

Pervasive Data Collection – Connectivity from A to Z

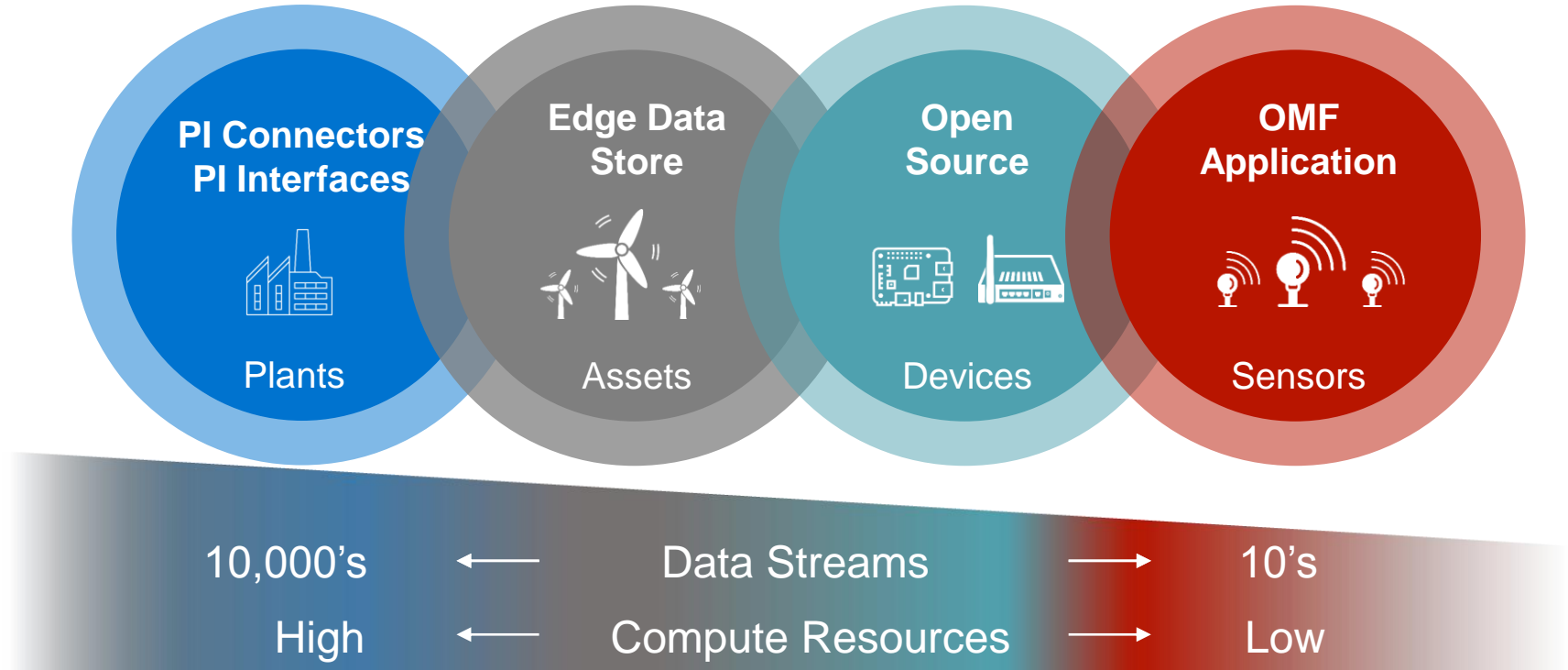
Chris Coen, Product Manager
Marco Guidobaldi, Systems Engineer



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



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



In development PI Interfaces	Market
Rockwell Pharmasuite MES	Pharmaceuticals
Landis+Gyr HES	AMI – Electrical Distribution

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

Demonstrations:



presentation

▶ Product Expo

PI Connector	Market	PI Connector	Market
▶ BACnet	Facilities	▶ WITSML (NOV)	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	▶ Redfish	Data centers
▶ IEC 60870-5-104	T&D Substations	▶ Siemens SINUMERIK	Discrete
▶ IEC 61850	T&D Substations	▶ Siemens SIMATIC PCS 7	Many
IPMI	Datacenters	▶ UFL	Many
▶ MTConnect	Discrete	▶ Wonderware Historian	Many

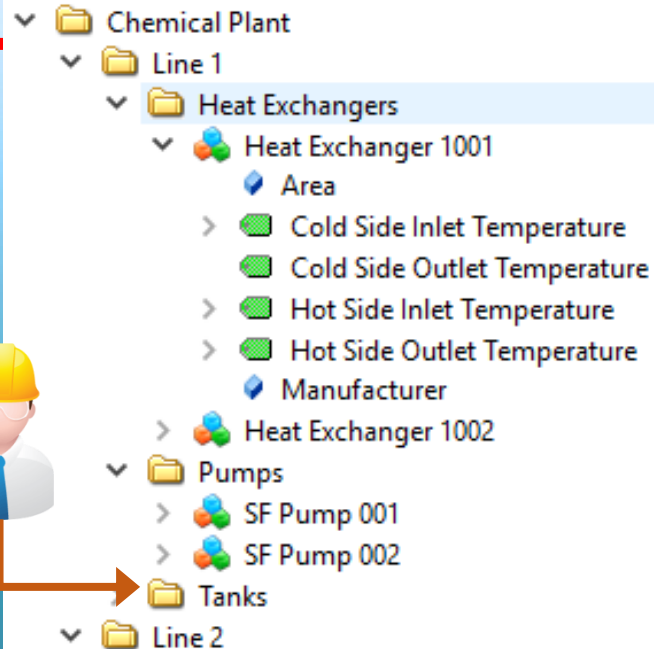
New PI Connectors in development

PI Connector	Market	Status
GE e-terra	T&D	Development
Honeywell PHD	Many	Beta
▶ Modbus for Cisco IOx	All	Q4 2018
▶ MQTT Sparkplug	All	Beta
Siemens Spectrum 7	T&D	Development
Tridium	Facilities	Development

Demonstrations:

▶ 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

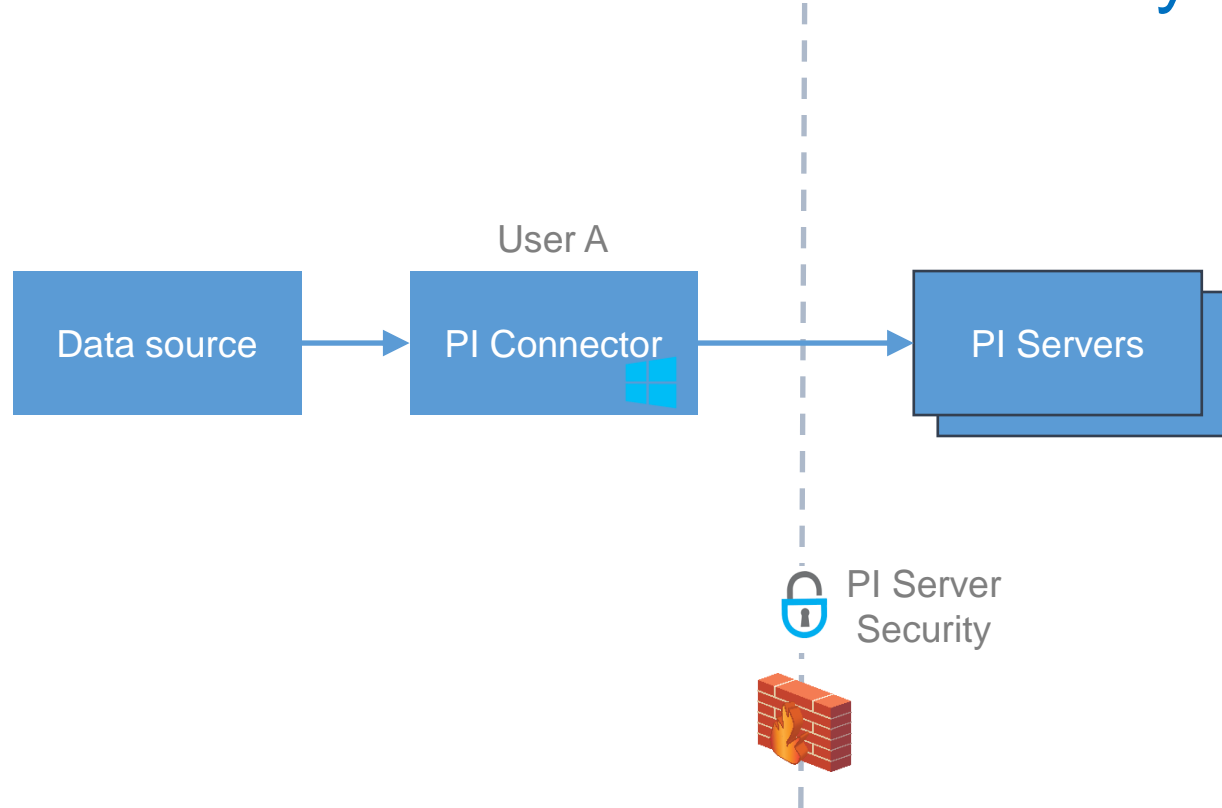
Build the tags & reference AF model with
meta data you select

Updates – Auto or with Approval

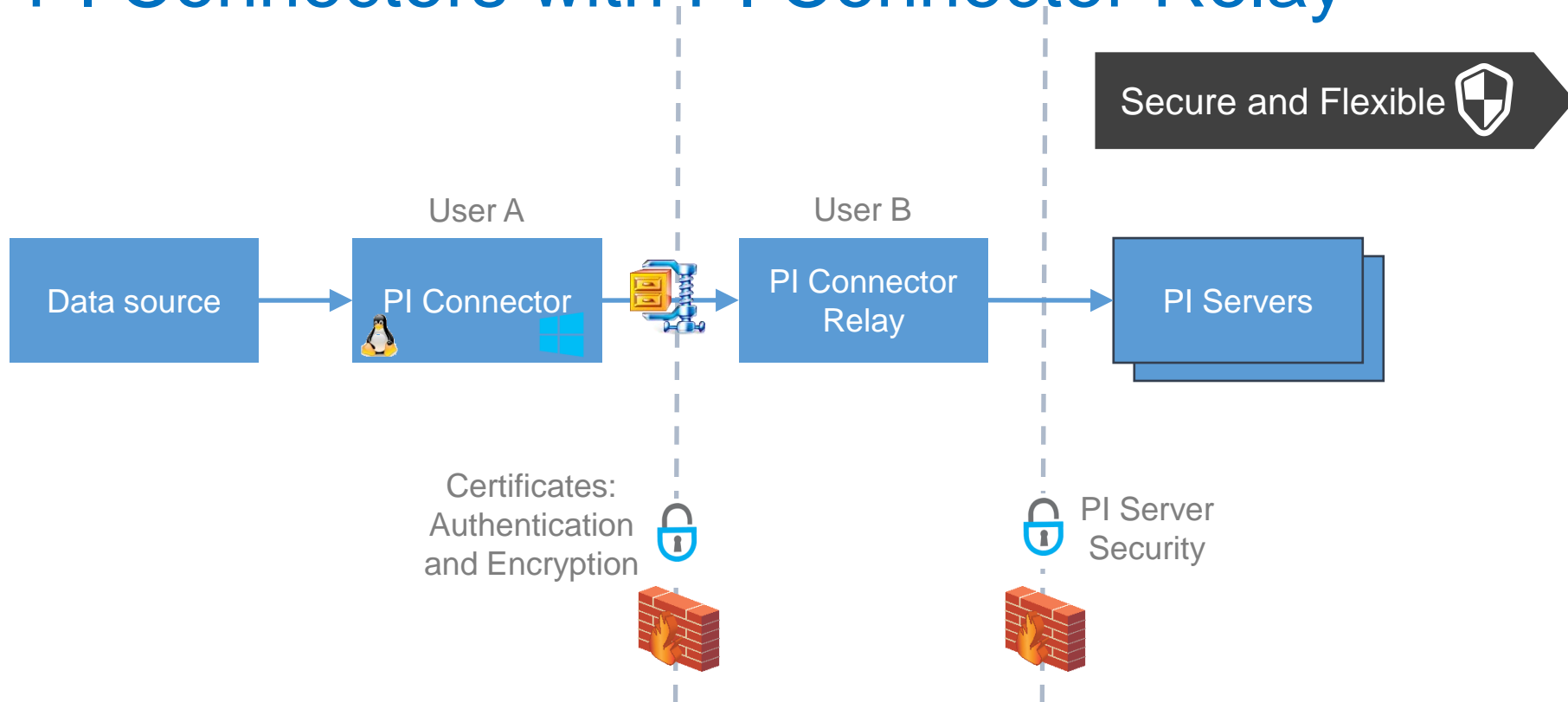
Automatic



PI Connectors – before PI Connector Relay



PI Connectors with PI Connector Relay

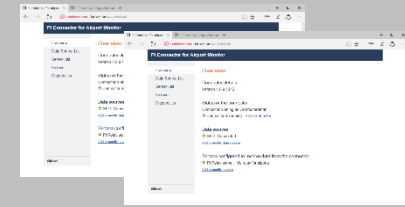


PI Connector evolution

PI Connector

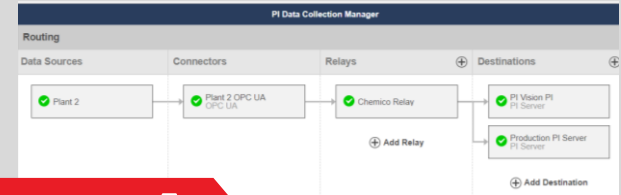
PI Connector Relay

Administration



PI Connector

PI Connector
Relay



Unified 

PI Connectors Available today

➔ Uses PI Connector Relay and PI Data Collection Manager

PI Connector	Market	PI Connector	Market
BACnet	Facilities	WITSML (NOV)	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	➔ Redfish	Data centers
IEC 60870-5-104	T&D Substations	➔ Siemens SINUMERIK	Discrete
IEC 61850	T&D Substations	Siemens SIMATIC PCS 7	Many
IPMI	Datacenters	UFL	Many
➔ MTConnect	Discrete	Wonderware Historian	Many

PI Connector for OPC UA

- Released version is single process
- Upcoming version supports PI Connector Relay and PI Data Collection Manager

DEMO

Using the Data Collection Manager with
the PI Connector for OPC UA

PI Data Collection Manager

Components

Data Sources

Connectors

Plant 2 OPC UA

Relays

Destinations

Routing

Data Sources

Connectors

Relays

Destinations

Plant 2 OPC UA Connector Details

Configuration

Data

Diagnostics

Connector Status

⚠ Data Configuration: No Data Sources

Configure data sources.

No data sources are associated with this connector. To add a data source that will send data to this connector, click Manage Data Sources.

Manage Data Sources

Connector Settings

Name

Plant 2 OPC UA

Connector ID

Plant 2

Description

OPC UA Connector for Plant 2 Operations

Edit Settings

More

Configuration Tasks for Plant 2 OPC UA

Cancel and Revert Configuration

Save Configuration

Configure Routing


✓ Select or Add a Relay

Configure Data

✓ Discover Data Source Contents

✓ Set up Data Selection (requires Data Source Contents Discovery)

✓ Set up Destination Data Settings (requires Relay and Destination)


PIWorld BARCELONA 2018

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PI Data Collection Manager

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Secure

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https://taudemo:5500/ui/dda/config

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PI Data Collection Manager

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Components

Data Sources ▲

Connectors ▲

Relays ▲

Destinations ▲

Routing

Data Sources	Connectors	Relays	⊕ Destinations

Edit Routing Configuration

Overview


Use this application to set up, maintain, and manage your PI Connector data flow.

The Components list shows the data sources, connectors, relays, and destinations set up in your data flow.

The Routing area shows how the Components are connected to each other to get data from data sources to destinations.

This pane shows contextual information about the items you select. To clear your selection and see this overview, click in any open area.

Less ▲



OSIsoft

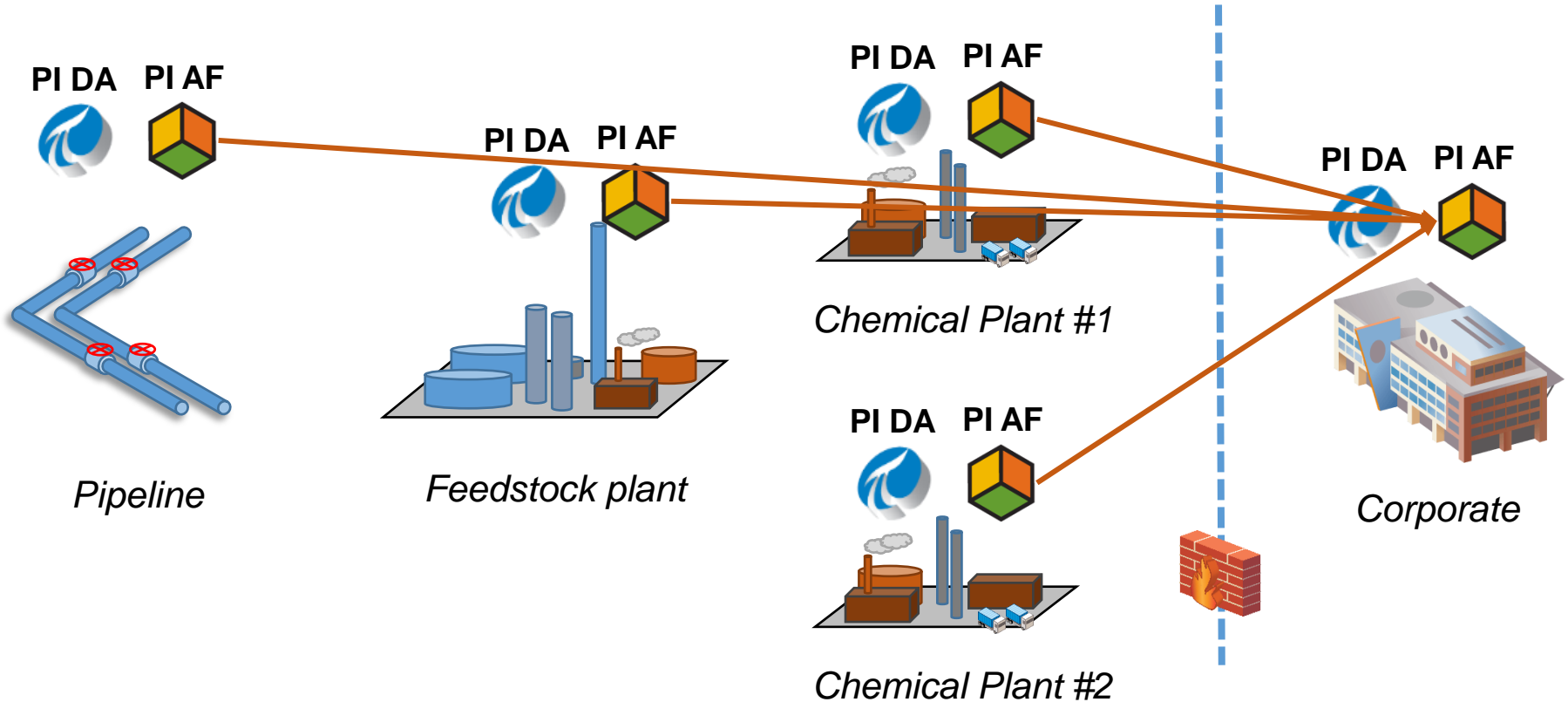
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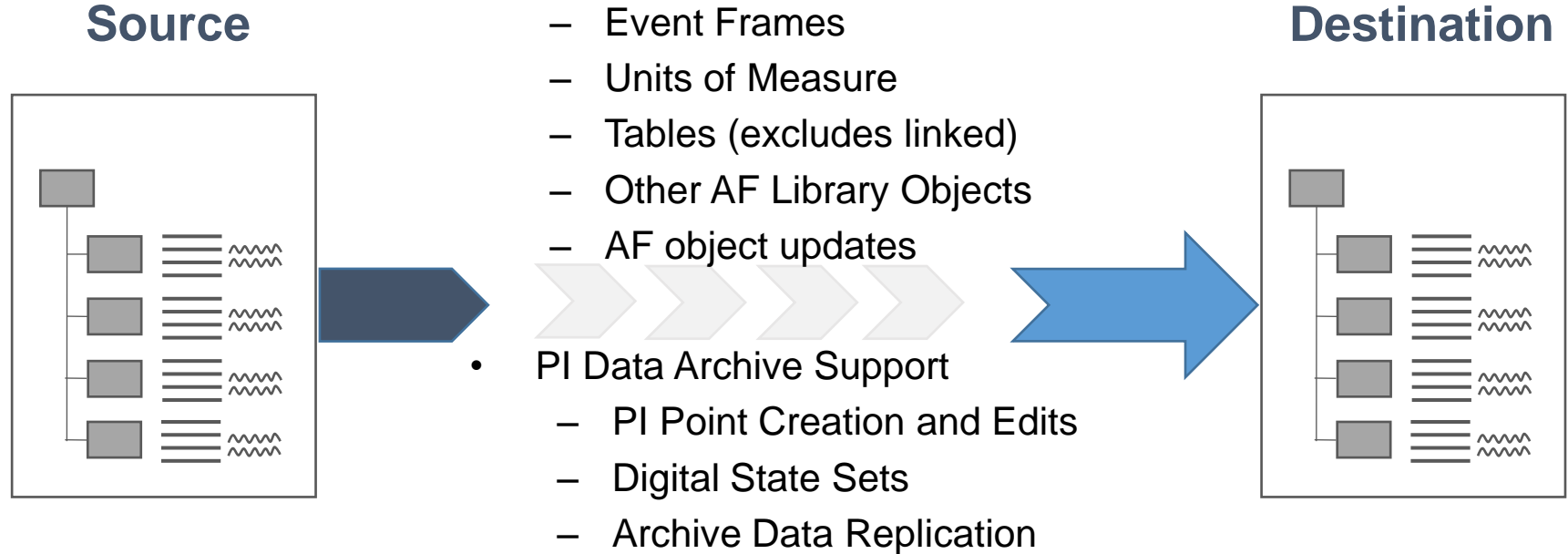
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PI System Connector aggregates data from sites to corporate



What data is PI System Connector moving?



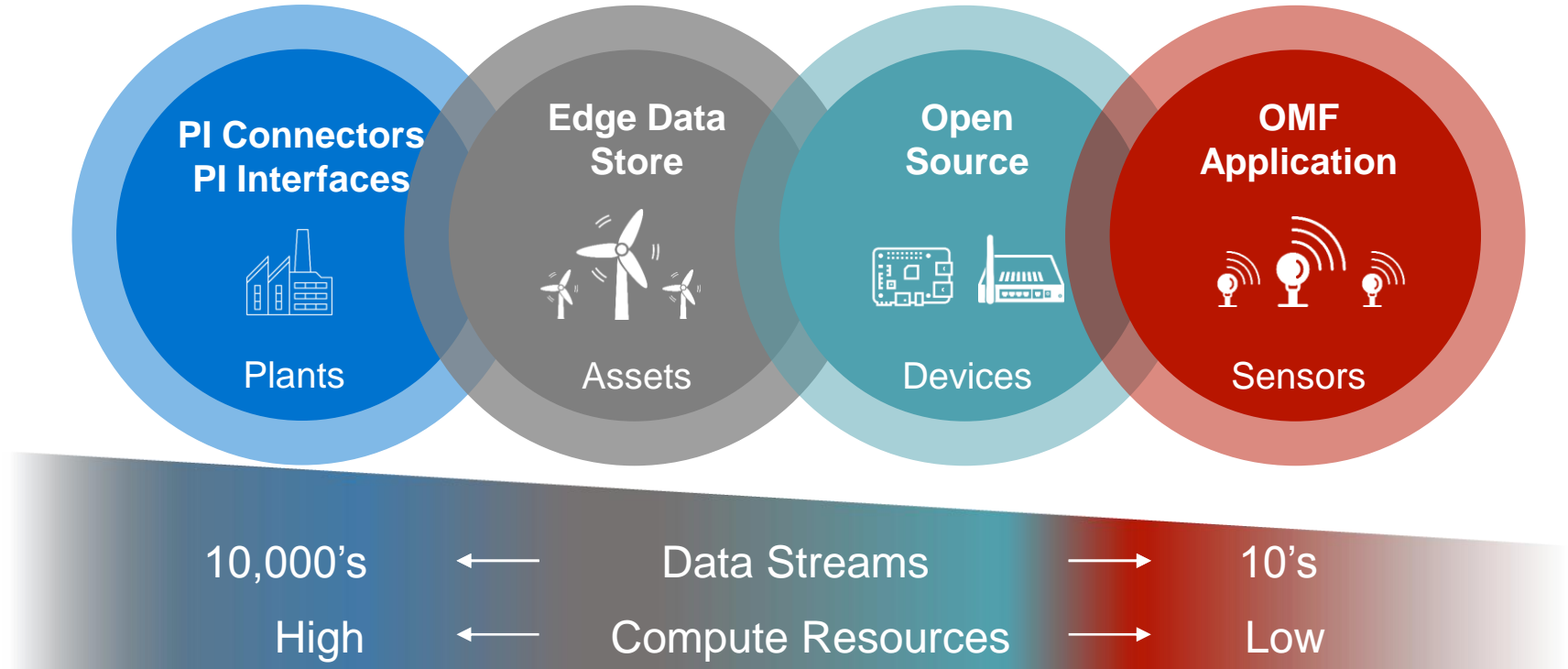
When should I use PI System Connector?

	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 WonderWare Historian – new history recovery
 - PI Connector for IEC 60870-5-104 – collect from all ASDUs on RTU
 - PI Connector for IEC 61850 - released
 - More!
-
- Come see us at our product expo booth in CCIB: Room 111/112 P1 Level!
 - Request new features and check progress on other features at ***feedback.osisoft.com***

Pervasive Data Collection Products & Technologies



OSIsoft Message Format

OMF
Application



Sensors



Maximum Developer Flexibility



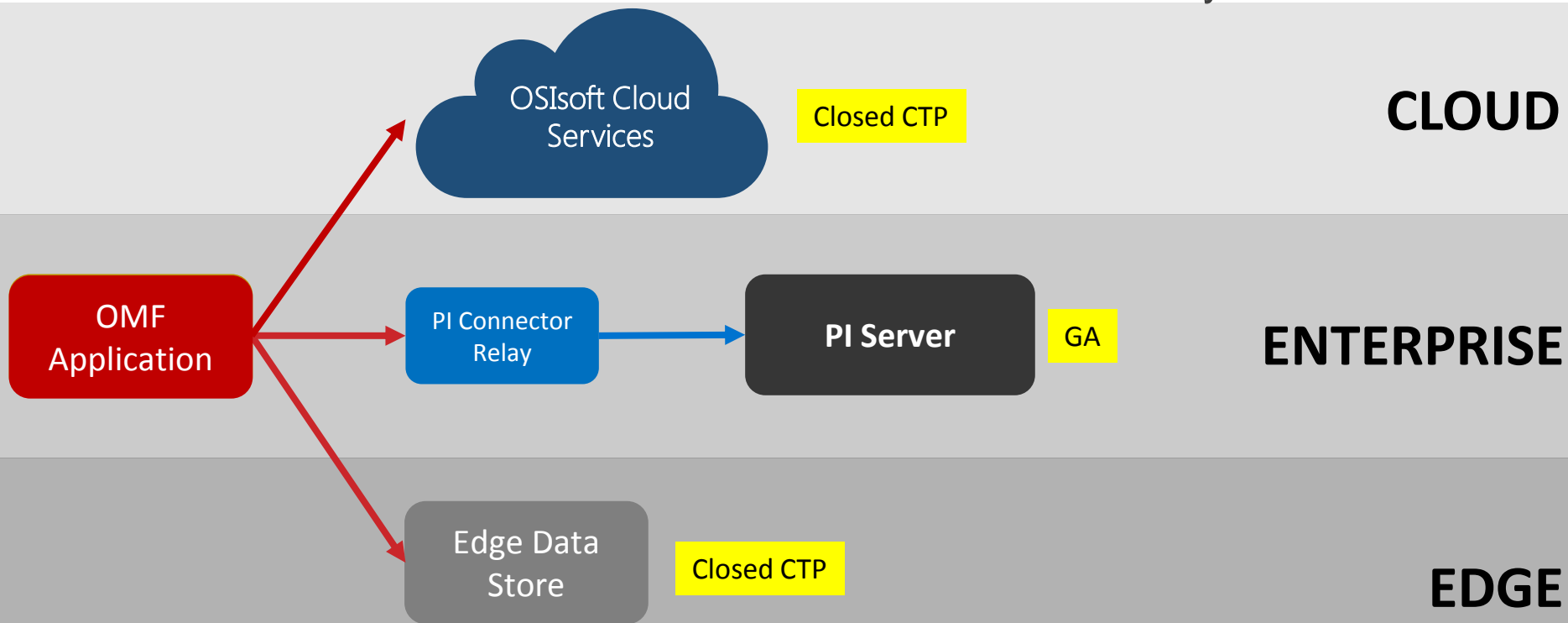
Lightweight Footprint

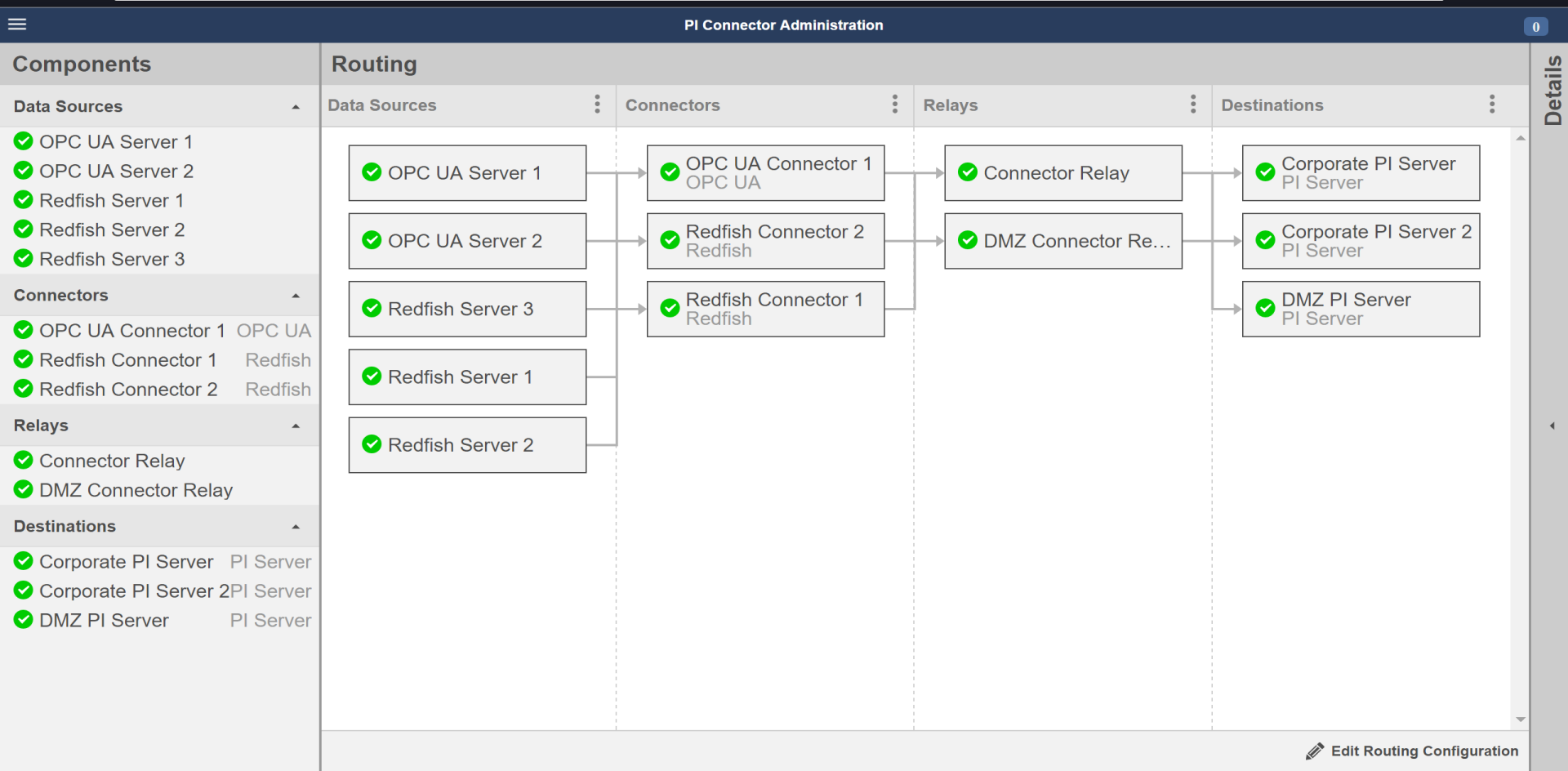


Agnostic to Environment

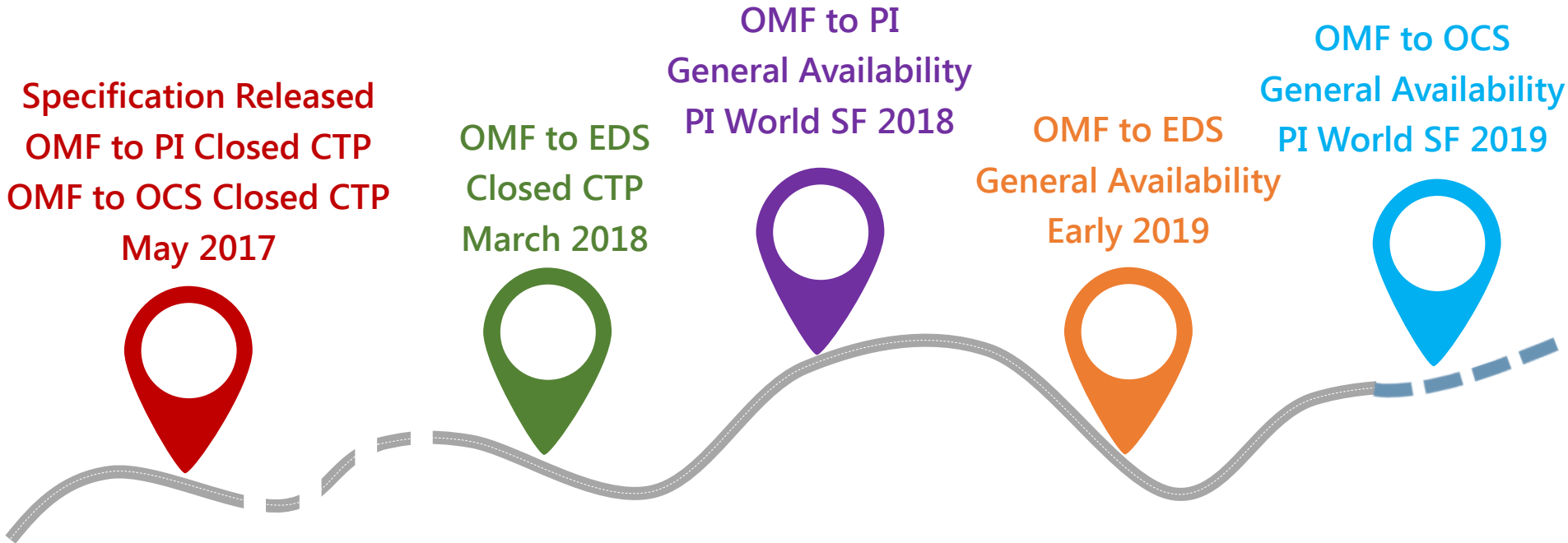
- Any Hardware
- Any Operating System
- Any Development Tools
- Data Ingress to Edge Data Store, PI Server and OSIsoft Cloud Services
- Finished Product Developed, Sold and Supported by 3rd Parties

OMF Provides Abstraction and OSIsoft Backend Flexibility





OSIsoft Message Format Version 1 Release Timeline



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>
- PI Developer's Club OMF Community
<https://pisquare.osisoft.com/community/developers-club/omf>
- Sample code and documentation
<https://github.com/osisoft/OMF-Samples>

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



OSIsoft Development Community

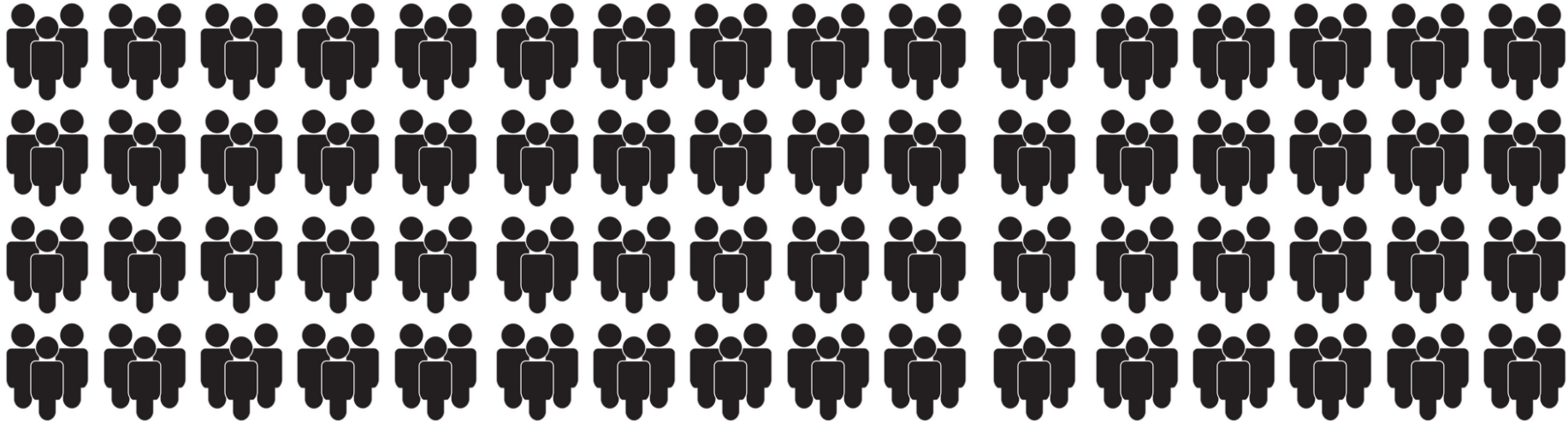


arm

elastic



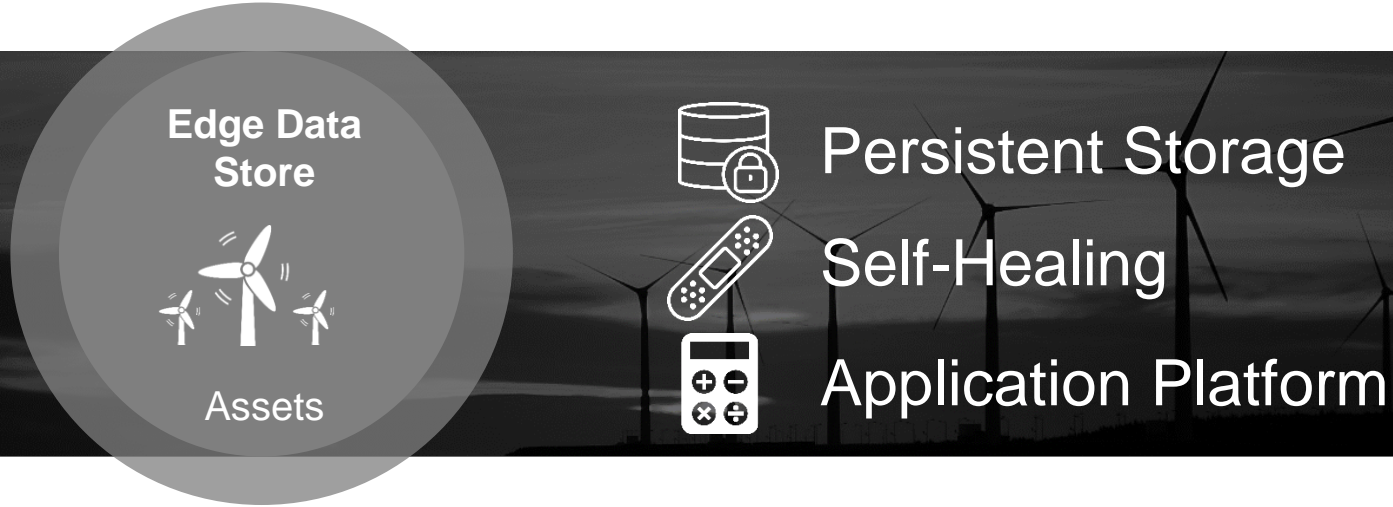
Open Source Software Development Community



Open Source Resources

- PI Developer's Club open source community
<https://pisquare.osisoft.com/community/developers-club/open-source>
- FogLAMP Documentation
<http://foglamp.readthedocs.io/en/master/>
- FogLAMP Source Code
<https://github.com/foglamp/FogLAMP>

Edge Data Store

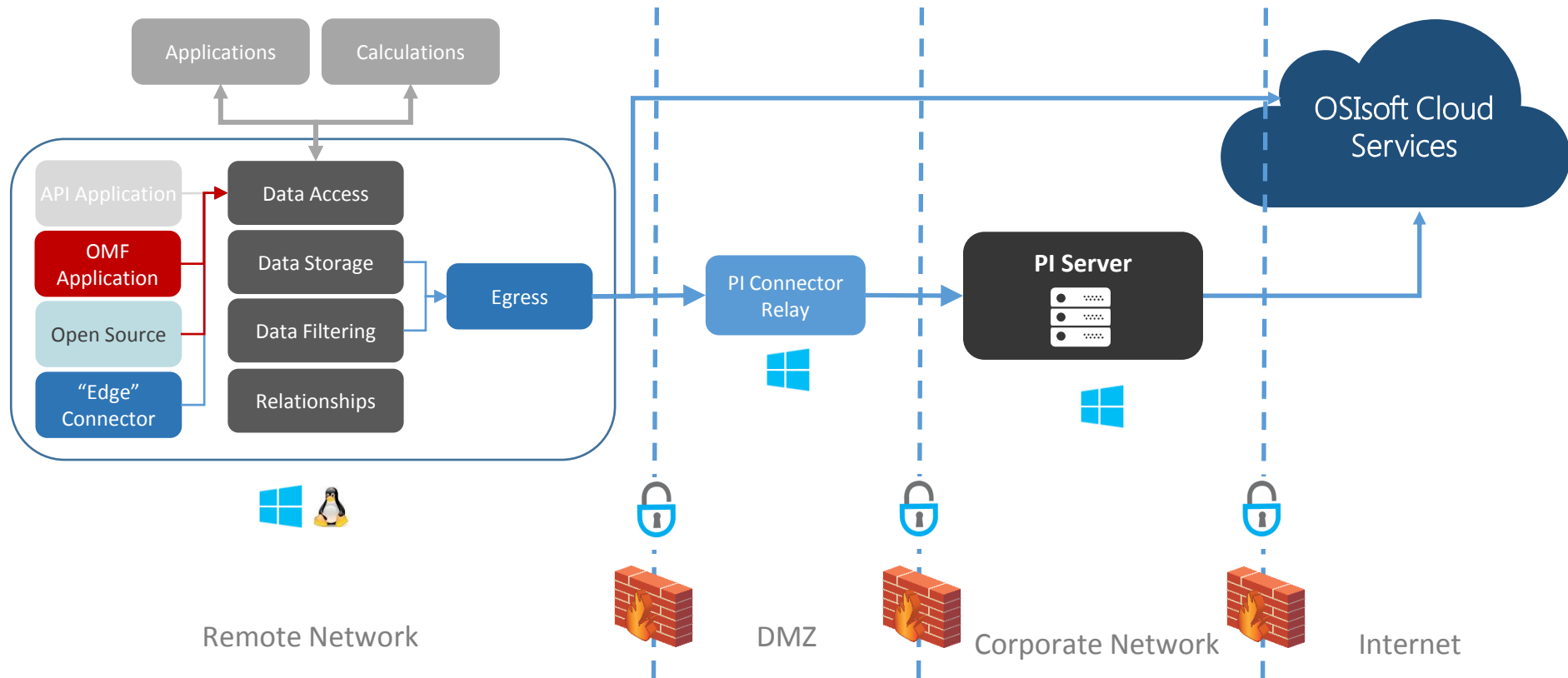


- Cross Platform (Windows, Linux)
- Multiple Data Ingress Options
- Analytics Ready
- Egress to PI Server and OSIsoft Cloud Services
- Developed, Sold, and Supported by OSIsoft

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
September
2018



CTP 3
Q4 2018



General Availability
Early 2019

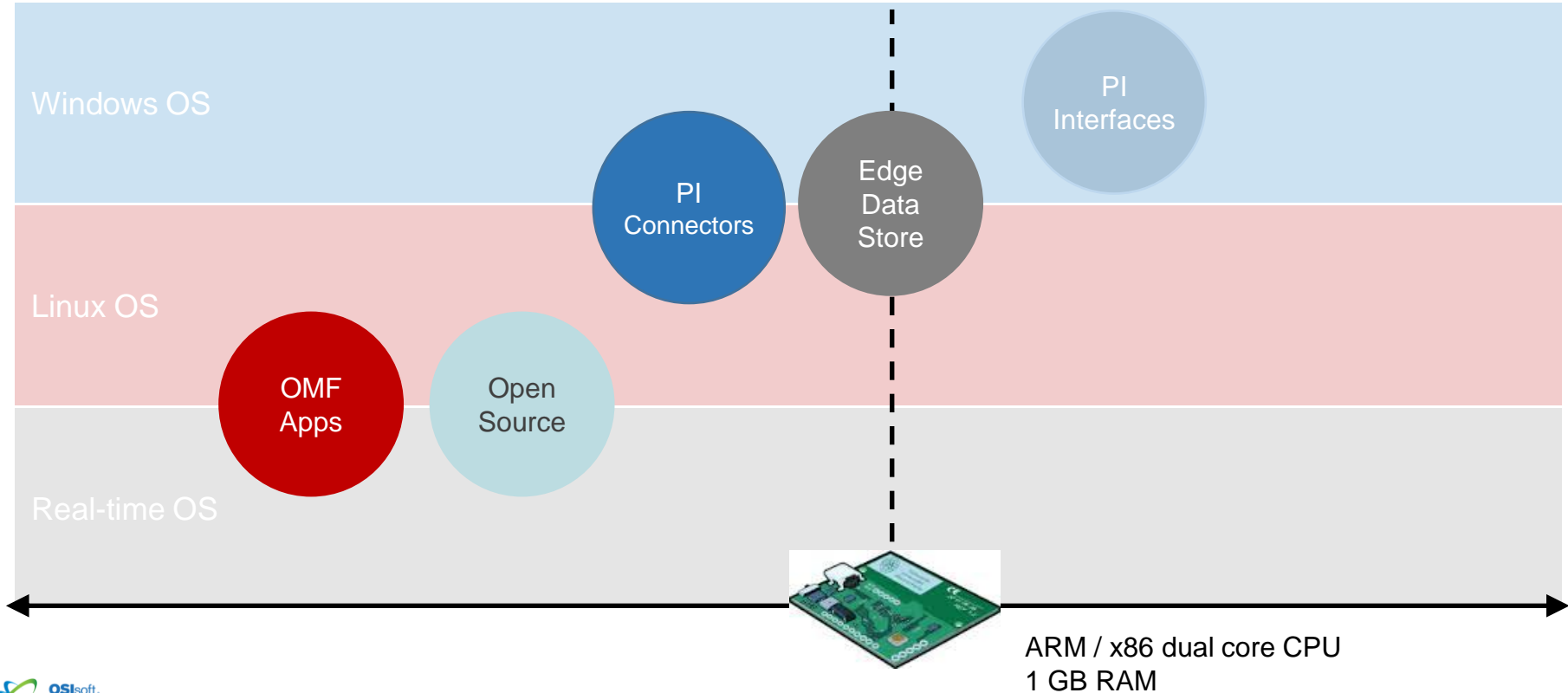


Looking for customers and partners to join each CTP!

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>
- “Data Collection at the Edge”, developer track session from PI World San Francisco 2018
<https://www.osisoft.com/Presentations/Data-Collection-at-the-Edge/>

Hardware and Operating System Targets



Pervasive Data Collection @ PI World

Developer Track

- How To: Writing applications at the Edge with OSIsoft Edge Data Store, Thursday @ 2:30pm

Product Booths

- Data Collection (Connectors & Interfaces)
- Emerging Technologies (Connectors, EDS & OMF)

Emerging Technologies Theatre

- Connectors, EDS & OMF

Partner Booths

- IPCOS (Connectors, EDS & OMF)
- Dianomic Systems (FogLAMP)

Labs

- Fog Computing: Develop data ingress applications from edge to cloud, Thursday @ 2:30pm



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Questions?

Please wait for
the **microphone**

State your
name & company



Please rate this session in the mobile app!



THANK YOU

OSIsoft. PIWorld

謝謝 KEA LEBONA
TARADH LEIBH 고맙습니다
BAЯPЛAЛAА MISAOTRA ANAO
DZIĘKUJĘ CI NGIYABONGA TEŞEKKÜR EDERIM GRACIES
OBRIGADO شڪرا SALAMAT
DANKON TANK TAPADH LEAT
DANKIE TERIMA KASIH
KÖSZÖNÖM
СПАСИБО
PAKMET CIZGE
GO RAIBH MAITH AGAT
БЛАГОДАРЯ GRACIAS
ТИ БЛАГОДАРАМ
TAK DANKE MAHADSANID
RAHMAT MERCI
HATUR NUHUN
CẢM ƠN BẠN
WAZVIITA
FALEMINDERIT
DANK JE ΕΥΧΑΡΙΣΤΩ GRATIAS TIBI
AČIŲ SALAMAT MAHALO IĀ 'OE TAKK SKALDU HA
GRAZZI PAKKA PĒR
PAXMAT CAĞA
SIPAS JI WERE TERIMA KASIH
UA TSAUG RAU KOJ
ТИ БЛАГОДАРАМ
СИПОС
MULTUMESC
FAAFETAİ
ESKERRIK ASKO
HVALA ХВАЛА ВАМ
TEŞEKKÜR EDERIM
HVALA
DZЯKYI
DI OU MÈSI
ĐAKUJEM
MATUR NUWUN