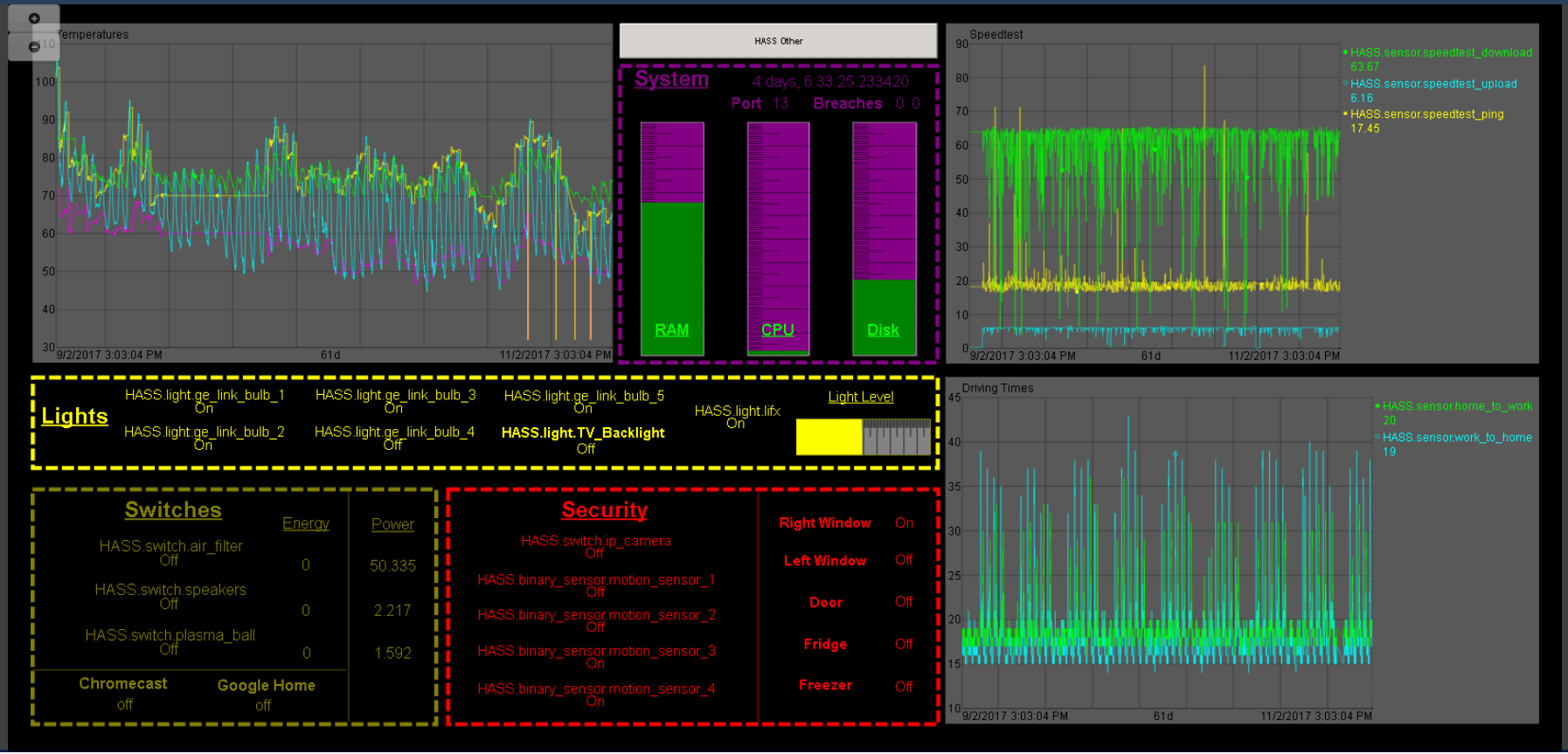
IIoT Data Collection with the PI System

Michael Norton

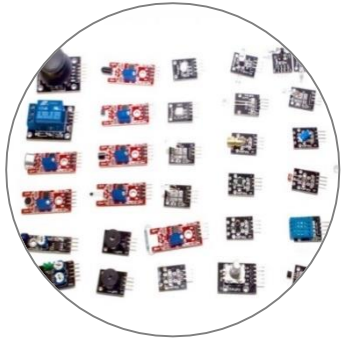
8-Nov-17



OSIsoft on Industrial IoT

"Connecting people with sensor based data in ways that were **physically** or **economically** unrealistic before"

What's Driving the Interest in IoT?



Cheap and tiny sensors

Decreased compute and storage costs

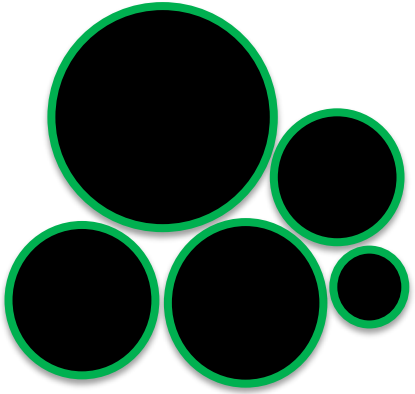
New abilities to process and analyze data

Ubiquitous connectivity

What is Different About IIoT?

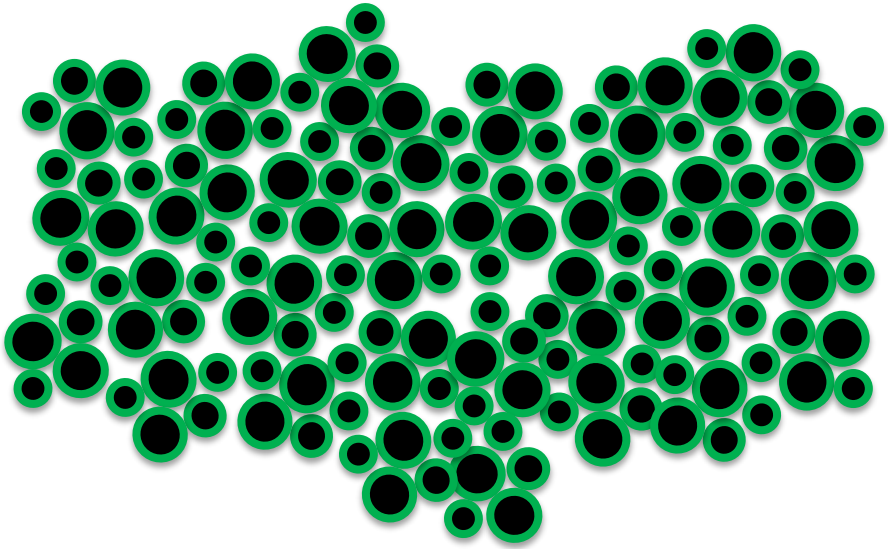
Traditional PI System data pattern

A few large “pipes” to systems on premises



IIoT data pattern

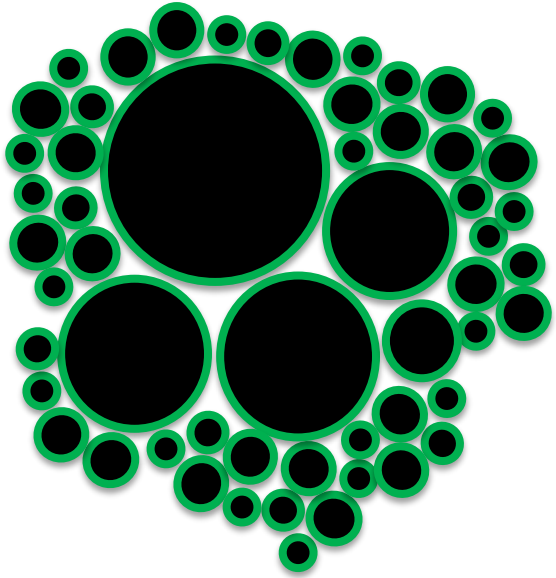
Many small “pipes” from IoT devices

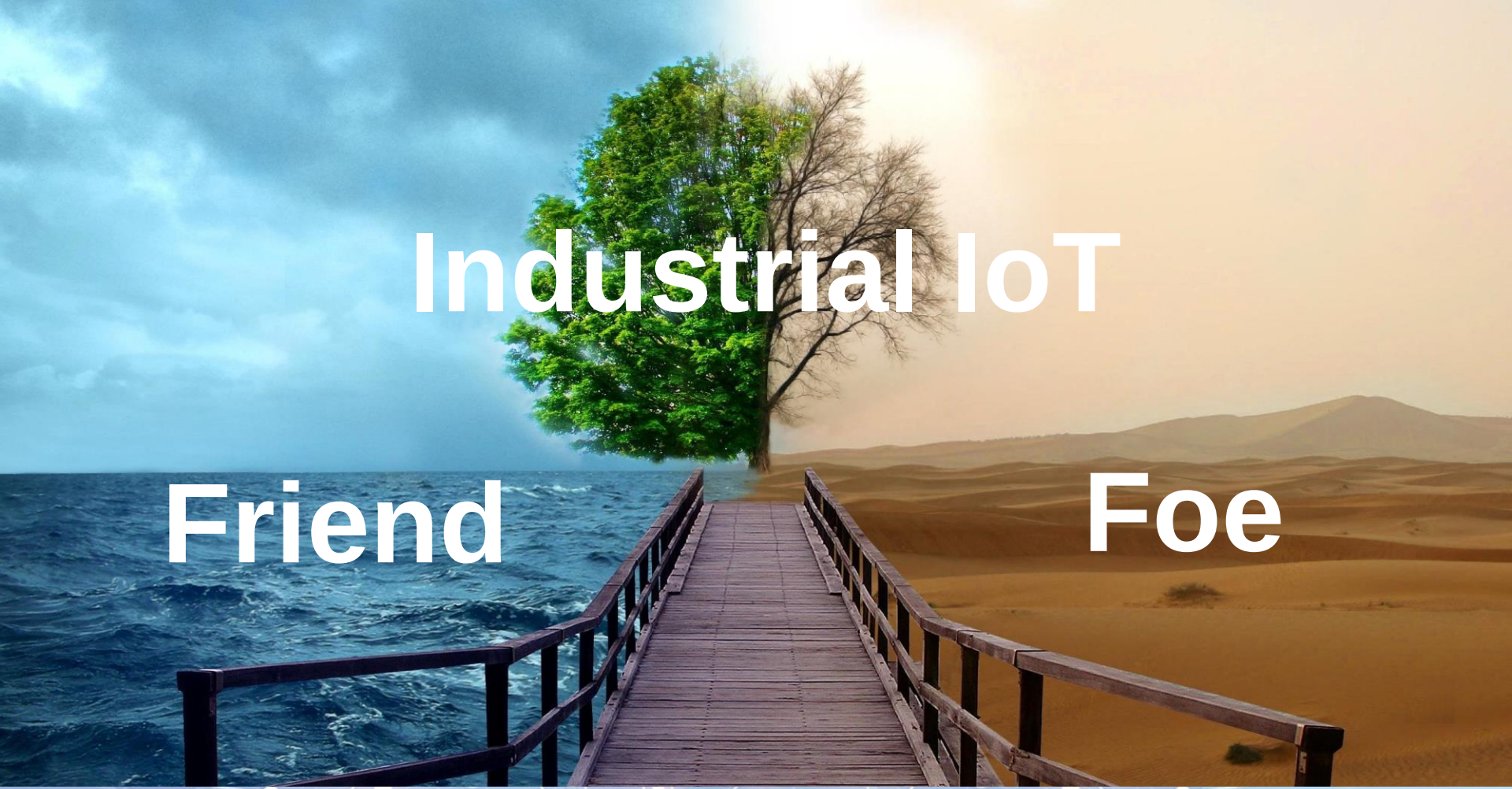


PI System Environment for IIoT

Hybrid of traditional PI System and IIoT data patterns

A few large “pipes” to systems and many small pipes to devices on premises or in the cloud

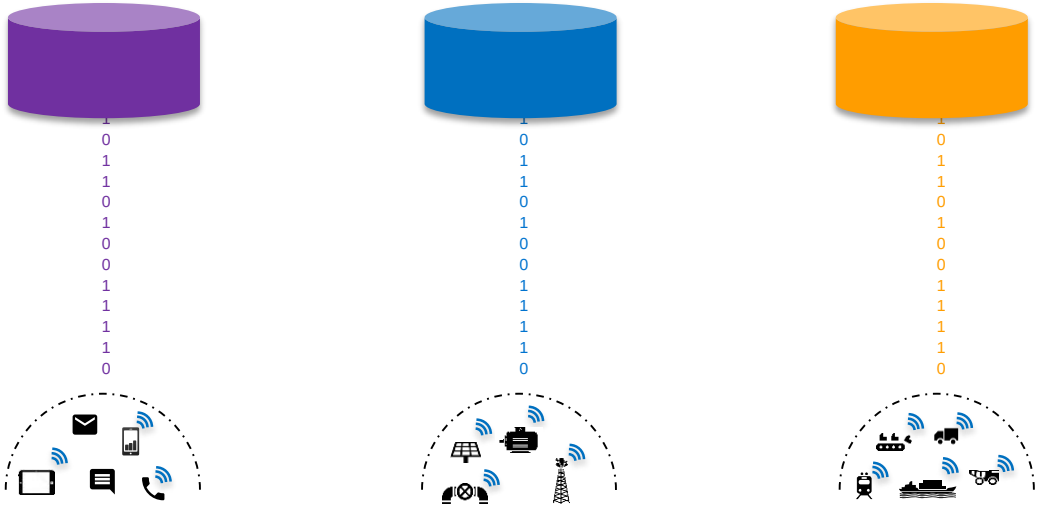




There are Inherent Risks and Challenges

Data Silos

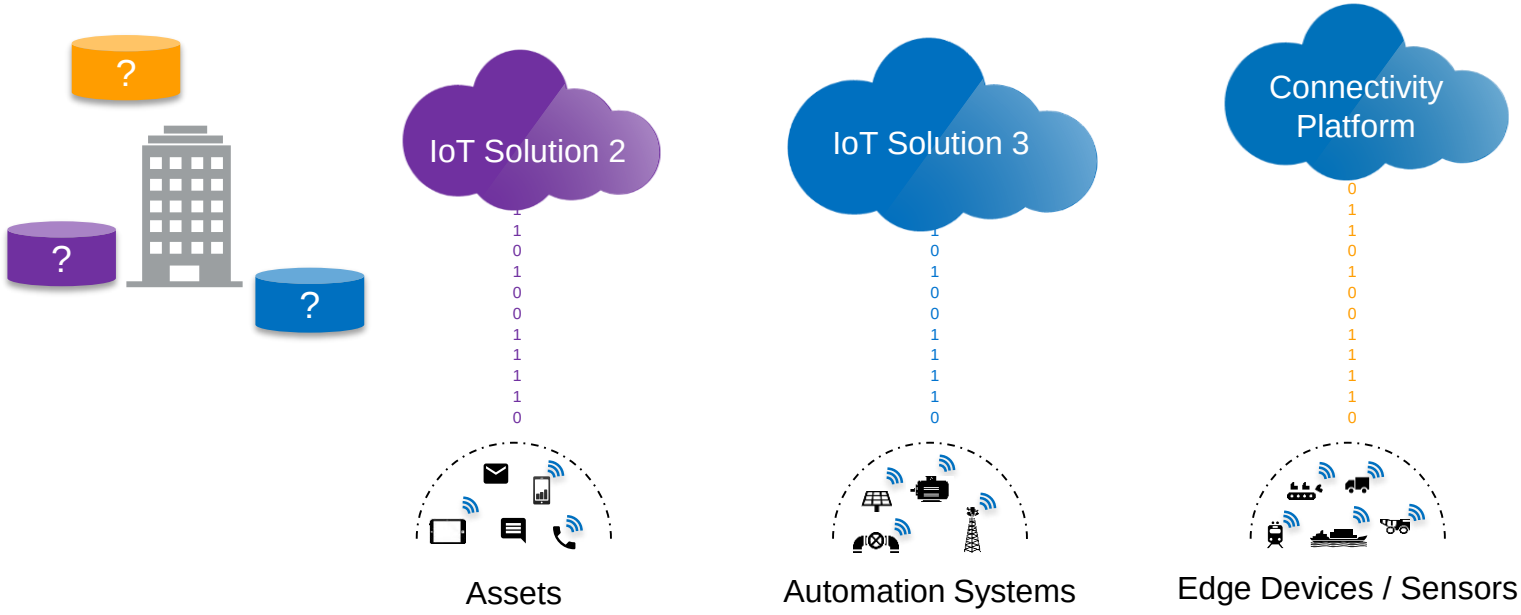
One version of the truth?
Data isolation from other use cases!
Data management challenges!



There are Inherent Risks and Challenges

Data Ownership

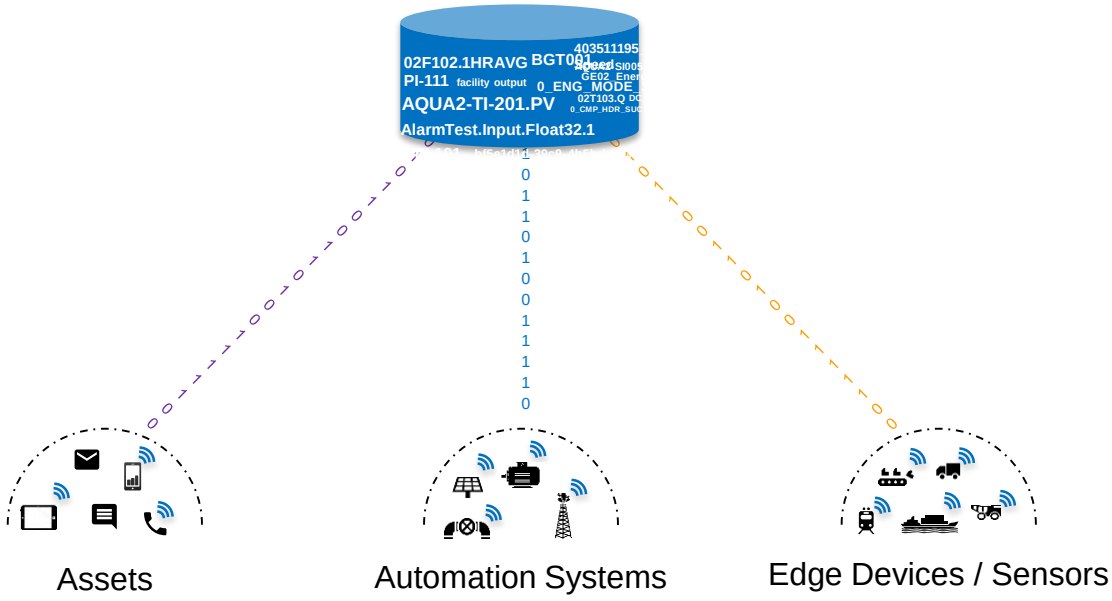
Do I have access to my own data?
How do I ensure that I can move from one solution to another?

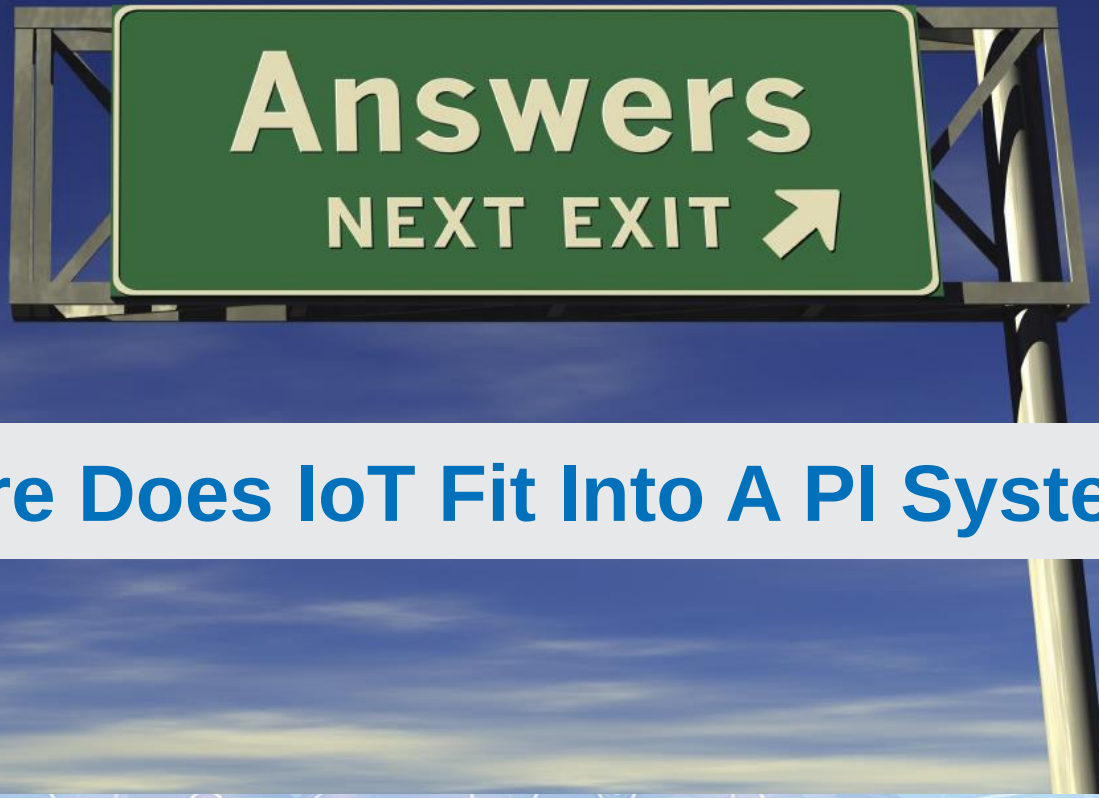


There are Inherent Risks and Challenges

Data Context

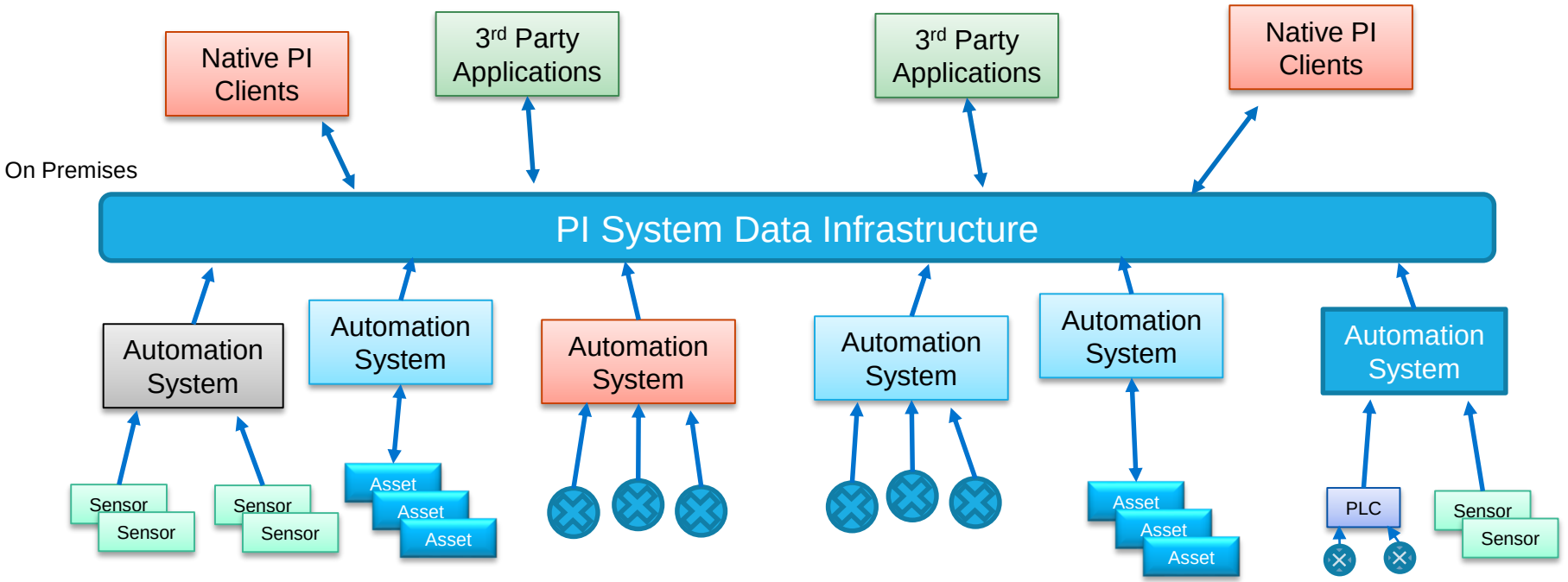
Understanding the criteria to analyze data is as important as the data itself
The further data moves from SME's, the more important context is



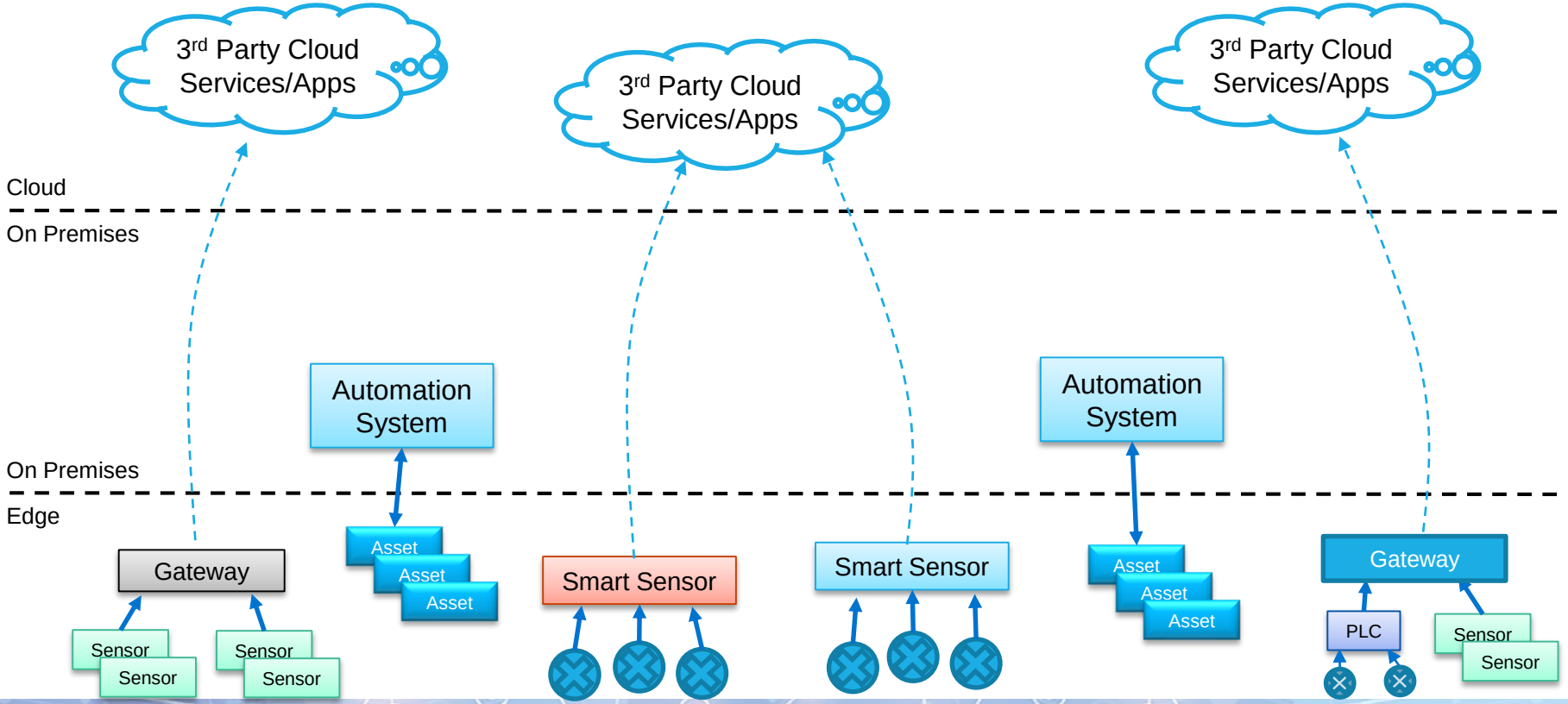


Where Does IoT Fit Into A PI System?

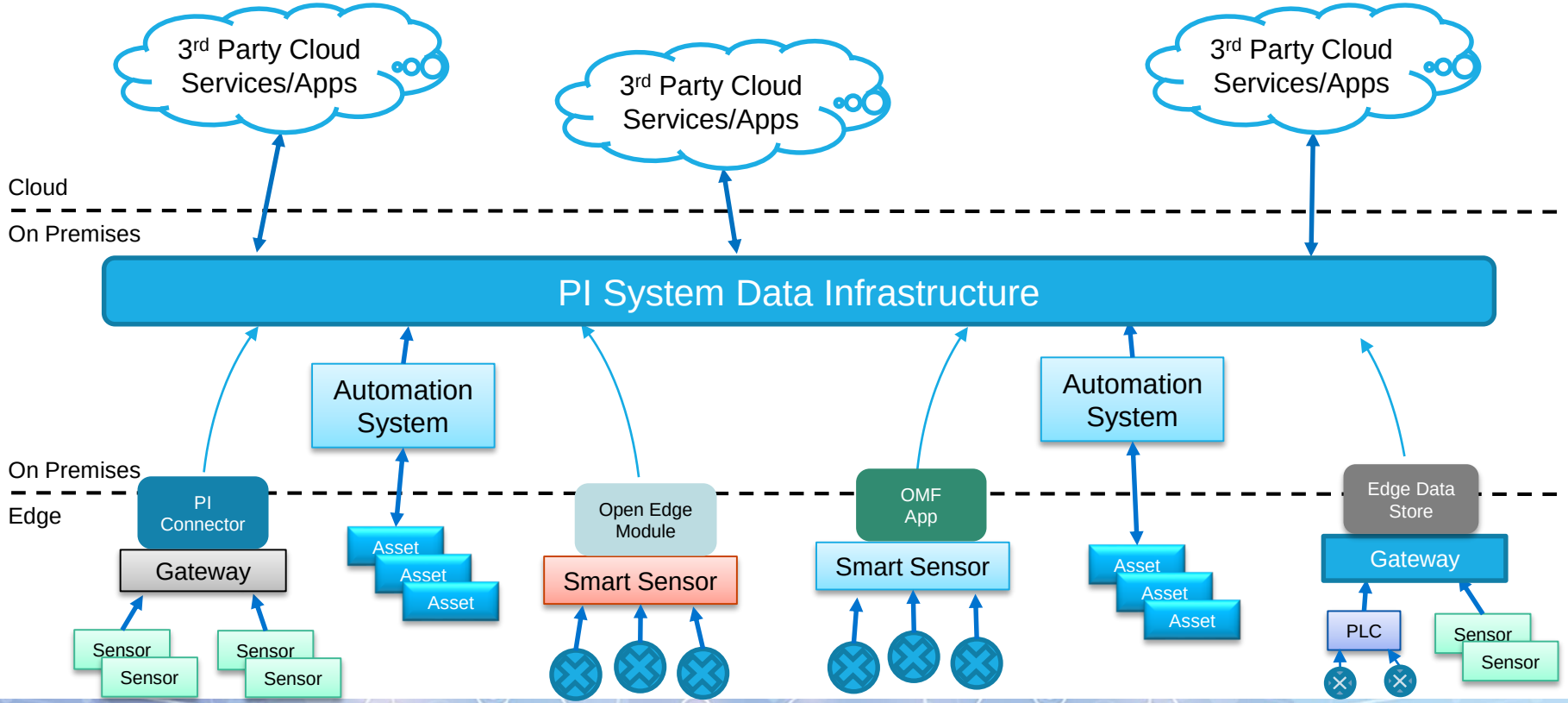
Recap: Traditional OSIsoft PI System Architecture



Attempt at an Industrial IoT Architecture…



OSIsoft's Industrial IoT Architecture for the Enterprise



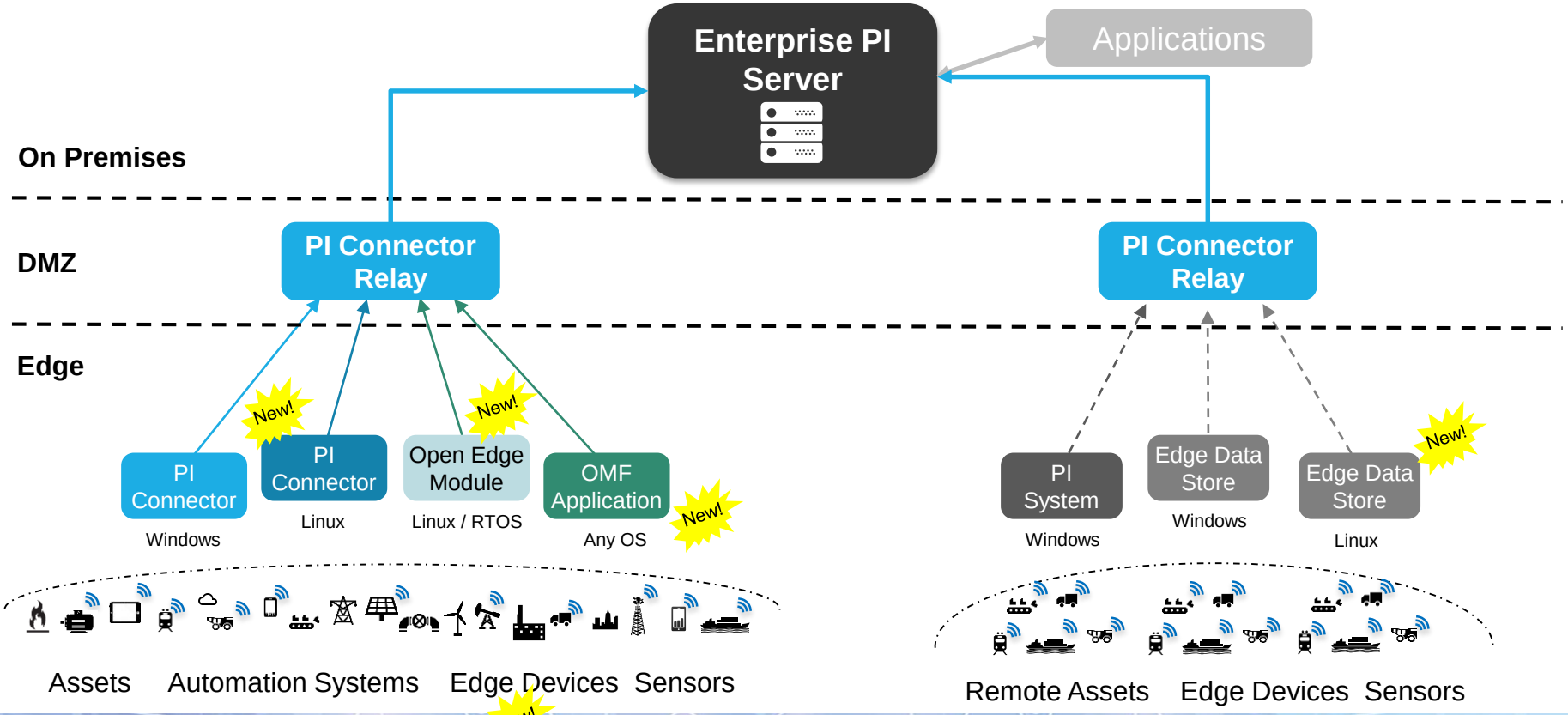
OSIsoft and the Edge

Pervasive Data Collection

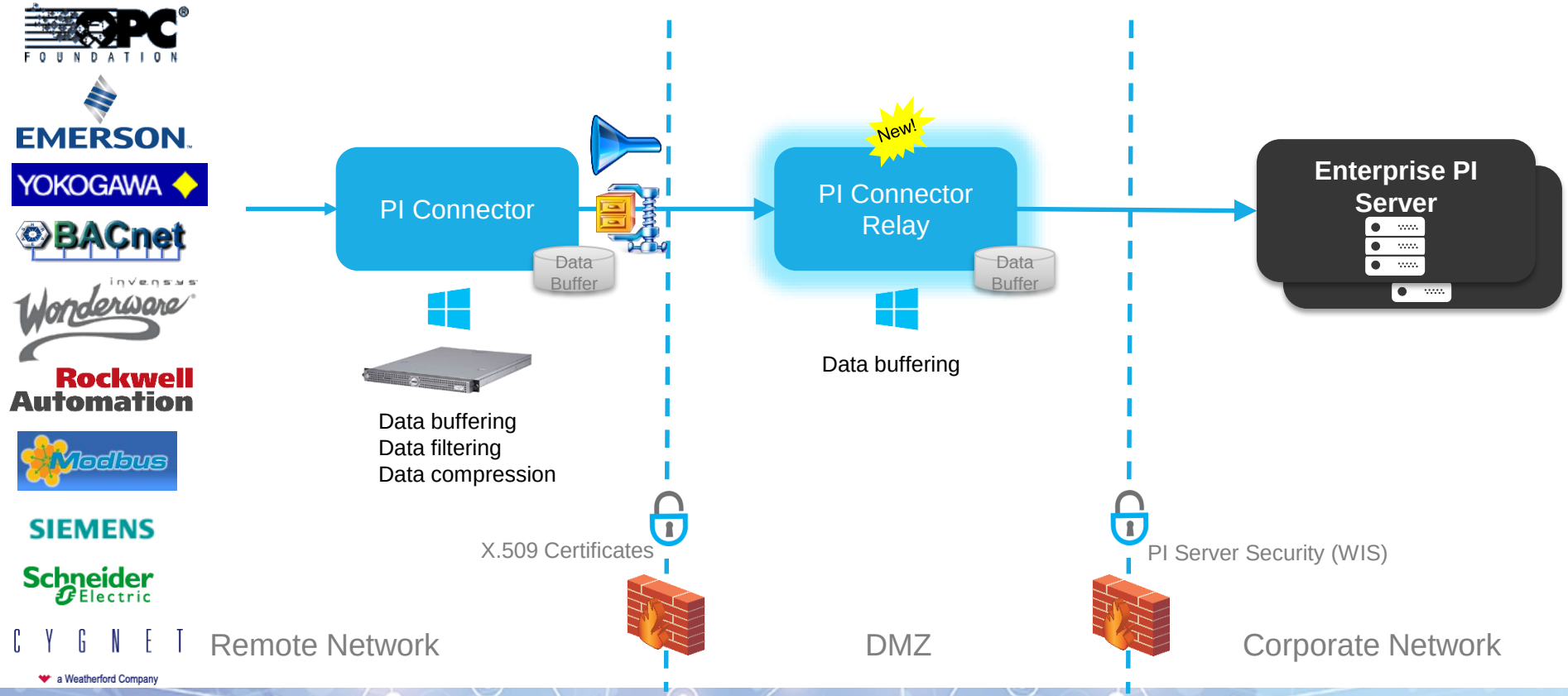
OSIsoft's Pervasive Data Collection Goal

Ensuring that no matter where your operational data resides, there are OSIsoft technologies available to **collect and store that data**

Pervasive Data Collection Architecture: What's New?



PI Connector Relay Architecture
Enhances Security and Network Flexibility for IIoT Data Patterns



Edge Gateways: An Emerging Class of Hardware

- ✓ Ruggedized chasses
- ✓ Low price points
- ✓ Windows 10 IoT Enterprise OS

PI Connectors for Linux
Add Connectivity for Remote and Mobile Assets

New!

PI Connector on Linux

Data Buffer

Data buffering
Data filtering
Data compression

PI Connector Relay

Data Buffer

Data buffering

Enterprise PI Server

X.509 Certificates

PI Server Security (WIS)

Remote Network

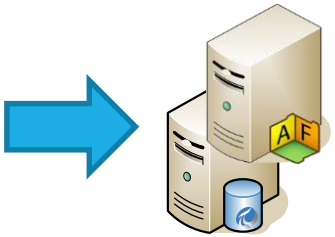
DMZ

Corporate Network

What Can This Look Like?

Example application:
Collecting power data at the edge

Critically important power data from a Modbus device is available at the edge



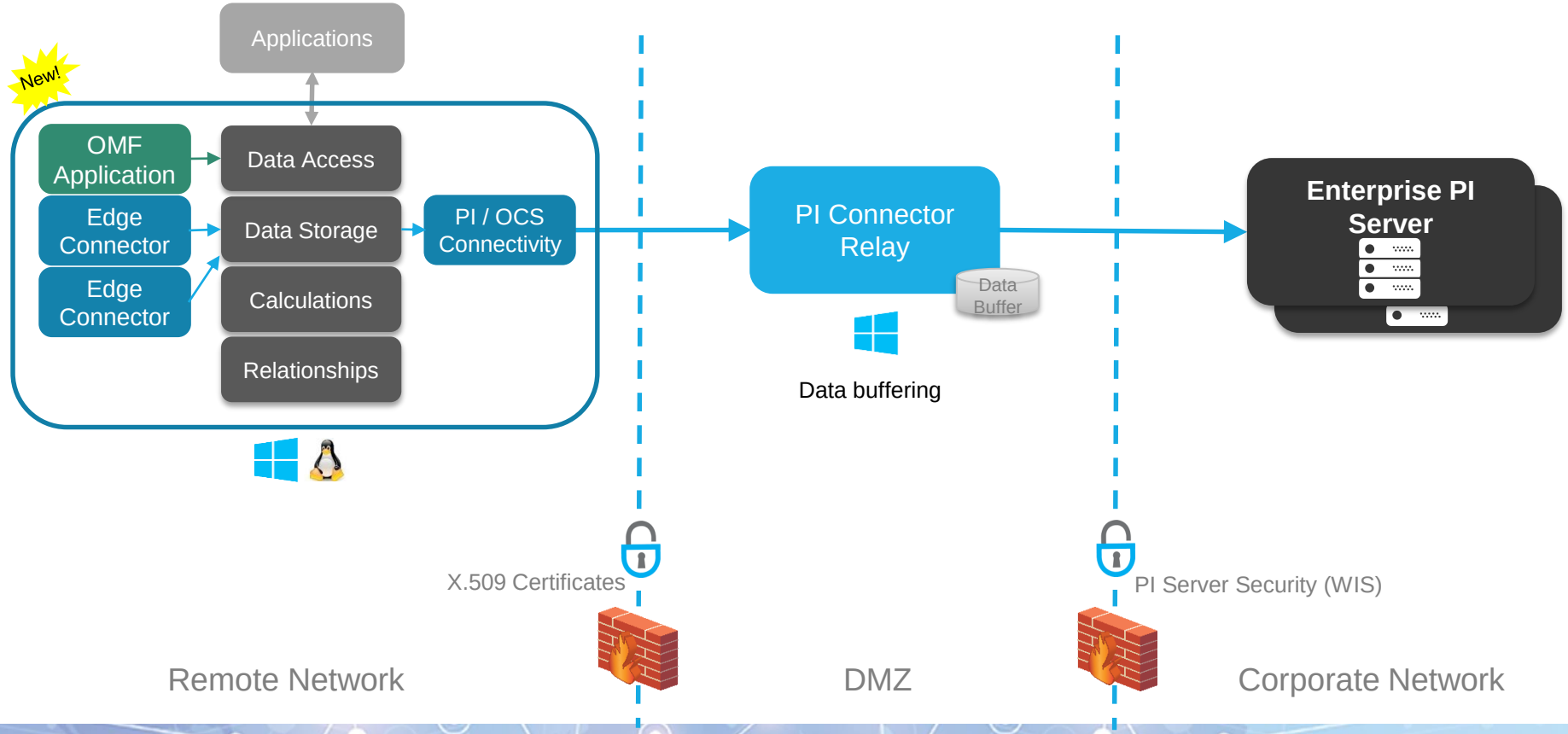
That data needs to eventually end up in an OSIsoft PI System, but the edge isn't suitable for running a PC

1. Power data is available at the edge, but there aren't any PCs at the edge!
2. The only hardware available at the edge is a Cisco 829 industrial router
3. **Our goal:** run a PI Connector for Modbus at the edge to collect critical power data

Solution: an embedded PI Connector can run directly on the Cisco edge device!

Edge Data Store:
Built for Purpose Storage, Access and Calculations for Edge Devices

Edge Data Store Components



The OSIsoft Message Format: Application Development Flexibility and Partner Enablement

New!

OMF Application

PI Connector Relay

Data Buffer

Data buffering

Enterprise PI Server

Custom features

SAS Tokens

PI Server Security (WIS)

Remote Network

DMZ

Corporate Network

Open Edge Module:
Edge Device Connectivity for the Open Source Developer Community

New!

Open Edge Module

Data Buffer

Input API
Data buffering
OMF Message Generator

SAS Tokens

PI Connector Relay

Data Buffer

Data buffering

Enterprise PI Server

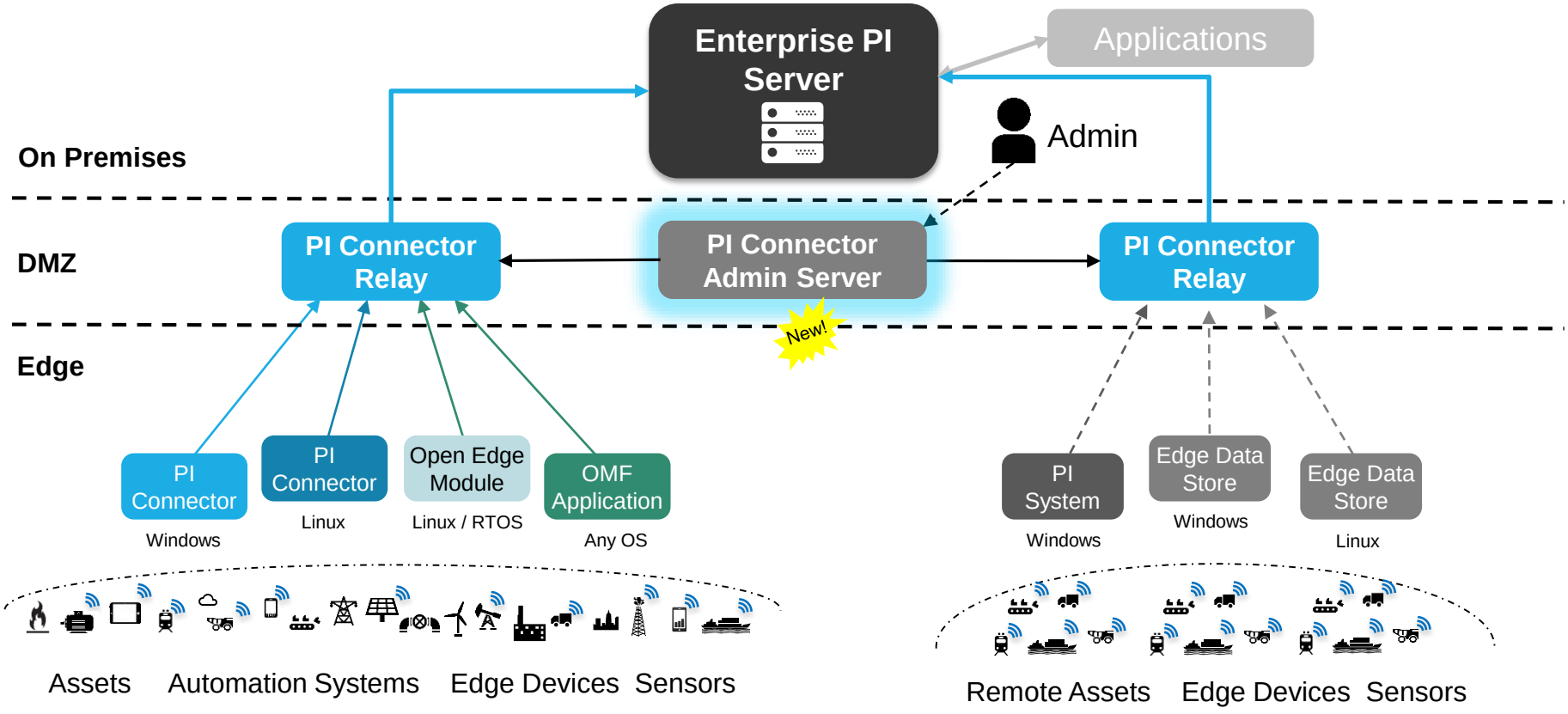
PI Server Security (WIS)

Remote Network

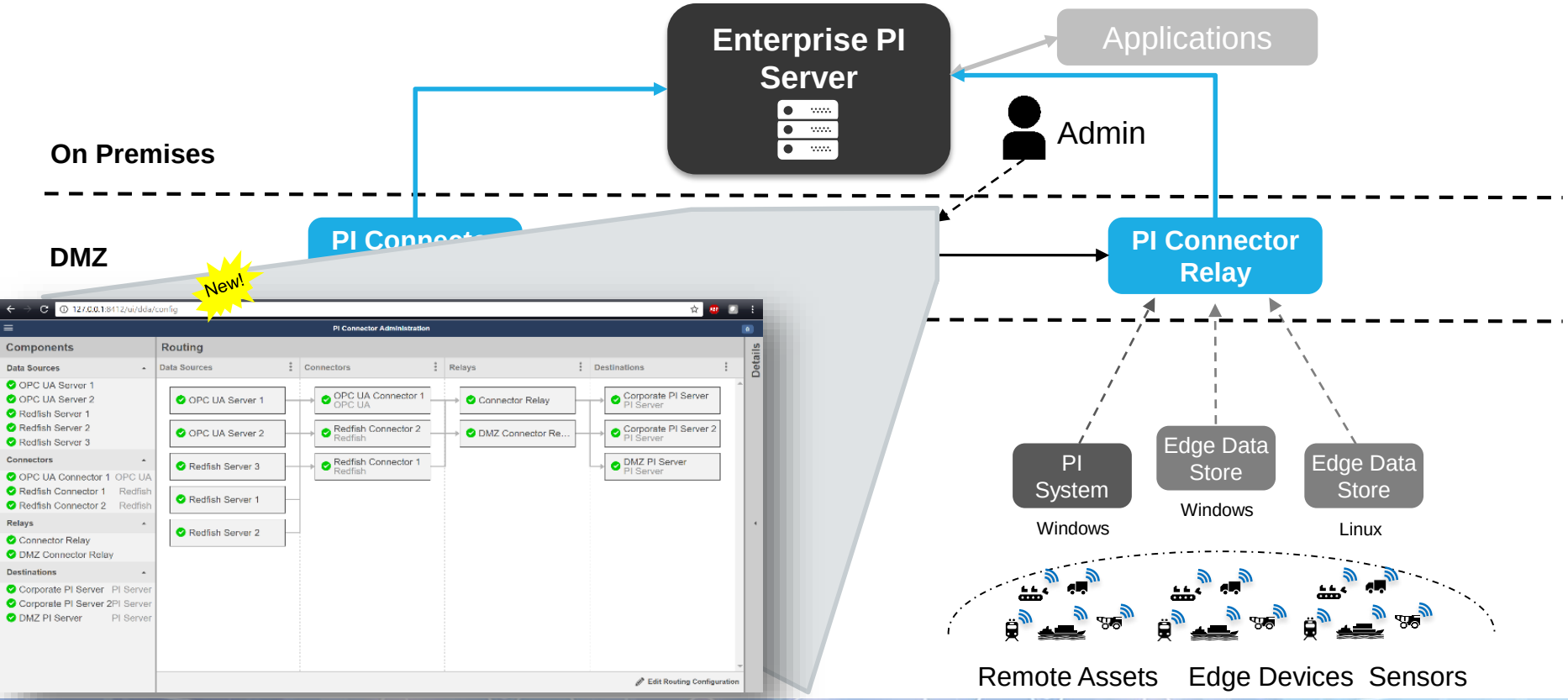
DMZ

Corporate Network

Pervasive Data Collection Management



Pervasive Data Collection Management



Our Data Collection Technologies

PI Connectors

Plants

Edge Data Store

Assets

Open Edge Module

Devices

OMF Application

Sensors

100,000's	← Data Streams →	100's
High	← Compute Resources →	Low

Why Use an OSIsoft Infrastructure?

The world's most powerful time series data sets reside in OSIsoft technology

1.5B data steams
35+ years
65% of Industrial Fortune 500

Contact Information

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OSIsoft

Questions

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

State your **name & company**

Please remember to…

Complete the Post-Event Survey

감사합니다

谢谢

Danke

Gracias

Merci

Thank You

ありがとう

Спасибо

Obrigado