ActiveUptime: Condition Monitoring & Predictive Maintenance For Test Assets & Test Facilities

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ActiveUptime™

Eliminate unplanned downtime

Maximize total uptime

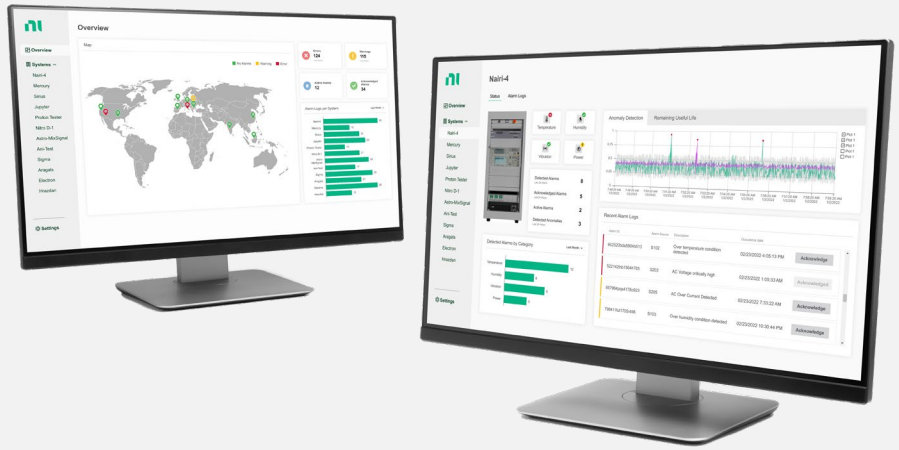
Optimize operational costs

Agenda

- ActiveUptime™ Overview
- Maintenance Maturity Model
- Condition Based Monitoring and Predictive Maintenance
- State-of-the-Art Smart Sensors
- Using Data for CbM and PdM
- Corrective Actions

ActiveUptime™

Condition Monitoring and Predictive Maintenance of Test Assets and Test Facilities



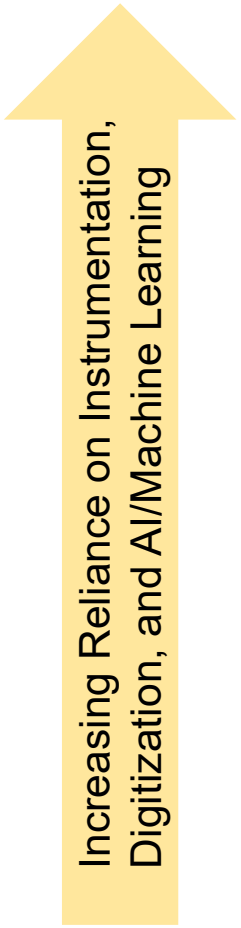
Eliminate unplanned downtime

Maximize total uptime

Optimize operational costs

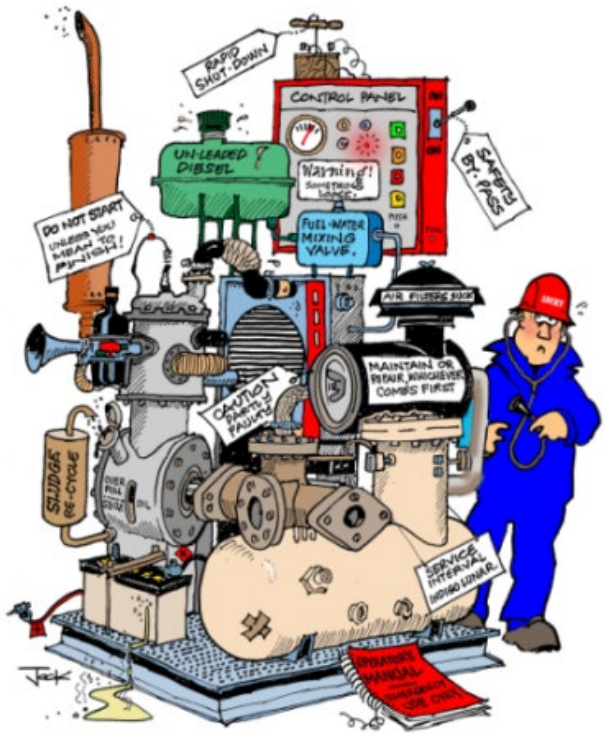
Maintenance Maturity Model

Autonomous	System initiates and executes optimal maintenance actions.
Prescriptive	System advises optimal maintenance actions and timing.
Predictive	Prediction of failures enabling optimized, preemptive maintenance actions.
Condition-based	Maintenance initiated when a single key measurement goes outside its defined threshold.
Preventative	Inspection and maintenance at specified time or usage interval.
Reactive	Run to failure.



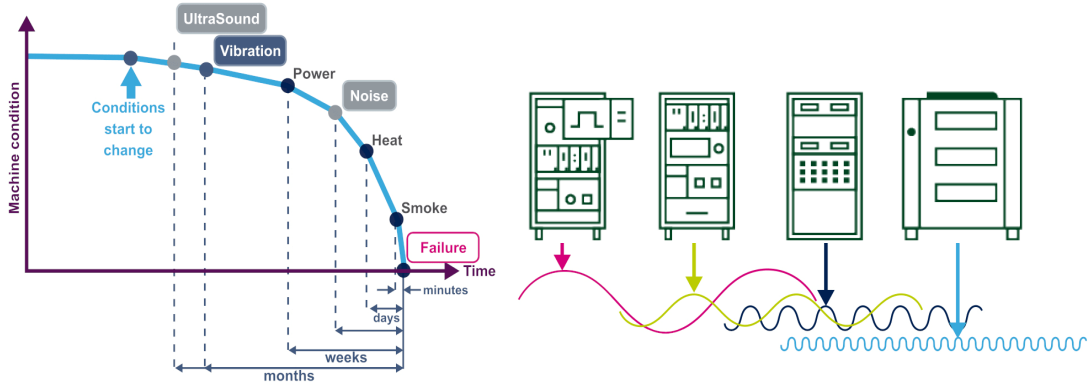
Condition Based Monitoring and Predictive Maintenance

Predictive vs. Condition-Based Maintenance (PdM / CbM)

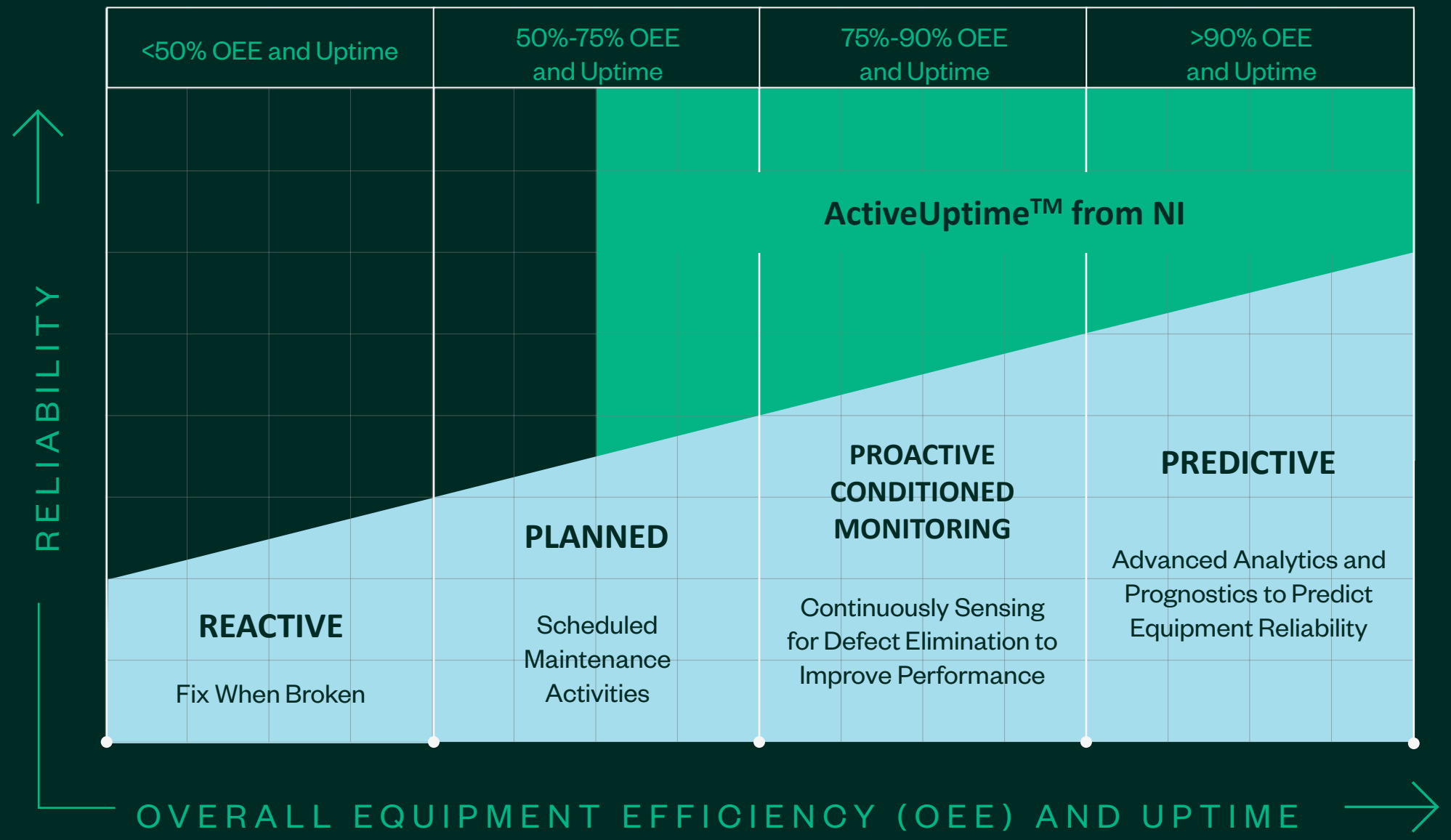


TRADITIONAL CONDITION MONITORING

Condition-based maintenance (CbM) is work that is performed at the exact moment when measured parameters reach unacceptable levels.

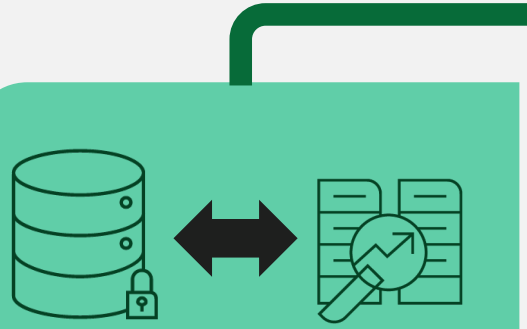


Predictive maintenance (PdM) is a next evaluation of condition-based maintenance that monitors the condition of assets using smart sensor devices. These smart sensor devices supply data in real-time and process, which is used to predict when the asset will require maintenance and prevent equipment failure.



INTERNAL - NI CONFIDENTIAL

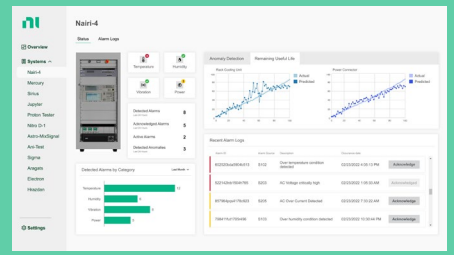
Enabling Condition and Predictive Maintenance with NI

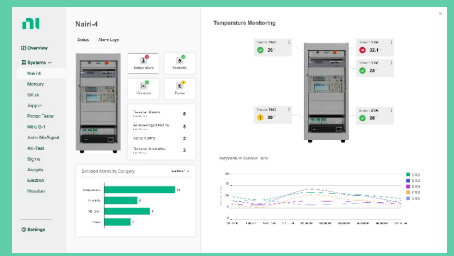


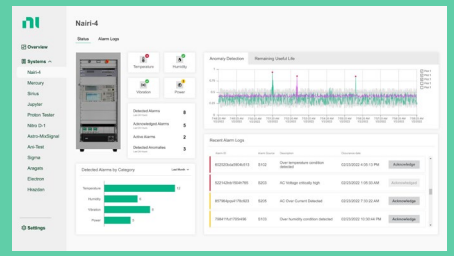
Data Visibility

Increased understanding, gap identification, added sensors, etc.

On the Edge ML based Anomaly detection trend identification.



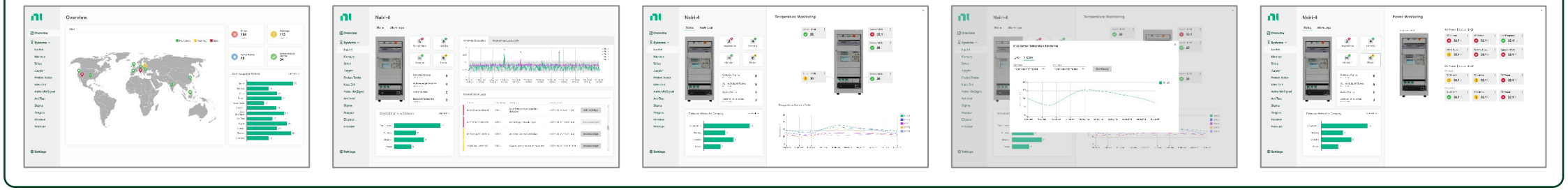




Remaining Useful Life (RUL) Analysis, Probability to Fail, etc

Data Foundation → Condition and Predictive Analysis

Proactive Conditioned Monitoring Using MaaS from NI



SystemLink Platform

User Security | Systems Management | Asset Management | Test Monitor | File Ingestion | TDM Reader | Isolated Analytics

Augment existing equipment with automated data collection and edge with processing

Edge Processing and Data Extraction

Temperature, Humidity, and Vibration

Environmental Sensor Extender

AC Power

Temperature, Vibration, and magnetic field

DC Power

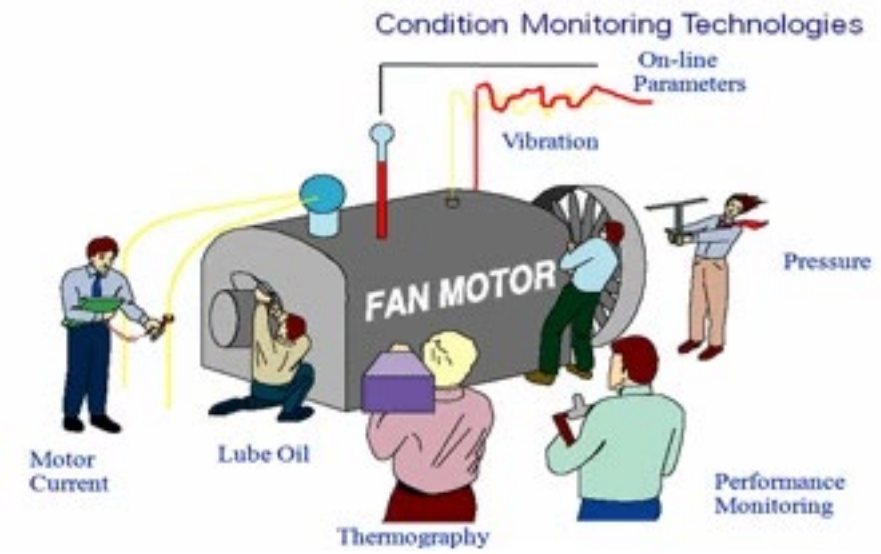
Identify critical assets

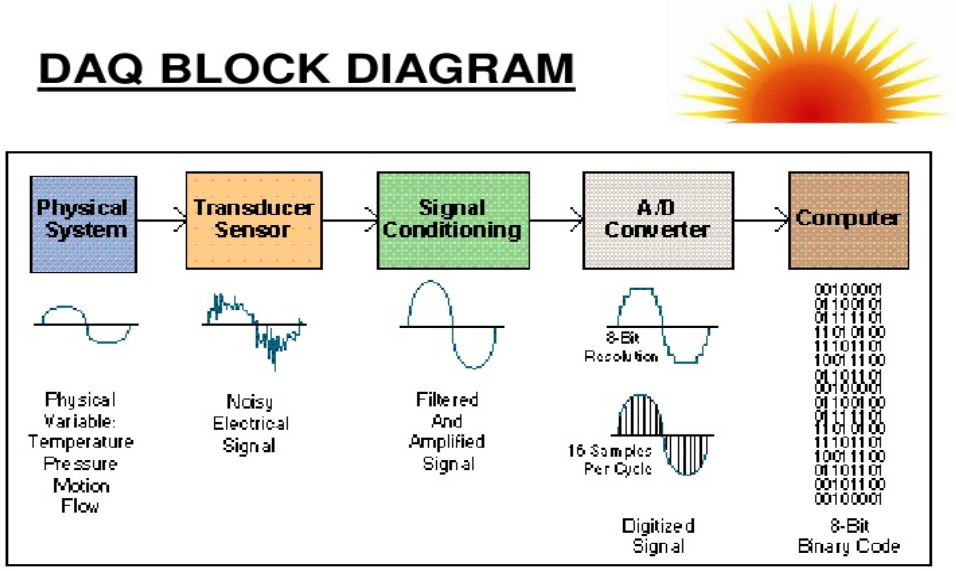
Test Equipment

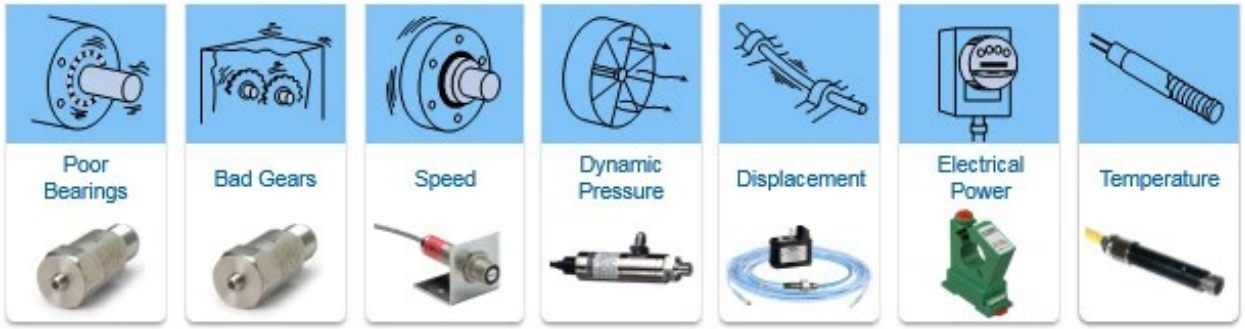
Test Facility

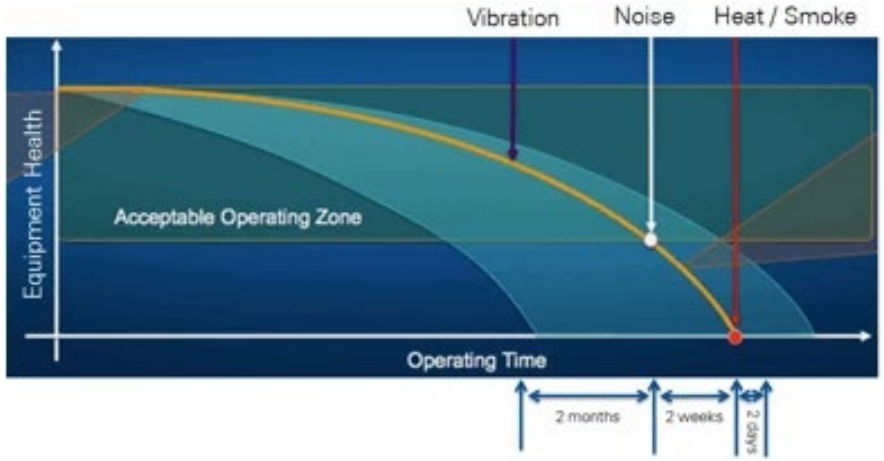
Specialty Equipment

Conventional CbM and PdM Solutions



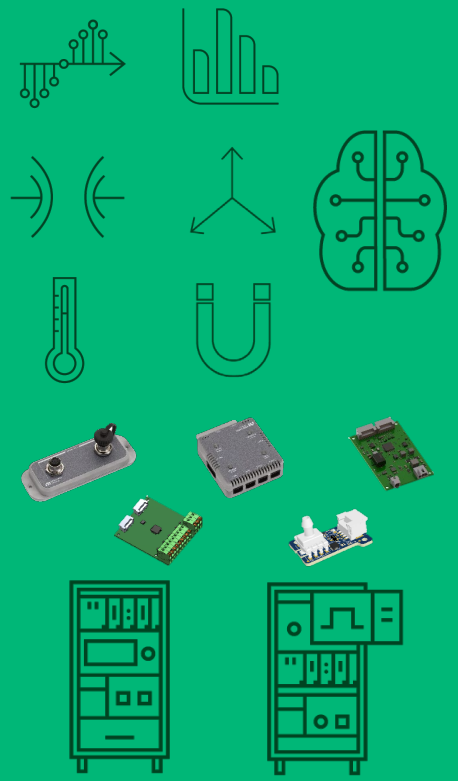




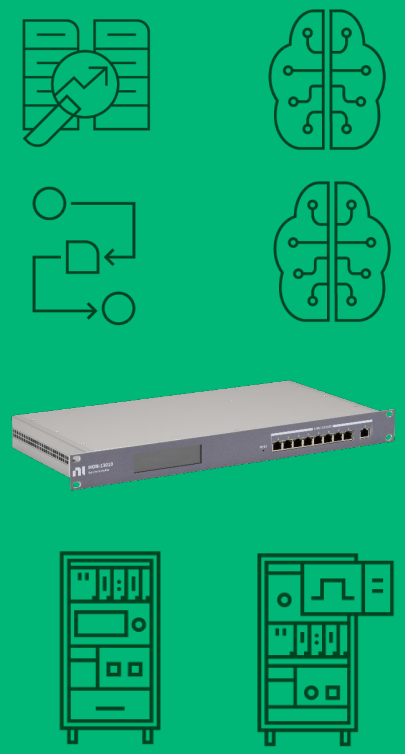


ActiveUptime State-of-the-Art Smart Sensors

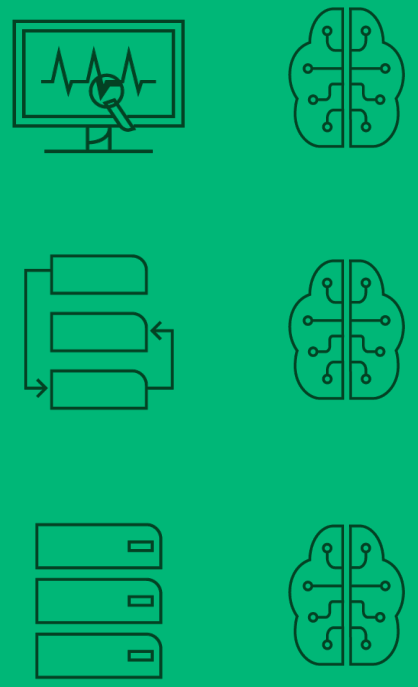
Smart sensors
Local analytics



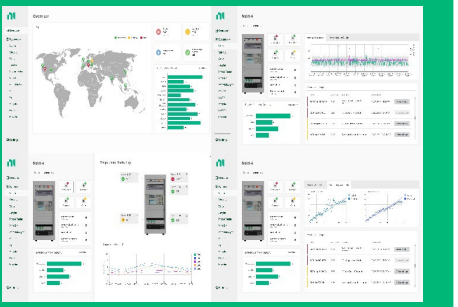
MON 13010
Edge analytics



SystemLink
Local/Cloud
analytics

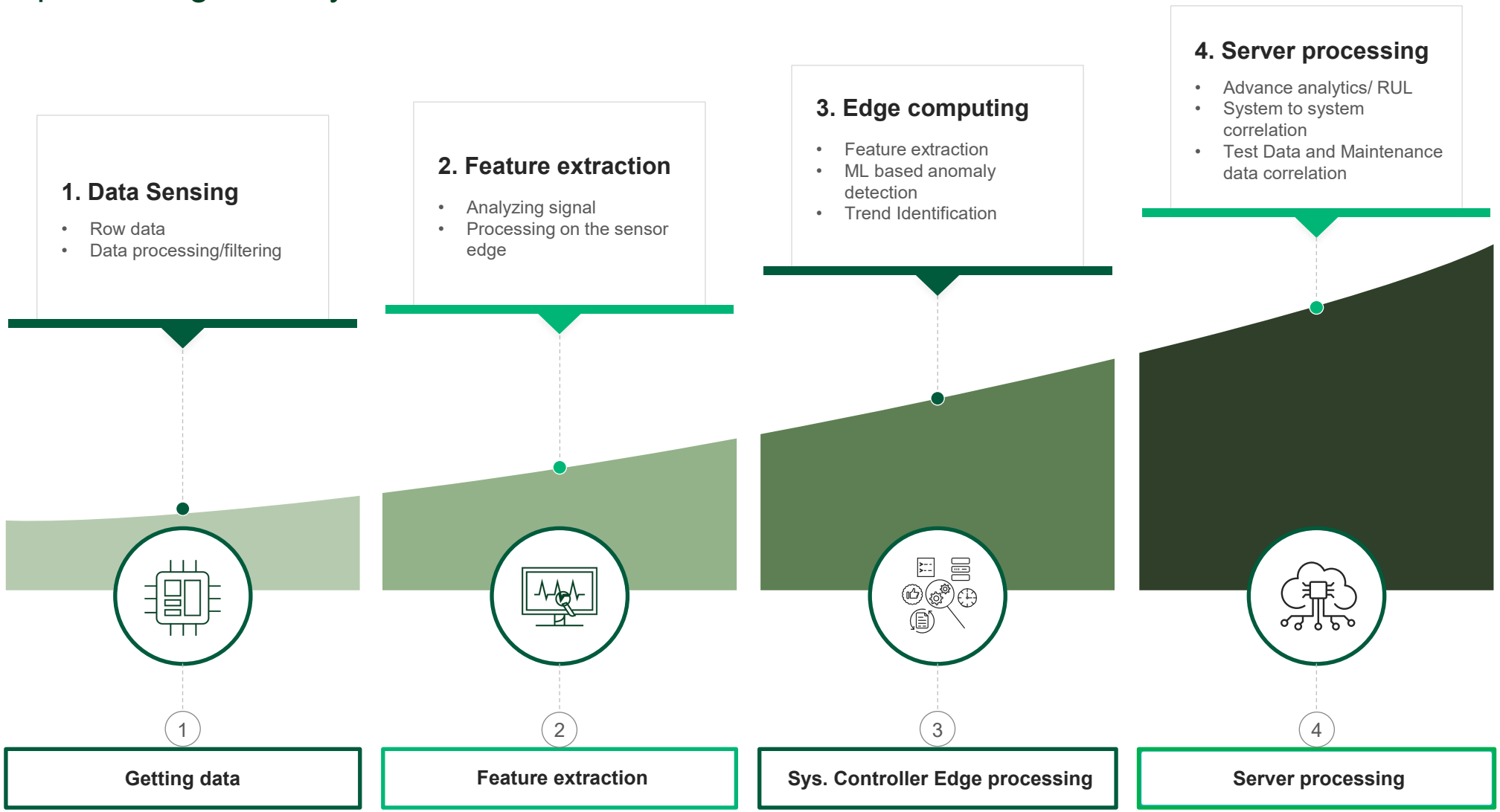


SystemLink based
Dashbaord



Using Data for CbM & PdM

Data processing maturity levels

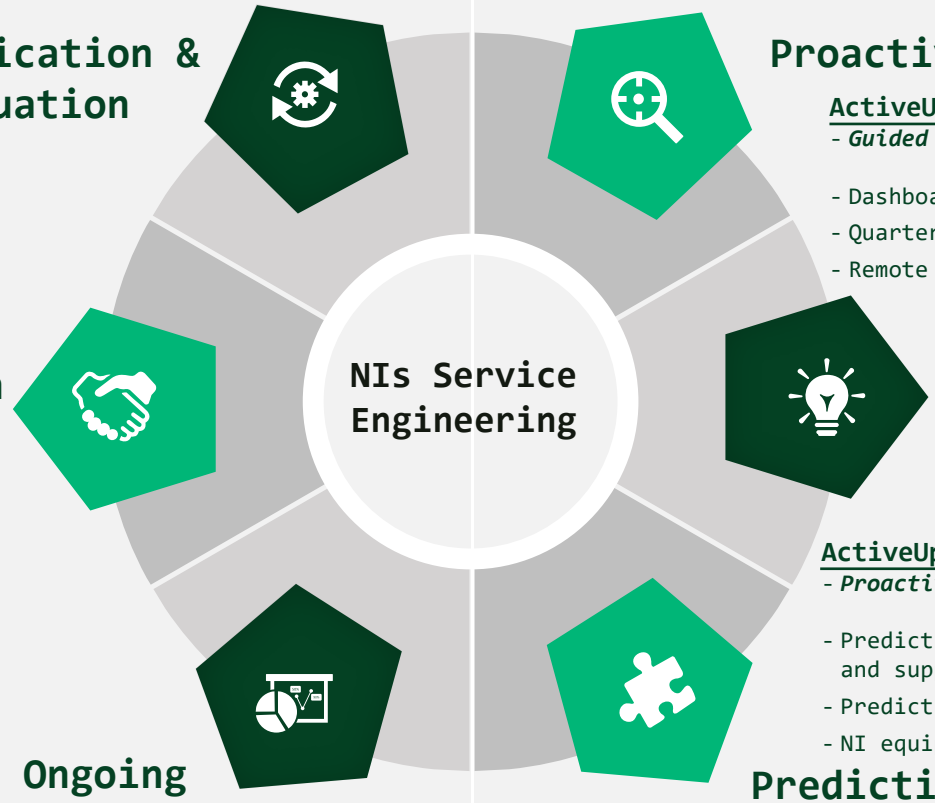


Using AR for Corrective Actions

Benefits of using AR for Maintenance

- Quick visual demonstration of the complex assembly
- Step by step visualization capability
- Ability to add appropriate information along with the animation
- Significantly to increase the first-time fix rate
- Reducing iatrogenic failure rate
- Intuitive rework instruction for complex subassemblies
- Allowing junior technicians to perform complex reworks
- Customer self-service rework instructions

From Evaluation through Ongoing Activities



On-site Visit
- Identify assets
- Review existing data sources and access
- Determine if additional sensors are needed

On-site/Virtual Visit
- Design review and identification of changes needed

On-site Visit
- Sensor installation
- Cabling and Controller setup
- Dashboard deployment
- Secure Server setup
- User permissions

Program ramp up
- Assigned Program Manager
- Assigned Tech lead
- User training

ActiveUptime *Guided Success*
- Training
- On-going product and root cause analysis support

ActiveUptime *Proactive Conditioned Monitoring*
- ***Guided Success package***

+
- Dashboard modifications and customizations
- Quarterly health checks
- Remote monitoring

ActiveUptime *Predictive Maintenance*
- ***Proactive Conditioned Monitoring package***

+
- Predictive model development, training, deployment, and support
- Predictive maintenance dashboard customizations
- NI equipment repair

Check out ActiveUptime DEMO at the Design to Test Pavilion !

Thanks!