





Processing at the Edge:

Why a Platform-Based Approach is Ideal for the Industrial Internet of Things

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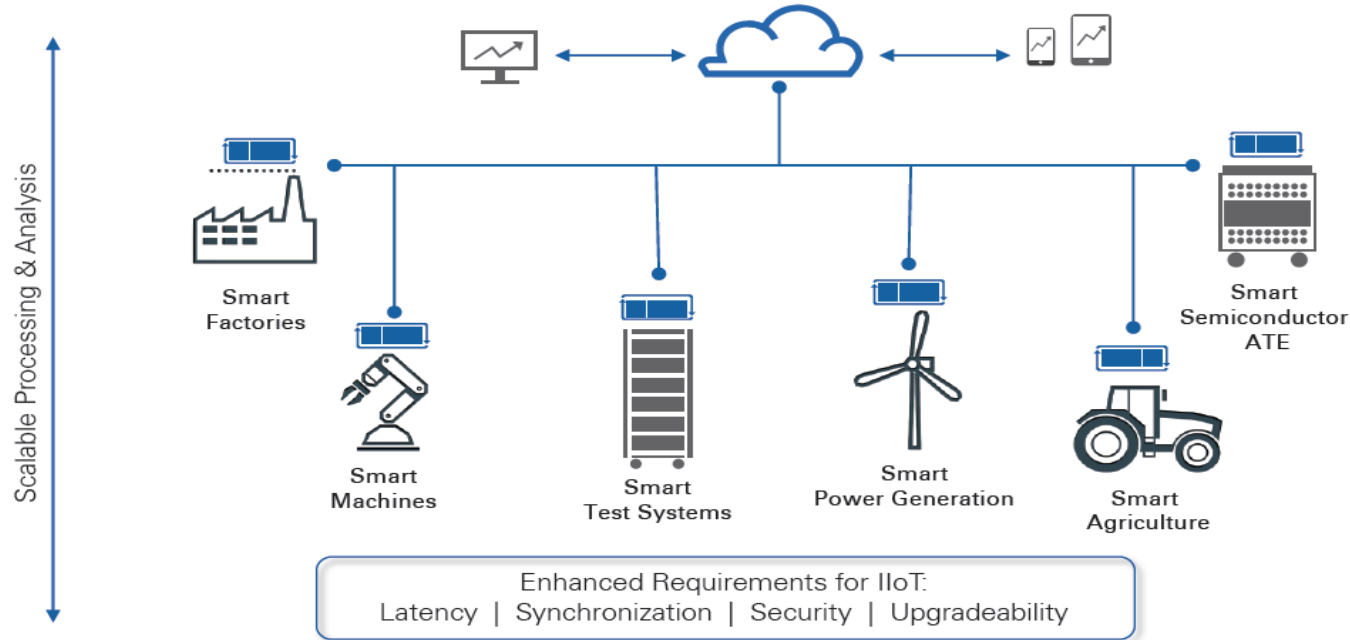
# Processing at the Edge: Why a Platform-Based Approach is Ideal for the Industrial Internet of Things

## Goals for today's session:

- Understand the definition and impact of the IIoT
- Discuss requirements and challenges associated with IIoT systems
- Review example IIoT system & architecture
- Illustrate benefits of a platform-based approach for designing IIoT systems

# Demystifying the IoT

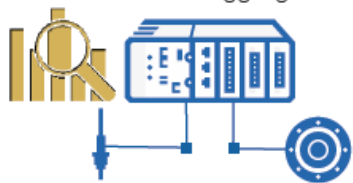
# The Industrial Internet of Things



# Trends in the Industrial Internet of Things

## Intelligent Systems

Sensors, Actuators, Acquisition,  
and Data Aggregation



Big Analog Data  
Storage  
Bandwidth

## Intelligent Systems Of Systems

Secure connectivity and  
system-to-system communication



Security  
Synchronization  
Bandwidth  
System Management

## End to End Analytics

Solutions from Device to cloud to deliver  
Business insights and customer value



Algorithms  
Automated Decisions

# IIoT System Requirements

# Common Requirements of IIoT Systems



## Computation

“Thinking”  
Processing  
Analytics  
Decision Making



## Connectivity

To IO  
To the Enterprise  
To the Cloud  
To other “Things”

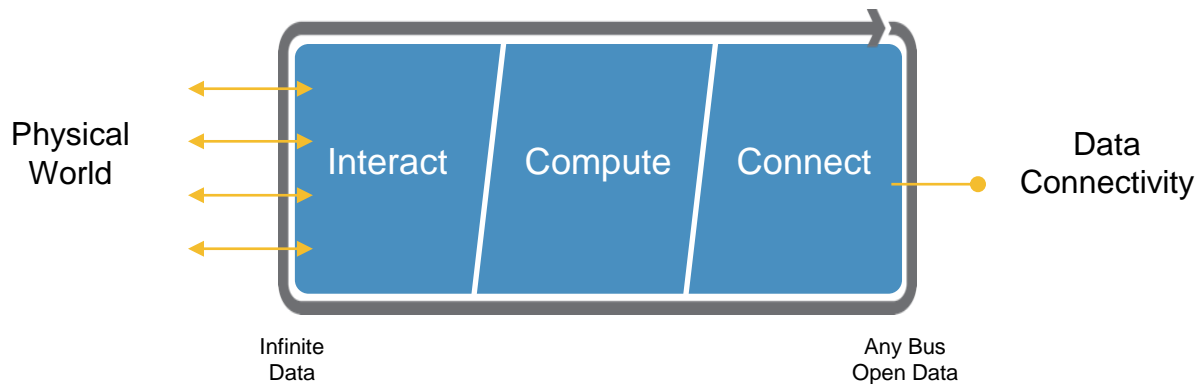


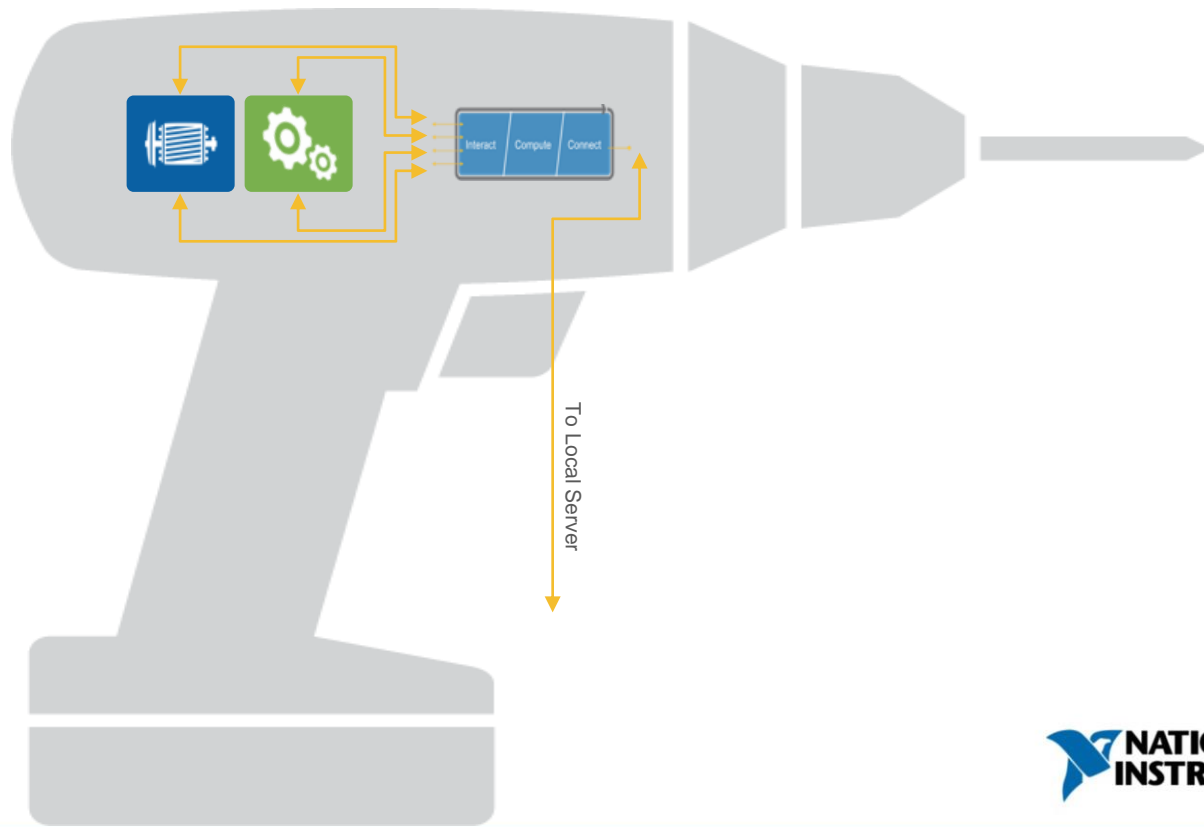
## Control

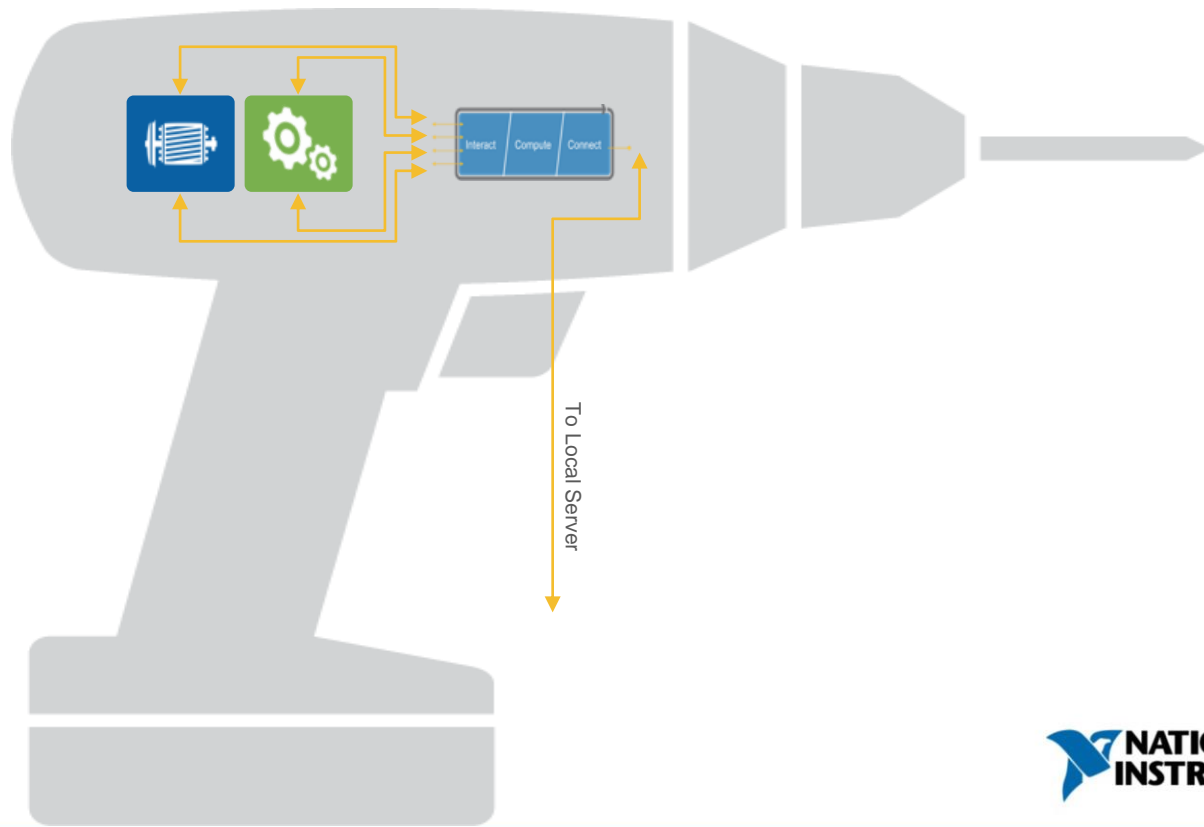
Act, Do  
Motors, Drives,  
Relays, Actuators



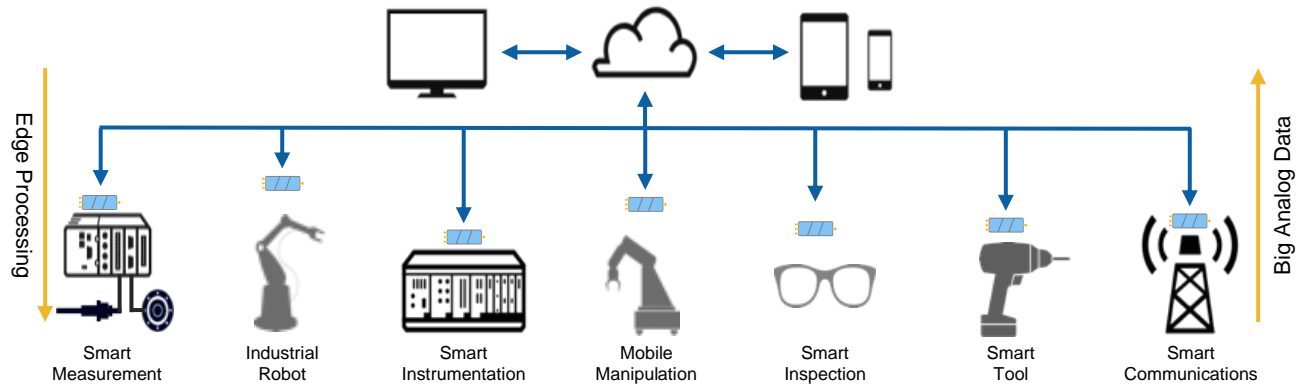
# Smart Edge Node Architecture







# Factory of the Future



## Enhanced Requirements for the IIoT

Reliability | Latency | Security | Upgradeability

# IIoT System Example



AIRBUS



Smart  
Tools



Intelligent  
Communication



Industrial  
Robots



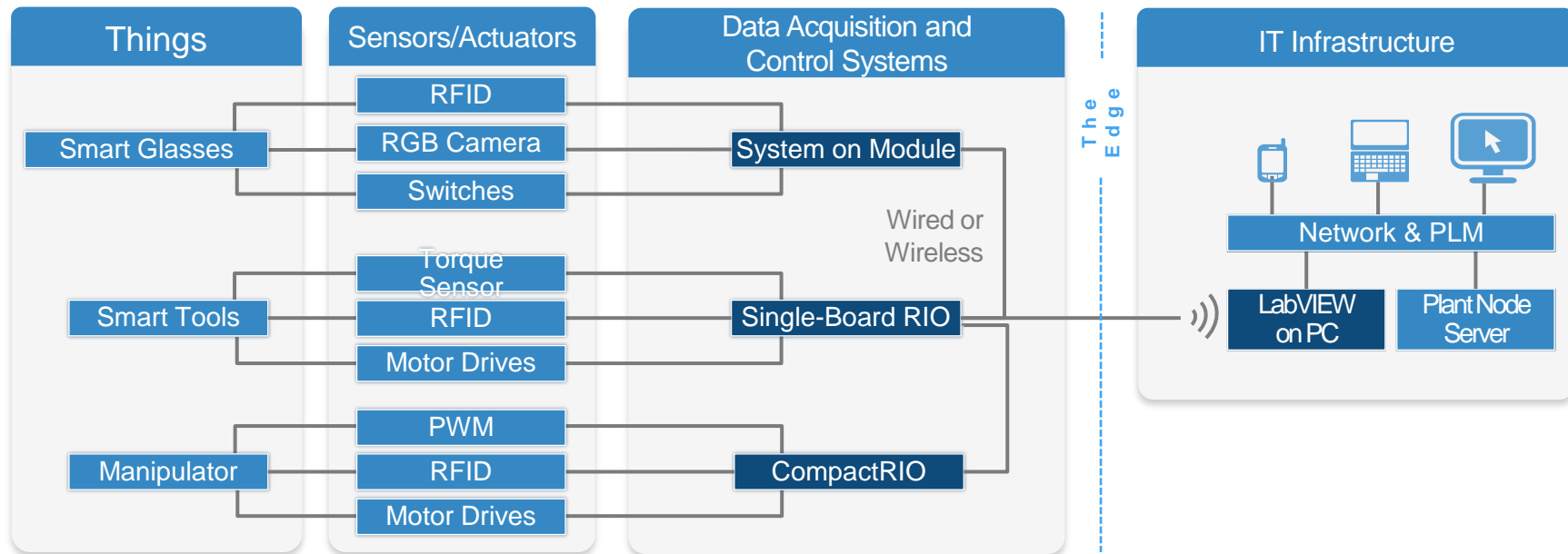
Smart  
Inspection



Mobile  
Manipulator

# End-to-End Industrial IoT Solution

Factory of the Future: Factory-Wide Online Monitoring and Control



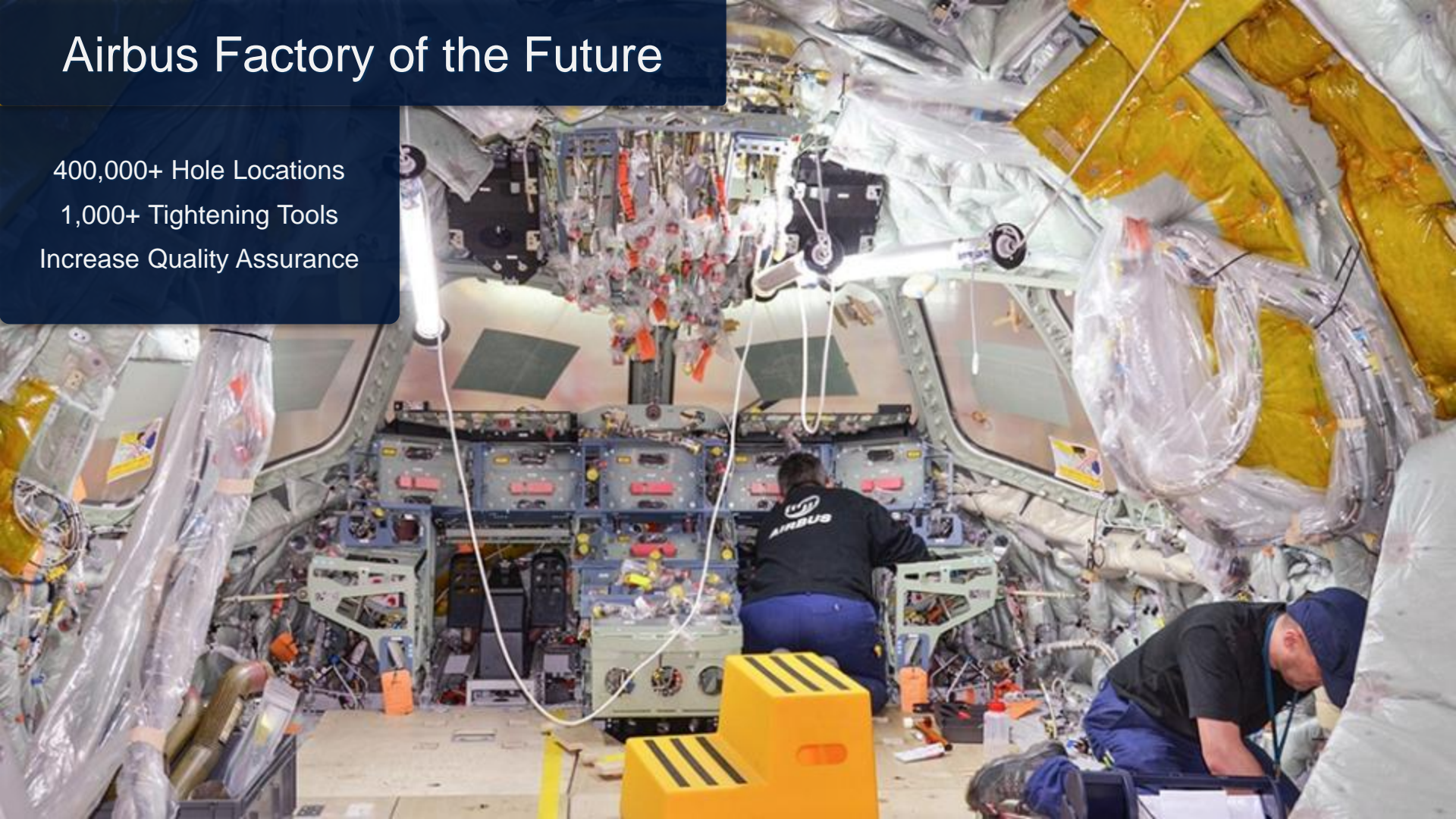


# Airbus Factory of the Future

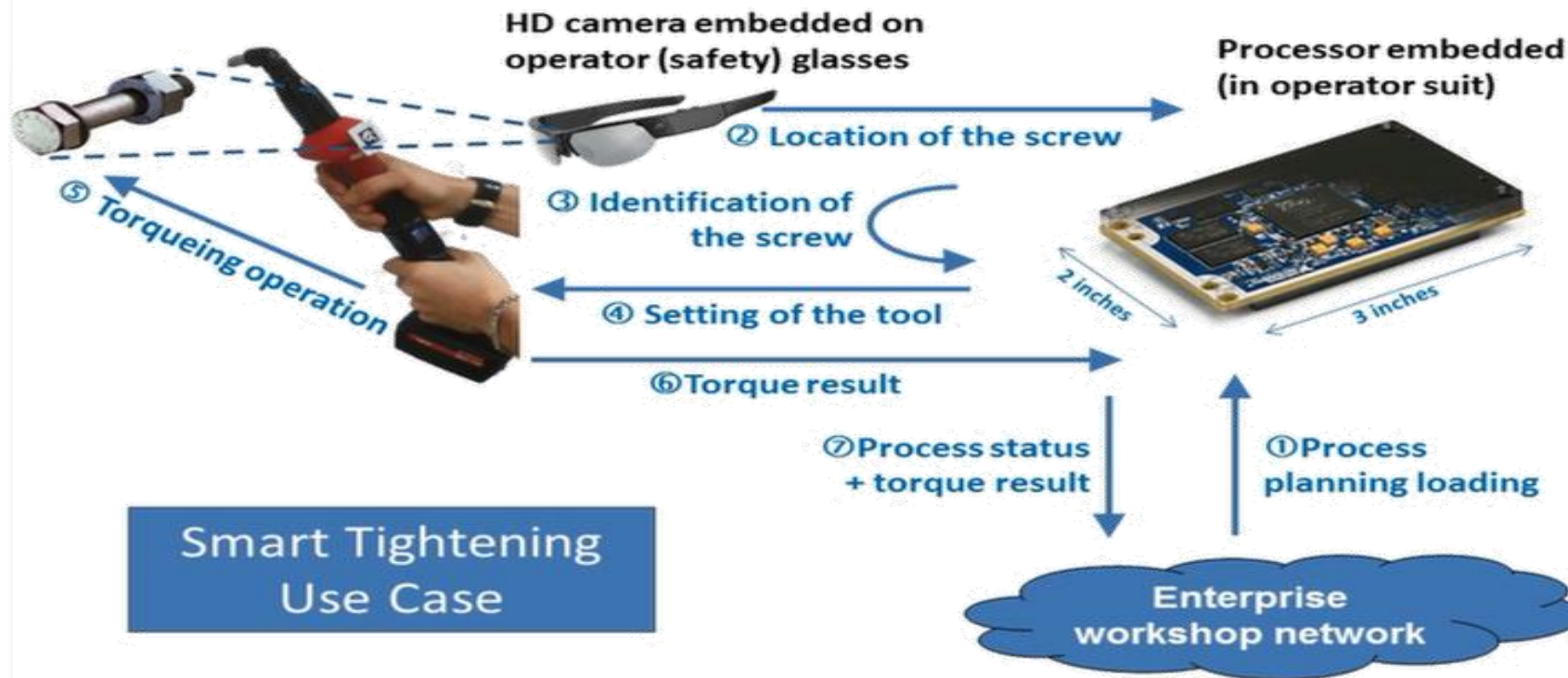
400,000+ Hole Locations

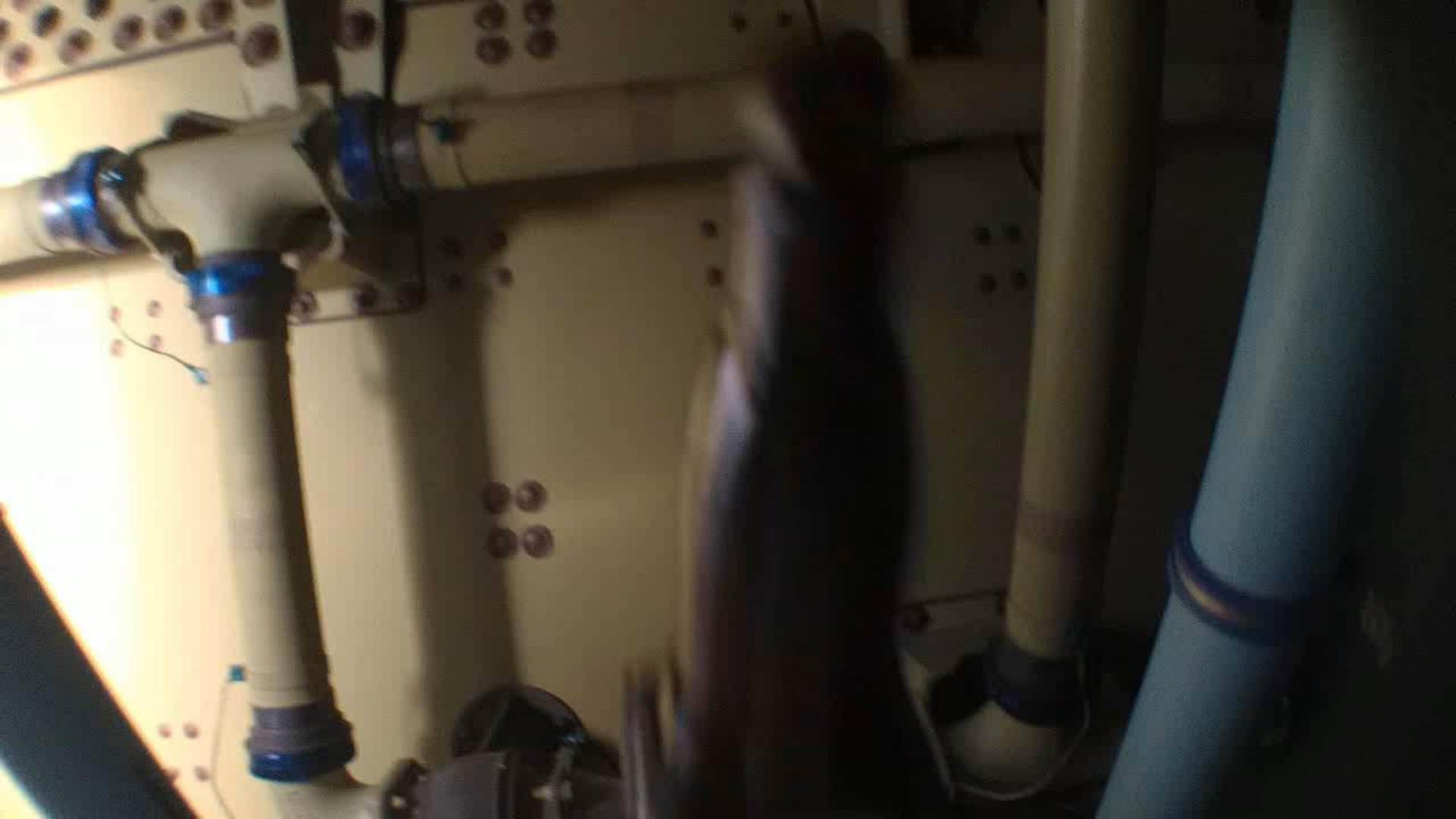
1,000+ Tightening Tools

Increase Quality Assurance



# Platform-based approach to Factory of the Future





# Airbus Technology Store



## Airbus Technology Store



Vision



Filter



Input/Output



Motion

IP and Algorithm Library



SOM



sbRIO



CompactRIO



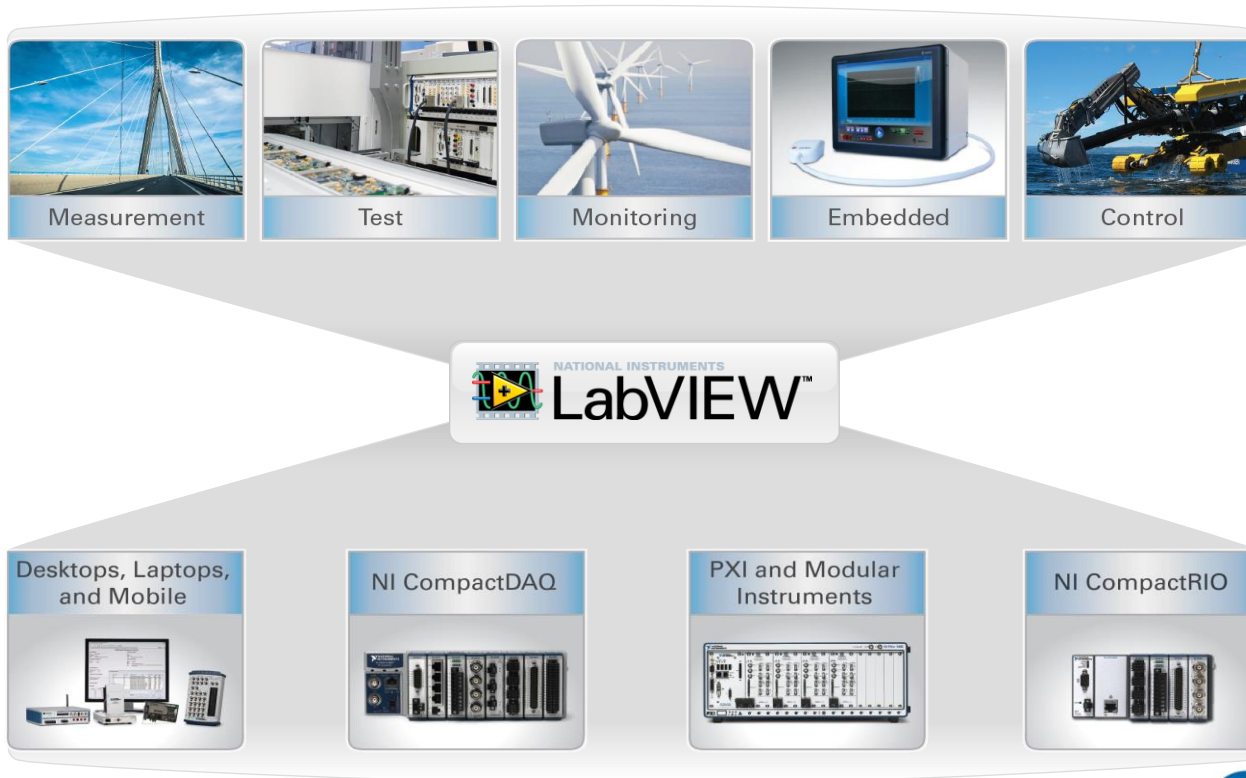
PXI

NI Hardware



So How Do We Meet These Requirements  
And Overcome These Challenges?

# Platform-Based Approach



# LabVIEW System Design Software

## Single Design Environment

Manage and organize all system resources, including I/O and deployment targets

## Deployment Targets

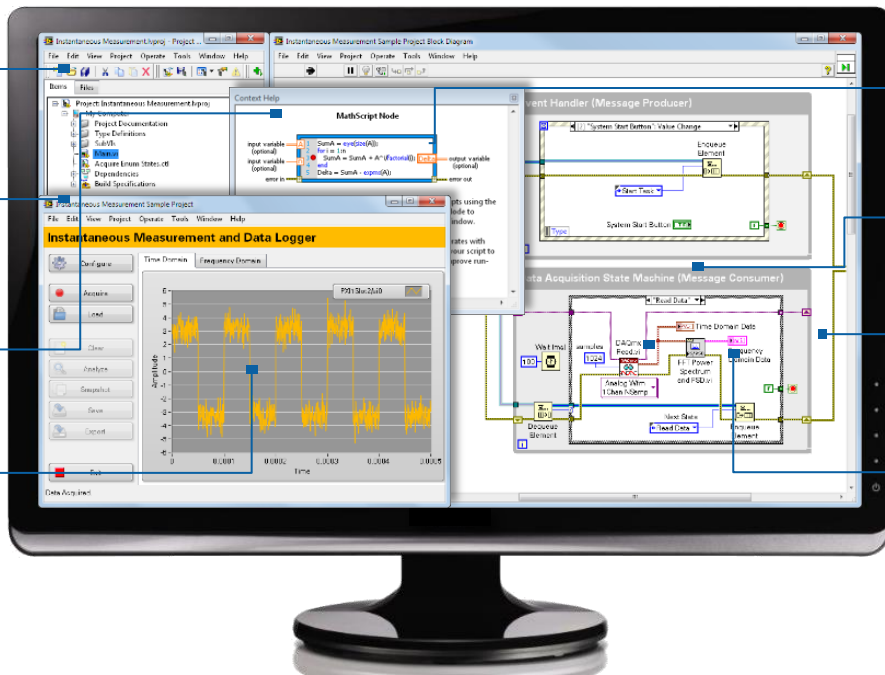
Deploy LabVIEW code to HMIs, RT processors, and FPGA targets

## Tools Network & Community

Leverage the partner ecosystem of more than 175 add-on products

## Code Portability

Access to latest technologies with minimal code refactoring



## Language Support

Augment with existing C/C++ development expertise and code

## Systems Management

Includes multiple system management clients and an API for extensibility

## Built-In Engineering IP

Over 900 control and analysis libraries designed for engineering and science

## Code Reuse

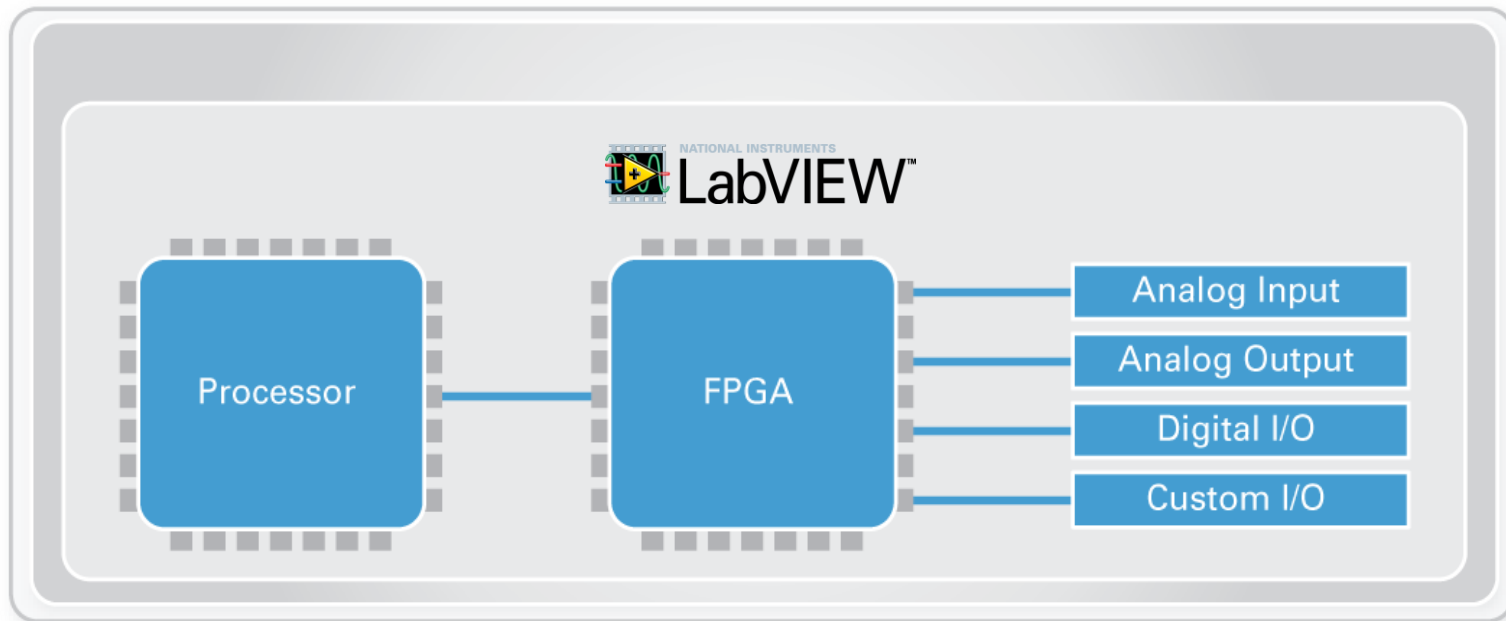
Reuse existing libraries, .m files, HDL and state-based simulation

## Accelerates Your Success

By abstracting low-level complexity and integrating all of the tools you need to build any measurement or control system

# The LabVIEW RIO Architecture:

The Foundation for Innovation in the IIoT





# Innovate with a Platform for the IIoT

- Eliminate the need to start from scratch
- Satisfy the computation, connectivity, and control requirements for Industrial IoT applications
- Meet changing requirements over time with flexible, scalable, and field-programmable products
- Choose from a variety of high-quality form factors, price points, and performance options
- Leverage a consistent software environment for
  - Programming every element of the system
  - Simulating, modeling, prototyping, development, and deployment
  - Performing edge and end-to-end analytics
- Integrate with existing systems



You are welcome @ our stand!