

The Changing Shape of Industry and Technology

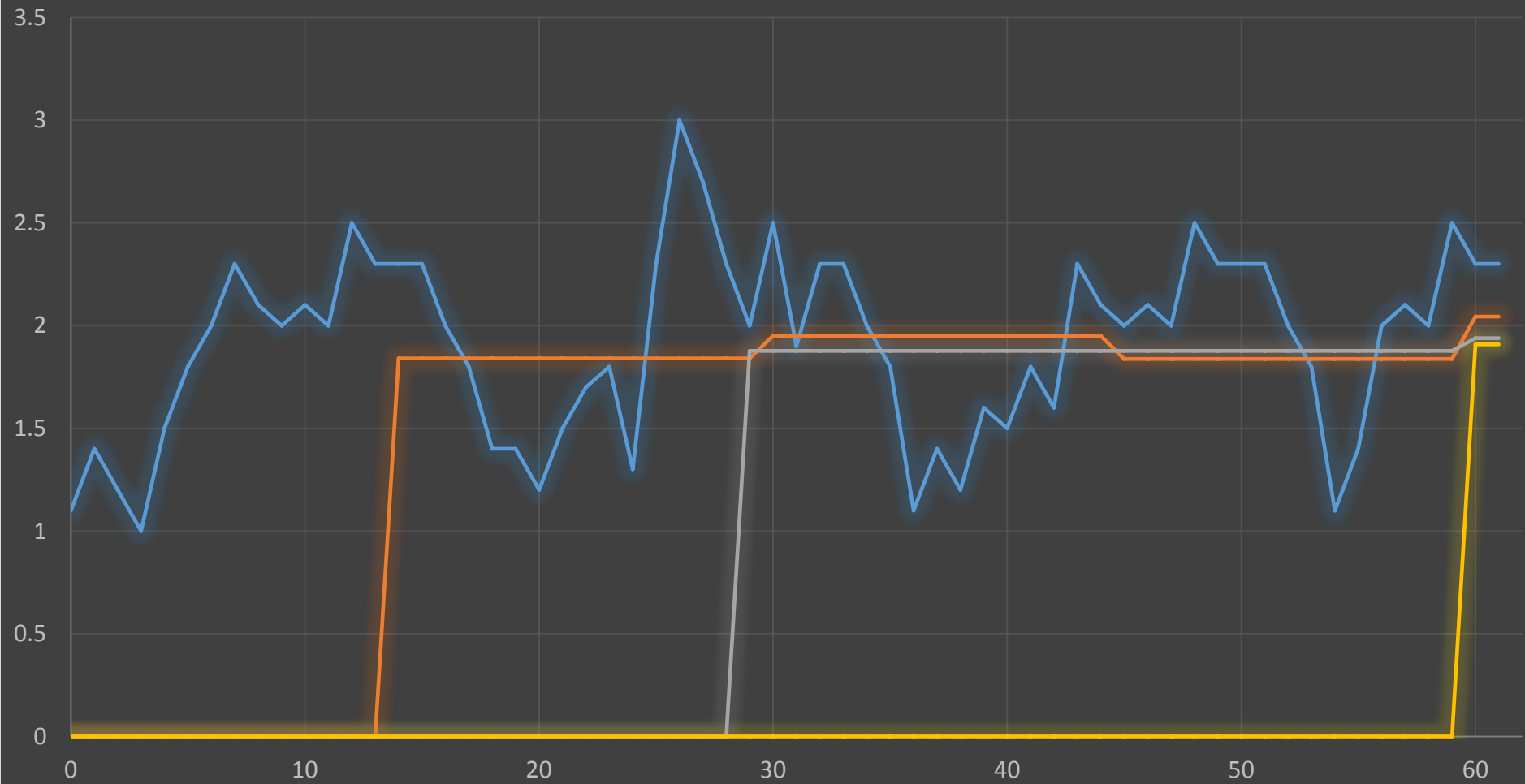
Gregg Le Blanc, VP Product

Penny Gunterman, PhD, Group Lead Product Marketing

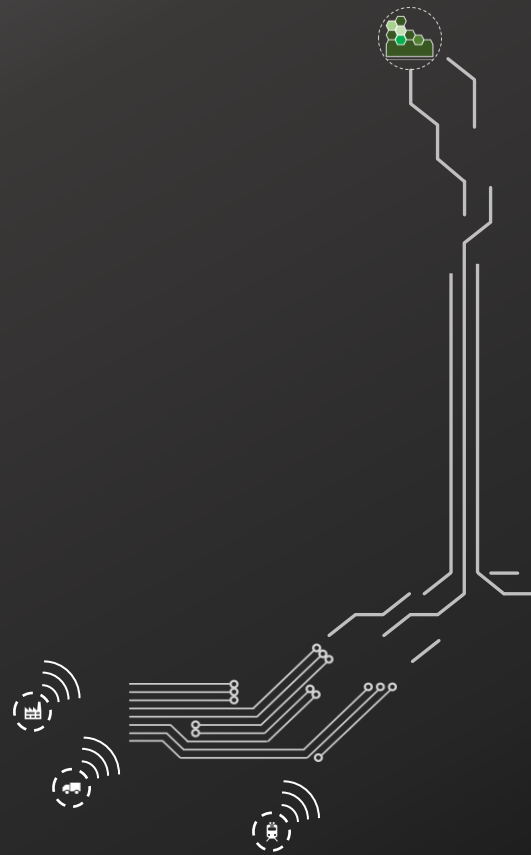
Chris Nelson, VP Software Development



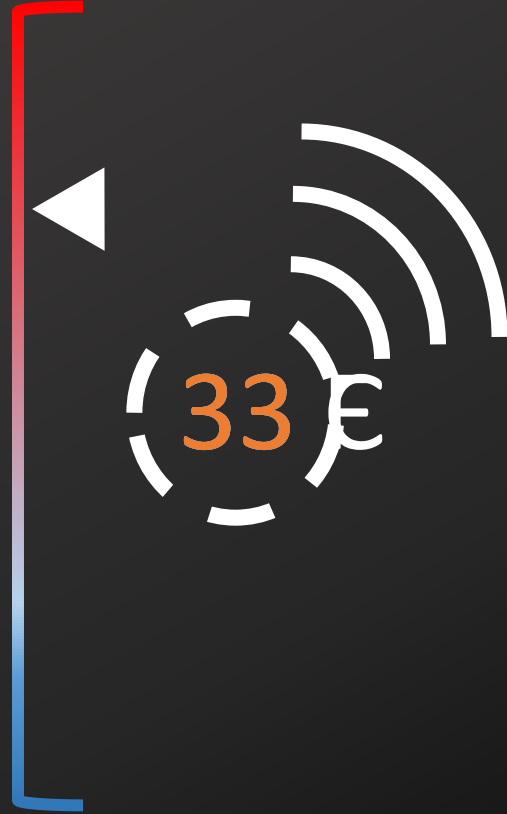
Home Power Usage



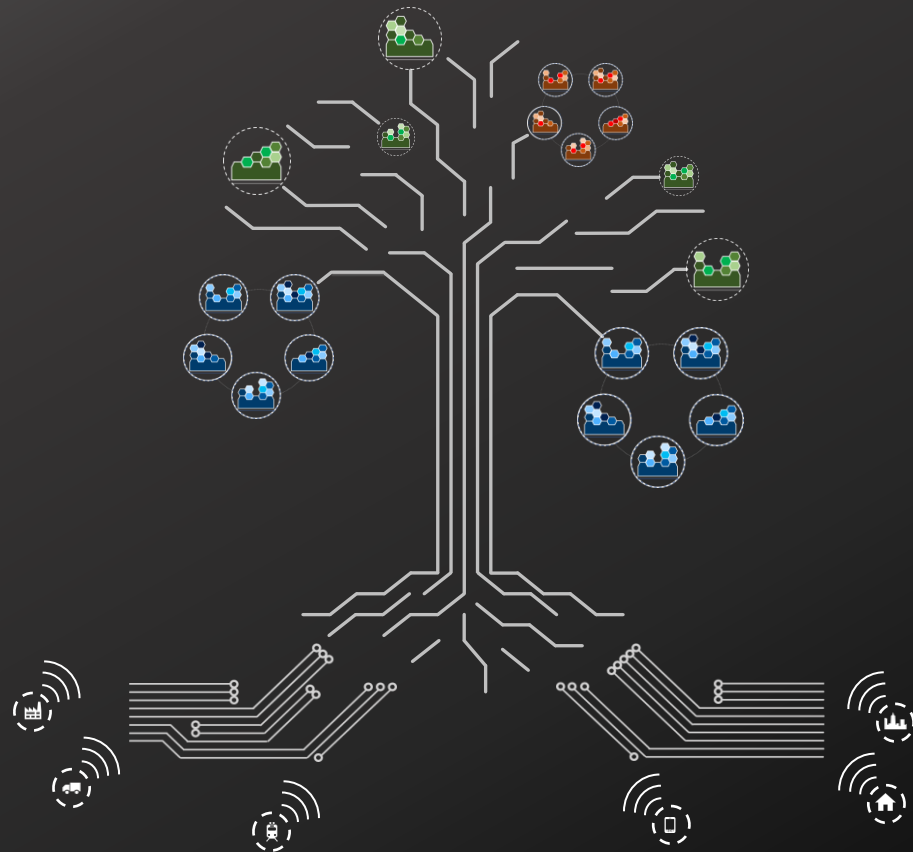
Dark Data



Dimension
Scale
Scope



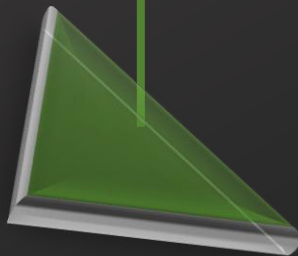
Dimension
Scale
Scope



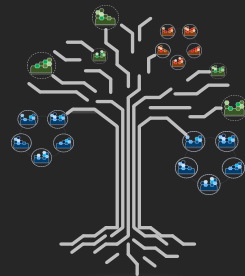
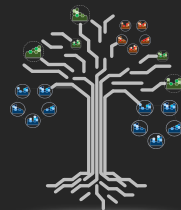
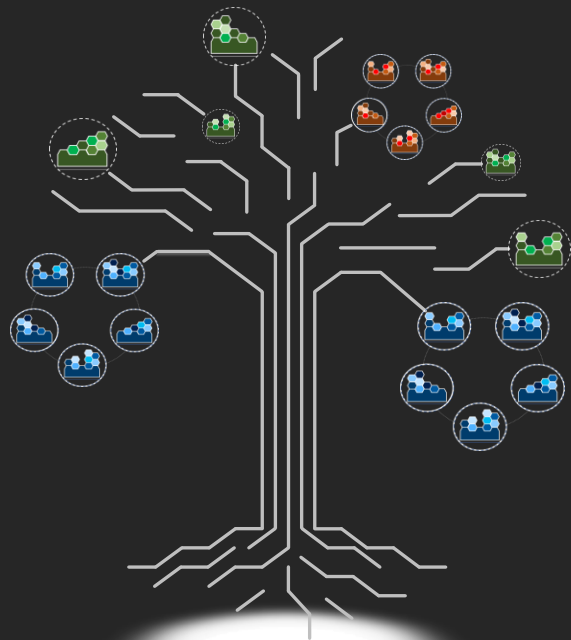
Dimension
Scale
Scope

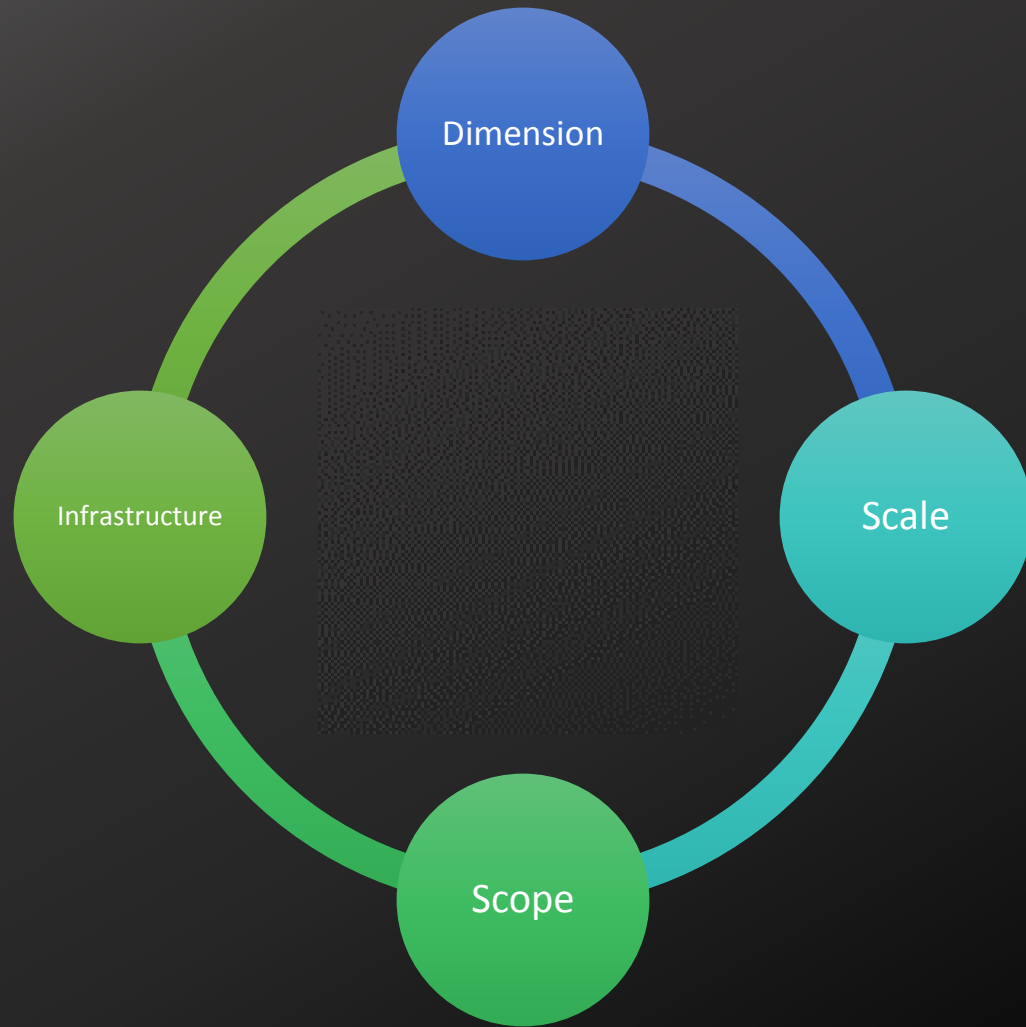
{ , 2018-04-23 15:03:01.0Z }

Time : 2018-04-23 15:03:01.0Z,
FridgeTemp : 33, SetPoint : 32,
{ B3d1g2018v04-23205A03r01.0Z }
CxnStatus : T, DoorsOpen : F,
FridgeLightOn : T, UpTime : 7



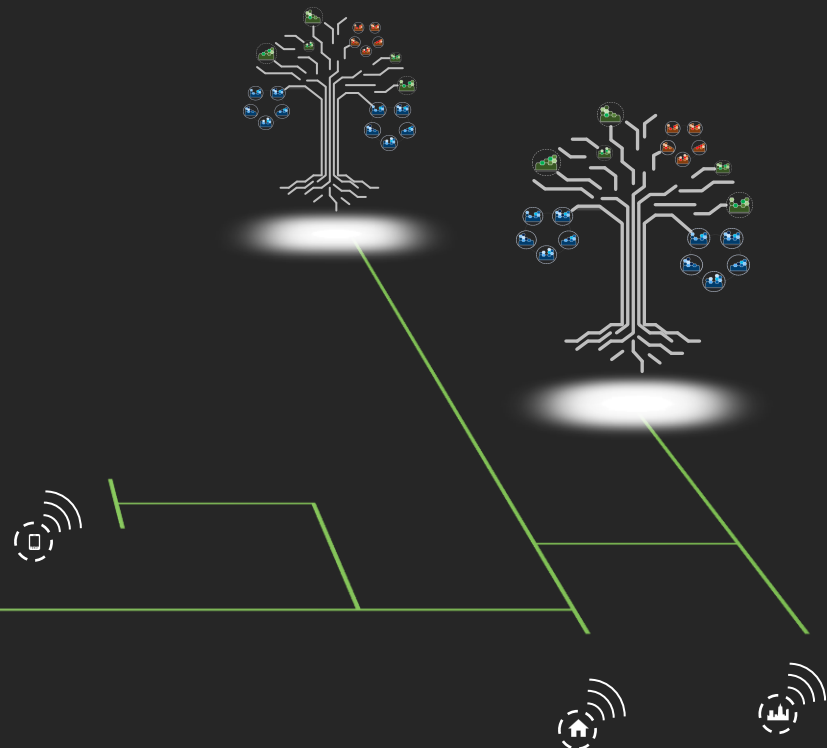
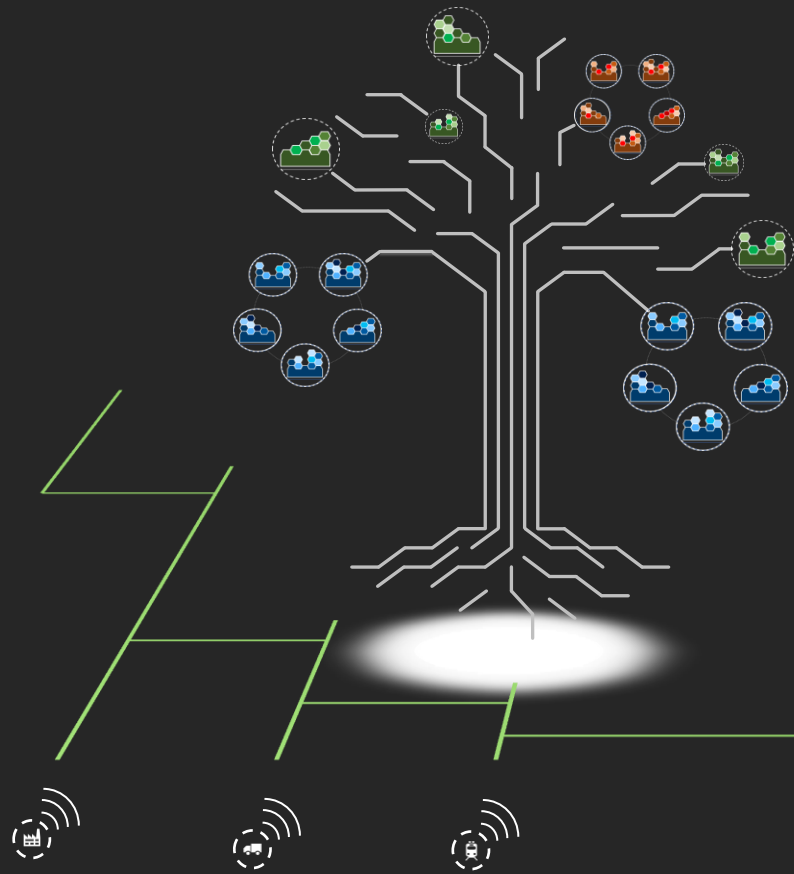
What's Past is Prologue





Artificial Intelligence

Artificial
Natural Intelligence



Operations from the Eyes of your Experts

Penny Gunterman, PhD
OSIsoft
Product Marketing



IoT is lighting up new data



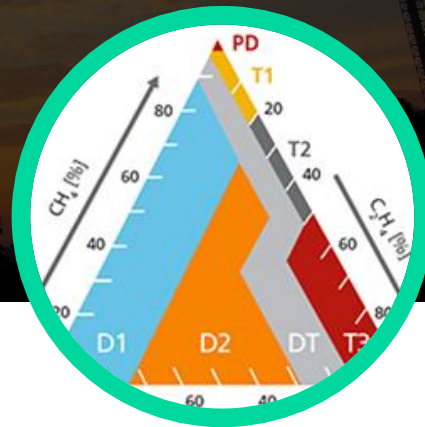
ACOUSTIC

Hear when there is a leak
in the boiler



THERMOGRAPHIC

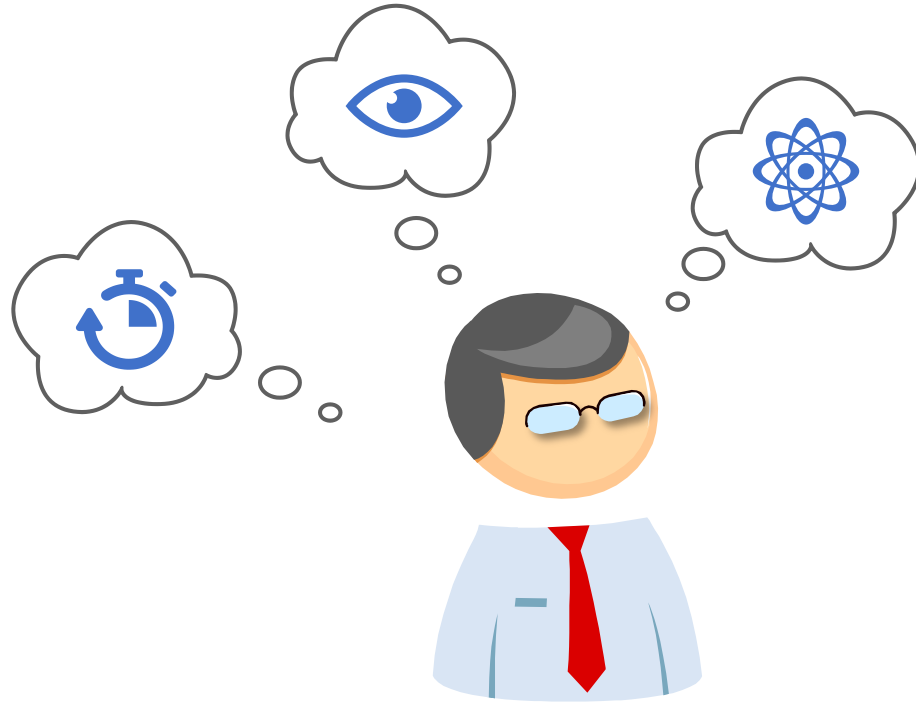
See rising temperatures by
mapping pixels to tags



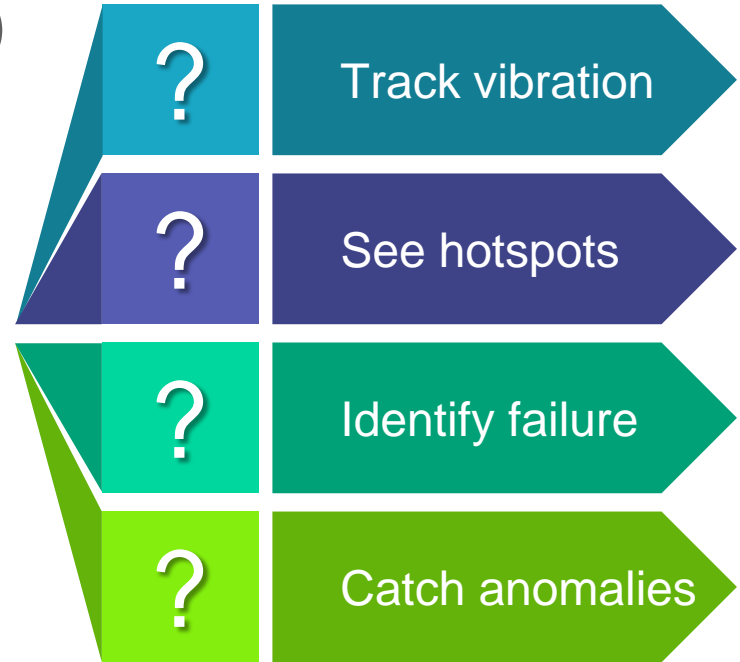
GAS CONCENTRATION

Use dissolved gas amounts
to identify transformer failure

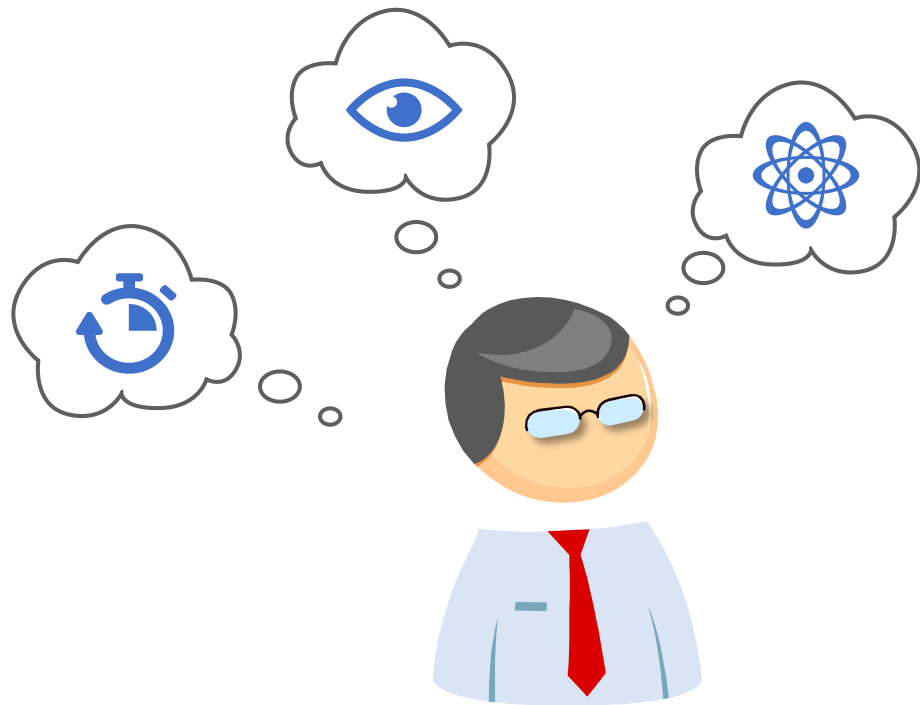
People know what problem they want to solve



Greg
Technical manager



Data allows people to act on what they know

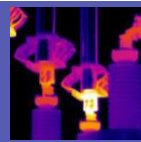


Greg
Technical manager

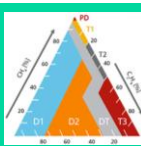
Digital extension of senses



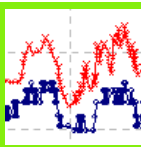
Track vibration



See hotspots



Identify failure



Catch anomalies



Technology & AI should complement
natural intelligence



WHITE HOUSE UTILITY DISTRICT

Simple insight
Big returns

- Water utility in Tennessee
- Approaching 80% capacity of plant
 - Expansions would cost \$20 million
 - Knew there were leaks, but where?



Install meters

Flow & pressure data



Segment metered areas

Calculate In - Out



OSIsoft.

PIWorld

SAN FRANCISCO 2018

#OSIsoftUC

#PIWorld

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Install meters

Flow & pressure data



Segment metered areas

Calculate In - Out



Only look at 1 am ~ 4 am





Install meters

Flow & pressure data



Segment metered areas

Calculate In - Out

\$300,000/yr leak found < 1 wk

\$900,000 saved 2015-2016



Only look at 1 am ~ 4 am

Deferred expansion costs



Let experts select their “senses”
Architect people *into* design



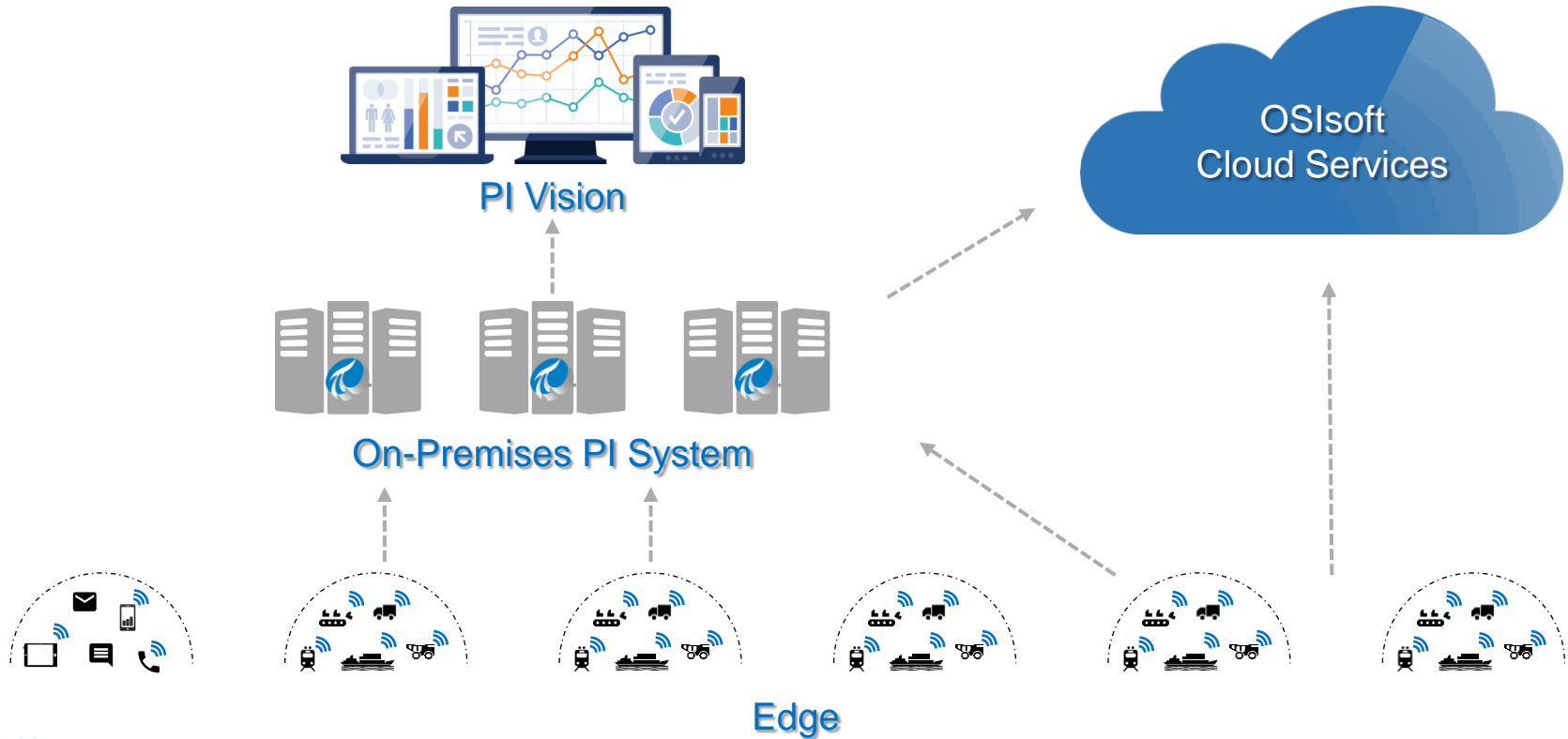
Chris Nelson

Vice President
Software Development

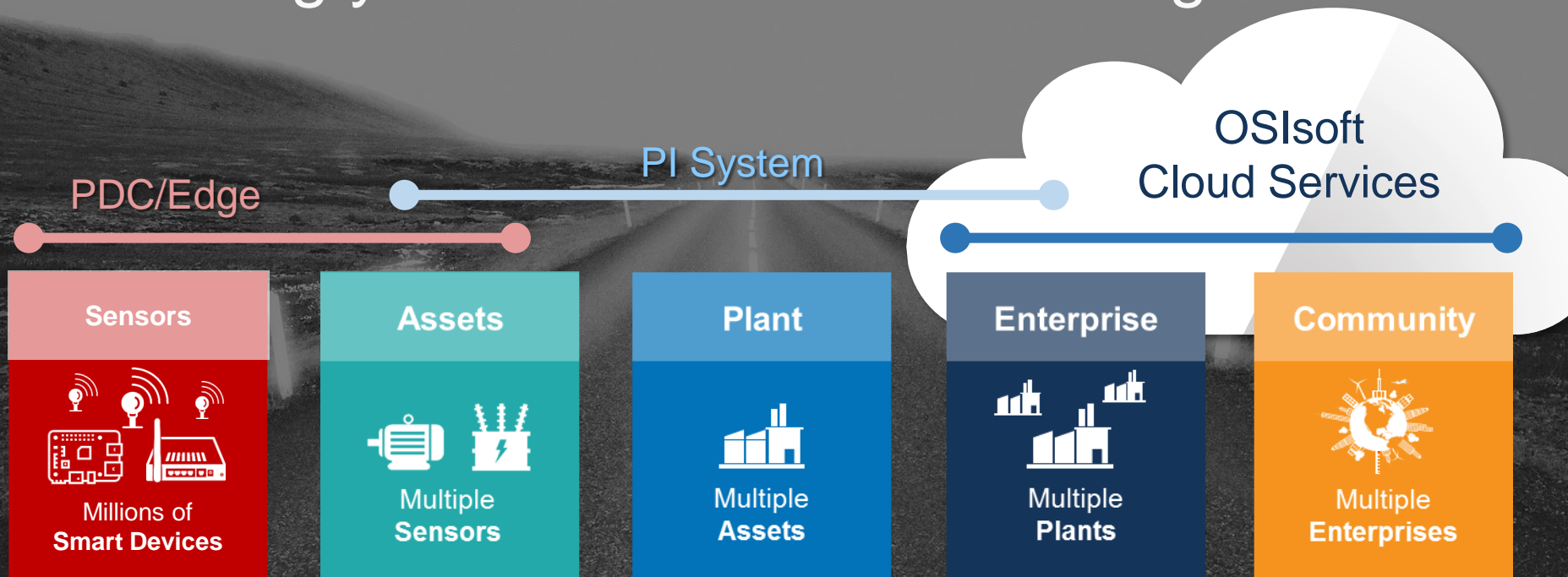
People with data will transform their world



Extending your Infrastructure from Edge to Community



Extending your infrastructure from edge to cloud

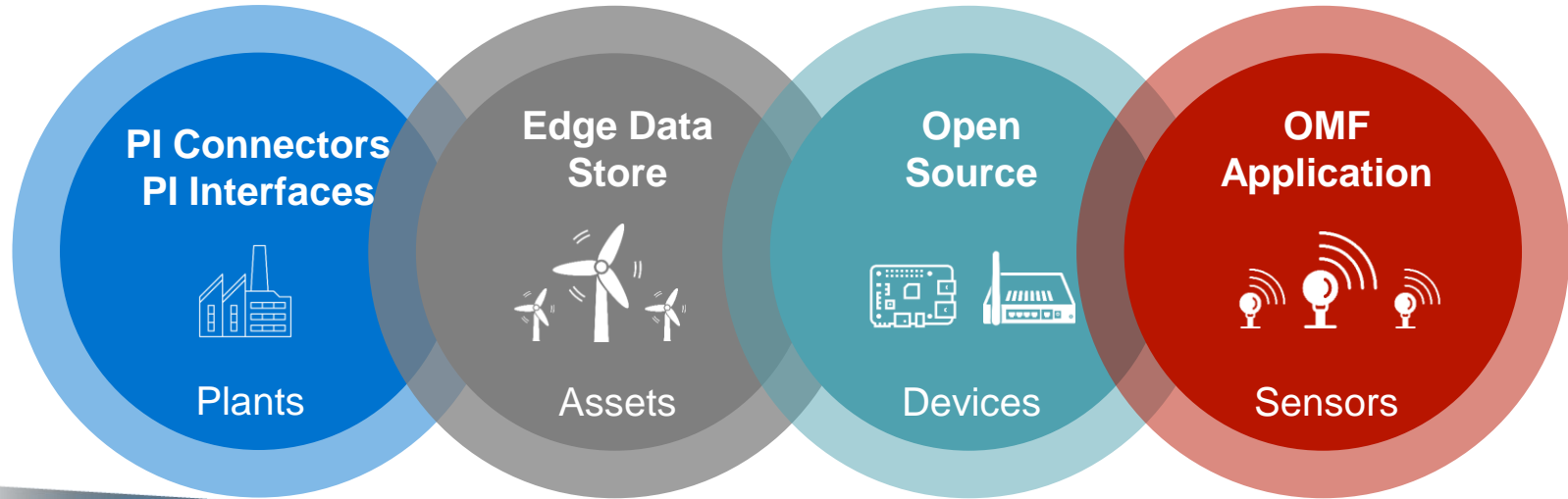


Light up Dark Data with Pervasive Data Collection



Edge

Pervasive Data Collection



10,000's

High



Data Streams



10's

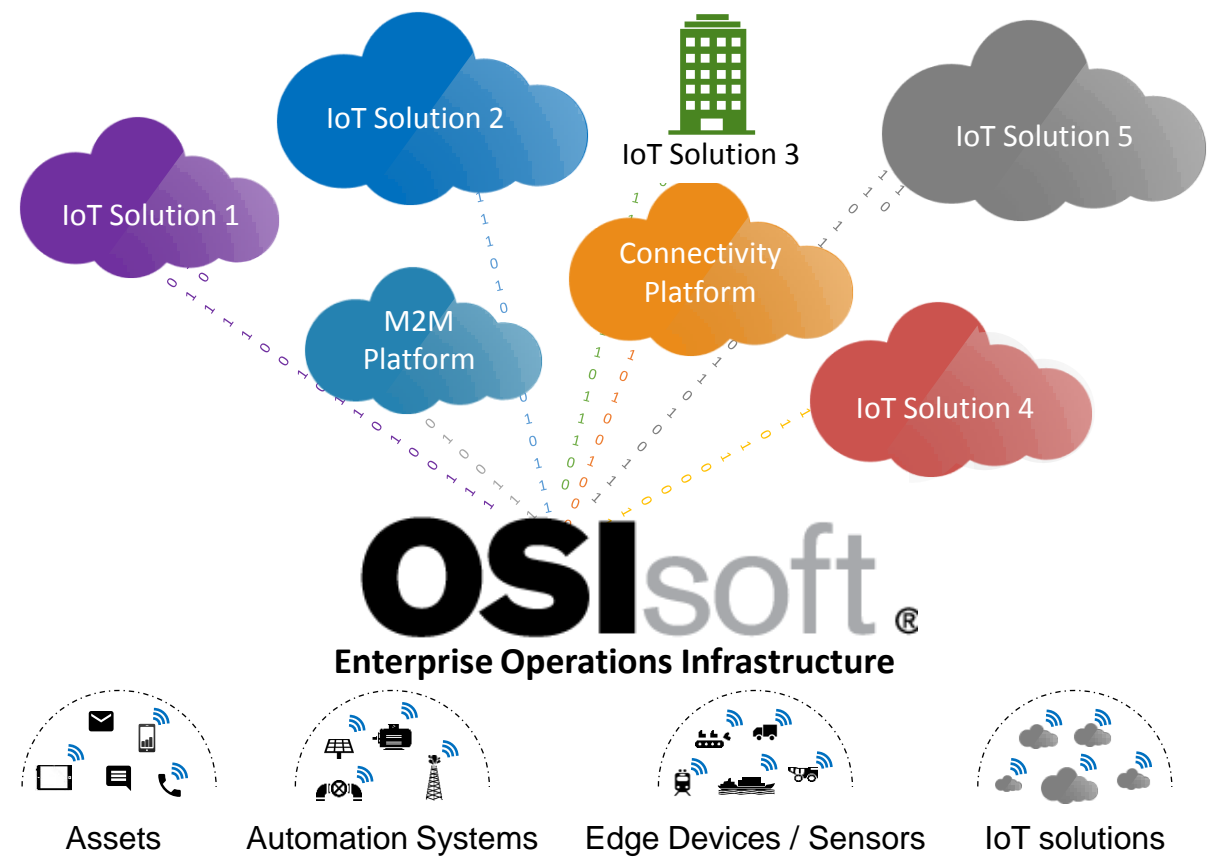


Compute Resources



Low

Secondary Sensor Networks, IoT Platforms, Scale and Dimension of Data



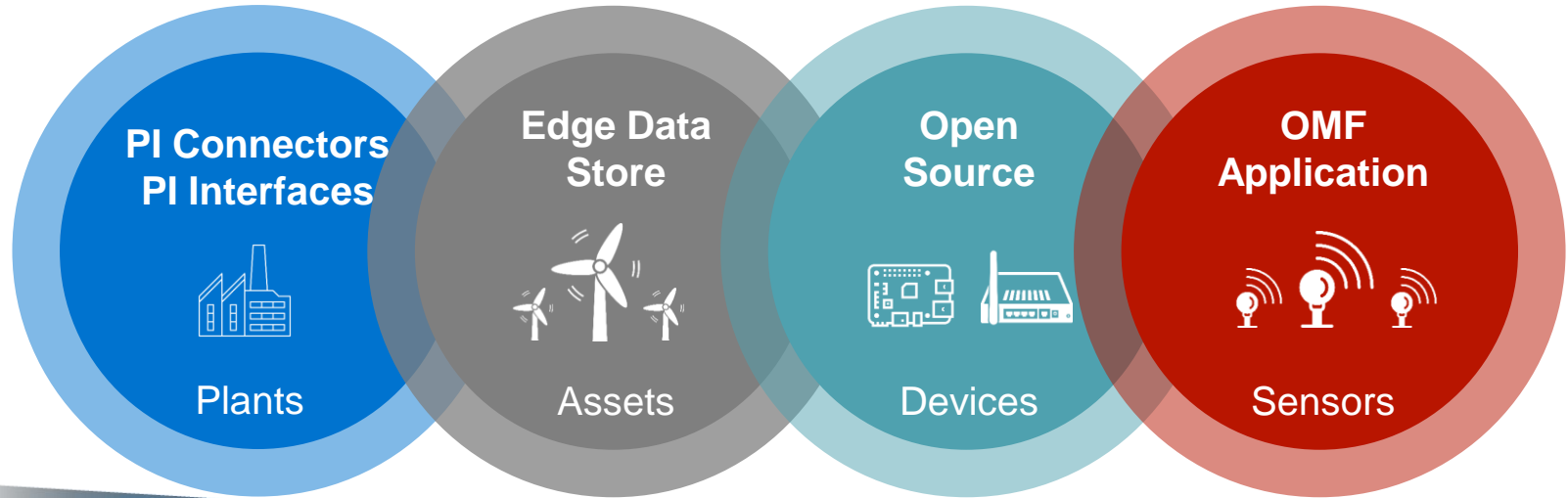
Assets

Automation Systems

Edge Devices / Sensors

IoT solutions

Pervasive Data Collection



10,000's
High



Data Streams



10's

Compute Resources

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

Open Source

Open
Source



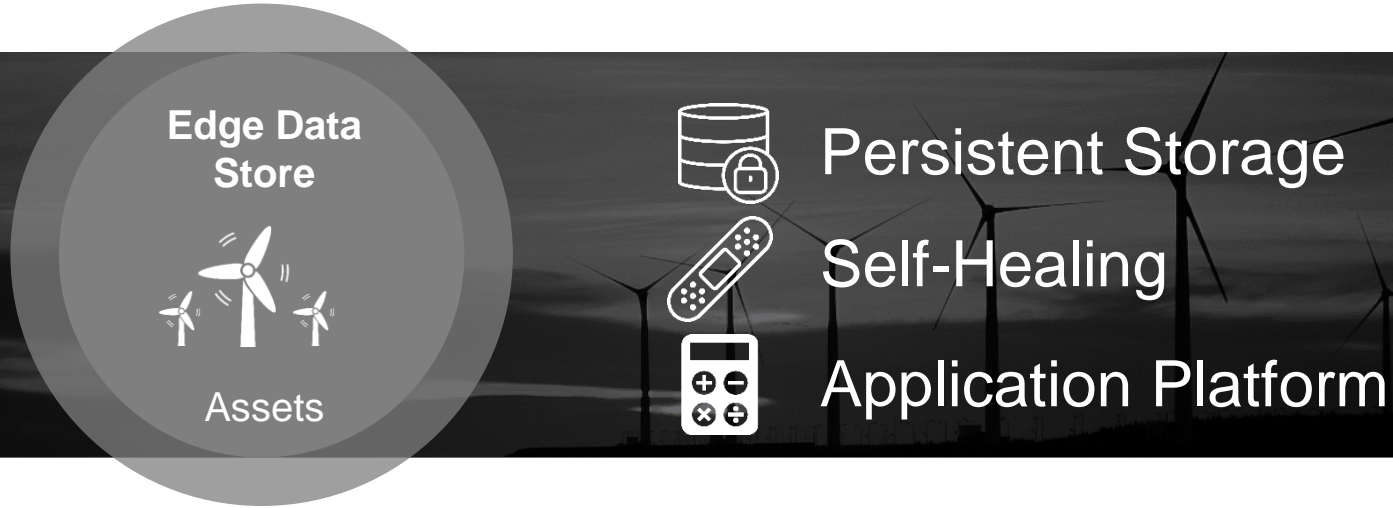
Open and Public
Community Driven

Focused on Integration

Examples...

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

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

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

Trust Your Data with **PI System Health & Improved System Manageability**



On-Premises PI System

Manageable System Initiative

Enterprise view of
PI System Health



Guidance for
troubleshooting,
best practices



Subscribe to
notifications of
health incidents



Monitor the health
of your data flow

PI System
Health



Automatically
detect your PI
System inventory

PI System
Directory



Simplifies
upgrade planning
across your
enterprise



Easily organize
your computers
and components



Informs PI
System Health
what is available
to monitor

Expand All +

System Overview

- ✔ DISCOINFERNO.osisoft.int (Computer)
- ✔ Everest.osisoft.int (Computer)
- ❗ Gatekeeper.osisoft.int (Computer)
- ✔ SDAF1.osisoft.int (Computer)
- ✔ THEROOFFISONFIRE.osisoft.int (Computer)
- ✔ WEBPOTPIE.osisoft.int (Computer)

Root



Recent Incidents

Severity	Name	Component Name	Item	Computer	Start	Duration	Acknowledged	
	Interface Incident	PI-opcint_ReadOnly2	Interface	Gatekeeper.osisoft.int	2018-04-6 12:53:30 PM	5 days	No	


✓ Healthy

17

 Error

2

 Warning

 Maintenance

0

PI System Health

Dashboards Incidents

System Components

Collapse All -

System Overview

▼ PI Data Archive

- Insomnia
- ✓ Everest.osisoft.int

▼ PI Buffer Subsystem

▼ Interface

- ✓ PI-PtoPI2
- ✓ PI-opcint_ReadOnly1
- ! PI-opcint_ReadOnly2
- ✓ PI-opcint_ReadOnly3
- ✓ PI-opcint_ReadOnly4

▼ Computer

Interface Incident (2018-04-6 12:53:30 PM - In Progress)

**Interface Incident**

The interface's heartbeat has not updated in a period of time
[How did this incident get created?](#)

Name PI-opcint_ReadOnly2
Type Interface
Computer Gatekeeper.osisoft.int
Detail PI-opcint_ReadOnly2

Incident Timeline - PI-opcint_ReadOnly2

IORate Heartbeat



Name	Start Value	Current Value	UOM	Description
InBadStateTimeThresh...	600	600	s	Maximum time before data is considered bad
Version	2.6.7.21	2.6.7.21		
ProductName	PI Interface for OPC DA (OPCInt) - Read-Only	PI Interface for OPC DA (OPCInt) - Read-Only		
MaintenanceStart	1-12-31 06:09:24 PM	1-12-31 06:09:24 PM		
MaintenanceEnd	1-12-31 06:09:24 PM	1-12-31 06:09:24 PM		

Incident History Analysis - High Risk

This incident has occurred 3 time(s) in the last week. There may be an underlying issue. Check out the Related Resources section for additional details.

Severity	Name	Component	Start	Duration	Acknowledged
!	PI-opcint_ReadOnly2	PI-opcint_ReadOnly2	2018-04-11 11:51:16 AM	8 hours	Yes
!	PI-opcint_ReadOnly2	PI-opcint_ReadOnly2	2018-03-30 10:06:16 PM	6 hours	Yes
!	PI-opcint_ReadOnly2	PI-opcint_ReadOnly2	2018-01-20 10:26:16 AM	12 hours	Yes

Data Flow Diagram

Respond Maintenance

Acknowledge

Comment

Add Comment

Add Comment

OSIvameyer 2018-04-9 06:18:56 PM
Test

Possible Causes

- The heartbeat tag might not be updating correctly. Please check the message logs.
- The heartbeat tag could be configured incorrectly.

Troubleshooting Resources

Documentation

- Messages
- Alphabetical list of parameters
- Messages
- PI Interface for OPC DA troubleshooting

KB Articles

- How to check your PI Server message logs, PI Client logs (pipc.log), and PI Interface log files
- How to read new UniInt 4.5.0.x and later Interface message logs (now in PI Message Log, not PIPC.log)

PI System Health

Troubleshooting Resources

Documentation

- Messages
- Alphabetical list of parameters
- Messages

- PI Interface for OPC DA troubleshooting

KB Articles

- How to check your PI Server message logs, PI Client logs (pipc.log), and PI Interface log files
- How to read new UniInt 4.5.0.x and later Interface message logs (now in PI Message Log, not PIPC.log)
- Descriptions of tags used to indicate interface status
- Troubleshooting connectivity to the PI System

Increase Natural Intelligence with **PI Vision**



PI Vision 4.x



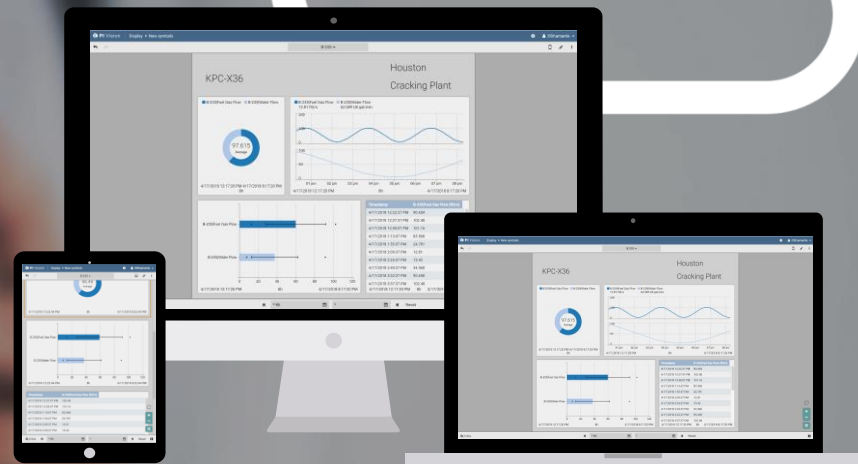
Takes advantage of latest in web technology for value now and future



Aligns with vision to connect from edge to the community



Quickly provides new features to address growing needs



PI ProcessBook Migration Tool



As we move forward, no customer is left behind



PI ProcessBook Migration Tool will help bring users into the future of visualization



Power Data Science at Scale and the Connected Community with **OSIsoft Cloud Services**



OSIsoft Cloud Services (OCS)

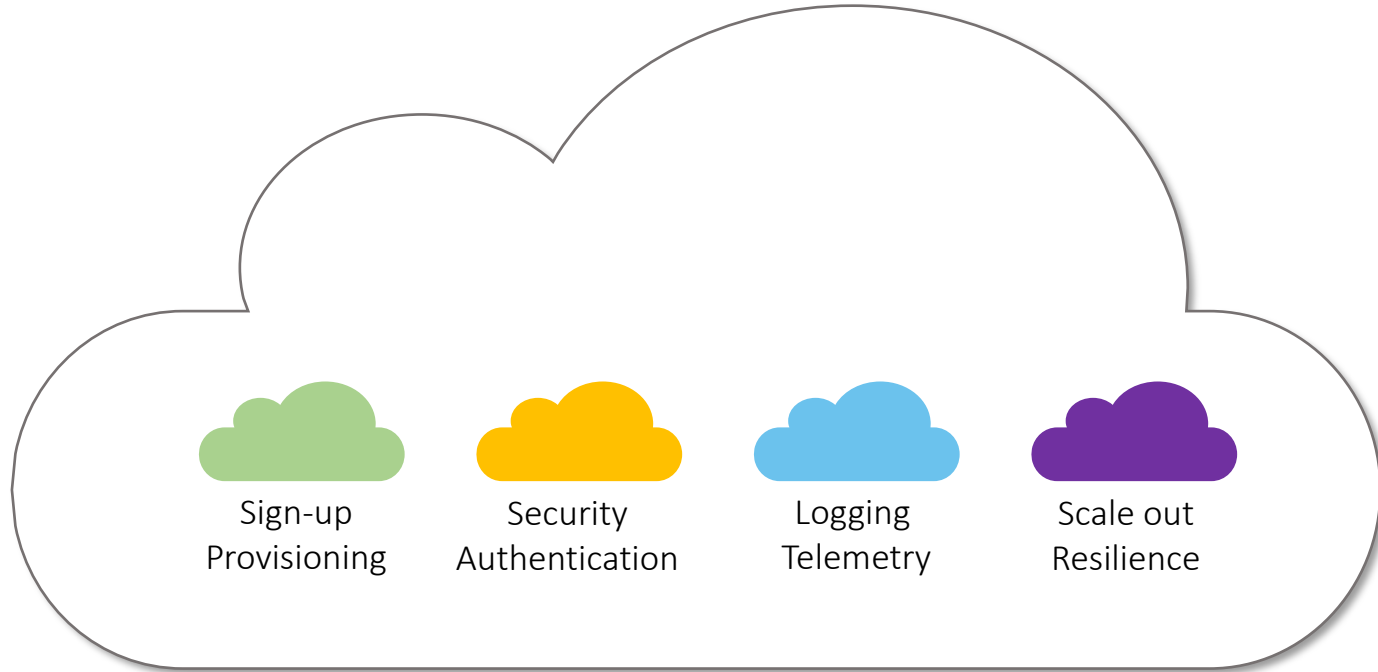
Data Science
Enablement



OSIsoft Cloud Services Vision

Develop & maintain an
operational data ecosystem
that connects customers
with **best-in-class Analytics** and
their **community** of **vendors** & **partners**.

An Infrastructure Approach

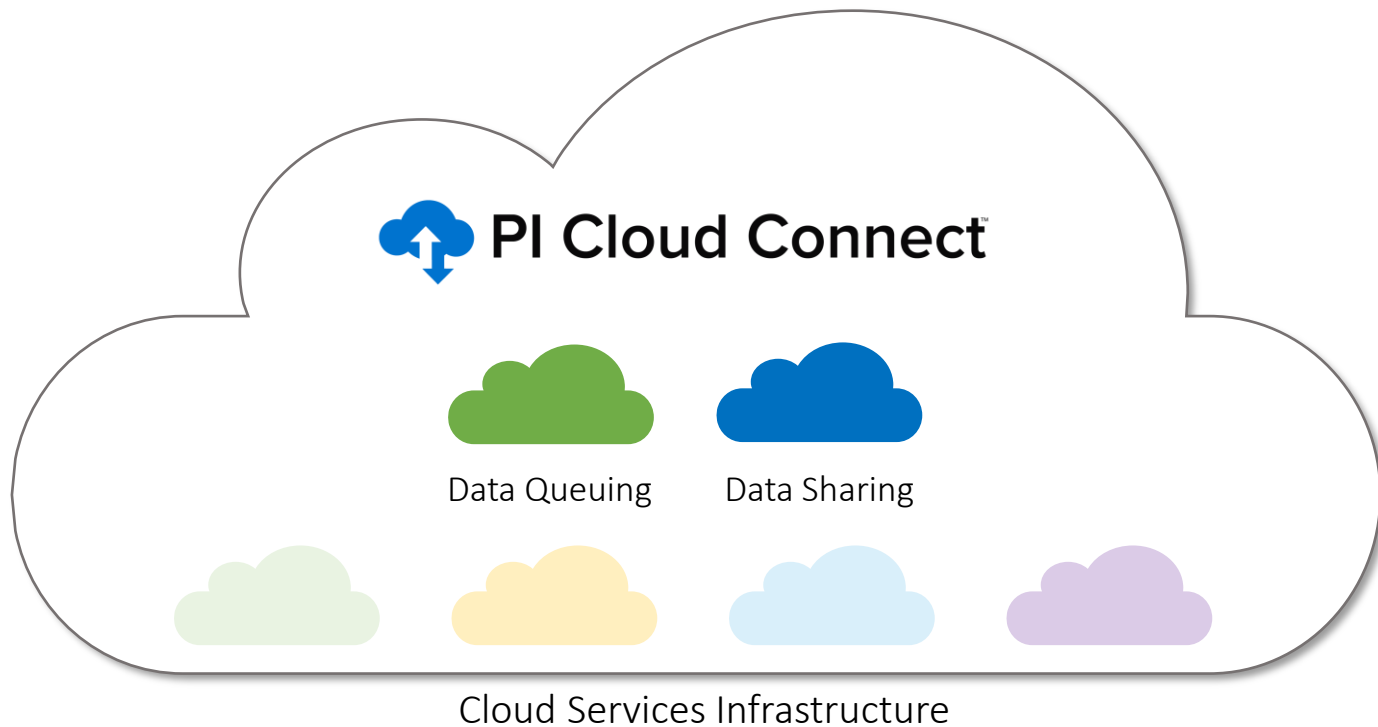


Cloud Services Infrastructure

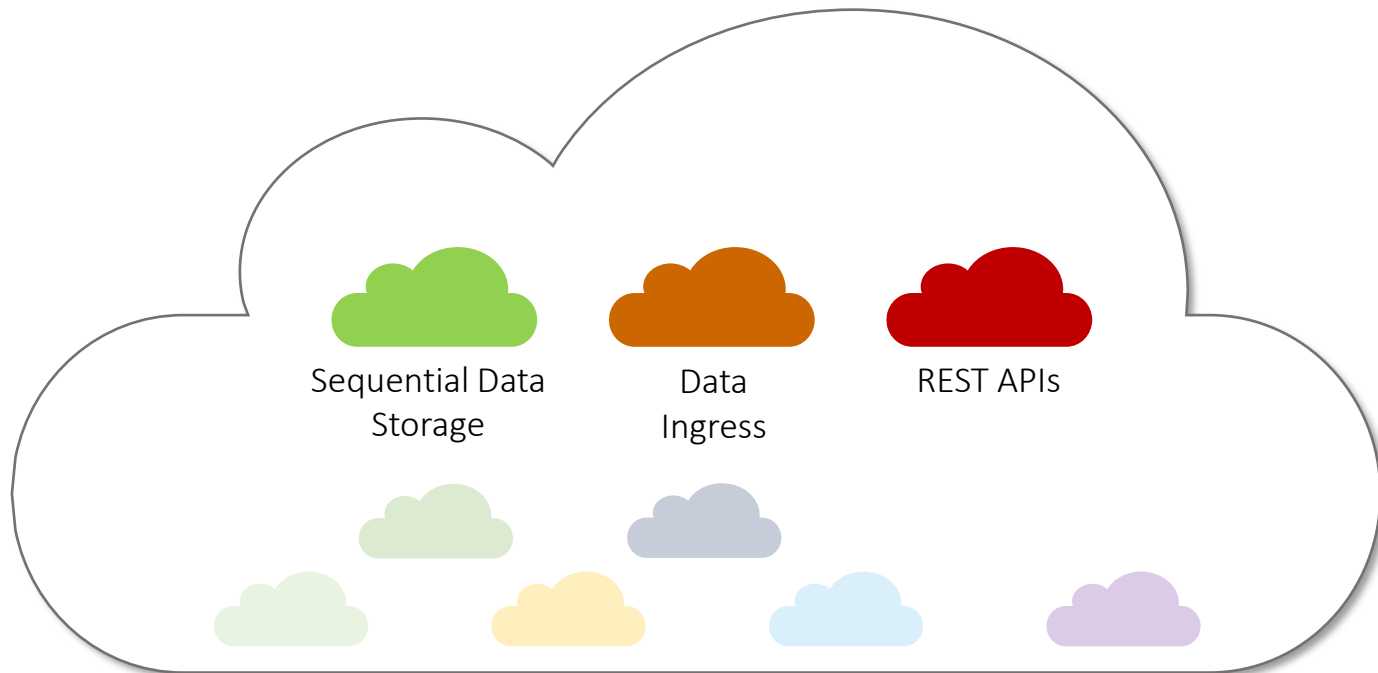


micro service

First SaaS Offering



Extending the Infrastructure

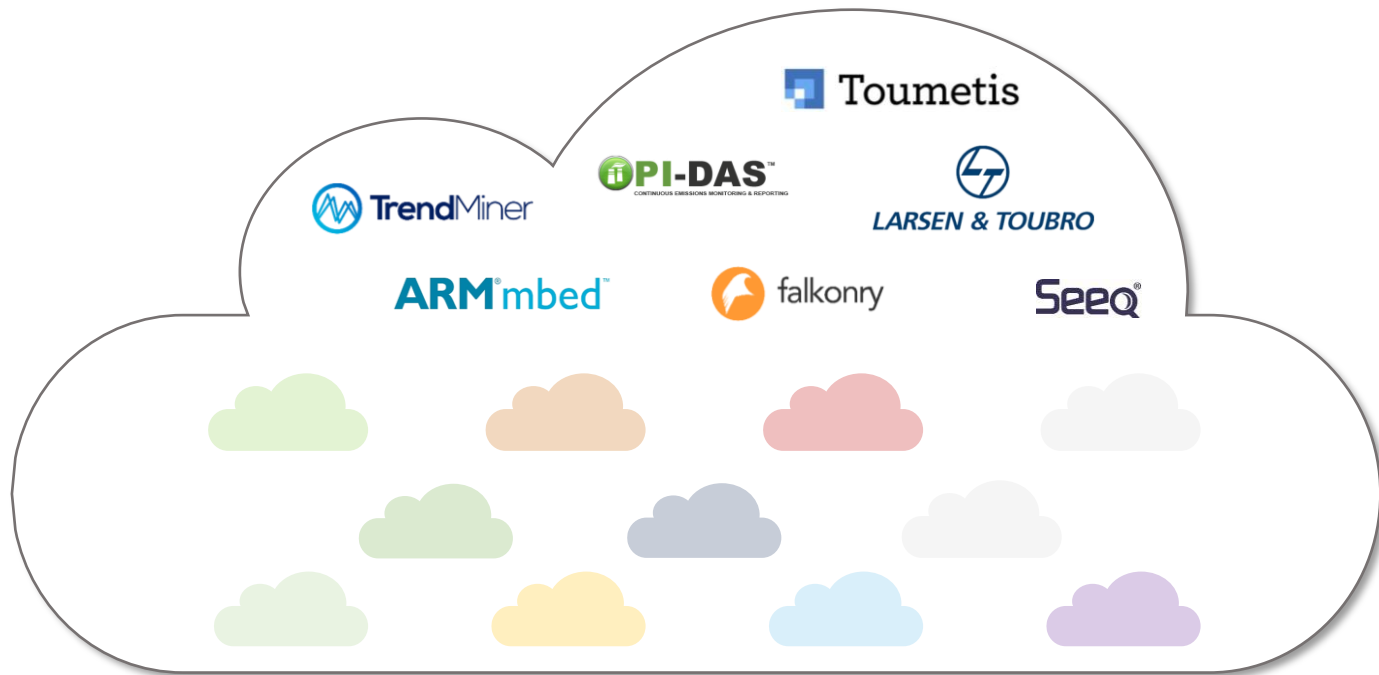


Cloud Services Infrastructure



micro service

Enable partners & Application Providers



Cloud Services Infrastructure



OSIsoft Cloud Services (OCS) Overview

- Managed, secure, data platform
 - Multi-tenant
 - PaaS & SaaS
- High speed, scalable, elastic
- Flexible, resilient, data storage
- Modern, secure REST APIs
- Secured by Azure Active Directory (AAD)
- Operated & maintained by OSIsoft
- Build and deployed in Microsoft Azure public cloud
- ...



OSIsoft Cloud Services (OCS)



**Remote Operations
Monitoring**



Data Science Enablement



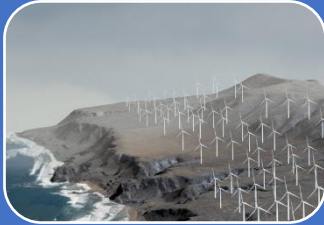
Connected Community

Initial Customer Scenarios

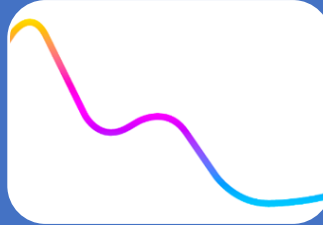
Remote Operations Monitoring



Customer Drivers



Remote Sites &
Assets



Believe Data is
Magic



Limited
Resources



Limited IT
Infrastructure

Goal

Enable remote operations monitoring of assets and processes at the “network edge” by sending data directly to the cloud and being able to visualize it in real time.

Data Science Enablement



Customer Drivers



Condition
Monitoring



Predictive
Maintenance



Process
Optimization



Demand
Forecasting



Energy
Management

Goal

Enable cloud based data science for existing industrial operating companies that want to tap into unrealized value within their PI System operational data for data science (DS) & machine learning (ML) initiatives.

Connected Community



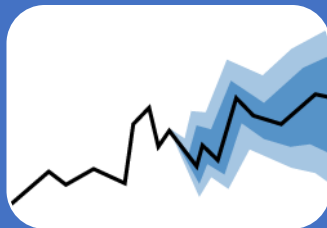
Customer Drivers



Asset
Maintenance



Outage
Management



Data
Forecasting



Contact
Manufacturing



Business
Transparency

Goal

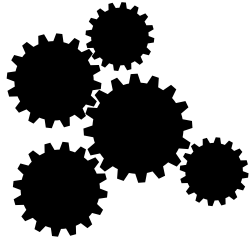
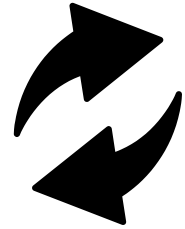
Enable existing industrial operating companies to connect and collaborate with their ecosystem of service providers, expertise and analytics providers, business partners, and application providers through sharing of operational data.

PI Integrators accelerate data science



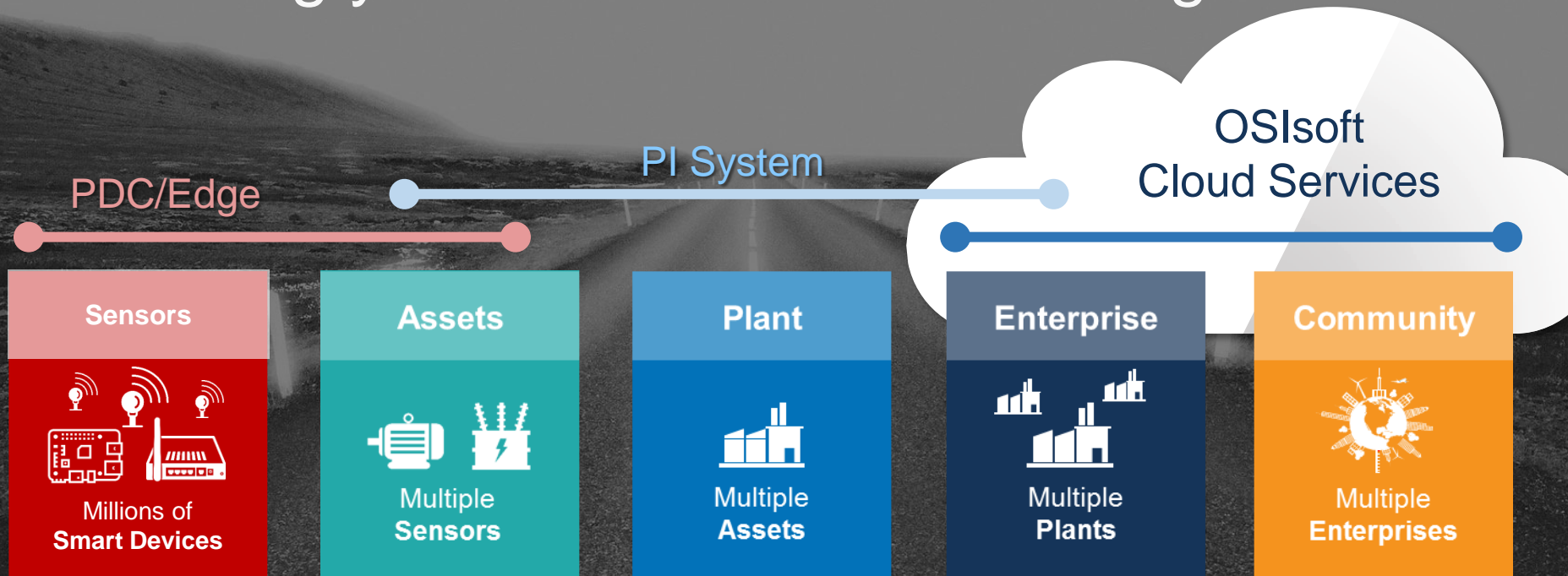
Trustworthy operational data for
machine learning algorithms

Code-free data preparation
supports iterative workflows



Integration of PI System infrastructure
to new IT architectures

Extending your infrastructure from edge to cloud



Extending your Infrastructure from Edge to Community

