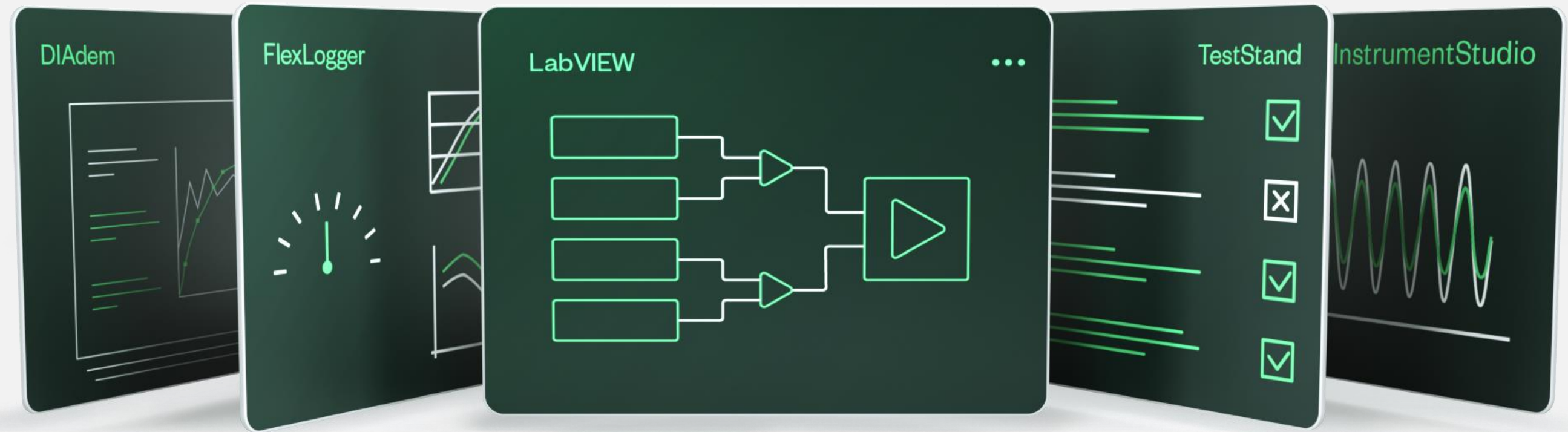


That's the Suite Life: A Session on LabVIEW+

Eric Reffett
David Prida

Agenda

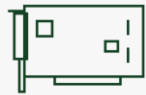
1. NI Software Strategy
2. The LabVIEW+ Suite and the Software That Makes It
3. Electronics Validation Workflow Demo
4. Electro-Mechanical Validation Demo



The NI LabVIEW+ Suite

We've Driven 5 Decades of Disruption through Software

INSTRUMENT CONTROL



GPIB

GRAPHICAL PROGRAMMING



LabVIEW

SOFTWARE-DEFINED INSTRUMENTATION



PC-Based Instruments



LabVIEW RT & FPGA

SOFTWARE-CONNECTED SYSTEMS



TestStand
& VeriStand



InstrumentStudio
& FlexLogger

DATA AND ANALYTICS



SystemLink



OptimalPlus

NI Software Promise: A Comprehensive, Connected Approach

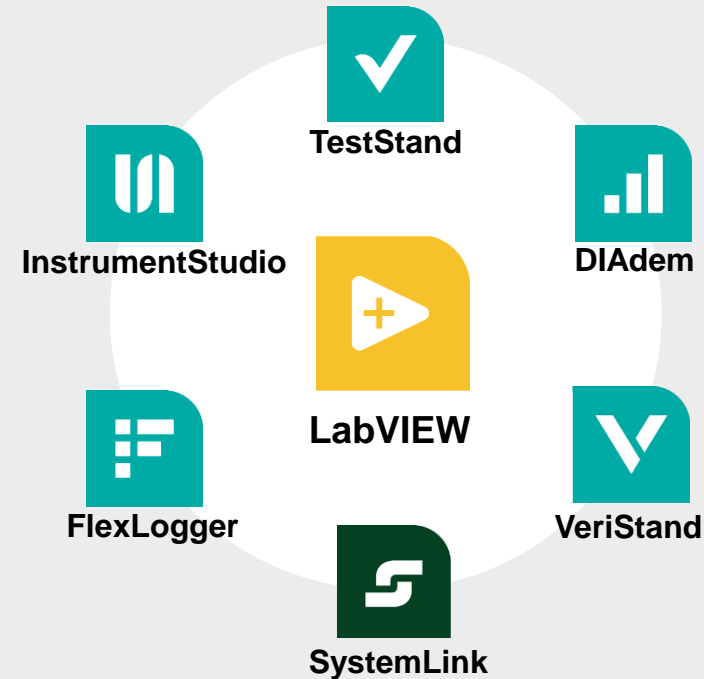


JOE & LUIS
LabVIEW Developers,
EI Electronics, Ireland.

1. **Develop more quickly** in an environment tailored to the specific workflow of the test engineer
2. **Spend time where it matters most** with higher level starting points for most measurement tasks
3. **Get unbound flexibility** to meet new and evolving requirements with an ecosystem open to any HW & SW
4. **Share and reuse IP** with a connected suite of software that spans the product development lifecycle
5. **Deliver insight across the organization** with trusted data sharing and visualization.

Evolving NI Test Software

Enable Automated Test & Measurement Professionals



1

Strengthen LabVIEW

Deliver new capabilities in **LabVIEW & NI Software** to meet the evolving requirements of applications and users

2

Connect LabVIEW+

Bridge seamlessly between tools, tasks and teams to accelerate the productivity of test professionals

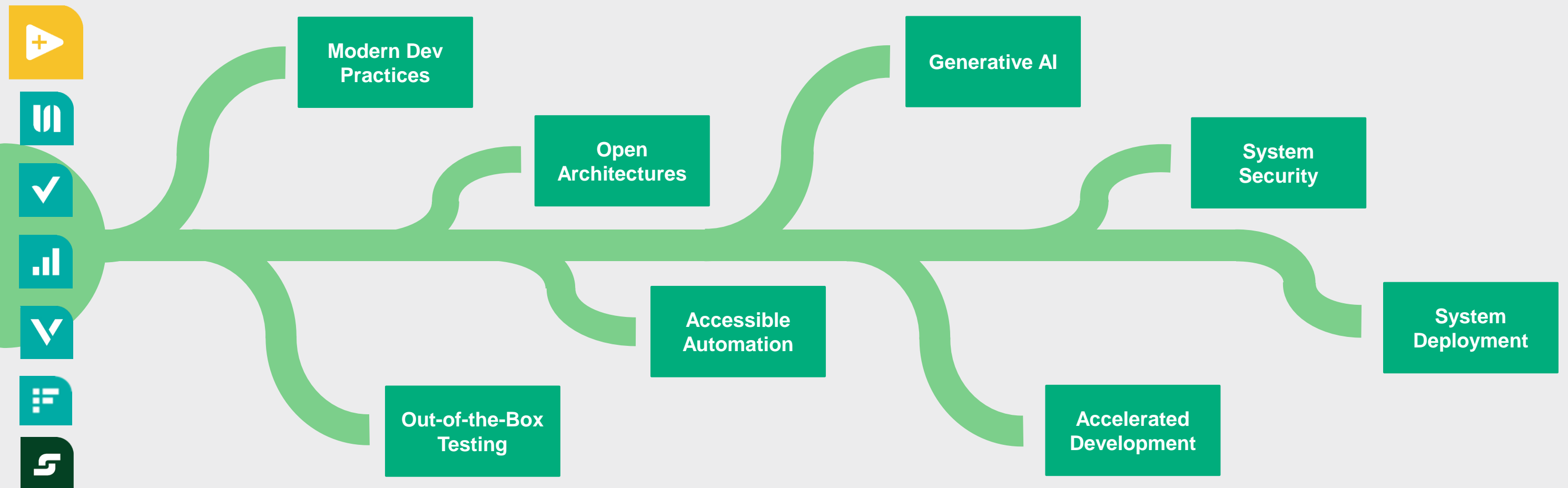
3

Build Community

Engage and collaborate with the community to empower their continued success

Strengthen LabVIEW

Deliver new capabilities in **LabVIEW & NI Software** to meet the evolving requirements of applications and users

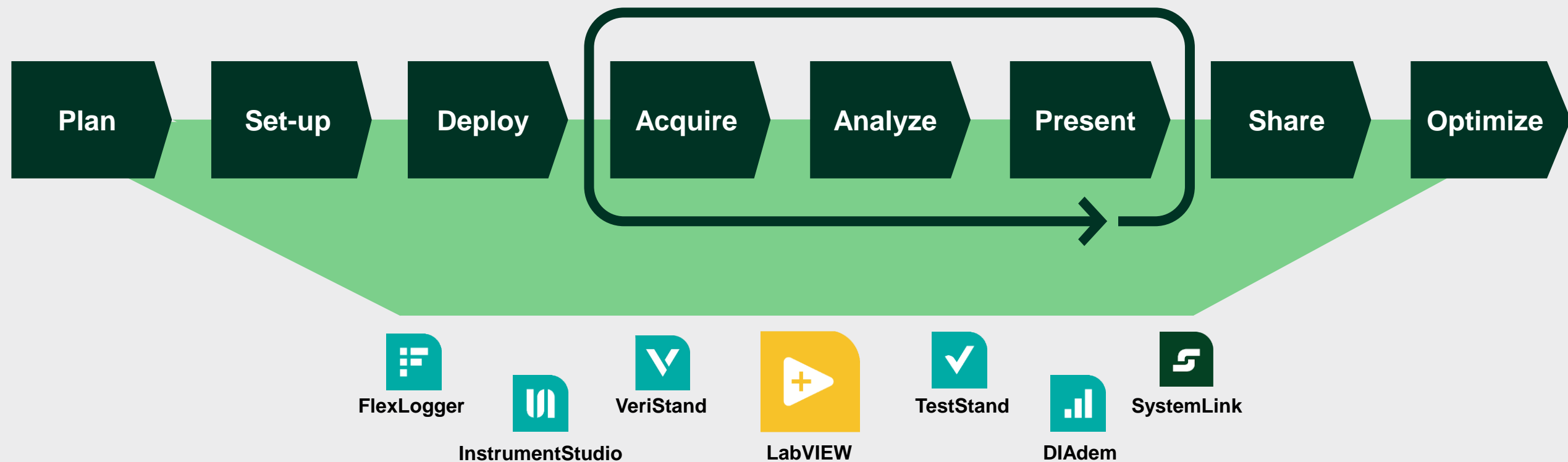


Connect LabVIEW+

Bridge seamlessly between tools, tasks, and teams to accelerate the productivity of test professionals

LabVIEW is a graphical programming environment that accelerates test and measurement application development.

LabVIEW+ brings together a comprehensive & connected suite of software, including LabVIEW, it delivers high-level development across test workflows.

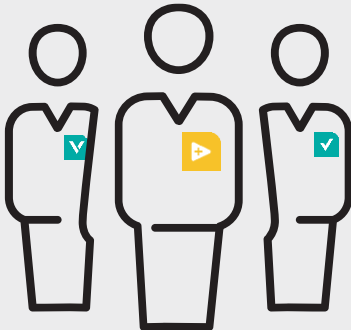


Build Community

Engage and collaborate with the community to empower their continued success



Community & student licensing	Training & certification	Evaluation, & new user content	User groups company & geo.	Student pipeline & academia
Open-source software	Roadmap collaboration	Online forums & support	Events and conferences	Community activism



Software for Engineering Workflows

Electronics Validation Test

Characterizing prototypes to ensure quality and performance delivery

Set-up & Configure

Measure & Automate

Analyze & Share



Electronics Production Test

Functional test ensuring manufactured products meet specifications

Set-up & Configure

Measure & Automate

Deploy & Maintain



Electromechanical Validation Test

Characterizing prototypes to ensure quality and performance delivery

Build & Customize

Configure

Analyze & Share



Embedded Software Test

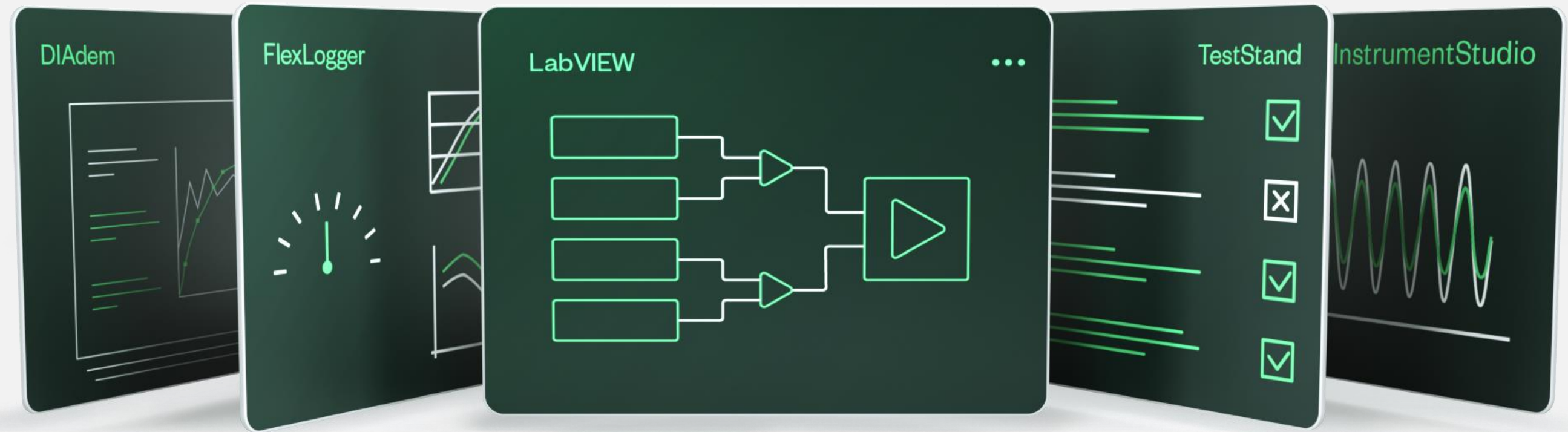
Testing deployed software for defects across wide parameter variations

Configure & Map

Test & Bring Up

Automate & Execute

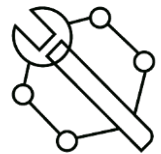




The NI LabVIEW+ Suite



A no-/low-code data acquisition software engineers use to build validation and verification test applications.



Configure Measurements

Set up your system in minutes by interactively selecting devices and measurement channels



Create Dashboards

Monitor and control tests with drag-and-drop visualization and interactive elements



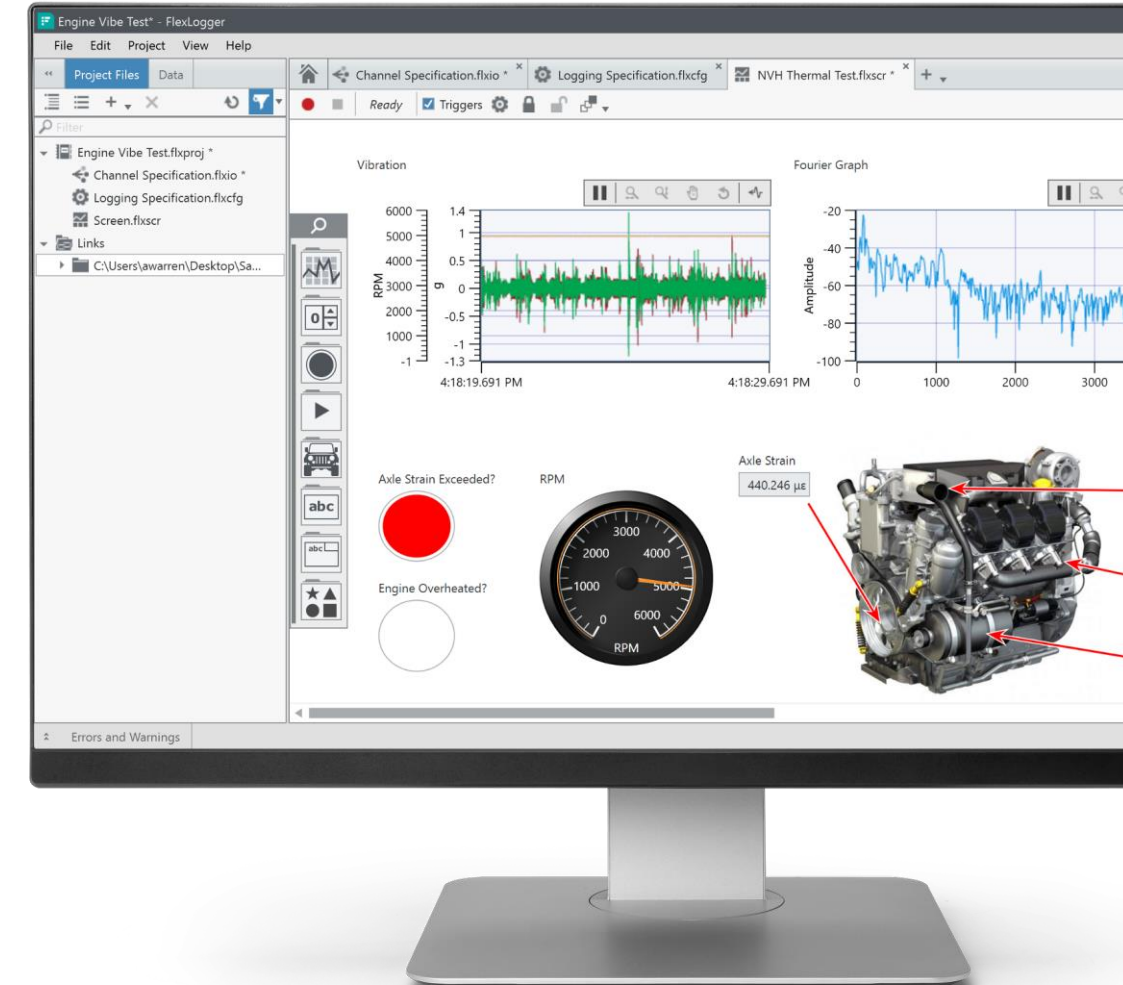
Store Results

Configure data storage preferences to automatically partition files and store to multiple locations



Automate Tests

Use events, alarms, logging triggers, and a fully-featured API to automate execution of tests



Connect FlexLogger



With **LabVIEW** to integrate custom measurements and control logic



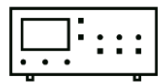
With **DIAdem** to quickly search, visualize, analyze, and generate reports on logged data



With **TestStand** to quickly build complex test sequences and generate reports

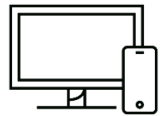
Instrument Studio™

Provides an integrated approach to interactive measurements with the ability to monitor and debug test systems, and more.



Visualize and Control Measurements

Interface interactively with your instruments and measurement IP with customizable front panels.



Share Projects with Colleagues and Systems

Store your layout and instrument configuration as a project for instant repeatability.



Monitor and Debug Applications

Monitor measurements in LabVIEW, Python, TestStand, and others for run-time debugging.



Automate Interactive Operations

Sequence over interactive steps, automate parametric sweeps and produce reports.



Connect InstrumentStudio



With **LabVIEW** to build and share reusable interactive measurement panels



With **TestStand** to quickly build complex test sequences and generate reports



With **your test infrastructure and IP** to lower costs and improve workflows



A graphical programming language and environment engineers use to develop automated research, validation, and production test systems.



Create Professional User Interfaces

View data and control your test system via an interactive UI built from drag-and-drop UI elements



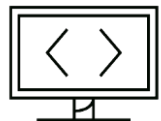
Integrate All Your Instruments

Acquire data from and control any instrument with 1000s of device drivers and industry-standard protocols



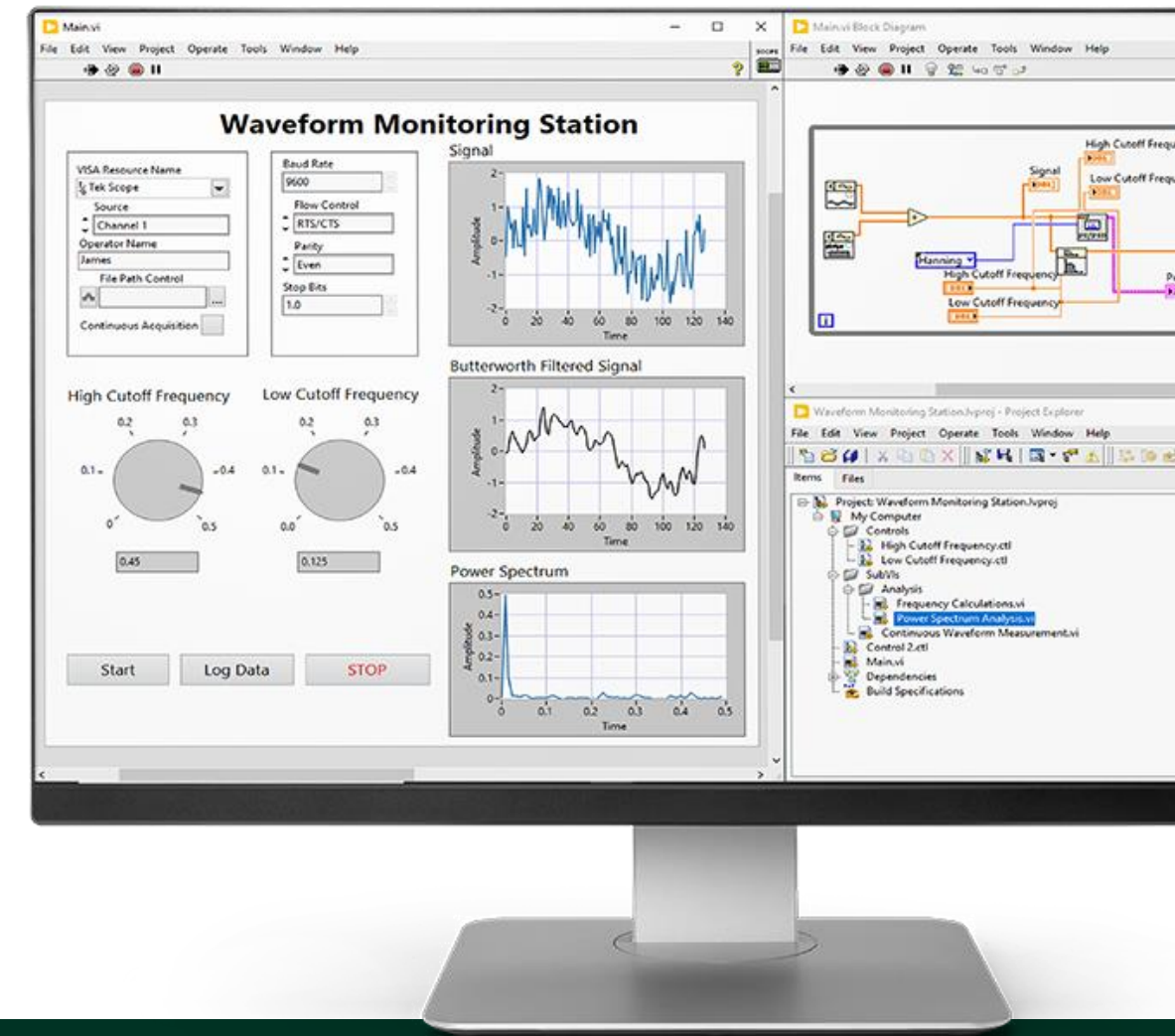
Program Like You Think

Save development time by creating and visualizing applications using data flow programming



Use Other Code

Leverage other and existing code written in Python, C/C++, MATLAB®, and .NET



Connect LabVIEW



With **TestStand** to quickly build complex test sequences and generate reports



With **Flexlogger** to build a customized configuration based datalogger



With **InstrumentStudio** to centralize and share interactive measurements



A test executive software that accelerates system development and deployment for engineers in validation and production.



Automate Your System

Create, execute, and debug test sequences using an interactive environment with code from LabVIEW, Python, C/C++, or .NET



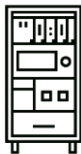
Test More, Faster

Use native parallel execution to reduce test time and functionality for advanced tasks such as sweeping and looping



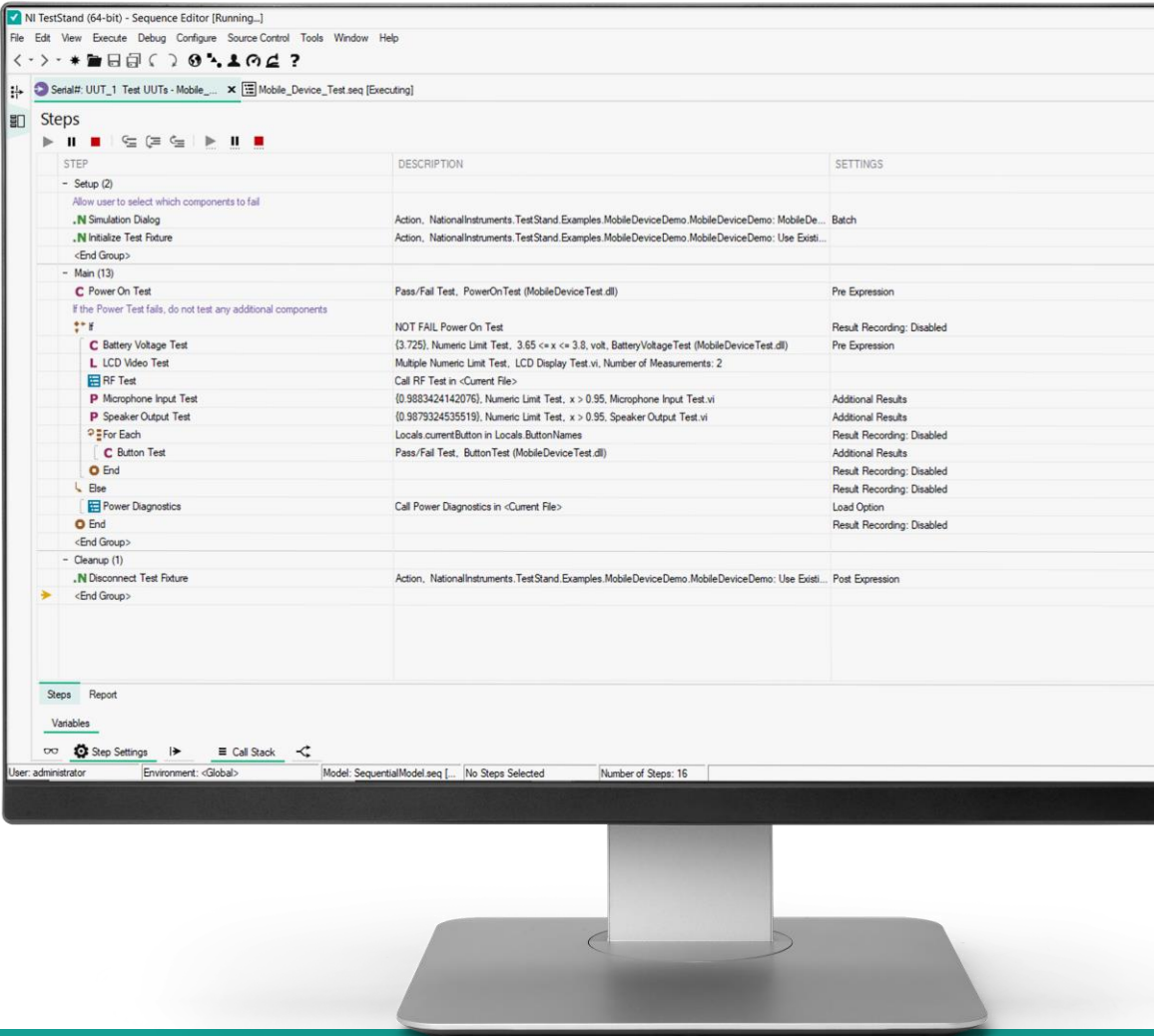
Keep Track of Results

Track units, automatically generate reports, and store results to local or network databases



Deploy To Your Testers

Scale your operations by deploying sequences to numerous test stations with custom or pre-built operator interfaces



Connect TestStand



With **LabVIEW** to quickly develop complex reusable tests



With **Flexlogger** to efficiently acquire and log data from your DAQ hardware



With **InstrumentStudio** for interactive instrument control



Data analytics software for measurement data search, inspection, analysis, and automated reporting.



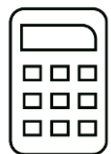
Data Search and Inspection

Access any type of data and search through metadata to find data in local or network locations



Visualization

Display data in multiple 2D-axis systems, play video data, and more



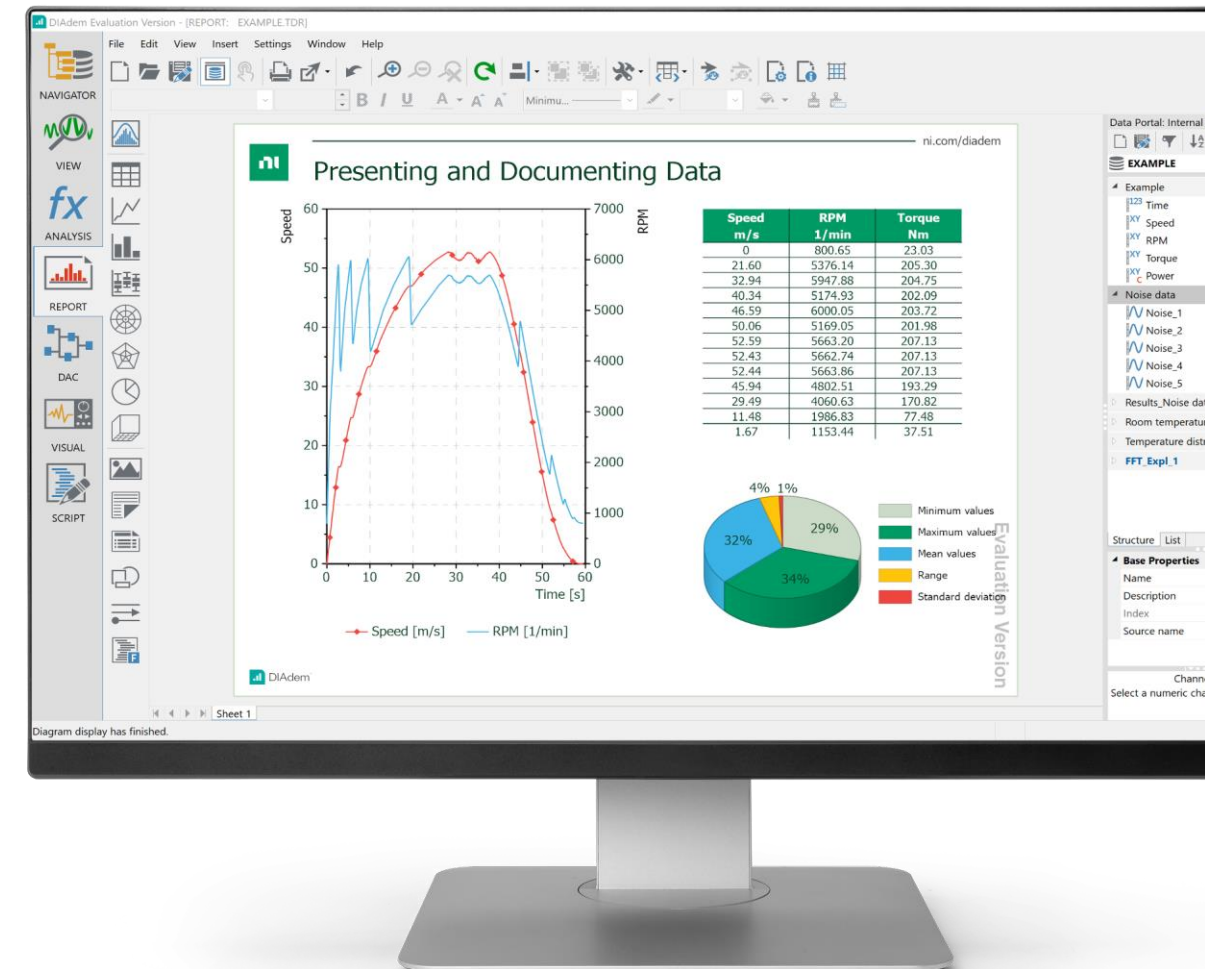
Advanced Analysis

Utilize hundreds of built-in advanced analysis functions (bode order tracking, order and rain flow analysis, etc.) in addition to custom reusable formulas



Automated Reporting

Automate your measurement data analysis workflow, from import to analysis to report



Connect DIAdem



With **LabVIEW** to acquire measurement and test data



With **Flexlogger** to acquire data from sensors



With **SystemLink** to serve as a centralized data storage source

Electronics Test | Validation Systems

Engineer Profile

Responsible for characterizing prototypes to ensure **quality and performance** delivery. Challenged by **evolving specifications**, and **short design schedules**.

Task Workflow

Set-up & Configure

Understand requirements → Find and configure equipment → Set-up DUT.

Measure & Automate

Find or develop measurements → Create tests → Sequence and sweep.

Analyze & Share

Visualize results → Confirm test coverage → Check compliance → Publish results.

Application Profile

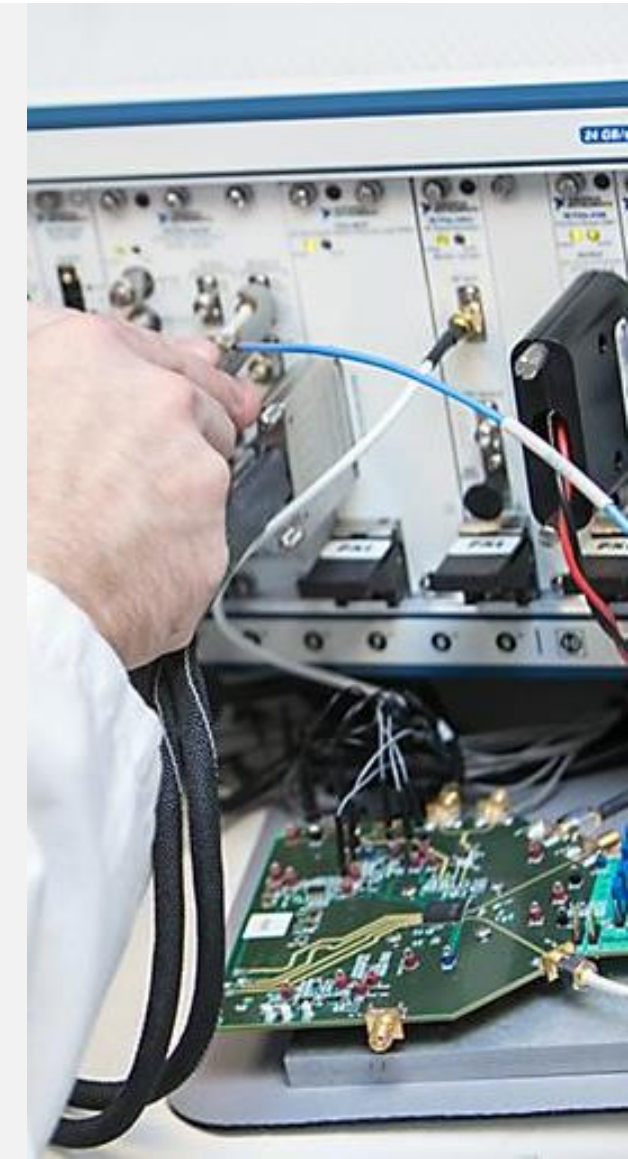
Multiple instruments combine to take both **interactive and automated measurements**. NI recommends **PXI** instrumentation and the **LabVIEW+** Suite of software.

Existing Strengths of NI Platform

- Wide I/O coverage
- Measurement oriented programming
- Reusable, standard architecture
- Flexible to evolving requirements

Gaps to be Addressed with Roadmap

- Publishing and sharing measurements
- Onboarding to TestStand
- Debugging
- Non-NI instrument support & pin maps



Electronics Test | Areas of Investment

Accessible Automation

Streamline toolchain for validation use case to speed use and lower barrier to entry

Example features

- Automate interactive measurements
- Connect sequencing inside InstrumentStudio

Open Architectures

Compatibility with 3rd party hardware and software tools

Example features

- Panels and pin maps for 3rd party instruments
- Ease use of .NET, Python, MATLAB, C#

Measurement Transition

Software tool interoperability to quickly share specifications, measurements, data and results

Example features

- Measurement repository
- Generate compliance data from InstrumentStudio

Modern Dev Practices

Improve collaborative tools in LabVIEW+ to ease large, complex application development

Example features

- git integration for LabVIEW and TestStand
- Improve diff and merge to support CI/CD

System Security

Meet regulatory requirements for security and share details of exposures

Example features

- SBOMs and CVEs
- IPv6 support

Electronics Validation Demo

Electromechanical Test | Validation Systems

Engineer Profile

Responsible for characterizing prototypes to ensure delivery of **quality and performance**. Challenged by **evolving specifications**, and **short design schedules**.

Task Workflow

Set-up & Configure	Define a test plan → Set-up equipment and DUT → Configure or develop measurements.
Automate & Monitor	Configure logging and dashboards → Automate control and tests → Execute tests and monitor.
Analyze & Share	Analyze and debug data → Generate reports → Share and back-up.

Application Profile

Log data from a mix of conditioned mixed I/O channels at varying rates. NI recommends **CompactDAQ** and the **LabVIEW+** Suite of software.

Existing Strengths of NI Platform

- Wide, reliable I/O coverage
- Flexible to evolving requirements (both HW and SW)
- Open integration of 3rd party components
- Quick configuration and dashboard creation
- Analysis and reporting tools

Gaps to be Addressed with Roadmap

- CI/CD Workflows (git, diff/merge)
- Language support
- Security
- Configuration environment with custom measurements
- Intuitive configuration of test automation



Electromechanical Test | Areas of Investment

Accessible Automation

Speed system development with connected applications and easy-to-use sequencing.

Example features

- Connect FlexLogger measurements with automation in LabVIEW or TestStand
- Automate durability tests without programming in FlexLogger

Open Integration

Simplify integration of 3rd party hardware, custom algorithms, and control logic.

Example features

- Improve development and debugging of FlexLogger plugins
- Develop custom measurements in any language

Out-of-the-box Measurements

Hardware and software built together to deliver measurements in minutes.

Example features

- FlexLogger Lite included with every DAQ device
- Guided setup, reference material and pin layout accessible directly from the hardware

Modern Dev Practices

Improve collaborative tools in LabVIEW+ to ease large, complex application development.

Example features

- git integration for LabVIEW and TestStand
- Improve diff and merge to support CI/CD

System Security

Meet regulatory requirements for security, especially when maintaining long term system deployments.

Example features

- SBOMs and CVEs
- Linux RT Identity and Access Management

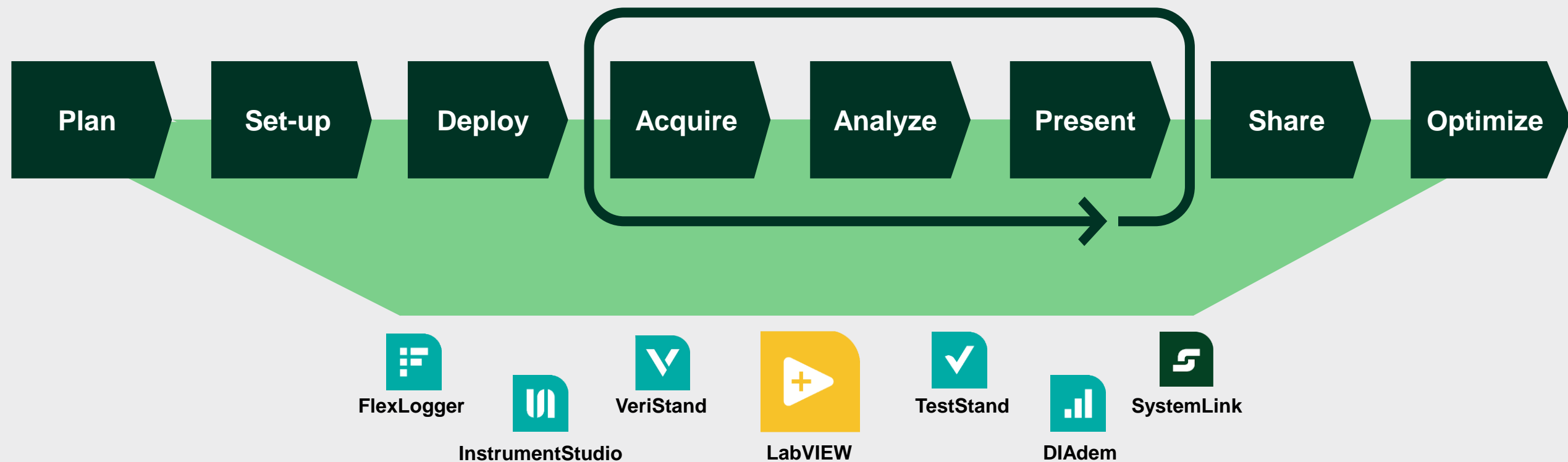
Electromechanical Test Demo

Connect LabVIEW+

Bridge seamlessly between tools, tasks, and teams to accelerate the productivity of test professionals

LabVIEW is a graphical programming environment that accelerates test and measurement application development.

LabVIEW+ brings together a comprehensive & connected suite of software, including LabVIEW, it delivers high-level development across test workflows.





Other Recommended Product Sessions

Session	Time	Location
What's New in LabVIEW?	10:15-11:15 AM	19A
What's New in TestStand	1:30-2:30 PM	19B
LabVIEW and TestStand—Together throughout the Test Lifecycle	1:30-2:30 PM	18B
Software Hands-On: Workflows from Instrument Bring up to Test Automation	1:30-3:45 PM	Ballroom E