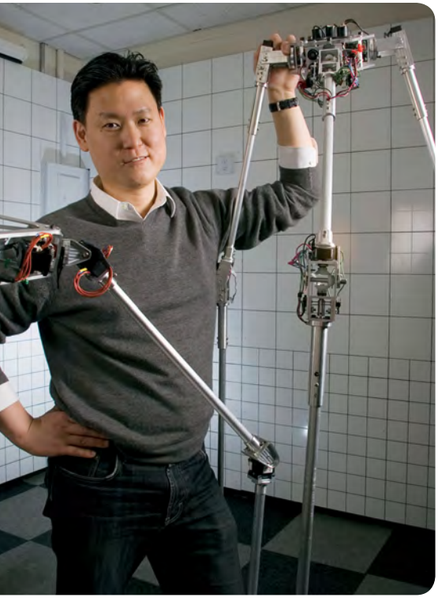
Presented by National Instruments

Who Should Attend

RF Engineers
Microwave Engineers
Wireless Communications Engineers
Researchers
Professors

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 design, simulation, prototyping, and deployment. With in-depth sessions and corresponding 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 Mechanics* – 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.

Presented by the Virginia Tech Robotics and Mechanism Laboratory (RoMeLa)

The Future of Ground Robotics 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 insight from 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.

Presented by the U.S. Army Tank-Automotive Research Development and Engineering Center (TARDEC) Joint Center for Robotics (JCR)

Who Should Attend

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

TECHNICAL SESSIONS

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.

Presented by Academic and Industry Experts

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.

Presented by Vecna Technologies

VISION SUMMIT

Expand your technical expertise by attending 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 in the industry.

KEYNOTE

There's No Accounting for 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.

Presented by Federal-Mogul

TECHNICAL SESSIONS

Seven Vision-Guidance Techniques for Robotics

The U.S. Air Force is developing a vision-guided robot to attach a fighter aircraft's refueling nozzle during ground hot-pit refueling. Review seven techniques used during development to recognize and distinguish unique geometric refueling receptacle features with an NI Smart Camera.

Presented by Stratom

Using NI Vision for Offline In-Mill Testing

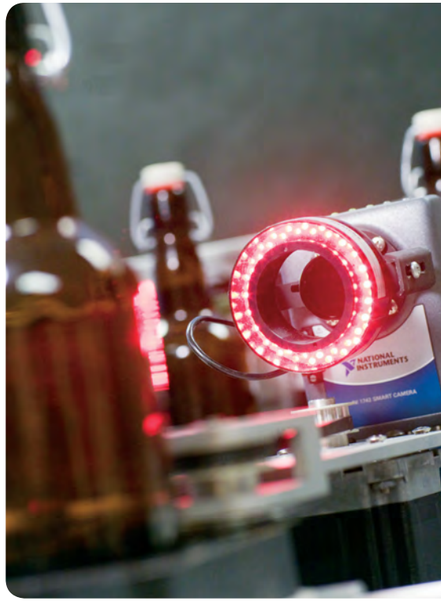
Kimberly-Clark, a leading consumer goods company, uses offline vision systems to inspect nonwoven fabrics for process monitoring and product release. Discover how the company used NI vision to measure features that affect consumer perception and product performance, from surface texture to pore size distribution. Also learn how factors such as calibration, equipment design, and user interfaces lead to successful adoption of these applications in production environments.

Presented by Kimberly-Clark Corporation

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.

Presented by 3M



Who Should Attend

Manufacturing Engineers
Imaging Professionals
Machine Builders
Researchers
Quality Control Engineers
Professors

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 at NIWeek 2010 include the following:

12 **Beyond 40 MHz: Designing for High-Throughput in LabVIEW FPGA**

13 **Using Xilinx IP and Coregen in LabVIEW FPGA**

14 **LabVIEW WSN Under the Hood**

15 **LabVIEW Compiler Under the Hood: Understanding the Optimizations in 2010**

16 **New Features in LabVIEW OOP**

16 **New Technologies in LabVIEW for Software Engineering and Advanced Application Development**

17 **Advanced Switching Configurations for Large Test Systems**

17 **DAQ Advanced: Real Developers Use Property Nodes**

18 **NASA Hearing Aid Analysis and Audio Test Architecture**

TECHNICAL SESSIONS

EMBEDDED DESIGN TRACK

Advanced Topic

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 do work on every clock cycle.

Presented by National Instruments

Combining a Linux® OS, Real Time, and NI I/O

Learn how to build flexible systems by combining hard real-time processing, Linux, and modular I/O on a single controller. Also explore new methods for accessing FPGA devices from applications on Linux.

Presented by National Instruments

Custom Design 101 with CompactRIO and NI Single-Board RIO

Find out how to build and create custom NI C Series modules, accessories, breakout boards, or connectors for 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.

Presented by Cyth Systems and National Instruments

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 special challenges of commercial software development and avoid rewrites in text-based languages by seamlessly evolving your prototype LabVIEW applications into shipping products.

Presented by JKI

Implementing Mission-Critical Distributed Systems – Designing with NI Tools and Custom Code

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.

Presented by G Systems

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.

Presented by Boston Engineering

TECHNICAL SESSIONS

EMBEDDED DESIGN TRACK

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.

Presented by the Massachusetts Institute of Technology (MIT)

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.

Presented by National Instruments

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.

Presented by Xilinx

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 intellectual property (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.

Presented by ARM

What's New in LabVIEW FPGA

See the latest features in LabVIEW FPGA, such as improved simulation, new compiler options, and build specifications.

Presented by National Instruments

TECHNICAL SESSIONS

INDUSTRIAL MEASUREMENTS AND CONTROL TRACK

Choosing Reconfigurable I/O (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.

Presented by National Instruments

Connect LabVIEW to Any PLC

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

Presented by National Instruments

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.

Presented by National Instruments

The Secret of Tuning – Advanced Control Strategies for Energy-Efficient Motor Tuning

Learn to use superior control strategies to improve servo system performance. An observer is a software mechanism that executes a model of the motor/load simultaneously with the servo algorithms and uses information from the sensor and the model to measure motor "states" and deliver superior control.

Presented by Kollmorgen

Tips and Tricks for Online Signal Processing and Data Management

Learn considerations to make when performing online signal processing by understanding the trade-offs of analysis techniques in LabVIEW Real-Time and LabVIEW FPGA. Review an architecture for taking processed data and managing it using CompactRIO.

Presented by National Instruments

Understand High-Speed DAQ 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.

Presented by National Instruments

Using Web Services to Remotely Configure Hardware and Access Data

Examine ways to use Web services to remotely access LabVIEW Real-Time controllers for configuration, monitoring, and thin-client visualization. Also view an iPhone application for accessing wireless sensor networks.

Presented by National Instruments

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.

Presented by AMS

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.

Presented by National Instruments

Advanced Topic

Best Practices for Delivering Data to Remote Clients

As technology evolves, devices, data, and clients are becoming more distributed. Applications now require data to be available at any time and from anywhere. Learn best practices for delivering and displaying data to remote clients with LabVIEW using real-world examples.

Presented by National Instruments

Building Blocks for Software Development in LabVIEW: Tips and Tricks for New Developers

Learn about several simple and easy recommended practices that can help you improve the quality, readability, and maintainability of your LabVIEW applications.

Presented by National Instruments

Effective Reporting Techniques for LabVIEW Users

Whether you use Excel, PDF, HTML, or another reporting tool, LabVIEW has several reporting features to meet your application needs. However, it can be difficult to determine the best approach for creating your report whether it be programmatic or templates. Learn about the options and best practices for creating professional reports.

Presented by National Instruments

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.

Presented by National Instruments

Full Speed Ahead: Maximize the Performance of NI TestStand

Discuss ways to improve the performance of your test systems based on NI TestStand.

Presented by National Instruments

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 Technical Data Management Streaming (TDMS) as a file standard versus other storage techniques, and learn data-saving best practices to get the most out of your test data.

Presented by National Instruments

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 2010 compiler to increase run-time performance. Explore how you can take advantage of these changes to optimize your LabVIEW applications.

Presented by National Instruments

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.

Presented by National Instruments

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.

Presented by Bloomy Controls

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.

Presented by JKI

TECHNICAL SESSIONS

SOFTWARE DEVELOPMENT TECHNIQUES TRACK

New Features in LabVIEW OOP

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.

Presented by National Instruments

New Technologies in LabVIEW for Software Engineering and Advanced Application Development

Learn about new tools for large LabVIEW applications and how to use them in a structured development environment to create high-quality, reliable applications.

Presented by National Instruments

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.

Presented by National Instruments

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.

Presented by National Instruments

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.

Presented by JKI, The G Team, and National Instruments

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.

Presented by National Instruments

Tips and Tricks to Increase LabVIEW Performance Speed

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.

Presented by National Instruments

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.

Presented by National Instruments

Using Your VI as a Web Service in LabVIEW

Learn ways to use LabVIEW Web services with thin-client human machine interfaces (HMIs) and how to publish VIs for standard, Web-based communication.

Presented by National Instruments

What's New in LabVIEW 2010

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

Presented by National Instruments

What's New in LabWindows/CVI 2010

Explore the new features and advancements of LabWindows/CVI 2010 and the LabWindows/CVI 2010 Real-Time Module to increase your productivity and application reliability. Also learn how to take advantage of the latest technologies, such as FPGA-based hardware, and share feedback directly with LabWindows/CVI developers.

Presented by National Instruments

Advanced Topic

TECHNICAL SESSIONS

TEST AND DATA ACQUISITION TRACK

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.

Presented by National Instruments

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.

Presented by National Instruments

Creating High-Speed Data Record and Playback Systems

Find out how to architect and build high-speed data record and playback applications such as RF record and playback, intermediate frequency (IF)/baseband streaming, and high-channel-count DAQ. Understand how to use the new high-throughput PXI Express instruments, chassis, and controllers to create systems with up to 6.4 GB/s of total system throughput.

Presented by National Instruments

DAQ Advanced: Real Developers Use Property Nodes

Examine advanced DAQ programming techniques, tips, and tricks from the National Instruments DAQ R&D team.

Presented by National Instruments

DC Sources Demonstrations: Do You Have the Power?

Providing power to your device under test (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.

Presented by National Instruments

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.

Presented by National Instruments

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.

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 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.

Presented by National Instruments

TECHNICAL SESSIONS

TEST AND DATA ACQUISITION TRACK

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 several of these applications and the architectures and technologies used to develop them.

Presented by National Instruments

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 reduce cold junction compensation (CJC) error in thermocouple measurements.

Presented by National Instruments

Introduction to Optical Sensing

Optical sensing provides benefits that help engineers and scientists perform previously difficult or impossible measurements. Compare electrical and optical measurements, learn about the benefits of optical sensing, and gain an overview of various optical sensing technologies and how to guide for conducting optical measurements with LabVIEW.

Presented by National Instruments

Introducing SC Express: High-Performance Sensor Measurements

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

Presented by National Instruments

NASA Hearing Aid Analysis and Audio Test Architecture

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.

Presented by National Instruments and NASA

NI FlexRIO and LabVIEW FPGA for Test

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 modules with DSP-focused Xilinx Virtex-5 FPGAs.

Presented by National Instruments

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.

Presented by National Instruments

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.

Presented by National Instruments

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, as well as reference architectures and other case studies.

Presented by National Instruments and G Systems

TEST AND DATA ACQUISITION TRACK

Advanced Topic

TECHNICAL SESSIONS

TEST AND DATA ACQUISITION TRACK

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.

Presented by Bloomy Controls

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, a variety of NI and third-party environments can be used to add custom functionality. Gain an introduction to NI VeriStand and how it can be used to create real-time testing applications more efficiently.

Presented by National Instruments

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 full capabilities of the iPhone, Droid, and other smart phones to acquire measurement data, present it on a limited display, and share it with your colleagues over the Internet.

Presented by National Instruments

Strain Gage Measurement Techniques

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

Presented by National Instruments

Test Development Improvements at Knowles Electronics

Knowles Electronics developed a standardized test platform using PXI and LabVIEW to reduce system cost and increase production throughput. Explore how the company uses a global database to control test specifications, test results, and real-time monitoring, and maximizes output with limited resources using a streamlined test system development life cycle and common configuration management tools.

Presented by Knowles Electronics

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.

Presented by National Instruments

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, which are critical to ensuring data integrity for the measurement system. Also gain an overview of the sensing technology and value of using quality outputs from sensors combined with ease of connectivity and setup to modern data acquisition systems.

Presented by Honeywell

Using PXI and LabVIEW for Characterizing Power Management ICs

ON Semiconductor chose the NI PXI platform to reduce cost and increase the flexibility of its semiconductor validation tests. Discover how engineers are saving space and lowering the cost of test systems on power management ICs.

Presented by ON Semiconductor

TEST AND DATA ACQUISITION TRACK

CONFERENCE REGISTRATION

Passes	By May 31	After May 31	Description
Full Conference (August 3–5)	$895 (USD)	$995 (USD)	Includes admission to three-day conference and exhibition, meals, exhibition hall receptions, and evening events.
NI Alliance Day[1] (August 2)	$100 (USD)	$200 (USD)	Special day for developers, consultants, and systems integrators in the NI Alliance Partner program.
NI Alliance Day[1] and Full Conference (August 2–5)	$895 (USD)	$995 (USD)	Includes full conference and NI Alliance Day.
Volume Discount Full Conference (August 3–5)	$2,685 (USD)	$2,985 (USD)	Covers four full-conference registrants for the price of three.
Academic Discount Full Conference (August 2–5)	$350 (USD)	$400 (USD)	Includes full conference and Academic Forum.
Academic Discount Sessions Only	$100 (USD)	$150 (USD)	Includes access to keynotes, sessions, and exhibition hall booths only.
Academic Discount One-Day Pass	$150 (USD)	$200 (USD)	Includes access to keynotes, sessions, exhibition hall, and evening event for one day.
Sessions Only	$695 (USD)	$795 (USD)	Includes access to keynotes, sessions, and exhibition hall booths only.
One-Day Pass	$500 (USD)	$500 (USD)	Includes access to keynotes, sessions, exhibition hall, and evening event for a single day.
Expo Plus Pass	$200 (USD)	$200 (USD)	Includes access to keynotes and exhibition hall plus all meals, receptions, and evening events.
Exhibition Hall Pass	FREE	FREE	Includes access to keynotes and exhibition hall only.

[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, 2010, you are subject to a $95 USD cancellation fee. No cancellation refunds are available after July 1, 2010, 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, 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

	Monday, August 2	Tuesday, August 3	Wednesday, August 4	Thursday, August 5
Certified LabVIEW Developer (CLD)	8:30 a.m.–12:30 p.m.			
Certified LabVIEW Architect (CLA)	1:00–5:00 p.m.			

Exam Schedule

Certified LabVIEW Associate Developer (CLAD)	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)	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)	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)	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)	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)		1:00–5:00 p.m.		
Certified LabVIEW Developer (CLD)		1:00–5:00 p.m.		
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 developers and systems integrators and walk away with starter code you can use.

MILITARY AND AEROSPACE PAVILION

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

NATIONAL INSTRUMENTS PRODUCT SHOWCASE

View demonstrations of the latest NI hardware and software products at the National Instruments Product Showcase. Talk directly to NI developers and learn how to incorporate NI products into your design, test, and control applications.

RF AND WIRELESS PAVILION

Stop by the RF and Wireless Pavilion and see how the software-defined NI PXI platform has revolutionized RF test. Watch live demonstrations of the fast, flexible, and accurate NI PXI platform performing measurements for wireless standards, including GSM, WCDMA, WLAN, GPS, LTE, and WiMAX. Also view practical implementations of advanced topics covered during the RF and Wireless Test Summit, such as precision RF component testing and MIMO prototyping.

ROBOTICS PAVILION

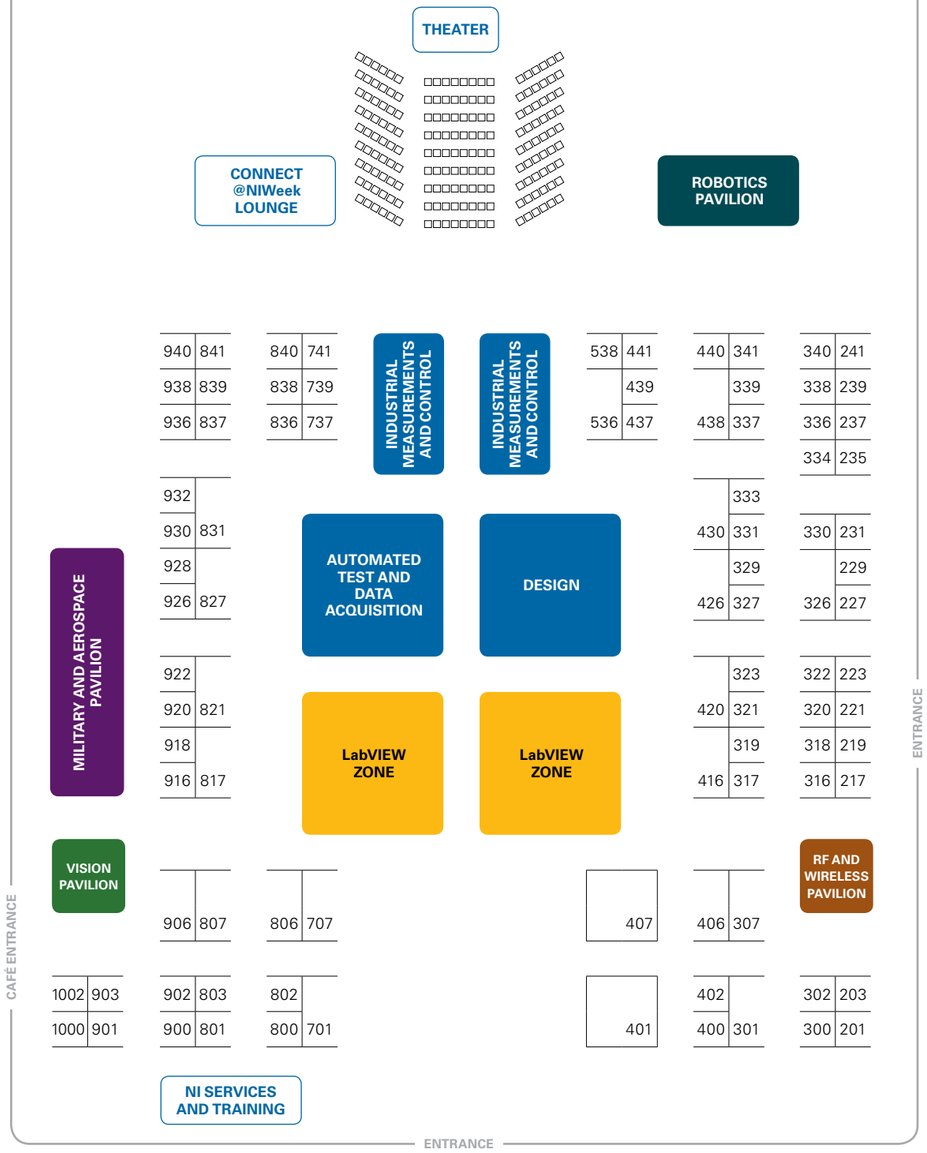
Visit the Robotics Pavilion to learn how cutting-edge technology from National Instruments is advancing unmanned systems and mobile robotics. See everything from real-time/FPGA-based ground vehicles and walking humanoid robots to multiagent swarms powered by LabVIEW. Check out the latest robotics designs from leading universities, including an autonomous moon rover from The University of Texas at Austin, a puppet that can imitate human motions from Georgia Tech, and several sophisticated robots from Intel and NASA, that are being used for research.

VISION PAVILION

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

Register for NIWeek at **ni.com/niweek** to gain the full conference experience.

EXHIBITION HALL



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.

EXHIBITORS

CURRENT EXHIBITORS

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Alfamation
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AmFax Ltd.
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Visit **ni.com/niweek**	E-mail **niweekexhibition@ni.com**	Call our customer service representatives at **888 564 9335**

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