Engineering Keynote

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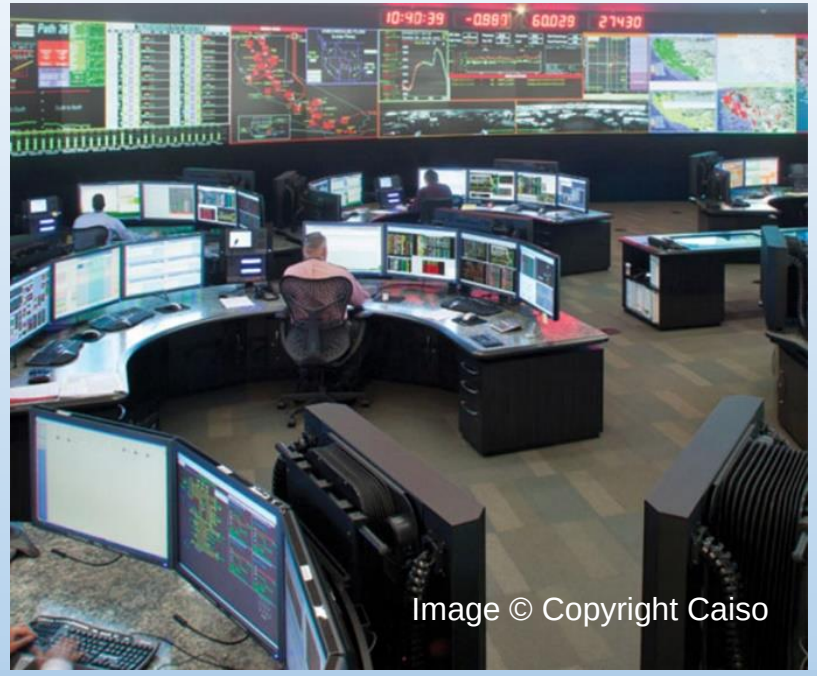
OSIsoft®

PI World

We BELIEVE
People with DATA
Can TRANSFORM
THEIR WORLD

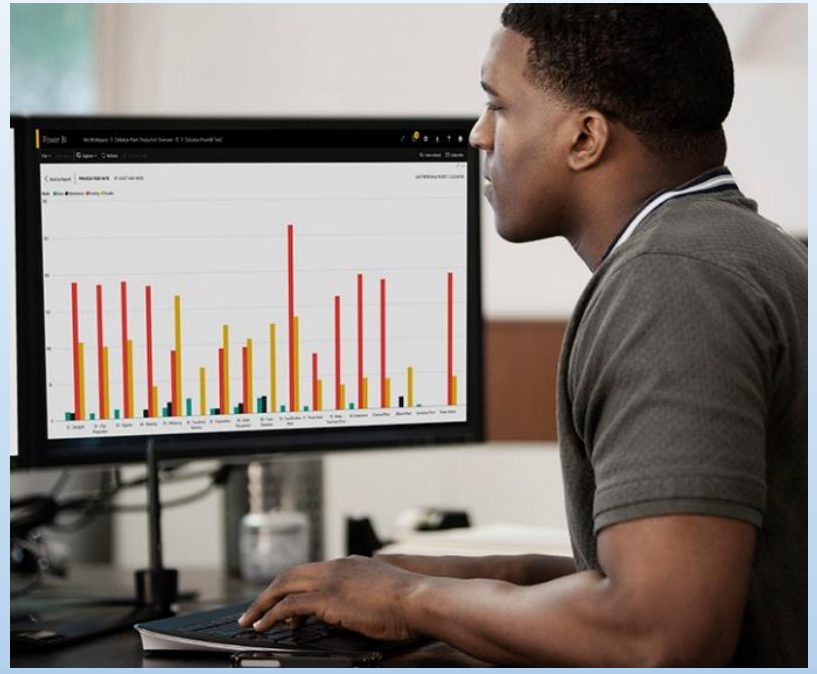
That’s Why We Created the PI System

Situational Awareness
Real-Time Dashboards



On Demand Exploration
Ad-hoc analysis

Third Party Applications
Fit for purpose application



OSIsoft Data Infrastructure

At the Edge
Collecting more data from more sources

In the Cloud
Enabling advanced analytics and new data-driven services

Sensors	Assets	Plant	Enterprise	Community
Millions of Smart Devices	Multiple Sensors	Multiple Assets	Multiple Plants	Multiple Enterprises

← Pervasive Data Collection (PDC) →

← PI Integrators →

← OSIsoft Cloud Services →

← PI System →

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System of Record

Manageable System Dimension

Seamless Infrastructure Secure

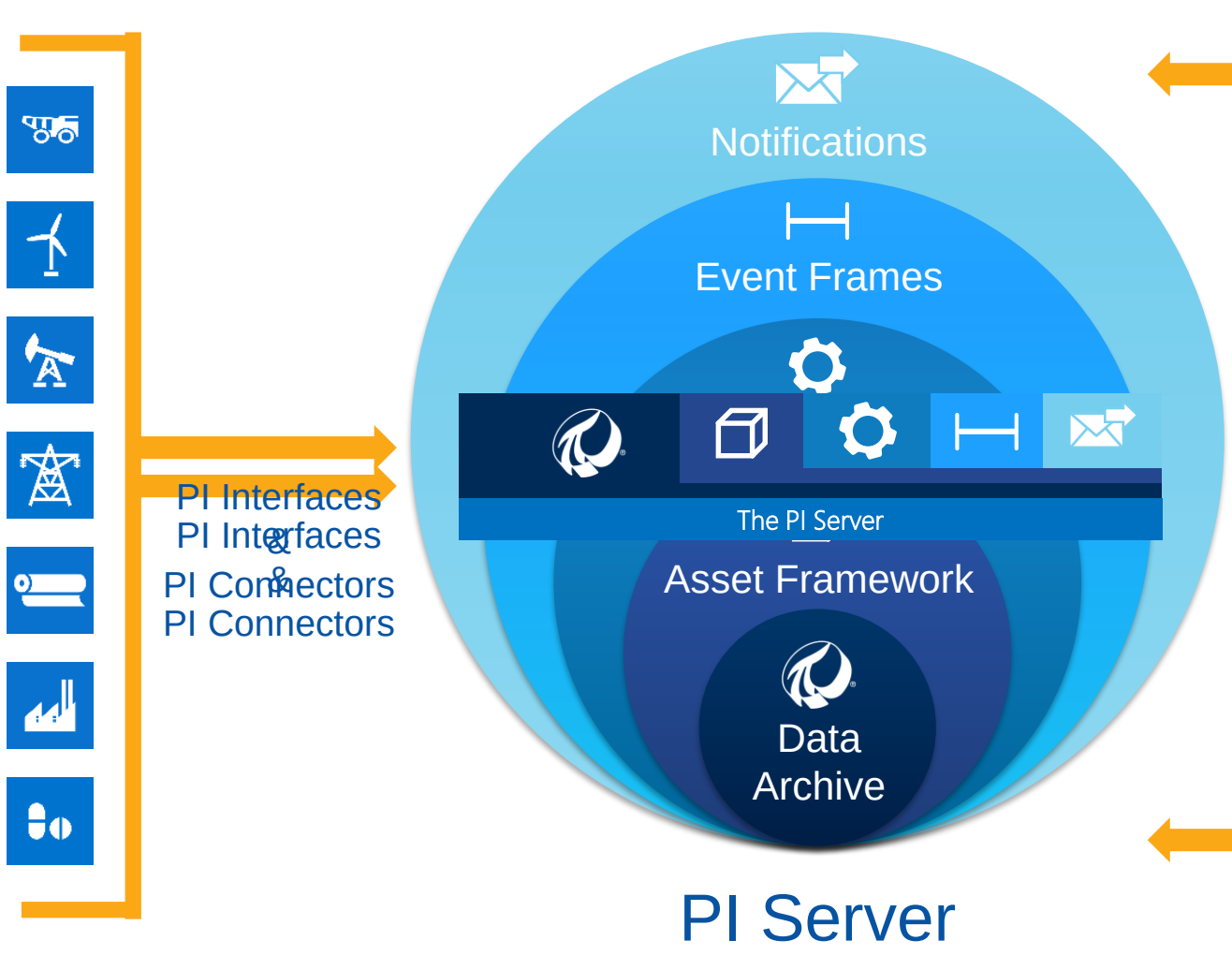
Increased Scope & Value

San Leandro Tech Campus*

* Drawing may not reflect implementation

Manageable Systems
Seamless Infrastructure
Increased Scope & Value

The PI System



PI Server

PI Cloud Connect

ArcGIS

Azure

Business Analytics

SAP HANA

PI Vision

PI DataLink

PI Manual Logger

PI ProcessBook

Custom applications
Business systems

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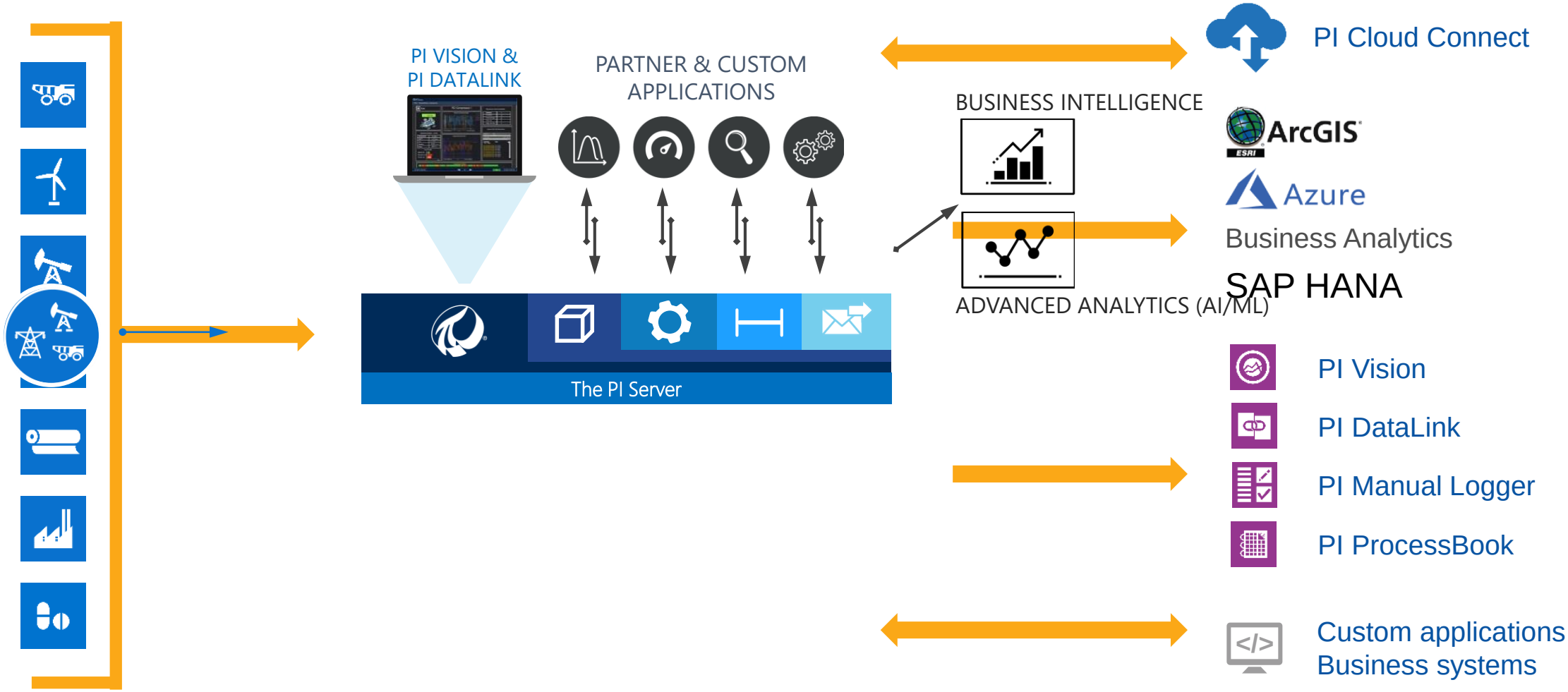
Focus on the PI Server



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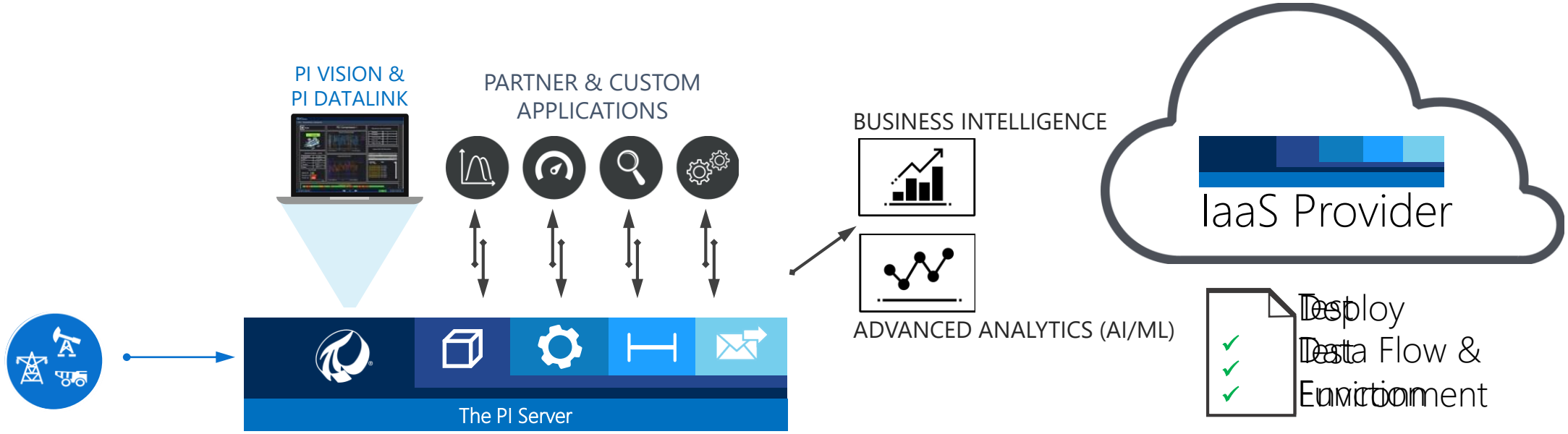
Investing in Manageability



Patch Production System ✓

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Engineering Keynote

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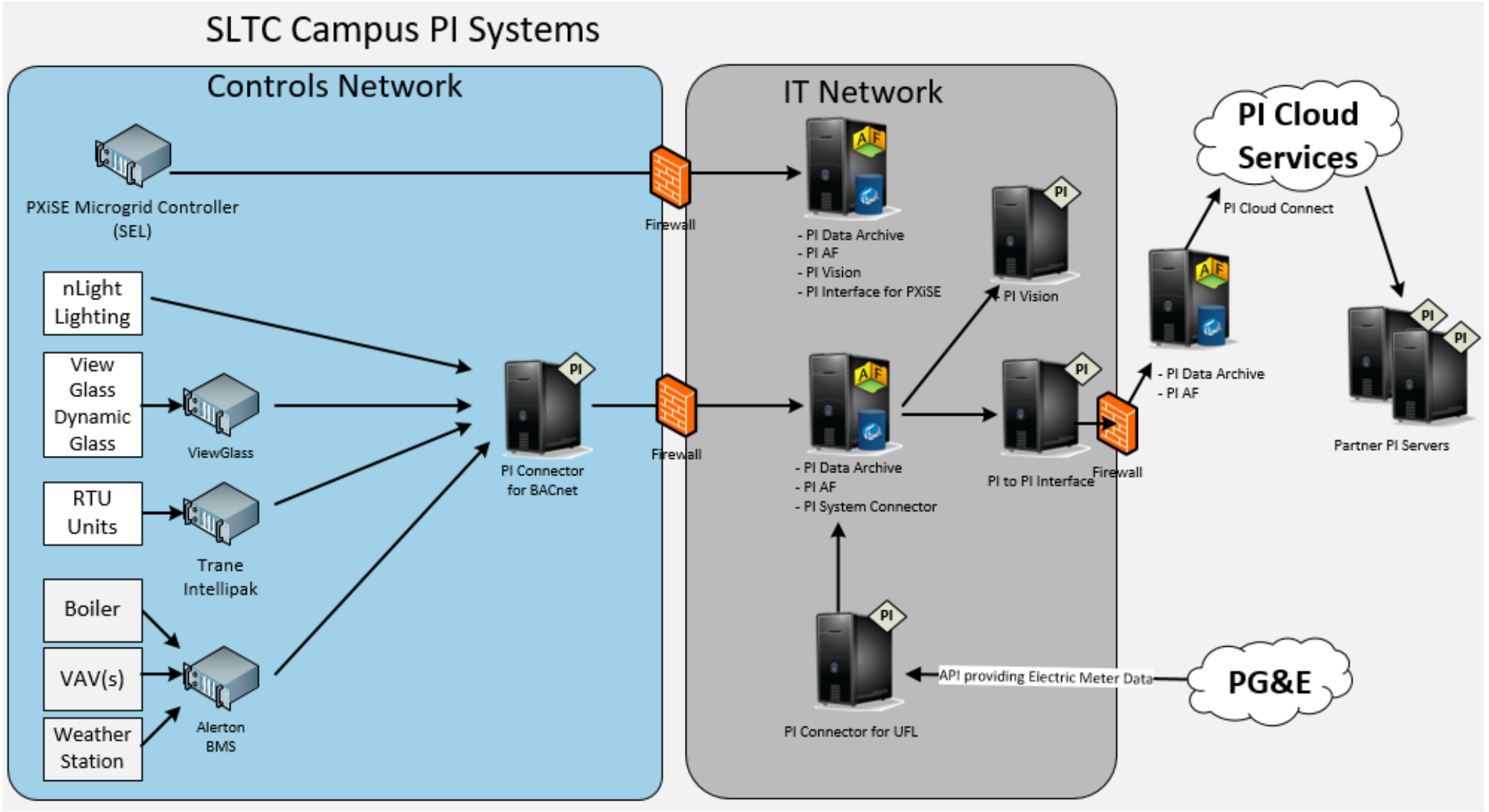
Where we started



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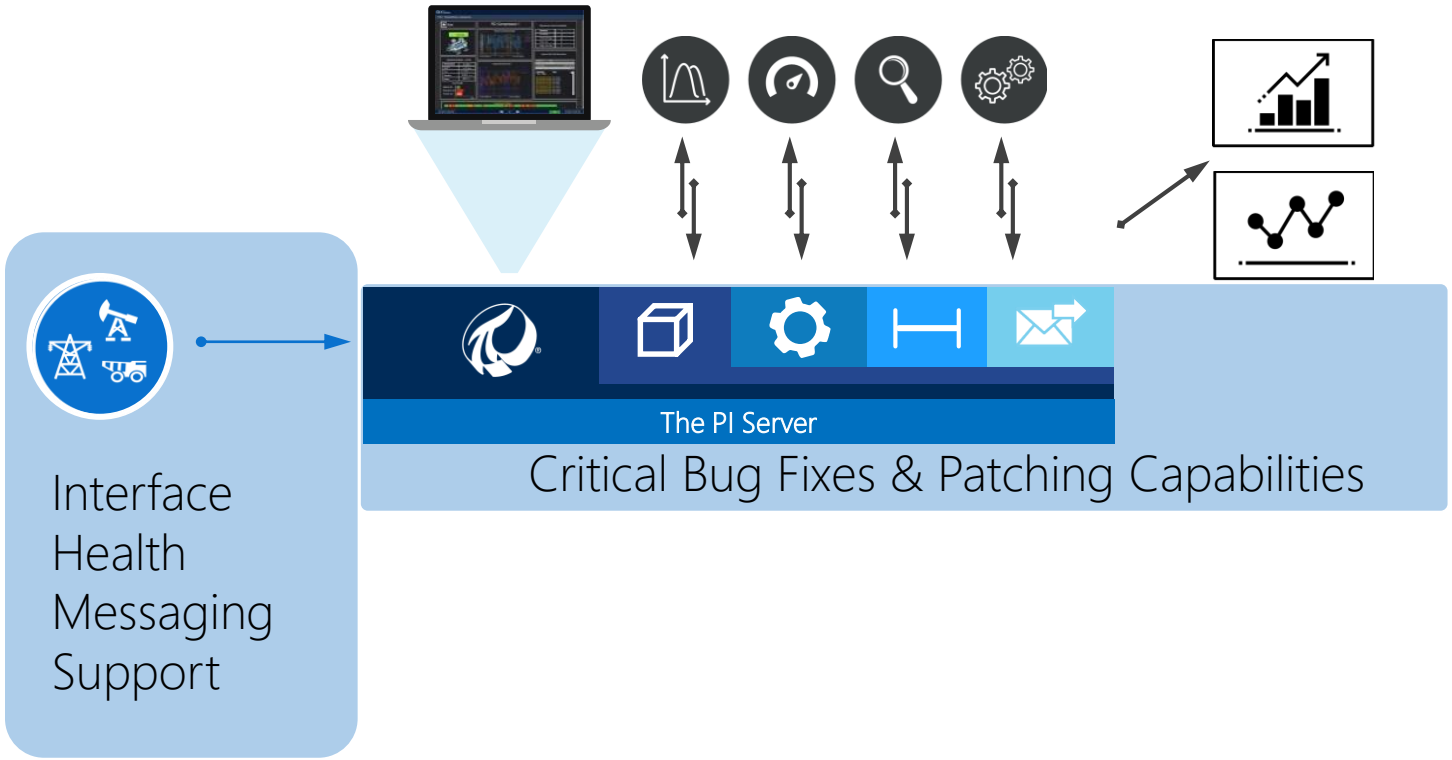
PI Server 2018 SP3



IaaS Deployment Scripts

Data Flow & Function Tests

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PI Vision 2019

PI ProcessBook Migration

Ad Hoc Trending

Streamlined Security for XY Plot and Events Table

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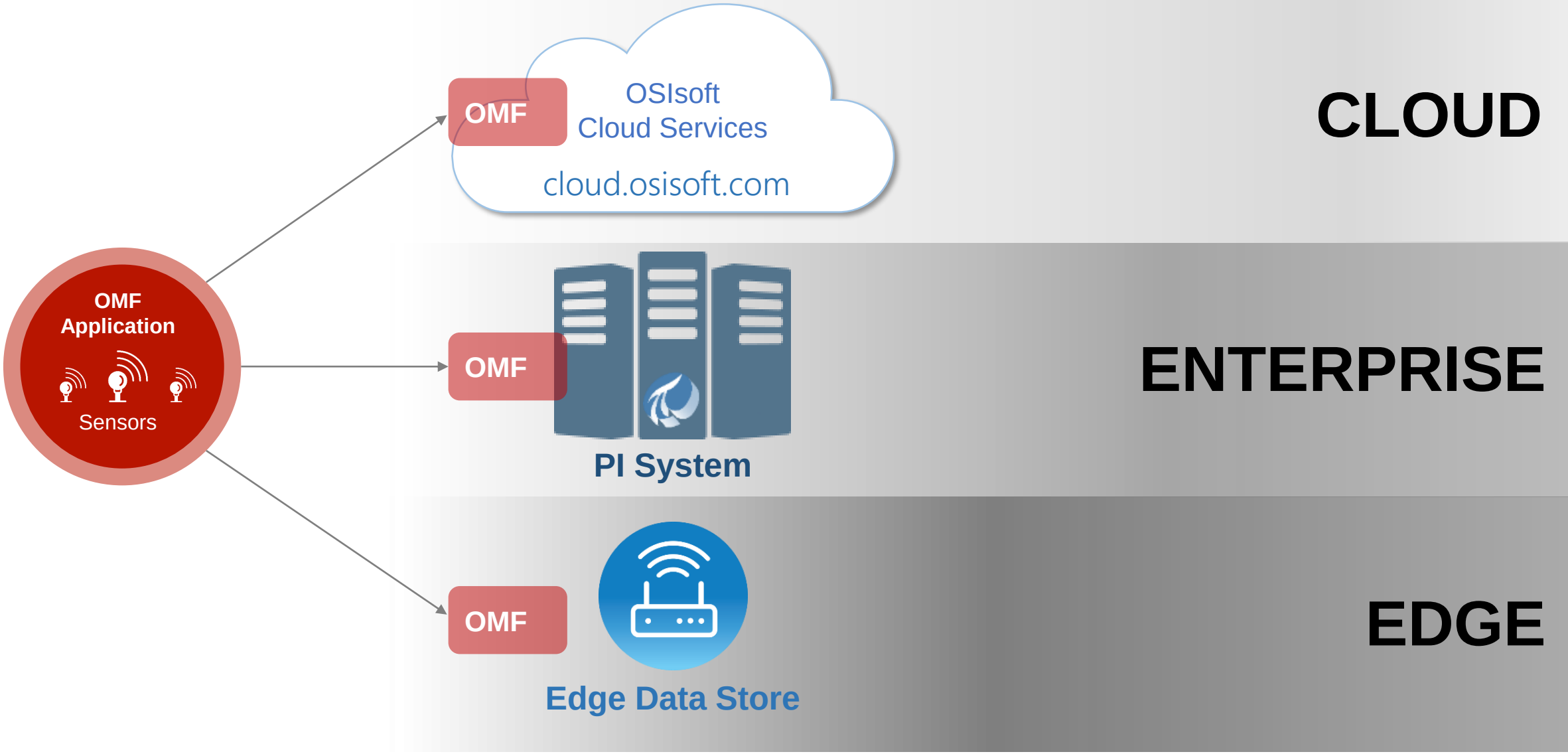
Extending Connectivity to All OSIsoft Systems



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DEMO

PI Vision 2019

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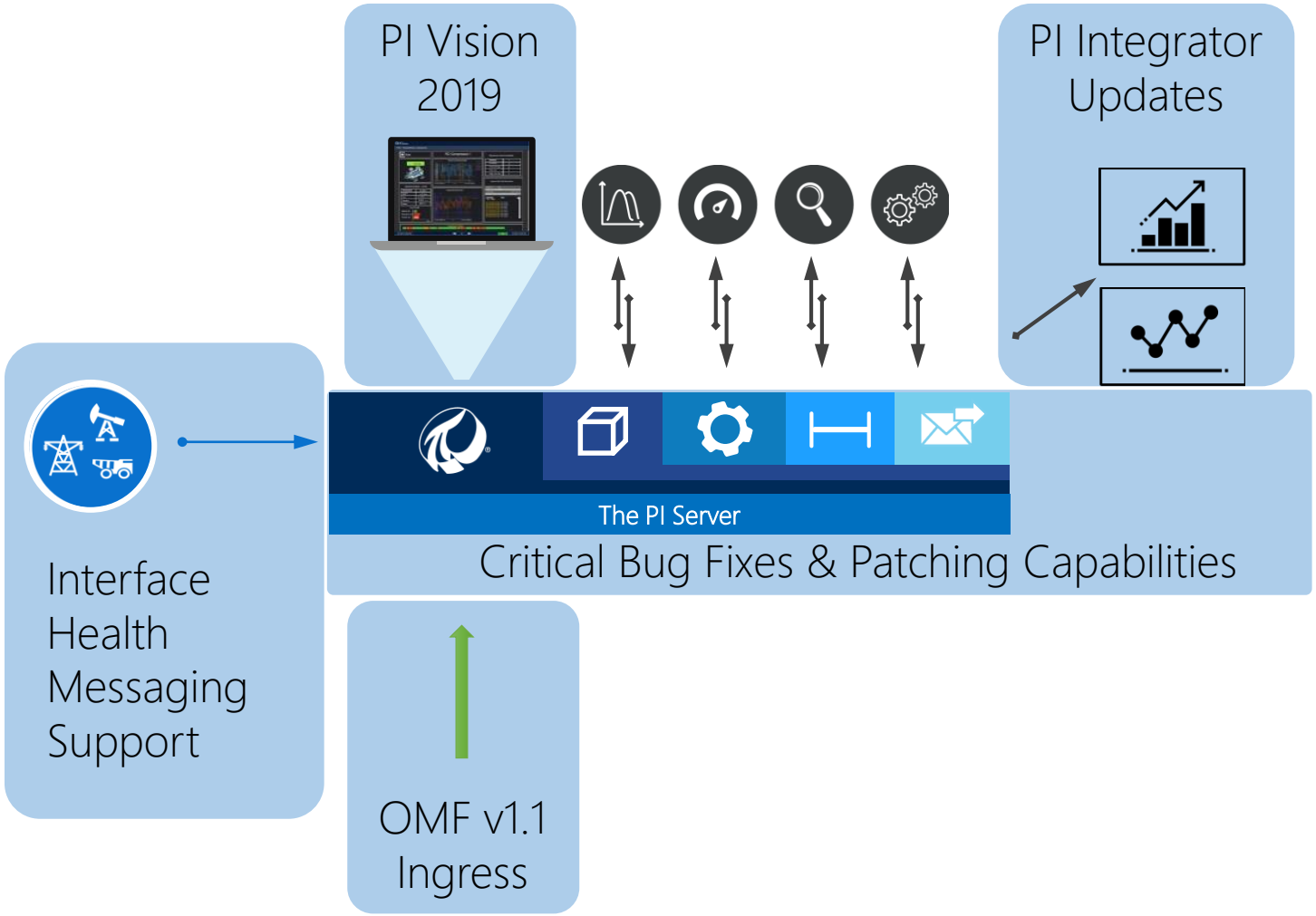
PI System Enhancements



IaaS Deployment Scripts

Data Flow & Function Tests

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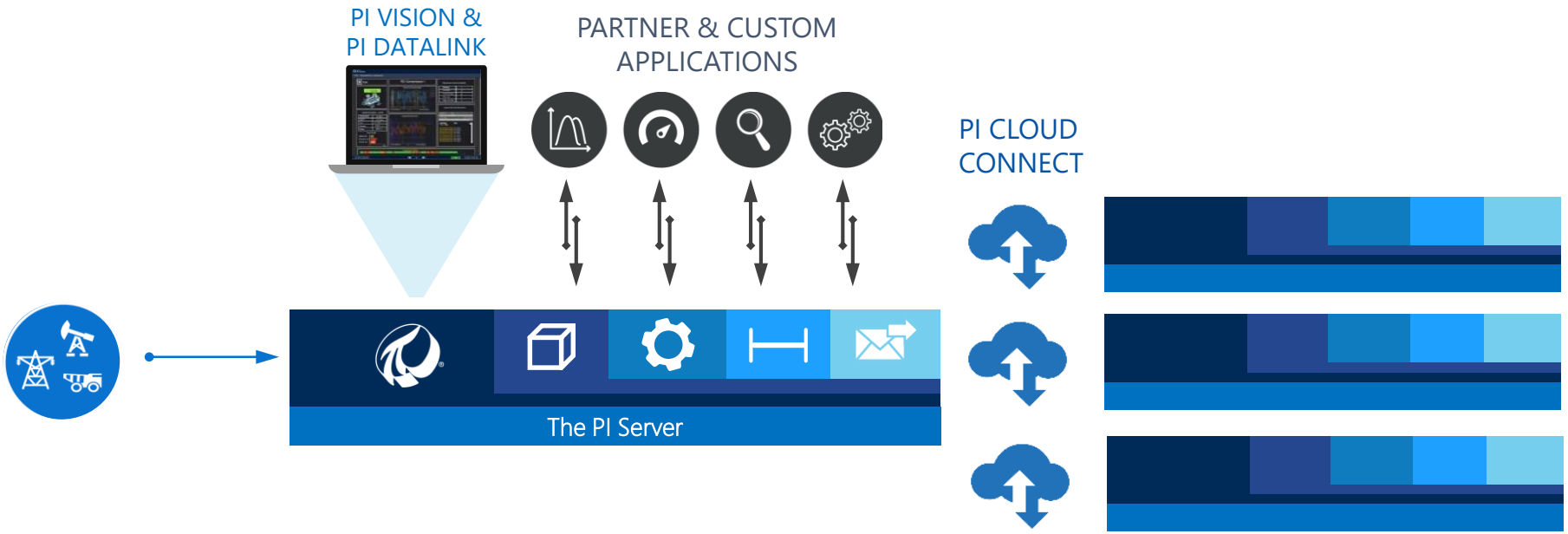
Manageable Systems
Seamless Infrastructure
Increased Scope & Value

Investing in a Seamless Infrastructure



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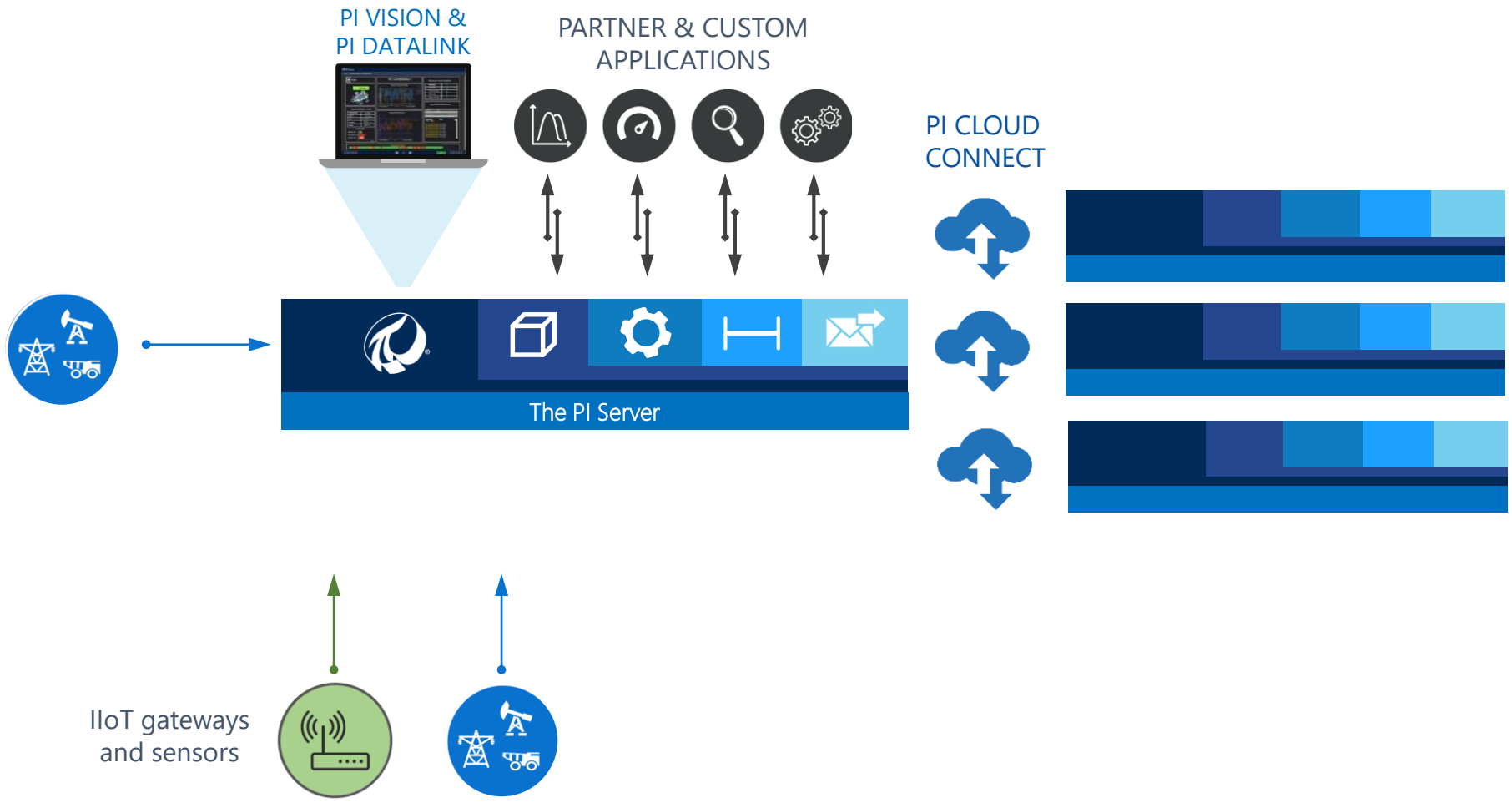
Investing in a Seamless Infrastructure



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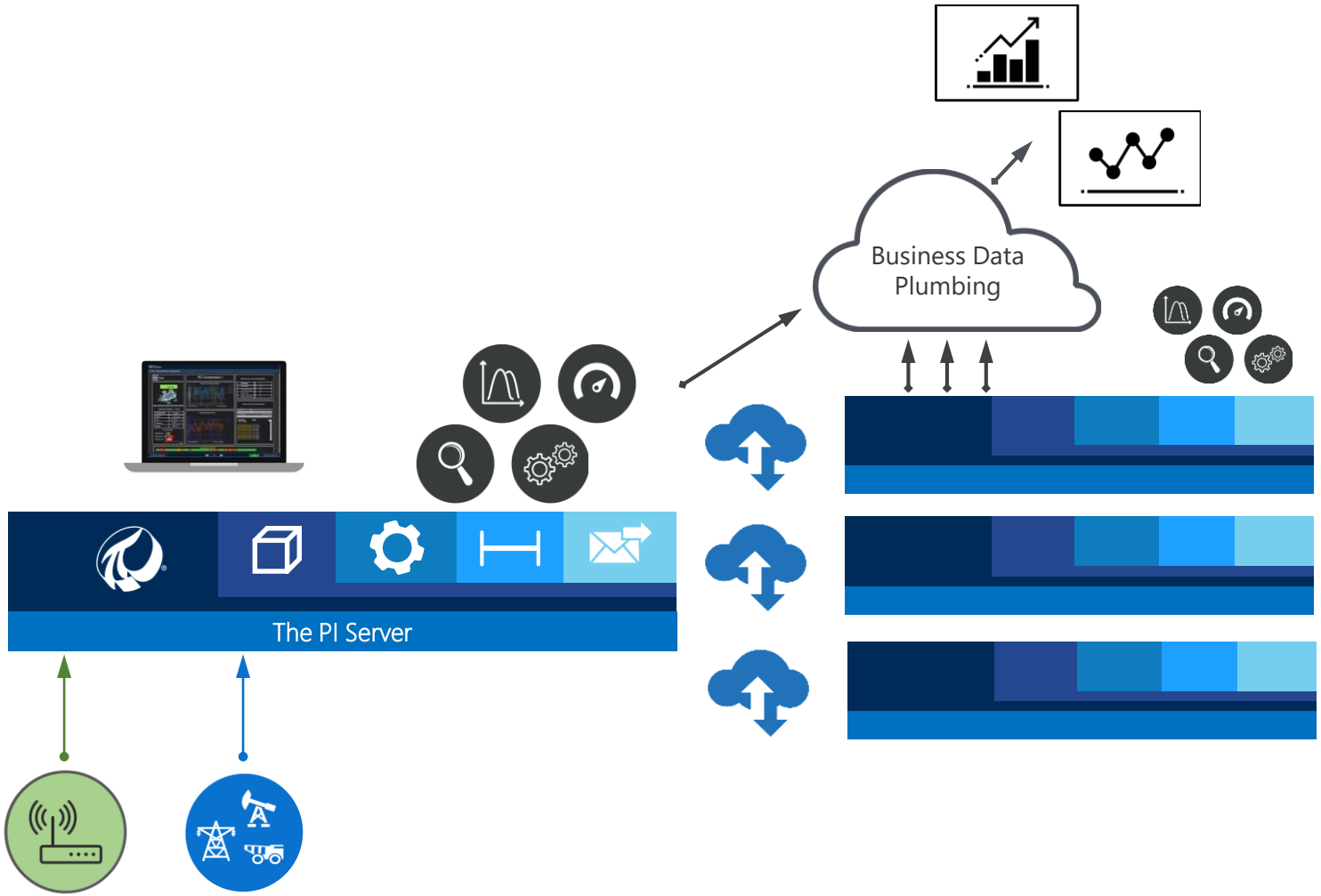
Investing in a Seamless Infrastructure



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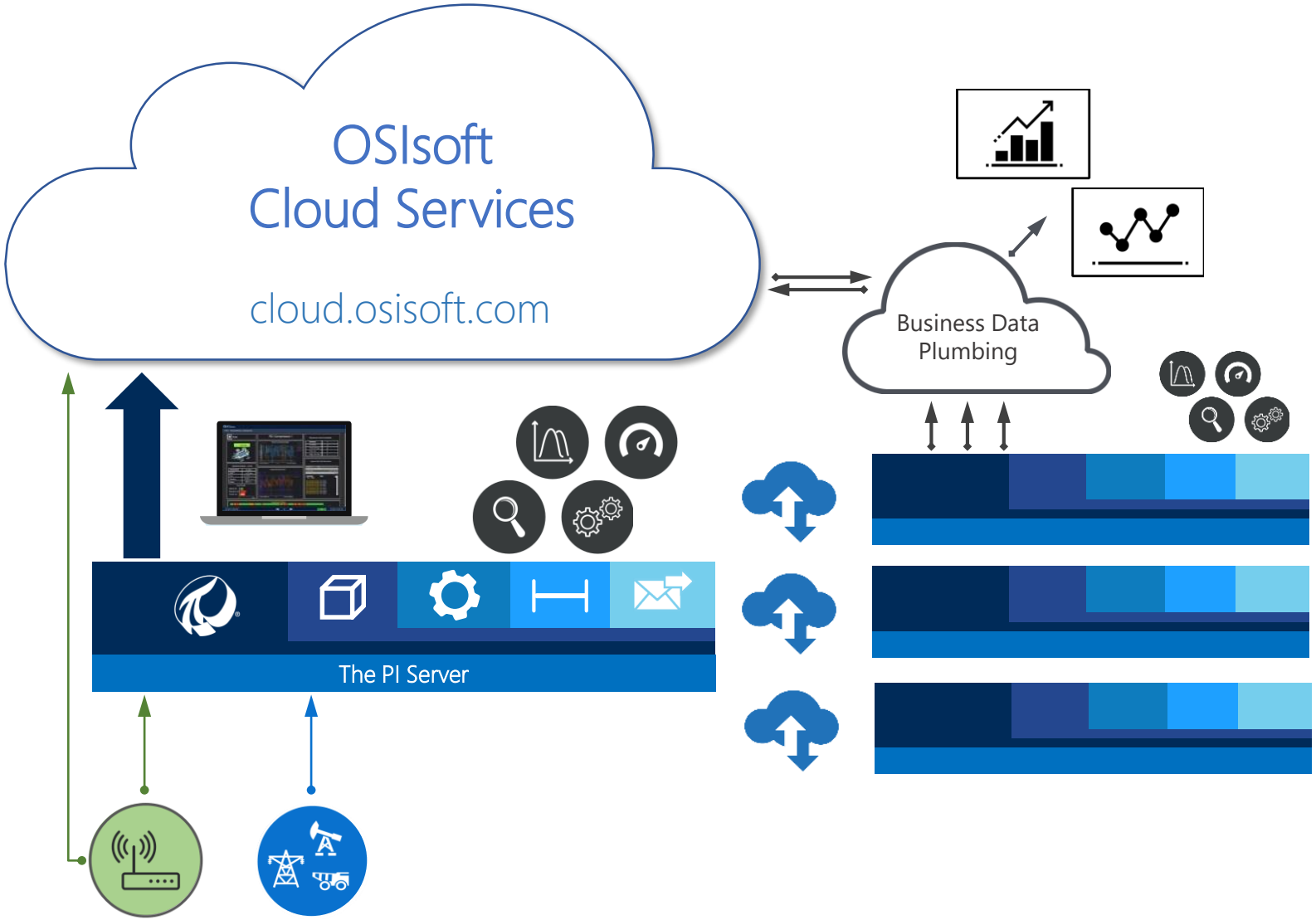
Investing in a Seamless Infrastructure



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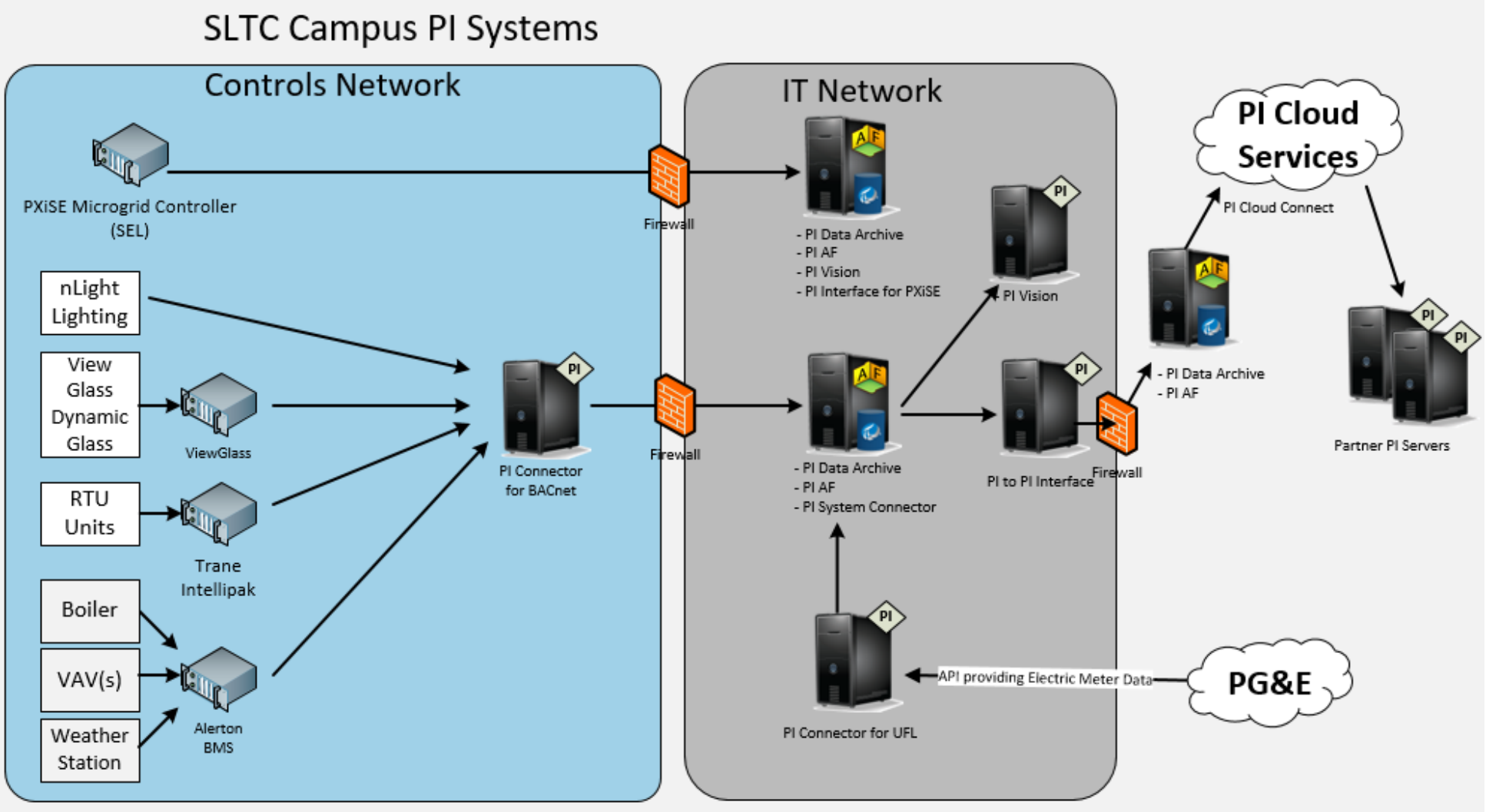
SLTC PI System Deployment



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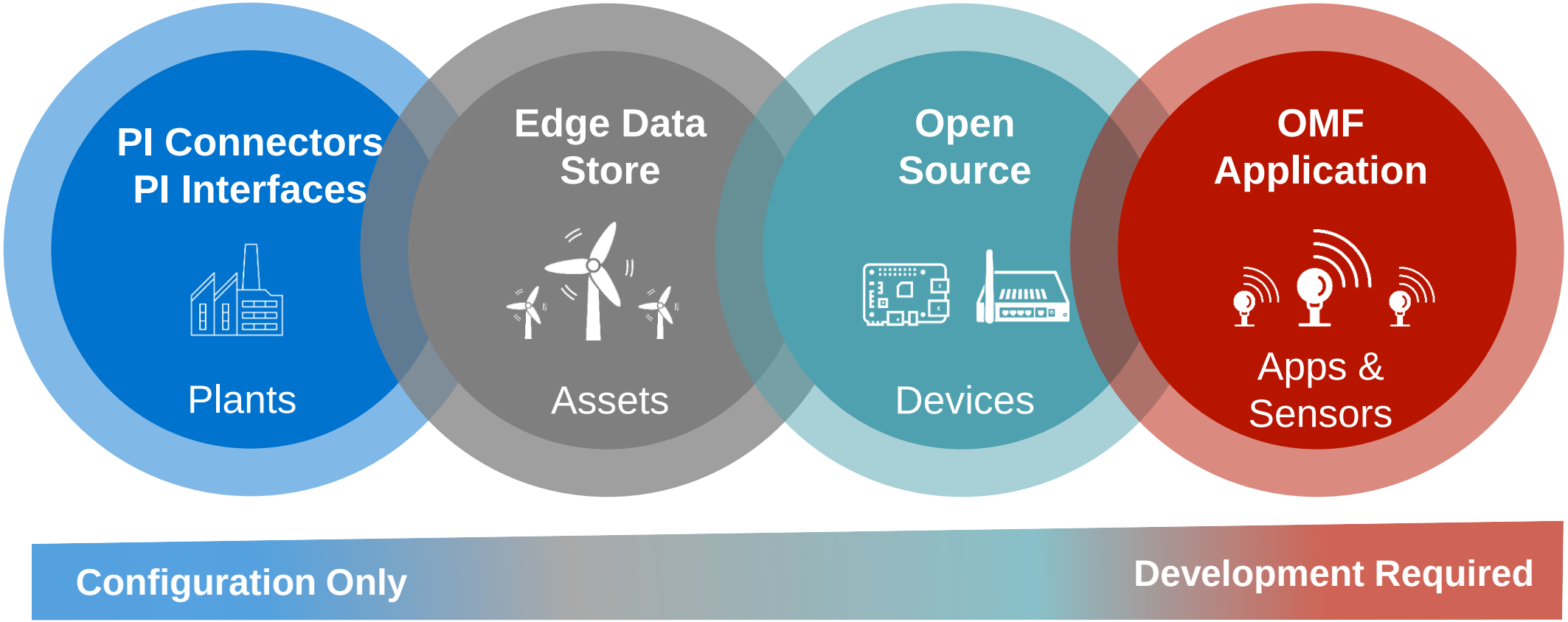
Pervasive Data Collection Products & Technologies



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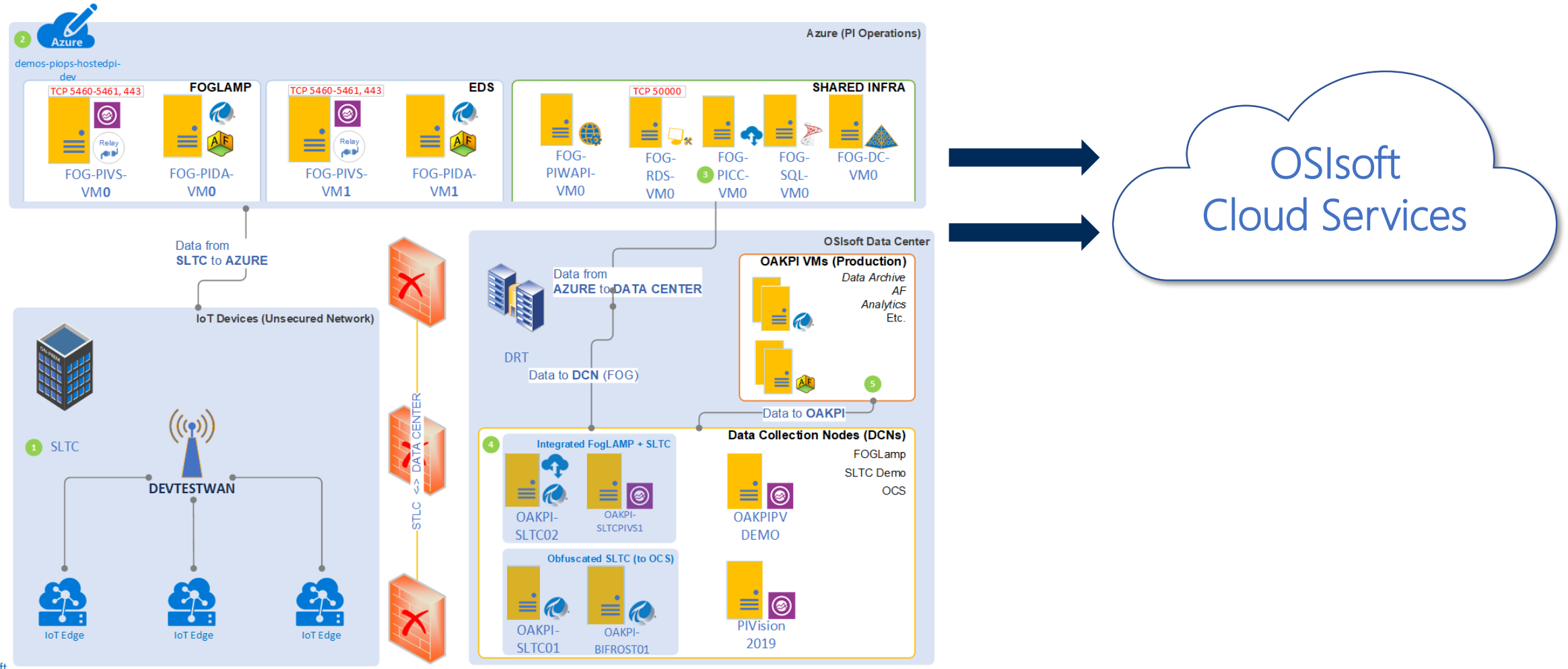
Addressing New Use Cases



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#1

Auto-Tinting Window Monitoring

Powered by FogLAMP and OMF

Challenge

SLTC is instrumented with automatic tinting windows called "Viewglass". When the tinting is set incorrectly, employees are blinded with sun in their eyes. Some folks have even started using umbrellas in the office!

Solution

Install ambient light sensors as a secondary measurement to verify if the windows are behaving properly. This data is then sent to the SLTC's PI System where it's combined with data from the Viewglass system. The data is analyzed and used to help tune the Viewglass setting through the year.

Results

Less employees with bad luck by opening up umbrellas indoors! Faster detection of issues with the ViewGlass windows and more accurate seasonal tuning.

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Device & Sensor Anatomy

Sound

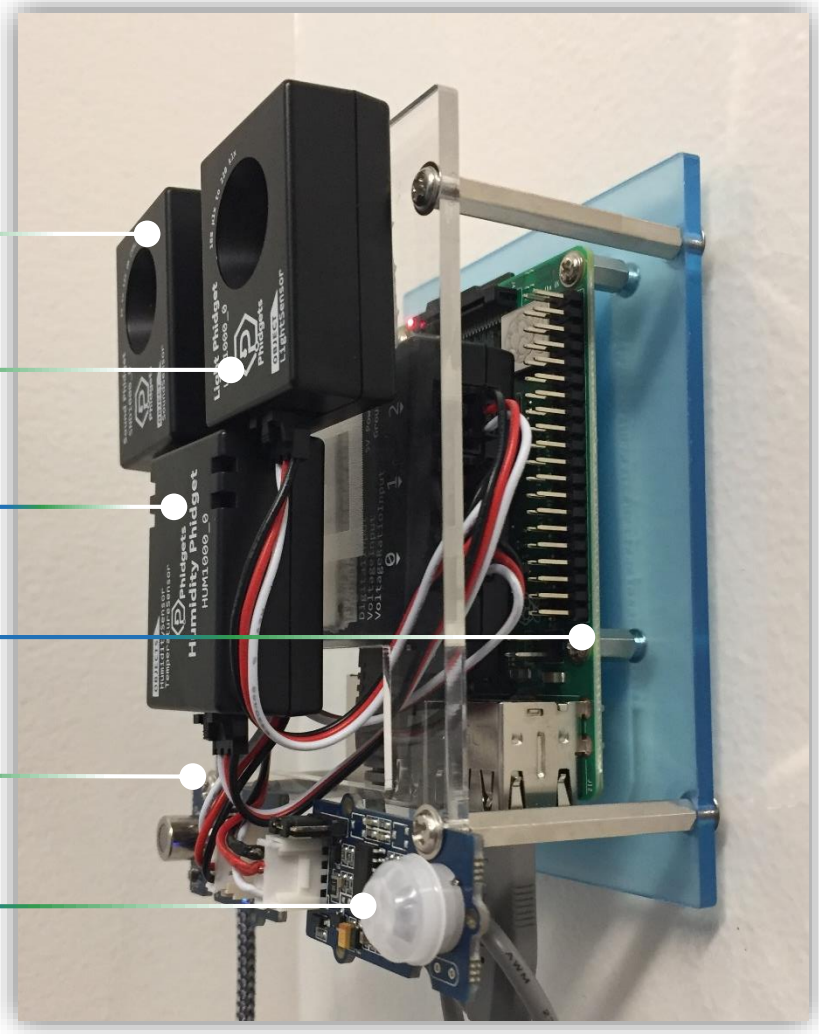
Light

Temperature & Humidity

Raspberry PI 3

Air Quality

Motion



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DEMO

PI Vision & IoT Sensor Data

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#2

Indoor Air Quality + Additional Sensors

Powered by OMF

Challenge

The age of IoT and pervasive data collection challenges the traditional operational approaches to long-standing maintenance and operations methodologies because these smart systems are managed independent of traditional control systems

Solution

Integrate IoT and pervasive data collection into your existing PI Systems through Edge Data Store and OMF to provide an integrated system for situational awareness

Results

IoT Air Quality Sensors can not only help measure the air quality and differential pressure for maintenance, we can also use these systems to provide situational awareness for poor air quality days from pollutants, fires to pollen count and find the intended value from these new systems

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Indoor Air Quality + Sensor Data Collection

CosaTron®
Advanced Technology for Indoor Air Quality

Other Sensors

**

- Ozone (ppb)
- Ozone-outside (ppb)
- Particulate - <2.5u
- Particulate - >2.5u
- Particulate - outside

Occupancy Sensor

**

- Occupancy
- Attendance
- Meeting times
- Meeting load
- CO_2 correlation

AIRTHINGS

- Radon (bq/m^3)
- TVOC* (ppb)
- CO_2 (ppm)
- Humidity (%)
- Temp (°C)
- Pressure (atm)

OSIsoft Cloud Services (OCS)

*Total Volatile Organic Compounds

** image for representation purpose only

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DEMO

PI Vision & IoT Sensor Data

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Dark Data

#3

Espresso Machine Monitoring

Powered by
Edge Data Store

Challenge

The espresso machines at the SLTC are leased from a 3rd party. How do we remotely connect our service provider to ensure reliable equipment operation?

Solution

Install sensors to capture and securely share critical data about espresso machine health before it's too **latte** to take action!

Results

OSIsoft increases reliability of espresso machines by collaborating with our Caffeinated Service Advisor so they make fewer trips on-site.

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DEMO

IoT Sensor Data, EDS and OCS

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Extending Your Data Infrastructure from Edge to Cloud

At the Edge
Collecting more data from more sources

In the Cloud
Enabling advanced analytics and new data-driven services

Sensors	Assets
Millions of Smart Devices	Multiple Sensors

Lighthouse Release

Edge Data Store

Extend your Data Infrastructure with dedicated OSIsoft Engineering Support

Plant

Enterprise

Community

Multiple Plants

Multiple Enterprises

Pervasive Data Collection (PDC)

OSIsoft Cloud Services

PI System

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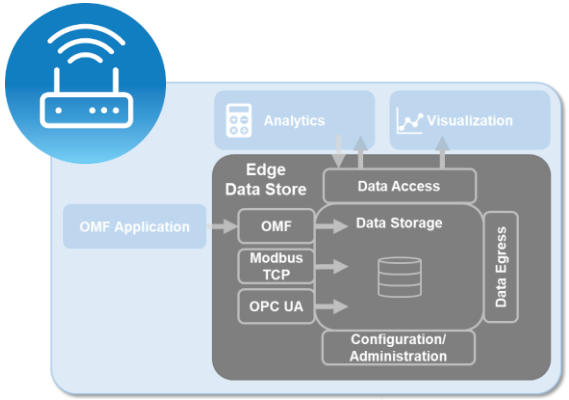
Edge Data Store Partners

IPCOS

Visit IPCOS at their booth in the Exhibit Hall!

ROLLOOS

Attend Rolloos Day 3 Marketplace Partner Showcase talk at 09:50!



OSIsoft Edge Data Store

Transpara™ NOW YOU KNOW.

NEXCOM

See a Nexcom IoT gateway on display at the Edge Technologies booth in the Exhibit Hall!

UET

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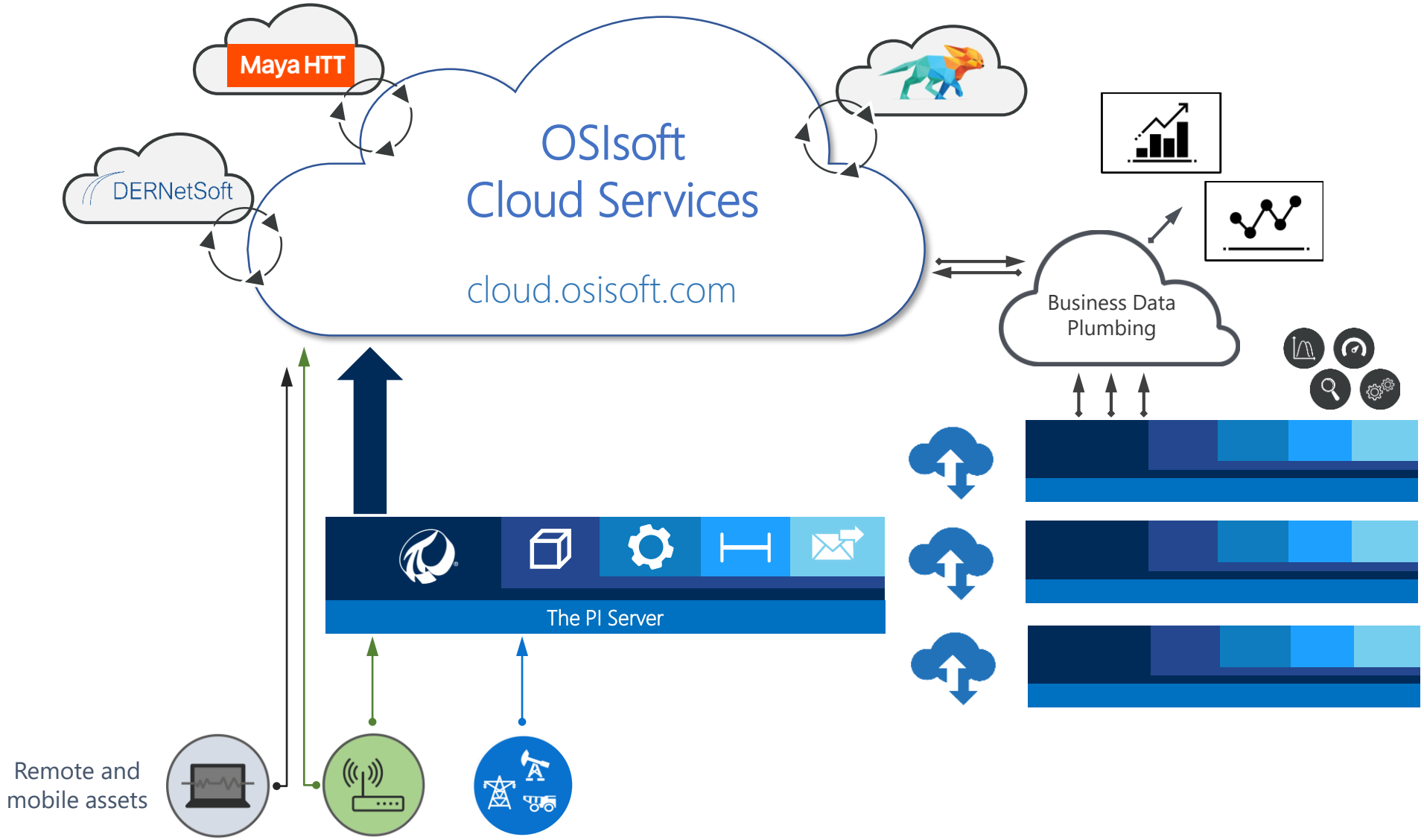
Manageable Systems
Seamless Infrastructure
Increased Scope & Value

Increasing the Scope & Value of Data



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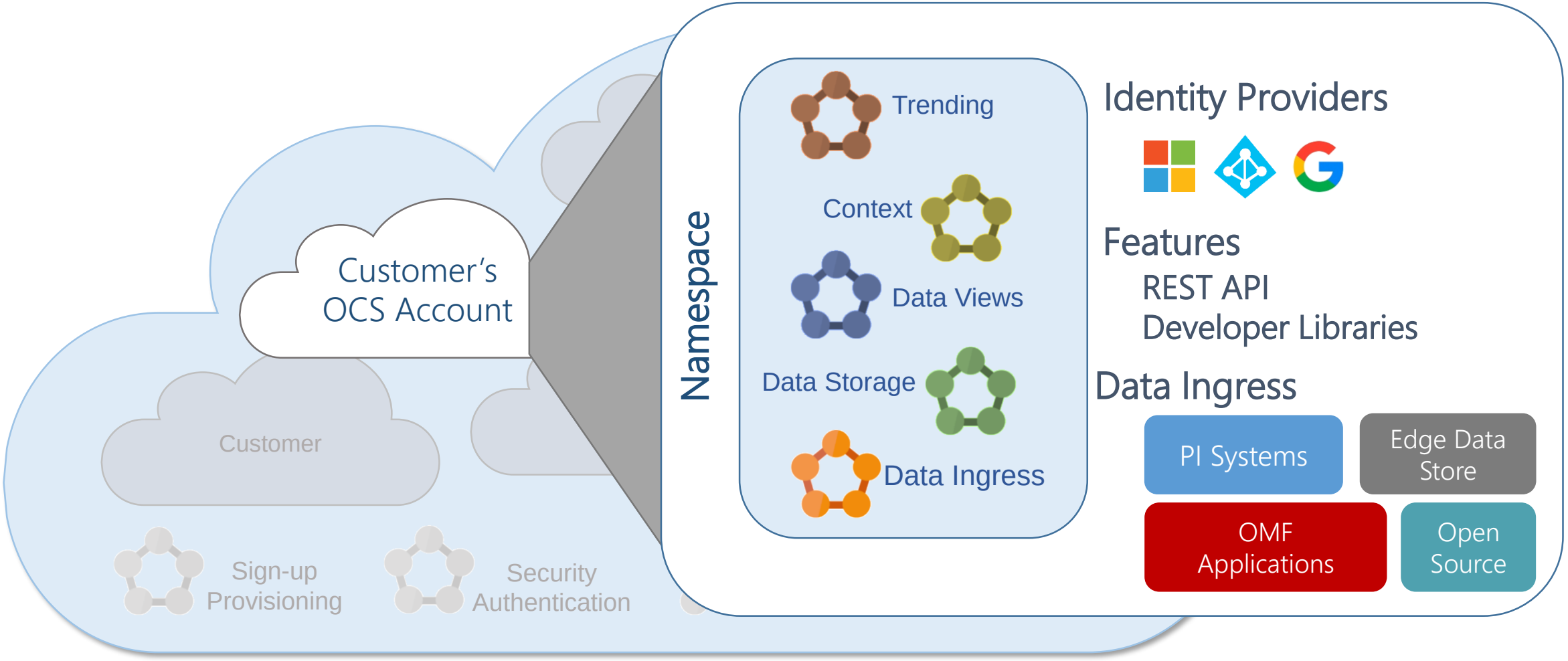
OSIsoft Cloud Services

micro services



Cloud Services Infrastructure

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DEMO

OSIsoft Cloud Services

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Maya HTT

mayahtt.com

Product Lifecycle Management

Simulation

AI & Big Data Analytics

Internet of Things

Manufacturing Simulation

Cloud Applications

Custom Engineering Applications

Optimization Services
Automation, Standardization & Compliancy

Composites

35+	Software solutions developed & maintained
7+ Years	Partnership with OSIsoft
75%	Engineers & Scientists
22%	PhDs

Outlier Analysis powered by OCS

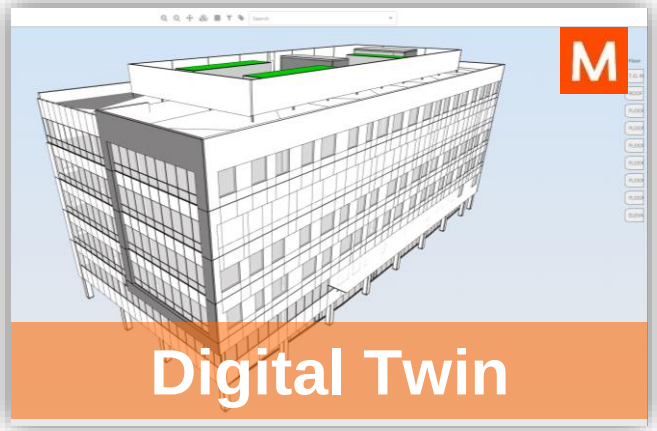
Maya HTT

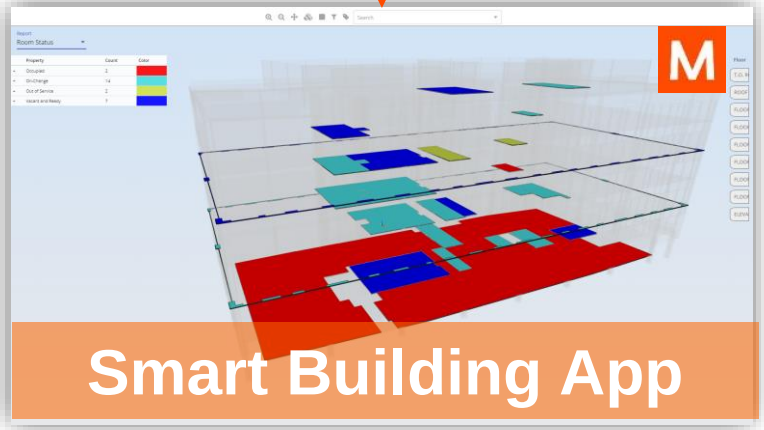
Smart Building Application Example

OSIsoft Cloud Services

Anomaly Label Microservice

Outlier Detection Microservice





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OSIsoft Cloud Services – Partners

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Product at PI World 2019 Gothenburg

Talks & Expo

- **Product Talks**
  - Pervasive Data Collection
  - PI System for Critical Operations and Advanced Analytics
    - PI Integrators too!
  - Visualization
  - OSIsoft Cloud Services
- **Best Practices**
  - Deep Dives (AF & EF)
  - Best Practices (Deployment & Scale)
- **Expo Room**

Releases & Announcements

- **Available today**
  - OSIsoft Cloud Services Partner PaaS
    - North America
  - PI Server 2018 SP3
  - PI Integrator for Business Analytics 2018 R2 SP1
    - Streaming data support
    - Amazon Web Services support!
  - Many Connectors & Interfaces
- **Available soon**
  - PI Vision 2019
  - PI Web API 2019 w/ OMF Ingress

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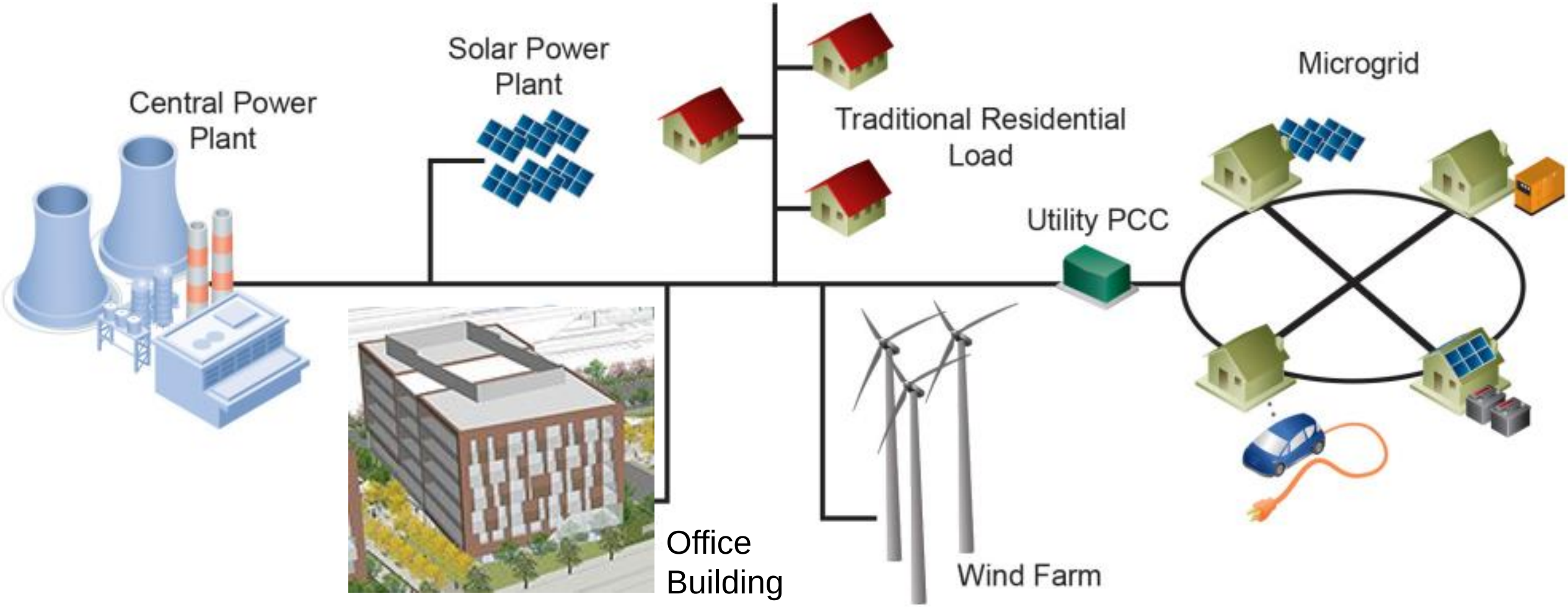
PI World

2B
Data
Streams



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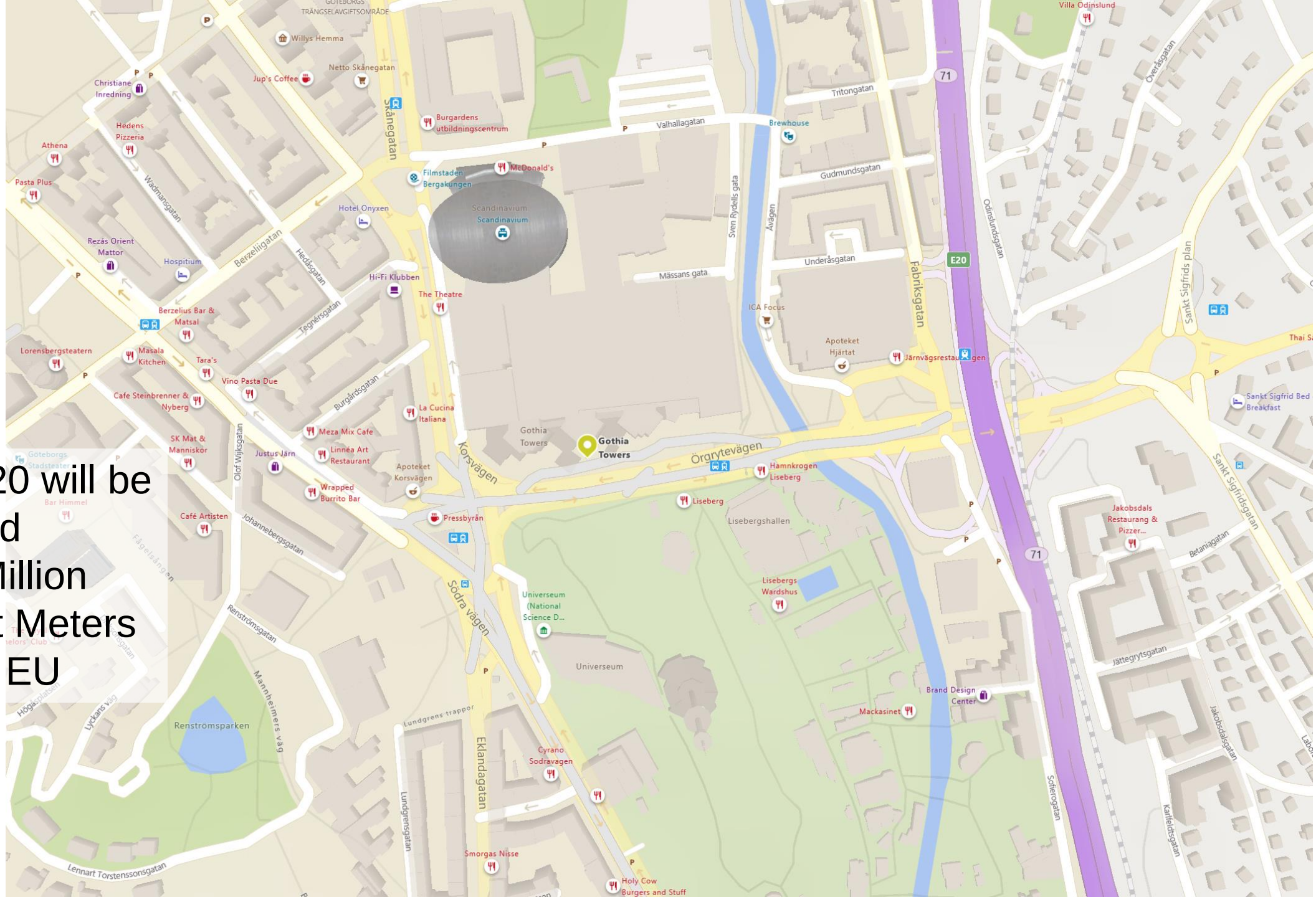
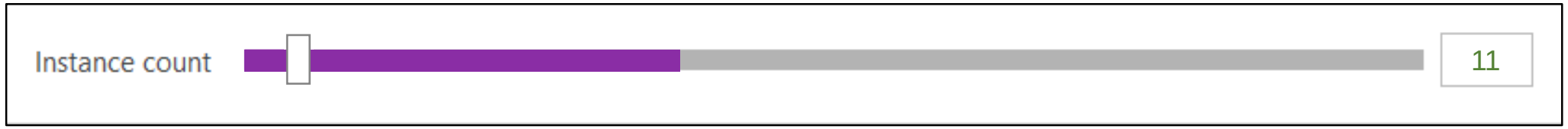
In 2020 will be around
200 Million
Smart Meters
in the EU



OSIsoft Cloud Services

A Cloud Scale System of Record

OCS: Sign Up,
Scale Out*



* We're pretty sure this is how it works…

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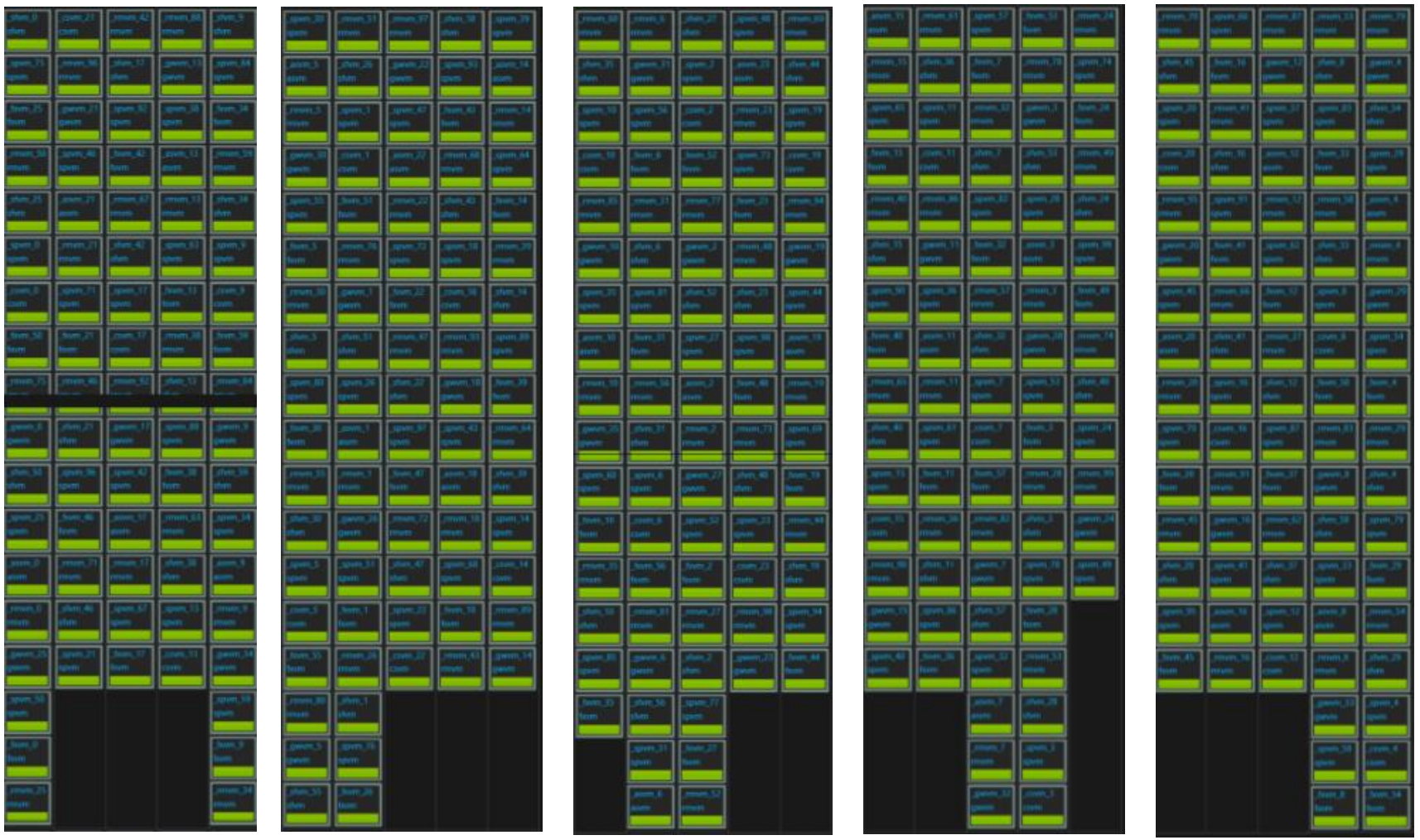
OCS – Secure Sharing at Scale



- **Big or Small** enough for your PI System
- **~2 Billion Data Streams!**
  - ~200M AMI Meters
    - 10-20 properties each
- **Data: Ready to Use**
  - Billions & Trillions of events
  - ~12B events / hr

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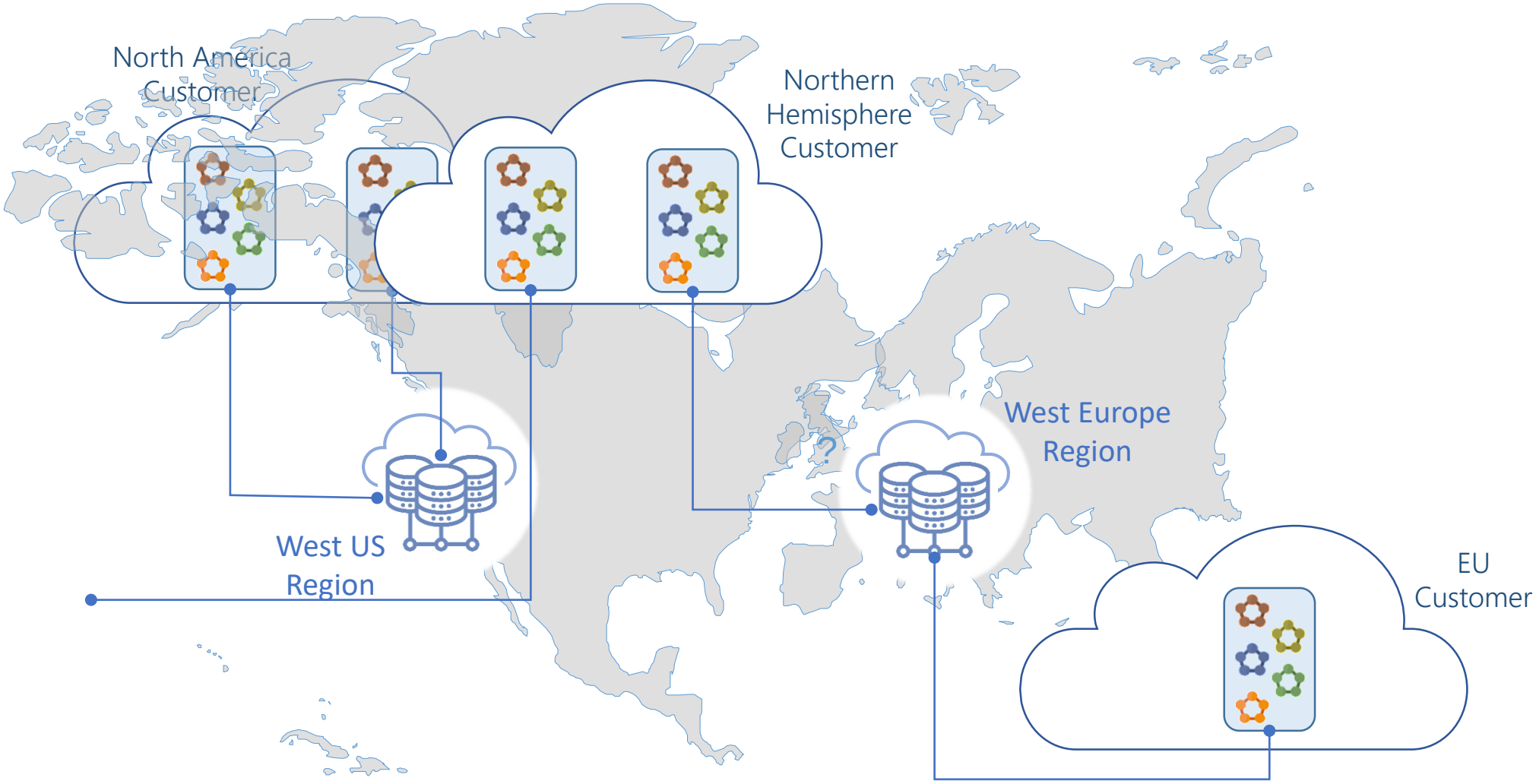
OSIsoft Cloud Services



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