



Next level of Digital shop floor with Industrial Edge

Who are we...?



Rasmus Loft
Technology Specialist

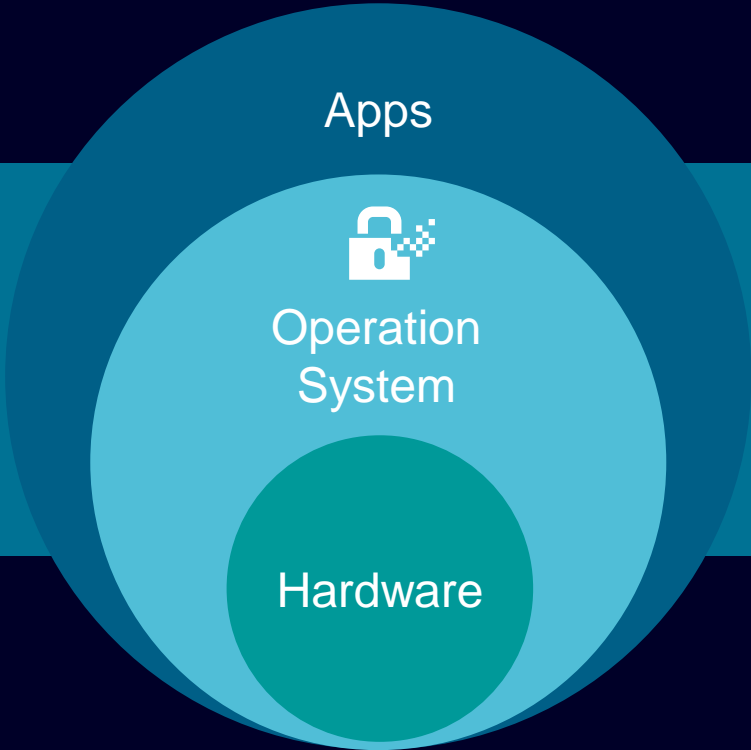
Morten Kromann
Technology Specialist

Kasper Germann Olsen
Technology Specialist

| Challenge

Keep software and devices up to date and secure

Industrial Edge let's you focus on your domain know how We take care about the rest



Focus on your domain know how



No maintenance required with Security by default

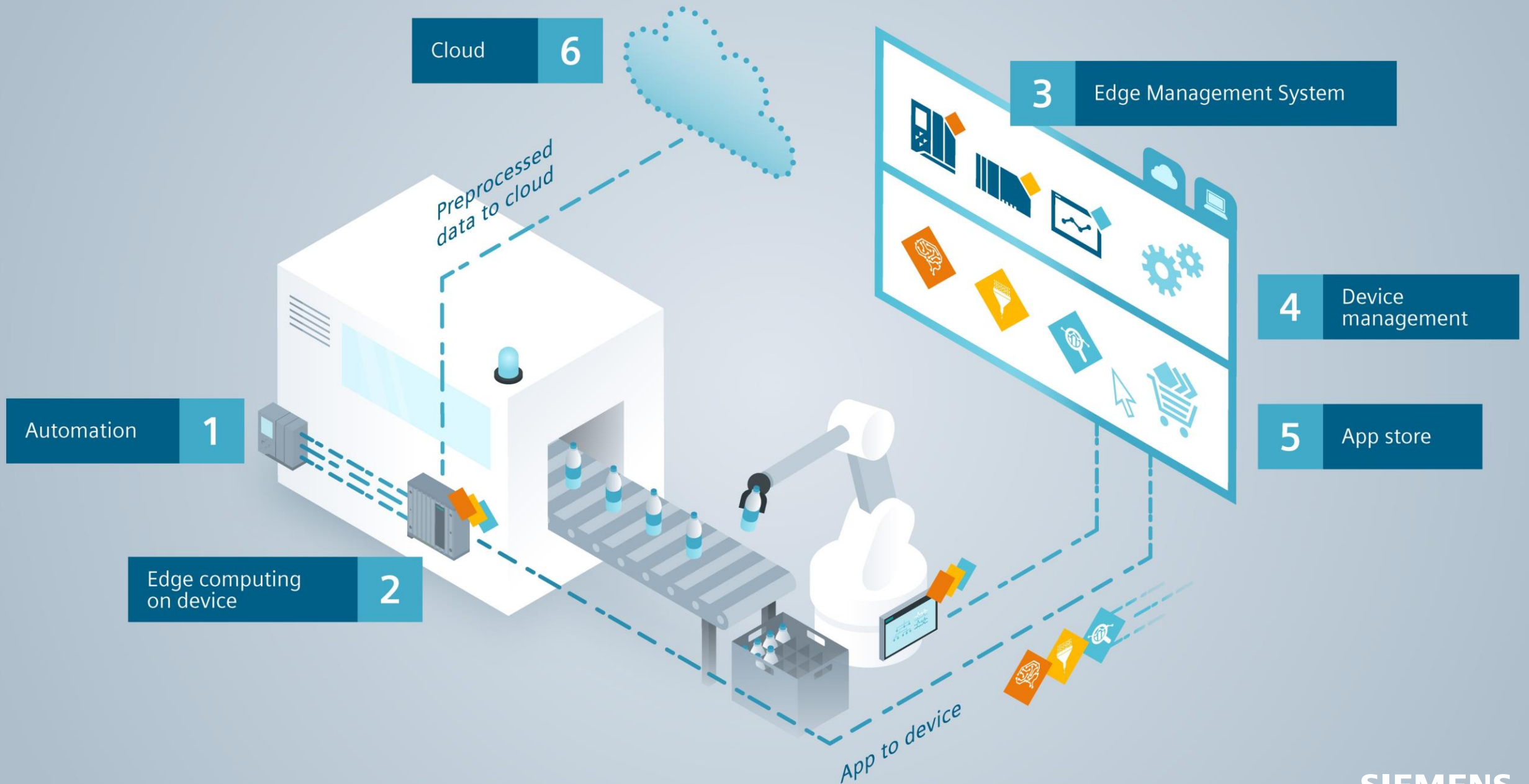


Scalable infrastructure tailored to your requirements



Industrial Edge system introduction

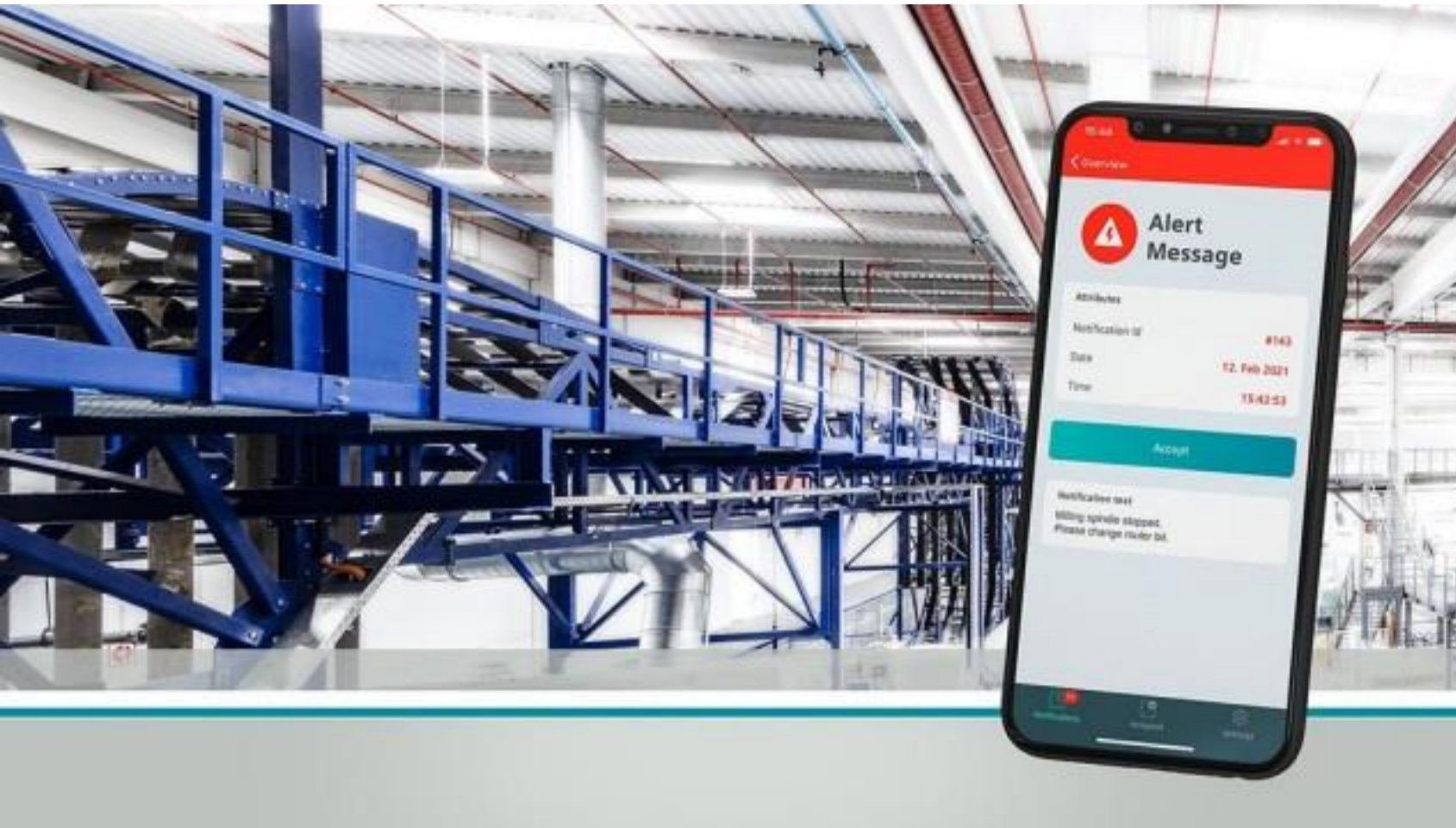
**Se film om Industrial Edge.
Du finder link på websitet, hvor du
downloadede denne præsentation**



| Industrial Edge Notifier

Industrial Edge

Use case: Notifier

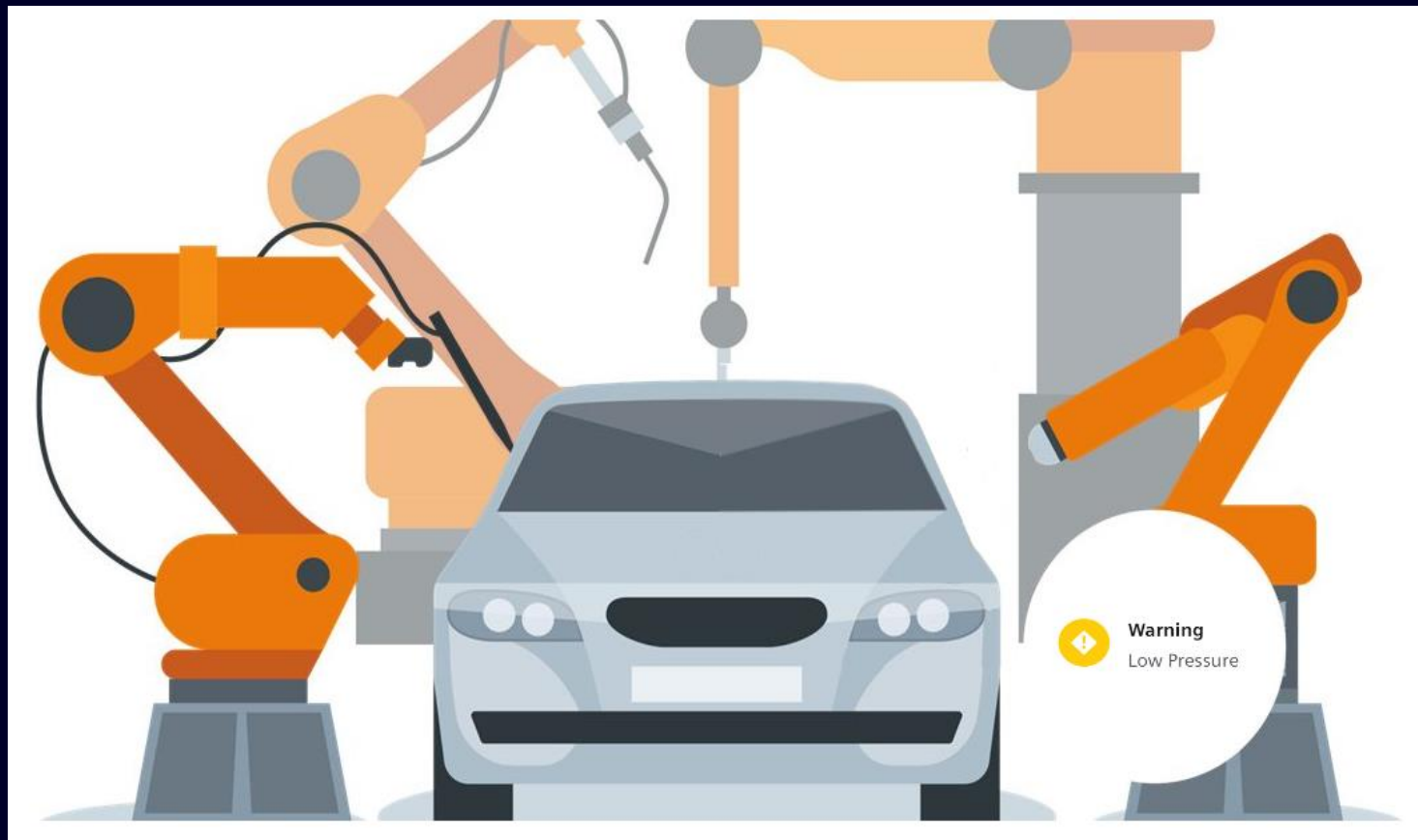
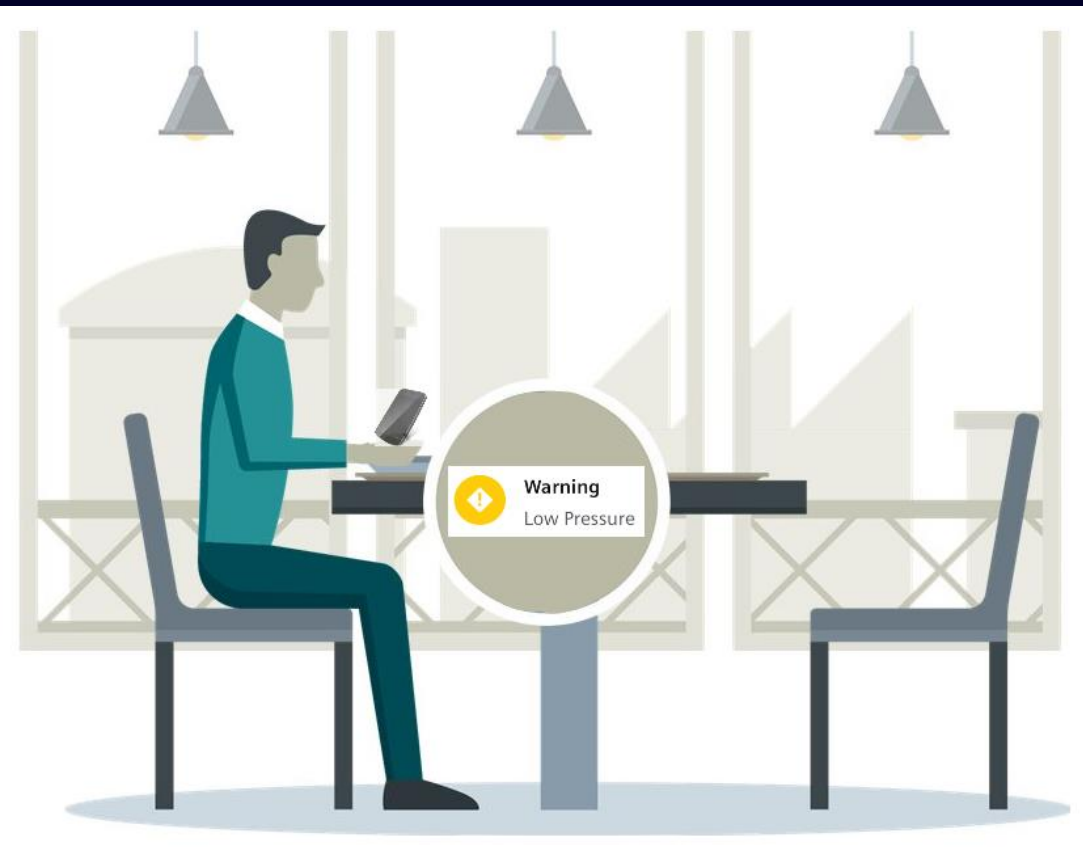


Know what is happening in the plant at all times

With Notifier, you significantly reduce your response and downtime times. You receive notifications about the plant's status and can exchange push messages with your staff.

Industrial Edge

Use case: Notifier - setup

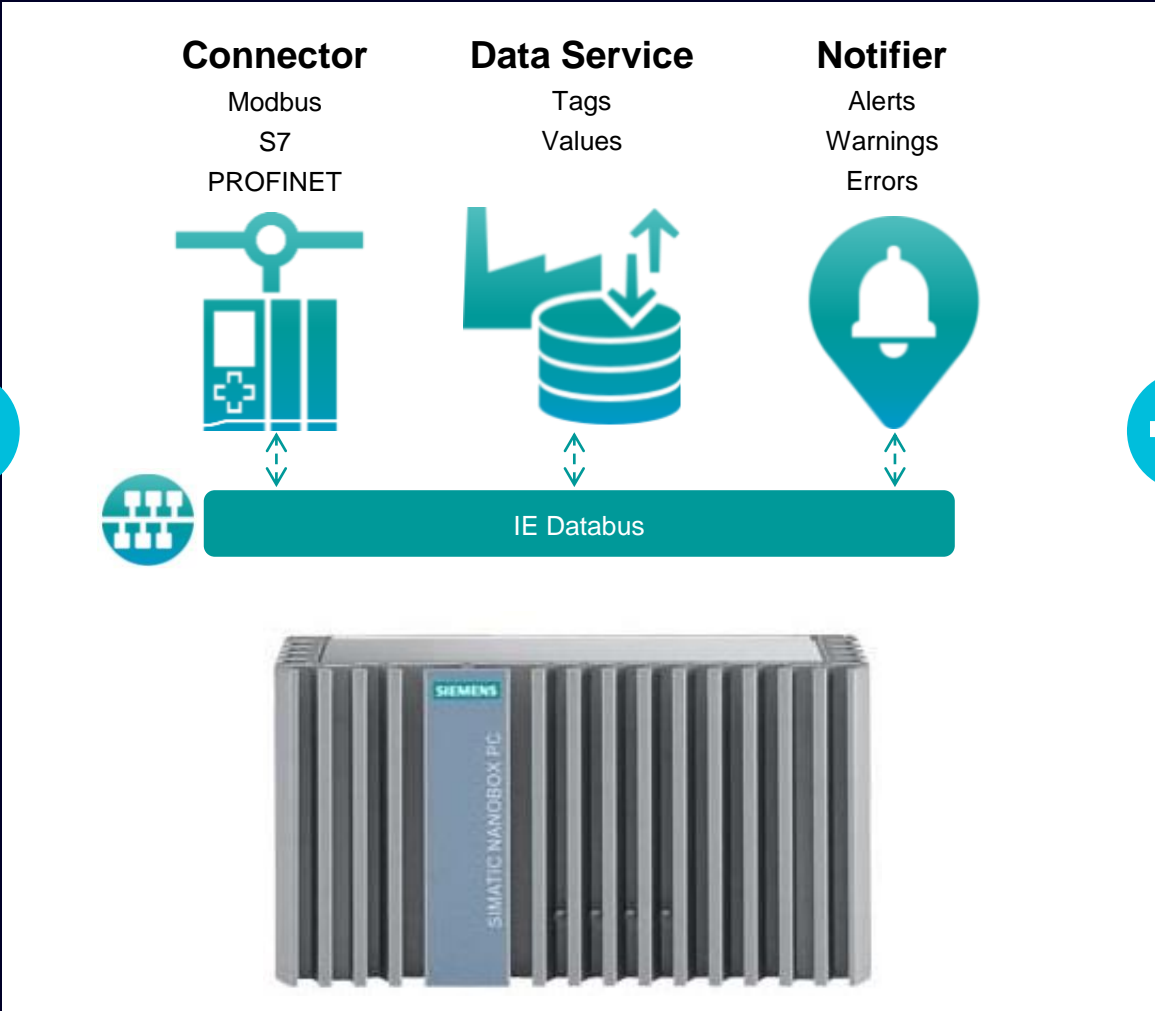


Industrial Edge

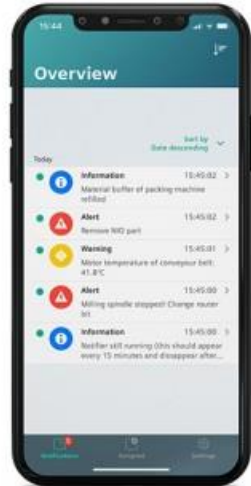
Use case: Notifier - setup



PLC



Edge Device



Mobile iPhone

Industrial Edge Management

Device Overview

The screenshot displays the Siemens Industrial Edge Management web interface. The top navigation bar includes the Siemens logo, the text "Industrial Edge", and several utility icons (flag, key, notification bell with "91", briefcase, and user profile). A left-hand navigation menu lists various management options: Home, Catalog, Edge Devices (expanded), My Edge Devices (selected), Authorized Edge Devices, Backups, My Installed Apps, Data Connections, Applications, Groups, Job Status, and Admin Management. The main content area is titled "My Edge Devices" and features a search bar, refresh, and settings icons. On the right, there are filters for "Sort" and a pagination indicator "3 of 3". Three device cards are shown, each with a server rack icon and the following details:

- Notifier Device**: Multiple NIC, Industrial Edge Dev...
- Test Device**: Multiple NIC, Industrial Edge Dev...
- Demo Device**: Multiple NIC, Industrial Edge Dev...

Industrial Edge Management

Configure Data Source

Management SIEMENS Industrial Edge 89

Data Connections

All System Apps SIMATIC S7 Connector X on rasmusdevice

Configure Data Source

S7 Connector OPC-UA Connector

Add Data Source Delete Deploy Start Project

<input type="checkbox"/>	Name	Comments	Address	Data Type	Acquisition Cycle	Acquisition Mode	Access Mode	Actions
<input type="checkbox"/>	PLC_1							✎ + 🗑
<input type="checkbox"/>	pressure	low pressure detect	%I0.5	Bool	1 second	CyclicOnChange	Read	✎

Industrial Edge Device – Data Service Adapter Configuration

The screenshot displays the Siemens Data Service web interface. At the top left is the Siemens logo, and at the top center is the text "DATA SERVICE". On the right side of the top bar are icons for help and information. Below the top bar, there is a breadcrumb navigation path: "Adapters" > "SIMATIC S7 Connector". A left-hand sidebar contains a list of adapters: "Adapters" (with a plus icon), "Ethernet IP Connector", "HmiRuntime", "Modbus TCP Connector", "Profinet IO Connector", "SIMATIC S7 Connector" (highlighted in blue), and "System Info". The main content area is titled "SIMATIC S7 Connector" with the subtitle "Settings for the adapter". It features a large configuration card with a share icon and an edit icon. The card displays the following configuration details:

- Status:** ACTIVE
- Connection:** CONNECTED
- Broker URL:** tcp://ie-databus:1883
- User name:** edge
- Password:** ----
- Metadata topic:** ie/mlj/simatic/v1/s7c1/dp

Industrial Edge Device – Data Service



Assets and Connectivity


The screenshot displays the Siemens Data Service interface. At the top left is the Siemens logo, and at the top center is the text 'DATA SERVICE'. On the right side of the top bar are two icons: a gear and an information icon. Below the top bar is a navigation bar with a 'Assets & Connectivity' tab. On the left side of the main content area is a 'Hierachy' sidebar with a tree view containing 'Hal 1', 'Linje 1', 'Linje 2', and 'Linje 3'. The 'Linje 1' item is selected and has a three-dot menu icon to its right. The main content area shows the details for 'Linje 1', including its path 'Hal 1 / Linje 1' and a note 'No limit For data storage set'. Below this are two tabs: 'Connectivity' and 'Aspects'. The 'Aspects' tab is active, showing a 'Variables (1)' section. This section has two buttons: 'Add variable' and 'Add multiple variables'. Below the buttons is a table with columns for 'Name', 'Type', 'Topic', and 'Preview data'. The table contains one row with the following data:


Name	Type	Topic	Preview data
pressure	Bool	PLC_1::pressure::5::8	


Industrial Edge Device – Notifier

Manage rules

SIEMENS NOTIFIER  

 Notifications

 Archive

 Settings







[< Settings](#)

Manage notification rules 2

Add, edit or delete notification rules.

[+ Add notification rule](#)

Filters Sort: Last modified

 RULE	Information No Warnings	ID #3 Last modified 2021 Oct 5 14:01:17 Location Hal 1/Linje 1	 
 RULE	Warning Low Pressure	ID #2 Last modified 2021 Oct 5 14:00:35 Location Hal 1/Linje 1	 


| I'll make it myself

Notifier example

I'll make it myself




PLC



Edge Hardware




Platform



MQTT OPC-UA
S7 Connectors



Bus and Data
Service



Notifier app



Smart Phone/watch



Mobile Notifier app



Management



Commissioning



Certificates and
Security



User administration



App deployment

I'll make it myself – Siemens Industrial Edge



PLC



Smart Phone/watch



Management

Edge Hardware

Platform

MQTT OPC-UA
S7 Connectors

Bus and Data
Service

Notifier app

Custom app

Updates

Mobile Notifier app



Commissioning

Certificates and
Security

User administration

App deployment

I'll make it myself – Siemens Industrial Edge



PLC



Smart Phone/watch



Management

Edge Hardware

Platform

MQTT OPC-UA
S7 Connectors

Bus and Data
Service

Notifier app

Custom Flow
Creator app

Mobile Notifier app



Commissioning

Certificates and
Security

User administration

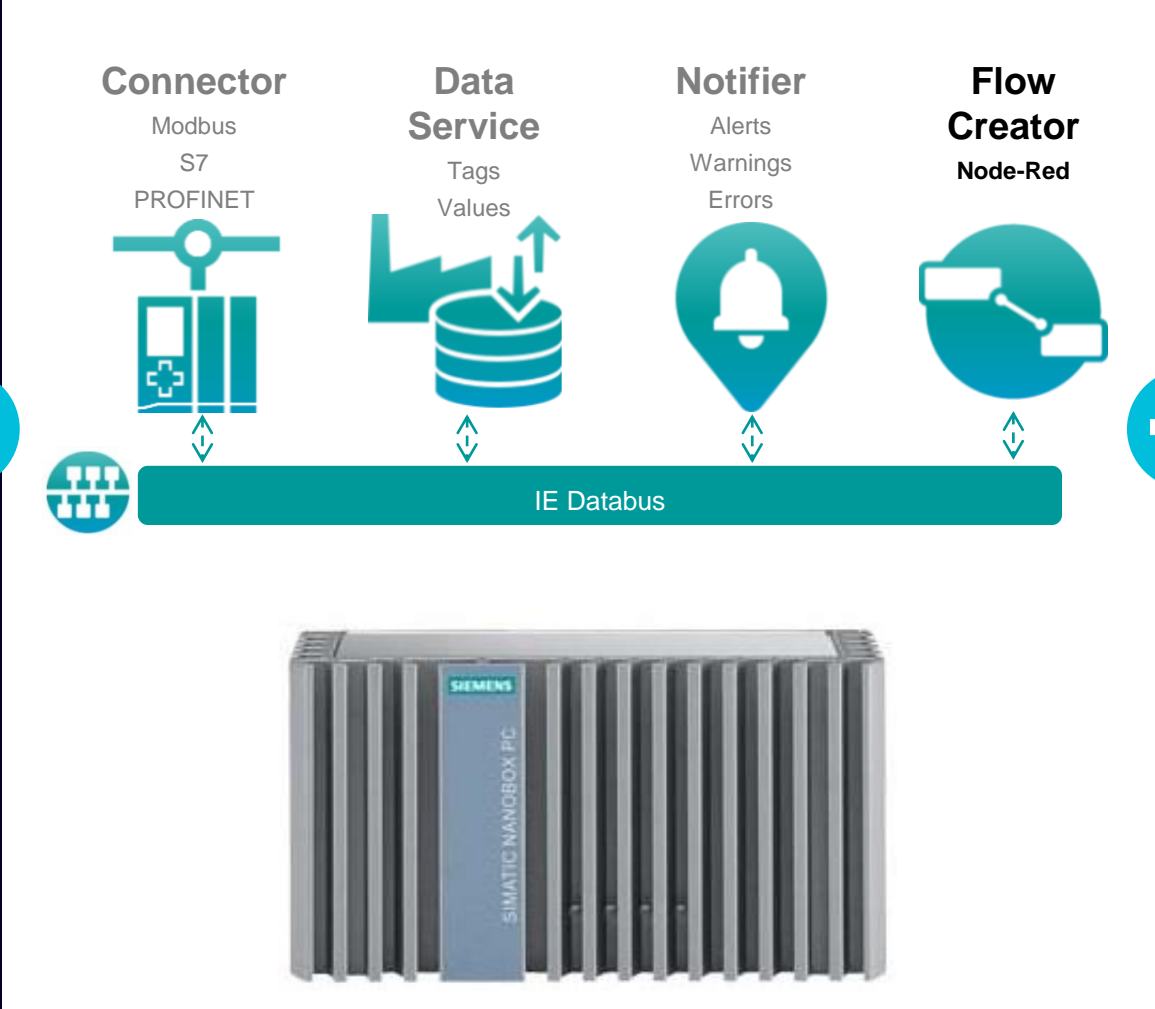
App deployment

| Flow Creator and Databus

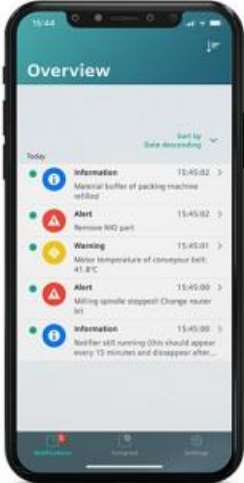
Industrial Edge Flow Creator



PLC



Edge Device



Mobile iPhone

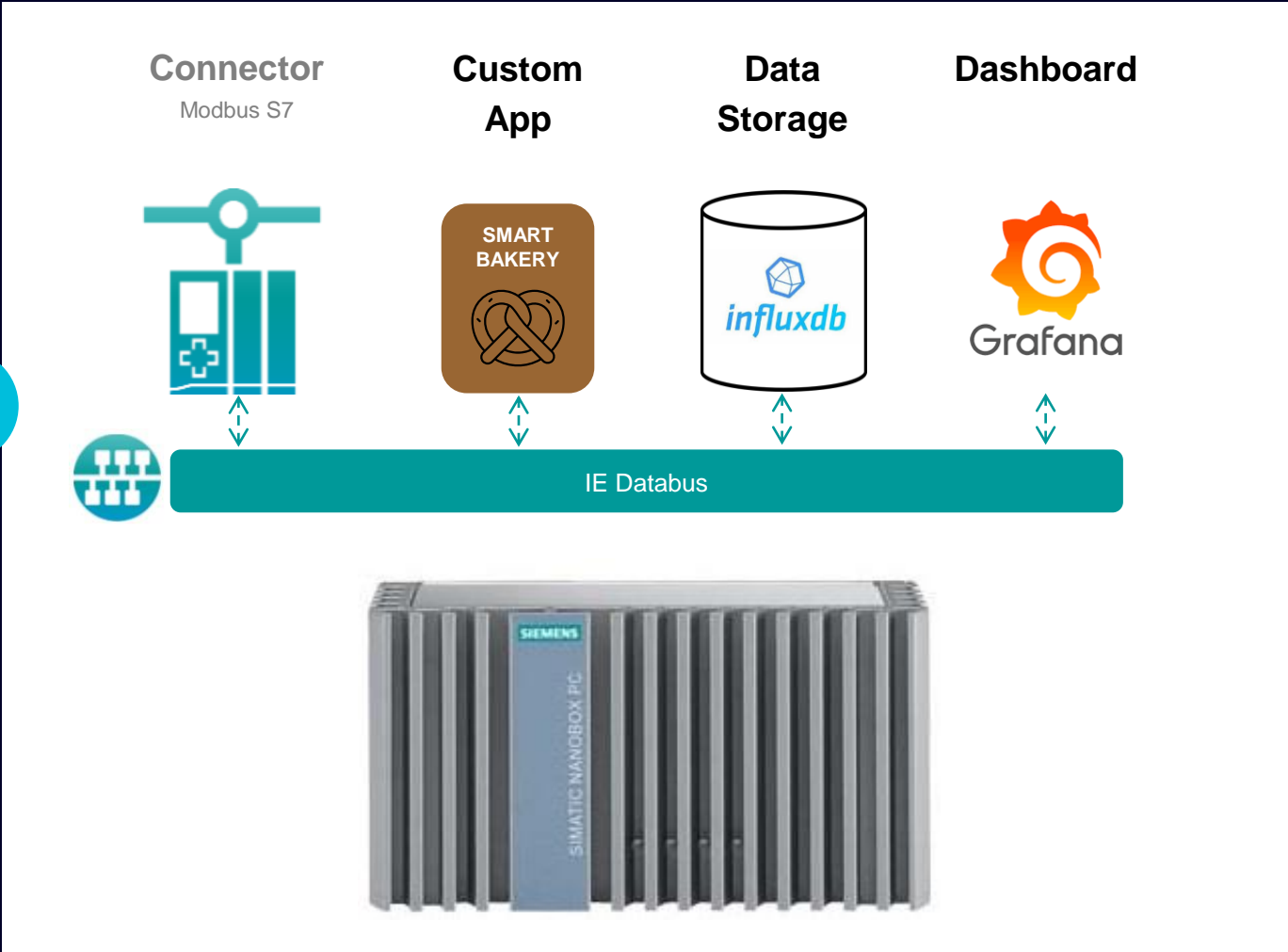
Industrial Edge Device Flow Creator

The screenshot displays the Industrial Edge Flow Creator 1.1.2 software interface. The main workspace shows a flow diagram for 'Flow 1' on a grid background. The flow starts with an 'MQTT IE-Databus' node (purple) which is connected. From this node, the flow branches into two paths: one through a 'Message Handler' node (orange) to a 'Send Mail Notification' node (green), and another through a 'Tags Handler' node (orange) to a 'chart' node (teal). On the left, a 'common' node palette includes 'inject', 'debug', 'complete', 'catch', 'status', 'link in', 'link out', and 'comment'. On the right, an 'info' panel shows a tree view with 'Flows' containing 'Flow 1', 'Subflows', and 'Global Configuration Nodes'. A 'Deploy' button is visible in the top right corner.

Industrial Edge Custom Apps



PLC



Edge Device

Industrial Edge App Development



Docker Containers

Consistent and Isolated Environment
Cost-effectiveness with Fast Deployment
Mobility – Ability to Run Anywhere
Repeatability and Automation
Test, Roll Back and Deploy
Flexibility
Collaboration, Modularity and Scaling



```
0 references
public class MqttCommClient
16
17
8 references
public MqttClient client;
2 references
private string clientId;
6 references
private string mqtt_broker;
6 references
private string mqtt_user;
6 references
private string mqtt_pw;
2 references
private string config_file = "///cfg-data/mqtt-config.json";
1 reference
public ManualResetEvent receiveDone = new ManualResetEvent(false);
1 reference
private JsonParams ReadJsonParams(string path)
24
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{
    JsonParams parameters = new JsonParams();

    try
    {
        Console.WriteLine("Start reading config params from " + path + ":");
        string text = File.ReadAllText(path);

        parameters = JsonConvert.DeserializeObject<JsonParams>(text);

        Console.WriteLine("user= " + parameters.User);
        Console.WriteLine("password= " + parameters.Password);
        Console.WriteLine("broker ip= " + parameters.BrokerIP);
    }
    catch (Exception ex)
    {
        Console.WriteLine("Error while reading config file: " + ex);
    }

    return parameters;
}
```

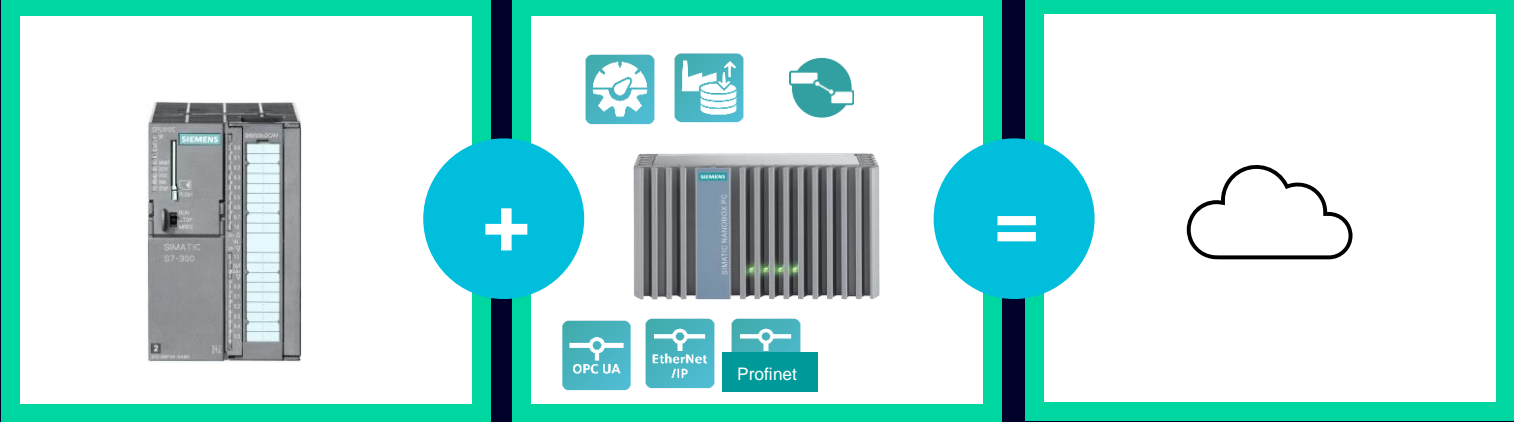


Digitalization with Industrial Edge

**“ The foundation
of digitalization**

“
Digitalization = Security • Standardization

Edge Standards



Older HW

Industrial Edge

IoT Ready solution

Transform

legacy automation into an IoT-Ready solution by just connecting them to Industrial Edge



Industrial Edge enabling OT Security

Edge Security

How do we get started with Industrial Security?



Inventory

See devices on network, get device and firmware information. Export data.



Industrial Vulnerability Manager

Check for vulnerabilities in firmware, manage and assess risks.



SIMATIC Automation Tool

Firmware update devices remotely.

Edge Security

How do we get started with Industrial Security?

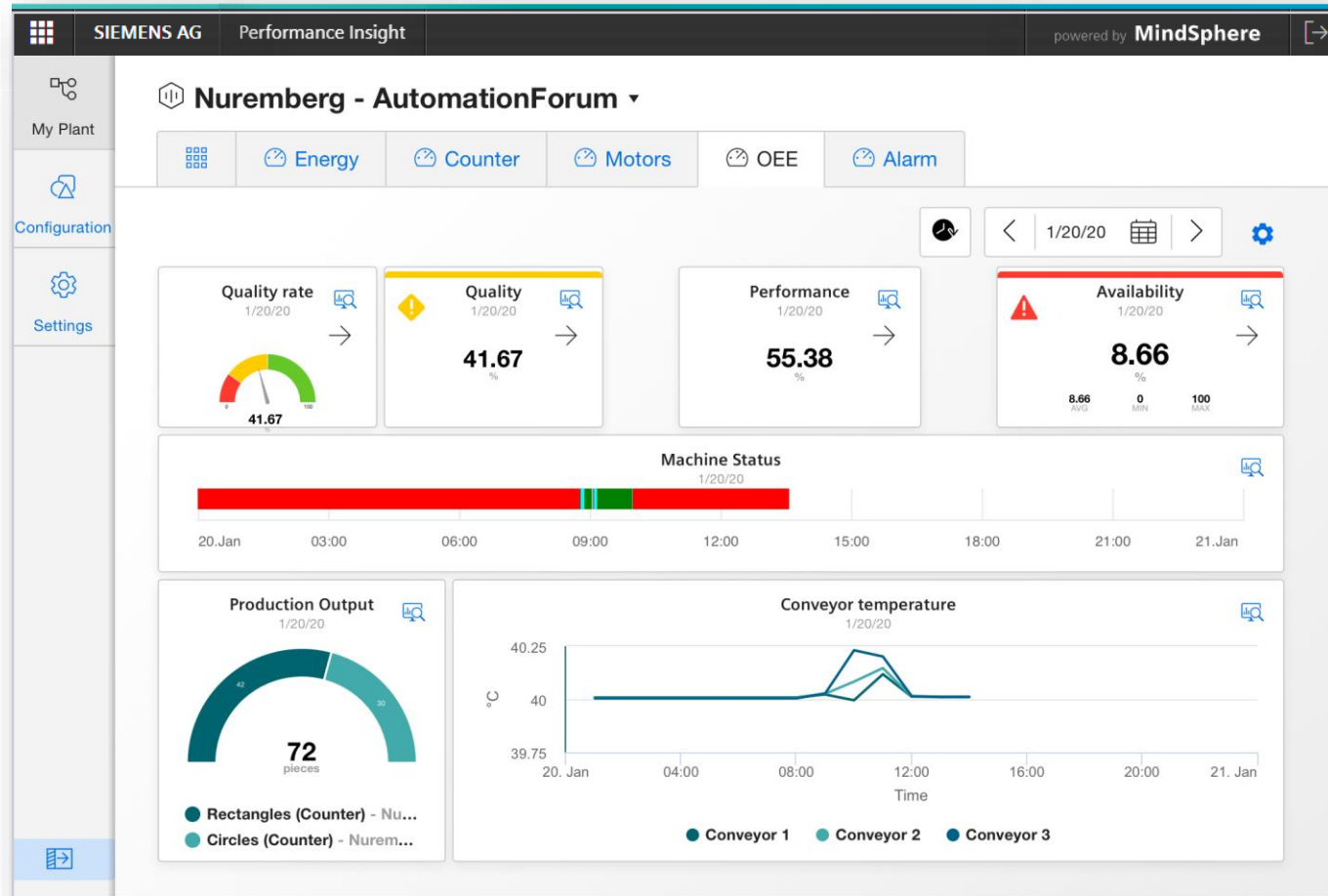
The screenshot displays the Siemens Industrial Edge Management web interface. The browser address bar shows the URL: `iemsindustrial-portal.edge.siemens.com/pp/app/edgedevices/myedgedevices`. The page title is "Management". The left sidebar contains navigation options: Home, Catalog, Edge Devices (expanded), My Edge Devices (selected), Authorized Edge Devices, Backups, My Installed Apps, Data Connections, Applications, Groups, and Job Status. The main content area is titled "My Edge Devices" and features a search bar labeled "Search Edge Devices" and a "+ New Edge Device" button. A single device card is visible, showing a server icon and the text "digidemo Multiple NIC". The bottom right corner of the page features the SIEMENS logo.

What makes a
great platform
even greater?

Apps.



Improve process transparency for machines for Service/Added value with Performance Insight Edge App



Data visualization

Individually customize dashboards for condition monitoring within minutes.

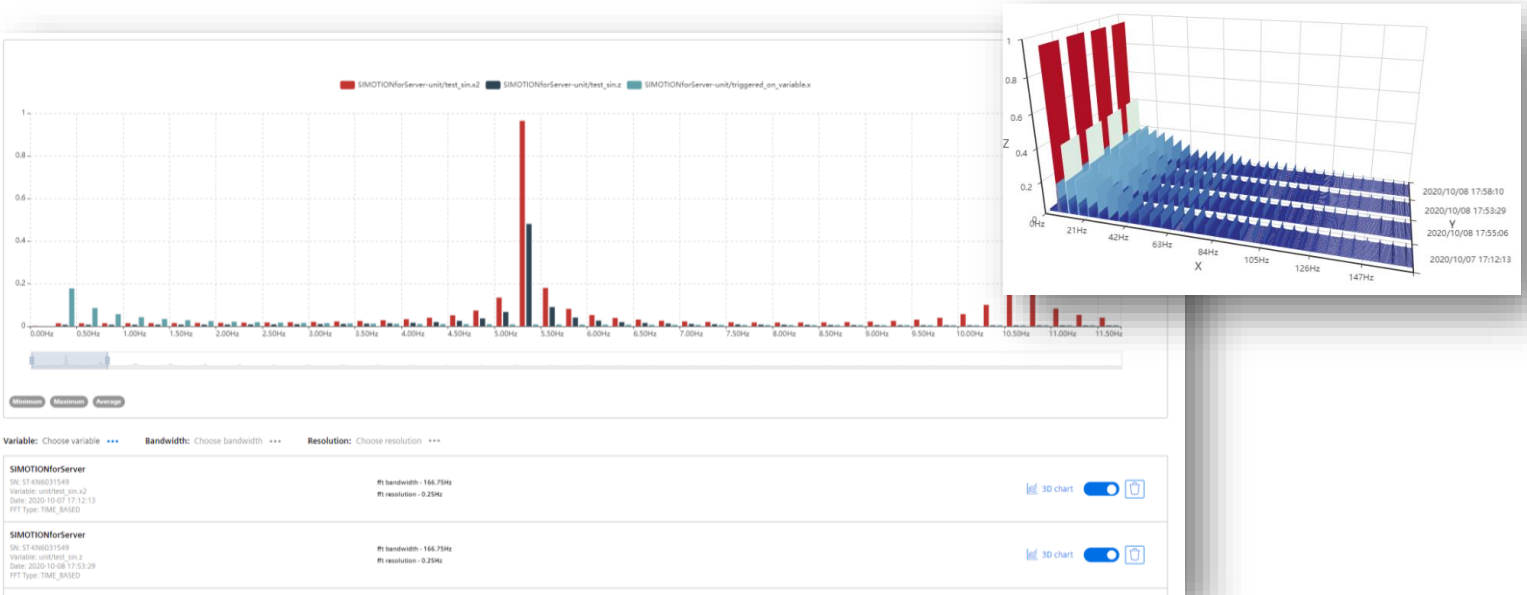
Typical Usecase

Correlate visualized machine data such as drive torque to predict wear of mechanical components.

Why Use the App

- To improve service accuracy
- To offer application and data access as added value to your customer

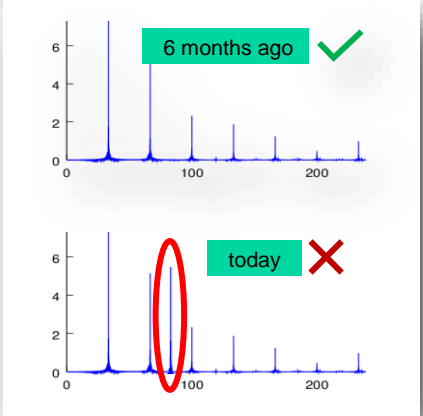
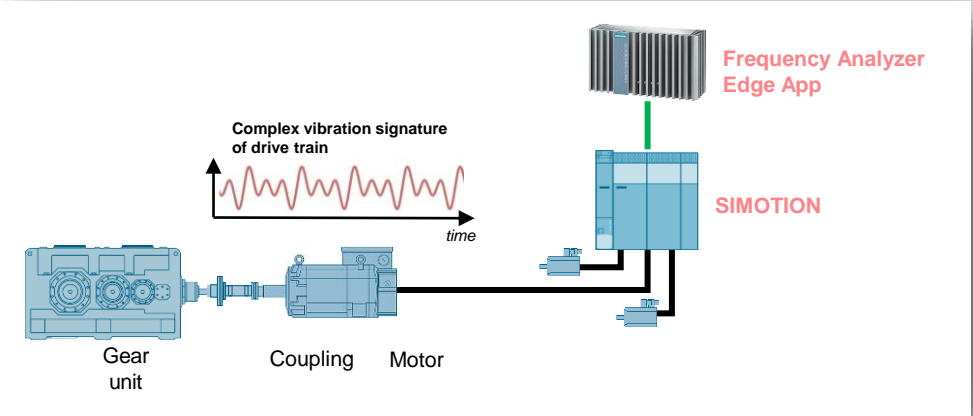
Analyze frequency spectrum of drives to detect anomalies in the process with Frequency Analyzer Edge App



Condition Monitoring (1/3)

Drive System frequency/vibration analysis for predictive maintenance of mechanical components.

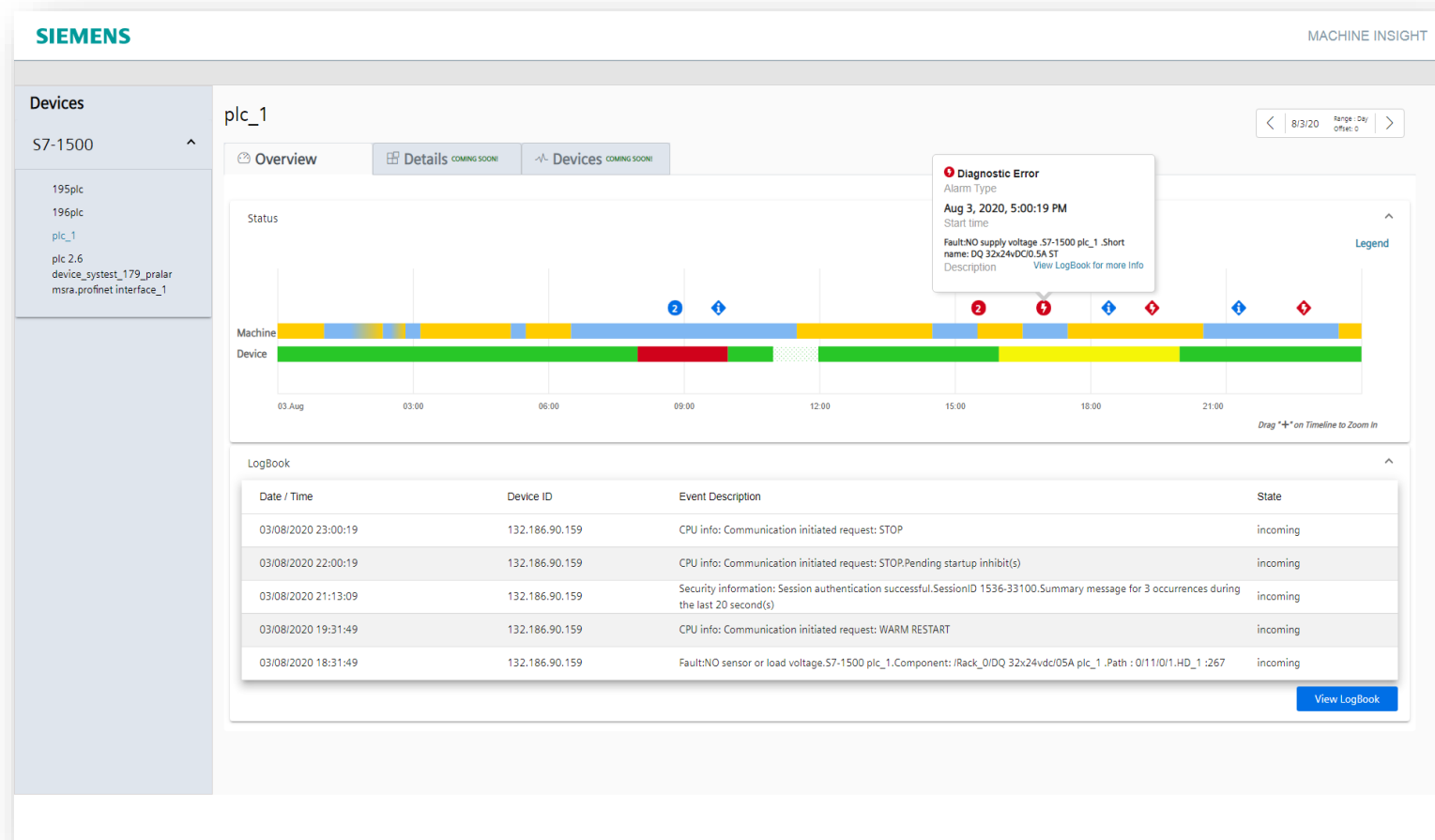
Data acquisition with **SIMOTION Trace Connector**, processing (Fourier Analysis) and Visualization at the machine with **Frequency Analyzer app** on Industrial Edge.



Why Use the App

- Optimize your service efficiency by predictive maintenance based on an early detection of vibration deviations
- To offer application and data access to your customer

Condition monitoring for machines (Focus on system diagnostics information) with Machine Insight Edge App



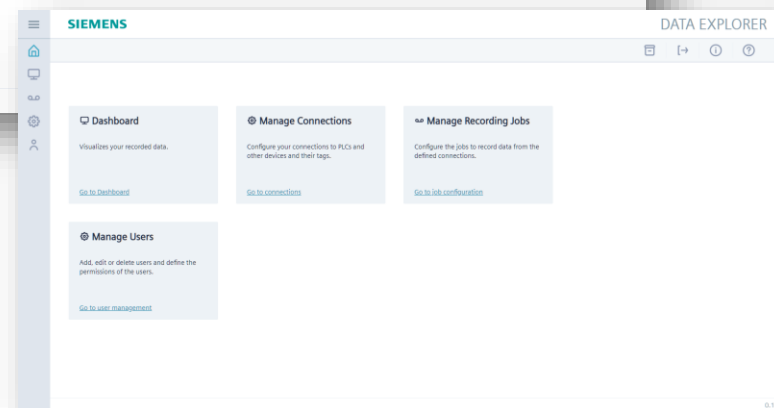
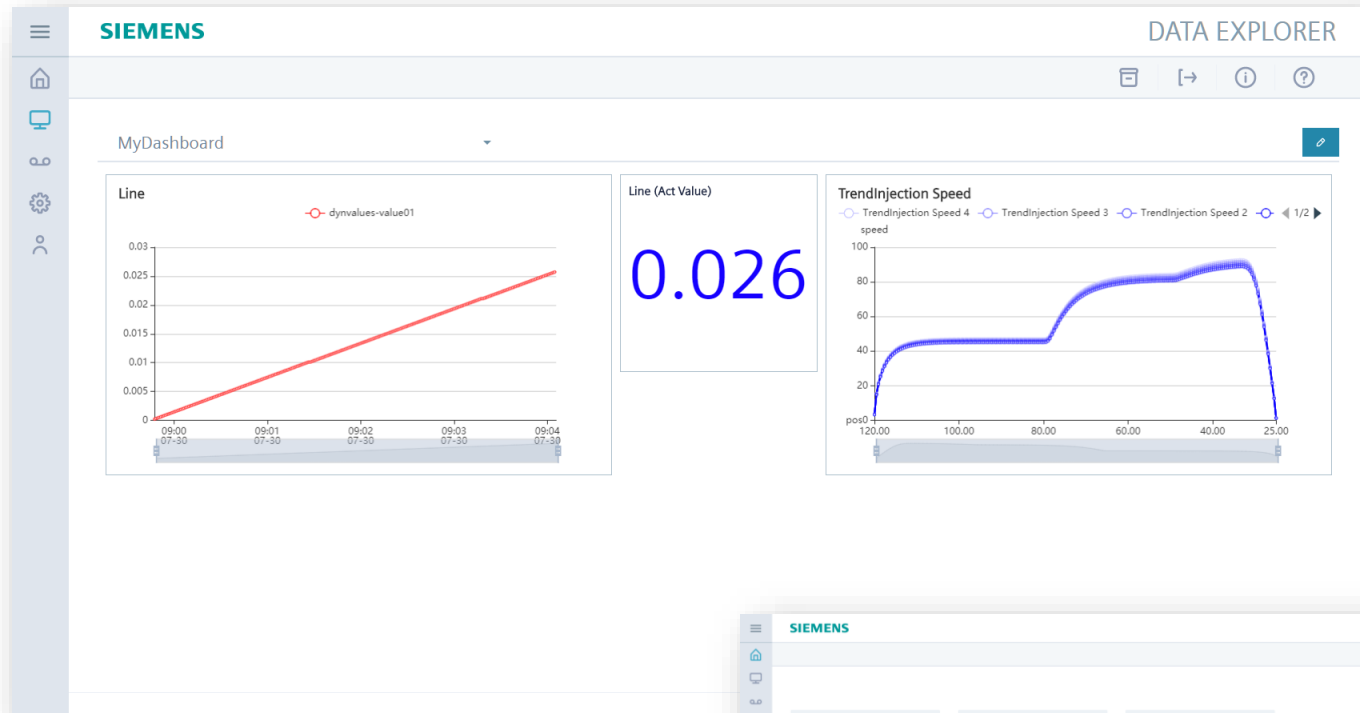
Condition Monitoring (2/3)

Machine Insight Edge App delivers historical diagnosis information of your machine to identify optimization potential to ensure machine and device availability.

Why Use the App

- To optimize your service efficiency by scheduling predictive maintenance
- To offer application and data access as added value to your customer

Process anomaly monitoring for predictive maintenance with Data Explorer Edge App



Condition Monitoring (3/3)

Data Explorer Edge App let's you record recurring machine actions (cycles) to detect anomalies of any kind by capturing live-data and comparing it to the blueprint.

Why Use the App

- To optimize your service efficiency by scheduling predictive maintenance based on strong anomalies
- To offer application and data access as added value to your customer

3rd Party App support Braincube



Braincube Factory Suite: Standard

Provided by BRAINCUBE



Braincube Factory Suite: Standard

Direct competitor to Siemens, selling Platform Supervision, Alerts, Machine Status, Connectors

Why Use the App

- The market will decide the best solutions
- Open Siemens ecosystem allows for 3rd party apps to not only integrate in to the edge system, but to be available directly from the Edge Marketplace.

SIEMENS

| AI on Edge

**Industry faces fast-changing market demands –
creating value for our customers**

Flexibility

Quality

Speed

Productivity

Sustainability

Business models

AI on Edge Pretrained apps



COMPANY CORE
TECHNOLOGY
**Artificial
Intelligence**

COMPANY CORE
TECHNOLOGY
**Connectivity
& Edge**

Use Case: Pretrained Artificial intelligence apps for food production.

Customer challenge

- Hair, packaging material or tool parts can occasionally get deposited on products as a part of production.

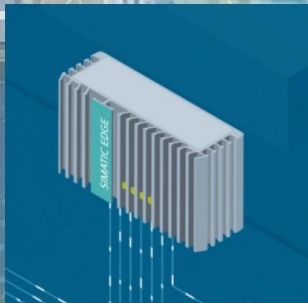
Solution

- Siemens Industrial Edge
 - Computer Vision system
 - Siemens Connectivity
 - Pretrained Siemens Artificial Intelligence App

Customer benefit

- Foreign body detection
- Anomaly detection
- Piece counting, size estimation

AI on Edge Custom solutions



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**Artificial
Intelligence**

COMPANY CORE
TECHNOLOGY
**Connectivity
& Edge**

Use Case: Closed Loop Analytics Quality Prediction with Industrial Edge and AI

Customer challenge

- Expanded production volume revealed a severe bottleneck, an expensive x-ray machine used in Quality Assurance.

Solution

- Siemens Industrial Edge
 - Edge ecosystem
 - Siemens Connectivity
 - Artificial Intelligence

Customer benefit

- 30% increase in production
- Eliminated need to expensive and slow equipment upgrades.
- More insights into the sources of production failures

**Se film om X Ray Electronics Infographic.
Du finder link på websitet, hvor du
downloadede denne præsentation**

SIMATIC S7-1500 TM NPU



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**Artificial
Intelligence**

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TECHNOLOGY
**S7-1500
PLC**

AI in production

Challenges

- Smart object recognition of any workpieces
- Visual quality check of products
- Quality checking using sensor and production data

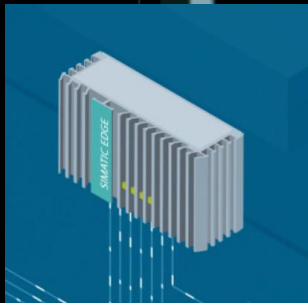
Solution

- Siemens SIMATIC PLC
 - S7-1500
 - S7-1500 TM NPU
 - Artificial Intelligence

Benefit

- Real time industrial AI
- Speed up production or QA
- Transform visual data into useable information.

AI on Edge ML DevOps



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Intelligence**

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TECHNOLOGY
**Connectivity
& Edge**

Managing the AI model lifecycle.

Challenges

- AI and ML models are static, but environments are not. Changes in lighting, materials, products or processes can cause the pre trained models to no longer work as intended.

Solution

- Siemens Industrial Edge
 - Edge ecosystem
 - Siemens Connectivity
 - Artificial Intelligence

Benefit


- Edge system collects data for retaining
- Edge system runs a control test on the AI system
- Edge system notices a difference in the distribution of the input data or the resulting output data and triggers a retraining of the net.

Webinar

Edge i industrien

Ny teknologi er på vej til vores maskiner.
Tag et smugkig på Siemens Industrial Edge.

www.siemens.dk/edge-til-industrien



**Nyt webinar
om Industrial
Edge kommer
til december**

SIEMENS