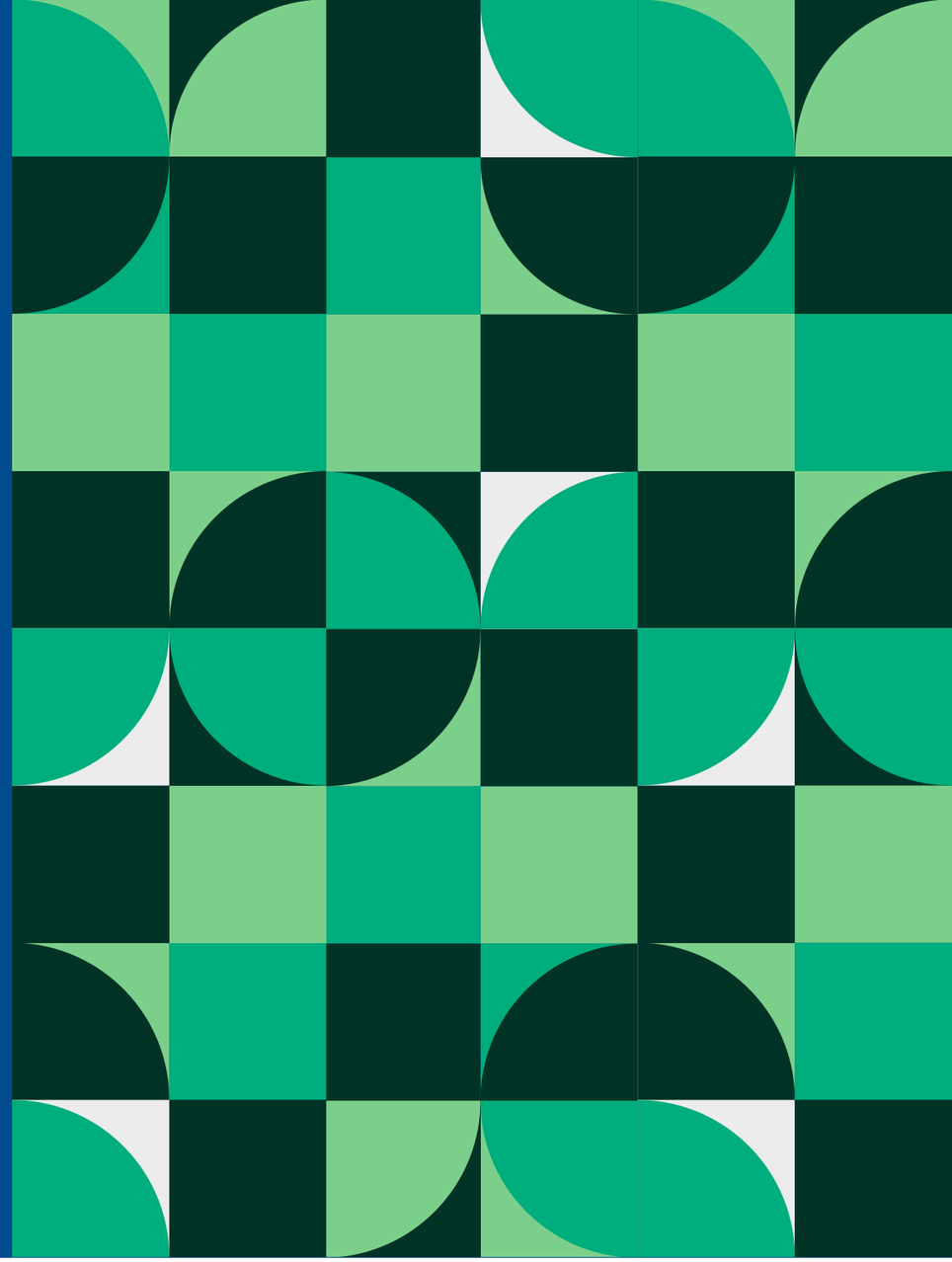
Flexlogger Overview

What Is FlexLogger?



FlexLogger™

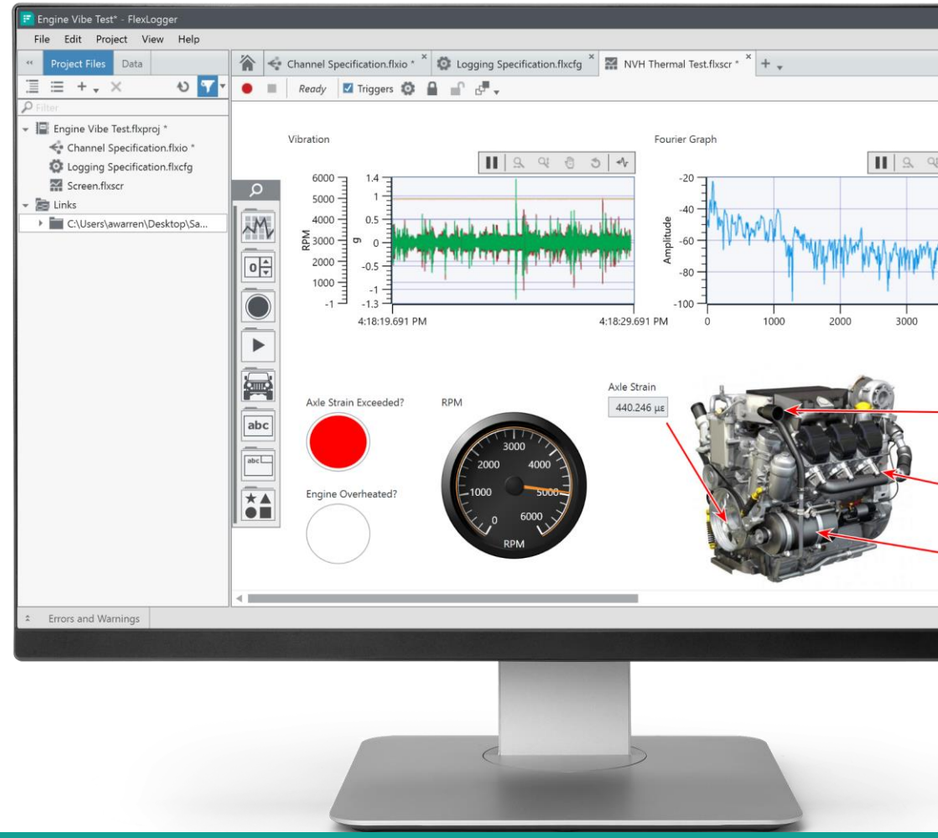
A no-/low-code data acquisition software engineers use to build validation and verification test applications.

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 fully-featured APIs to automate execution of tests



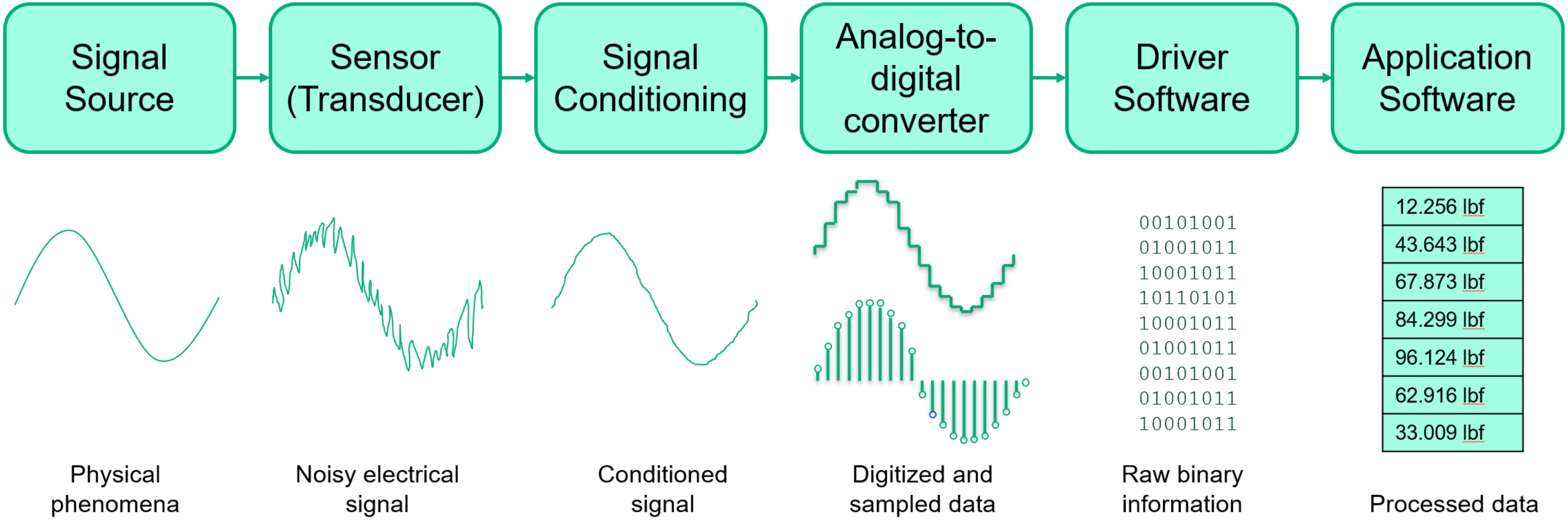
Connect FlexLogger

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

Data Acquisition Overview



FlexLogger User Workflow

Create intuitive, extensible electromechanical test systems. Connect teams, systems, and data.

Traditional Systems

are either
Too simple and closed off
Forcing users to make expensive trade-offs between hardware and software needs

or
Custom and complicated
Causing delays and distrust in data as users often “hack” in the functionality they need to meet deadlines

FlexLogger Systems

are
Simple *and* extensible

By creating a plug-in-based architecture, FlexLogger users get the benefits of an *out-of-the-box* measurement and test solution while maintaining the ability to extend and integrate any 3rd party hardware they may need for their tests.

Run interactive measurements for quick validation, then automate tests to minimize downtime.

FlexLogger Editions

	FlexLogger Lite	FlexLogger Pro
User Value	Manual/Simple Validation	Automated/Enhanced Validation
Measure with nearly any NI DAQ device	✓	✓
Create monitoring dashboards	✓	✓
Log to standard formats (TDMS, CSV)	✓	✓
Visually inspect logged data (TDMS Viewer)	✓	✓
Develop and run custom measurement and control plugins		✓
Include additional measurements and visualizations (live calculations, CAN/LIN, etc)		✓
Automate measurement sequences with Python		✓
Automate response with alarms, events, and logging triggers		✓
Scale to multiple chassis		✓
Remotely monitor tests and manage data (SystemLink)		✓
Operator mode		✓
Technical support from NI		✓
Price (per node per year)	$0	$793

FlexLogger 24Q3, 24Q4, and 25Q1

New features include:

NI mioDAQ Support

- *Support for mioDAQ devices: USB-6421, USB-6423, USB-6451, USB-6453*
- *New hardware support features include built-in CJC thermocouples and PFI trigger filters*

LabVIEW Automation API

- *LabVIEW API for automating FlexLogger tests*
- *Start/stop tests, fetch channel values, set output channel values, update data rates, open log files, update test properties, and more*

TestStand Automation API

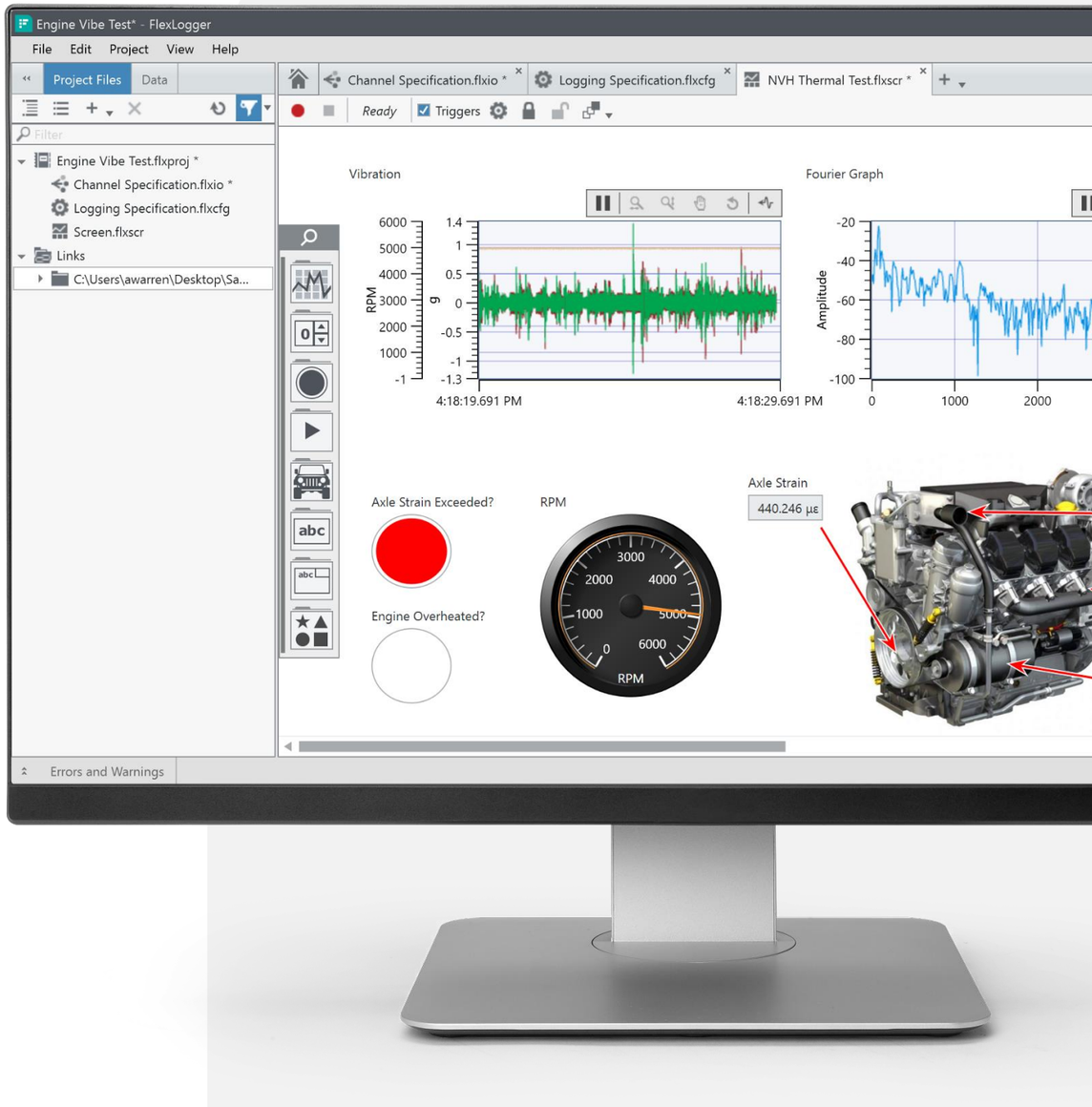
- *TestStand API for automating FlexLogger tests via FlexLogger steps*
- *Similar functionalities to the LabVIEW API*

Hardware Connections Using HWCU

- *Configure hardware in Hardware Configuration Utility instead of NI MAX*
- *Delete simulated hardware configurations directly in FlexLogger without opening an additional program like NI MAX or HWCU*

FlexLogger Community Plugins Repository

- *Public GitHub repository containing common example plugins*
- *The repo is open source, and we encourage users to contribute and reuse plugins across the community (reducing the need for development)*



FlexLogger™ Roadmap

Short-term product focus

Provide companion software to new and existing DAQ users

Leverage the power of LabVIEW and TestStand with the ease of FlexLogger for automated validation

Improve the experience of developing new custom measurements and lightweight control logic

Long-term product focus

Streamline the development, management, and deployment of custom measurement and lightweight control logic

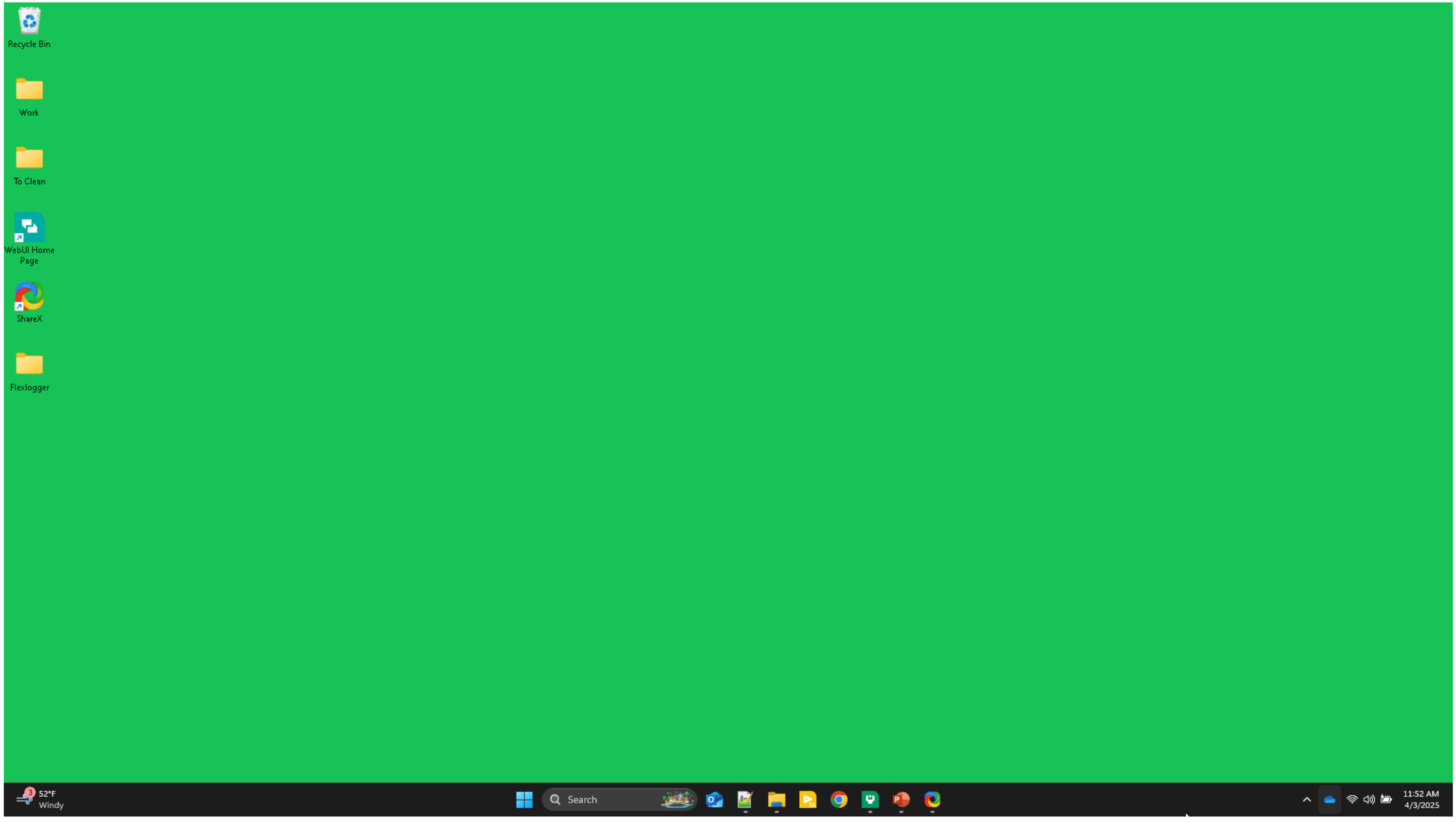
Simplify automated validation with built-in sequencing, alarms, events, logging triggers, and more

Expand and enhance core measurement configuration and monitoring capabilities

Capability	Status	2024	2025	2026+
Ecosystem Integration				
Free FlexLogger Lite edition for basic logging applications	Released	Q2		
Support for new USB multifunction DAQ devices (NI mioDAQ)	Released	Q3		
Simplified hardware connections via NI Hardware Configuration Utility	Released	Q4		
Support for NI mioDAQ functionalities like built-in CJC thermocouples, PFI trigger filters, and configurable digital voltage levels	In Development		✓	
Customization and Extensibility				
Public GitHub repository for FlexLogger plug-ins created by the Community *	Released		Q1	
Simplified plug-in development and debug experience through Measurement plug-ins (includes Python support) *	In Development		✓	
Enhanced CSV logging experience with additional customizations	Backlog			✓
Expanded calculation channels and out-of-the-box data analysis	Backlog			✓
Test Efficiency				
Decrease logging rates outside of events of interest to reduce disk space *	Released	Q2		
Improvements in project and application load performance	Released	Q3		
Automate FlexLogger tests with NI LabVIEW *	Released	Q4		
Automate FlexLogger tests with NI TestStand *	Released		Q1	
Import/export channel configurations from a spreadsheet *	Backlog		✓	
Additional conditions and methods for users to update the logging rate of their test *	Backlog		✓	
Additional conditions, actions, and notification methods for FlexLogger events *	Backlog			✓
Access additional hardware specifications and configuration settings directly in FlexLogger	Backlog			✓
Automate tests in FlexLogger with a simple, native sequencer *	Backlog			✓
Minimize time to measurement with the FlexLogger AI Assistant *	Backlog			✓
Security				
Security updates for third-party dependencies	In Development		✓	
Encrypt logged data and communications	Backlog			✓

Demo

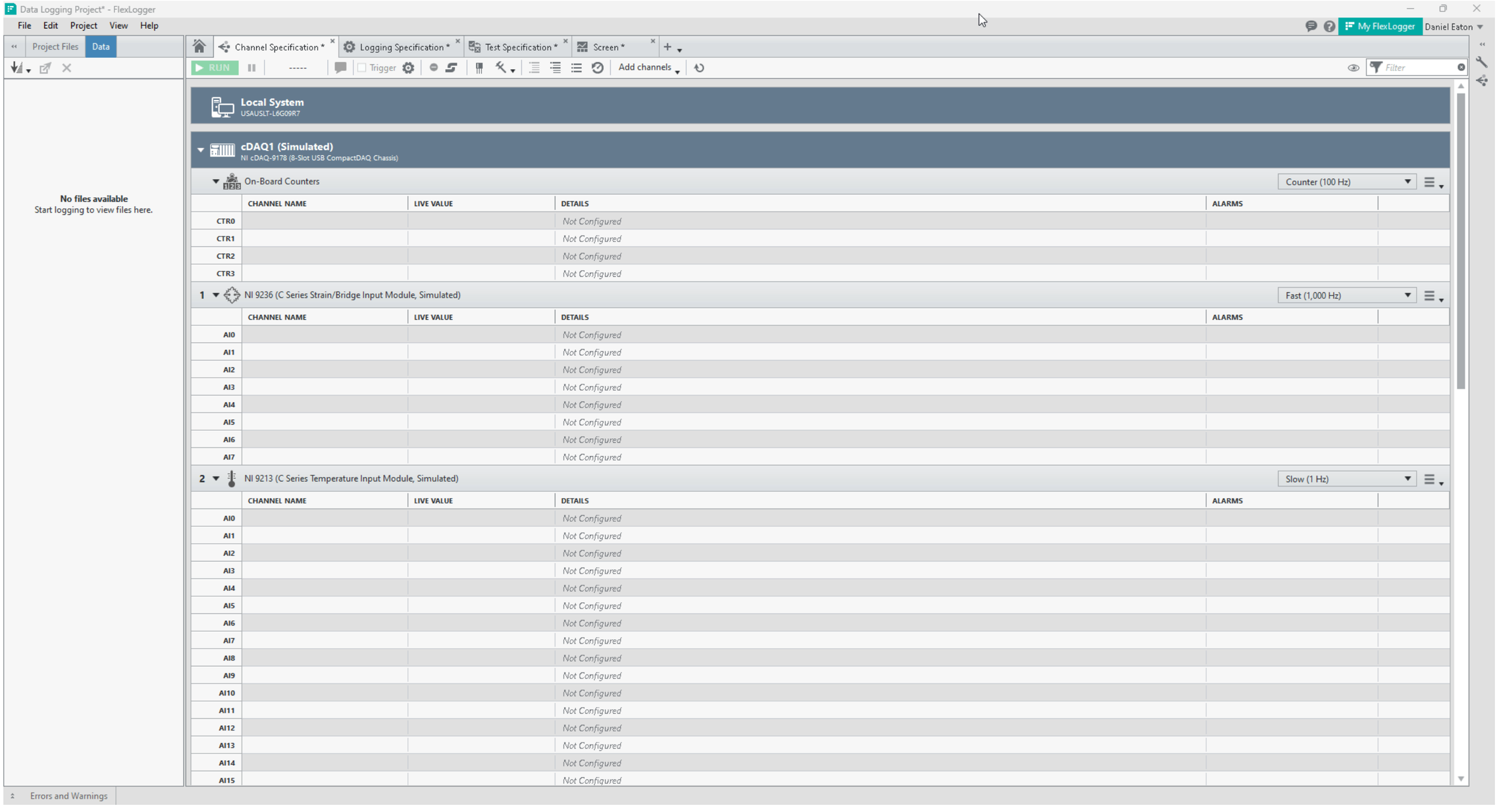
Demo: Hardware Setup



Summary: Hardware Setup

- Hardware is automatically detected
- Hardware is automatically imported to Flexlogger

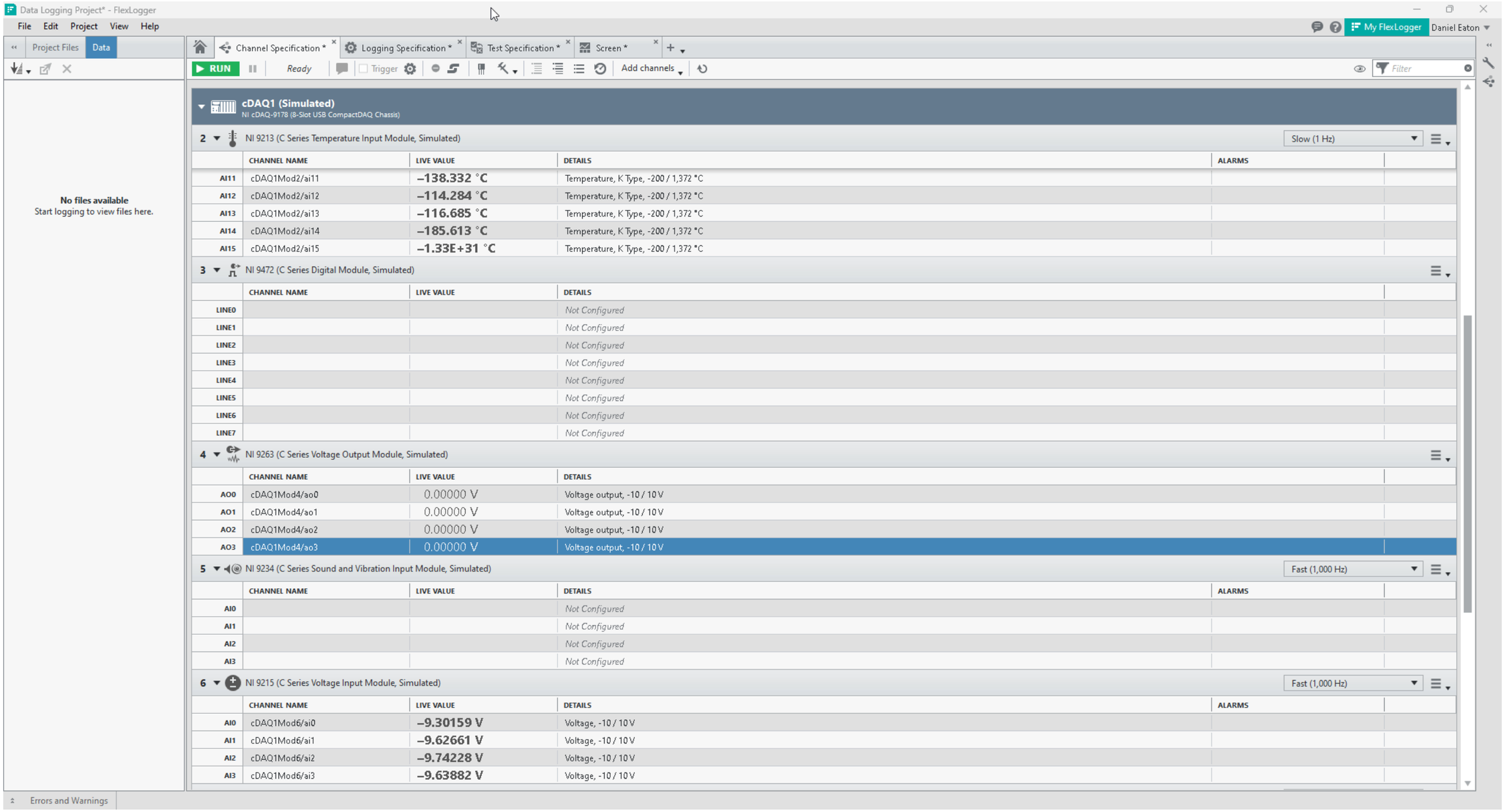
Demo: Configuring Analog Channels



Summary: Configuring Analog Channels

- Configure; no programming required
- Many sensor types supported
- Multiple scaling and calibration options supported
- Multi-select channel configuration for easy configuration
- Copy & paste channel configurations for easy replication

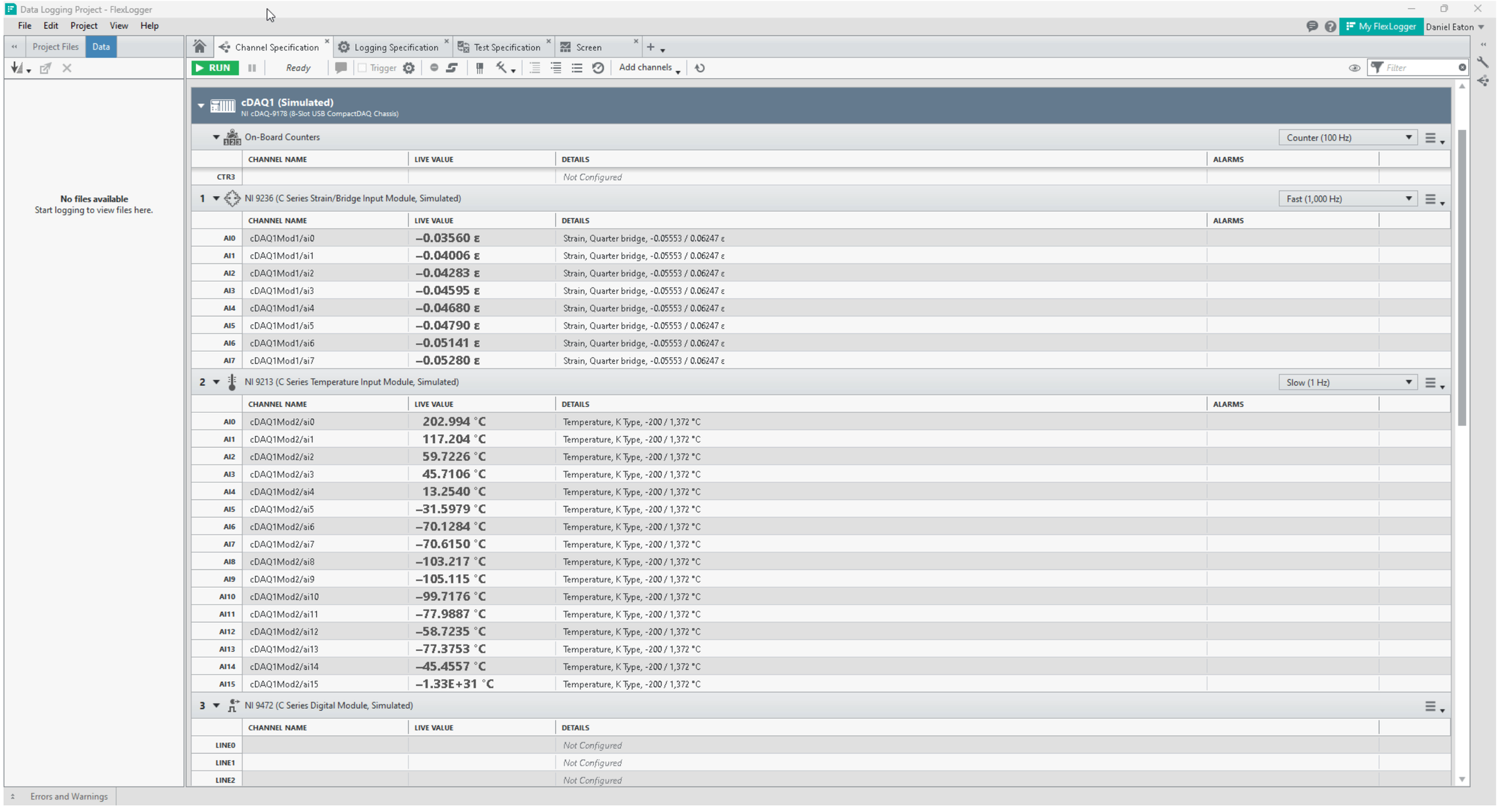
Demo: Configuring Digital and Counter Channels



Summary: Configuring Digital and Counter Channels

- Built in counters need a digital module front end (e.g. 9401)
- Dedicated counter modules for additional counters (up to 64)
- Many sensors supported
- Same copy / paste & multichannel configuration options

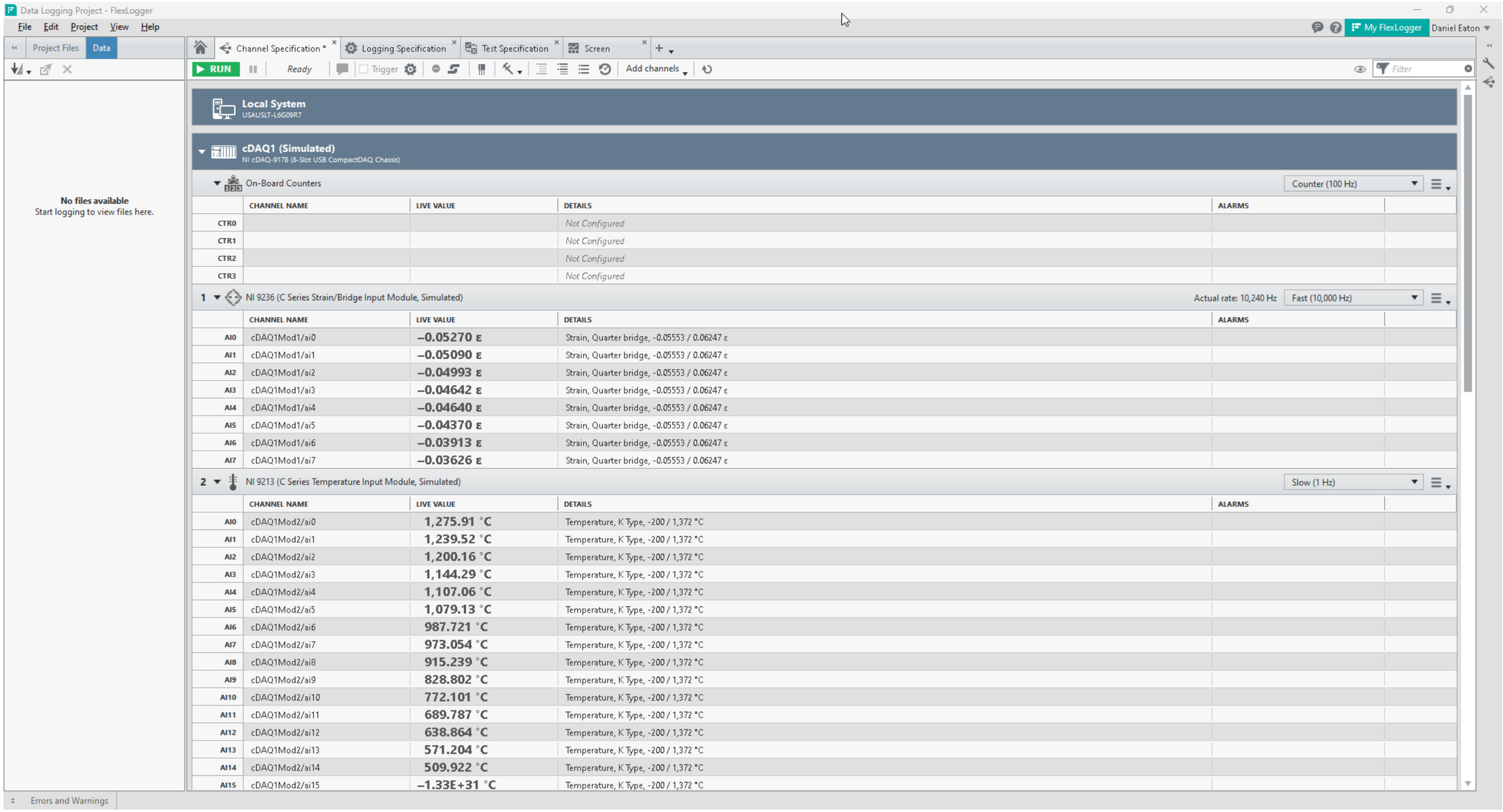
Demo: Configuring Sample Times



Summary: Configuring Sample Times

- Three available rates for analog input tasks
  - Automatically synchronized with delta sigma modules
  - Actual value shown
- Separate rates for digital and counter acquisition

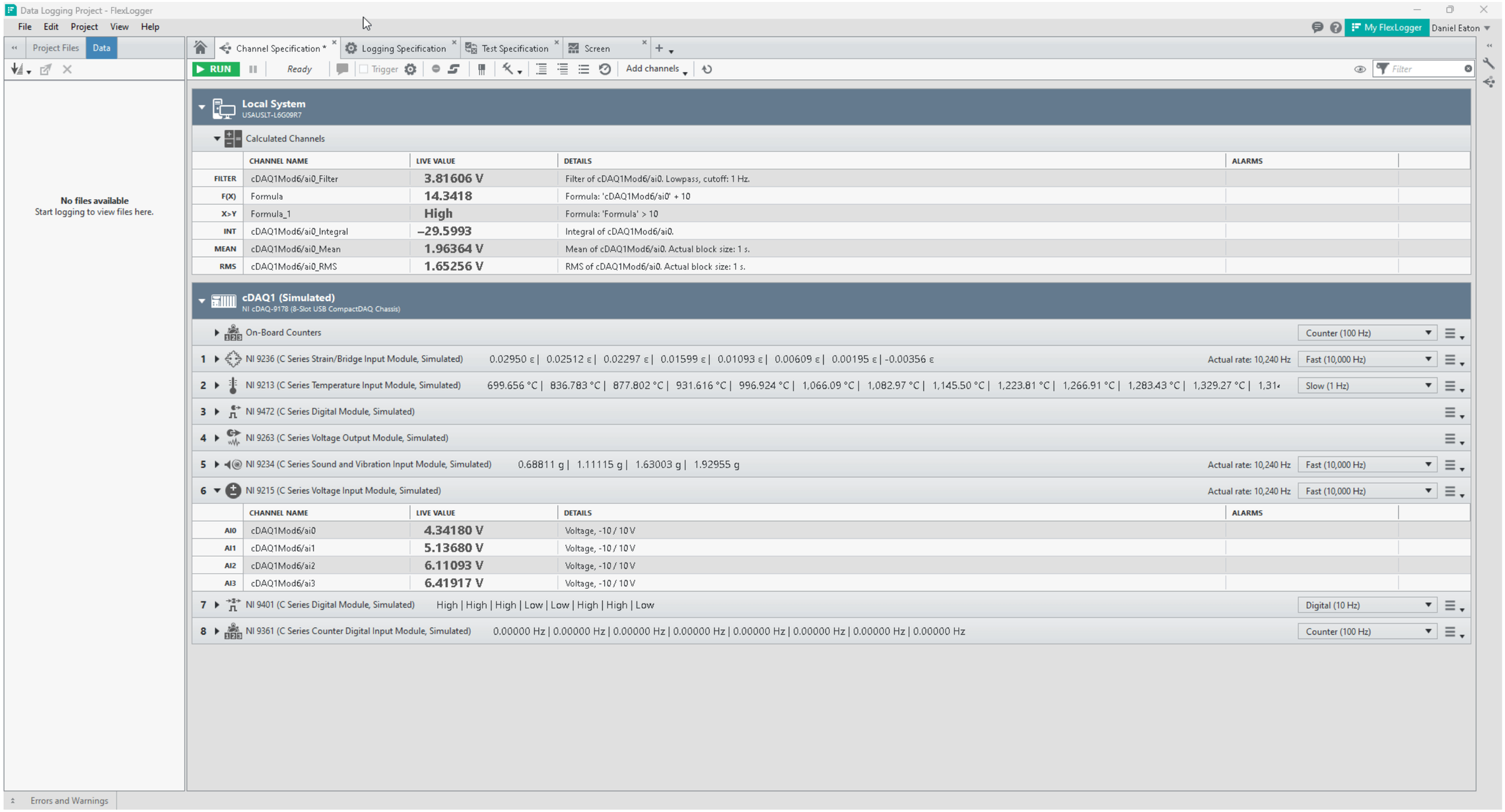
Demo: Configuring Additional Channels



Summary: Configuring Additional Channels

- Ability to create additional calculated channels
- Calculated channels can use DAQ or other calculated channels

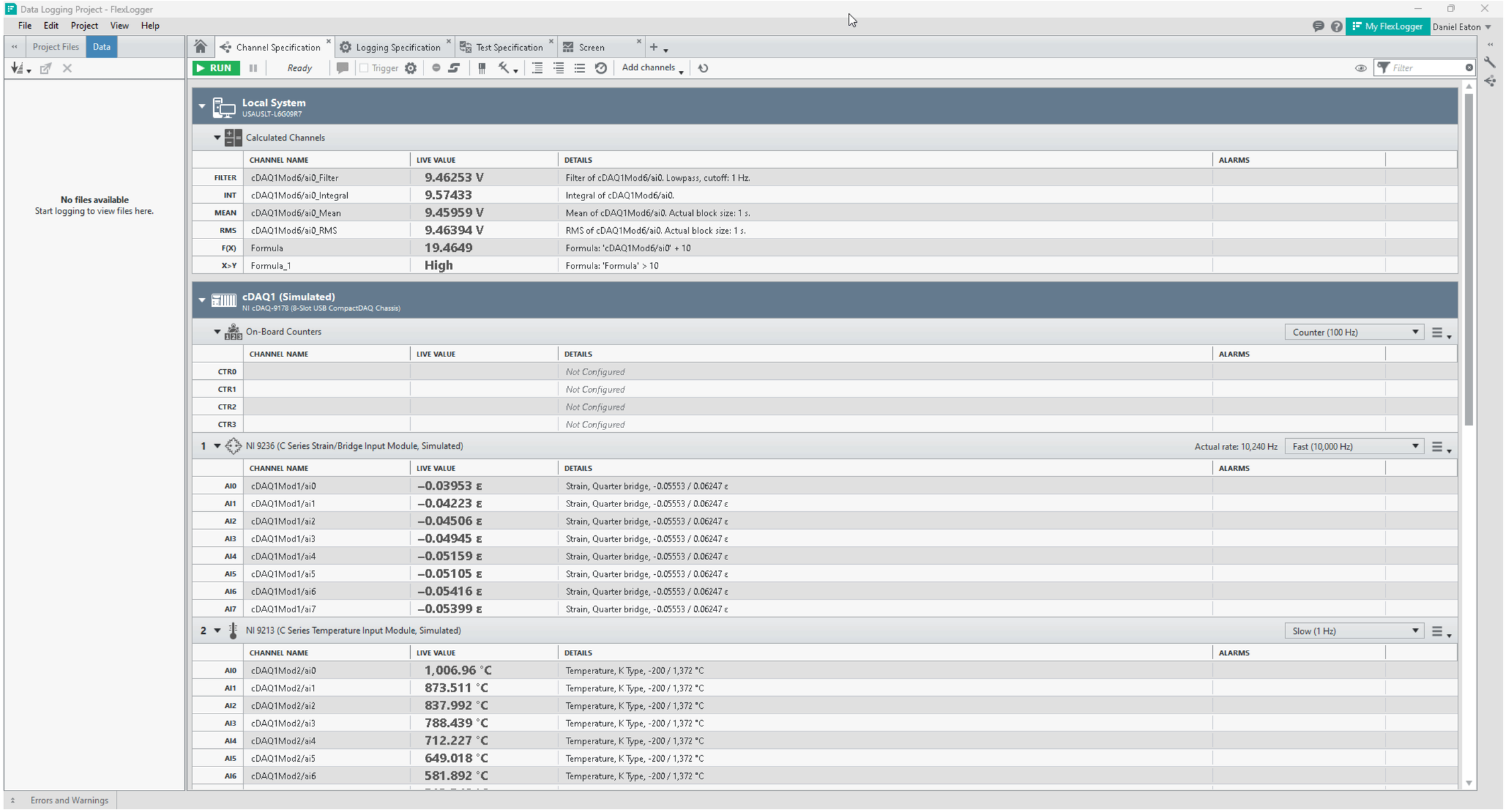
Demo: Make a GUI



Summary: Make a GUI

- Create graphical interfaces in tool (no programming)
- Link to DAQ, calculated channels, other EXEs, or events
- Build any number of screens (not shown)

Demo: Create and Run a Log Spec

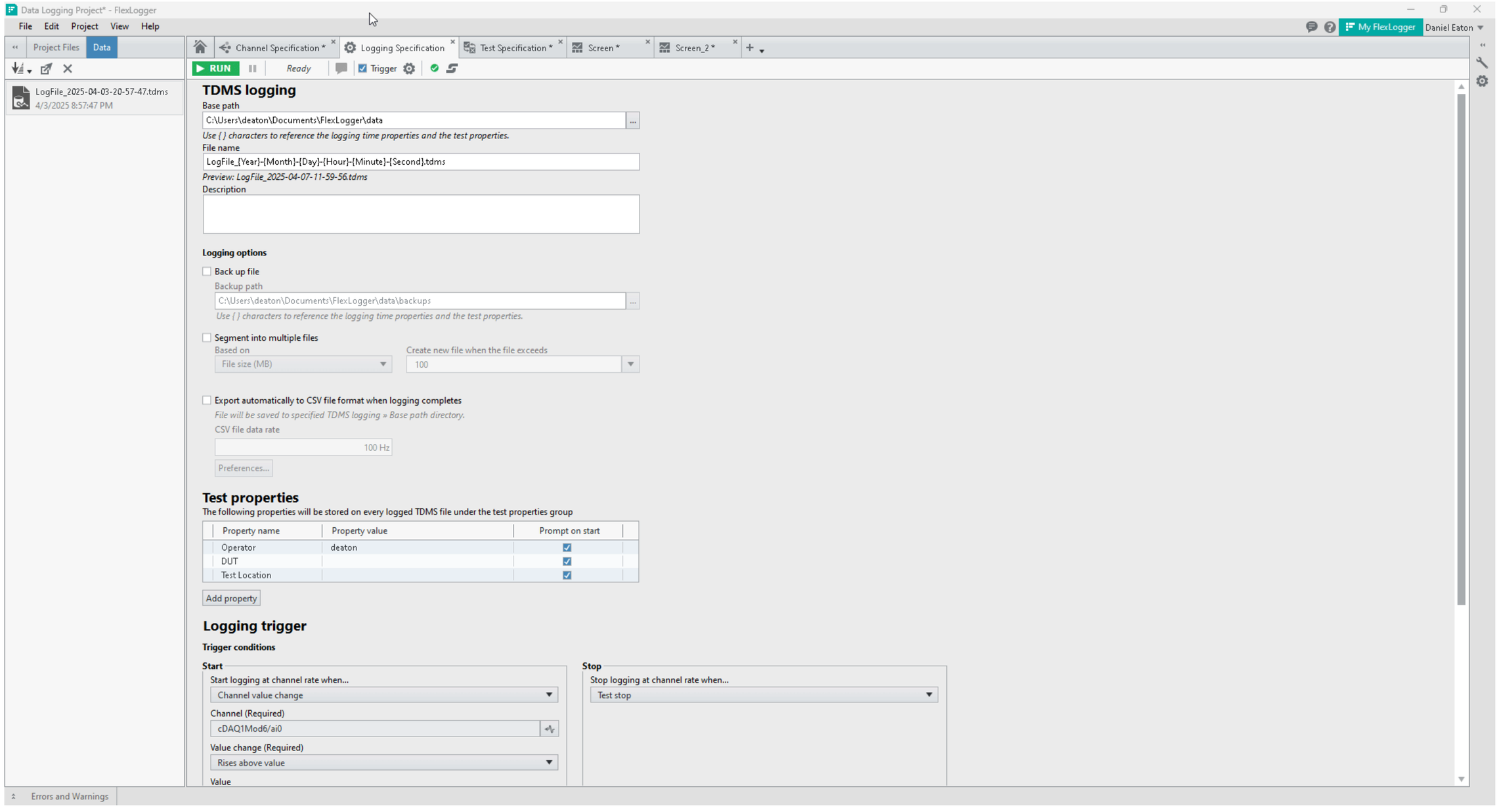


Summary: Create and Run a Log Spec

- Configure log file:
  - Name
  - Location
  - Start / stop trigger
  - “Black Box” recording before trigger
  - File segmentation
  - Meta data (with prompt option)
- Run the log, get your data, and review!

- Again, no programming required

Demo: Review Log Files



Summary: Review Log Files

- Quickly review large data sets
- Run additional post processing routines

SystemLink Targeted Outcomes

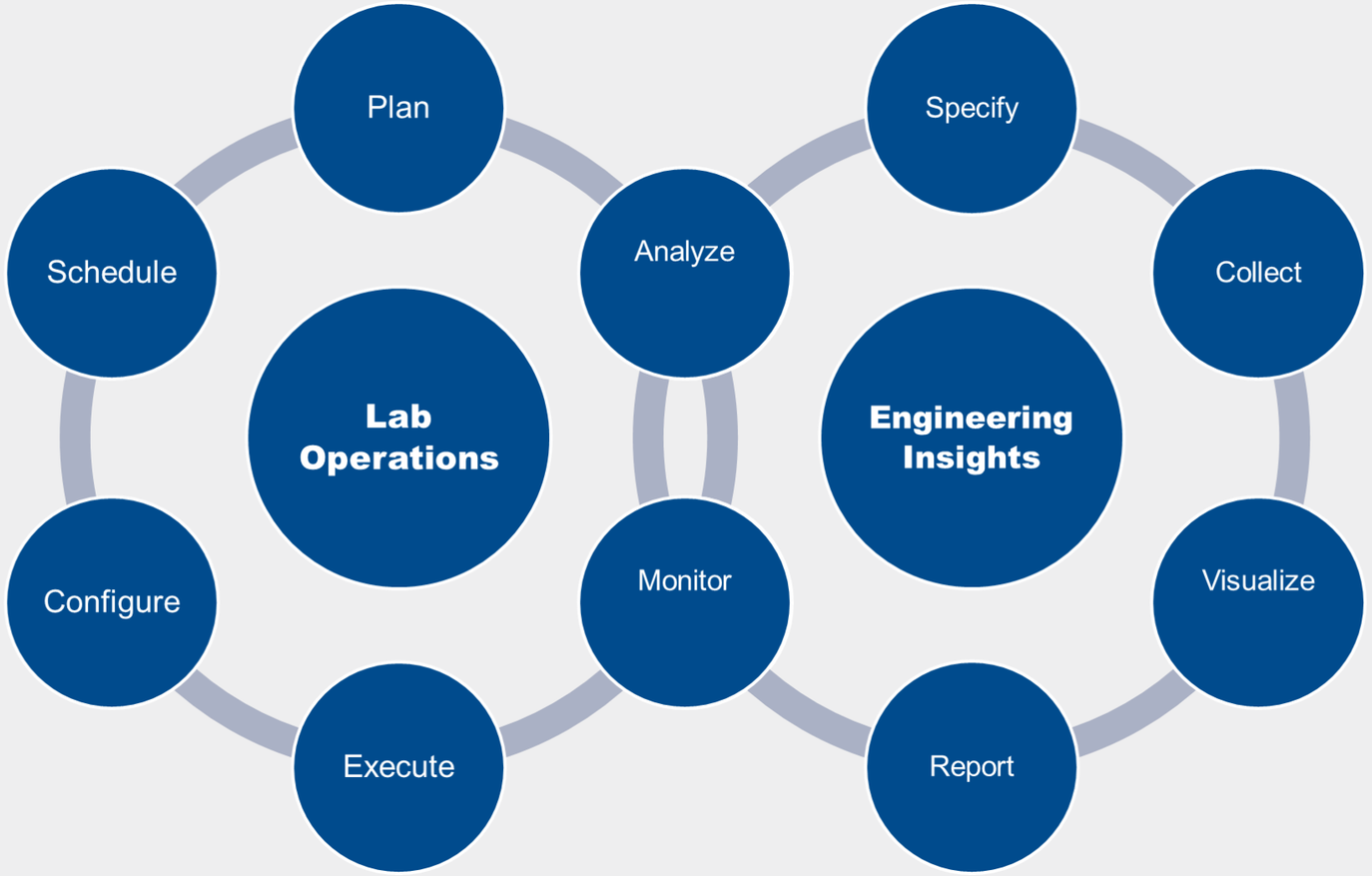
Streamline lab operations & amplify engineering insights

Optimize Lab Operations

Coordinate and schedule test plans to increase lab throughput and increase the visibility for all stakeholders.

Increase Lab Efficiency

Automate software deployment, track and manage assets/DUTs, and monitor system health to maximize asset utilization.



Improve Test Coverage and Compliance

Elaborate product specifications, limits, and conditions. Link to test data to ensure product requirements are adequately tested and in compliance.

Accelerate Product Insights

Monitor and analyze test results to quickly discover test and product issues and decrease design/test iteration time.

SystemLink Architecture Fundamentals

Standards-Based

Developed with industry-leading technologies, IP best practices

Scalable

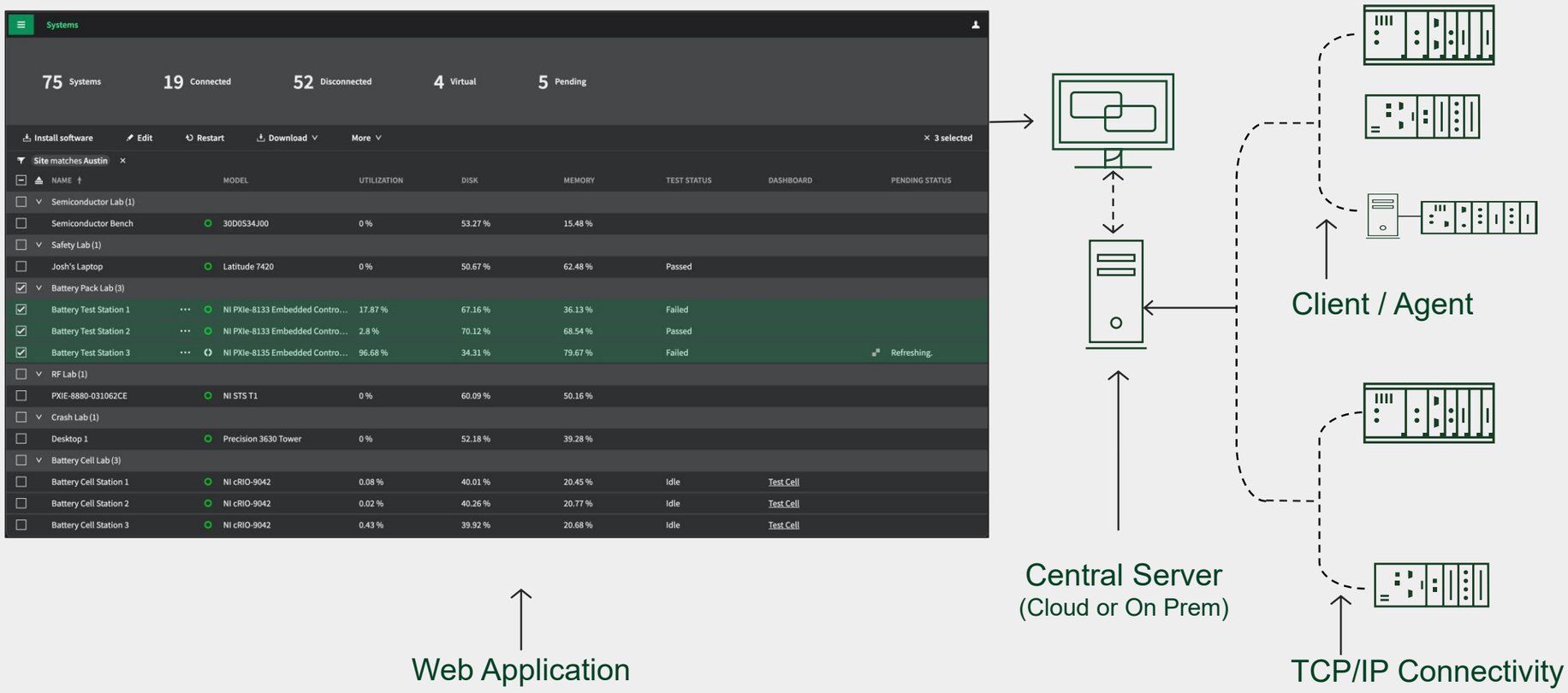
Megabytes to Petabytes of data from 1000s of data sources

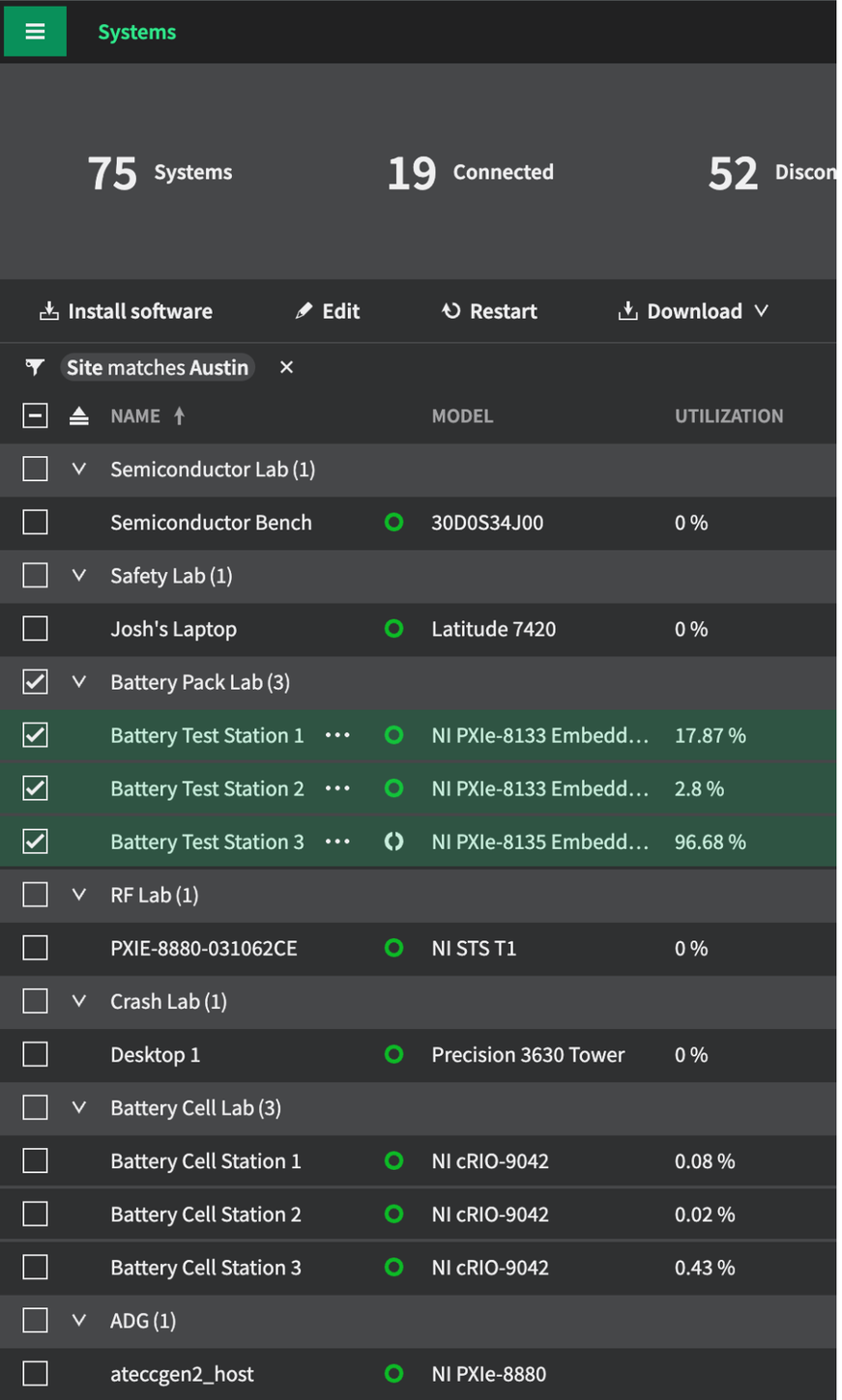
Extensible

Config-based dashboards, plug-in applications, open APIs, partners

Secure

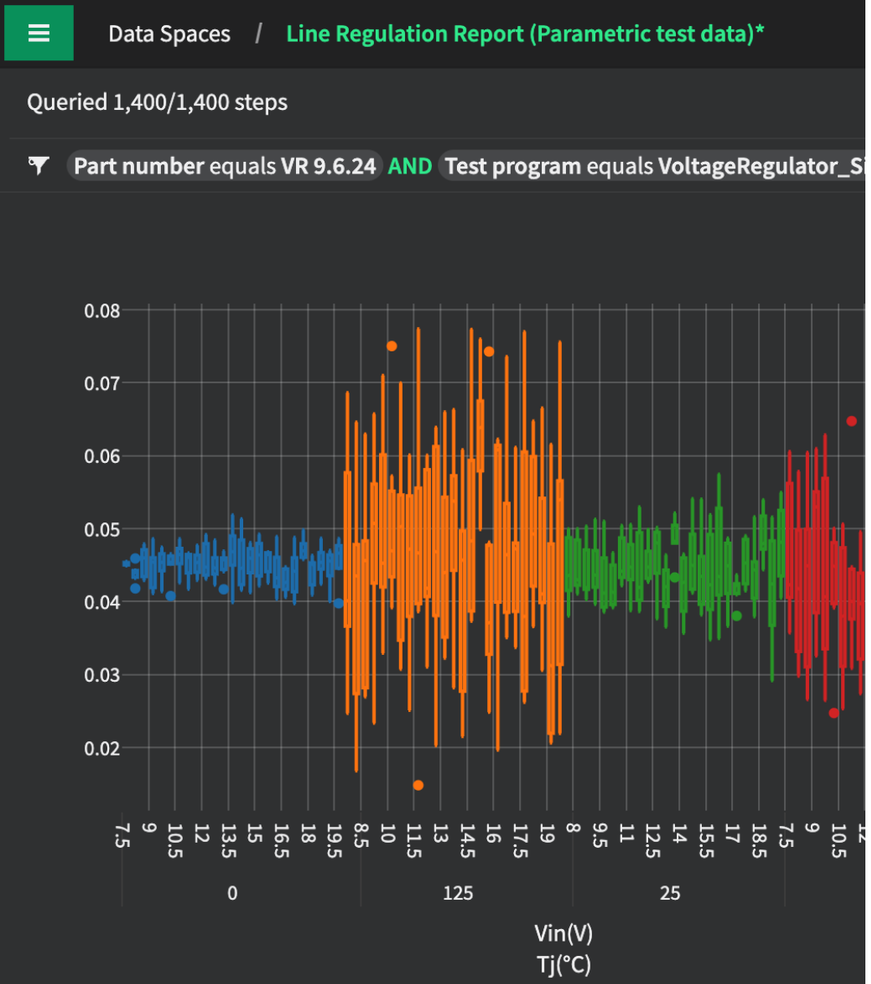
HTTPS / TLS data encryption; authentication & access control





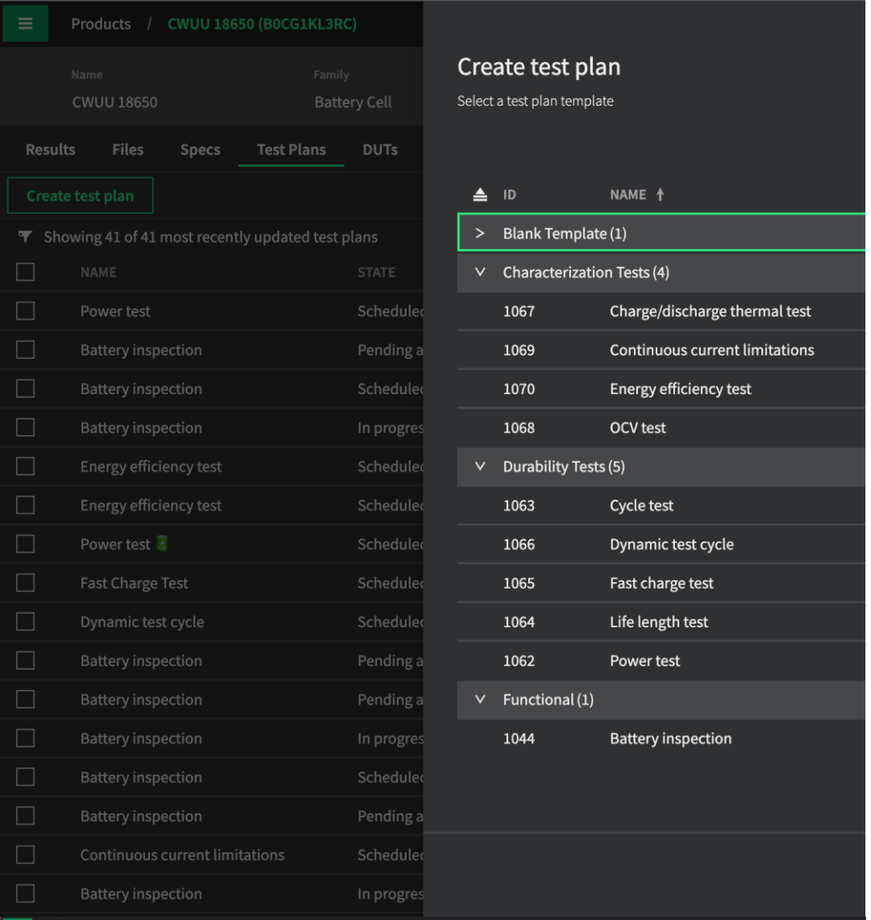
Increase Lab Efficiency

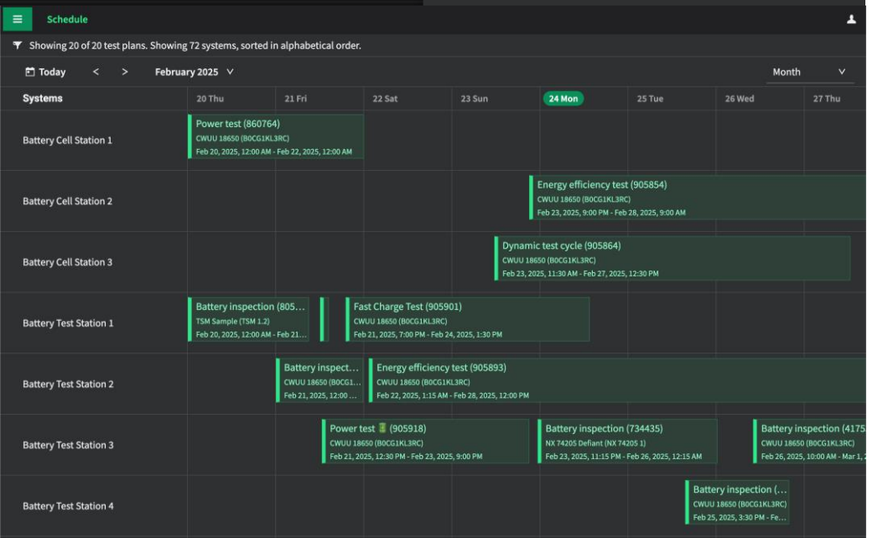
- Mass deploy NI and test software for your entire fleet from a central web interface
- Monitor test systems and assets health with alarms and notifications as well as customizable dashboards
- Manage and track the assets calibration status, calibration history, and location history
- Track utilization for DUTs, assets, systems, and the entire lab



Accelerate Product Insights

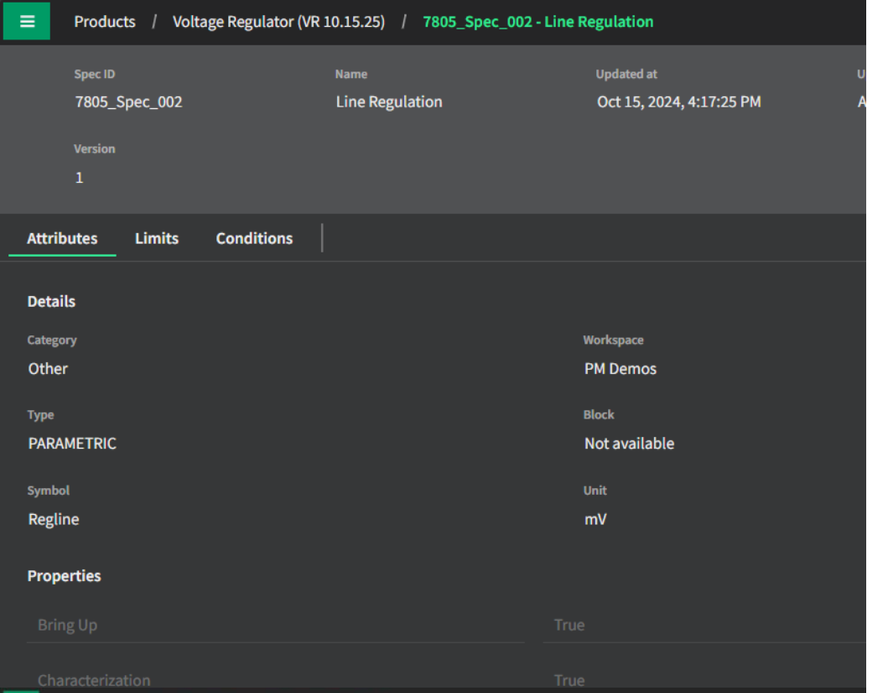
- Collect, store and view test results, files, parametric and waveform data from LabVIEW, TestStand, FlexLogger and 3rd party test software
- Quickly search and filter data to analyze past results and gain additional insights
- View waveform and parametric measurement data from a web-based user interface
  - Plot and group measurement data across different conditions
  - View distributions using box and violin plots as well as histograms

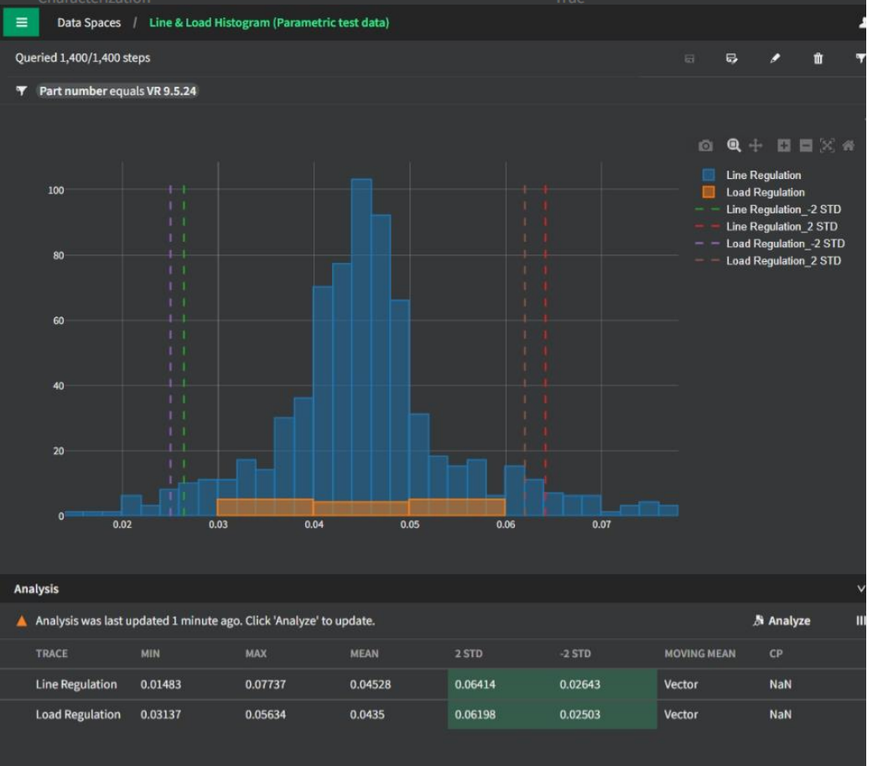




Optimize Lab Operations

- Plan and schedule systems, assets, and DUTs to be used for testing
- Define customizable test parameters and custom actions that can be integrated with both NI and 3rd party systems
- Define, manage, schedule, deploy, remotely start, and monitor tests
- Monitor test execution and measurements in real-time and get immediate updates as test result data is available

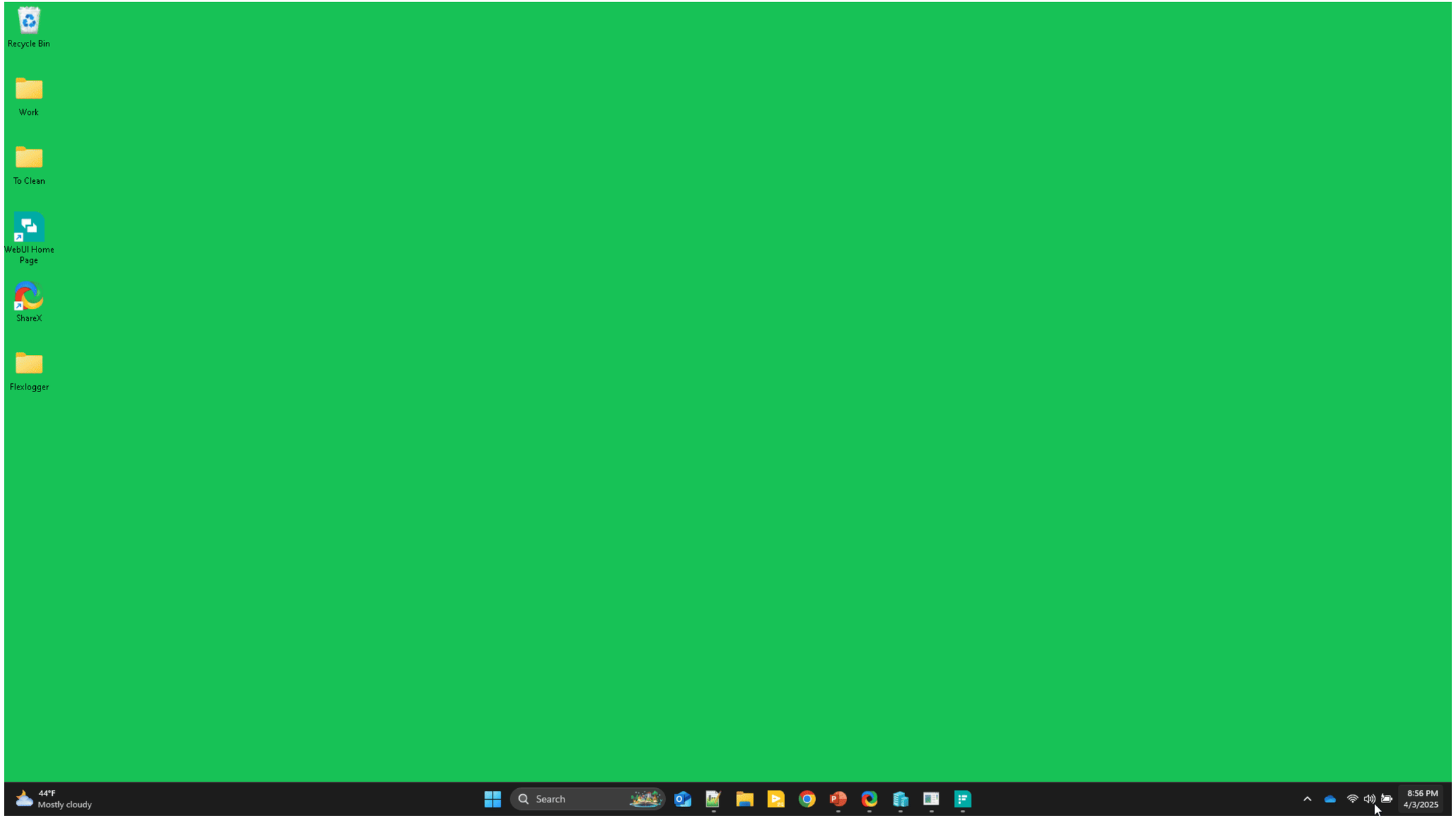




Improve Test Coverage and Compliance

- Import and store product specifications in a central repository with a web UI
- Map specs to measurement data stored in SystemLink parametric and waveform stores.
- Compute compliance and coverage using Specifications + Test Data
  - Compliance: Did the product behavior match specifications?
  - Coverage: Did I test enough unique DUTs to be confident moving to production?
- Customize specification compliance statistics and measurement analysis

Demo: SystemLink Integration



Summary: SystemLink Integration

- Share slow speed tags to SystemLink
- Within SystemLink, use tags for:
  - Web based GUIs
  - Alarming
  - Analysis
- Automatically upload data fies to SystemLink
- Within SystemLink, use data files for:
  - Post process analysis using Python / Jupyter Notebooks
  - Web based GUIs
  - Downloading to local machine
  - Data management