

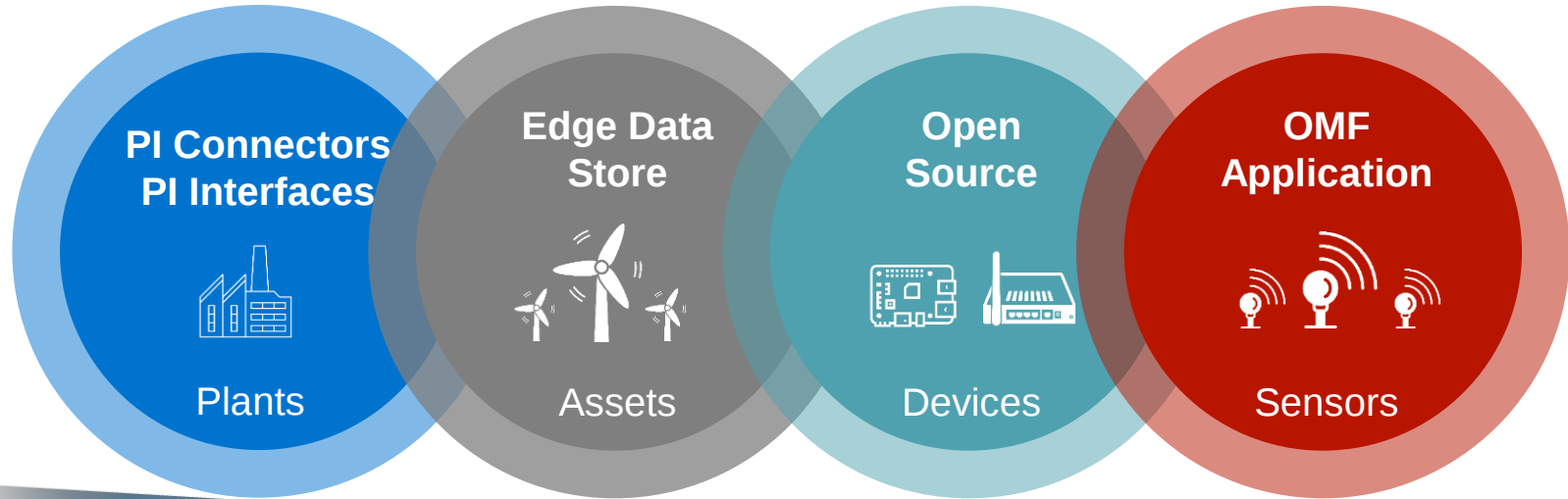
Pervasive Data Collection – All the Ways to Collect Your Data

Chris Coen, Product Manager
Chris Felts, Product Manager

Pervasive Data Collection

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

Pervasive Data Collection Products & Technologies

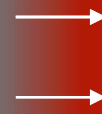


10,000's
High



Data Streams

Compute Resources



10's
Low

PI Connectors & PI Interfaces

PI Connectors
PI Interfaces



Plants



Ready Off-The-Shelf



Secure Architecture



High Performance

- Flexible Deployment
- Cross Platform (Windows, Linux)
- Robust data collection (Data Buffering)
- Intelligent Data Selection and Data Transfer
- Developed, Sold, and Supported by OSIsoft

PI Interfaces

- Majority of data collection today
- Strongly supported
- 30+ releases per year
- Hundreds available



PI Connector benefits



Streamlined Configuration

Auto create PI Points with rules-based data selection.

Auto discover data, now and later

PI Connectors monitor the source so you don't have to.

Unified Admin Experience

A one-stop shop to manage data collection across your sources.

Secure & Flexible Architectures

Send data securely across diverse networks to multiple destinations.

PI Connectors Available today

PI Connector	Market	PI Connector	Market
▶ BACnet	Facilities	▶ NOV WITSML	Upstream, drilling
▶ CygNet	Upstream Oil & Gas	▶ OPC UA 	Many
▶ DC Systems RTscada	T&D	Ping	IT infrastructure
▶ EtherNet/IP	High-speed PLC data	▶ PI System Connector	Many
▶ FANUC Focas	Discrete	PI System Health	IT infrastructure
▶ HART-IP	Wireless sensors	▶ Siemens SINUMERIK	Discrete
IEC 60870-5-104	T&D Substations	Siemens SIMATIC PCS 7	Many
▶ IEC 61850	T&D Substations	▶ UFL	Many
▶ IPMI	Datacenters	▶ Wonderware Historian	Many
▶ MTConnect	Discrete		

Demonstrations:

-  in presentation
- ▶ in Product Expo

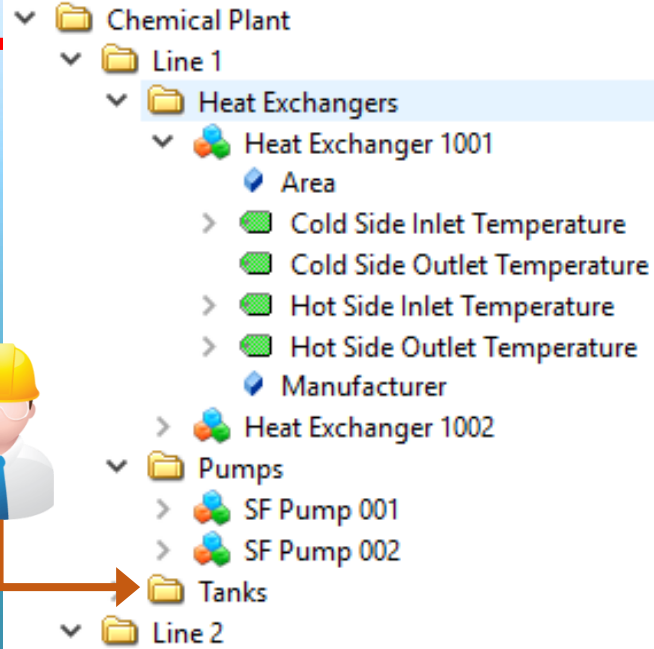
New PI Connectors in development

PI Connector	Market	Status
GE EterraHabitat	T&D	Development
Honeywell PHD	Many	Development
▶ Modbus for Cisco IOx	All	Release soon
▶ MQTT Sparkplug	All	Alpha
▶ Redfish	Datacenter	Beta
Siemens Spectrum 7	T&D	Development
Tridium	Facilities	Development

Demonstrations:

▶ in Product Expo

Auto discovery and rule-based data selection



Select by rules:

Every Pump – 2 of 5 tags

Every Tank – all data

Every Heat Exchanger – only
*Temperature values

Easy



Collect the data you need

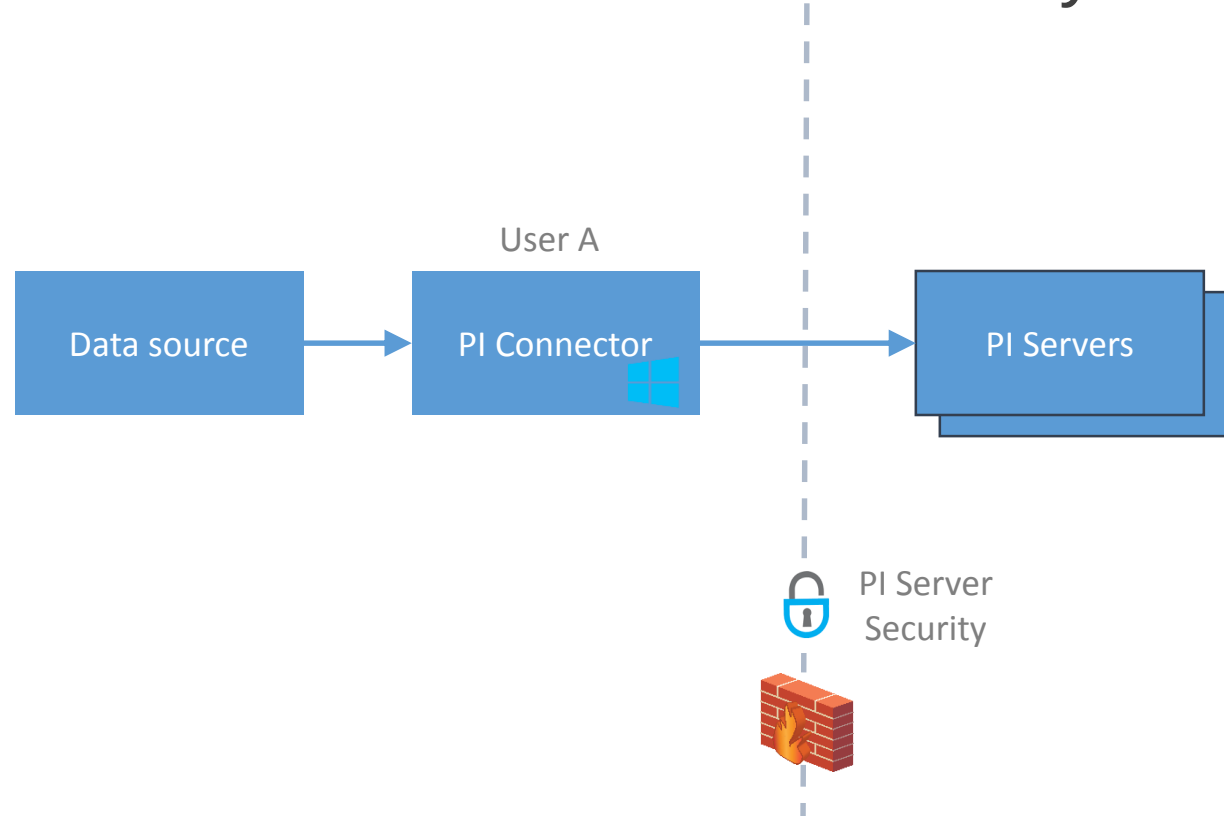
Build the tags & reference AF model with meta
data you select

Updates – Auto or with Approval

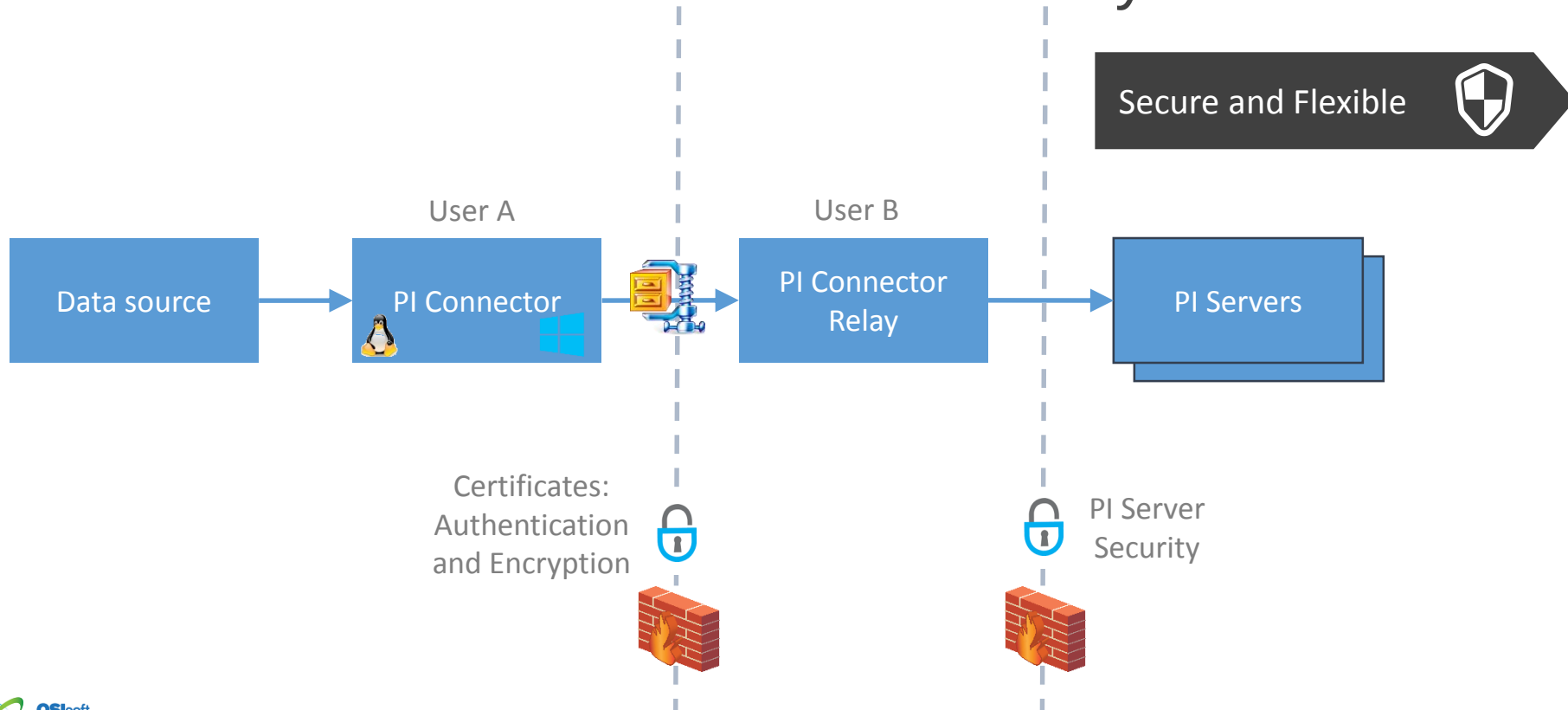
Automatic



PI Connectors – before PI Connector Relay



PI Connectors with PI Connector Relay

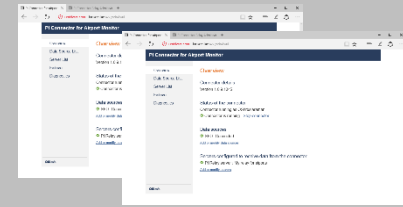
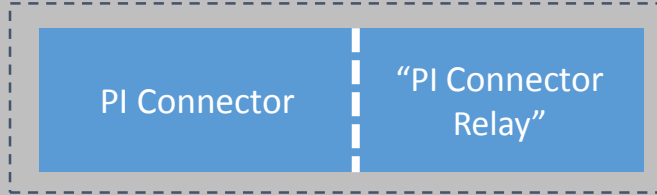


PI Connector evolution

PI Connector

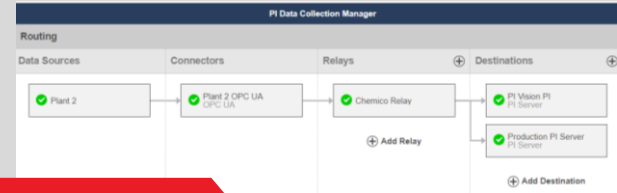
PI Connector Relay

Administration



PI Connector

PI Connector
Relay



Unified



PI Connectors Available today

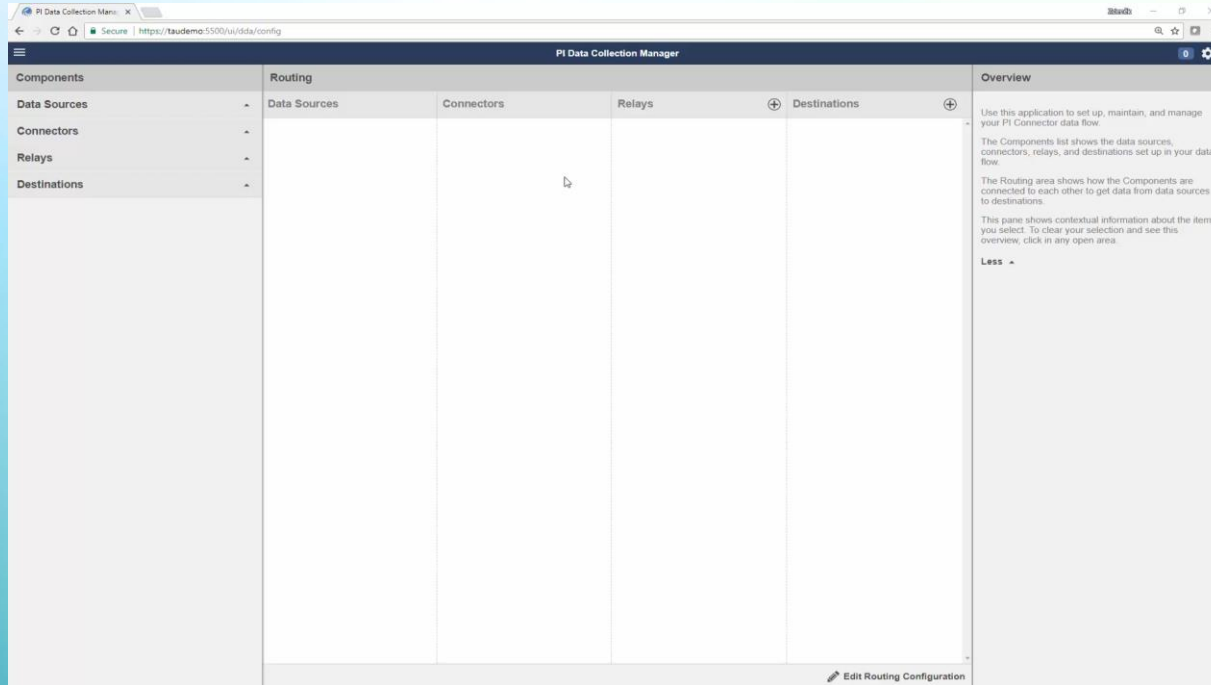
PI Connector	Market	PI Connector	Market
BACnet	Facilities	NOV WITSML	Upstream, drilling
CygNet	Upstream Oil & Gas	OPC UA	Many
DC Systems RTscada	T&D	Ping	IT infrastructure
EtherNet/IP	High-speed PLC data	PI System Connector	Many
➔ FANUC Focas	Discrete	PI System Health	IT infrastructure
HART-IP	Wireless sensors	➔ Siemens SINUMERIK	Discrete
IEC 60870-5-104	T&D Substations	Siemens SIMATIC PCS 7	Many
IEC 61850	T&D Substations	UFL	Many
IPMI	Datacenters	Wonderware Historian	Many
➔ MTConnect	Discrete		

➔
Uses PI Connector Relay and
PI Data Collection Manager

PI Connector for OPC UA

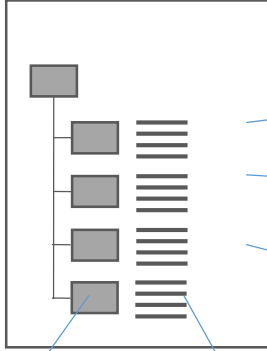
- Released version is single process
- Upcoming version supports PI Connector Relay and PI Data Collection Manager
- Demo: using PI Data Collection Manager with PI Connector for OPC UA

PI Connector for OPC UA using PI Data Collection Manager



PI Connectors create reference model

AF reference model



Process Engineer



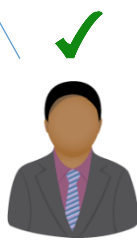
Accountant



Maintenance Engineer



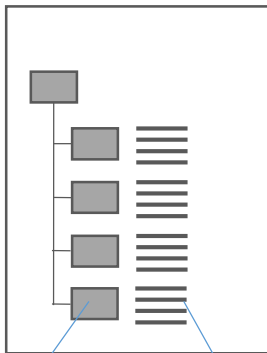
PI Administrator



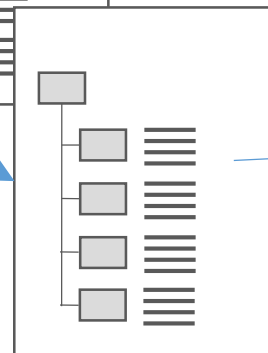
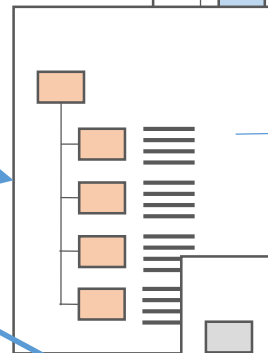
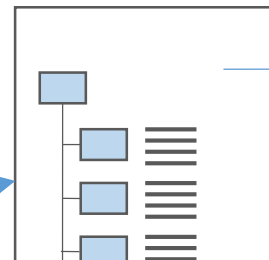
Corporate Engineer

Transformed models

AF reference model



Business Models



Process Engineer



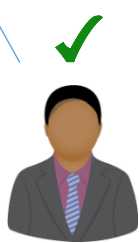
Accountant



Maintenance Engineer

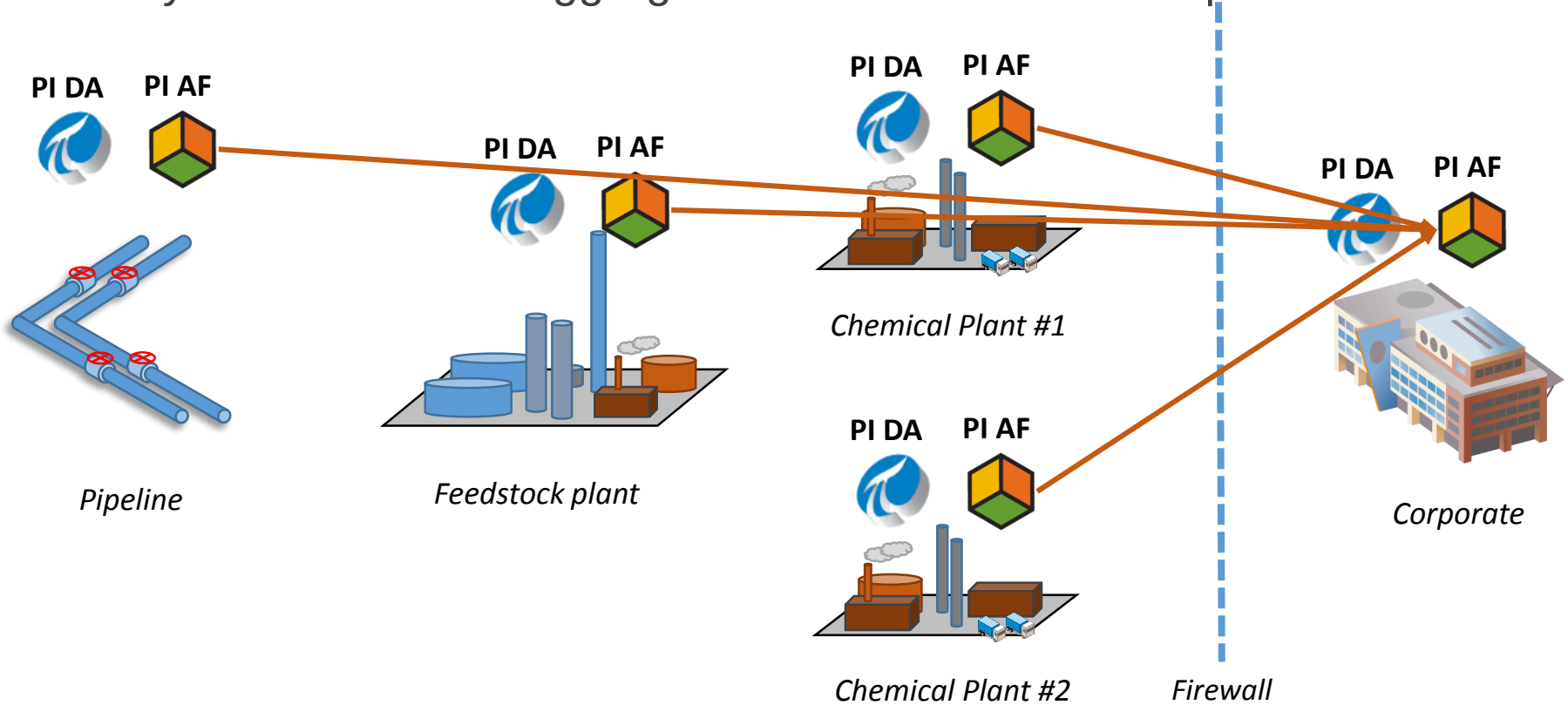


PI Administrator



Corporate Engineer

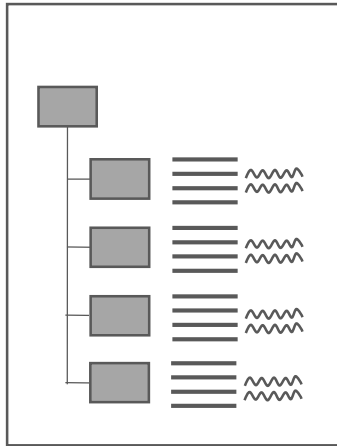
PI System Connector aggregates data from sites to corporate



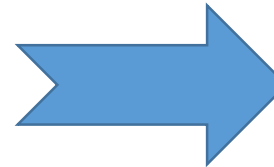
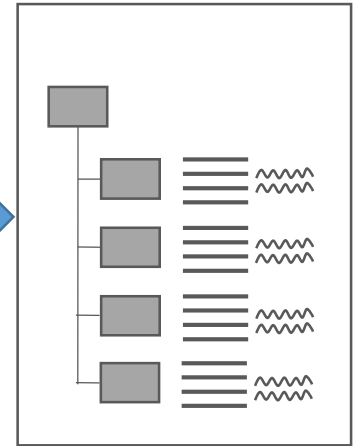
What data is PI System Connector moving?

- PI AF Support
 - Elements/Element Templates
 - Event Frames
 - Units of Measure
 - Tables (excludes linked)
 - Other AF Library Objects
 - AF object updates
- PI Data Archive Support
 - PI Point Creation and Edits
 - Digital State Sets
 - Archive Data Replication

Source



Destination



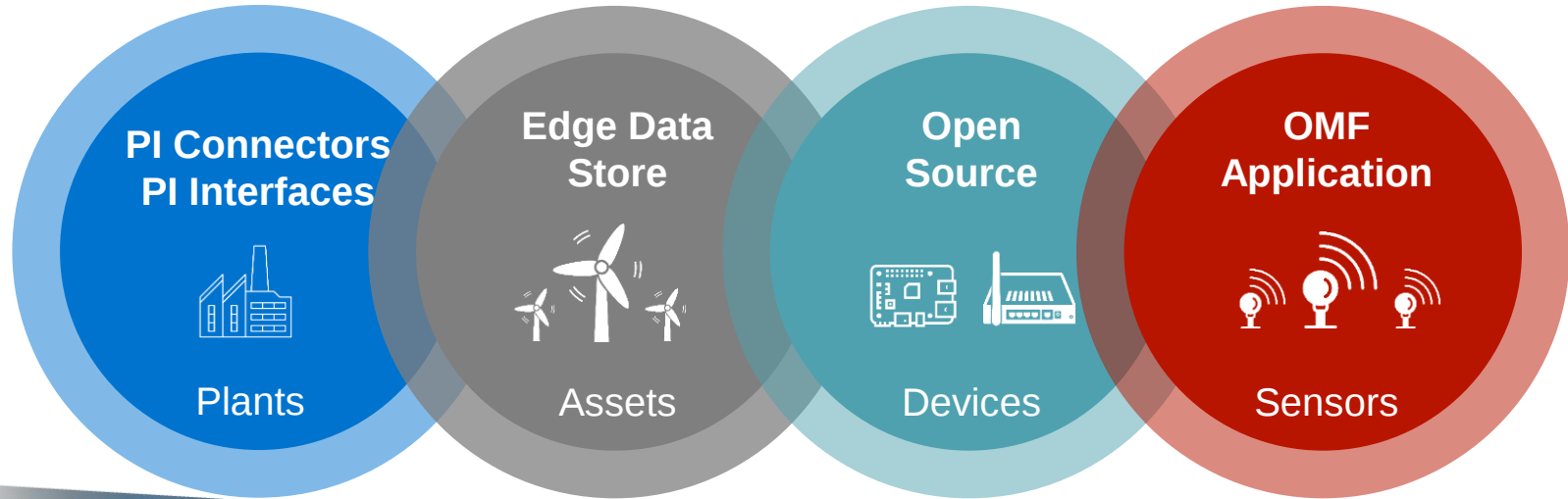
When should I use PI System Connector?

	PI to PI Interface	PI System Connector
Operates without PI AF	Yes	No
Snapshot data	Yes	No
History recovery for downtime	Yes – Manual	Automatic
Auto create PI Points	Yes with PI AutoPointSync	Yes
PI AF data including Event Frames	No	Yes
Auto create Digital State Sets	No	Yes

What else is new in PI Connectors?

- PI Connector for UFL
 - Native JSON parsing
 - ForEach loop
 - Parameterized web service calls
 - PI Connector for BACnet – COV (change of value)
 - PI Connector for WonderWare Historian – new history recovery
 - More!
-
- Come see us at our product expo booth in Golden Gate ballroom!
 - Request new features and check progress on other features at ***feedback.osisoft.com***

Pervasive Data Collection Products & Technologies

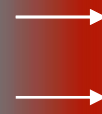


10,000's
High



Data Streams

Compute Resources



10's
Low

OSIsoft Message Format

OMF
Application



Sensors



Maximum Developer Flexibility



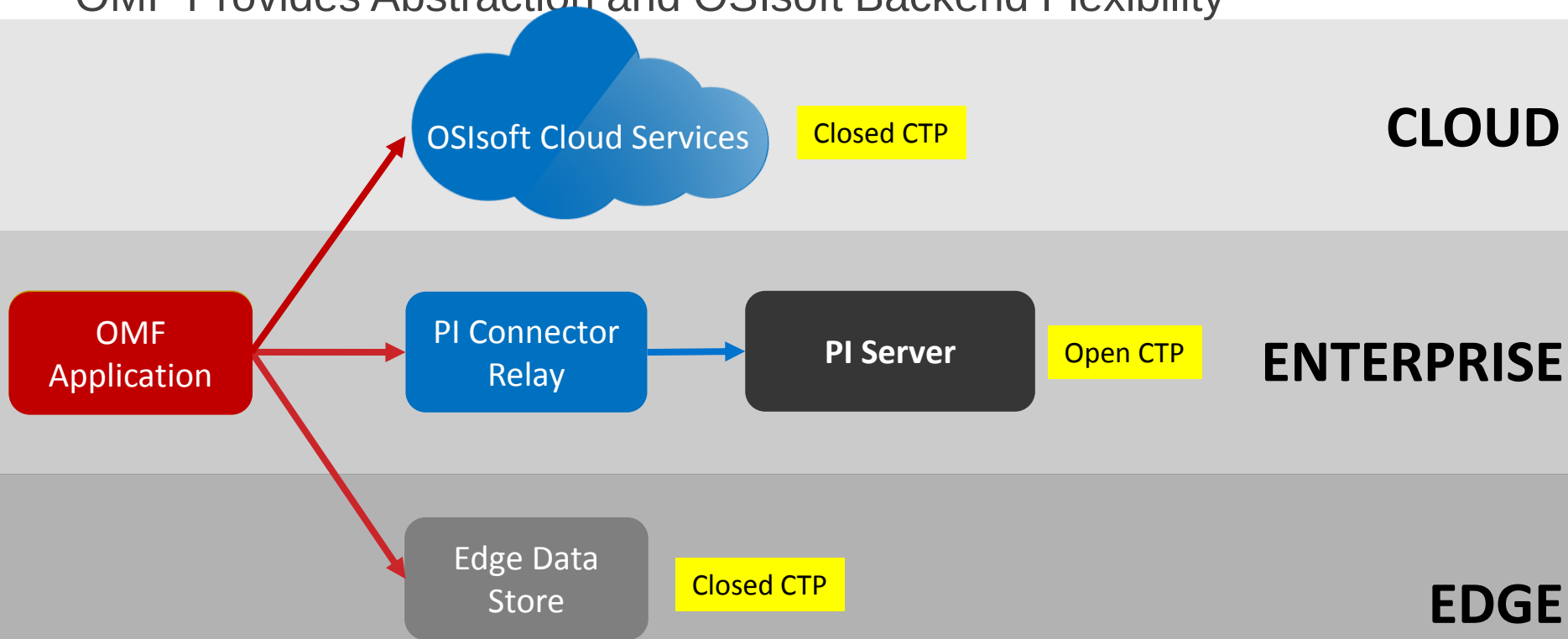
Lightweight Footprint



Agnostic to Environment

- Any Hardware
- Any Operating System
- Any Development Tools
- Data Ingress to Edge Data Store, PI Server and OSIsoft Cloud Services
- Finished Product Developed, Sold and Supported by 3rd Parties

OMF Provides Abstraction and OSIssoft Backend Flexibility



127.0.0.1:8412/ui/dda/config

☆ ABP

PI Connector Administration0

Components

Data Sources

✓ OPC UA Server 1

✓ OPC UA Server 2

✓ Redfish Server 1

✓ Redfish Server 2

✓ Redfish Server 3

Connectors

✓ OPC UA Connector 1 OPC UA

✓ Redfish Connector 1 Redfish

✓ Redfish Connector 2 Redfish

Relays

✓ Connector Relay

✓ DMZ Connector Relay

Destinations

✓ Corporate PI Server PI Server

✓ Corporate PI Server 2PI Server

✓ DMZ PI Server PI Server

Routing

Data Sources

✓ OPC UA Server 1

✓ OPC UA Server 2

✓ Redfish Server 3

✓ Redfish Server 1

✓ Redfish Server 2

Connectors

✓ OPC UA Connector 1
OPC UA

✓ Redfish Connector 2
Redfish

✓ Redfish Connector 1
Redfish

OMF Application 1
App Description

OMF Application 2
App Description

Relays

✓ Connector Relay

✓ DMZ Connector Re...

Destinations

✓ Corporate PI Server
PI Server

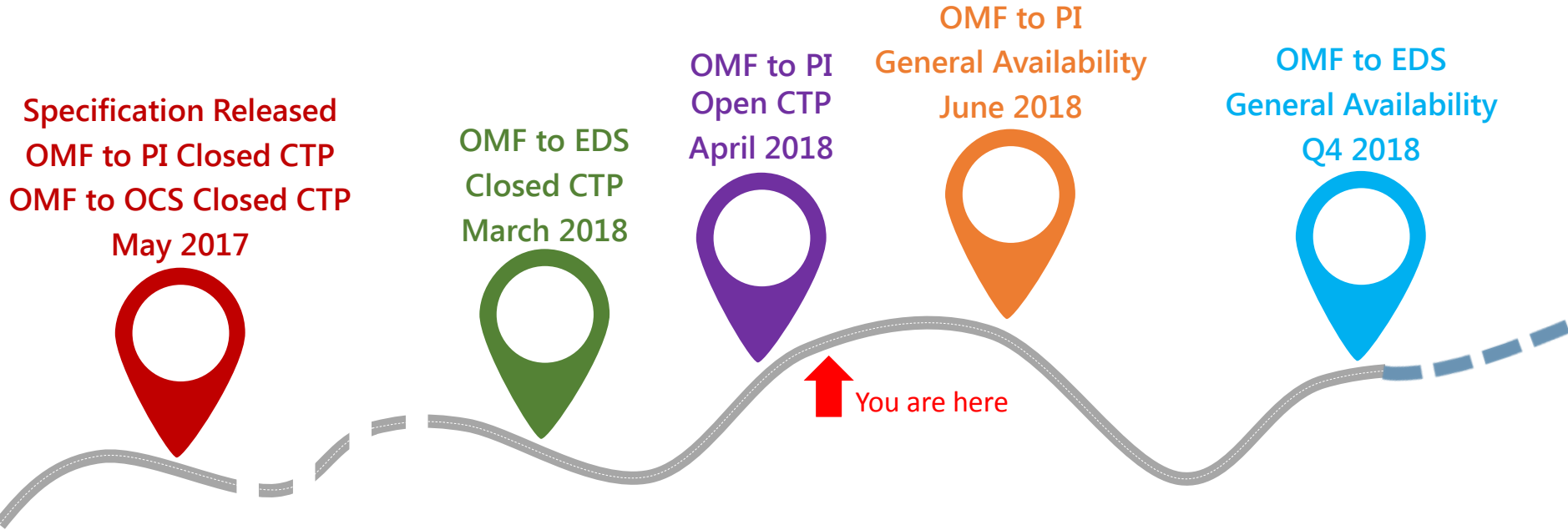
✓ Corporate PI Server 2
PI Server

✓ DMZ PI Server
PI Server

Edit Routing Configuration

#OSISoftUC #PIWorld ©2018 OSISoft, LLC

OSIsoft Message Format Version 1 Release Timeline



Looking for customers and partners to join the CTP!

OSIsoft Message Format Resources

- Specification
 - <http://omf-docs.readthedocs.io/en/v1.0/>
- PI System Developer's Companion Guide
 - <http://omf-companion-docs.osisoft.com>
- PI Connector Administrator Guide
 - <https://techsupport.osisoft.com/Downloads/File/40489fc5-e515-4669-b185-8866a9f9f616>
- OMF Community on PI Square
 - <https://pisquare.osisoft.com/groups/pi-relay>
- Sample code and documentation
 - <https://github.com/osisoft/OMF-Samples/tree/master/PI%20System>

Open Source

Open
Source



Open and Public
Community Driven
Focused on Integration

Examples...

- ***FogLAMP*** – an open source toolkit for getting data into PI System & OCS
- ***ARM & Mbed*** – a community with 250,000 developers

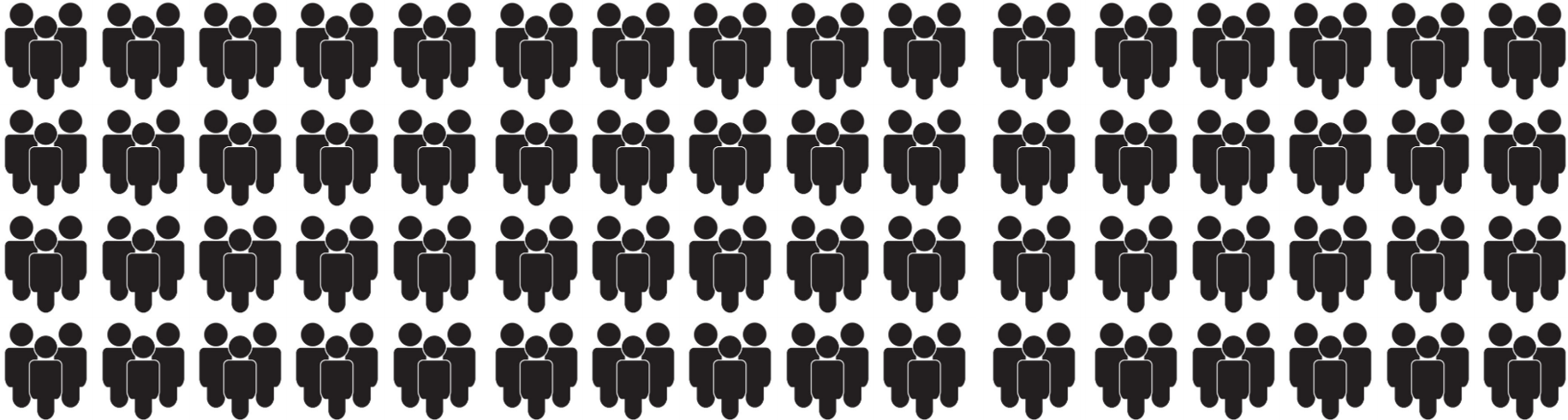
Open Source Enablement and Scale



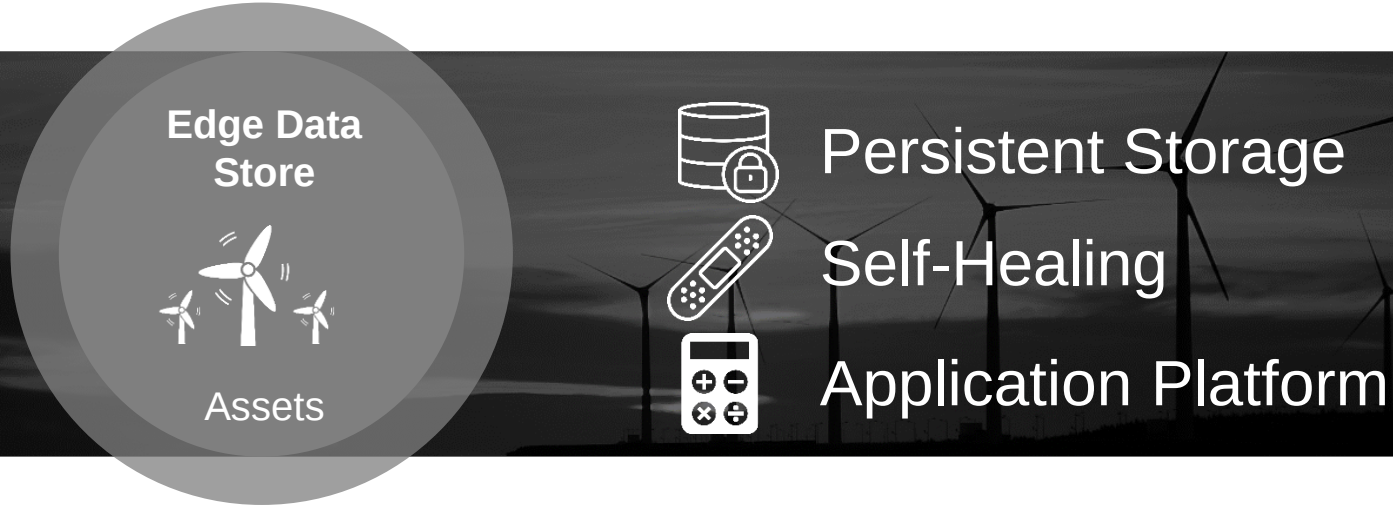
OSIssoft Development Community



Open Source Software Development Community



Edge Data Store

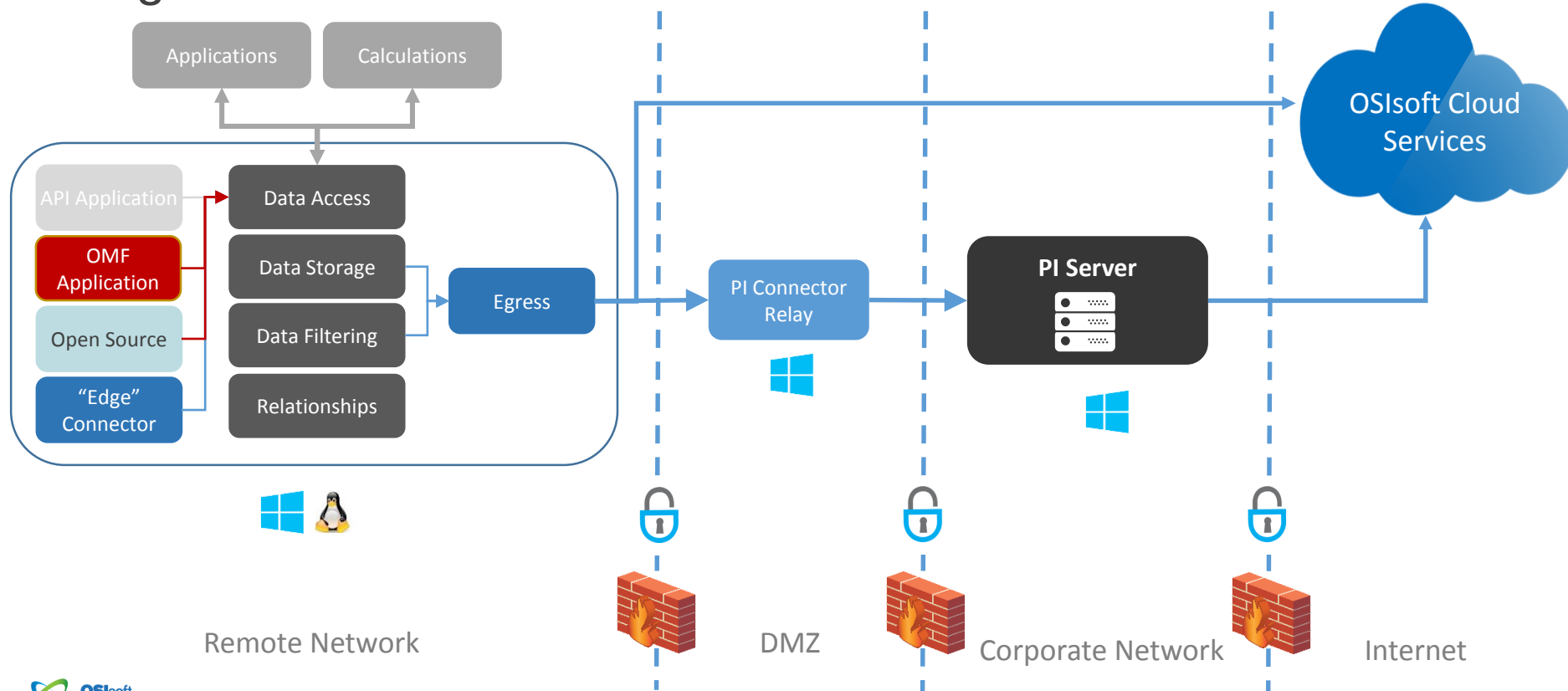


- Cross Platform (Windows, Linux)
- Multiple Data Ingress Options
- Analytics Ready
- Egress to PI Server and OSIsoft Cloud Services
- Developed, Sold, and Supported by OSIsoft

What is the Edge Data Store?

- A new OSIsoft product built for remote, unmanned deployments in harsh environments, on lightweight, Windows and Linux devices
- A “sequential” database
 - Anything that can be ordered can be stored
- Shares the same storage technology and API as OSIsoft Cloud Services
- Product features
 - Simple or Complex data types
 - Multiple indexes
 - Non-time series
 - Compound
 - Secondary
 - No distinction between future and past data
 - Unbounded Event Size
 - Egress to PI Servers and/or OSIsoft Cloud Services
 - High – precision timestamps (100ns)

Edge Data Store Architecture



Edge Data Store Version 1 Release Timeline

CTP 1
March 2018



CTP 2
~May 2018



CTP 3
~July 2018



General Availability
Q4 2018



You are here

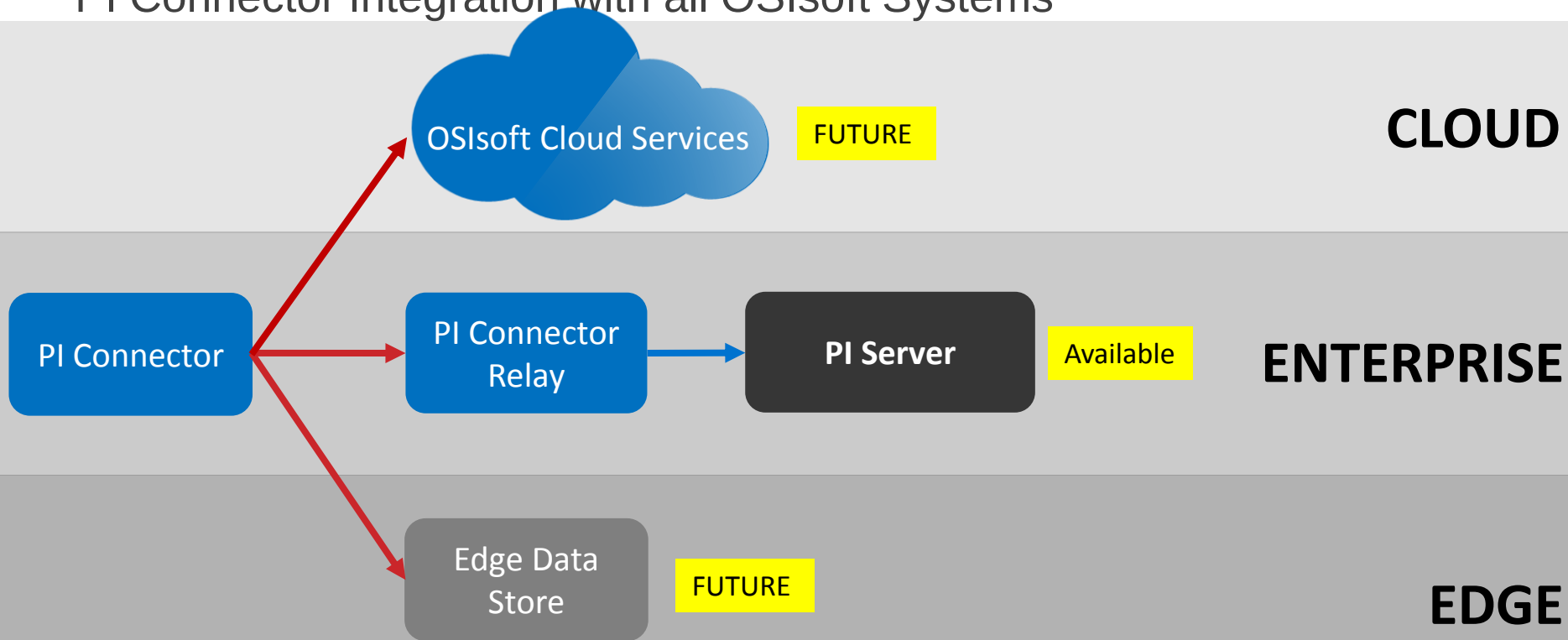


Looking for customers and partners to join the CTP!

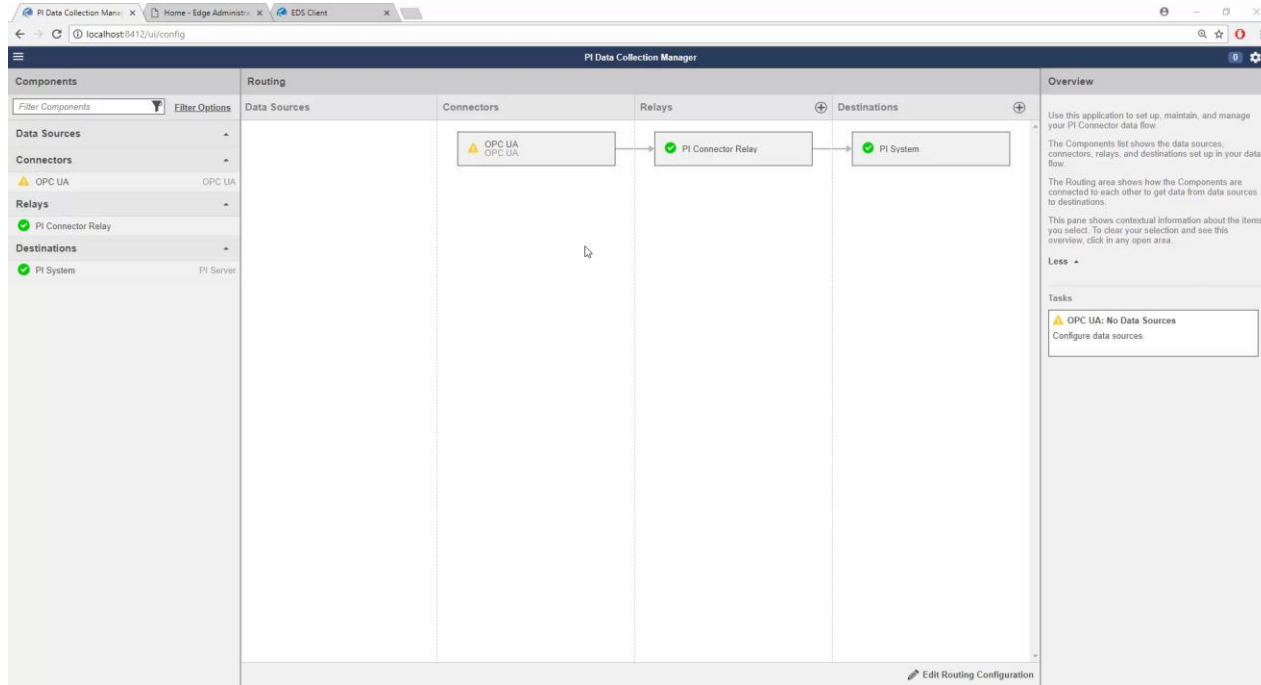
Edge Data Store Resources

- Administration and API documentation:
 - http://osisoft-edge.readthedocs.io/en/latest/EdgeDS_Admin.html
- PI Square community
 - <https://pisquare.osisoft.com/groups/edge>
- Presentation from London User's Conference 2017
 - <https://www.osisoft.com/Presentations/Data-Collection-at-the-Edge---OSIsoft-Message-Format>

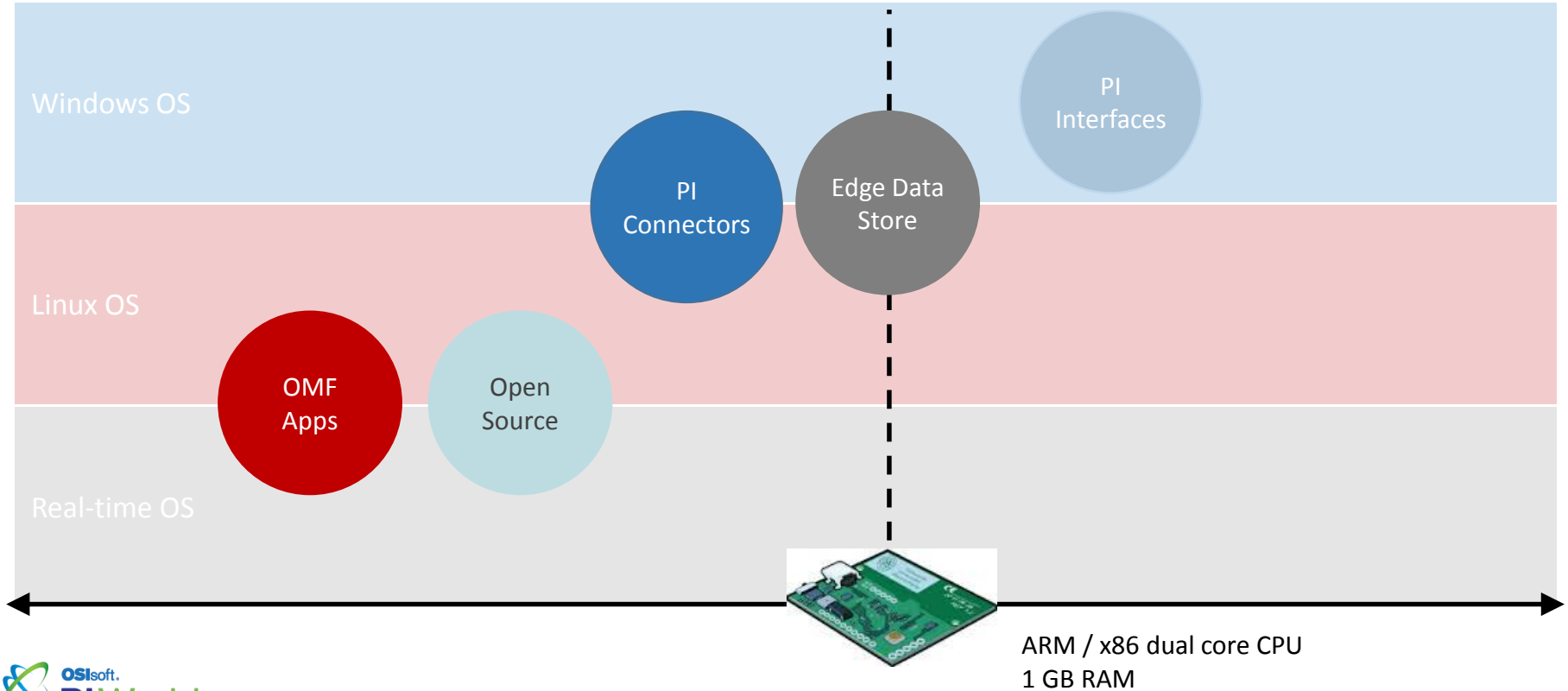
PI Connector Integration with all OSIsoft Systems



PI Connector Integration with Edge Data Store Demo



Hardware and Operating System Targets



Pervasive Data Collection @ PI World

Developer Track

- Data Collection at the Edge, Thursday @ 2:30pm

Partner Track

- Fog Computing and OSIsoft, Thursday @ 2:30 pm

Product Pods

- Ingress Pod (Connectors & Interfaces)
- OEM Enablement Pod (EDS & OMF)

Partner Pod

- Dianomic Systems (FogLAMP)

Labs

- OMF for Handling IoT Data Streams, Thursday @ 1:30pm
- IoT & Fog Computing, Edge to Cloud, Thursday @ 1:30pm



- **Chris Coen**
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- Product Manager
- OSIsoft



- **Chris Felts**
- cfelts@osisoft.com
- Product Manager
- OSIsoft

Questions

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

State your **name & company**



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Merci

谢谢

Спасибо

Danke

Gracias

Thank You

감사합니다

ありがとう

Grazie

Obrigado