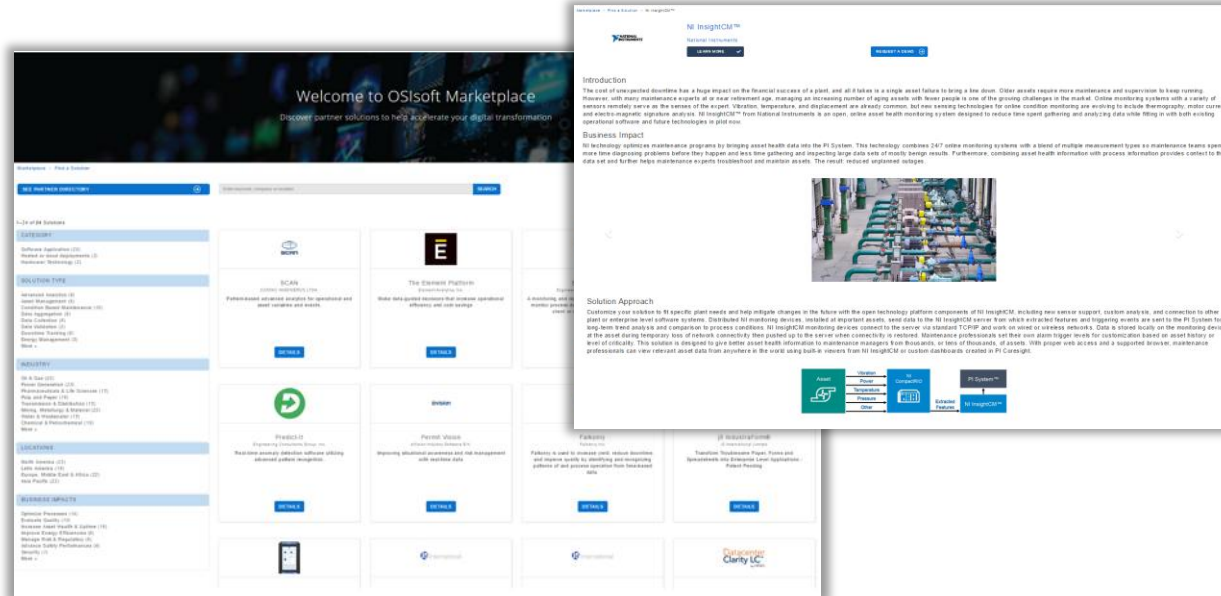


# The OSIsoft Marketplace

## Your next transformation, one click away.



<https://partners.osisoft.com/solutions/solution/114/ni-insightcm>

&

<https://partners.osisoft.com/solutions/solution/186/osisoft-pi-system-connectivity-toolkit-for-labview>

# Condition Monitoring and Process Data for Reliability



Presented by **Roberto Piacentini Filho**  
**Principal Manager**



- About National Instruments
- Monitoring Challenges
- Applying Marketplace solutions to the challenge
- InsightCM demonstration
- Results Obtained and Business Impact
- Other Suggested Activities at the UC



7,500+  
EMPLOYEES  
50+ COUNTRIES  
FOUNDED IN 1976

**\$1.23**

BILLION  
IN 2015

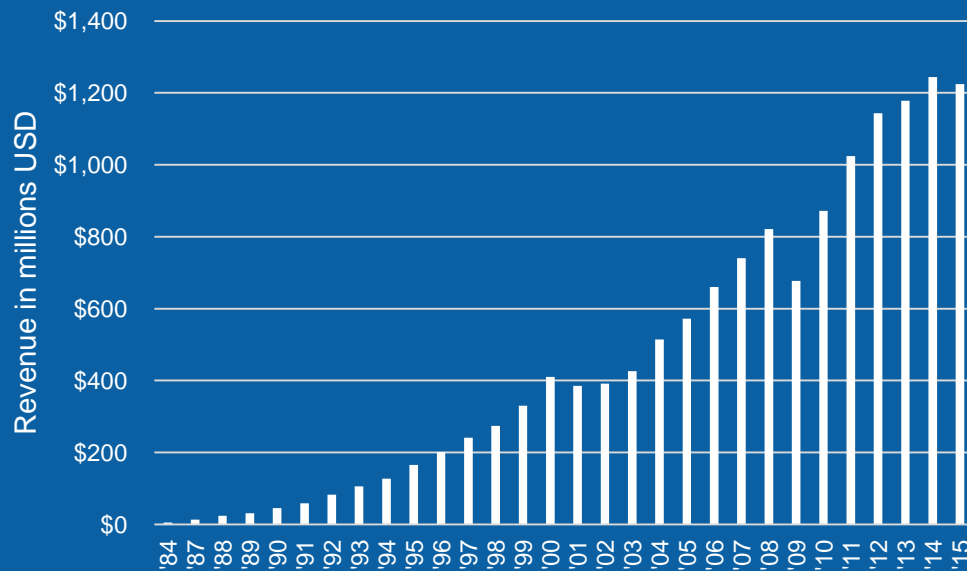


35,000+  
CUSTOMERS WORLDWIDE



OVER 18%  
INVESTMENT IN R&D

## Long-Term Track Record of Growth



## NI Modular Hardware Allows Easy Customization

We equip engineers and scientists with systems that accelerate productivity, innovation, and discovery



Complete I/O Coverage  
With More Than 600 Modules



Parallel Measurement Execution  
With Latest Multicore Processors



Hardware platforms for Test & Measurement,  
Smart Grid and Condition Monitoring



Real-Time Measurements  
With Timing and Synchronization



Software-Defined Instruments



Measurement Acceleration  
With User-Programmable FPGAs

# Monitoring Challenges

Higher risk of catastrophic failure

Must reduce downtime to save money

Lack of insight to understand overall reliability

Aging plants have critical equipment that needs to be reliable

Specialists are hard to find and existing ones are retiring

New technology is more complex, expensive, and tougher to maintain

Disparate systems

**SAFETY!**

Spending too much time collecting vs. analyzing data

Unable to get to all the necessary measurements we need

Inconsistent diagnostics

How Do We Address Our Challenges?

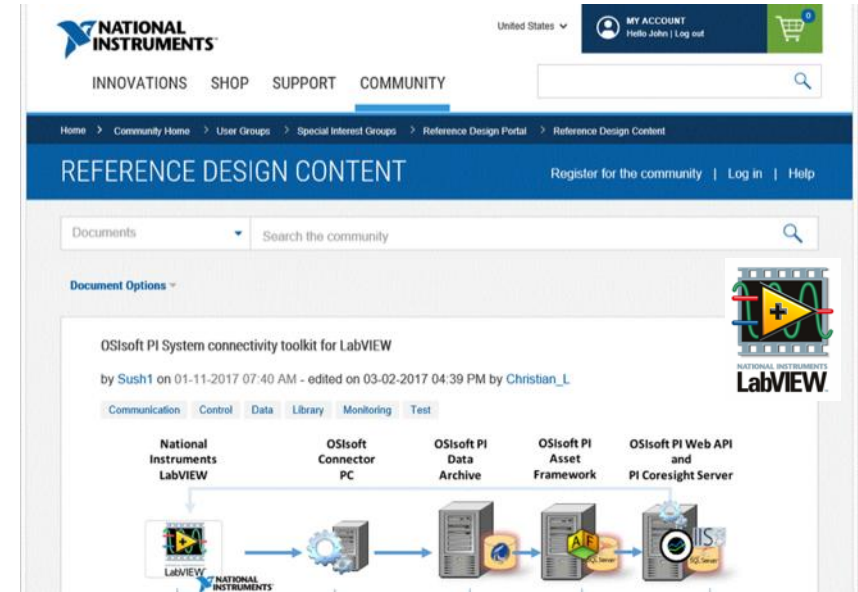
# SMARTER TECHNOLOGIES



# OSIsoft Marketplace – LabVIEW / PI Connectivity Kit

- **LabVIEW**
  - *Graphical Programming Language*
  - *Runs on all NI hardware*
  - *Support for multiple OSes (Windows, Linux and Mac)*
- **LabVIEW Connectivity kit for the PI System**
  - *Enables bi-directional data exchange and automatic AF creation*

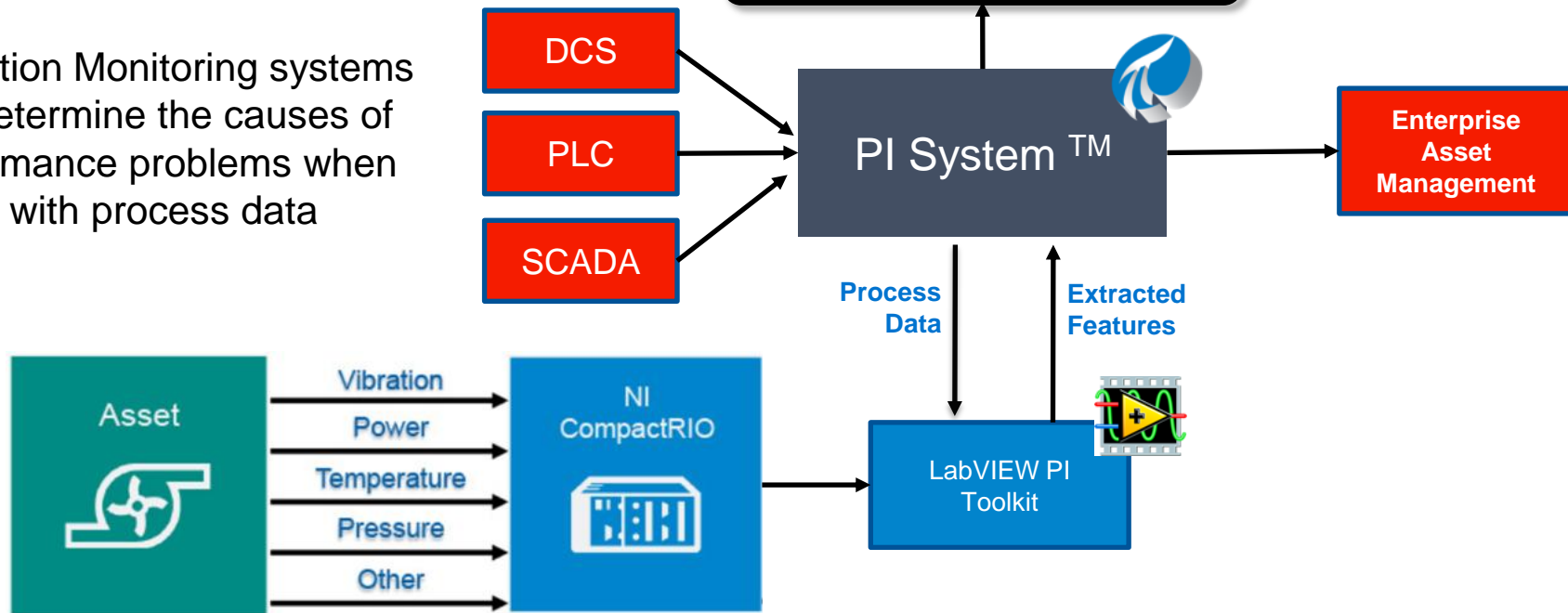
<http://forums.ni.com/t5/Reference-Design-Content/OSIsoft-PI-System-connectivity-toolkit-for-LabVIEW/ta-p/3568074>



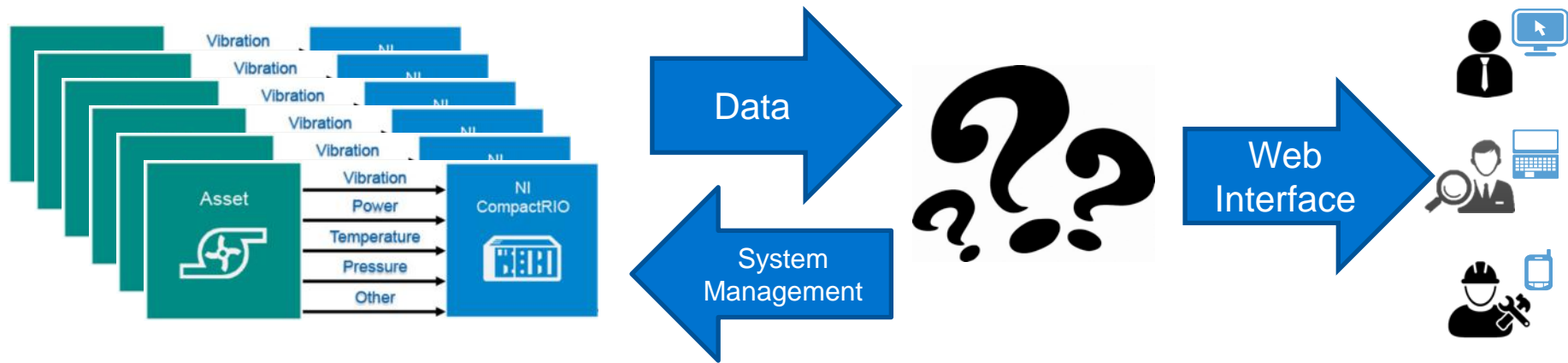


# Condition Monitoring with Process Context

Condition Monitoring systems can determine the causes of performance problems when linked with process data



# What if you have many edge systems to manage?



# OSIsoft Marketplace – NI InsightCM™

Application software tailored for online monitoring applications

- Configuration-based acquisition and data management tools
- Provides device management for 1000's of deployed systems
- Wide range of dynamic waveform and static sensor input options
- Connectivity to third-party systems and analytics via LabVIEW
- Web-based complete accessibility to waveforms and calculated features (pushed to the PI System)



# NI Monitoring Devices from DC to GHz

Integrated sensor measurements, analytics, data storage, and alarming



Custom Measurements via SDK

## Extensive I/O support:

- Accelerometers
- Velometers
- Proximity Probes
- Tachometers
- Current Transducer
- Potential Transducer
- Static voltage
- Static current (4-20 mA)
- RTD
- Thermocouple
- Thermography
- Current Signature Analysis
- ...

# The Intelligent Enterprise:

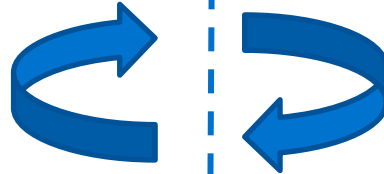
Through the leverage of Smarter Technologies Addressing Business and Operations Challenges



**NI compactRIO**  
Embedded Controllers



**NI**  
InsightCM™  
Enterprise



**PI Coresight**



**PI SYSTEM**  
**OSIsoft.**

# Benefits of NI and OSIsoft Technologies

**Cost effective** alternative that can enable companies to outfit large scale fleets for fuller visibility.

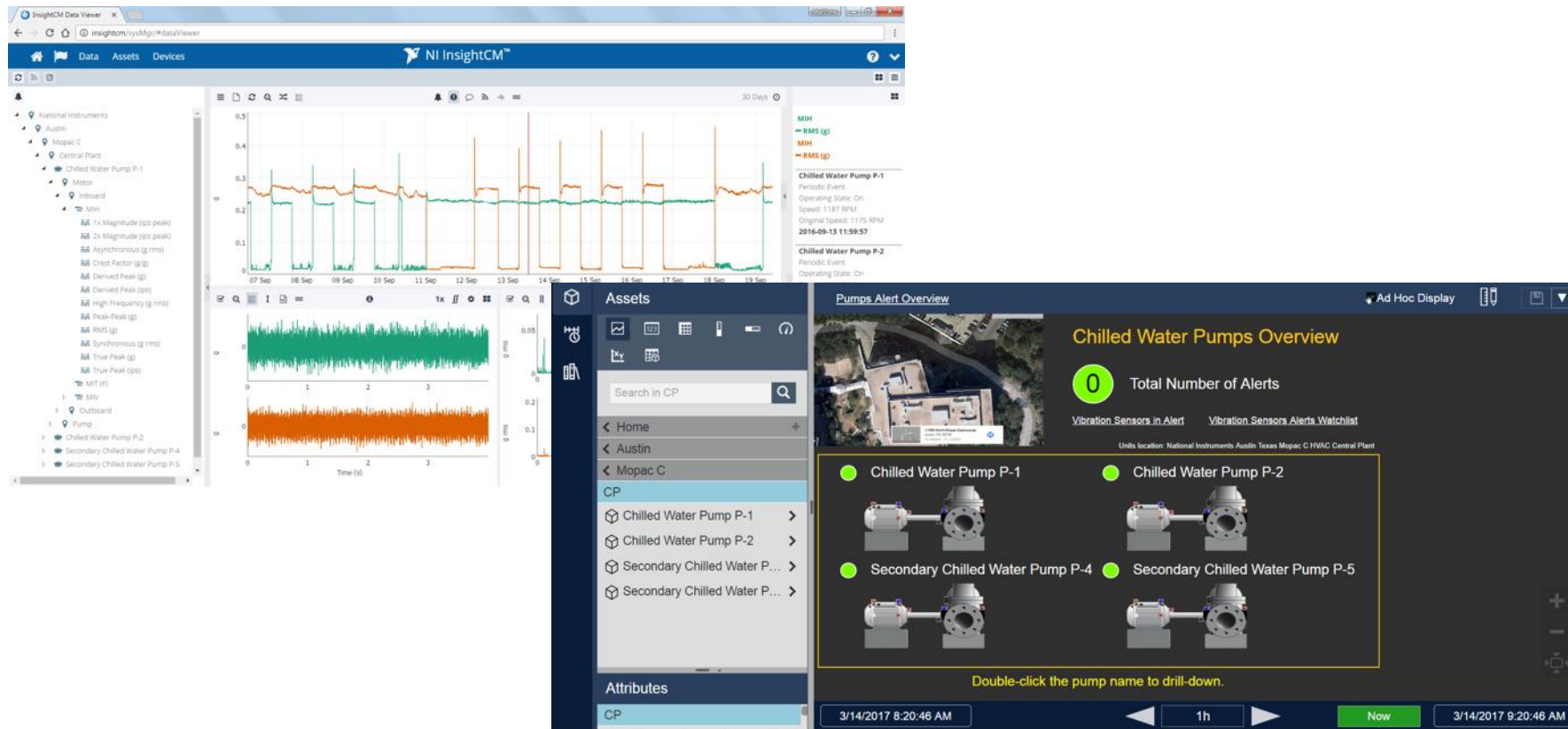
**Customize, scale, and future-proof** your solution to meet current and evolving business needs.

Gain access to the **raw data** and easily **integrate with existing enterprise infrastructure**.

**Multiple measurement in a flexible platform**, combine vibration, electrical, process measurements in the same software.

**Open solution** allows support for third-party hardware, custom analytics, and **full access to data** to connect with third-party IIoT and Analytics packages.

# InsightCM Demo

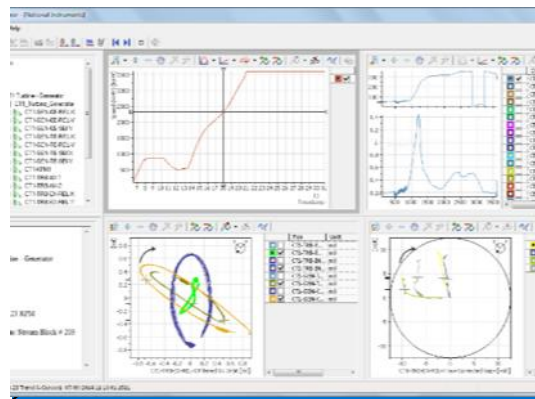




# Condition & Process Data For Better Maintenance & Reliability

## COMPANY and GOAL

Large electrical utility wants to better understand how new process conditions affect generation asset's health and reliability



## CHALLENGE

Due to penetration of renewables, generating assets are being used outside design conditions.

How does this effect equipment health and reliability?

Increasing demand on shrinking work force

## SOLUTION

Additional instrumentation to automate capture of vibration and other indicators

Storing vibration features in the PI System

Correlating vibration & process

Enterprise-wide access

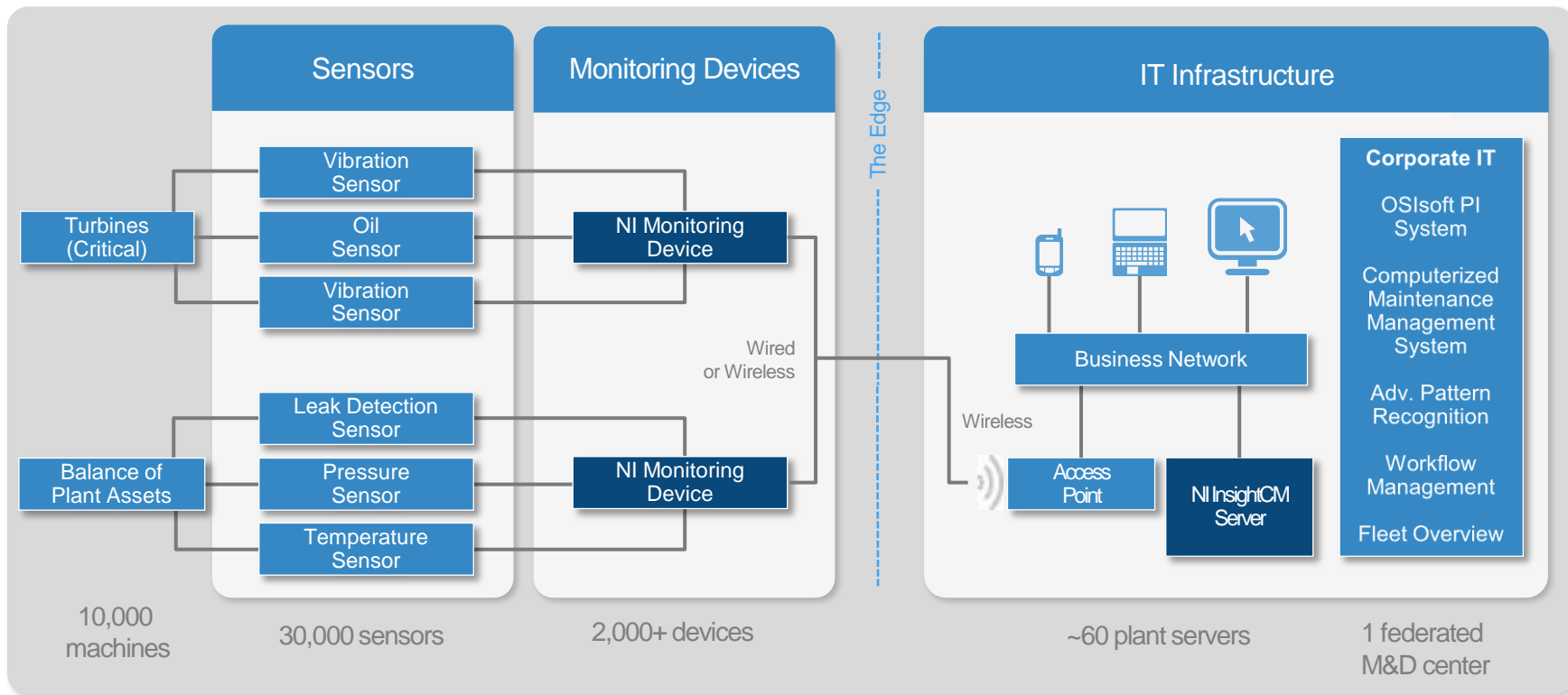
## RESULTS

A smaller workforce is able to monitor and act on more assets

Maintenance is proactive and reliability is improved

Foundation is laid for anomaly detection and predictive maintenance

# Condition & Process Data Solution Blueprint



## Other activities

- Thursday Lab 10:15 to 12:15  
Incorporating Condition Monitoring Data - Vibration, Infrared and Acoustic for Condition-based Maintenance
- Come to the NI booth on the exhibit floor to see real-time condition monitoring, anomaly detection, predictive analytics and augmented reality with our partner, PTC

## Questions

Please wait for the **microphone** before asking your questions



State your **name & company**

## Please remember to...

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감사합니다

谢谢

Danke

Merci

Gracias

**Thank You**

ありがとう

Спасибо

Obrigado