



OpreX™ Asset Management and Integrity

# An Integrated IIoT Program

JOIN



# The JOIN Mission

## Consolidating Expectations

In order to keep a business operating on an even keel is to ensure that unplanned plant shutdowns never have a chance to occur. To accomplish this, first have a full grasp of what is happening in every part of a plant's operations and be prepared to step in and respond directly at the first sign of an impending failure.

IIoT has the potential to affect dramatic changes in how maintenance is carried out, allowing technicians to diagnose a device from any location and access the needed information to troubleshoot and solve an issue. Operators can predict of assets failure and take appropriate action in order to make sure the assets will not fail within the next couple of months. Look no further than Yokogawa for IIoT solutions that will enhance both availability and reliability. Discover JOIN – an all-new integrated IIoT ecosystem, offering you a complete value chain for all Industry 4.0 issues.

### **1. THE JOIN MISSION**

Consolidating expectations

### **2. CONNECT – PREDICT- ACCELERATE**

A complete IIoT program  
of solutions & services

### **3. ADDED VALUE**

Applications

### **4. JOIN**

How to start



# Platform Architecture

IIoT: combining the best of OT & IT



# Connect – Predict – Accelerate

Achieving higher technical reliability & sustainable efficiency

## A complete IIoT program of solutions and services

### Achieving higher technical reliability & sustainable efficiency

IIoT consists of using Internet of Things (IoT) technologies to enhance industrial processes. It incorporates machine learning and big data technologies to harness sensor data, machine-to-machine communications, and automation technologies.

### The program's promise

JOIN is an open, collaborative IIoT program that consists of a complete value chain from consultancy, data collection, connectivity, cloud, predictions and dashboards. What our successful use cases have in common? Predictive maintenance and preventing unplanned shutdowns.



## Sushi Sensor Line Up

### Wireless Sensors for vibration, pressure and temperature monitoring

Sushi Sensor is an OpreX™ brand wireless solution for the Industrial IoT. The wireless vibration sensor measures vibration and surface temperature to monitor machine or facility conditions for industrial applications. The wireless pressure sensor and temperature sensor facilitate the online collection of pressure and temperature data from equipment such as tanks and furnaces. The sensor lineup allows for equipment condition monitoring based on a wider variety of plant data. This enables the reduction of equipment inspection man-hours and the detection of signs of equipment abnormalities at an early stage.



# 73% of executives are either researching or currently deploying IoT initiatives.

Source: (2017). Survey of industry executives commissioned by Verizon2. Retrieved from State of the Market: Internet of Things 2017.

## Connect

Attach smart sensors to assets. Yokogawa's Sushi Sensor collects data, stores it wirelessly and uses analytics and machine learning to improve your business processes. By learning your organization and needs, we then consolidate, enrich & standardize all relevant data from a wide range of sources, making it accessible and cost effective.



## Predict

JOIN indicates how errors can be predicted in the future and uses collected data to predict when a new issue will occur. We combine domain knowledge & data science at scale. In-house developed algorithms translate data into predictive information. The solution contains techniques from simple rulings to advanced machine learning to monitor or predict, from anomaly detection to prescriptive.

## Accelerate

All data is stored at a central location. We empower your business with proactive visual dashboard and system notifications. We guide you in the transition to embed controlled monitoring and a new predictive maintenance strategy. Both the connectivity and the IIoT platform are scalable. You can now accelerate and proactively improve your business. The dashboard gives alarms, notifications by email or SMS.



# Connect

## It's all about strategy creation

In order to achieve the best results, based on your expectations, JOIN offers you an open, scalable platform that makes of different wireless technologies. Sensors are attached to physical assets by using the IIoT technology. They gather data, store it wirelessly, and use analytics and machine learning to realize predictive maintenance.

The IIoT does not only connect devices and systems, it also connects people. When working from a distance, the IIoT allows digital communication to optimize processes that makes life easier for people. By connecting streams of machine data to powerful analytics and humans, we are closer than ever before.



# 847

IoT devices are estimated to generate zettabytes of data per year by 2021.

Source: (Nov, 2018). 'Cisco Global Cloud Index'. Retrieved from Cisco.

### PEOPLE

Create urgency awareness in your business and develop strategy creation! Together we create roadmap, strategy, change management and teambuilding.

### PROCESS

Adapting change in existing processes and creating awareness among the team involved. We connect the various data sources to consolidate for a single source of truth.

### TECHNOLOGY

Using the latest technology for IIoT, analytics and cloud functionality. Easy access and standardised templates. Cloud platform for secure and easy deployment.



# Predict

## Forecast failures for industrial assets accurately

Predictive maintenance for industry 4.0 is a method of preventing asset failure by analyzing production data to identify patterns and predict issues before they happen. Carrying out scheduled maintenance and regularly repaired machine parts to prevent downtime will be the past. With JOIN, you can harness machine data and predict asset failures accurately by automating machine learning. Analyze your assets and identify unknown errors.

### **RULE ENGINE**

In many cases rulings or SPC are enough to monitor multiple outputs to capture shared dynamics across components. Enhanced by capturing existing business logic within the automated rule engine.

### **ANOMILY DETECTION**

Enhance strong monitoring engine by applying multi variable anomaly detection. Navigating multiple data streams to extract features and model behaviour. Train highly performant normality models through In-house developed algorithms.

### **PRESCRPTIVE ANALYTICS**

Adding intelligence for recognition of failure mechanism and unlabelled unhealthy events. We develop & apply machine learning to predict the probability of failure and/or the remaining useful life (RUL).



# Accelerate

## Improve your bottom line & transform your business

By using IIoT for collecting and analyzing data to deliver useful insights, the gathered information helps you make optimal business decisions in a smarter and cost-efficient way, and as a result exceeding your plant production goals, lowering major incidents drastically while meeting strict regulations.

### INTEGRATE

Proof of concept to create urgency & awareness in your business and develop strategy creation.

### SCALE UP

Creating roadmap, insights and teambuilding, offering a scalable solution including IIoT connectivity, sensors, algorithms, and dashboards.

### ADD VALUE

Monitoring & service 24/7 and redefining maintenance strategy. Accessible visual dashboarding & user friendly system notifications.





## Added value JOIN

- Improve the performance of factories with the help of the latest technologies
- Create support by managing behavioral change and team building
- Monitoring and 24/7 service
- Redefining the maintenance strategy
- Accessible dashboard and user-friendly system alerts

### Improve Plant Performance

The collected data is used to improve automated realtime control and help plant engineers and operators make better decisions regarding operation and maintenance

### Manage Behavioral Change

By applying connected devices and sensors, JOIN supports you in early identification of behavioral change

### Redefine Maintenance Strategy

Predicting various equipment failures and plant shutdowns, enabling you perform maintenance before an abnormality occurs

## IIoT, it's more than just a buzzword

The IIoT is here to stay and offers countless opportunities for organizations to gain new insights into operational and energy efficiency. Its disruptive potential is huge, as industry-leading organizations leverage intelligence to wring inefficiencies out of business operations, all while securing great competitive advantages.





# Ready to improve your plant performance?

Yokogawa offers a total solution within the field of Asset Performance Management 4.0. JOIN is an end-to-end concept in which consultancy, knowledge and the latest technologies come together, which provide an up-to-date insight into (work) processes and the state of assets. JOIN is an essential part of a 'smart factory', supporting plant personnel's safety, technical reliability, performance, quality and durability.

Discover JOIN for diverse applications. Besides safety, process optimisation and sustainability, the concept is applies to various asset types:

- Rotating Equipment
- Static Equipment
- Valves and Fittings
- Facilities and Utilities





# ORDER YOUR JOIN STARTERS KIT NOW

Experience the possibilities of JOIN for your assets in real-time and request your starters kit. Now available in three versions:

- Starters Kit for Heat Exchangers
- Starters Kit for Rotating Equipment
- Starters Kit for Position Hand Valves

More info? Visit [yokogawa.com/nl/join](http://yokogawa.com/nl/join)

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