

Insight: Time-series Data Science Enablement

PI Integrators and OSIsoft Cloud Services

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Starting with the Why

Digging for Insights using BI & Data Science



“ Our company-wide objective is to complete a digital transformation across all business units **by 2020** and identify potential savings of **\$20MM** from data analytics.



*Vice President,
Digital Innovation*



*Senior Manager,
Process Technology*

“

My team spends **1 week** at the end of every month preparing yield reports for the business. That rolls up to **1 FTE a year** on just reports. That engineer could have been increasing uptime in our critical operations instead.

“

We have been trying to just get the data for **3 months**. We cannot start the analysis until the data is accessible, **prepared**, and ready for modeling.



Data Scientist

What We Hear From You @ PI World 2019

18%

**Data Scientist
Attendees**

61%

**Interest in Data
Science**

55%

**Interest in Business
Intelligence**

What treasure are you
looking for in your
operations data?

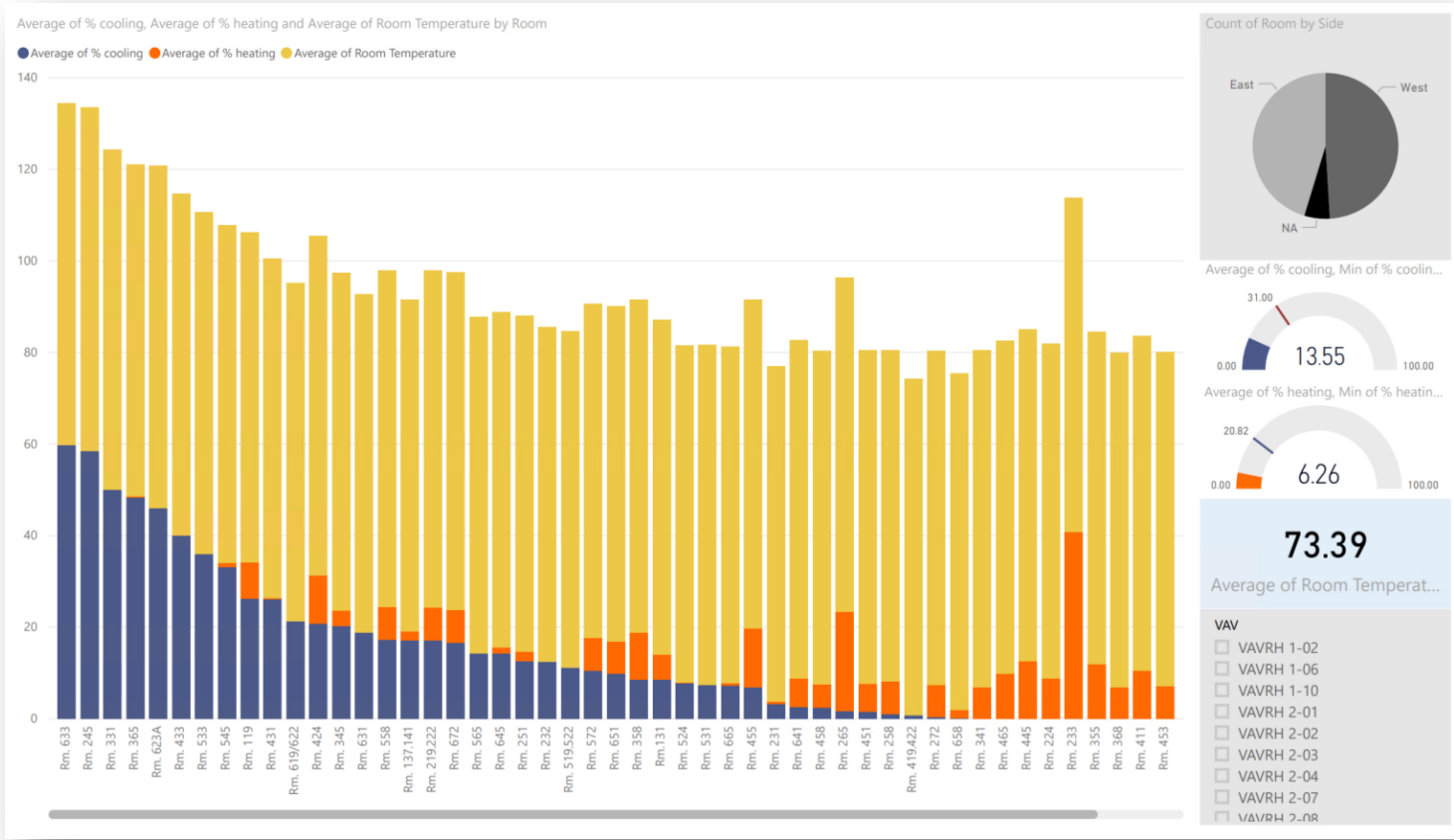


How can OSIsoft data
infrastructure help you
find it?

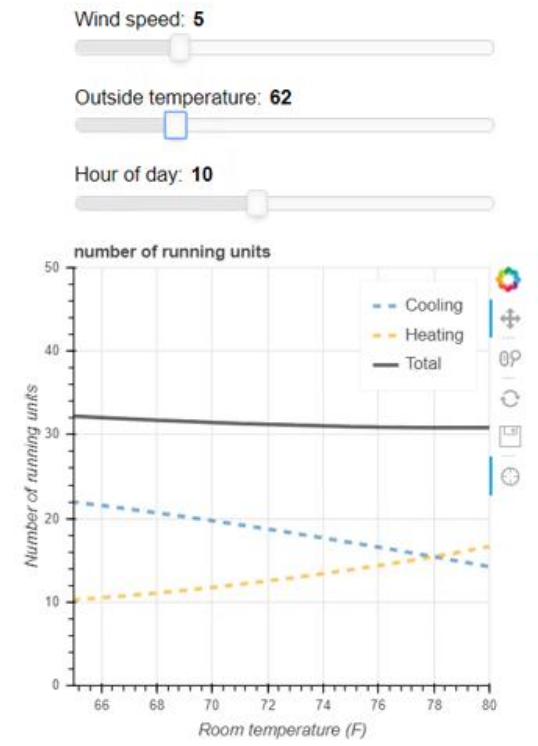
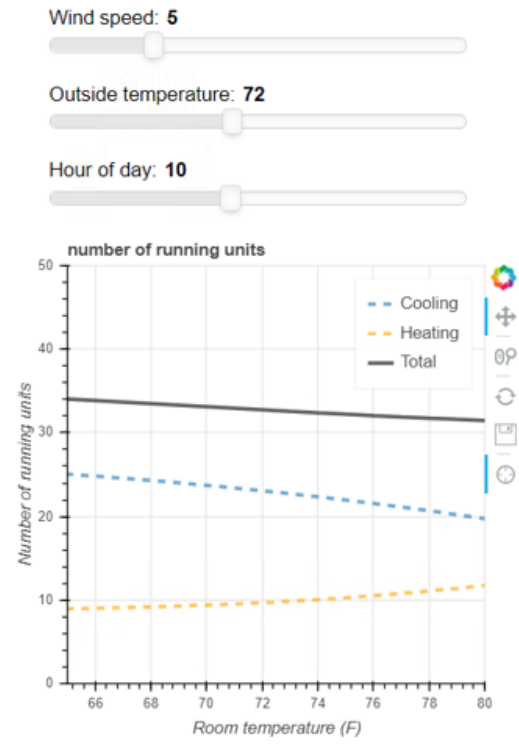
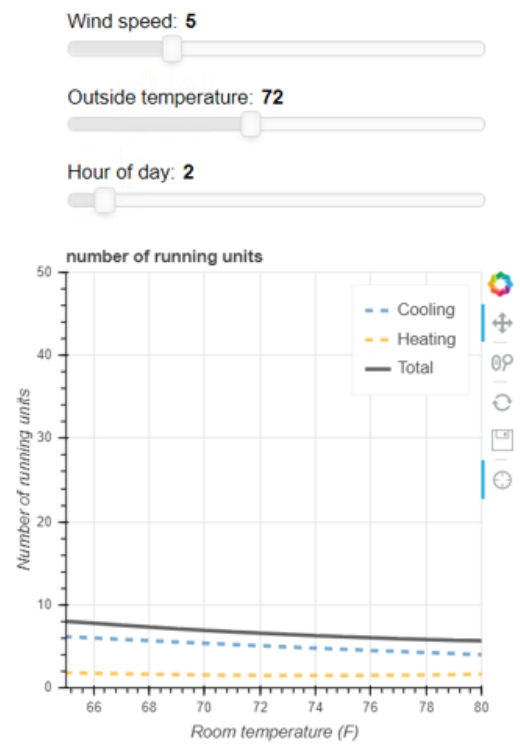


Uncovering Insights

12-month report of building cooling and heating data by room



Weather & time of day effects on building cooling and heating



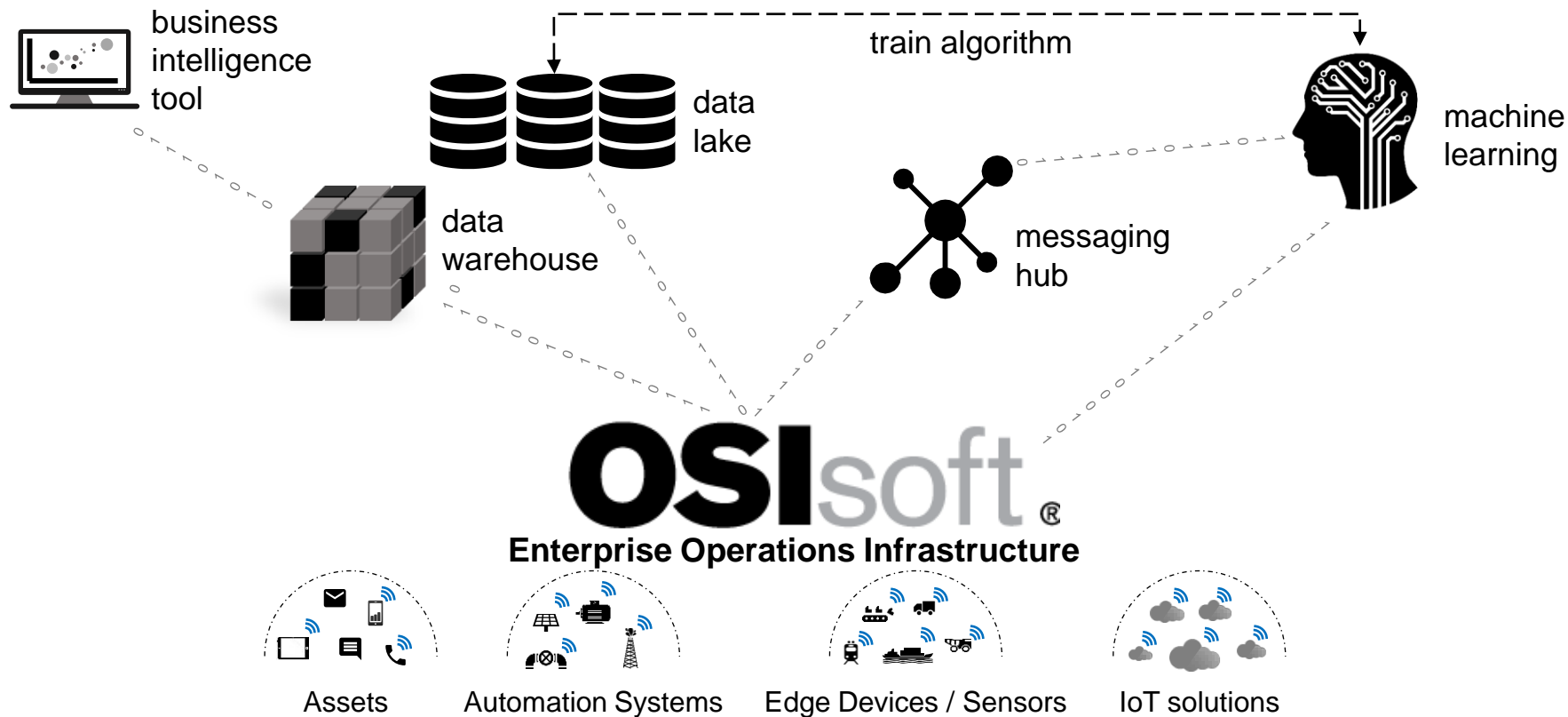
Time-aligned data sets for algorithm and BI tool consumption

BuildingFloor	BuildingSide	PercentCooling	PercentHeating	VAVUnit	Timestamp
2	East	0.0	16.557413	101201	2018-02-01T00:00:00Z
2	East	0.0	15.875705	101201	2018-02-01T01:00:00Z
2	East	0.0	15.193996	101201	2018-02-01T02:00:00Z
2	East	0.0	14.512288	101201	2018-02-01T03:00:00Z
2	East	0.0	13.830580	101201	2018-02-01T04:00:00Z
2	East	0.0	13.148871	101201	2018-02-01T05:00:00Z
2	East	0.0	12.467163	101201	2018-02-01T06:00:00Z
2	East	0.0	11.785455	101201	2018-02-01T07:00:00Z
2	East	0.0	11.103746	101201	2018-02-01T08:00:00Z
2	East	0.0	10.422038	101201	2018-02-01T09:00:00Z
2	East	0.0	9.740330	101201	2018-02-01T10:00:00Z
2	East	0.0	9.058621	101201	2018-02-01T11:00:00Z
2	East	0.0	8.376913	101201	2018-02-01T12:00:00Z

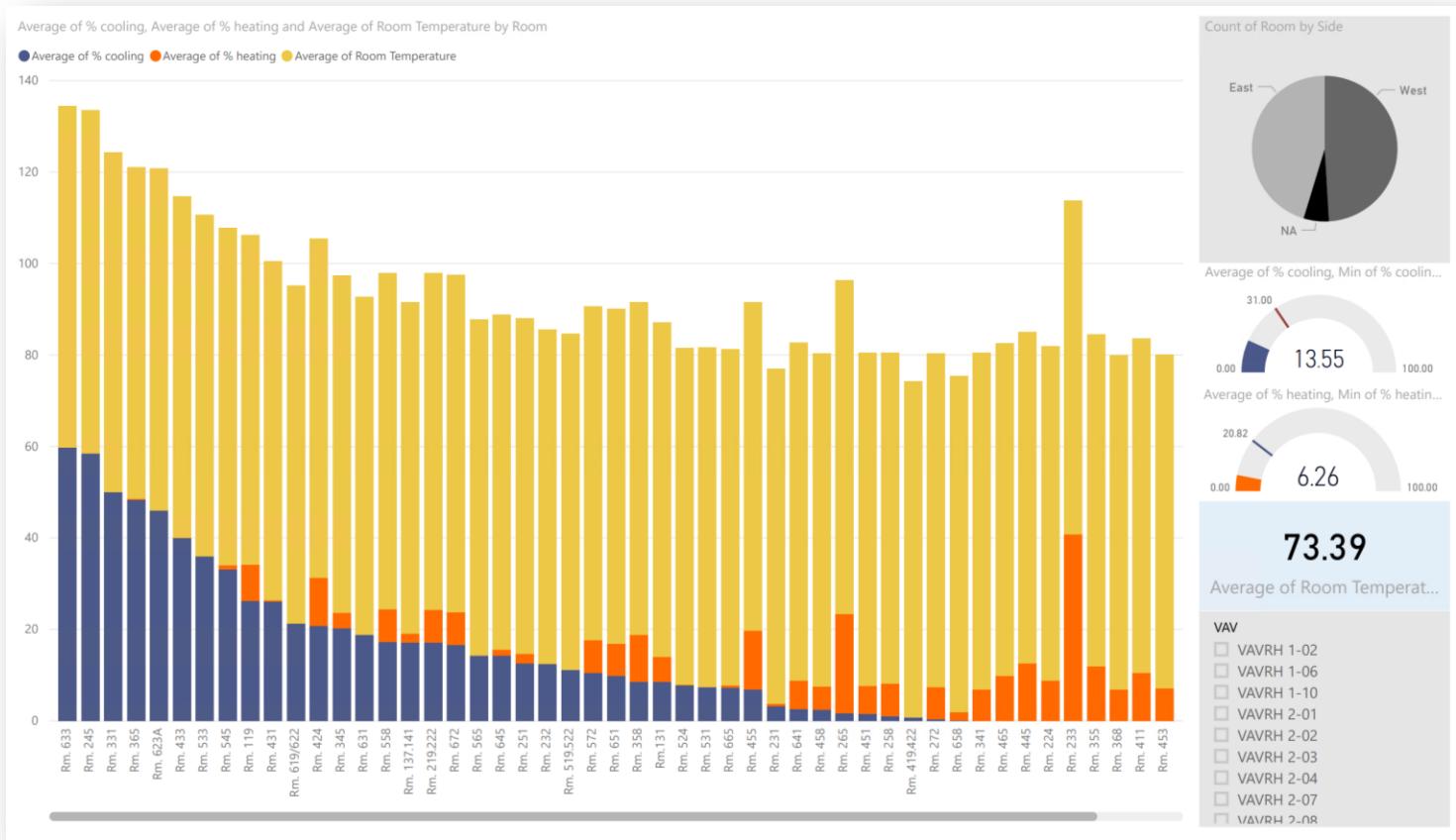
PI Integrators *speed the process that brings trustworthy data to many unique analytics tools*



PI System accelerates and operationalizes advanced analytics



12-month report of building cooling and heating data by room



Name	Run Status	Type	Run Mode	Start Time	End Time	Last Run Time
Overview	Published	Asset	Once	4/2/19 9:00AM	4/2/19 5:00PM	Apr 2, 2019 7:00:29 PM
SLTC Facilities - VAVRH	Stopped By User	Asset	Continuous	1/1/19 12:00AM	*	Apr 2, 2019 7:27:17 PM

Value Realized By Our Customers

Greater Operational Efficiency



Henkel (with pmOne) **predict when a transition occurs** for an exothermic reaction, **saving 5% of process time.**

Enhanced Ability to Prevent Costly Failures



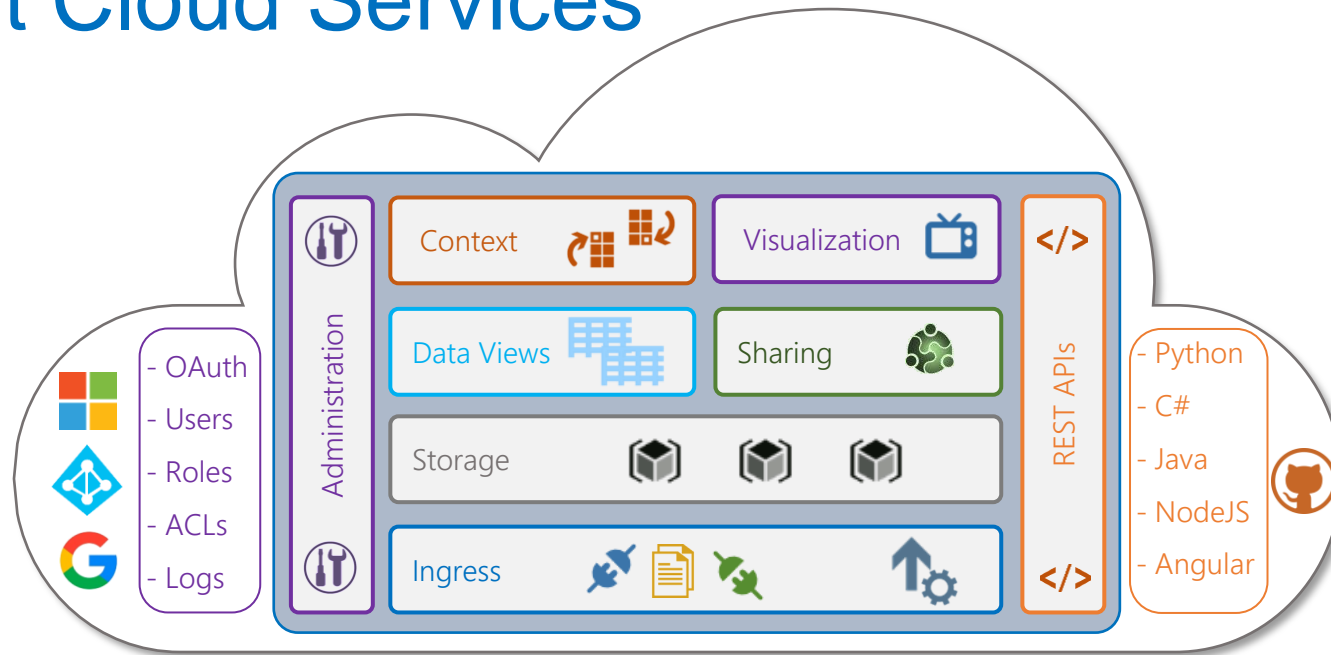
Invenergy (with SparkCognition) **predict catastrophic gearbox failures** at least one month in advance.

Better Environmental Protection



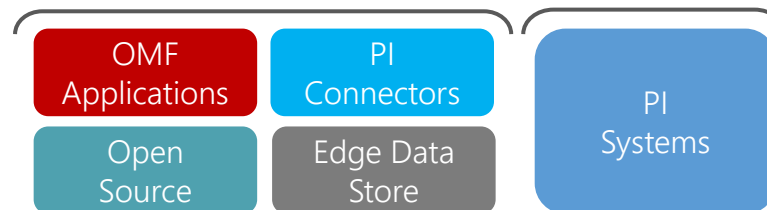
United Utilities proved an ability to accurately **predict combined sewer overflows 6 hours before an incident.**

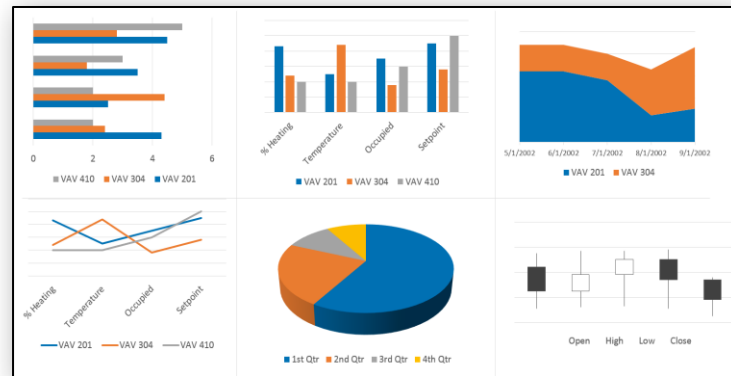
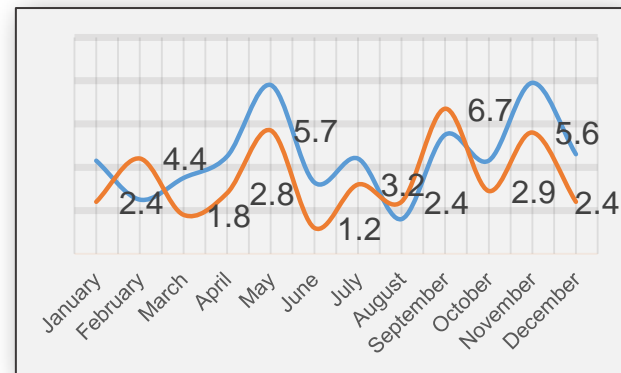
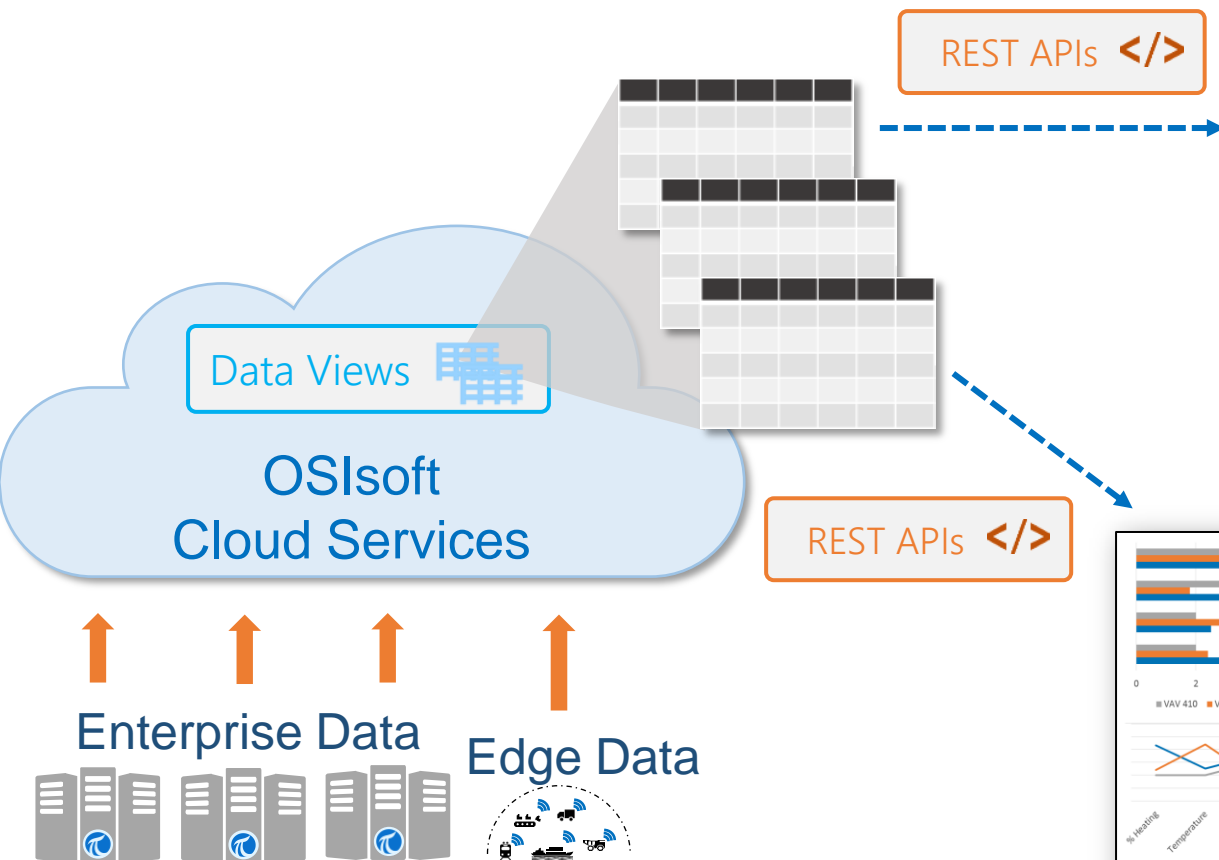
OSIsoft Cloud Services



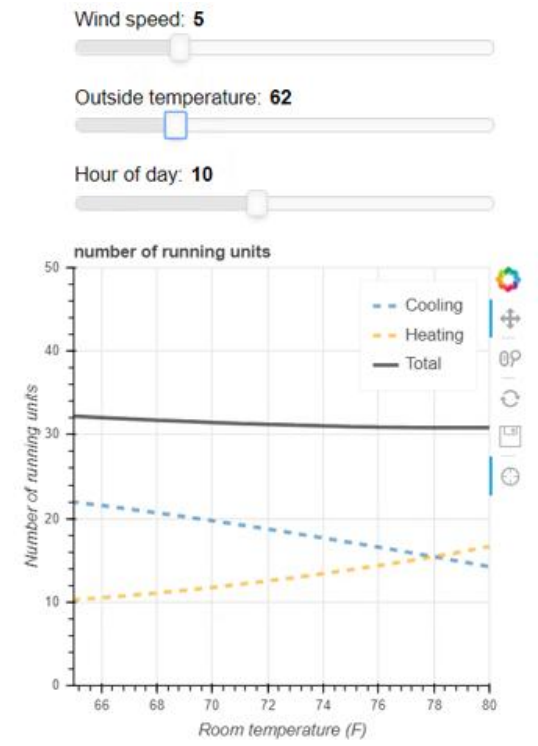
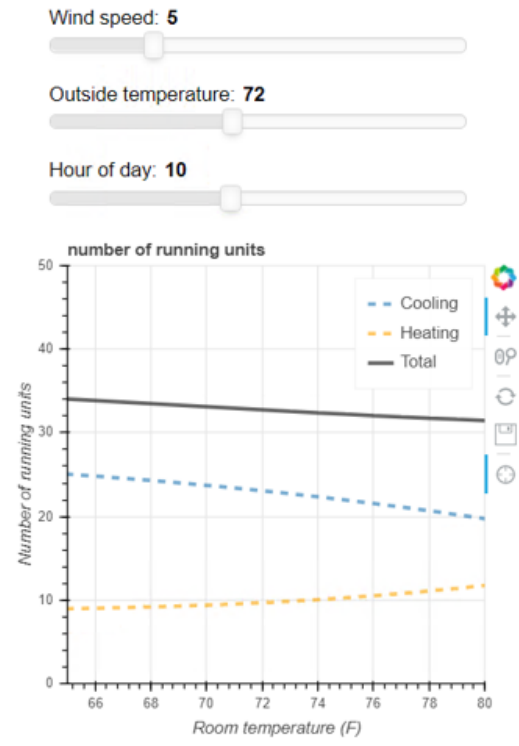
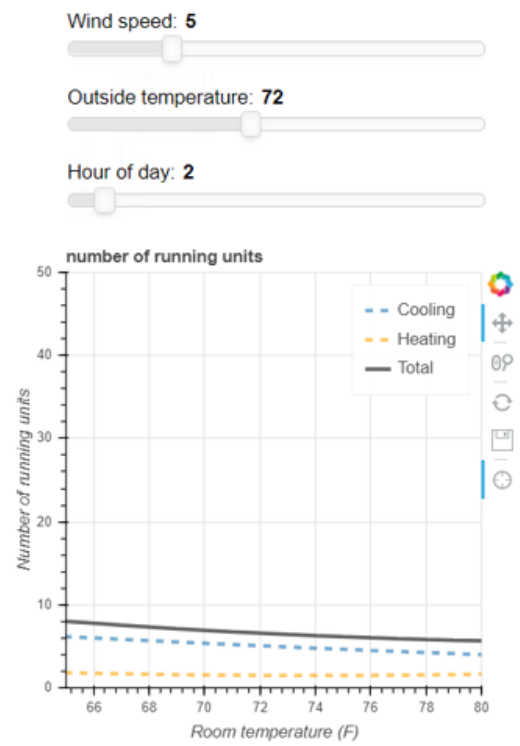
OSIsoft Messaging Format

Native





Weather & time of day effects on building cooling and heating



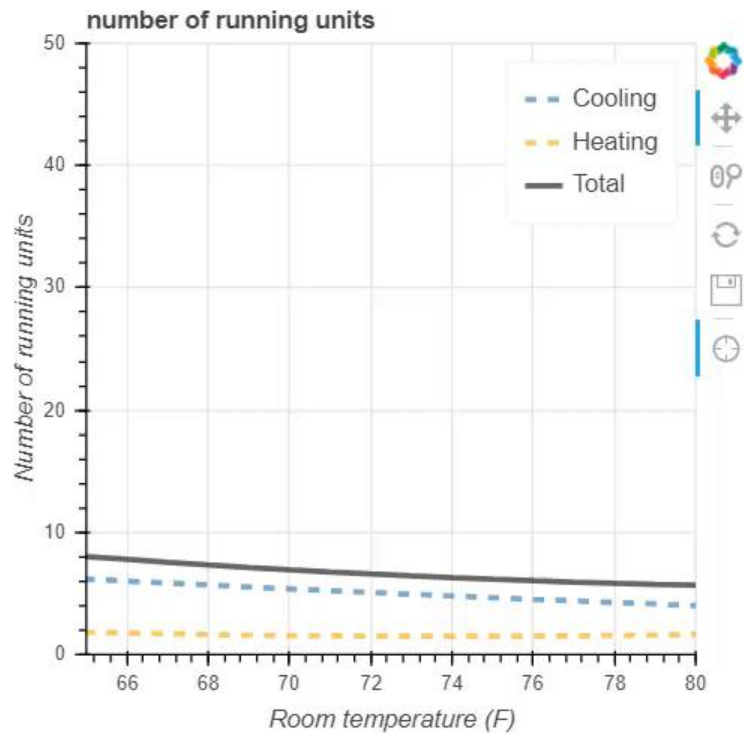
Wind speed: **5**



Outside temperature: **72**



Hour of day: **2**



Data Science Enablement

across your OSIsoft data infrastructure

Trustworthy data ensuring one version of the truth

Time-aligned operational data sets of shaped and formatted data in context

Integration with your choice of advanced analytics platforms

Enabling people, process, and technology with agile and iterative workflows

Data Science Enablement

with the PI System

Tabular and streaming datasets published to analytics platforms

Drag and drop configuration experience for easy, no-code workflows

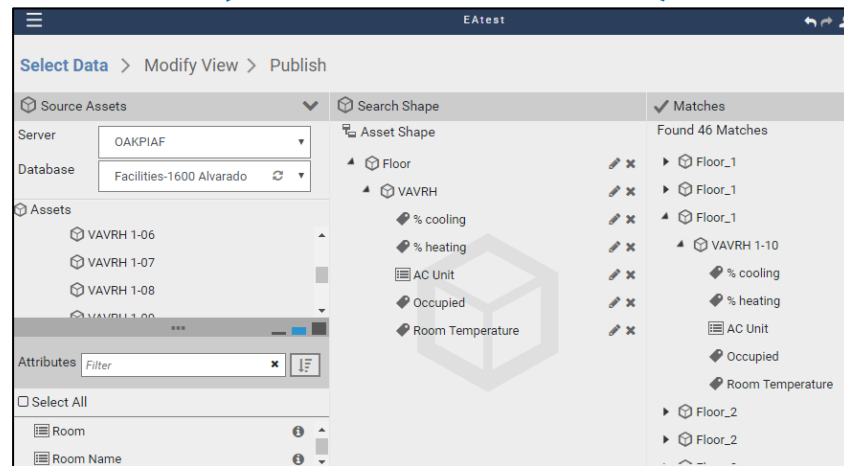
Asset Framework and event frames sync complete data context

data warehouse



data lake

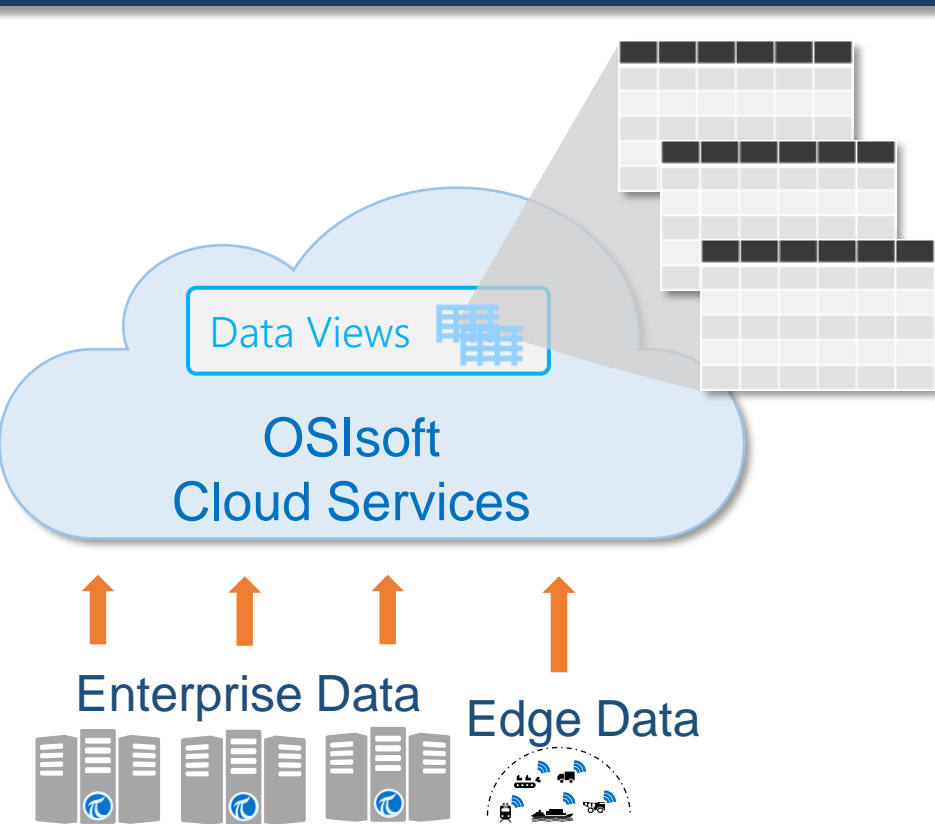
messaging hub



Enterprise Data



Data Science Enablement



with OSIsoft Cloud Services

OCS is an operational data platform, hosted and managed by OSIsoft

Data aggregation from multiple PI Systems plus cloud and edge sources

Enterprise support with scale and resiliency of cloud architecture

Tabular datasets via queryable surface area

Programmatic data view creation and data retrieval with REST API

What's Now & What's Next

Data Science Enablement in OCS – Roadmap

Manageable System
Seamless Infrastructure
Increased Value & Scope of Data



Developing Now

Tabular Data Views with Interpolated Data

Enable users to define tabular datasets of related data that is grouped, shaped, aligned, and formatted for data scientists to leverage.

Interactive Data View Configuration Experience

Enable subject matter experts to create data views for data scientists without code.



Considering Next



Researching Future

Augmented

with Raw

Interested in previewing this functionality in OCS?

Contact Elizabeth Ammarell
eammarell@osisoft.com

ent Data
on

gregation

Science

Feature Creation



feedback.osisoft.com

Last Updated: 2019-04

PI Integrators – Roadmap



Developing Now

PI Integrator for SAP HANA: Compatibility & Architecture

Compatibility w/ latest SAP HANA release, plus UI & architecture updates for better maintainability and supportability moving forward.

BETA

PI Integrator for SAP HANA: Streaming Analytics

Migrate SAP HANA Streaming Analytics support to Apache Kafka

PI Integrator for Esri ArcGIS:

Compatibility with the latest releases and updates from Esri products



Considering Next

Google Cloud Platform Integration



Researching Future

MathWorks MATLAB Integration

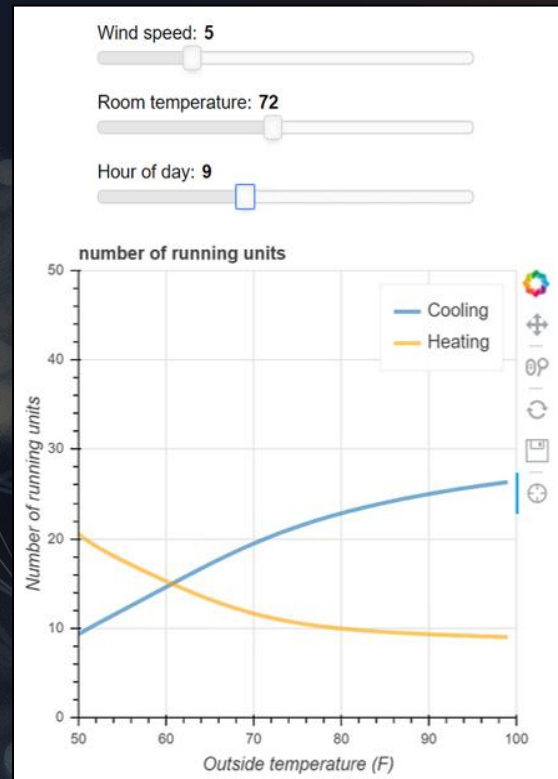
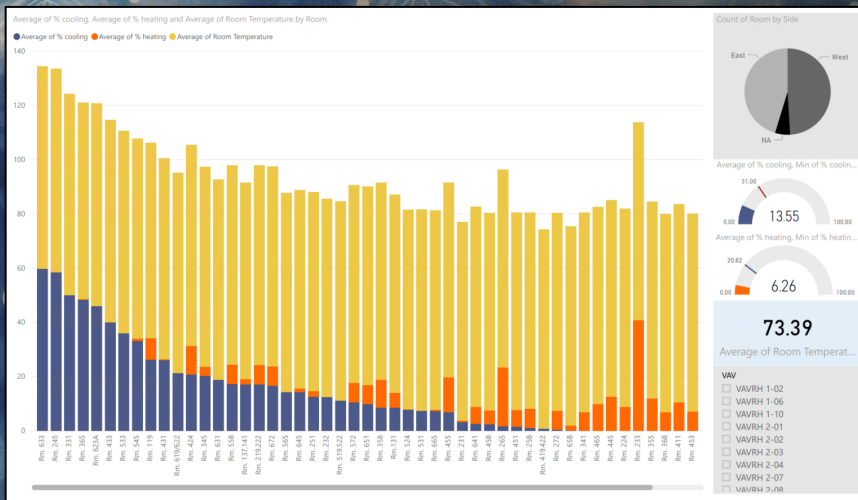


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Make trustworthy data available for data analytics and realize potential savings of **thousands of dollars**

Accelerate data science workflows to more efficiently utilize your **employee resources**

Eliminate **weeks and months** spent on data wrangling with easy and broad access to prepared data ready to model



Resources



➞ Product Booth

Data Science Enablement

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

*Product Expo – Yosemite Ballroom
@ Hilton*



➞ OSIsoft Talks

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

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

Cloud Services
Day 1 - Product Track



➞ Customer Talks

TransCanada's Journey to
Advanced Analytics – Integrating
TransCanada's PI AF/EF with
AWS Machine Learning

Real-time GIS Data for
Optimized Operations

Data Analytics to enhance
Advanced Energy Communities
Planning and Operation

Communicate with OSIsoft Product Managers



<https://feedback.osisoft.com>

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

Contact us!



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Questions?

Please wait for
the **microphone**

State your
name & company



Please remember

TO DOWNLOAD
APP, SEARCH
OSISOFT



Download on the
App Store



GET IT ON
Google Play



LUNCH IN TWO LOCATIONS TODAY

General Attendee Lunch – Hilton
Developer Lunch – Parc 55





IT'S THROWBACK THURSDAY AT GEEK NIGHT TONIGHT!

Hilton – Grand Ballroom 7:00 – 10:00 PM

謝謝 KEA LEBONA
 TAPADH LEIBH 고맙습니다
 БАЯРЛАЛАА MISAOTRA ANAO
 DZIĘKUJĘ CI NGIYABONGA TEŞEKKÜR EDERIM GRACIES
 OBRIGADO شڪرا SALAMAT
 DANKON TANK TAPADH LEAT
 KÖSZÖNÖM DANKIE TERIMA KASIH GRACIES
 СПАСИБО MULTUMESC
 PAKMET CIZGE FAAFETA
 GO RAIBH MAITH AGAT ESKERRIK ASKO
 БЛАГОДАРЯ GRACIAS HVALA ХВАЛА ВАМ
 ТЕШЕККÜR EDERIM
 TI БЛАГОДАРАМ MAHADSANID
 TAK DANKE
 RAHMAT MERCI
 HATUR NUHUN
 DANK JE ΕΥΧΑΡΙΣΤΩ GRATIAS TIBI
 AČIŮ SALAMAT MAHALO IĀ 'OE TAKK SKALDU HA
 GRAZZI PAKKA PĒR
 PAXMAT CAĞA
 FALEMINDERIT
 ありがとうございます
 SIPAS JI WERE TERIMA KASIH
 UA TSAUG RAU KOJ
 TI БЛАГОДАРАМ
 СИПОС
 CẢM ƠN BẠN
 WAZVIITA



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THANK YOU

HVALA

ДЗЯКУЙ

GRAZIE



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SAN FRANCISCO 2019

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