

Learn How to Use PCI for Fast, Accurate Data Acquisition

For information and tips on using the PCI bus for high-speed, accurate data acquisition, call for our new, free, tech note, "Doing PCI Right: the Advantages of MITE-Based PCI Data Acquisition." Engineers Arthur Ryan, Tim Hayles, and Ed McConnell address topics such as PCI system architecture, bus mastering, system design, driver software, and memory issues. The paper also discusses how to overcome system-level problems that are not solved by PCI. ▶

For a PCI tech note, check this option on the reply card or download the PDF document from www.natinst.com/daq/daq_mite.htm

Hot Off the Press

Use the enclosed information reply card to order these articles and application notes. Order numbers are listed after the literature descriptions.

"A LabVIEW-Based Real-Time Hardware Simulation Environment for Automotive Testing," by Conrad Cajulis, User Solutions article. **A910A-02**

"Use Data Acquisition to Evaluate Cable Designs," by Kenneth Kelly, *Electronic Design*, June 23, 1997. **A1013**

"Data Analysis and Visualization for Data Acquisition," by Greg Wells, *Sensors*, June 1997. **A1092**

"Controlling and Monitoring a Manufacturing Burn-In Room with LabWindows/CVI," by Josip Popovic, User Solutions article, June 1997. **A1094**

"Future of Virtual Instrumentation," by Ed McConnell, *Sensors*, July 1997. **A1105**

"Wizards Create Easier Setups," by Tim Studt, *R&D Magazine*, May 1997. **A1120**

"Working Smarter with a VMM," by Dave Wilson, *Desktop Engineering*, July 1997. **A1121**

"A Review of ComponentWorks," by Ed Baroth, Jim McGregor, and Frank Razo, *Evaluation Engineering*, April 1997. **A1126**

"Infant Vision Assessment with LabVIEW on Linked Macintosh Computers," by Scott Steinman, User Solutions article, July 1997. **A1129**

"Designing a Virtual Sound-Level Meter in LabVIEW," by Dean Capone and Gerald Lauchle, User Solutions article, June 1997. **A1130**

"HiQ, and Pretty, Too," by Kenneth Foster, *IEEE Spectrum*, June 1997. **A1133**

"VXI Celebrates 10th Anniversary," by David Haworth, *Evaluation Engineering*, June 1997. **A1134**

"Modular Instrumentation at PCI Prices," by Ron Wolfe, *Evaluation Engineering*, October 1997. **A1147**

CUSTOMER EDUCATION

New LabVIEW Course Teaches Machine Vision and Image Processing

Have you ever needed to integrate imaging into your test and measurement, industrial automation, or research applications, but did not know how to use or implement machine vision techniques? The new LabVIEW Image Processing course provides you with the fundamentals for developing an image processing application, from the camera lens to the final presentation and display of your data.

The course begins with an introduction to imaging hardware and a discussion of camera types, sensors, scanning techniques, and video signal standards. You then receive hands-on experience in learning how to configure the image processing hardware and software using the NI-IMAQ™ Configuration Utility. The course covers how to process images in LabVIEW, along with other issues such as resource and memory management. Using the hands-

on exercises, you can quantify image data (convert between IMAQ image and LabVIEW array) and apply these techniques to an application that verifies from an image whether a spray tip is present on an aerosol can, for instance.

After completing this course, you will understand the basics of image processing, how to configure an image acquisition system, acquire and quantify images, and how to analyze and present the image data. You will also have the ability to locate objects within an image, calibrate image coordinates, extract single color from color image, and process an image in the frequency domain. The course finishes with a discussion of



With the new LabVIEW Image Processing course, you can develop an IMAQ application.

application strategies to provide you with a complete understanding of image processing. ▶

The LabVIEW Image Processing course will be available in 1998. For more information, contact our Customer Education Department at (512) 794-0100 in the U.S. or your local branch office.

Why OEMs Choose National Instruments

Whether you need 20 units or 20,000, you get the price and value you need using National Instruments products. Long known for our high quality, National Instruments uses modern design components and manufacturing technologies to ensure you get reliable products that work as specified. Our investment in advanced ASIC technologies decreases board component count and increases the mean time between failures.

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Call today to discuss your special OEM product needs – our quantity discount prices may surprise you!

Back Issues of *LabVIEW Technical Resource Journal* Available on CD

LabVIEW Technical Resource, the quarterly journal written by and for LabVIEW users and developers, recently released a library of back issues available on CD.

The *LabVIEW Technical Resource Library of Back Issues* on CD includes the contents of each of the 15 issues and source disks published by LTR Publishing since its inception in 1993. Using an on-line LTR Search Engine, you can easily browse through more than 100 articles and virtual instruments for specific topics about LabVIEW programming. ✎

New – 1998 Catalogue Available!



The 1998 version of *Instrumentation Catalogue* is a free, 864-page catalog that details hundreds of software and hardware products that scientists and engineers use to develop integrated, PC-based instrumentation systems for test, measurement, and industrial automation. The catalogue includes tutorials on data acquisition, GPIB, VXI, and industrial automation; product line overviews; and selection guides – all designed to help readers increase productivity and save money with virtual instrumentation.

New catalogue highlights include PXI modular instrumentation; FieldPoint distributed I/O; computer-based instrumentation; and a new line of motion control products. The 1998 catalogue also describes new versions of LabWindows/CVI, HiQ, Lookout™, and BridgeVIEW application software. ✎

For your free 1998 catalogue, check this option on the reply card.

NIWeek 98 Call for Papers

Share your innovative applications of measurement and automation with colleagues from around the world! We encourage you to submit a paper for the NIWeek 98 Best Measurement and Automation Contest and participate in the Poster Session. NIWeek 98 will be held at the Austin Convention Center, Aug 25-27, 1998.

All accepted papers will be published in the Conference Proceedings CD. Winners receive free registration to NIWeek 98, while both winners and semifinalists will present their papers during the conference sessions. A reimbursement of \$100 from the conference fee will be awarded to one author of each paper accepted (limit one reimbursement per submission).

To enter, e-mail a request to niweek.contest@natinst.com. Kits will be mailed or e-mailed in late December. Abstracts are due by March 1, 1998 with complete paper materials due May 1. ✎

Winners of Reader Survey Drawing Announced

Thanks to the *Instrumentation Newsletter* readers who submitted feedback on our recent Reader Survey. We will consider your input in future editions of our newsletter, refining this publication to better suit your needs and expectations.

We would also like to announce the two winners of the HiQ software package offered to all survey respondents through two drawings (one domestic and one international). Lukas Gruber of Lawrence Livermore National Labs in California is our domestic winner. Internationally, our winner is B.J. Johnson of Audio Engineering Limited in London. Congratulations to both winners, and thanks again to all survey participants! ✎



For more information about the back issues CD (including pricing) or a subscription to *LabVIEW Technical Resource*, call LTR Publishing, Inc. at (214) 706-0587, web www.ltrpub.com.

New Members for Alliance Program Advisory Committee Announced

During NIWeek 97, we announced the new members of the Alliance Program Advisory Committee (APAC) selected by Alliance Program members. New members are:

Richard M. Brueggman, Data Science Automation, Inc.
 Don Seidenspinner, Spincraft Engineering
 Brad Hedstrom, Advanced Measurements, Inc
 Bob Jacobs, V I Engineering
 Philippe Sauvan-Magnet, Graftek
 National Instruments recognizes that

Alliance Program members play a vital role to our success. Not only do they use our general-purpose virtual instrumentation hardware and software products to create vertical solutions, they also provide valuable feedback on how we can improve our products and processes. In addition to the existing mechanisms for feedback, such as the Alliance Day portion of NIWeek and an Internet list server, we instituted the APAC to formulate ideas that contribute to the mutual success of National Instruments, the Alliance

Program members, and our customers. Topics include:

- Improving business practices
- Improving the Alliance Program service
- Expanding markets to create new opportunities
- Defining the topics and agenda for NIWeek

Alliance Program members – you can now see our latest software revisions and toolkit compatibility requirements by using our web site. To view these revisions, visit <http://www.natinst.com/softlib/nsf/>

Expanding Products Through Partnerships

The recent acquisition of nuLogic and the joint development of BioBench™ with Premise Development Corporation demonstrate our commitment to working with Alliance Program members to integrate technologies and develop products that help customers with their measurement and automation applications. Over the past several years, National Instruments has worked with Alliance Program members in a variety of ways.

Joint Development of Products – One of the first partnerships with an Alliance Program member was the joint development of the PID Toolkit, originally designed by Gary Johnson. More recently, National Instruments worked with Premise Development Corporation to develop BioBench.

Distribution of Alliance Products – Occasionally, an Alliance Program member develops a product that National Instruments



National Instruments welcomes nuLogic. From left to right: Jack Barber, Developer Relations Manager; Jeff Seiden, Motion Control Marketing Manager (from nuLogic); Dr. James Truchard, President; Tim Dehne, Vice President of Marketing; Jeff Kodosky, Vice President of Research and Development.

decides to market, sell, and distribute along with our own products. Such is the case with the SQL Toolkit, developed by Ellipsis Products, Inc. and the LabVIEW Unit Test

and Validation Procedures, developed by Instrument Services, Inc.

Acquisition of Technologies – As some technologies developed by Alliance Program members become mainstream, it makes sense for National Instruments to add the technology to our portfolio. Such was the case last year when National Instruments acquired image acquisition and analysis software from Graftek for our IMAQ product line.

Acquisition of Companies – Finally, a partnership may lead to the acquisition of not only technologies, but also the employees of companies who have the expertise to accelerate our efforts. This was true in our most recent acquisition of nuLogic.

National Instruments has shown a willingness to partner with our Alliance Program members in a variety of ways to better serve our mutual customers. We look forward to more partnerships in the future.

GTE Division to Provide Calibration for DAQ Boards

National Instruments is pleased to announce that GTE Electronic Repair Services (GTE ERS), a department of GTE Supply, is now qualified to calibrate our computer-based instruments. Users can now have their boards calibrated by a company with years of experience calibrating stand-alone instruments. GTE ERS has handled repair, logistics, services, and metrology management for GTE, the largest independent local telephone company in

the United States, since 1968. GTE ERS also provides these and other services to leading manufacturers in industries such as telecommunications, defense, electronics, and computers, as well as to other service providers.

GTE Electronic Repair Services, an Alliance Program member, is a leading provider of repair, calibration, engineering, and product life cycle support services to large and small OEMs, service providers, and end-user

organizations throughout North America. GTE ERS provides its services through a national network of depot repair centers that offer quick response and turnaround for a diverse group of customers.

For more information, contact GTE Electronic Repair Services at 5615 High Point Drive, MC: A04Y04, Irving, TX, 75038, (800) 788-4831. They have repair facilities in Ontario, CA; Tampa FL; Ft. Wayne, IN; Dallas, TX; and Suwanee, GA.

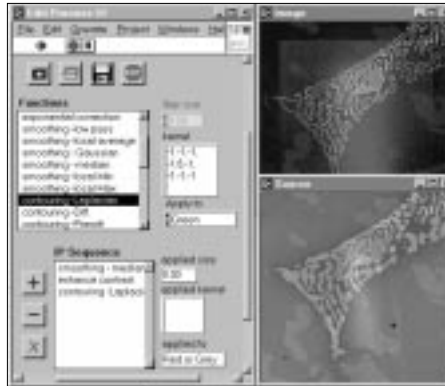
Imaging Sandbox Simplifies Image Analysis Applications

GTFS, an Alliance Program member, has announced the Imaging Sandbox, an integrated testing environment that facilitates imaging control system development. The Imaging Sandbox is designed to prototype and validate image processing sequences written with the functions of the IMAQ Vision Advanced Library.

Featuring a ready-to-use virtual instrument and a VI library, the low-cost Imaging Sandbox can be used by new IMAQ Vision programmers or by experienced users as a base structure for developing imaging applications.

The Imaging Sandbox features an easy-to-use interface to edit complete imaging sequences, with operations for image enhancement and filtering, image segmentation, object manipulations, and

morphology transformations. Using a validation mode, users can observe how well a selected sequence performs on sample images. An object measurement report and several other analysis modules are included with the software. Users can



easily integrate specialized and custom modules into the program.

The graphical user interface makes it easy to modify algorithms; users do not have to spend time programming to evaluate imaging techniques. In addition, users can reuse the VI library code across platforms and for multiple imaging projects. The Imaging Sandbox interfaces with the IMAQ PCI-1408 image acquisition board from National Instruments and other IMAQ-compatible frame-grabber cards. ▶

For more information, contact GTFS, 2455 Bennett Valley Rd. 100C, Santa Rosa, CA 95404 tel (707) 579-1733, fax (707) 578-3195, e-mail info@gtfs.com or see the web site at www.gtfs.com

ISATEC Board Speeds Imaging and Signal Processing Applications

ISATEC, an Alliance Program member, has announced the Systola 1024, a power computing board for the PCI bus that increases the computing power of a common PC to that of high-performance workstation standards. Users can perform efficient real-time image processing and complex analysis applications, such as real-time image signal processing, real-time digital signal processing, complex analysis, and cryptographical tasks for network security applications.

The ISATEC Systola 1024 integrates 1024 RISC processors onto a standard PCI

board. These computing units work in parallel, giving users computing power up to 30 times faster than the normal PC rate. For example, in the nondestructive testing of workpieces in the aeronautical industry, a 2D-reconstruction of an object viewed from 400 different angles takes only four seconds to complete with the Systola 1024.

One important advantage is that the user continues to work in a standard programming environment such as C/C++, Pascal, and LabVIEW. Therefore, the training time on parallel software implementations for Systola 1024 is

relatively short. Plus, using the ISA-TOOLS development environment included, users can develop new parallel routines as well as customize. ▶

For more information, contact ISATEC, Schauenburger Str. 116, D-24118, Kiel, Germany at tel (49) 431 5606410, fax (49) 431 5606419, e-mail isatec@t-online.de, or web site at www.netuse.de/Home/isatec.

New VXI Module Performs Telecommunication Functions

Pentek, an Alliance Program member, has introduced a new dual-span, full-duplex transceiver VXI module that handles either T1 or E1 digital PCM telecom standards for transmission of image, voice, data or other digital signals. This module, which provides a flexible, configurable connection to T1 and E1 lines, is ideal for VXI telecom development systems where programmability is essential.

The Model 4459 is a C-size VXI module that contains two complete

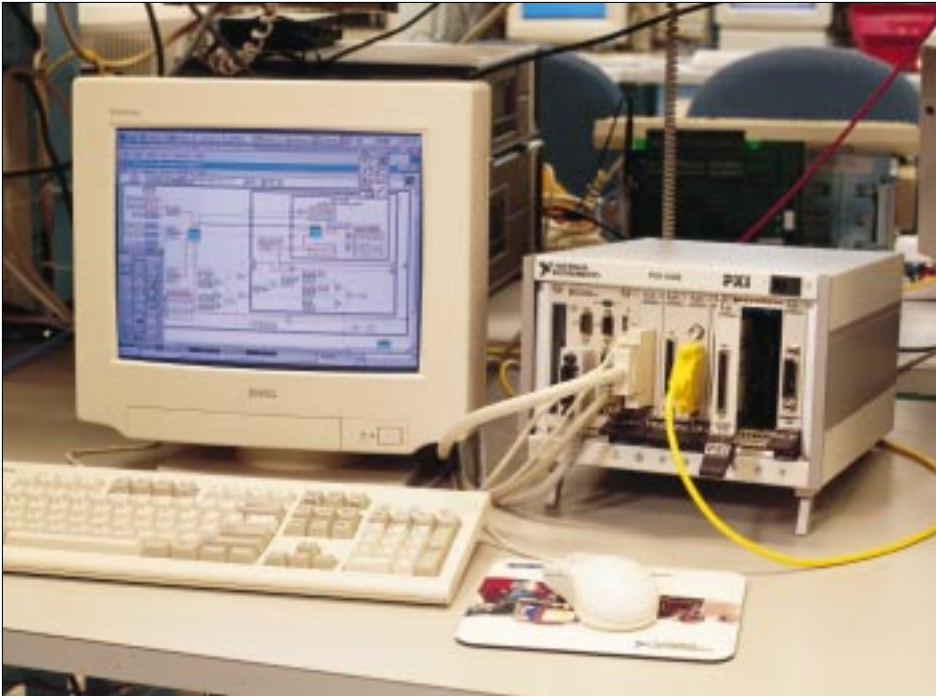
1.544 Mbit/s T1 or 2.048 Mbit/s E1 digital PMC telecom interfaces. With these interfaces, users can have as many as 48 T1 or 64 E1 simultaneous, full-duplex data or voice channels. The unit features high-performance PCM line interface circuitry followed by frame encoding/decoding options for T1 or E1 (CEPT), an HDLC controller, and dual-port SRAM.

The Model 4459 is supplied with a complete set of VIs for LabVIEW with support for a variety of workstations and embedded host platforms running Sun

OS and Solaris, HP-UX, MS-DOS, Windows 95 and NT. With the VI driver set, users can configure and initiate data transfers for the Model 4459 all through a soft front panel presented via the LabVIEW graphical user interface. ▶

For more information, contact Pentek, Inc., One Park Way, Upper Saddle River, NJ 07458-2311; tel (201) 818-5900, ext. 726, fax (201) 818-5904; e-mail news@pentek.com

PXI – Modular Instrumentation that Makes Sense



The PXI modular instrumentation platform delivers the PC-based performance, flexibility, ease of integration, and affordable cost you have asked for in data acquisition, test and measurement, and industrial computing applications – see cover story.

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For Customer Education schedule, see insert.

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Look for the National Instruments booth at these upcoming trade shows:

MacWORLD Expo

San Francisco, CA Jan 6-9

Photonics

San Jose, CA Jan 27-29

IMAC

Santa Barbara, CA Feb 3-5

SAE

Detroit, MI Feb 23-26

PittCon

New Orleans, LA March 2-5

Nepcon

Anaheim, CA March 3-5

Industrial Automation

Chicago, IL March 16-19

Interphex

Philadelphia, PA March 17-19

Automated Manufacturing Expo

Greenville, SC March 24-26

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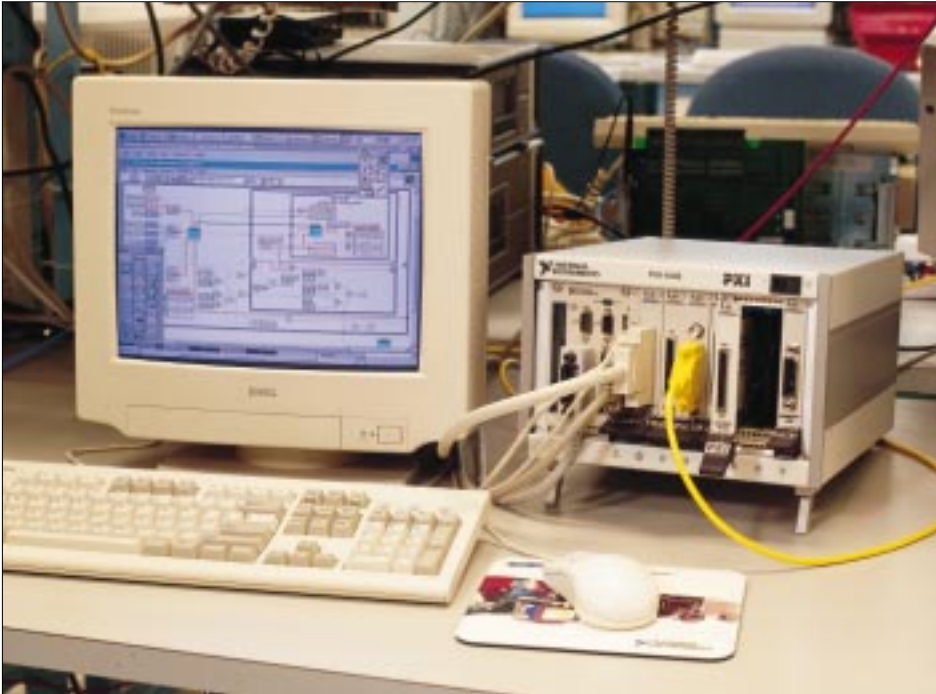
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Look for the National Instruments booth at these upcoming trade shows:

Teknik & Data 98		IPOT 98		C&I 98	
Odense, Denmark	Feb 4-6	NEC, Birmingham, U.K.	Feb 11	NEC, Birmingham, U.K.	Apr 28
DanMiljo 98		MTEC 98			
Messecenter Herning, Denmark	Apr 21-23	NEC, Birmingham, U.K.	Feb 11		
Computer 98		Nepcon 98			
Lausanne, Switzerland	Mar 28	NEC, Birmingham, U.K.	Mar 17		

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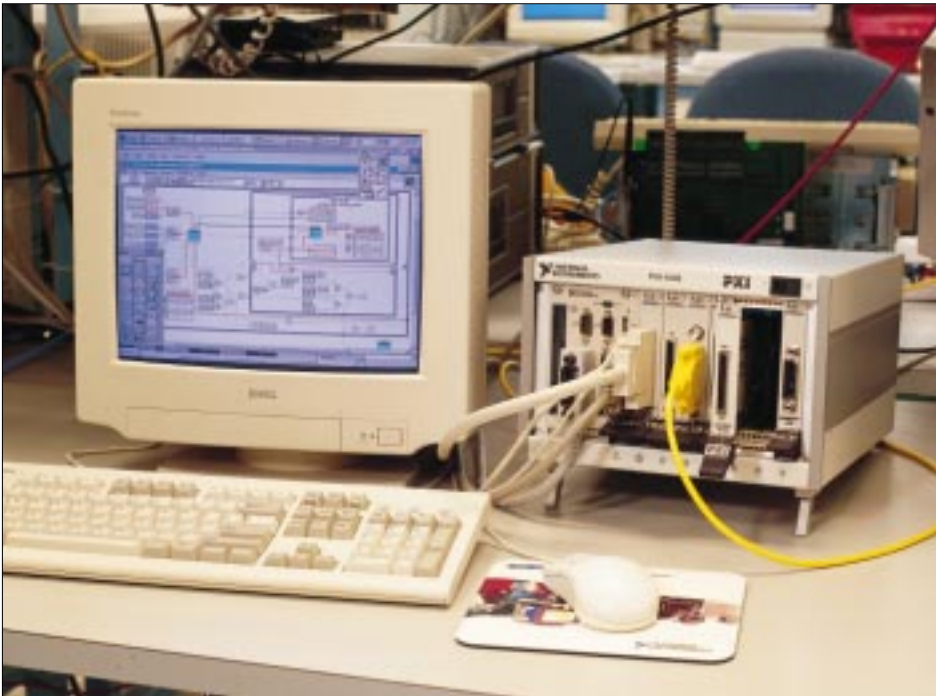
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KOFA

Seoul, Korea

Mar 27-30



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