OSIsoft as an Enterprise Customer

From the OSIsoft Product Team and
Chris Nelson, VP Software Development

and Gregg

What to expect for Day 3

Day 3: Best Practices Imperial Ballroom A, Ballroom Level	Day 3: Marketplace Partner Showcase Imperial Ballroom B, Ballroom Level	Day 3: Products Grand Ballroom A, Grand Ballroom Level
10:30 AM - 11:15 AM	**10:30 AM - 11:15 AM**	**10:30 AM - 11:15 AM**
Index: Incorporate Event Frames into Your Operatons	Self-directed Analytics and Reporting with OSIsoft Cloud Services (Seeq)	Aggregate: PI System 2018 SP2 and your Critical Operations – Deployment, Patching, Testing
11:30 AM - 12:15 PM	**11:30 AM - 12:15 PM**	**11:30 AM - 12:15 PM**
Contextualize: Rolling out Asset Framework	Petuum Artificial Intelligence Reveals the Goldmine in OSISoft PI Systems Data (Petuum)	Insight: PI Integrators and OSIsoft Cloud Services for time-series Data Science Enablement
2:30 PM - 3:15 PM	**2:30 PM - 3:15 PM**	**2:30 PM - 3:15 PM**
Process: Getting more out of Asset Analytics	Shop Floor Collaboration and OEE Improvement with PI System and Shiftconnector (Eschbach)	Gather: Data connectivity options for the PI System and the Cloud
3:30 PM - 4:15 PM	**3:30 PM - 4:15 PM**	**3:30 PM - 4:15 PM**
Scale: Connecting your PI Systems to OSIsoft Cloud Services for Applications	Designing OMF into A Multi-function Edge Device (Monico)	Visualize: PI Vision 2019 and ProcessBook migration

OSIsoft Headquarters

- Leverage PI System to support the facility
- Collect data from:
  - Building Management System (BMS)
  - Power Systems
  - IoT Devices
- To enable:
  - Operational excellence
  - Single pane of glass
  - Better Energy management
    - Optimize energy usage
      - HVAC performance
  - Anomaly detection
- Replicate best practices!

San Leandro Tech Campus

Project:1 M Sq Ft Mixed Use Development

Efficiency in design

- Old HQ – 26 kWh Sq/Ft
- SLTC – 8.5 kWh/Sq/Ft
- Dynamic Window Tinting
- Neolith Tiles
- LED Lighting

OSIsoft's new Headquarters, the SLTC story

Gregg Le Blanc – VP Product

Agenda for the next 82 minutes

- SLTC Business Challenges and Product Roadmap
- Pervasive Data Collection
- PI System 2018 SP2 and Critical Operations
- Visualization
- Enabling Analytics via PI Integrators
- OSIsoft Cloud Services & PI Systems
- Data Science Enablement via OCS
- Dev Con Kickoff
- Summary

OSIsoft Data Infrastructure

OSIsoft
Cloud Services

Partner PaaS

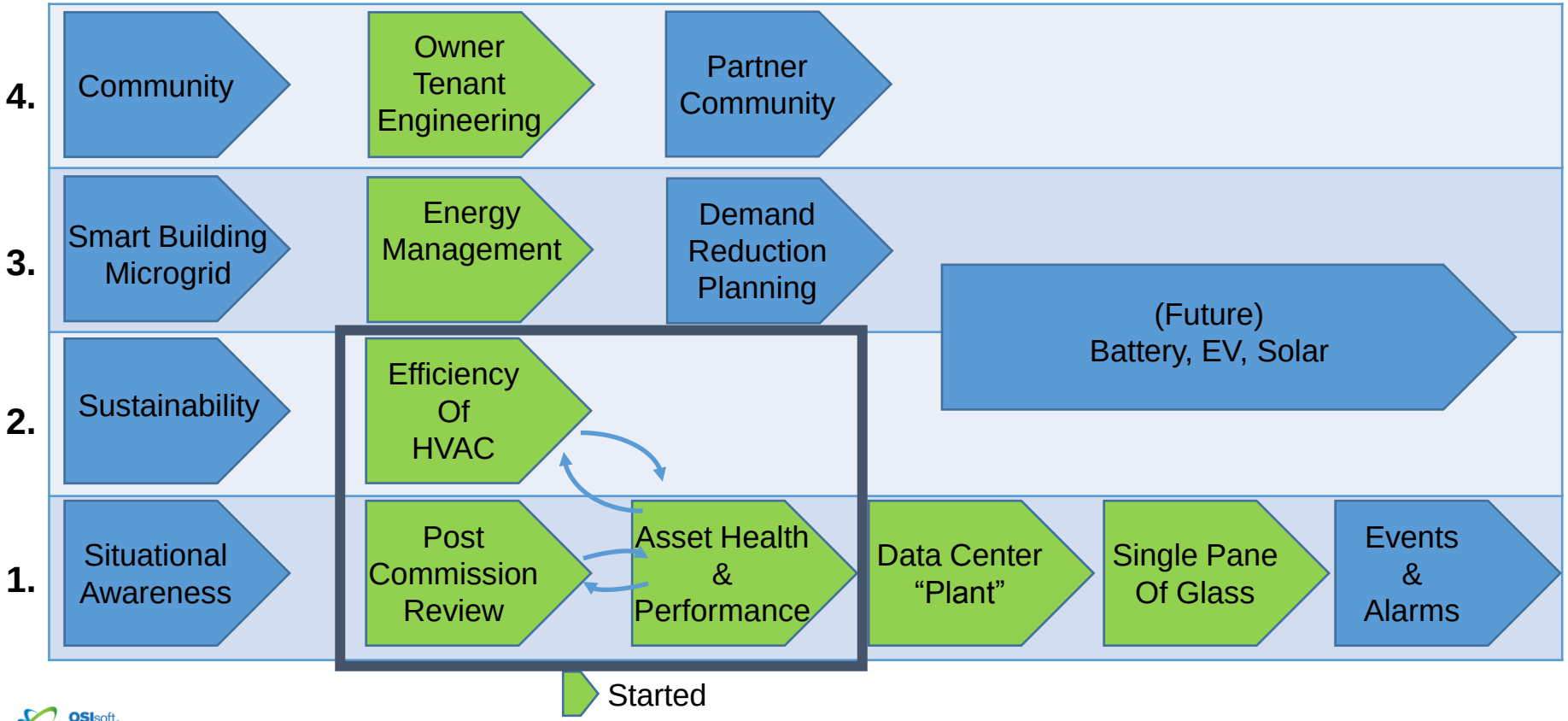
Classic PI System

PDC/Edge

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

Integrators

OSIsoft – as a Customer



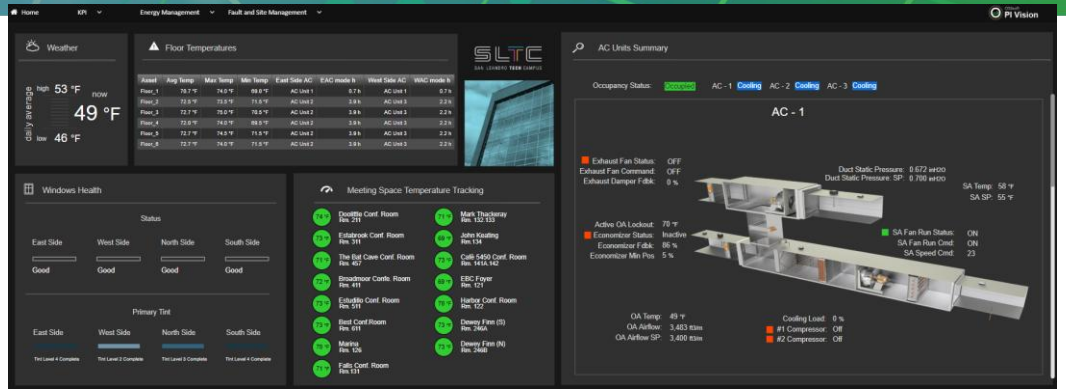
Rollout and Development Themes

- Manageability
  - Using PI Vision to centralize UI work
  - Using OSIsoft Cloud Services to aggregate data
- Seamless infrastructure
  - Using Connectors to collect our data
  - Deploying IoT and Edge devices
  - Deployment & Testing from PI System 2018 SP2
  - Connecting PI System to OSIsoft Cloud Services

SLTC PI System

OSIsoft Headquarters

The PI System real-time infrastructure has enabled OSIsoft to improve our support and development of products while realizing improved operations and energy savings.



CHALLENGES

Production PI System for three mission critical needs:

1. Test bed for development of the PI System product stack
2. Develop a data set for partners to build market solution
3. Efficiently manage our own mission critical facilities

SOLUTION

Install the PI System for real-time operations against multiple data sources for the operation of the San Leandro Tech Campus

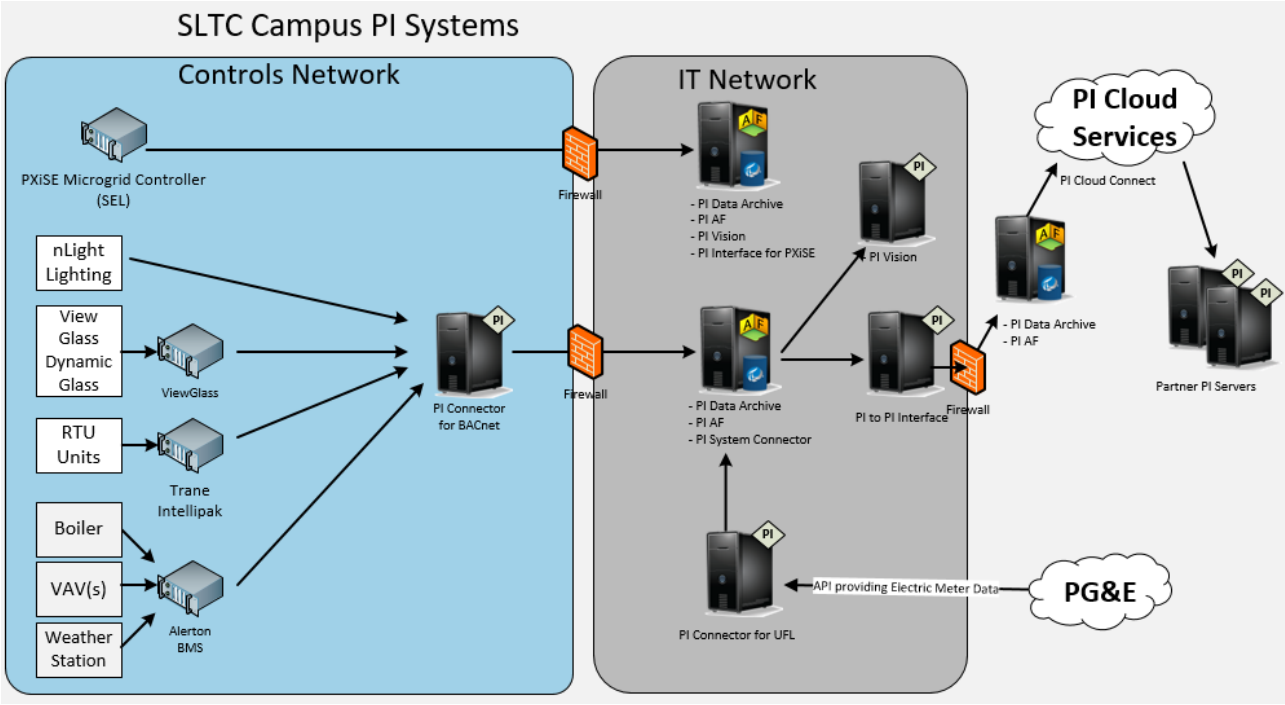
RESULTS

1. Production system in which the BACnet Connector was tested and improved to meet market requirements.
2. Ability to demonstrate PI in a production environment for facilities management
3. Improve facility operations, energy savings and hold vendors accountable for the warranty claims and improvements

PI System Deployment Architecture

Architecture Requirements

- Separate control from data
- OCS for community access
- Disparate Data Collection
- Handle 3V's
  - Volume
    - 10,000 Streams
  - Velocity
    - 10 values a sec
    - 1 to 3 sec
    - 5 Minute
    - 15 minutes (48 hours after the fact)
  - Variety
    - Metering
    - BMS
    - IOT
    - API Data
    - Electric Relays/CTs



#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.

#2

Conference Room Occupancy Monitoring

Powered by OMF

Challenge

Conference rooms make up a large portion of SLTC. OSIsoft wants to better understand how much time we spend leaving the lights on in rooms that are unoccupied.

Solution

Install a suite of sensors that monitor motion and ambient light. The motion sensor will determine if the room is occupied. The light sensor will indicate if the lights are left on.

Results

Increased visibility into the energy used to light up conference rooms with they are unattended, with the goal of reducing energy costs.

#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?

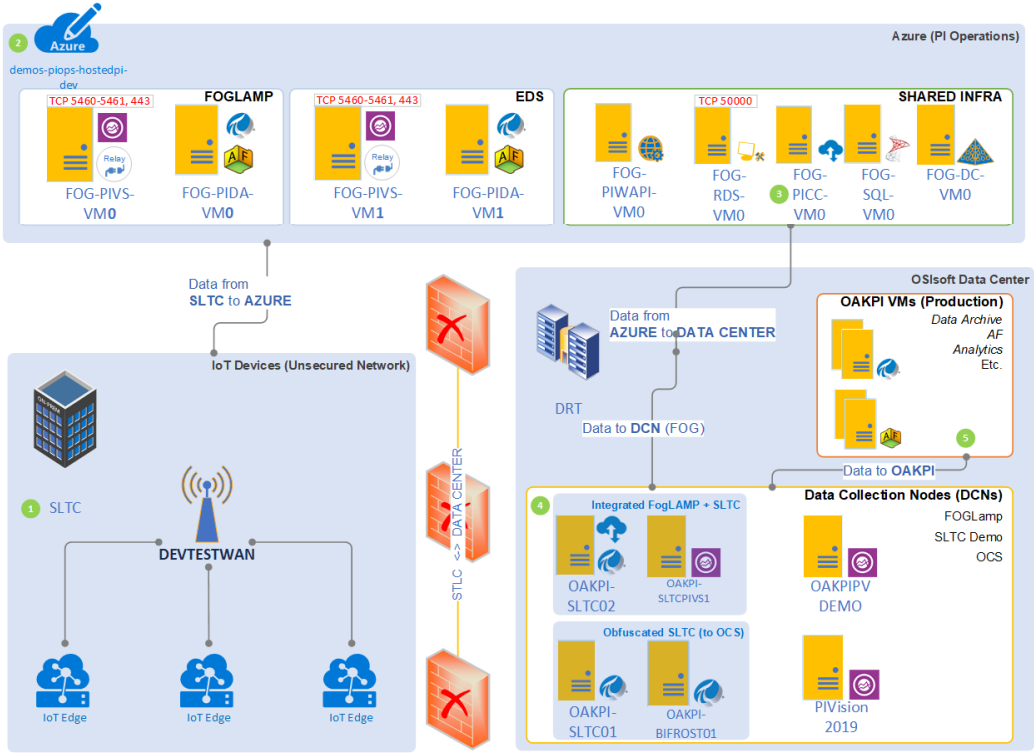
Solution

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

Results

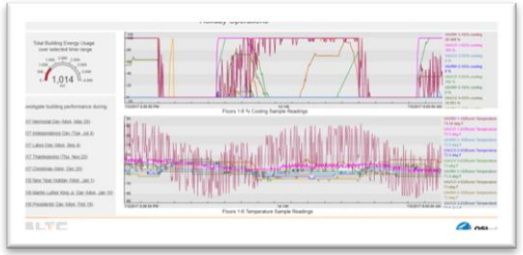
OSIsoft increases reliability of espresso machines by collaborating with our Caffeinated Service Advisor so they make fewer trips on-site.

How addressed new use cases



Post Commission Review (Visualization, Data Baseline Trend Analysis)

The target for the building was an improvement from 26 kWh/sf (old building) to 8.5 kWh/sf (new building) how to validate design and evaluate the commission process for errors.



CHALLENGE

The commission process is only as good as the design specifications

- Design vs. actual performance
- Failed equipment
- Inadequate or missing specifications

SOLUTION

Implement PI for benchmarking the HVAC, hot water and window tinting system.

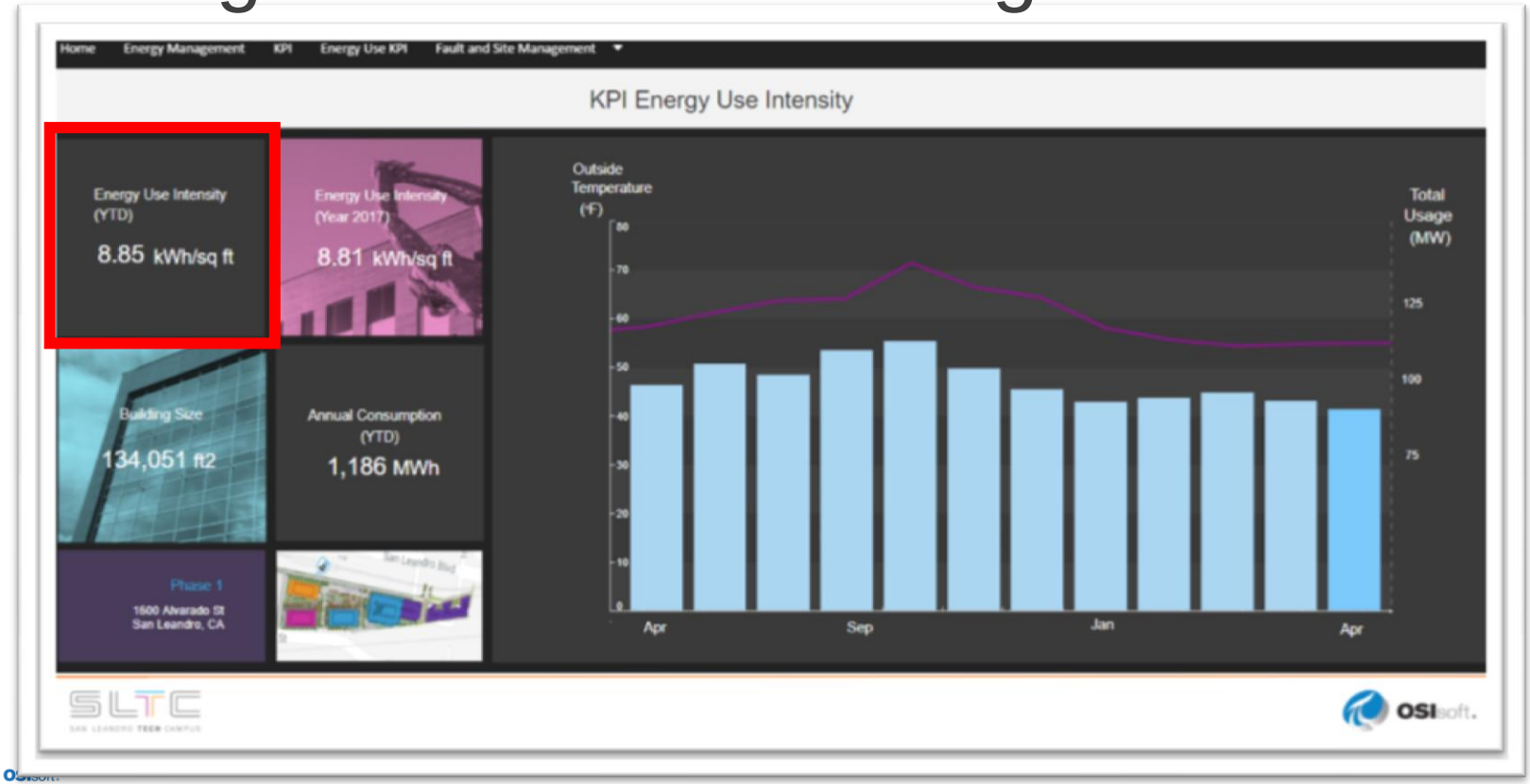
- BACnet Connector
- PI Vision
- PI UFL for Energy Data

RESULTS

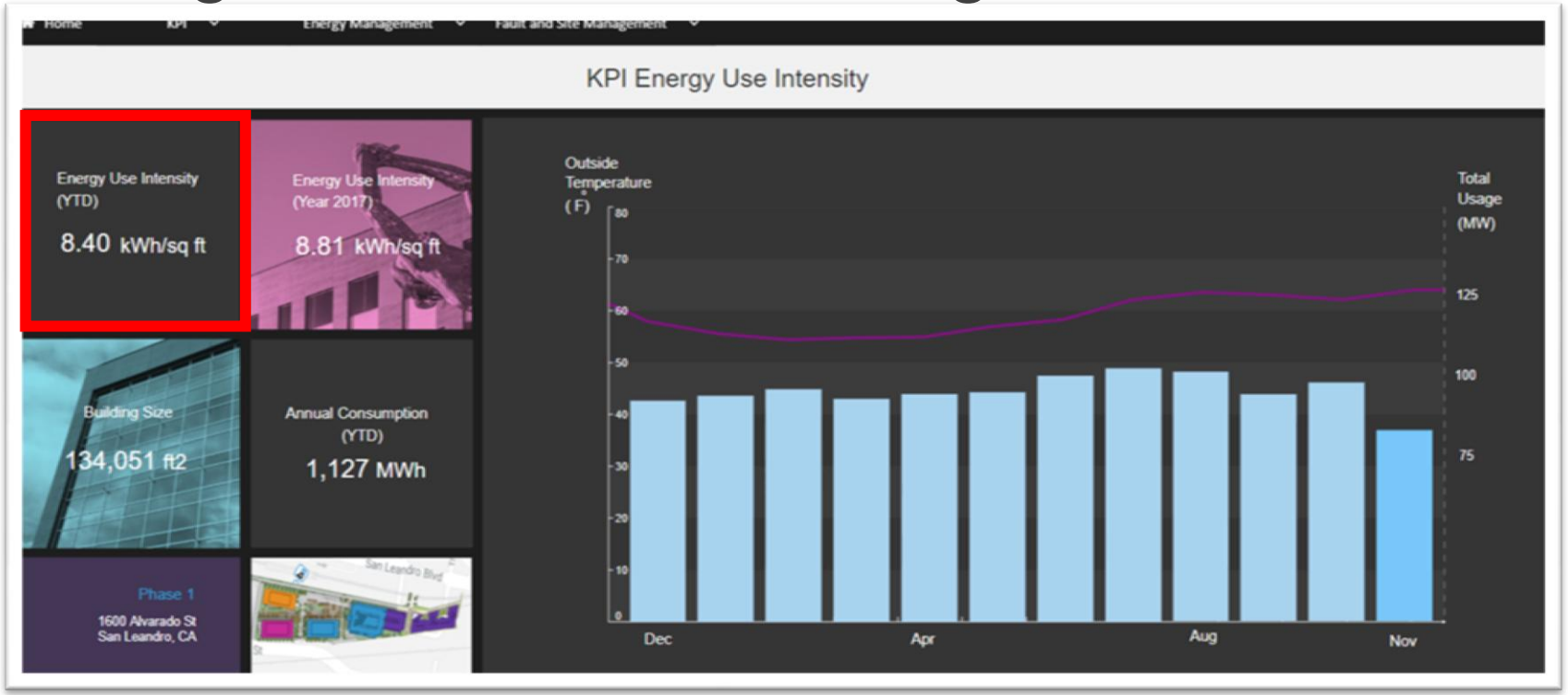
Found numerous gaps between the design specification and the actual system requirements.

- Failed or poorly installed equipment
- Lack of BMS required features
- Programming errors
- Building design issues

Management KPI – Building Benchmark

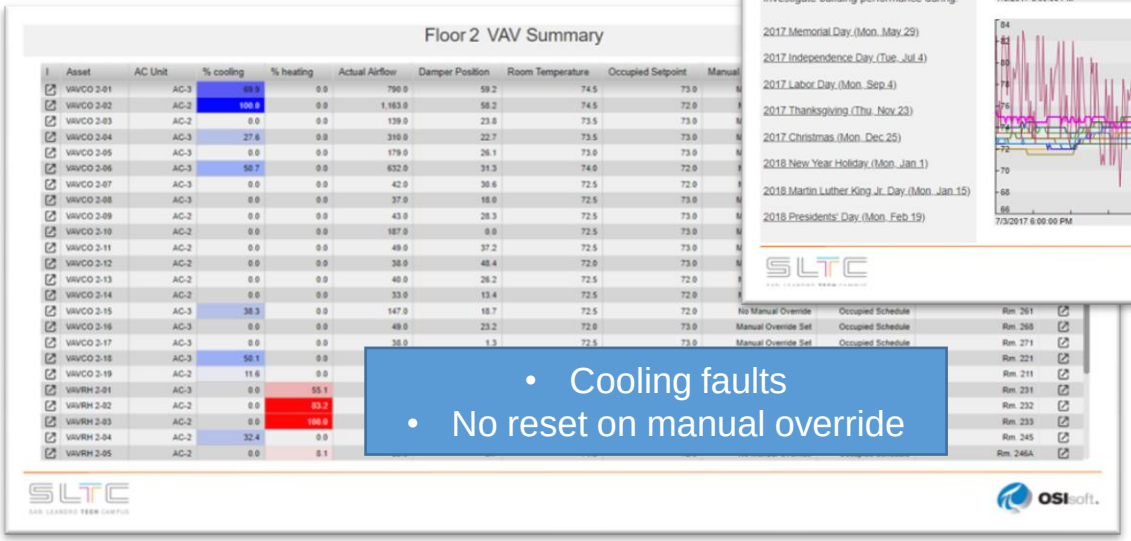


Management KPI – Building Benchmark



Problems with the real world

Issues they didn't see



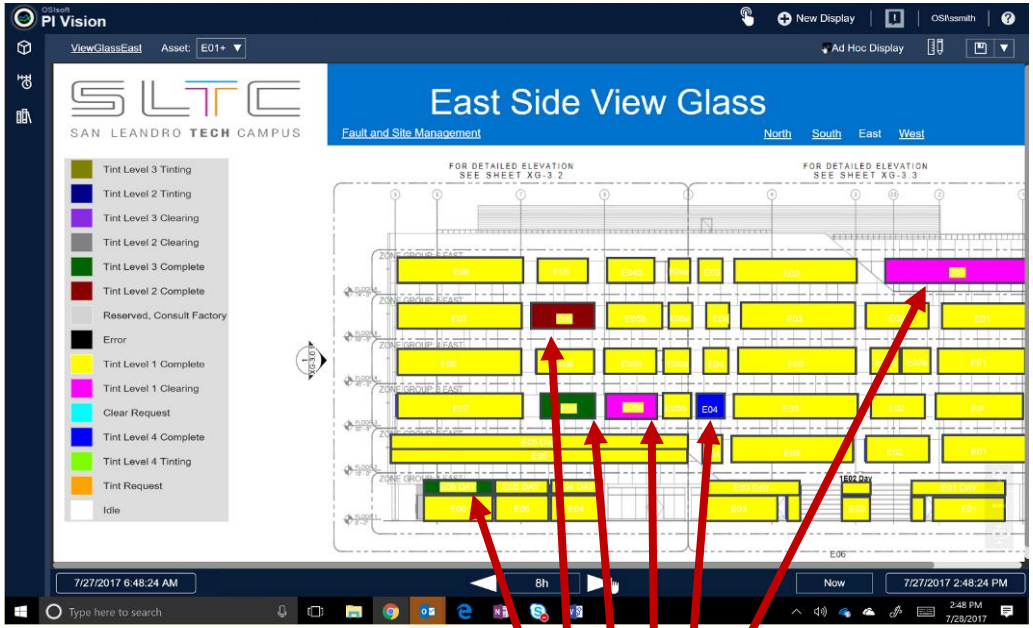
- Cooling faults
- No reset on manual override

- 4am start on a holiday
- One unit hunting despite vacant

Problems with the real world

Commissioning of specialized systems

How it should work



Reality = hidden faults

Single Pane of Glass (Visualization)

We installed new technologies that provided no management console and additional building systems were not connected to Building Management System.

CHALLENGE

We lacked completed system visibility

- ViewGlass window tinting system had no HMI.
- Lighting & ViewGlass not in BMS
- BMS lacked ability to share data with multiple participants

SOLUTION

Leverage PI Vision for dashboards, troubleshooting and root cause analysis

- Dashboards for the current status of the system
- Integrate trending
- Troubleshooting Analytics

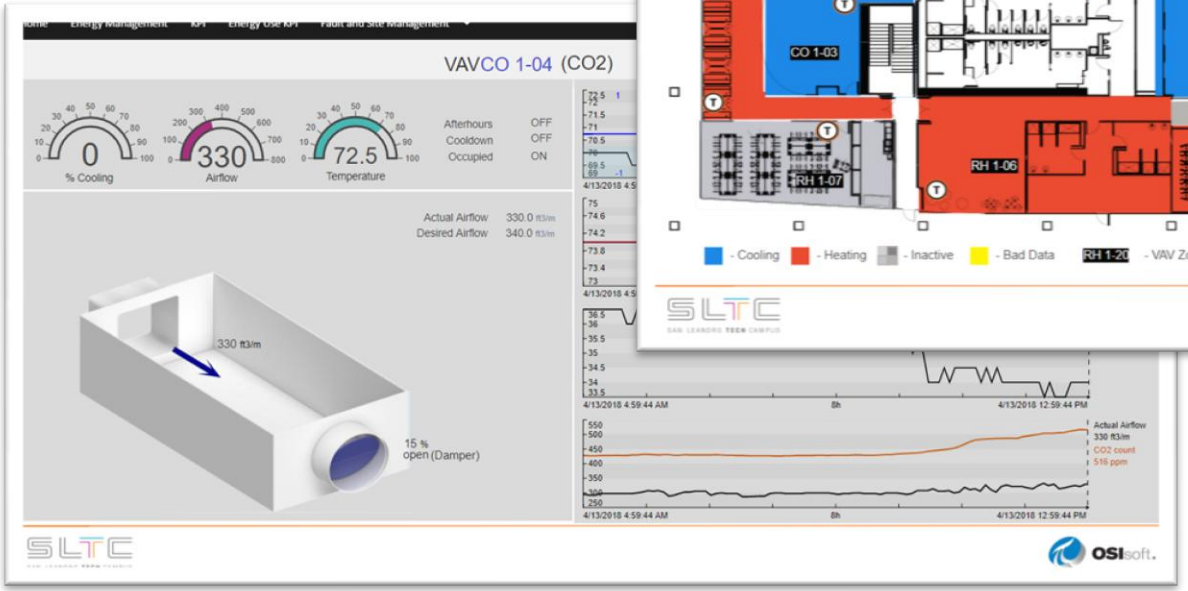
RESULTS

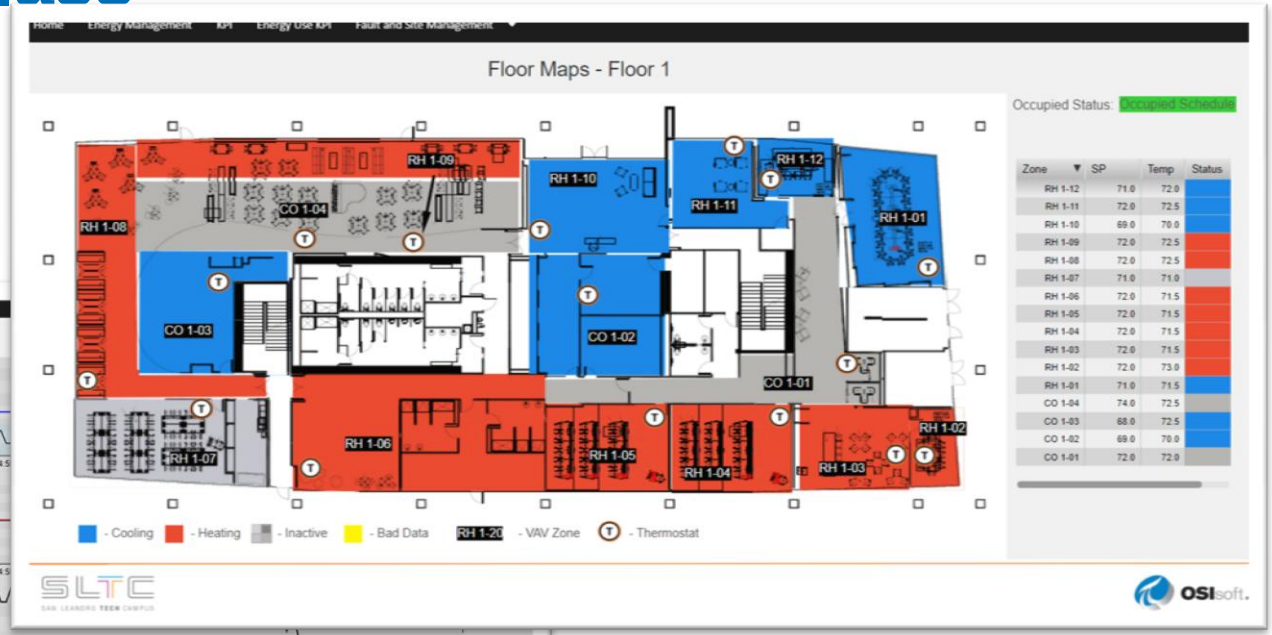
Real Time Reporting for multiple stakeholders and missing HMI system

- ViewGlass Displays (Vendor Now Interested in using PI)
- 3 Stakeholders Access – engineering, landlord, tenant
- Internal Customer Screens

Single Pane of Glass

Asset View

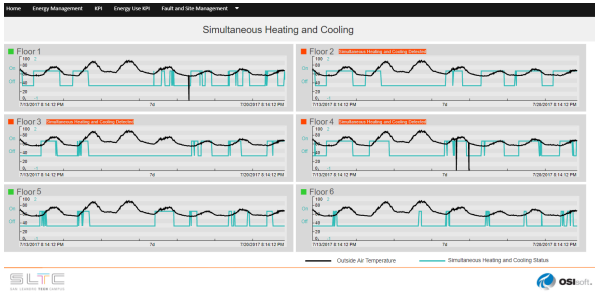




Floor View

HVAC Performance (Trend Analysis and Machine Learning)

The BMS system included it's own algorithm on the optimization of the start-up process. Plus the amount of manual temperature overrides we needed to understand system performance tied to comfort for employees.



CHALLENGE

We monitored inefficient use of the HVAC system and need to understand performance.

- Start-up 4 hour duration but units achieving set point temperature in as little as 30 minutes
- Significant manual overrides causing simultaneous heating and cooling in contiguous zones

SOLUTION

Analyze system performance with Machine Learning and analyze trends of manual overrides

- Integrator for Business Intelligence
- Power BI, R, Orange
- PI Vision Adhoc Trending
- PI Vision Dashboards

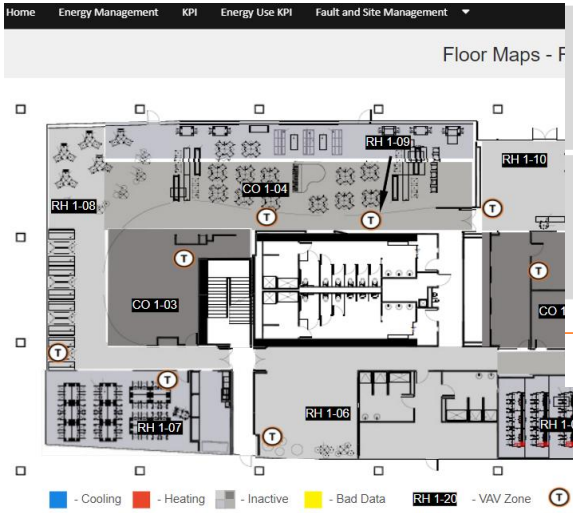
RESULTS

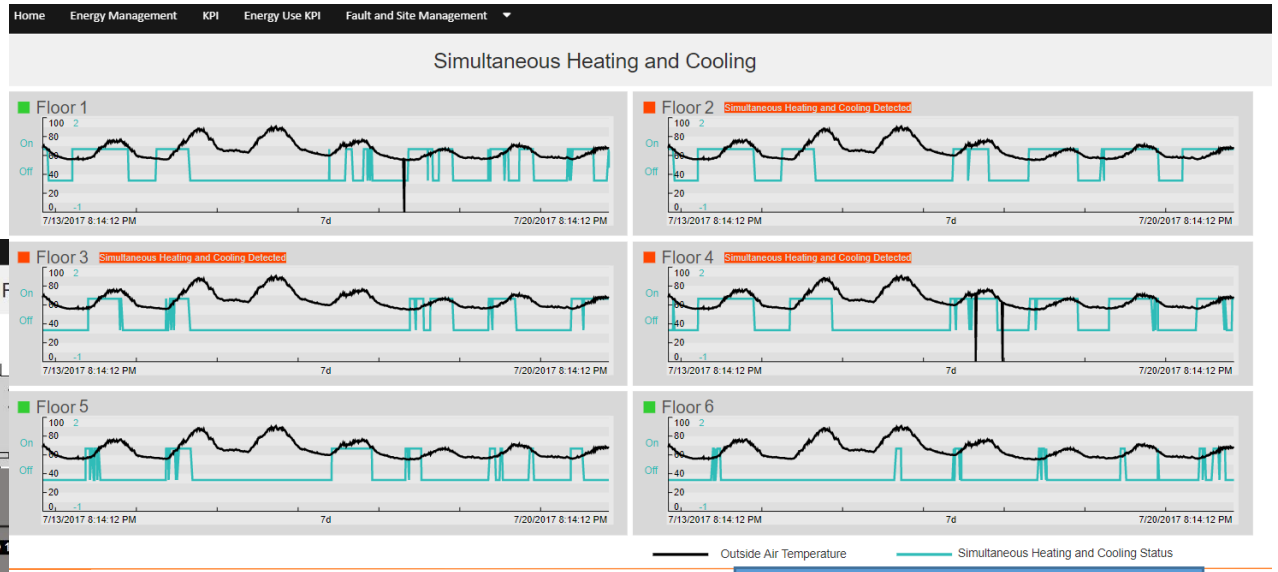
Identified multiple contributing issues contributing to a minimum of 5% energy consumption

- BMS Software Bugs
- BMS Configuration Issues
- HVAC Design Issue
- BMS optimization algorithm not optimized for energy conservation

Problems with the real world

First Floor Failed Pre-Conditioning Prior to





Manual Overrides created extensive heating and cooling issues

Machine Learning Insights

28% Of The Zones Never Reached Temperature

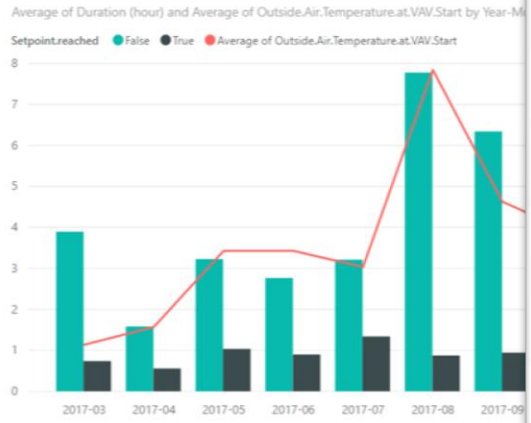
How long is startup taking?

1.84

Average of Duration (hour)

0.97

Average Duration (setpoint reached)



Are the VAV Units reaching setpoint? At what time?

72%

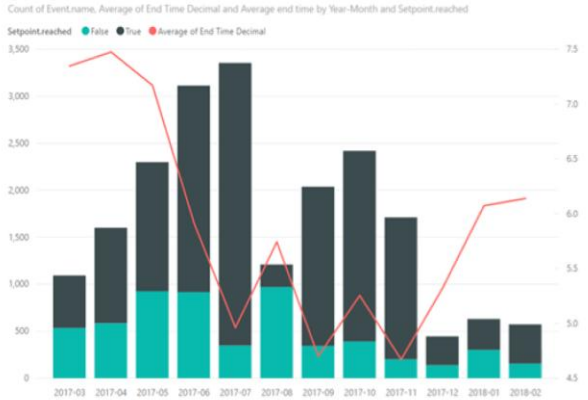
% Setpoint reached

5:38:08

Average end time

Side	Number of Events	% Setpoint reached	Average end time
East	7623	68%	5:48:06
NA	2056	53%	6:45:09
West	10809	78%	5:23:26
Total	**20488**	**72%**	**5:38:08**

Floor	Number of Events	% Setpoint reached	Average end time
1	2056	53%	6:45:09
2	3064	74%	5:13:56
3	3825	71%	5:20:35
4	3720	77%	5:43:27
5	2963	74%	5:44:50
6	4860	73%	5:38:09
Total	**20488**	**72%**	**5:38:08**



Energy Management

While the building is energy efficient we lacked visibility of energy consumption by system and for building two the need for multi-tenant billing support.

CHALLENGES

PG&E provides energy data 48 hours after the fact and only in 15 minute intervals.

No sub-meters on key systems.

How do we measure performance tuning?

SOLUTION

Implement a PXiSE Microgrid controller to provide 10 hertz granularity of the whole building data.

API access to PG&E data to validate billing

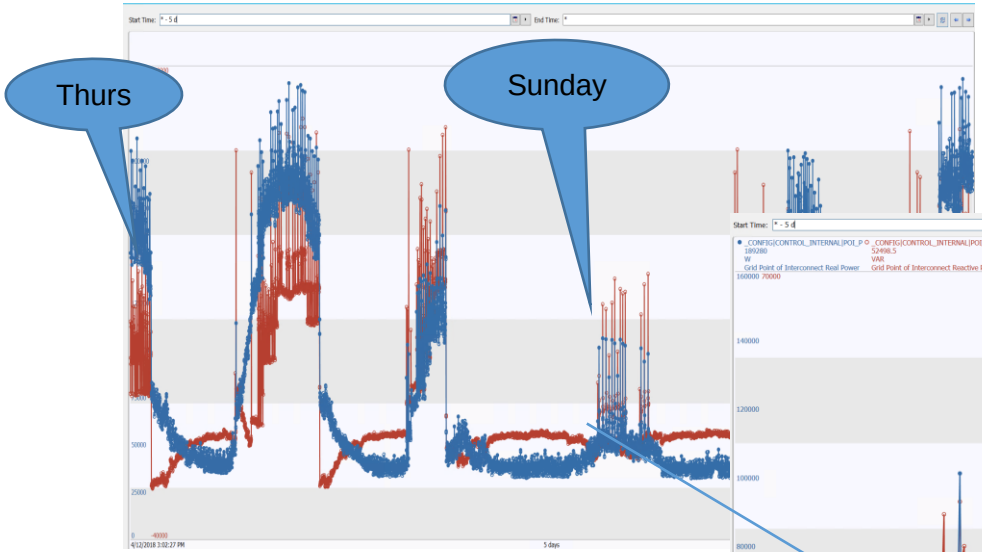
RESULTS

Were able to directly measure energy reduction for the changes to temperature adjustments.

Able to validate PG&E Bills

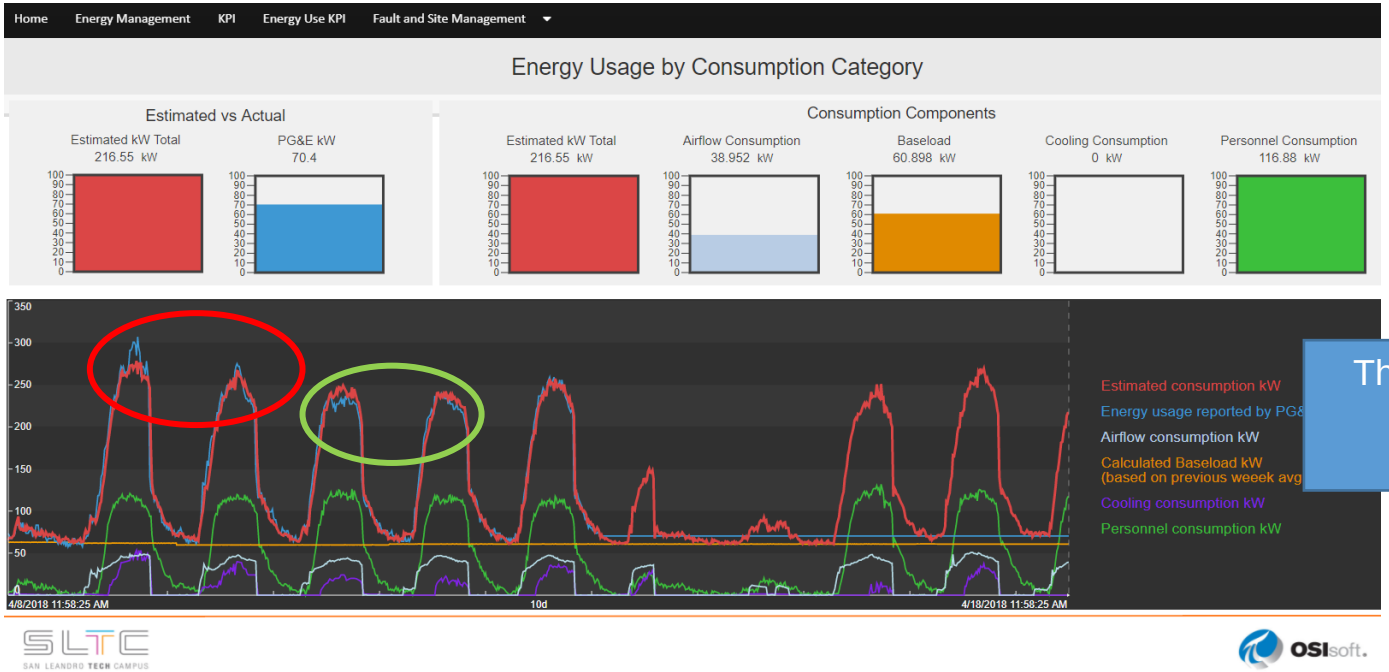
Using the data to size for ROI calculations for solar and storage

PXiSE – High Fidelity Energy Data



Jumps in real and reactive power. The intervals between disturbances is between 21 and 26 minutes with a peak of 60 kW for 2 minutes. About 25 events per day at 365 days and $0.20 per kWh amounts to about $3650 in costs.

Energy Consumption



The data now tells us a story on where we consume energy

Community (PI Cloud Connect, PI Integrators, OCS)

We are part of an ecosystem as a customer and as a manufacturer of the solution. We need to share our data with the landlord, building engineering, Microgrid provider, independent software vendors, system integrators and building technology vendors.

CHALLENGE

A disparate group of community members with different requirements.

- Building engineering wanted real time access
- ISV and SI wanted streaming data to build market solutions
- Technology providers was point in time snapshots

SOLUTION

Leverage the toolkit for an appropriate solution for each customer with no additional overhead.

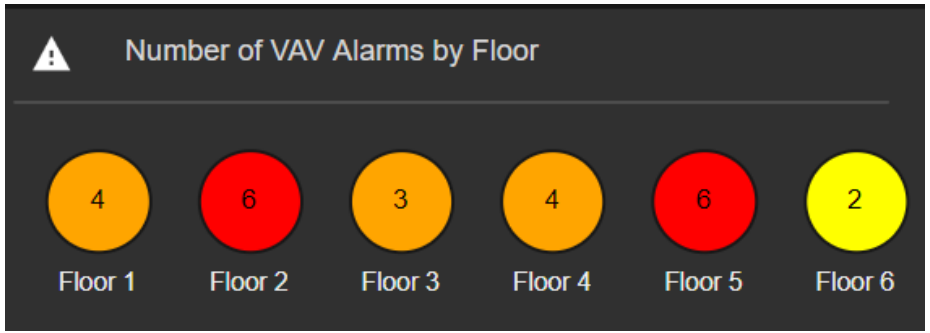
- PI Cloud Connect
- PI System Connector
- PI Datalink
- PI Vision Dashboards
- PI System Integrator

RESULTS

A subscriber menu based on requirements we can provide quick and easy access with history.

- 3rd party companies with PI who want streaming data took PI Cloud Connect
- Internal we used all of the options based on use cases (ML, Training, Demo)
- Building engineering just want pre-built displays

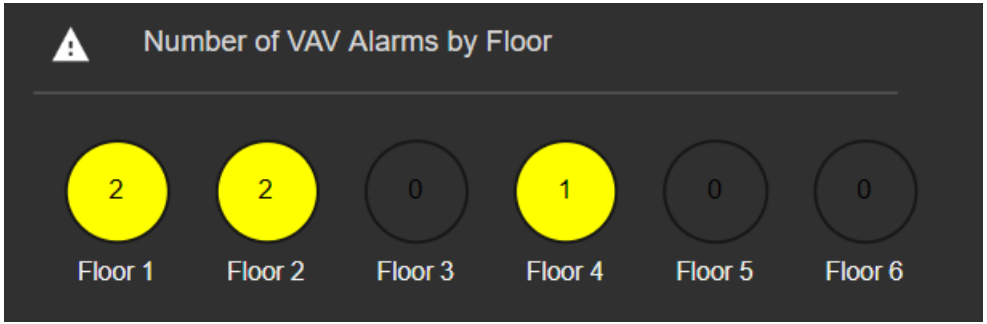
Building Performance – Out of Spec



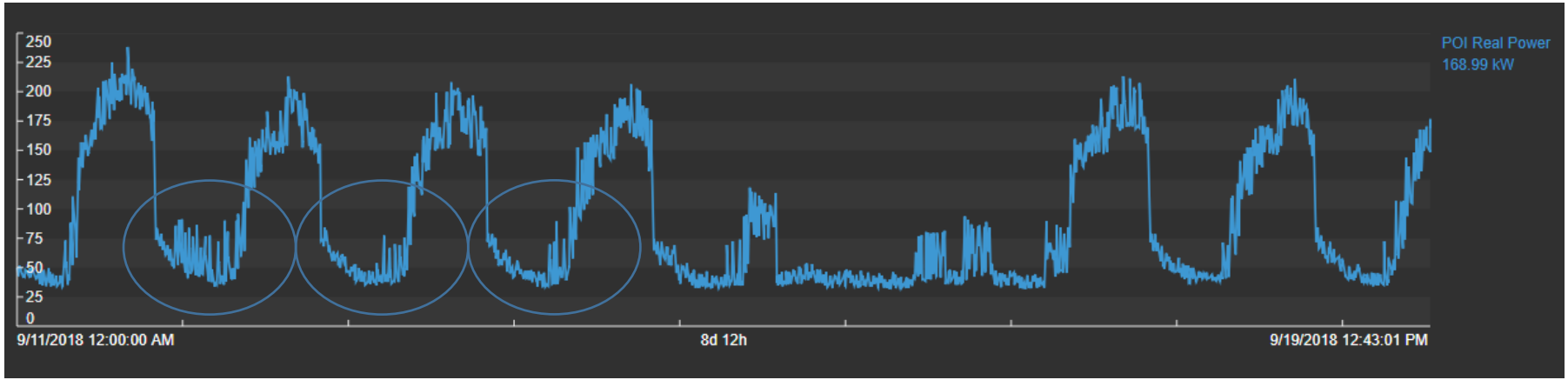
Running Out Building Spec –
Zones not achieving temperature setpoint

The analysis forced a review of design specifications and found we were attempting to cool to an unsupported temperature.

Users wanted 68 Degrees
Building designed for 72 Degrees + / – 2 degrees

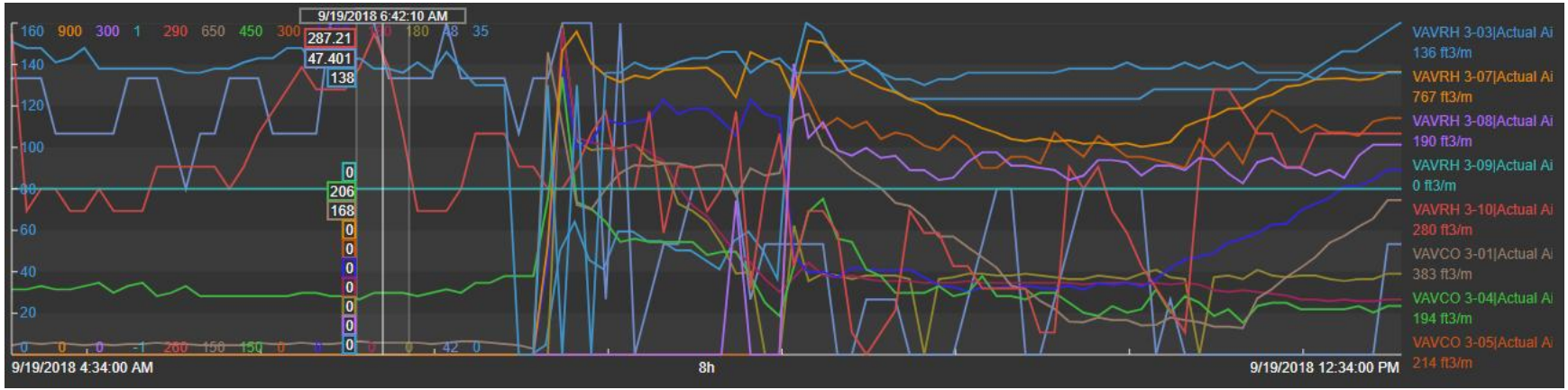


Real Power Impacts



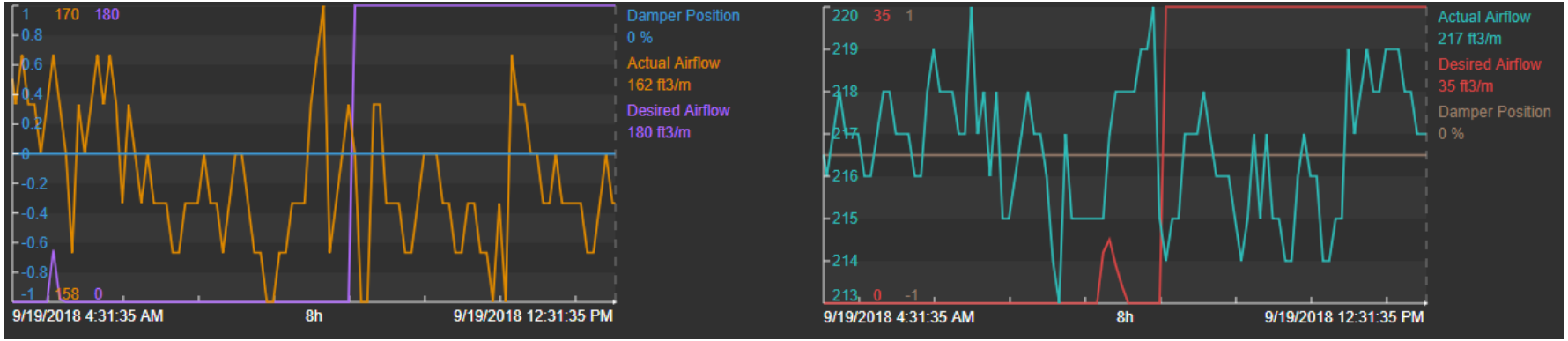
1. 15 Minute Utility Meter is like driving at midnight with sunglasses on
2. High Velocity data shows the impact of poor performance and improvements from tuning
3. See the change in fan usage by changing set points to within building design specifications

Facility Analytics – Multiple Issues



No Supply Air Fan, Dampers Open or Closed
Several VAV Systems with significant airflow

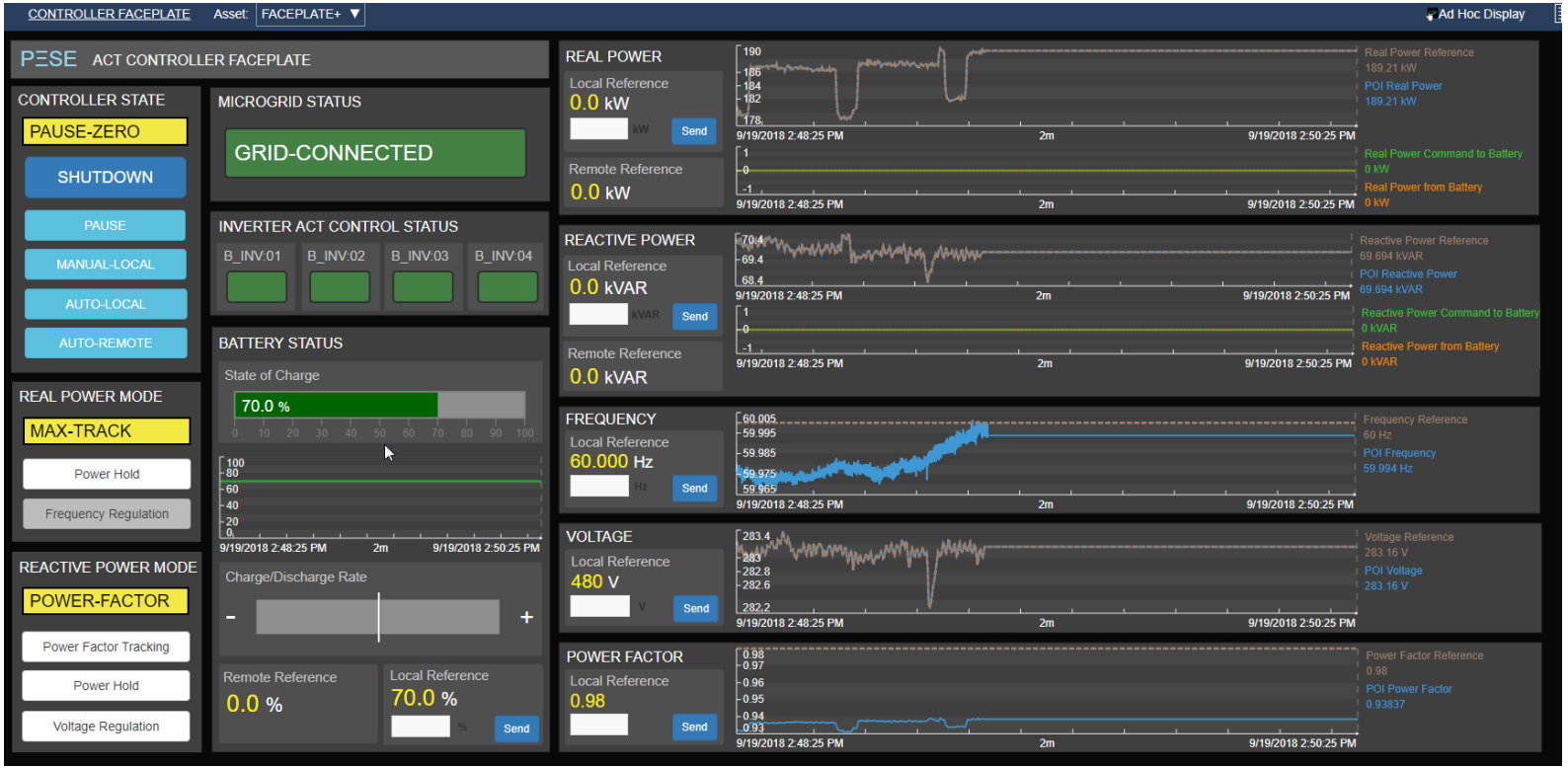
Facility Analytics & FDD (or Lack Of)



We found several VAV boxes with either poor calibration or broken dampers

Airflow
With Damper Closed Examples

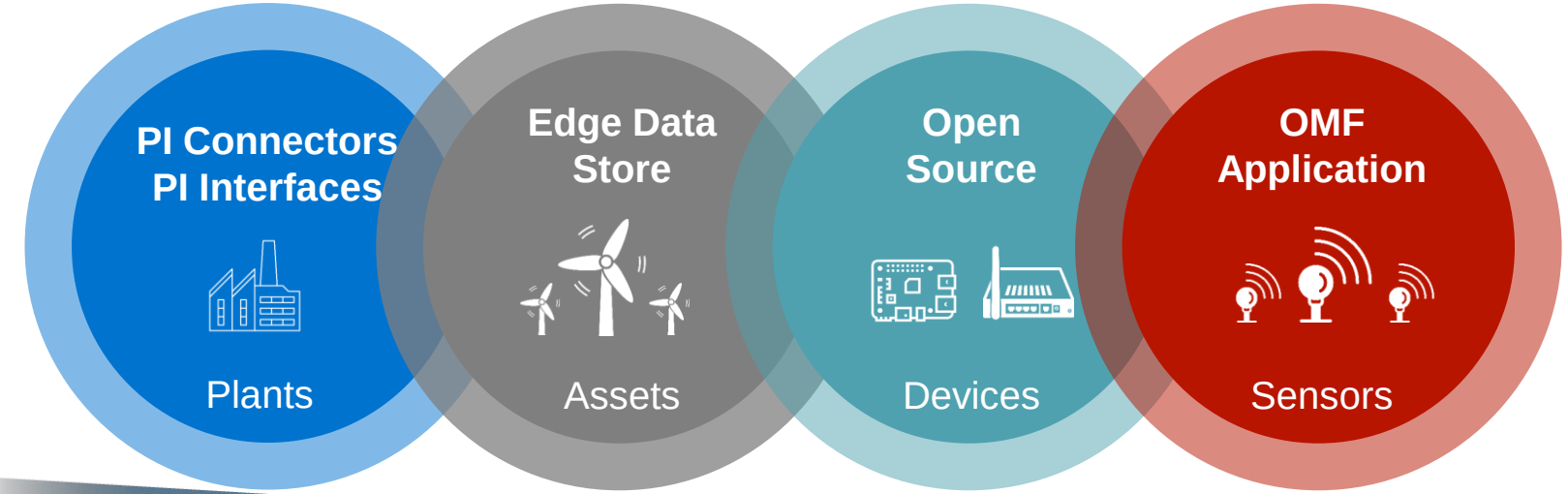
Real Power in Real Time



Pervasive Data Collection

Abbas Saboowala – Product Manager

Pervasive Data Collection



10,000's	⟵	Data Streams	⟶	10's
High	⟵	Compute Resources	⟶	Low

BILL AND NOT MILTON

Bill aka ‘TPS Report Guy’

Milton aka ‘Red Stapler Guy’

PI Connectors help you be strategic

Streamlined Configuration

Auto create PI Points and AF reference model 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.

What do we collect

BACnet

UFL

Redfish

Collect Building Management Data

Parse Energy Data

Server monitoring for IT Operations

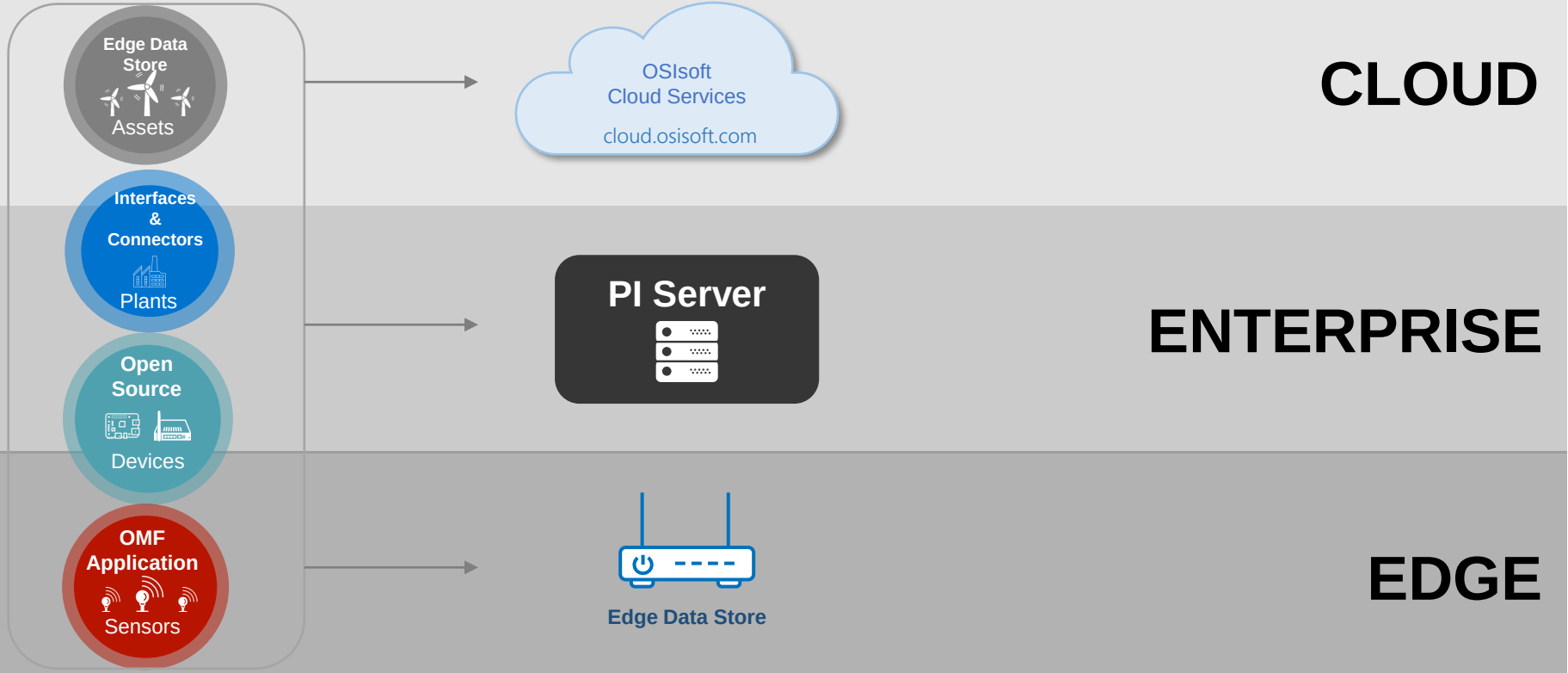
PI Server

The best way to predict the future is to create it.

- Peter Drucker

What do you see here?

Connectivity to All OSIsoft Systems



OMF Accelerates Data Connectivity

What is the OSIsoft Message Format (OMF)?

- Contract based message format for data ingress
- Well documented specification & sample code
- 0111001 0010010 1111010 0100111 — Supports streaming data & metadata
- Connectivity to on-premises PI Servers, OSIsoft Cloud Services and Edge Data Store
- Enables application development by partners, end customers and 3rd parties
- Independent of operating system & programming language

What OMF is not:

- A replacement for PI Web API, PI AF SDK or other OSIsoft API
- An application development framework

http://omf-docs.readthedocs.io/en/v1.1/

PI-oT

(PI) (O)ver that (T)hing

Edge Data Store Hardware Requirements

Targeting edge gateway devices (typical specifications)

- ARM or Intel CPU, GHz dual core
- 1 GB RAM
- Internal storage (SSD preferred)

ADLINK MXE-200i

Advantech UNO-2272G

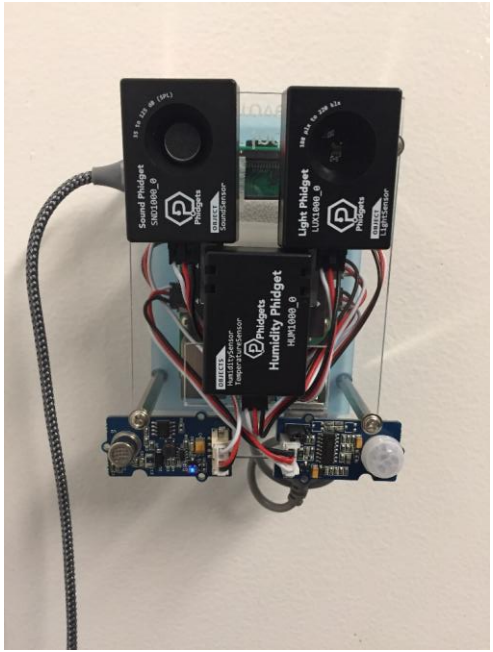
Nexcom NISE 50 IoT

Operating systems / installation options

- Linux, 64 bit architecture (multiple distributions)
- Linux, ARM32 (limited distributions)
- Windows, 32 and 64 bit architectures
- Docker Container

Raspberry Pi 3B+

Infrared and Sound Sensors



OSIsoft
Cloud Services

cloud.osisoft.com

Service Provider

Edge Data Store

OSIsoft Facilities Monitoring

Product Booth

Data Collection (PI Connectors & PI Interfaces)

Edge Technologies (EDS & OMF)

Demos
Ask questions
Speak with Developers

Other Talks

Gather: Data Connectivity Options for the PI Server and the Cloud (Product Track)
2:30pm, Grand Ballroom A, Hilton Hotel

Edge Analytics with the PI System (Developer Track)
3:30pm, Cyril Magnin I, Hilton Hotel

And more …

Code your way out of the stickiest data connectivity requirements (pre-registration required)

10:30 am (Thursday), Parc 55

PI Server 2018 SP2

Mana Afshari

Testing and Upgrading the PI System

Role

- In charge of keeping our PI System up to date

Requirements

- I want the fixes and improvements in PI Server 2018 SP2
- I need to assess the new version before upgrading

Challenge

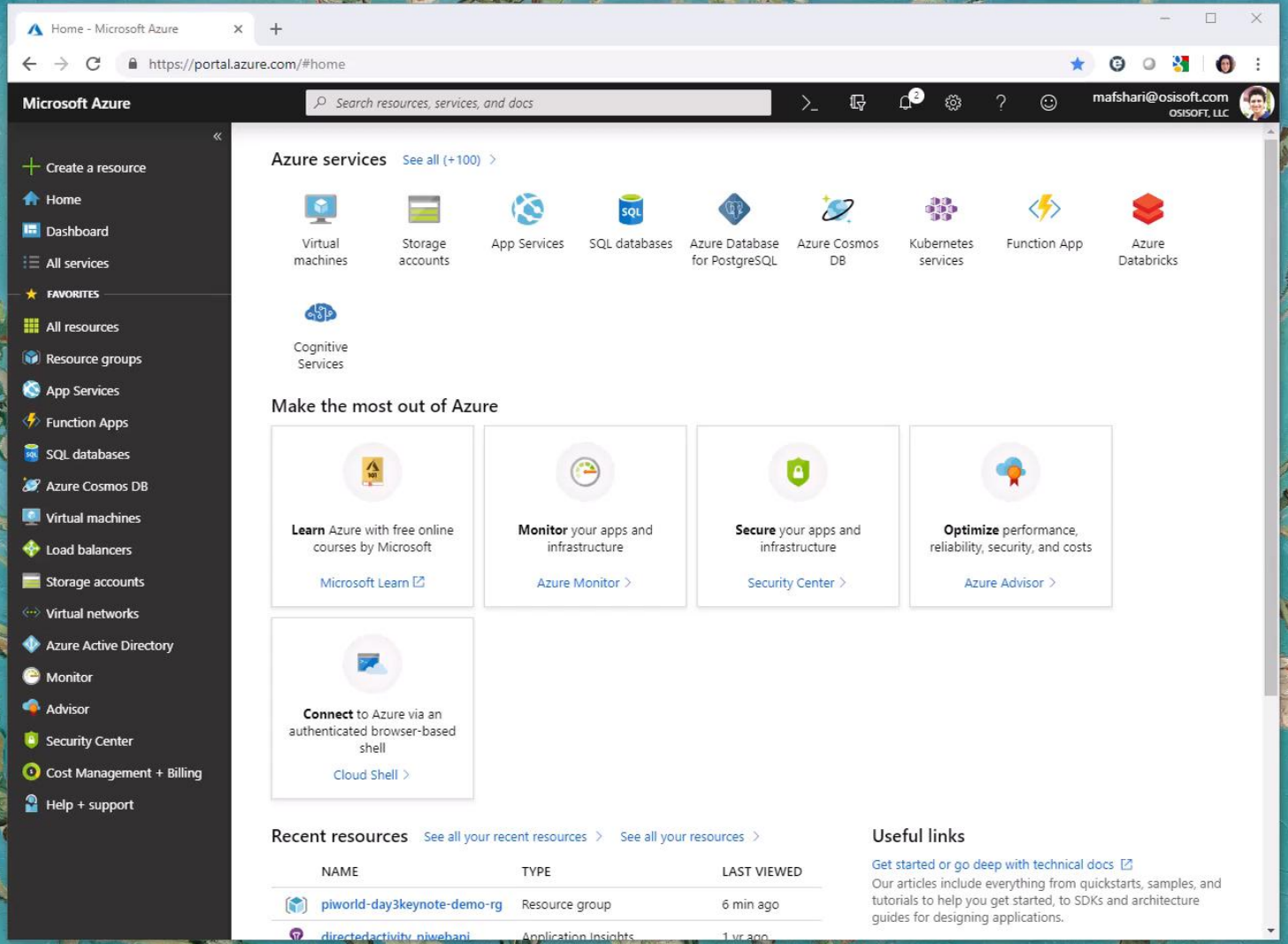
- Need a test environment, but getting that set up will take a lot of time

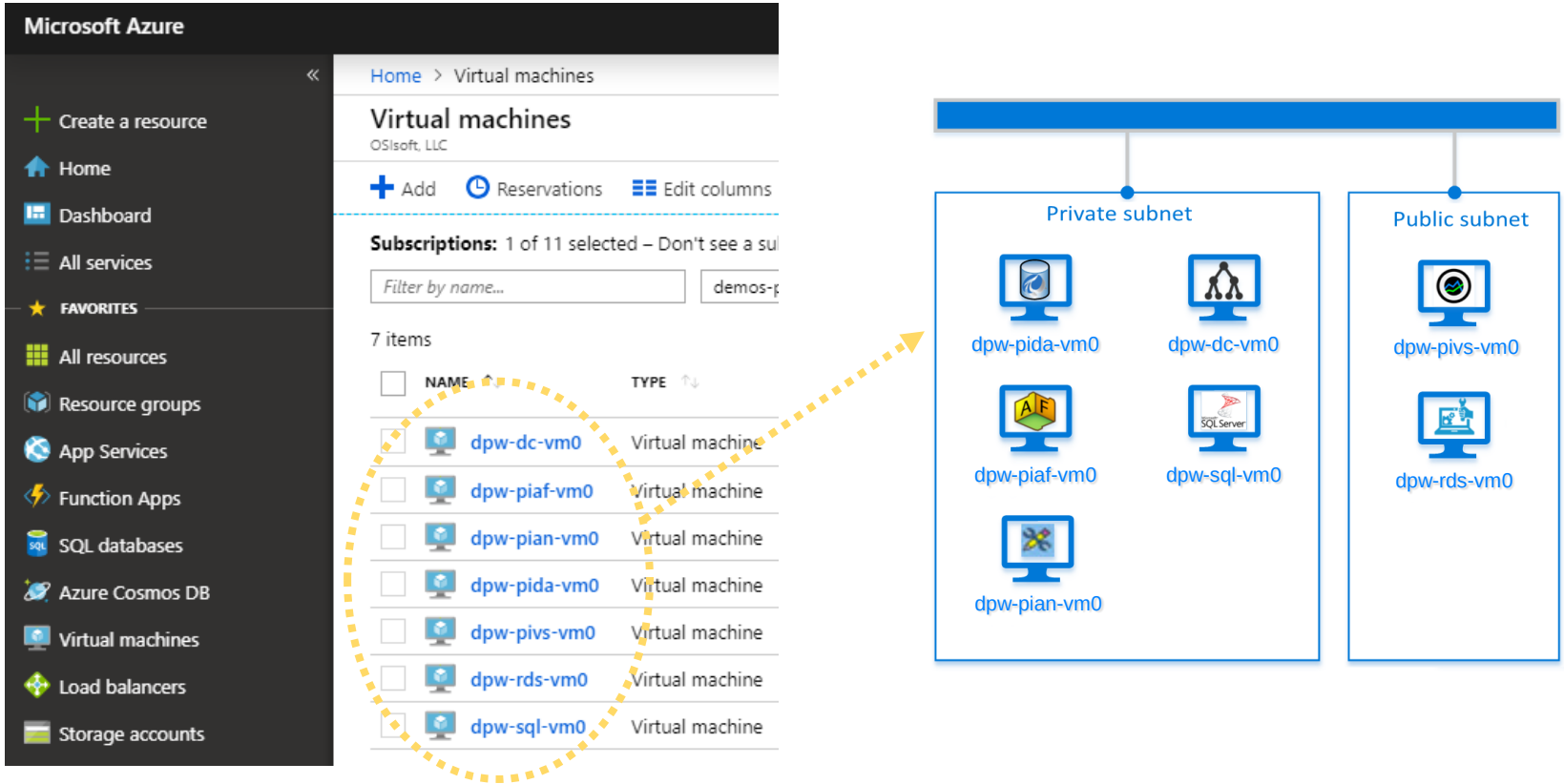
Solution

- OSIsoft has a set of templates and scripts to spin up an environment with a few clicks, and within a few hours

DEMO

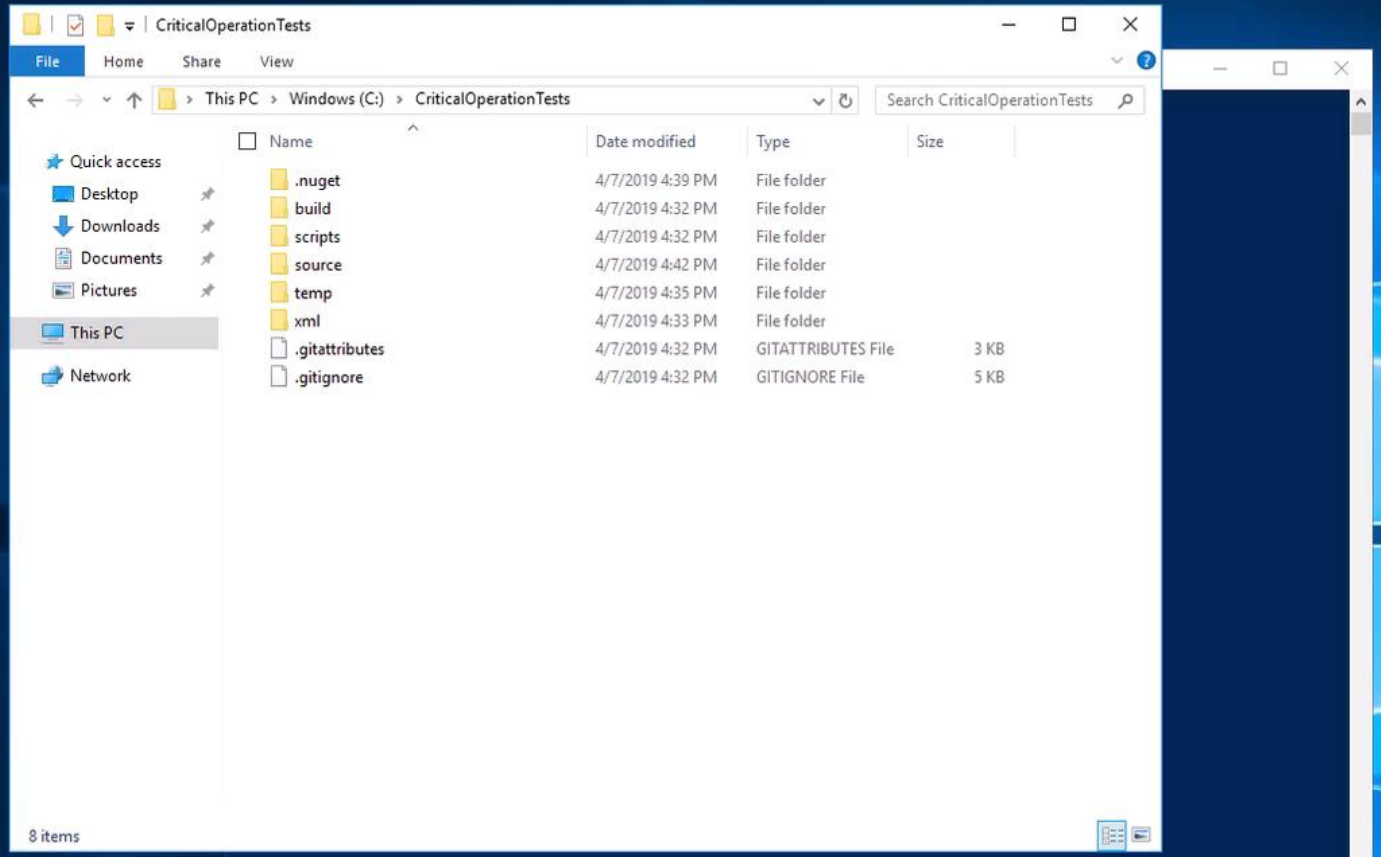
Deploy a Test Environment in Microsoft Azure


Home - Microsoft Azure
https://portal.azure.com/#home
Microsoft Azure
Search resources, services, and docs
mafshari@osisoft.com
OSISOFT, LLC
Create a resource
Home
Dashboard
All services
FAVORITES
All resources
Resource groups
App Services
Function Apps
SQL databases
Azure Cosmos DB
Virtual machines
Load balancers
Storage accounts
Virtual networks
Azure Active Directory
Monitor
Advisor
Security Center
Cost Management + Billing
Help + support
Azure services
See all (+100)
Virtual machines
Storage accounts
App Services
SQL databases
Azure Database for PostgreSQL
Azure Cosmos DB
Kubernetes services
Function App
Azure Databricks
Cognitive Services
Make the most out of Azure
Learn Azure with free online courses by Microsoft
Microsoft Learn
Monitor your apps and infrastructure
Azure Monitor
Secure your apps and infrastructure
Security Center
Optimize performance, reliability, security, and costs
Azure Advisor
Connect to Azure via an authenticated browser-based shell
Cloud Shell
Recent resources
See all your recent resources
See all your resources
NAME
TYPE
LAST VIEWED
piworld-day3keynote-demo-rg
Resource group
6 min ago
Useful links
Get started or go deep with technical docs
Our articles include everything from quickstarts, samples, and tutorials to help you get started, to SDKs and architecture guides for designing applications.



DEMO

Test the PI System Upgrade


CriticalOperationTests
File
Home
Share
View
This PC
Windows (C:)
CriticalOperationTests
Search CriticalOperationTests
Quick access
Desktop
Downloads
Documents
Pictures
This PC
Network
Name
Date modified
Type
Size
.nuget 4/7/2019 4:39 PM File folder
build 4/7/2019 4:32 PM File folder
scripts 4/7/2019 4:32 PM File folder
source 4/7/2019 4:42 PM File folder
temp 4/7/2019 4:35 PM File folder
xml 4/7/2019 4:33 PM File folder
.gitattributes 4/7/2019 4:32 PM GITATTRIBUTES File 3 KB
.gitignore 4/7/2019 4:32 PM GITIGNORE File 5 KB
8 items

Product Booth

- Calculations & Events
- PI Data Archive
- PI Asset Framework
- PI System for Critical Ops.

Product Expo – Hilton

Other Talks

Day 2 – 2:30 pm
"Effortlessly deploying a PI System in Azure or AWS"
Tech Talk – Parc 55

Day 3 – 10:30 am
"Aggregate: PI System 2018 SP2 and your Critical Operations"
Product Track – Hilton

Labs

Day 3 – 2:00 pm
"PI System Quick Start Templates for AWS"

PI Vision 2019

Ryan McErlean – Product Manager

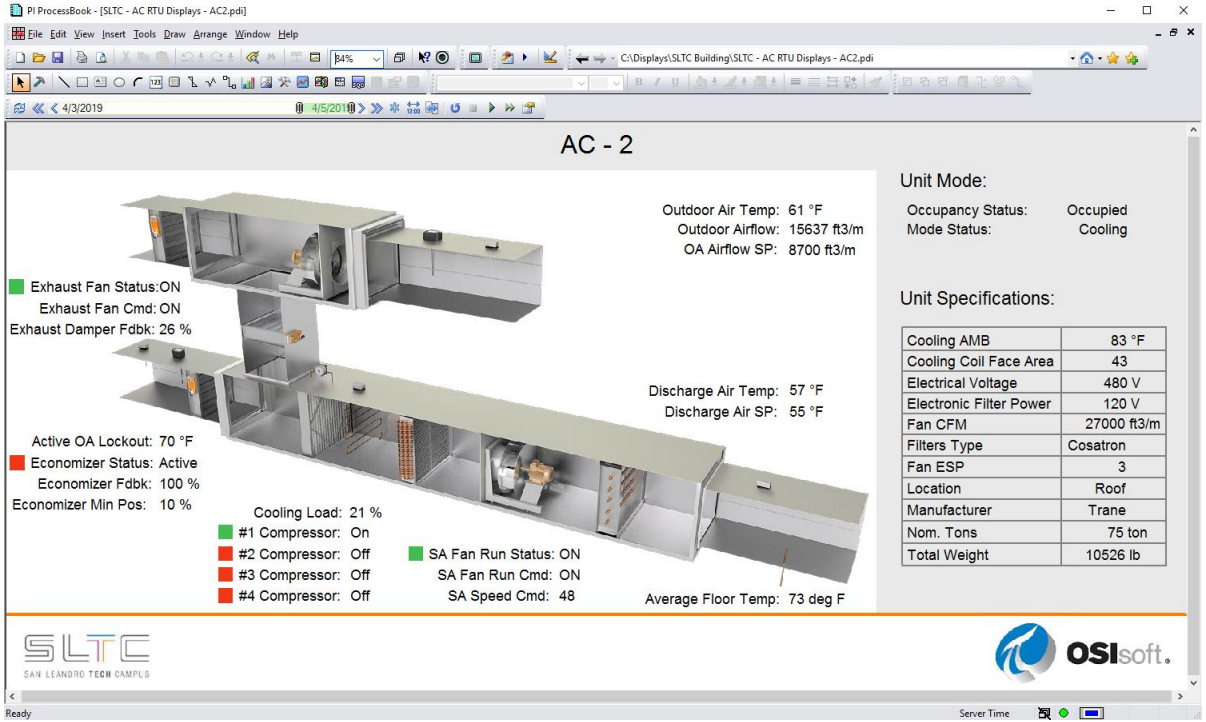
PI Vision 2019

PI ProcessBook Migration

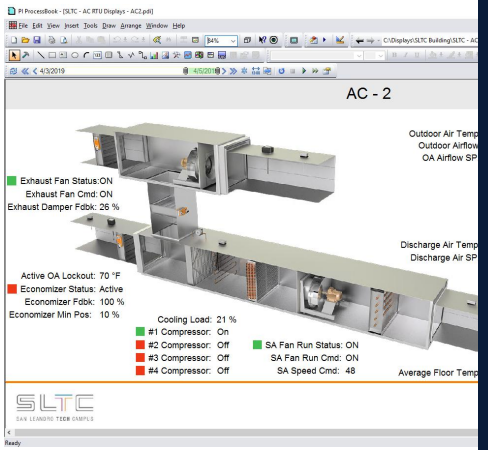
Ad Hoc Trending

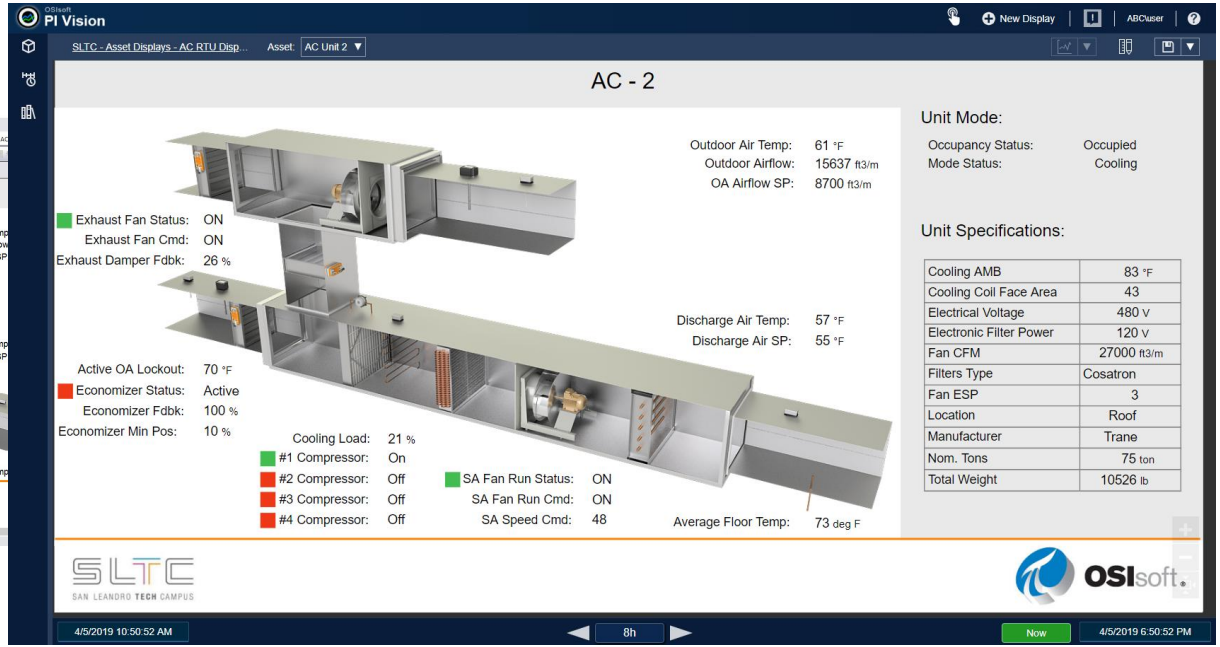
Streamlined Security for XY Plot and Events Table

PI ProcessBook Migration



PI ProcessBook Migration

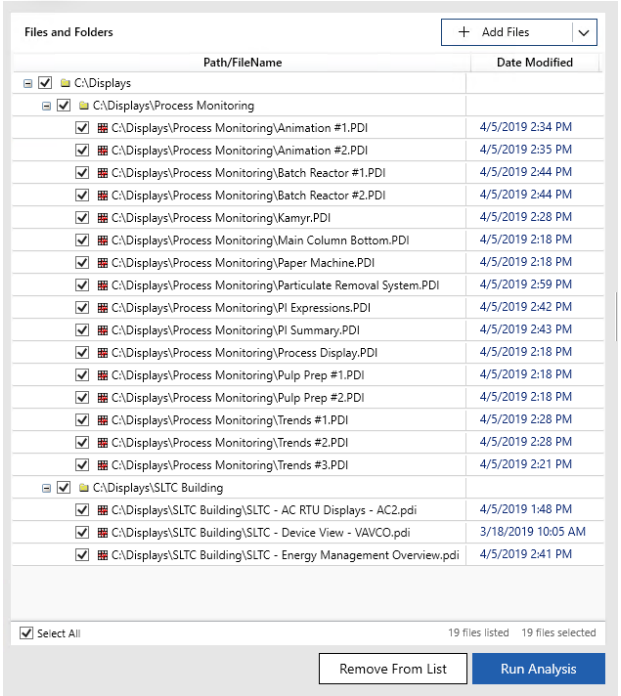




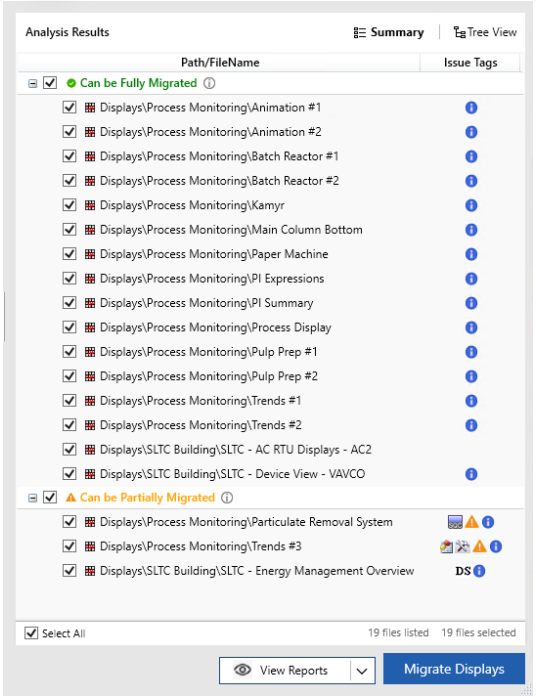
Accelerate your path to the latest visualization tool

PI ProcessBook Migration

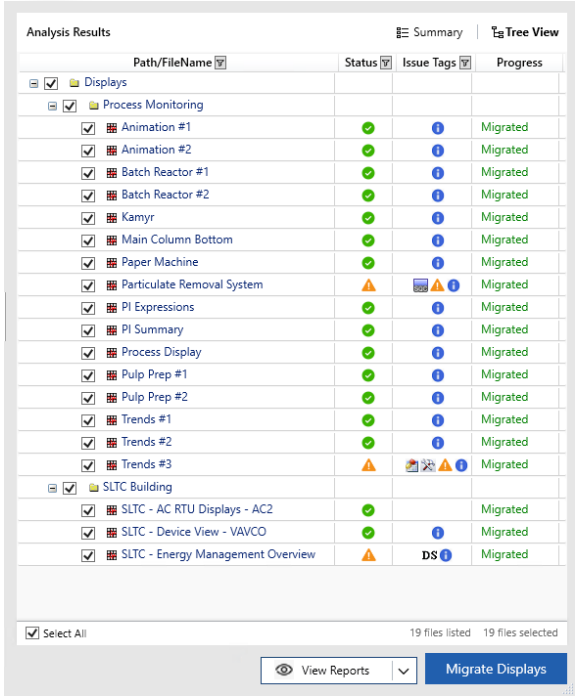
1 Select



2 Analyze



3 Migrate



Ad Hoc Trending

Dive into a real-time investigation of your operations

Select relevant data

Trend and **Explore**

Discover insights

DEMO

Ad Hoc Trending

Product Booth

Visualization

Product Expo –
Golden Gate Ballroom

Other Talks

Visualization: PI Vision 2019
Recording from Day 1

Visualize: PI Vision 2019 and ProcessBook Migration
Thursday – 3:30pm
Products Track – Hilton

And more …

Building Displays with PI Vision 2019
Thursday – 2:30pm
Friday – 9:00am
Lab

PI Vision: Beyond the Basics
Thursday – 10:30am
Friday – 9:00am
Lab

PI Integrators

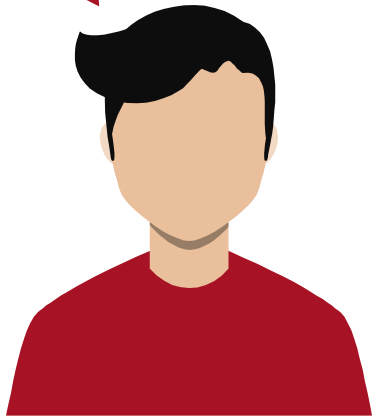
Joy Wang – Product Manager

Serving the Needs of Different Users @ SLTC

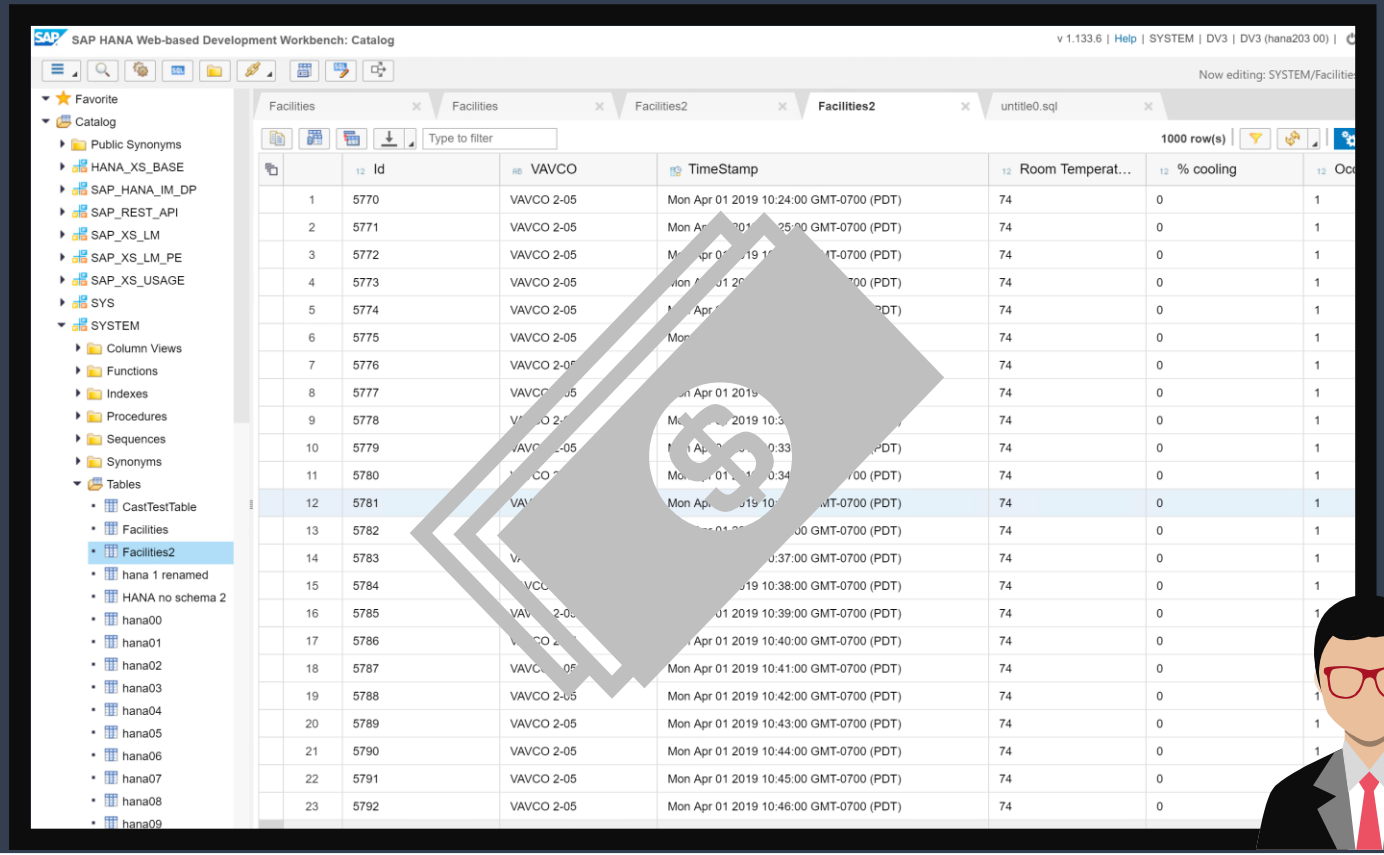
"Are we utilizing energy efficiently at SLTC?"

"Which rooms' heating units are malfunctioning and too hot?"

"How do outside features affect the effectiveness of cooling units?"

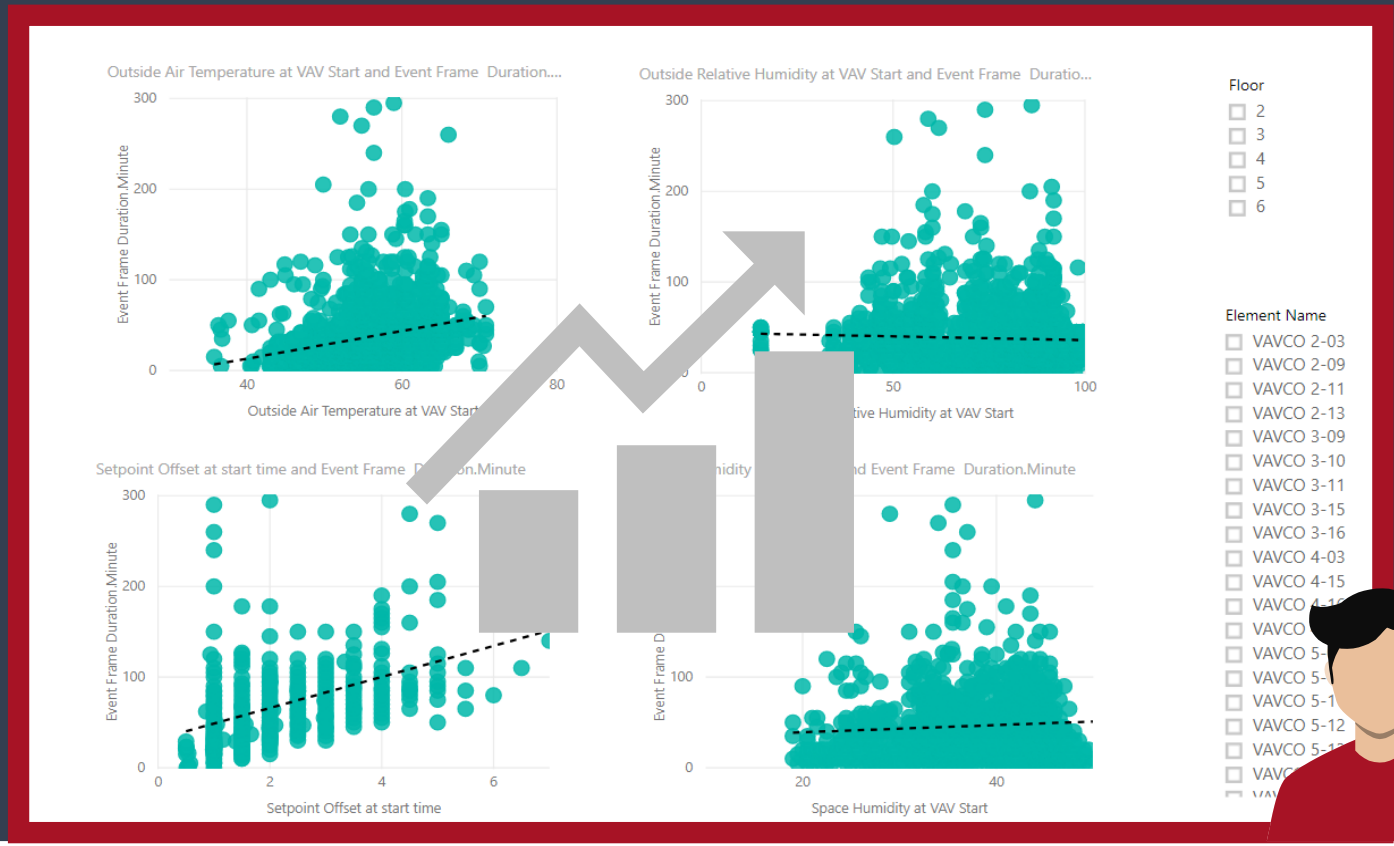


Data Warehouse & Reporting with PI & HANA



Situational Awareness with PI & ArcGIS

Data Science Enablement with PI & Power BI



***PI Integrators speed the process** that **brings trustworthy data** to many unique analytics tools*

Favorite
Catalog
Public Synonyms
HANA_XS_BASE
SAP_HANA_IM_DP
SAP_REST_API
SAP_XS_LM
SAP_XS_LM_PE
SAP_XS_USAGE
SYS
SYSTEM
Column Views
Functions
Indexes
Procedures
Sequences
Synonyms
Tables
CastTestTable
Facilities
Facilities2
hana 1 renamed
HANA no schema 2
hana00
hana01
hana02
hana03
hana04
hana05
hana06
hana07
hana08
hana09
hana10
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hana14
hana15
hana16
hana18
hana19
hana20

VAVCO Assets Perfor... | VAVCO Assets Perfor... | VAVRH Bivariate Anal...

Type to filter

1000 row(s)

	Id	VAVRH	TimeStamp	% cooling	% heating	Occupied	Room	Room Temperat...	PIIntTSTicks	PIIr
1	1	VAVRH 1-02	Tue Apr 02 2019 11:46:53	0	11.447307586669922	1	Rm.131	72.23463439941406	636898168130000000	1
2	2	VAVRH 1-02	Tue Apr 02 2019 12:46:53	0	18.724960327148438	1	Rm.131	72	636898204130000000	1
3	3	VAVRH 1-02	Tue Apr 02 2019 13:46:53	0	18.724960327148438	1	Rm.131	72	636898240130000000	1
4	4	VAVRH 1-02	Tue Apr 02 2019 14:46:53	0	22.77277946472168	1	Rm.131	71.76448059082031	636898276130000000	1
5	5	VAVRH 1-02	Tue Apr 02 2019 15:46:53	0	21.23006248474121	1	Rm.131	72	636898312130000000	1
6	6	VAVRH 1-02	Tue Apr 02 2019 16:46:53	0	19.089336395263672	1	Rm.131	71.73486328125	636898348130000000	1
7	7	VAVRH 1-02	Tue Apr 02 2019 17:46:53	0	16.60512924194336	1	Rm.131	72	636898384130000000	1
8	8	VAVRH 1-02	Tue Apr 02 2019 18:46:53	0	11.747580528259277	1	Rm.131	72	636898420130000000	1
9	9	VAVRH 1-02	Tue Apr 02 2019 19:46:53	0	16.725290298461914	1	Rm.131	72	636898456130000000	1
10	10	VAVRH 1-06	Tue Apr 02 2019 11:46:53	0	0	1	Rm. 137.141	70.5	636898168130000000	2
11	11	VAVRH 1-06	Tue Apr 02 2019 12:46:53	0	0	1	Rm. 137.141	70.5	636898204130000000	2
12	12	VAVRH 1-06	Tue Apr 02 2019 13:46:53	0	0	1	Rm. 137.141	70.5	636898240130000000	2
13	13	VAVRH 1-06	Tue Apr 02 2019 14:46:53	0	0	1	Rm. 137.141	70.5	636898276130000000	2
14	14	VAVRH 1-06	Tue Apr 02 2019 15:46:53	0.014702731743454933	0	1	Rm. 137.141	71	636898312130000000	2
15	15	VAVRH 1-06	Tue Apr 02 2019 16:46:53	26.530513763427734	0	1	Rm. 137.141	71.23538208007812	636898348130000000	2
16	16	VAVRH 1-06	Tue Apr 02 2019 17:46:53	38.55576705932617	0	1	Rm. 137.141	71.5	636898384130000000	2
17	17	VAVRH 1-06	Tue Apr 02 2019 18:46:53	65.25942993164062	0	1	Rm. 137.141	71.5	636898420130000000	2
18	18	VAVRH 1-06	Tue Apr 02 2019 19:46:53	65.86992645263672	0	1	Rm. 137.141	71	636898456130000000	2
19	19	VAVRH 1-10	Tue Apr 02 2019 11:46:53	0	0	1	Rm. 119	70.5	636898168130000000	3
20	20	VAVRH 1-10	Tue Apr 02 2019 12:46:53	0	0	1	Rm. 119	70.5	636898204130000000	3
21	21	VAVRH 1-10	Tue Apr 02 2019 13:46:53	0	0	1	Rm. 119	71	636898240130000000	3
22	22	VAVRH 1-10	Tue Apr 02 2019 14:46:53	0	0	1	Rm. 119	71	636898276130000000	3
23	23	VAVRH 1-10	Tue Apr 02 2019 15:46:53	0	0	1	Rm. 119	71	636898312130000000	3
24	24	VAVRH 1-10	Tue Apr 02 2019 16:46:53	0	0	1	Rm. 119	71	636898348130000000	3
25	25	VAVRH 1-10	Tue Apr 02 2019 17:46:53	0.7098361253738403	0	1	Rm. 119	71	636898384130000000	3
26	26	VAVRH 1-10	Tue Apr 02 2019 18:46:53	17.05296516418457	0	1	Rm. 119	71.5	636898420130000000	3
27	27	VAVRH 1-10	Tue Apr 02 2019 19:46:53	21.120559692382812	0	1	Rm. 119	71	636898456130000000	3
28	28	VAVRH 2-01	Tue Apr 02 2019 11:46:53	0	0	1	Rm. 231	72.5	636898168130000000	4
29	29	VAVRH 2-01	Tue Apr 02 2019 12:46:53	0	0	1	Rm. 231	72.5	636898204130000000	4
30	30	VAVRH 2-01	Tue Apr 02 2019 13:46:53	0	0	1	Rm. 231	72.5	636898240130000000	4
31	31	VAVRH 2-01	Tue Apr 02 2019 14:46:53	0	0	1	Rm. 231	72.5	636898276130000000	4

New release!

Category	Destination	PI Integrator for Business Analytics 2018 R2 Standard	PI Integrator for Business Analytics 2018 R2 Advanced	PI Integrator for SAP HANA 2017	PI Integrator for Esri ArcGIS 2017 SP1
General	PI ODBC or Flat Files	✓	✓	✓	
Relational Database	SQL Server	✓	✓		
	Azure SQL Database	✓	✓		
	Oracle RDBMS	✓	✓		
Data Warehouse	SAP HANA Smart Data Integration			✓	
	Apache Hive	✓	✓		
	Azure SQL Data Warehouse	✓	✓		
New!	Amazon Redshift	✓	✓		
Data Lake	Hadoop HDFS	✓	✓		
	Azure Data Lake Store	✓	✓		
New!	Amazon S3	✓	✓		
Messaging Hub	SAP Streaming Analytics			✓	
	Apache Kafka		✓		
	Azure IoT Hub or Event Hubs		✓		
New!	Amazon Kinesis Data Streams		✓		
GIS	ArcGIS GeoEvent Server				✓

Product Booth

Data Science Enablement

- Data science use cases
- PI Integrators
- DSE with OSIsoft Cloud Services

Product Expo – Yosemite Ballroom @ Hilton

OSIsoft Talks

Insight: Time-series Data Science Enablement with PI Integrators and OSIsoft Cloud Services
Today @ 11:30 AM – Grand Ballroom A

PI System for Critical Operations and Advanced Analytics
Day 1 - Product Track

Hands-On Labs

PI Integrator for Busines Analytics: In-depth Tutorial
Today @ 2:30 PM – Nikko

Overlay Real-time Operations Data onto Esri ArcGIS Platform for Live Situational Awareness and Perform Analysis with Historical Playback
Today @ 2:30 PM – Nikko

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PI System for Critical Operations and Advanced Analytics
Day 1 - Product Track

Hands-On Labs

The Value of Combining SAP HANA IoT Integrator by OSIsoft and SAP's Analytic Cloud Platform for Self-service Analytics
Day 4 @ 9:00 AM – Parc 55

Bring your data together in OSIsoft Cloud Services

Janelle Minich, Technical Product Manager

Why OSIsoft Cloud Services?

Available

Your data is available everywhere you go

Empower

Empower your users to connect with Enterprise scale analytics

Connect

Share data with your community of vendors, service providers and business partners through simplified central claims based security

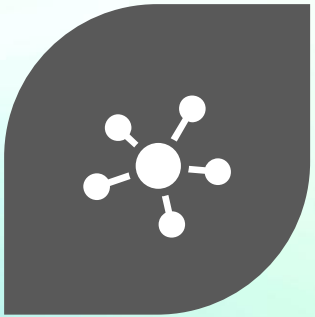
What is PI to OCS?

Transfer PI Time Series Data to OCS: Central, Simple, Secure.

Secure

Secure authentication in the cloud

Windows accounts authenticate against on-Prem PI Server(s)



Best of Breed

Moves time series data from On-Prem PI Server to PI OCS

Easy to Use

Simple to install

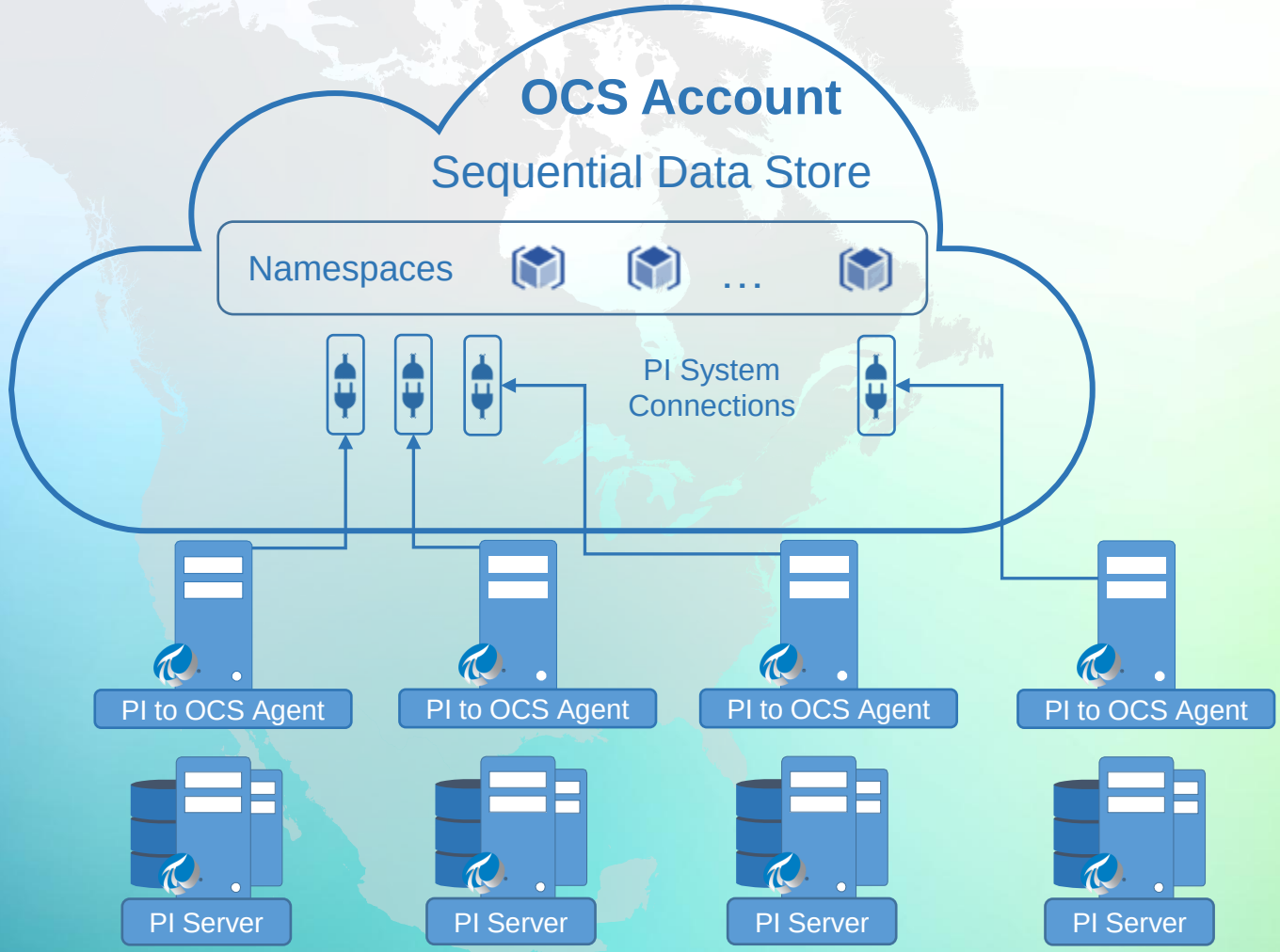
Runs On-Prem

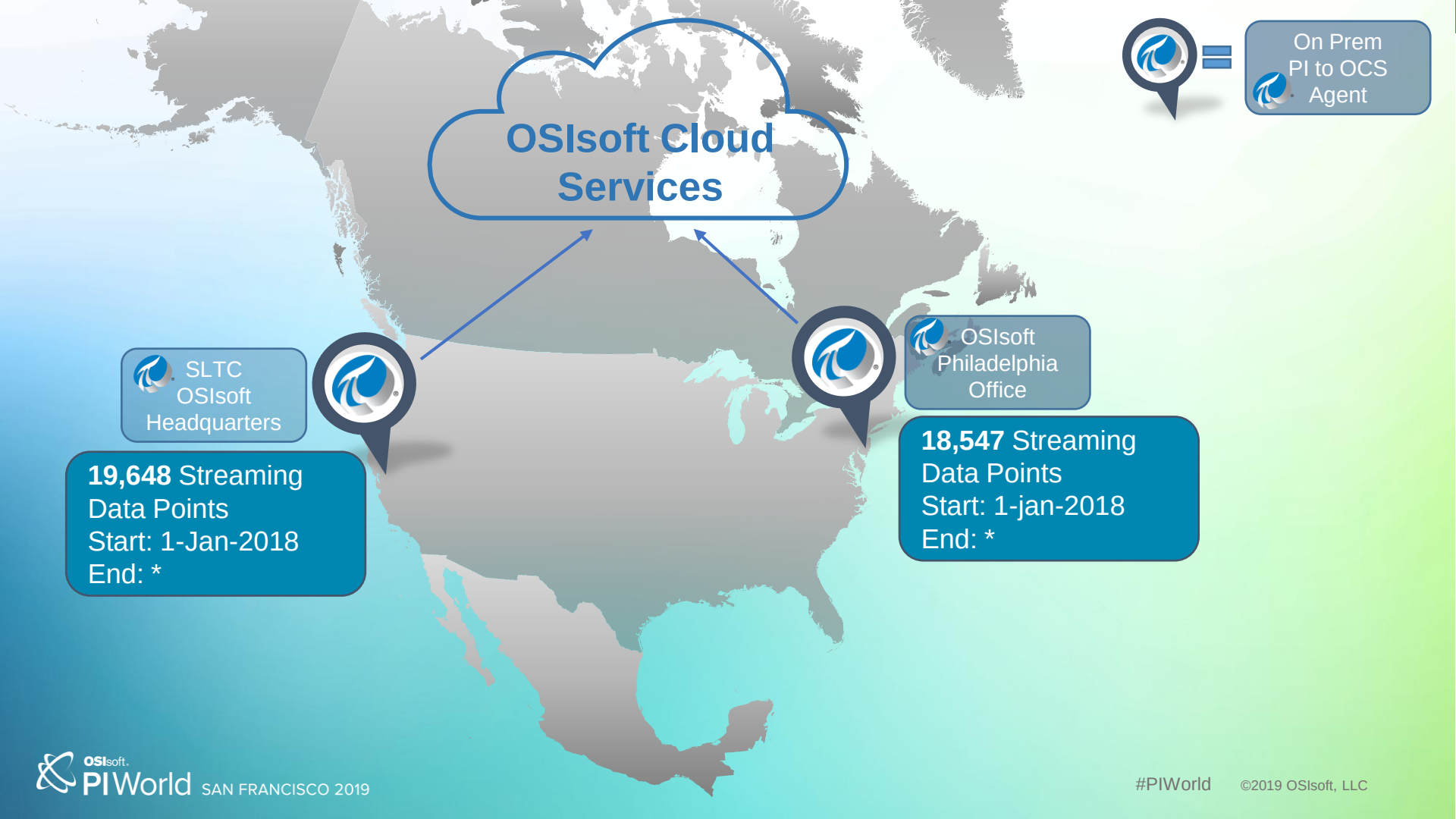
Off the shelf software

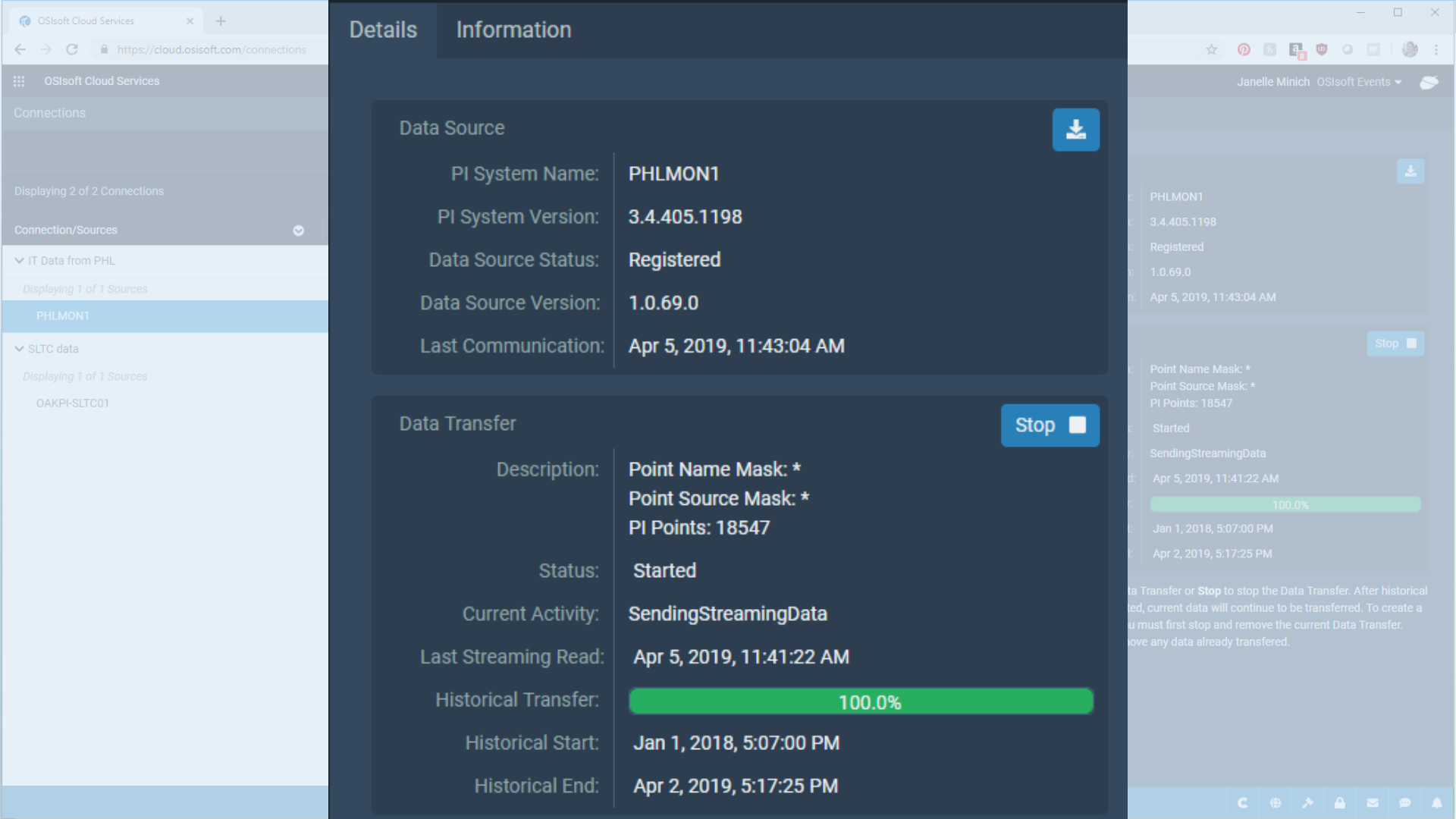
Central Configuration

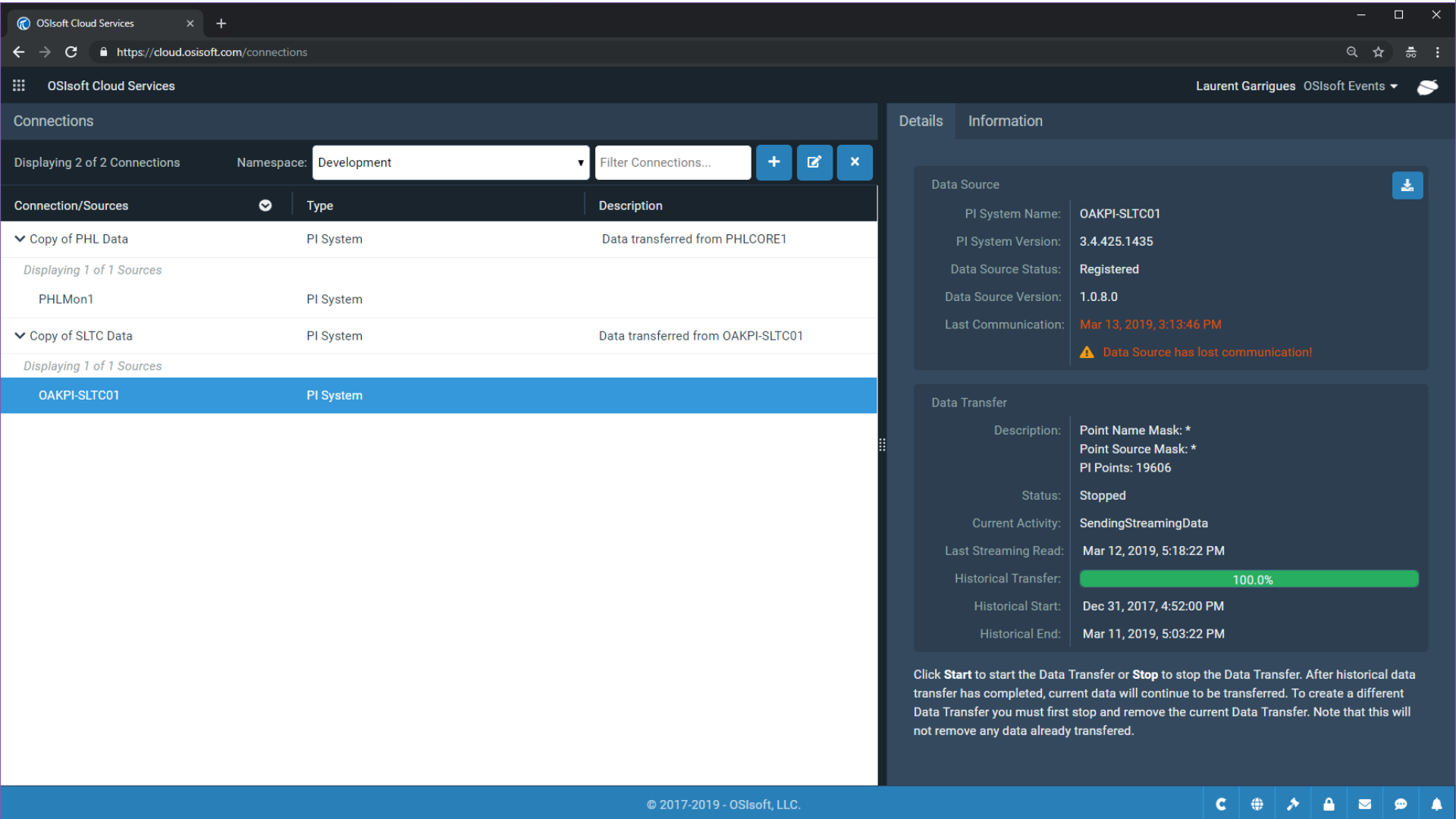
Configure and Manage connections, data transfers, and security from PI OCS Portal

OCS is the place to aggregate your important data from multiple PI Servers throughout your organization






Details
Information
Data Source
PI System Name: PHLMON1
PI System Version: 3.4.405.1198
Data Source Status: Registered
Data Source Version: 1.0.69.0
Last Communication: Apr 5, 2019, 11:43:04 AM
Data Transfer
Stop
Description: Point Name Mask: *
Point Source Mask: *
PI Points: 18547
Status: Started
Current Activity: SendingStreamingData
Last Streaming Read: Apr 5, 2019, 11:41:22 AM
Historical Transfer: 100.0%
Historical Start: Jan 1, 2018, 5:07:00 PM
Historical End: Apr 2, 2019, 5:17:25 PM


OSIsoft Cloud Services
https://cloud.osisoft.com/connections
OSIsoft Cloud Services
Laurent Garrigues
OSIsoft Events
Connections
Displaying 2 of 2 Connections
Namespace:
Development
Filter Connections...
Connection/Sources
Type
Description
Copy of PHL Data
PI System
Data transferred from PHLCORE1
Displaying 1 of 1 Sources
PHLMon1
PI System
Copy of SLTC Data
PI System
Data transferred from OAKPI-SLTC01
Displaying 1 of 1 Sources
OAKPI-SLTC01
PI System
Details
Information
Data Source
PI System Name:
OAKPI-SLTC01
PI System Version:
3.4.425.1435
Data Source Status:
Registered
Data Source Version:
1.0.8.0
Last Communication:
Mar 13, 2019, 3:13:46 PM
Data Source has lost communication!
Data Transfer
Description:
Point Name Mask: *
Point Source Mask: *
PI Points: 19606
Status:
Stopped
Current Activity:
SendingStreamingData
Last Streaming Read:
Mar 12, 2019, 5:18:22 PM
Historical Transfer:
100.0%
Historical Start:
Dec 31, 2017, 4:52:00 PM
Historical End:
Mar 11, 2019, 5:03:22 PM
Click Start to start the Data Transfer or Stop to stop the Data Transfer. After historical data transfer has completed, current data will continue to be transferred. To create a different Data Transfer you must first stop and remove the current Data Transfer. Note that this will not remove any data already transfered.
© 2017-2019 - OSIsoft, LLC.

Product Booth

Emerging Technology Wall

Yosemite - Hilton

- Edge data collection
- OCS Overview
- PI to OCS
- Data Science Enablement
- Community

Other Talks

Day 2 – DERNetSoft
PI Geek – *Park 55*

Day 2 – Diemus
PI Geek – *Park 55*

Day 3 – OCS for Dev
PI Tech – *Park 55*

Day 3 – Petuum
Market Place - *Hilton*

More Talks

Day 3 – PI to OCS
Best Practices - *Hilton*

Day 3 – Seeq & Devon
Market Place - *Hilton*

Day 3 – Data Science
Products - *Hilton*

Day 3 – Edge to Cloud
Product - *Hilton*

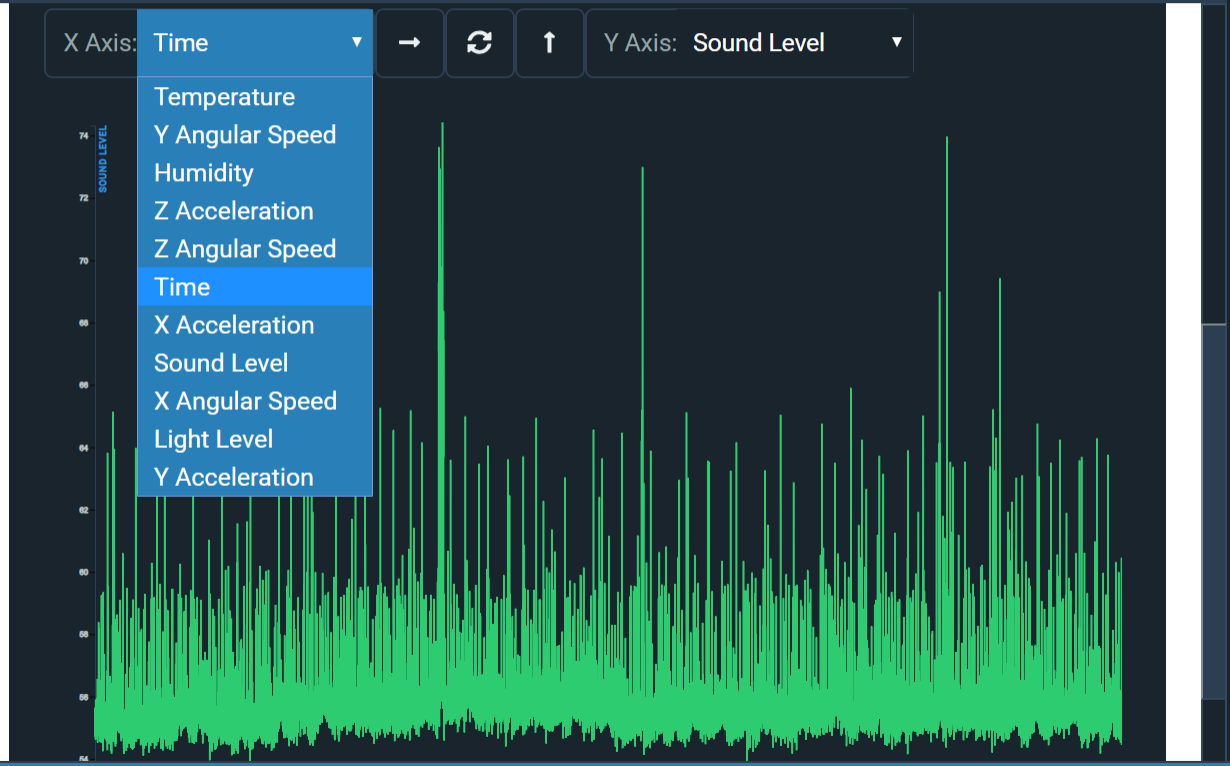
OCS Developer Platform Overview

Chad Chisholm, Program Manager

Four things, Eight minutes

- Data Streams
- Stream Data
- Identity in OSIsoft Cloud Services
- How to Get Started

API Console



Information

API console

The Sds REST API provides programmatic access to your SDS data. To experiment with the Sds REST API, compose an API command and click **Send**. The URL entered is incomplete if the background color is red.

Each API command begins with an HTTP verb (GET, POST, PUT, DELETE) and is followed by a path to the appropriate SDS REST endpoint. /api/tenants and your account Id are automatically prepended to the path you enter, so the command /Streams will be issued to SDS as /api/tenants/namespaceId/Streams. This complete path is shown in the **Full Path** area. If your command starts with PUT or POST, you are prompted to enter a body for the call.

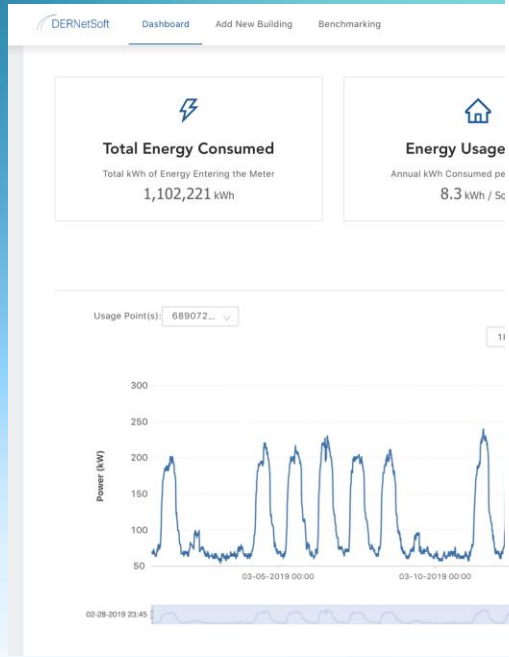
See API calls for reading data for more

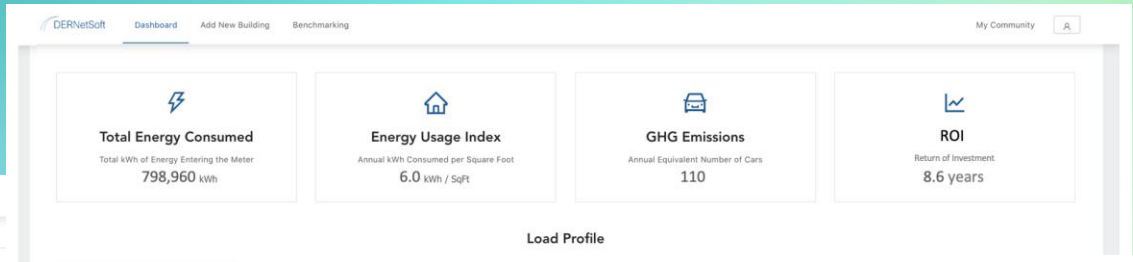
Data Science Enablement with OSIsoft Cloud Services

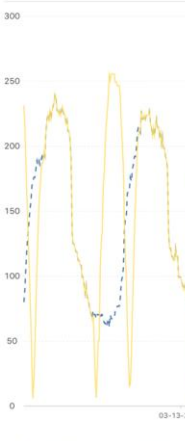
Elizabeth Ammarell

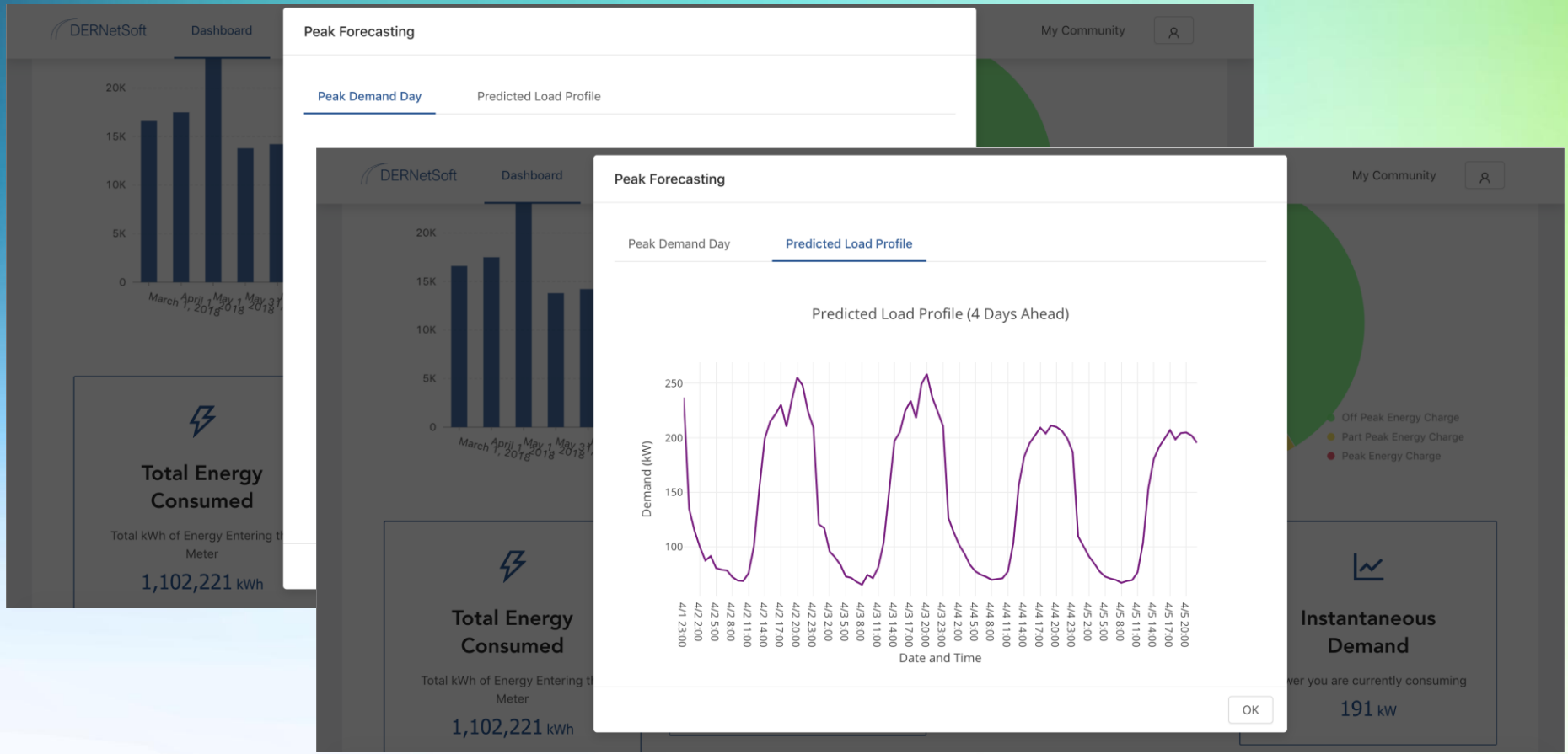
OSIsoft Cloud Services (OCS)

Customer Scenarios

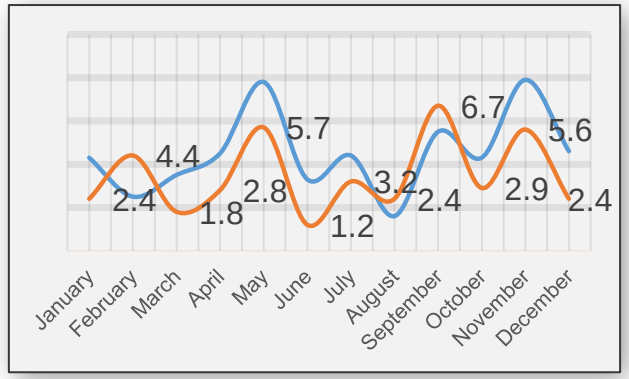








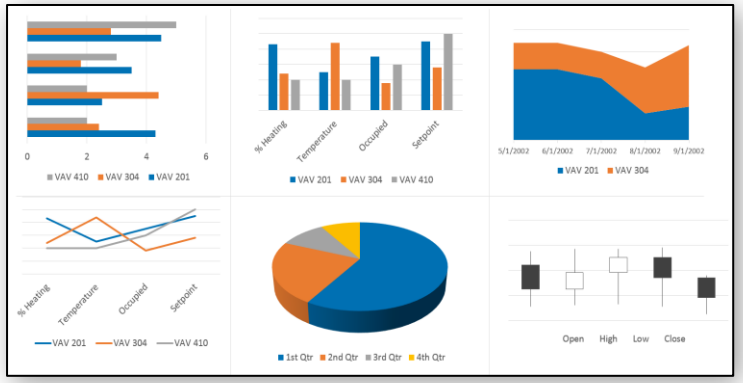
REST APIs </>



Data Views

OSIsoft
Cloud Services

REST APIs </>



Enterprise Data

Edge Data

Product Booth

Data Science Enablement

- Data science use cases
- PI Integrators
- DSE with OSIsoft Cloud Services

Product Expo – Yosemite Ballroom @ Hilton

OSIsoft Talks

Insight: PI Integrators and OSIsoft Cloud Services for time-series Data Science Enablement
Today @ 11:30 AM – Product Track

Cloud-based Data Science Enablement for the PI System
Today @ 2:30 PM - Developer Track

Cloud Services
Day 1 - Product Track

Customer Talk

Data Analytics to enhance Advanced Energy Communities Planning and Operation
DERNetSoft
Day 2 – PI Geek Track

Call to Action

Chris Nelson & Gregg Le Blanc

Presentation Template Brief

- A Style Tips and Best Practices document accompanies this template.
- This template was developed for presenters to insert their company template between the introduction slide and summary slide.
- One of the slides suggests topics to consider including in your presentation. **Feel free to adapt it for your work.**
- Please delete these instruction slides once you build your presentation.

Communicate with OSIsoft Product Managers

https://feedback.osisoft.com

If it is not shared on the feedback portal, it didn't happen!

Welcome to PI World 2019 DevCon!

Rick Davin, Technology Enablement Team Lead
Mike Sloves, Engineering Department Lead

Home Sweet Home

The Parc 55

- All of our DevCon events are at the Parc 55
- Developer and Technical “-related” Talks
- Hands-On Labs
- Dedicated PI Geek Track
- Dedicated Tech Talks
  - Formerly Live-Coding and How-To’s
- Security Workshop
- Developer Reception at 4:30 tonight!
- We started *yesterday*!
  - Recorded for your viewing pleasure

Who is DevCon Really For?

- If you are…
  - A Developer
  - A Data Scientist
  - A Business Analyst
  - A Security Professional
  - A PI System Administrator

What's going on at DevCon?

- PI Geek Tracks
  - Talks proposed and given by YOU
  - "Selecting the Right Analysis Tool" – Dave Soll, Omicron
  - "…Evaluating OSIsoft Cloud Services" – Lonnie Bowling, Diemus
- Tech Talks
  - In-depth, focused intense learning. Walk away knowing how to do something.
  - "Using Stream View for Real Time Analytics"
  - "Generating API Clients…"
  - "Using PI Web API and PowerApps"
  - "OSIsoft Cloud Services for Developers"
  - "Effortlessly deploy a PI System to Azure or AWS"

Even more going on at DevCon!

- PI System Security Workshop
  - An all-day event
  - Guest Keynotes
  - PI System Security
  - OCS Security
  - Case Studies
- Hands-On Labs
  - Developers
  - Data Science
  - IoT
  - Power Users
  - PI System Maintenance and Administration

The Parc 55

What's Changed This Year?

- Focus on Replay-ability
  - So much is happening but you can watch what you missed once your return home.
- Expanded the "Tech Talks" over 2 days
- A Dedicated "PI Geek" Track
- A Dedicated Security Workshop

Developer Reception and Awards

- Developer Reception this evening at 4:30
- Where: The Parc 55
- PI Developers Club Community All-Stars
  - Individuals that contribute to the betterment of the community
  - Trophies and $400(US) Amazon Gift Cards
- Please come and support your fellow PI Geeks!

Post PI World Merriment

- Developer Reception at the Parc 55 @ 4:30
  - Awards Ceremony at 5:00

- GEEK NIGHT!
  - Hilton Grand Ballroom from 7:00-10:00

Final Words of Wisdom

The Software Development Process

1. I can't fix this
2. Crisis of Confidence
3. Questions Career
4. Questions Life
5. Oh, it was a typo. Cool.

Communicate with OSIsoft Product Managers

https://feedback.osisoft.com

If it is not shared on the feedback portal, it didn't happen!