

Free Webinar

Remotely Manage Your Machines with IoT Edge Technologies



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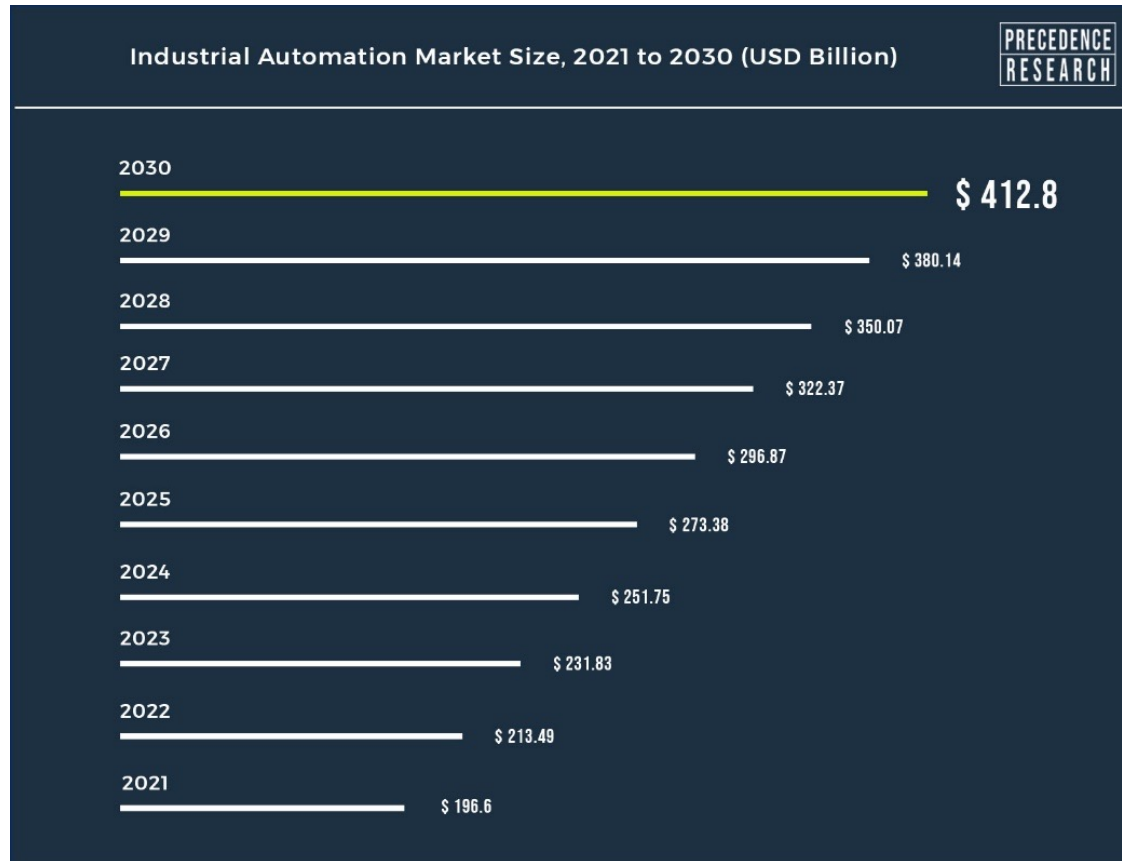
Demo: Configure Data Acquisition in Minutes

Who Are We?

Q&A

Remote Management with IoT Technologies

Industrial Automation Market



September 22, 2022 | Source: Precedence Research

- Industrial automation is the use of **control systems** and **information technologies** for handling different processes and machineries in an industry to replace a human being.
- Global industrial automation market size is predicted to hit around USD **231.8 billion** in 2023 and USD **412.8 billion** by 2030
- The compound annual growth rate (CAGR) is around **8.59%**
- Major factor that drives the market growth is **real-time data analysis** (monitoring) and increased **maintenance** of the developed technologies.

Remote Management

Monitoring

What is the status of the equipment
What would be the trend for the equipment

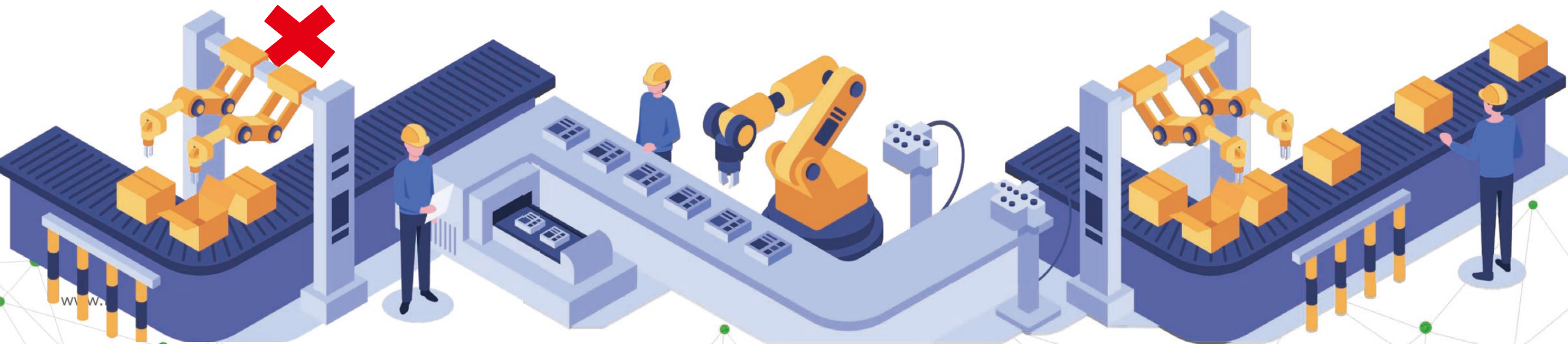


Control

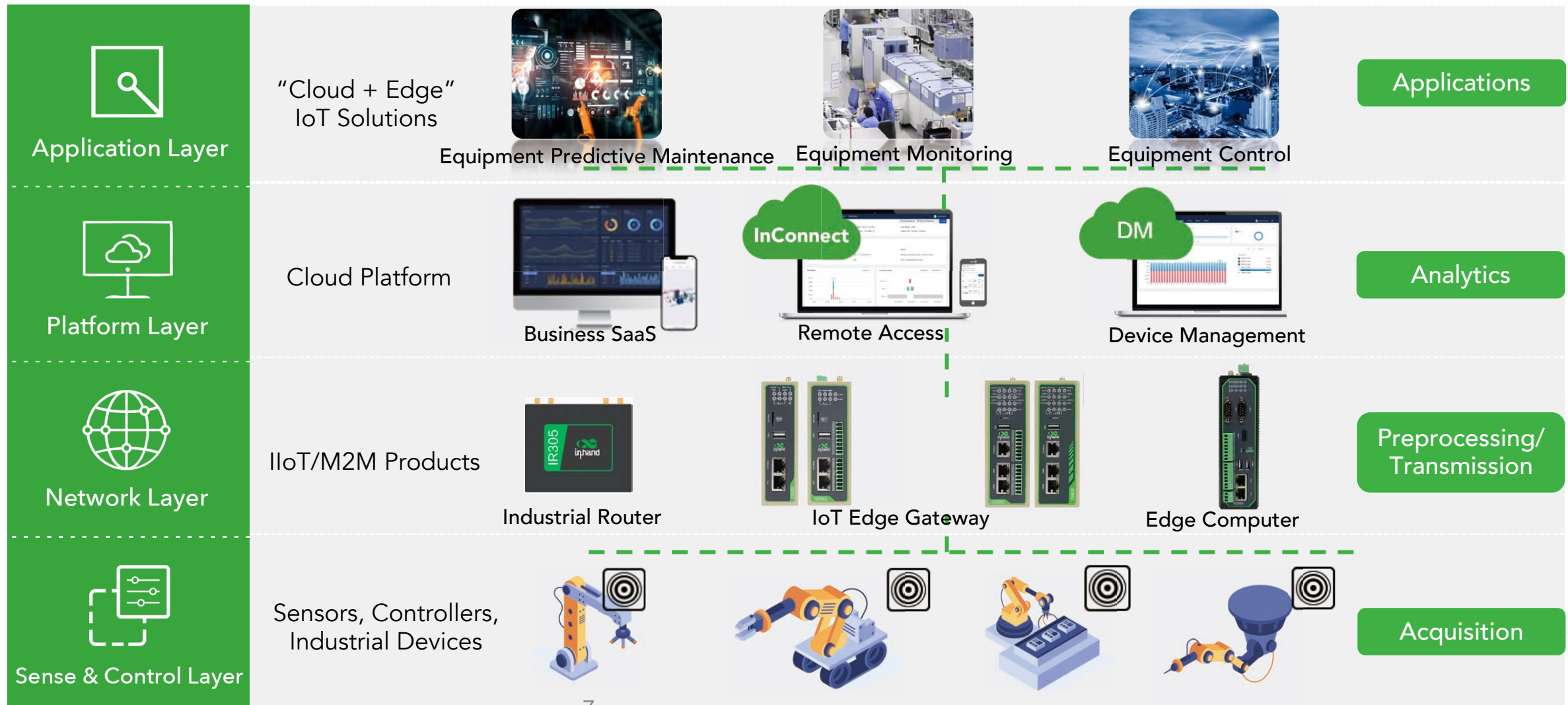
Remote control the status of the equipment
Remote upgrade/programming of the equipment



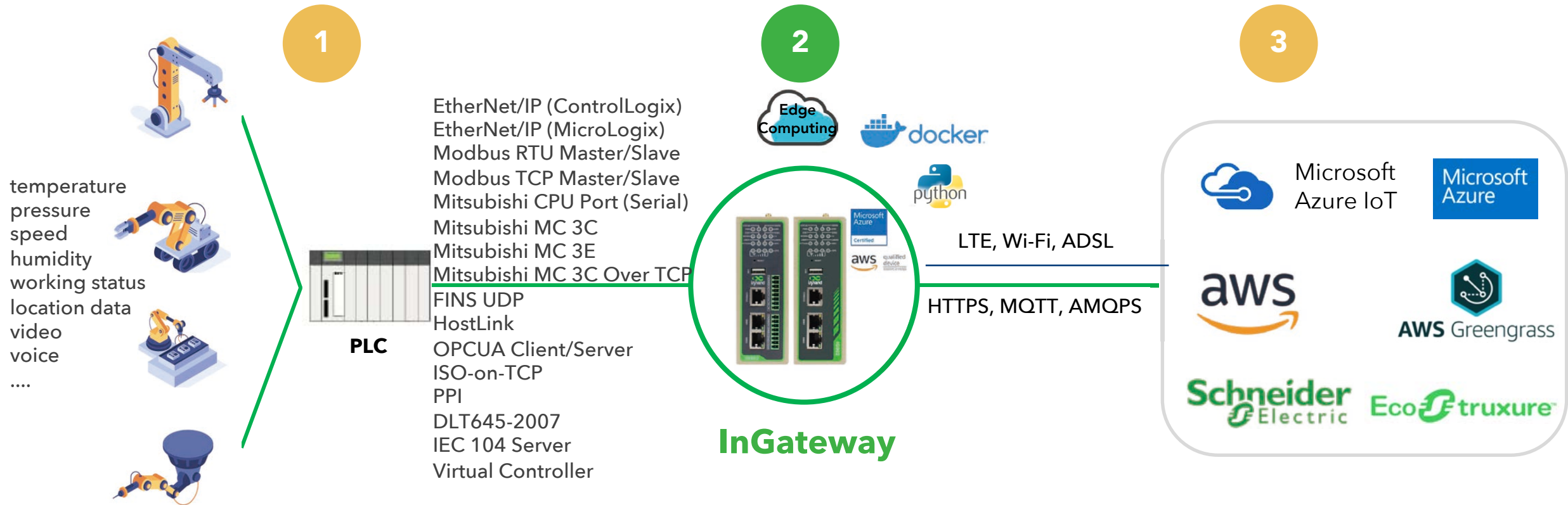
- Increased productivity
- Improved product quality
- Reduced downtime
- Enhanced worker safety
- Optimized resource utilization



IoT Technologies: From Acquisition to Application



InHand Remote Management Solution



Southbound Interface

Data Collection

Data Processing

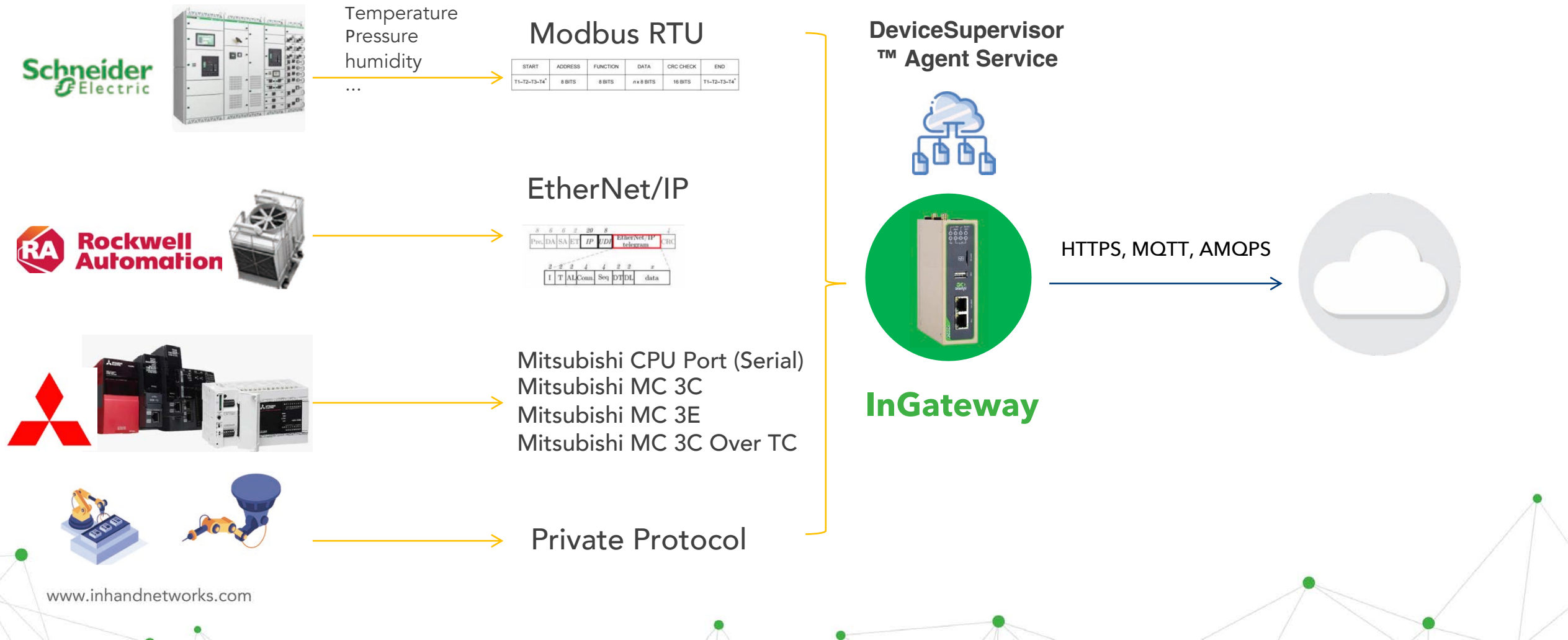
Northbound Interface

Data Transfer

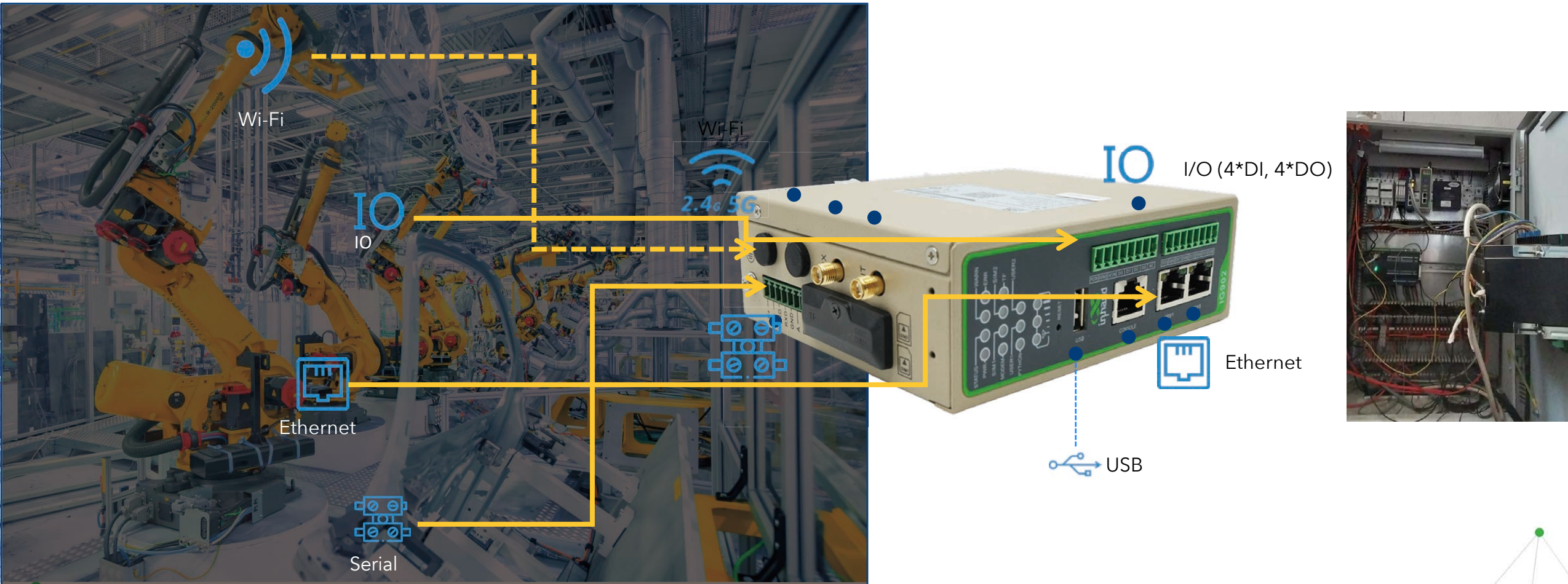
Problems in Remote Management



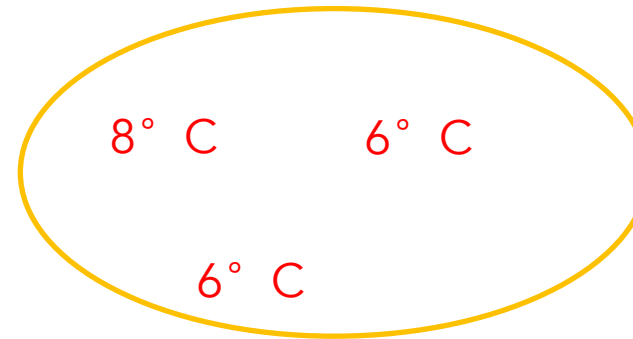
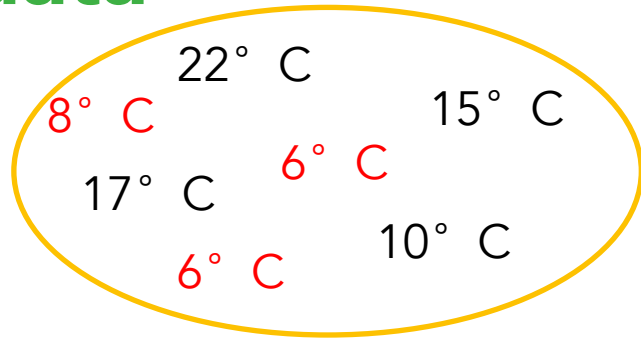
Solution 1 - Difficulty with Data Acquisition



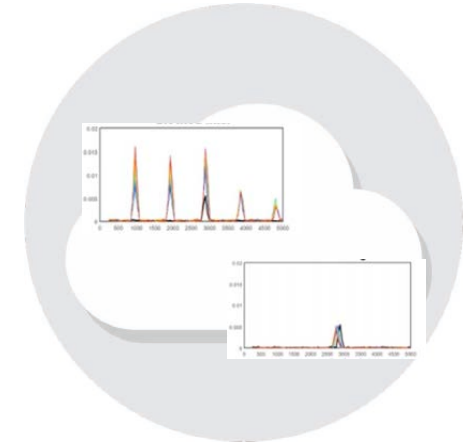
Solution 2 - Difficulty in Device Connection



Solution 3 - Difficulty in handling large quantity data



42.8° F
46.4° F



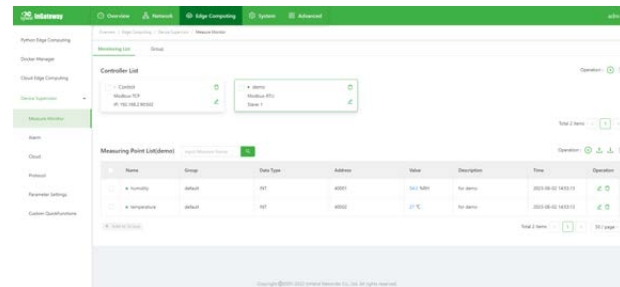
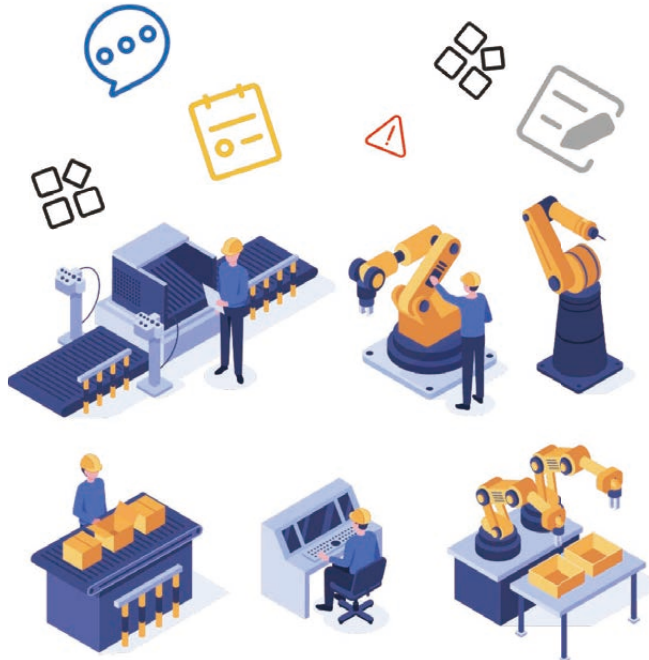
$$c^{\circ} \text{ C to } f^{\circ} \text{ F: } f = c \times 1.8 + 32$$



Edge Computing

DeviceSupervisor

Cloud Computing



Solution 4 - Difficulty in Data Safety

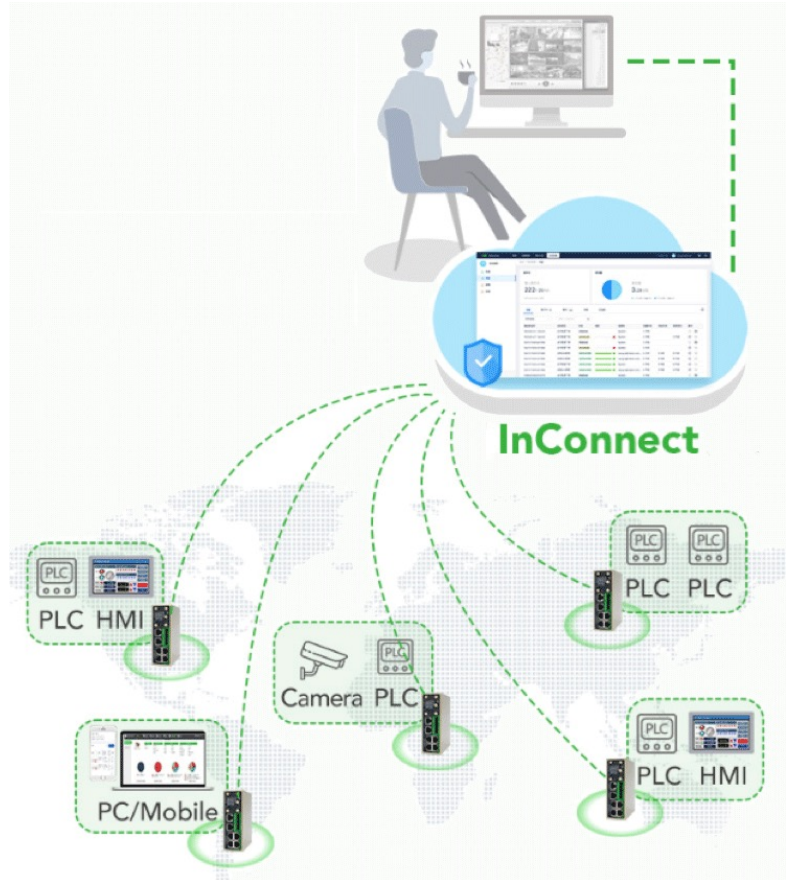
- **OpenVPN:** encryption technology to protect data transmission
- **Firewalls:** protect network security
- **Multi-layer user authorization:** protects the system against external attacks.



Cloud Platform



- Equipment Management
- Equipment Monitor
- Alarm Management
- Maintenance Management
- Customer Management
- Statistical Analysis



Remote Access



InHand Devices Management

Case Studies: Remote Management & Preventive Maintenance

Case 1 Remote Management of Air Compressors - Background

A world-leading vendor of air compressors was seeking a remote management solution for their distributed machines...



SCALE

How to gather data from **thousands of** remotely installed air compressors in an efficient way?



LEGACY

With numerous models of air compressors deployed, how to practically acquire data from all of them which have different data tables or even **different protocols**?

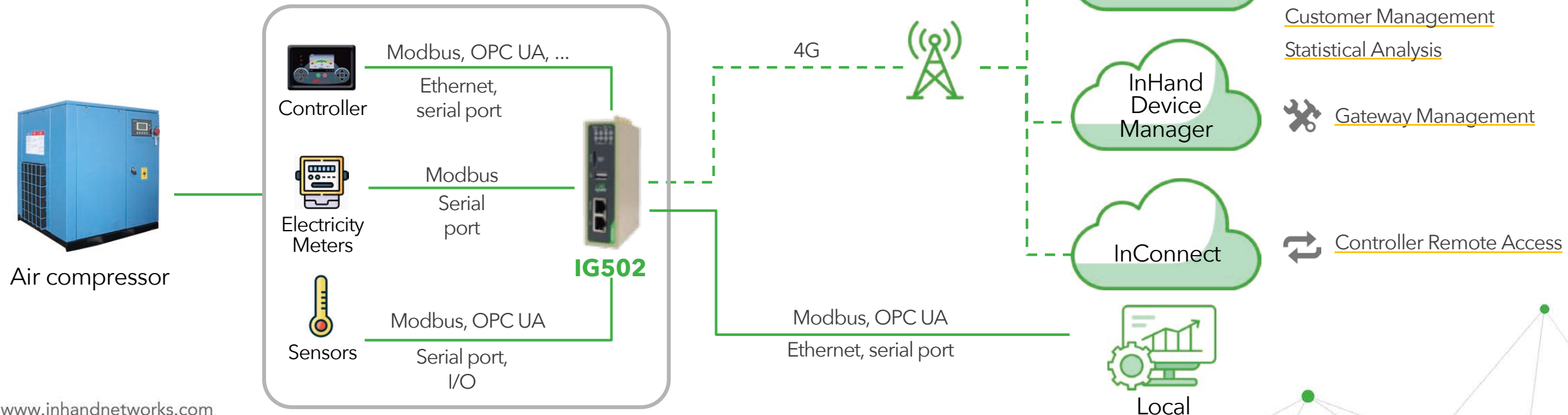


COMPATIBILITY

The air compressor is controlled by the customer's DCS control system on site. How to acquire data **without disturbing the existing control system**?

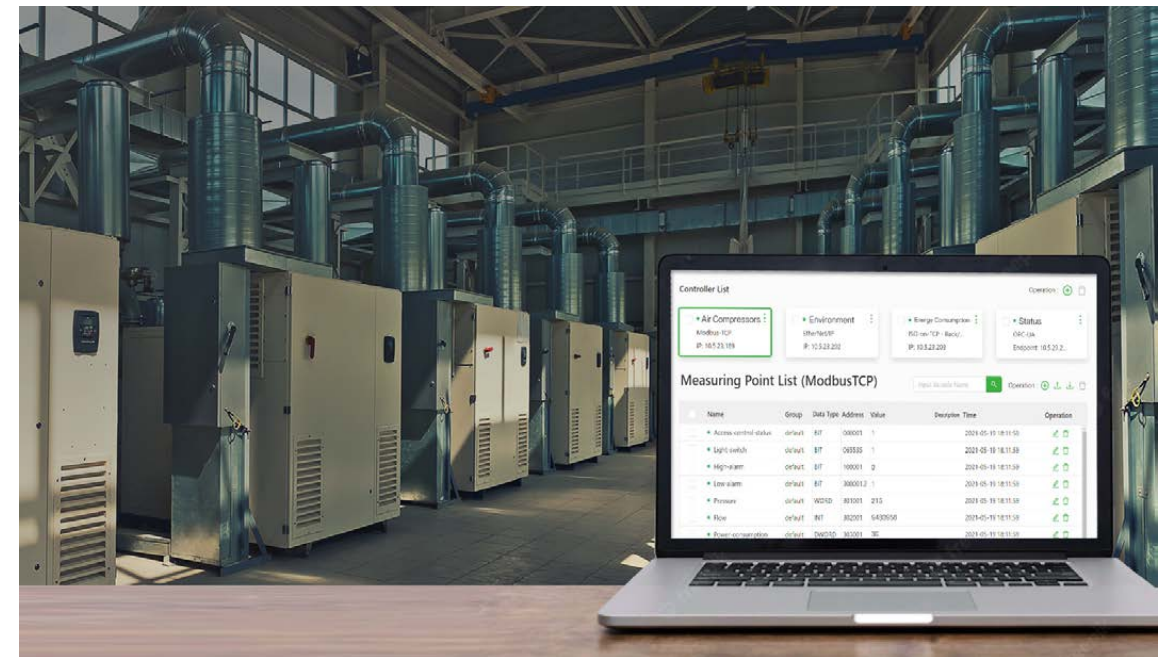
Case 1 Remote Management of Air Compressors - Solution

- Nearly 100 variables including air compressor temperature, pressure, etc. collected through controller at intervals of seconds
- Data **pre-processed** (e.g. unit conversion) before uploaded to the cloud
- Collected data forwarded to the **local monitoring system** through protocol conversion
- InGateways managed by **Device Manager**, while remote access to controllers through **InConnect**



Case 1 Air Compressor Remote Management - Value

- Real-time monitoring of compressor status, timely responding when compressor parts need to be replaced, and enhancing secondary sales.
- To notify the responsible person in time when the air compressor alarms and failures occur, to improve the efficiency of air compressor maintenance.
- To accumulate air compressor operation data for big data analysis to optimize air compressor design and improve manufacturing process



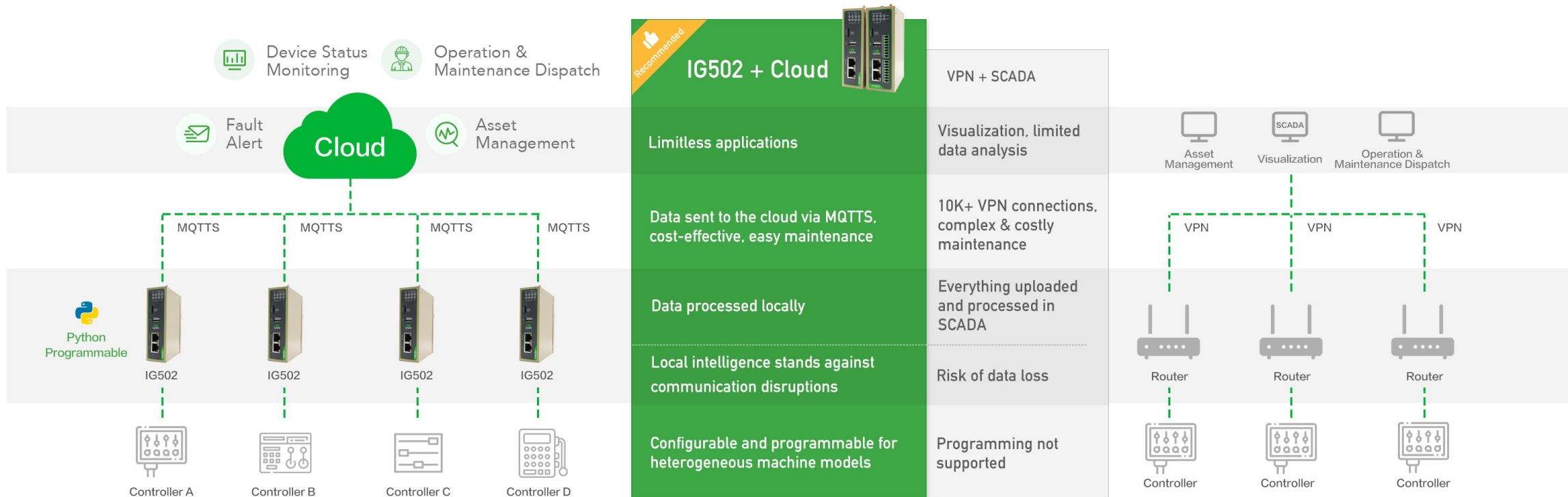
Increased customer satisfaction and loyalty

Case 1 Featured Product - IG502 IoT Edge Gateway



 <p>LTE CAT4/CAT1</p>	 <p>Multiple Industrial Protocols</p>	 <p>AWS, Azure</p>
 <p>Interfaces: RS232, RS485, I/O, ETH, USB, GPS, Wi-Fi</p>	 <p>Powerful Edge Computing</p>	 <p>Python Programmable</p>
 <p>Industrial design, - 25°C ~ +70°C</p>	 <p>Device Manager, InConnect</p>	 <p>Dual SIM</p>

Case 1 Why "IG502 Gateway + Cloud" rather than "VPN + SCADA"?



Case 2 Remote Service Solution for Textile Machines - Background

A European manufacturer of textile machines was seeking a remote management solution for their distributed machines...



SCALE

How to gather data from thousands of distributed installed textile machines in an efficient way?



CUSTOMIZATION

How to **run their own software** for data processing and machine management?

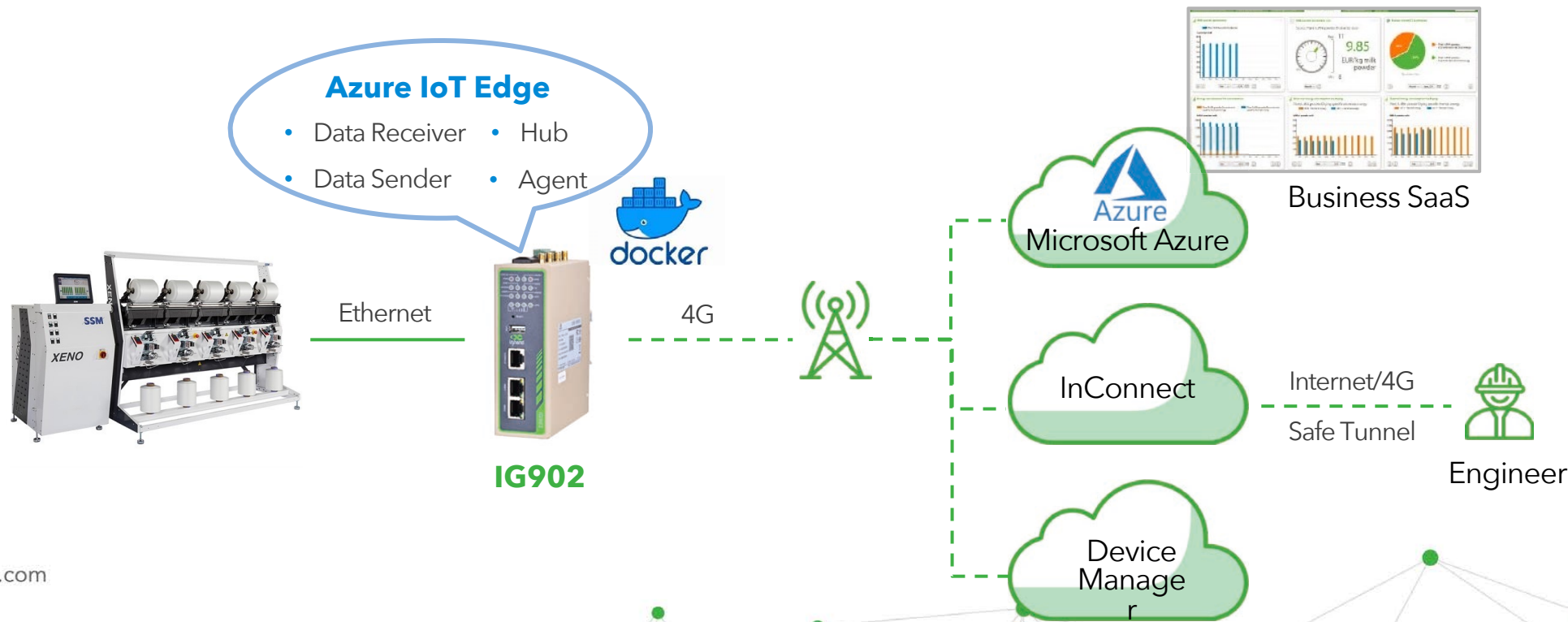


COMPATIBILITY

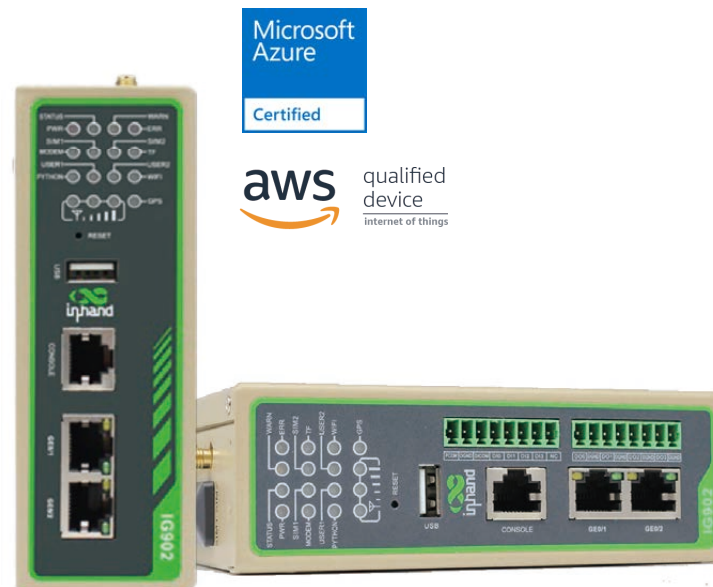
How to achieve efficient retrofit without disturbing the existing system?

Case 2 Remote Service Solution for Textile Machines - Solution

- Azure IoT Edge deployed locally in IG902 empowers edge devices with cloud intelligence
- Powerful computing capabilities with support of 4 dockers, easily programmable for data acquisition
- Global cellular network access supported
- Remote access to user devices through InConnect
- Efficient management of InGateways by Device Manager



Case 2 Featured Product - IG902 High-performance Edge Computing Gateway



4G⁺

LTE CAT4/CAT1



Multiple Industrial
Protocols



AWS, Azure



Interfaces: RS232,
RS485, I/O, ETH,
USB, GPS, Wi-Fi



Powerful Edge
Computing



Python, Docker



Industrial design, -
25°C ~ +70°C



Device Manager,
InConnect



Dual SIM



Case 3 Remote Management of Generators – Background

A European manufacturer of generator was seeking a remote management solution for their distributed machines...



DIVERSITY

How to gather different variables at varying frequencies?



CUSTOMIZATION

How to customize data processing for the customer's business need?



COMPATIBILITY

There are already a large number of machines being used. How to achieve efficient retrofit without disturbing the existing system?

Case 3 Remote Management of Generators – Solution

- The clients need to use the latest version of **Azure IoT Edge** which can only be supported by **Linux distribution** version
- Data (e.g. generator voltage, current, speed, vibration, oil temperature, oil pressure, etc.) collected through the controller at varying intervals (from milliseconds to minutes)
- Collected data pre-processed locally (e.g. filtering) and then uploaded to the cloud
- Edge computers managed by **Device Manager**, and remote access to the controller by **InConnect**



Case 3 Featured Product - EC900 High-performance Edge Computer

COMING SOON



Linux Debian OS



Strong performance:
Rockchip RK3568 ARM
Quad Cortex-A55



Easy Configuration,
Multiple Protocols



Clouds Ready:
AWS, Azure



Interfaces:
RS232/485/422, I/O,
USB, HDMI, CAN



Security: Secure
Boot, TPM2.0



Reliable
Communications:
4G, Wired, Wi-Fi



InCloud
Manager

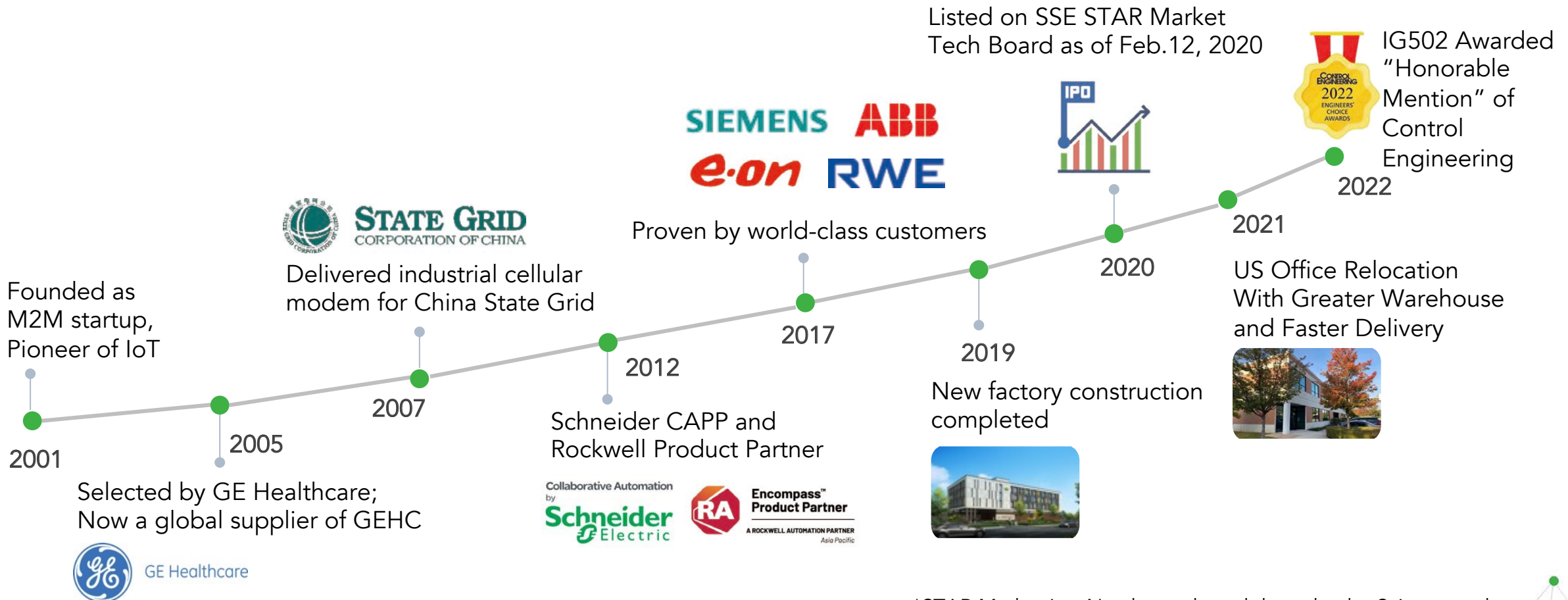


Industrial design, -
25°C ~ +70°C

Demo: Configure Data Acquisition in Minutes

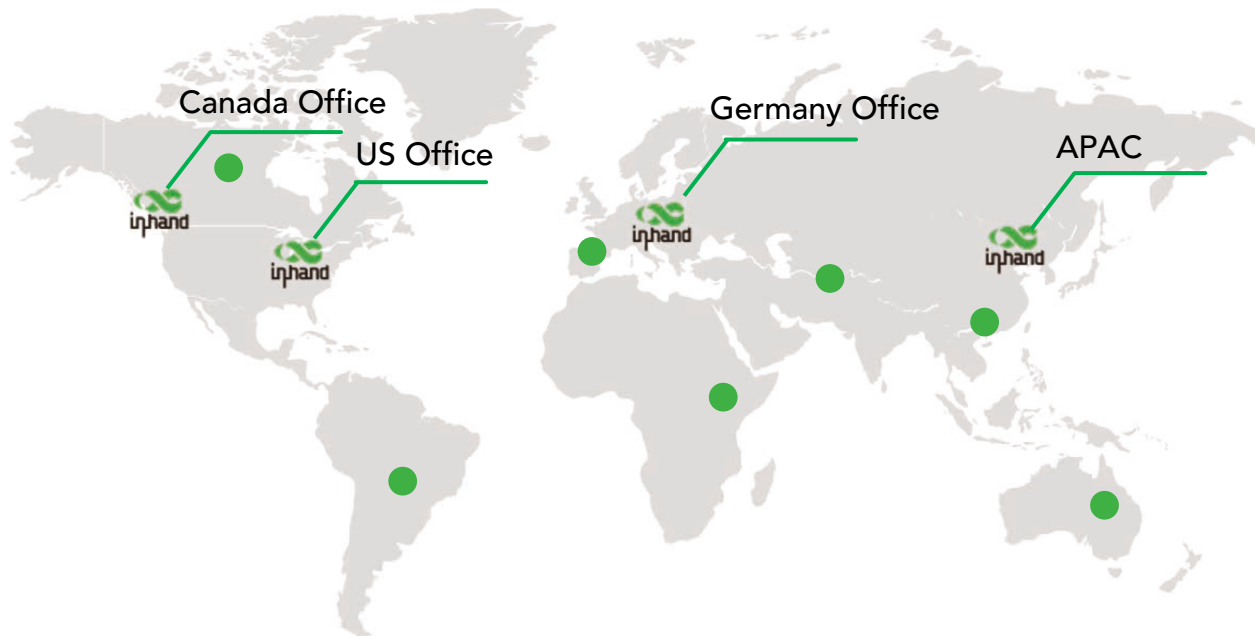
Who Are We?

Pioneering IoT for 22 Years

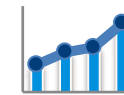


*STAR Market is a Nasdaq-style tech board – the Science and Technology Innovation Board at Shanghai Stock Exchange.

Global Coverage



Employees 400+
R&D Team 140+



Continued growth, listed
among Top 10 IoT gateway
vendors by Berg Insight



Free Technical Support
16 Hrs per Day
5 Days per Week

Supply Chain: Self-owned Factory with Ensured Capacity and Quality

7 Production lines with a high level of flexibility

3,000 Units produced per day

17,898 Square meters



Quality Commitment & Support



- ISO 9001/ ISO 14001/ ISO45001/ ISO27001
- Information Security Management System Certificate
- Energy Management System Certificate
- Intellectual Property Management Certificate

Q & A

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InHand Networks

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