

Technology for Quality assurance in SME production

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World-Class Capabilities Required

- Quality Control and Assurance
- Optimized Process Control
- Cost Competitiveness
- Meeting Standards
- High Efficiency



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SME Constraints

- Small Budget
- No Specialized Experts
- Limited System Resources
 - System infrastructure
 - System Tools
 - Few BAs or BIs

“SMEs report an average budget increase of just 2% over actual spend in 2006...spending on research and development (R&D) and security will rise 1%”

*Michael Speyer, February 2007
Forrester Research Inc.*

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SME Resources

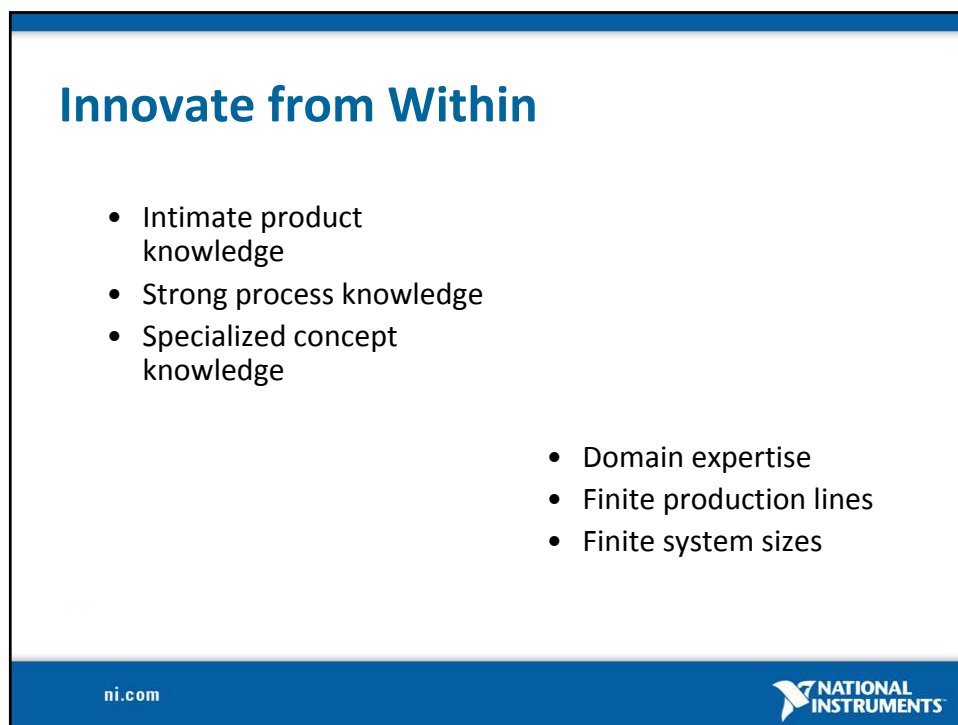
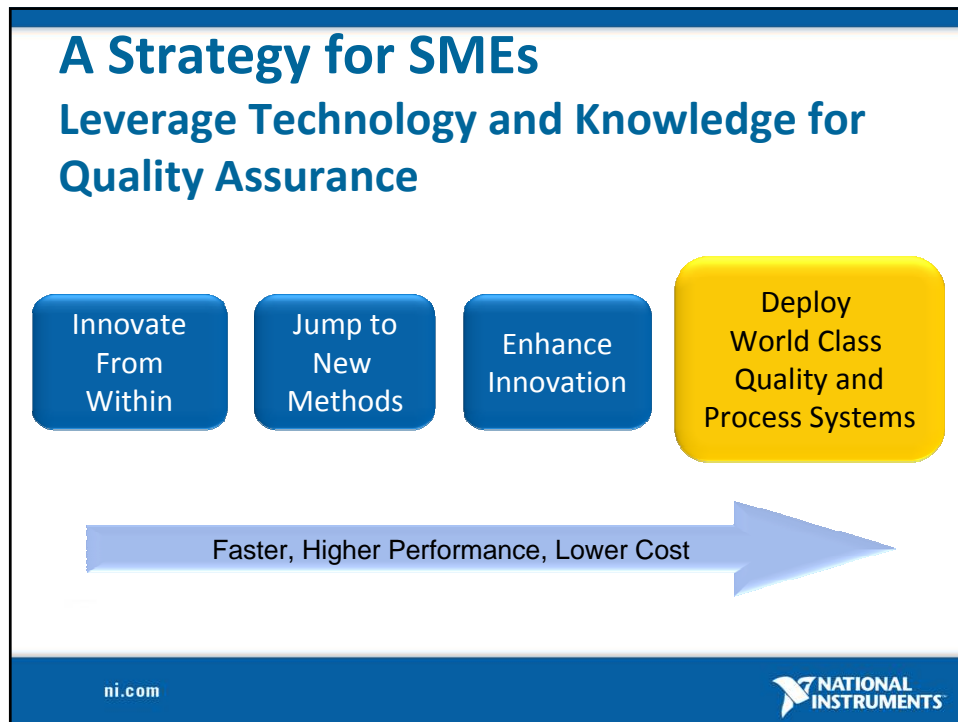
- Process, Product and Production proximity
- Domain expertise
- In-house innovation
- Flexibility
- Rapid adaptability



Designer, Developer, and Assembler

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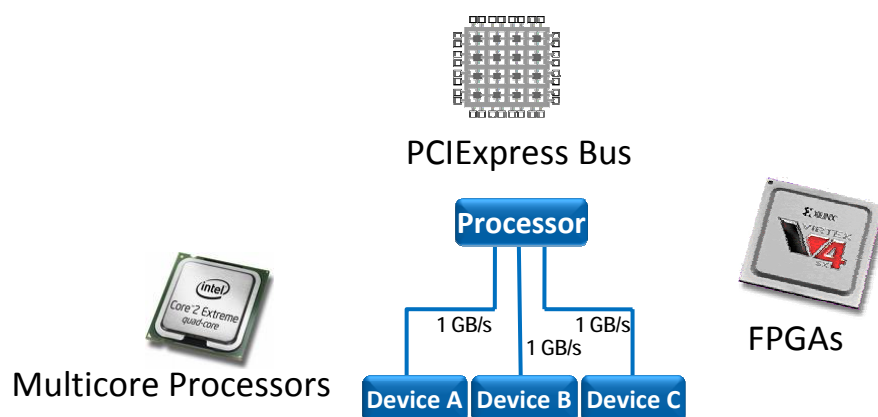
Jump to New Methods

- Avoid closed, inflexible system components
- Utilize computing and digital advances
- Move measurement and control routines to software
- Reuse equipment through software reconfiguration
- Reduce size and cost

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Enhance Innovation: Leverage Commercially Off The Shelf Technology (COTS)



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Measurement Components

Reprogrammable HW Controller (FPGA)

Data Transfer

I/O Modules

- Temperature
- Vision
- Motion Control
- Strain
- Position
- Bar code

LabVIEW

Real-Time

Embedded Control

Networked

Leverage IP

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NATIONAL INSTRUMENTS

Some Sensors

Force

Encoders & Resolvers

Microphones

Level Sensors

Position

Bar Codes & Matrix Codes

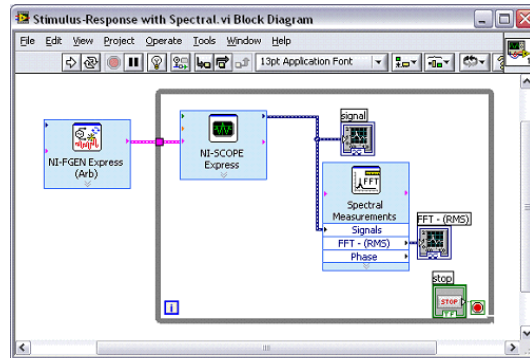
1D & 3D Acceleration

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NATIONAL INSTRUMENTS

Enhance Innovation: Abstract Complexity

- Software encapsulates your domain IP for rapid reuse
- Automatically leverage COTS advancements
- Reduce Need for Technology Specialists
- Utilize IP from industry players



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Enhance Innovation Leverage IP of the World-Wide Development Community

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LabVIEW Zone Online User Community

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LabVIEW Zone

Features

NI LabVIEW 8.5, featuring multicore development tools, statechart programming, and more, has been released. [Click here](#) to find out what's new in LabVIEW 8.5.

Have you read *The LabVIEW Style Book*? Peter Blume, President of NI Select Partner Bloomy Controls, has authored the definitive guide to best practices in LabVIEW development. Blume presents practical guidelines for optimizing each facet of your application - from readability and simplicity to performance and maintainability.

Read the latest [Eyes on Vis](#) blog entry from Christina Rogers of National Instruments LabVIEW R&D.

New User Group Presentations now available! Visit the [User Groups Page](#) for other resources for your User Groups.

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Deploy World-Class Quality Assurance and Process Control

- With current in-house knowledge
- With competitive edge of innovation
- On-time and on-budget
- Through COTS
- And Abstraction

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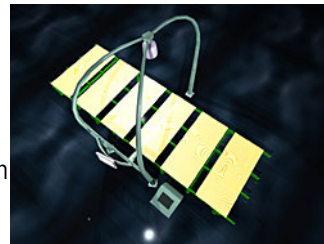
NI LabVIEW and PXI Optimize Plywood Sorting Process

Application: Sorting green veneer plywood panels according to moisture content on a high-speed conveyor line.

NI Products Used: LabVIEW, LabVIEW Real-Time, PXI/CompactPCI, Vision

SME Decision making factors:

Fast deployment enabled by compatible SW tools and Vision
Improved performance and ease of use



Guiding Factors for Technology Selection

- Tight Integration Between SW & HW allowed for a 3x Faster Deployment of Application resulting in increased profitability
- Increased reliability by reducing the number of miss-registrations and by providing an easy to use operator interface
- Improved production rate by performing analysis in tight time window

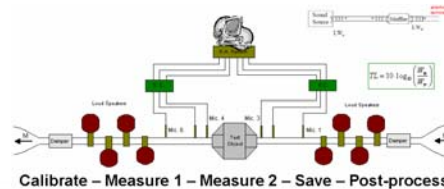
[NI LabVIEW and PXI Optimize Plywood Sorting Process](#)

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Muffler Noise level Testing

- Muffler Transmission Loss
 - Difference between incident sound power levels and transmitted sound power level when tailpipe has anechoic termination
- Anechoic Termination is impossible to achieve
- Two-Source Technique to eliminate reflections effects

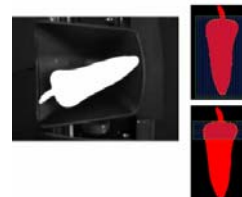


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Vegetable Sorting

- Product used:
 - LabVIEW , LVRT, LV DSC and Vision Acquisition and Analysis
- Sort Vegetable: Capsicum
 - By size: shoulder width and length
- Achieved:
 - Alarming & Events
 - Producer tagging
 - Quality selection per lane based on size
 - Rejection based on size or missing stem
 - Improved speed & quality
 - Integrated total machine control
 - Customized Report generation



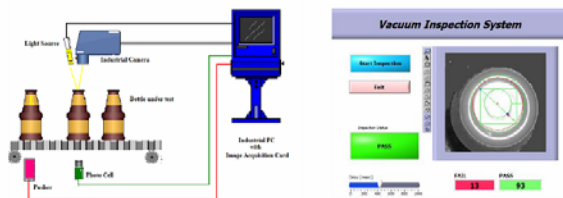
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Image Inspection System to test The Vacuum in Juice Bottle

Control system configuration:

- National Instruments Image Acquisition Card
- CCD Camera with Light Source
- Photo Cell for trigger
- Industrial PC
- Application software developed under LabVIEW
- NI-Vision Software



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Design and Production of Retinal Disease Treatment Machine

Application: Developing a highly accurate system capable of using patterns to automate the delivery of laser pulses used to treat retinal diseases.

NI Products Used: DAQ, LabVIEW FPGA, LabVIEW

Reasons for Choosing NI Products: "The hardware determinism of the PCI-7833R allows for faster retinal scanning, significantly reducing the number of office visits for the patient."

"Using LabVIEW FPGA technology, we were able to automate this proven procedure with speed and reliability."

[Improving Retinal Disease Treatment with LabVIEW FPGA and Intelligent DAQ](#)

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Flexible Machine Control System

Application: Integrating NI vision and motion control technology into a flexible program to control the production machine and easily adapt and modify the steps in the production process.

Challenge: Building an accurate and flexible research and development production machine for a new, smaller type of metal halide lamp.

Products: Data Acquisition, LabVIEW, LabVIEW FPGA, Motion Control, Vision

Key Benefit: Accuracy within 1.2 mm, Expandability

"LabVIEW graphical programming is at the heart of the system."

[Sylvania Lighting Develops Flexible Machine Control System](#)

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