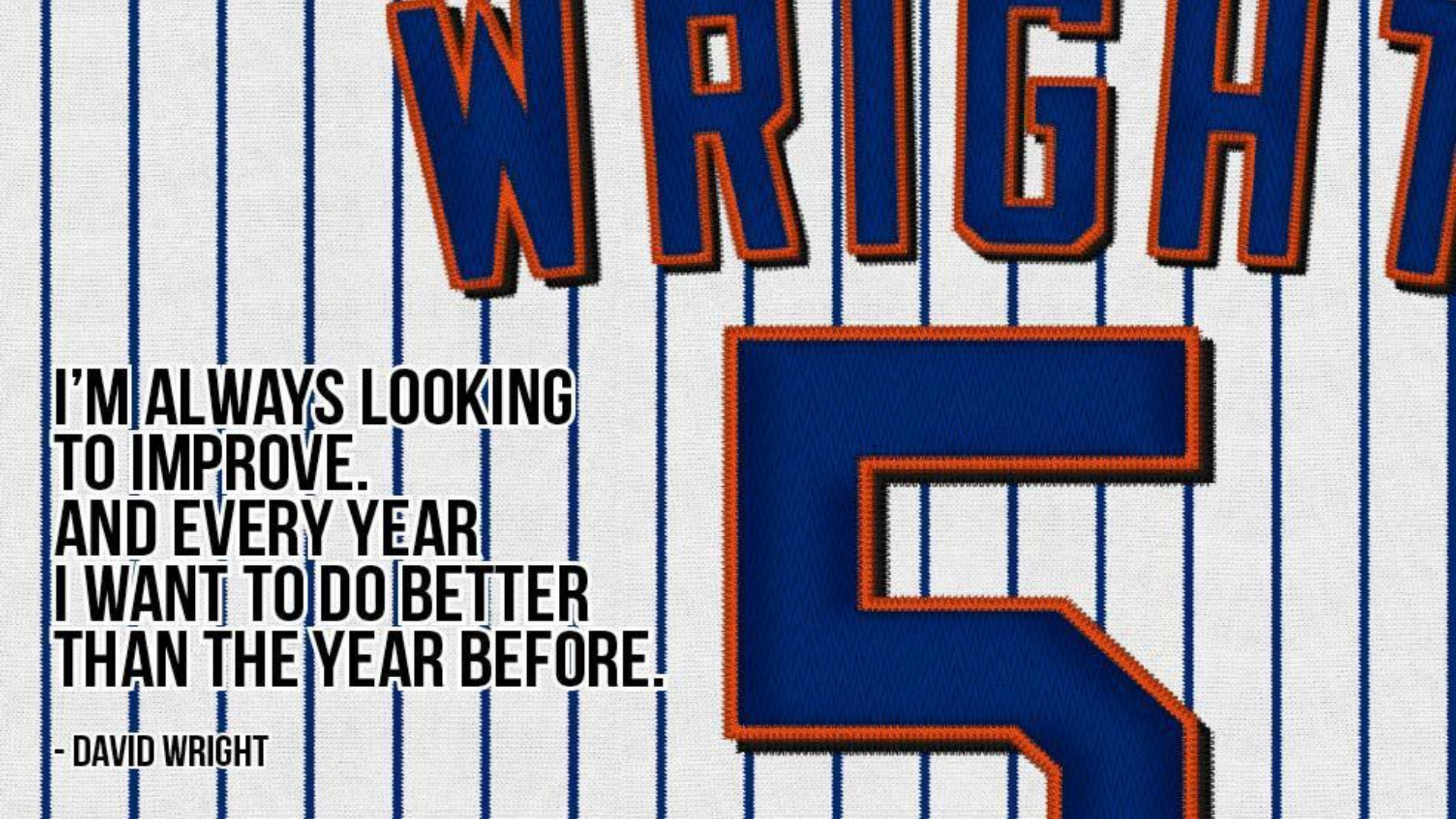


I'M ALWAYS LOOKING
TO IMPROVE.
AND EVERY YEAR
I WANT TO DO BETTER
THAN THE YEAR BEFORE.

- DAVID WRIGHT

Providing Real-Time Insight into the Operations of a Professional Sports Stadium

LP Page-Morin, Sr. Systems Engineer

Wednesday, November 9th, 2016

OSIsoft

© Copyright 2016 OSIsoft, LLC

"You can only analyze the data you have. Be strategic about what to gather and how to store it."

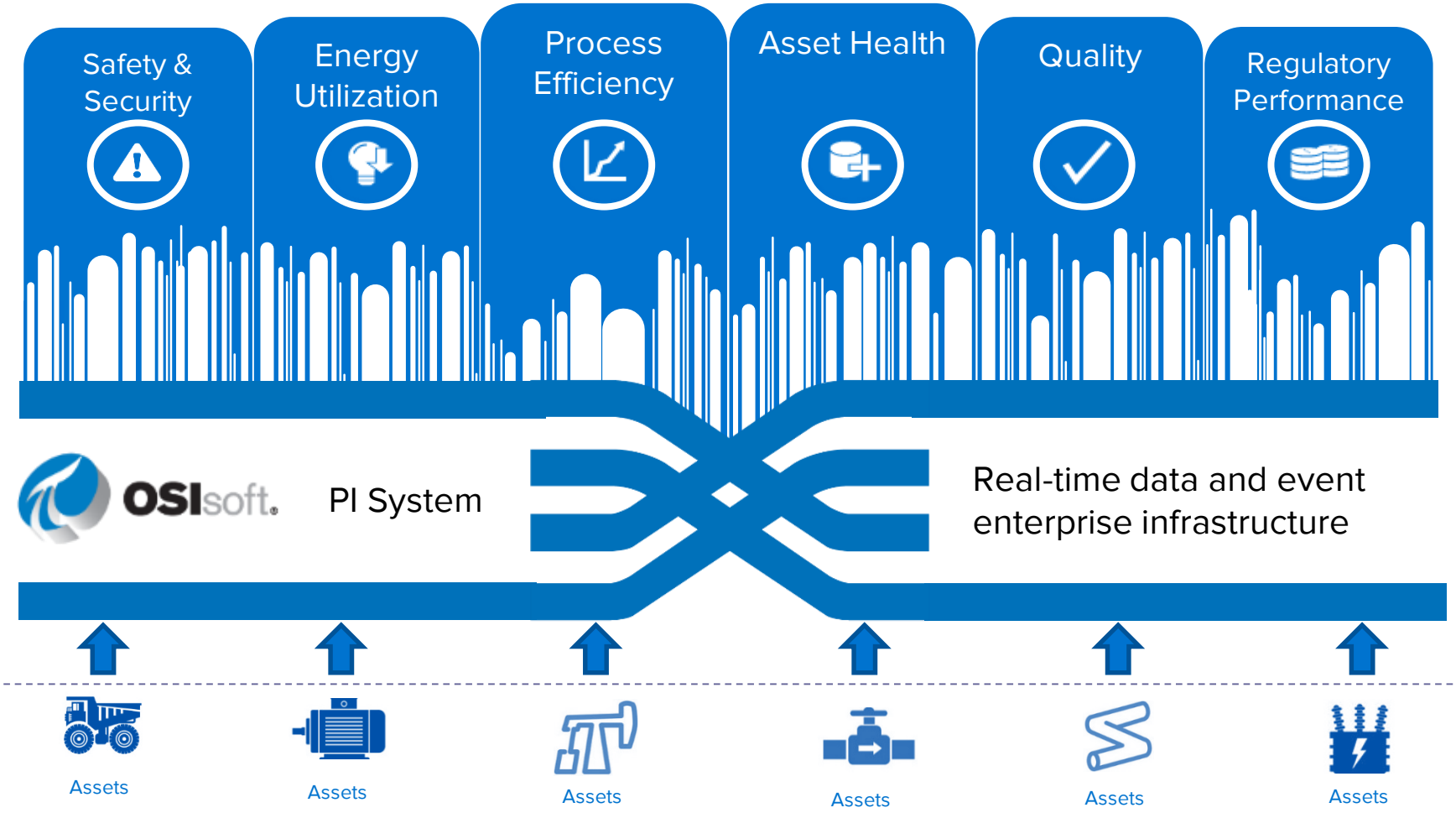
— Marie Curie

"Experts often possess more data than judgment."

— Colin Powell

https://quotefancy.com

© Copyright 2016 OSIsoft, LLC



© Copyright 2016 OSIsoft, LLC

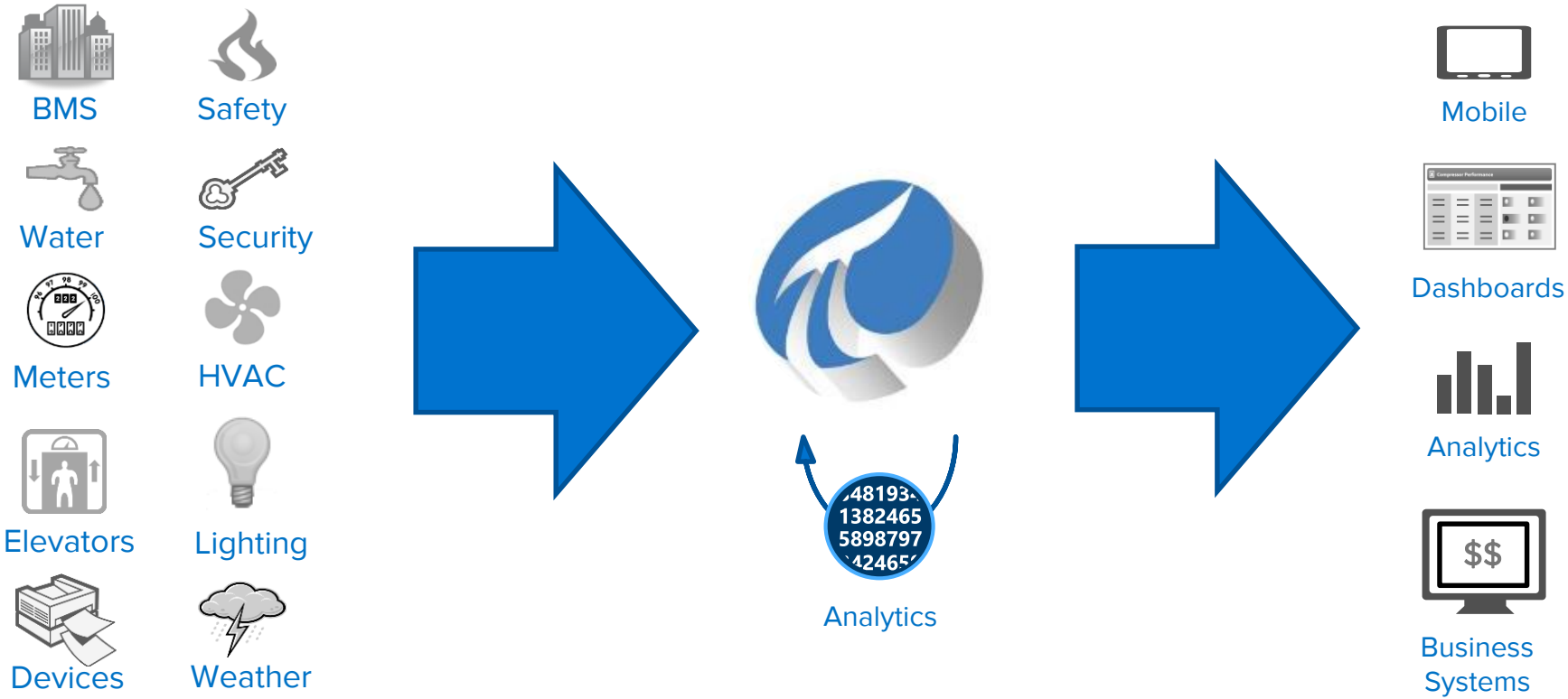
Business Impacts: Delivering Value at Enterprise Scale

Safety & Security	Energy Utilization	Process Efficiency	Asset Health	Quality	Regulatory Performance
PETRONAS	Microsoft	Columbia Pipeline Group	Power Stream	Maynilad	Wheelabrator Technologies Inc. A Waste Management Company
Reduced 5 unplanned shutdowns in a year	Reduced facilities energy costs by over $2M	Over $2.8M in savings from event prevention	Prevented unit failure, avoided an expense of up to $2M	Recovered 640M liters of treated water	$300k in savings Water temperature permit compliance

© Copyright 2016 OSIsoft, LLC

The PI System: Software as the Common Infrastructure

Connect to multiple systems. Store ALL of your data. Use ALL of your data.



© Copyright 2016 OSIsoft, LLC

OSIsoft Presence in Professional Sports in the U.S.

© Copyright 2016 OSIsoft, LLC

The PI System is Used Here!

- They collect electricity demand and usage, historical gas bill data, game schedule data from ESPN, local weather data
- They discovered that the home-run derby actually reached higher usage levels than the all-star game

© Copyright 2016 OSIsoft, LLC

Energy and Ice Management

Minnesota Wild Arena – Xcel Energy Center

The PI System's real-time data allows the operations staff to more precisely control the ice slab quality during live games, along with giving them greater insight (and increased ability for costs savings) into their utilities usage.

CHALLENGES

Utility data sources were from many different vendors and manufacturers

Refrigeration plant sensors were isolated to a single, aging interface computer

Engineers and management lacked a unified view into their data for comparing different sensor feeds

SOLUTION

Utilized the PI System for data collection and centralized storage

Collected data from the ice plant and made it available for visualization and analysis from any location inside or outside the arena

Created standardized dashboards for reporting and efficiency analysis

RESULTS

Significantly reduced time for data analysis and reporting

Improved ice slab management

Facilitated ongoing metering projects by providing an efficient way to interface new sensors and data feeds into the new PI System

© Copyright 2016 OSIsoft, LLC

OSIsoft®

Better Communication, Better Ice

Travis Larson, Xcel Energy Center
Jim Ibister, Saint Paul RiverCentre
Christine Reeves, Progressive Associates

CRITICAL EQUIPMENT MONITORING

THE ICE SLAB REFRIGERATION PLANT IS NOW BEING MONITORED
CRITICAL STATISTICS ARE NOW AVAILABLE ACROSS THE FACILITY

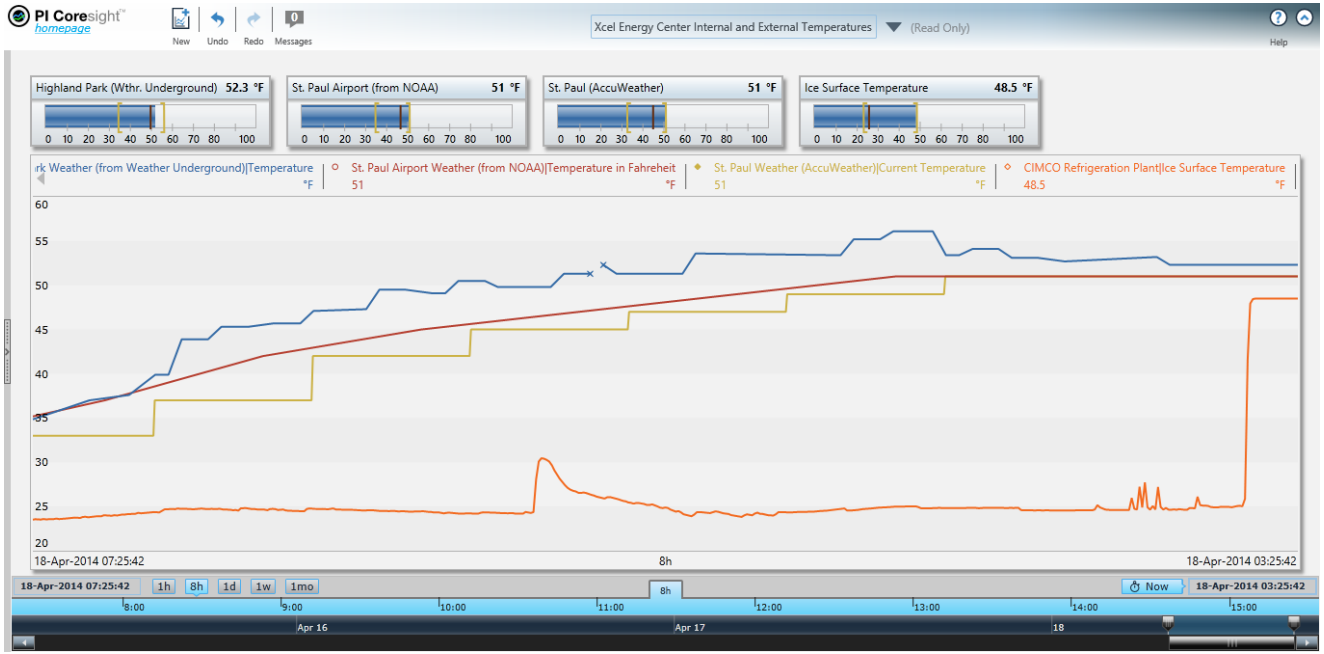
All of the data from the refrigeration plant sensors, combined with the rest of the campus data, is now available to engineers wherever they are
Glycol leaks can occur in seconds and can take hours to repair, so it is essential that engineers are never far from their critical data

© Copyright 2016 OSIsoft, LLC


PI Coresight
homepage
New
Undo
Redo
Messages
Xcel Energy Center Live Refrigeration Plant
(Read Only)
Help
Refrigeration Plant (Live)|Rink Slab Temperature
21.79 °F
Refrigeration Plant (Live)|Ice Surface Temperature
25.793 °F
32
30
28
26
24
22
20
18
16
14
12-May-2014 08:00:00
2d
14-May-2014 08:00:00
Refrigeration Plant (Live)|Glycol Supply Temperature
20.534 °F
Refrigeration Plant (Live)|Glycol Return Temperature
20.943 °F
Refrigeration Plant (Live)|Current Set Point
21 °F
26
24
22
20
18
16
14
6
12-May-2014 08:00:00
2d
14-May-2014 08:00:00
Live Ice Plant Dashboards
12-May-2014 08:00:00
1h
8h
1d
1w
1mo
2d
Now
14-May-2014 08:00:00
20:00
13-May-2014 12:00:00
4:00
8:00
12:00
16:00
20:00
14-May-2014 12:00:00
4:00
8:00
12:00
16:00
May 10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
May 28
29

IMPROVED WEATHER TRACKING

THE WILD MADE CLEAR THE IMPORTANCE OF LIVE WEATHER INFORMATION
REAL-TIME FEEDS ARE NOW COLLECTED FROM FOUR INDEPENDENT WEATHER STATIONS



In addition to the internal Davis weather station, three different internet feeds of local external weather are also being monitored

The most reputation-damaging event in the Wild's recent history could've been avoided had more timely weather data been available and acted on

© Copyright 2016 OSIsoft, LLC

The Business of Ballparks

Seattle Mariner's Stadium – Safeco Field

"We're greening our bottom line, greening our brand, improving our environmental performances, and ultimately with sports, we have the opportunity to create a conversation with the public."

Scott Jenkins, Board Chair of the Green Sports Alliance

CHALLENGES

Major League Baseball helps manage 342 major and 240 minor league parks

Previous sustainability initiative "MLB Green Tracks" required manual entry – very negative response and failure to adopt

Needed a powerful, automated way to collect and visualize

SOLUTION

Utilized the PI System for data infrastructure and visualization

Connected to building systems for real-time, automated data collection

Created live energy dashboards for the local facilities staff to see real-time performance

RESULTS

No more manual entry required for energy monitoring. Quickly finding issues before they cost a fortune

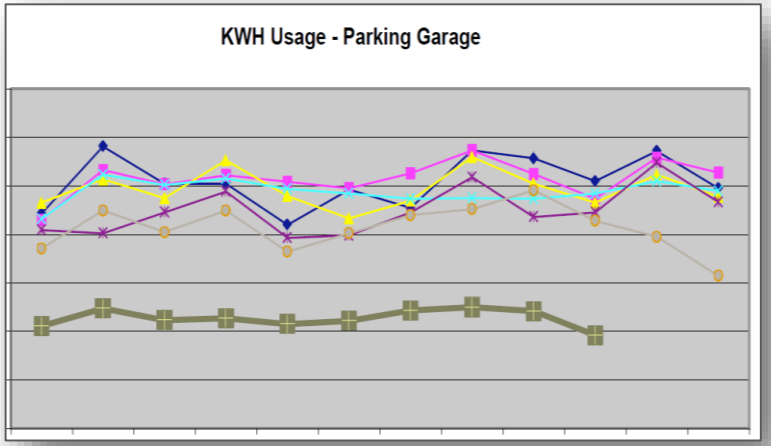
Real cost tracking and billing of other events at the ballpark

Saved $1.4 million over 5 years in the first ballpark

© Copyright 2016 OSIsoft, LLC

Flexible, User-Configurable Web Tools

Evolved and refined stadium utility dashboards at Safeco Field



Before

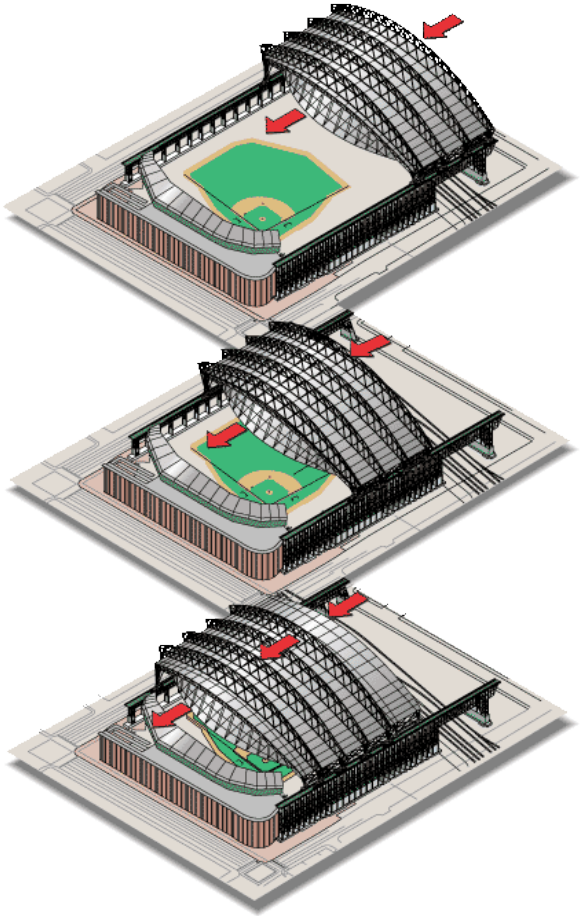
Static data in Excel, manually entered

After

Real-time information, shared online

© Copyright 2016 OSIsoft, LLC

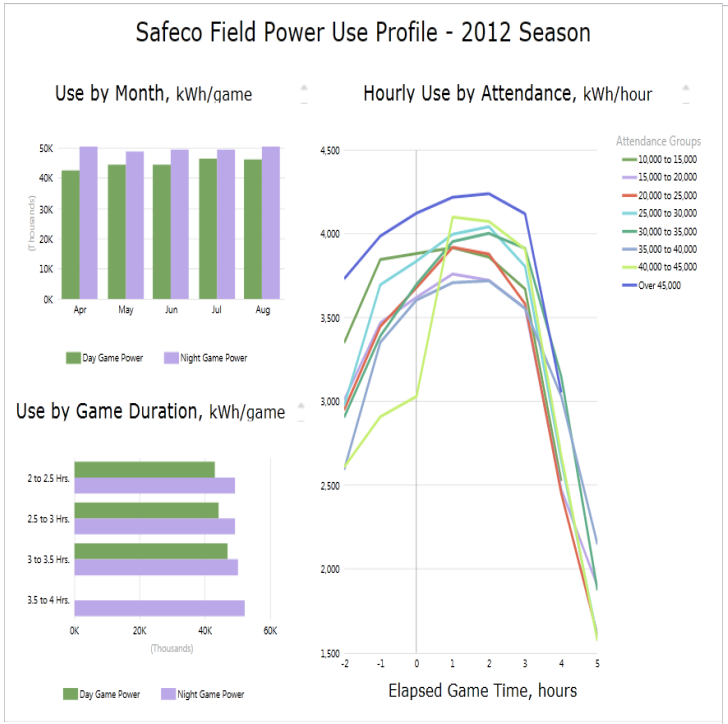
The “Roof” Story

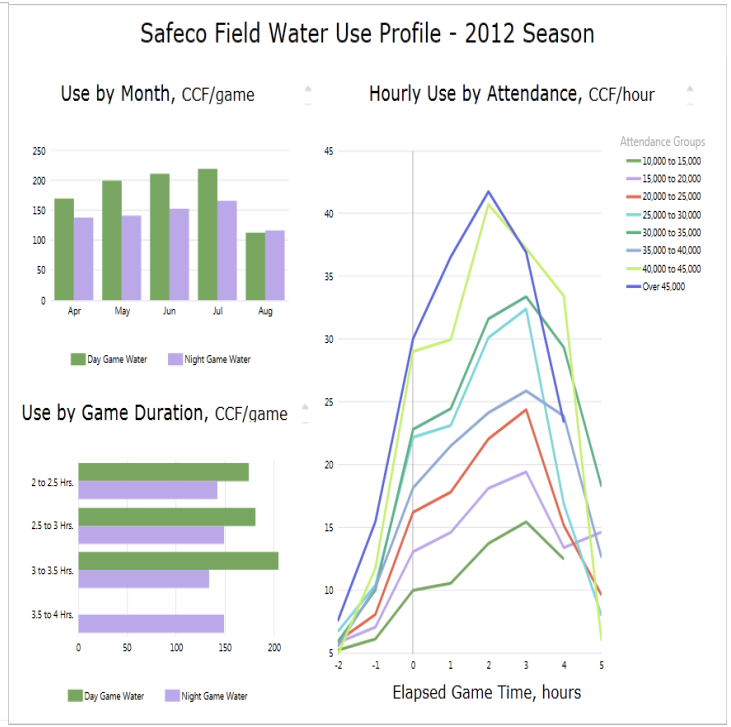


© Copyright 2016 OSIsoft, LLC

Season Utility Profiles

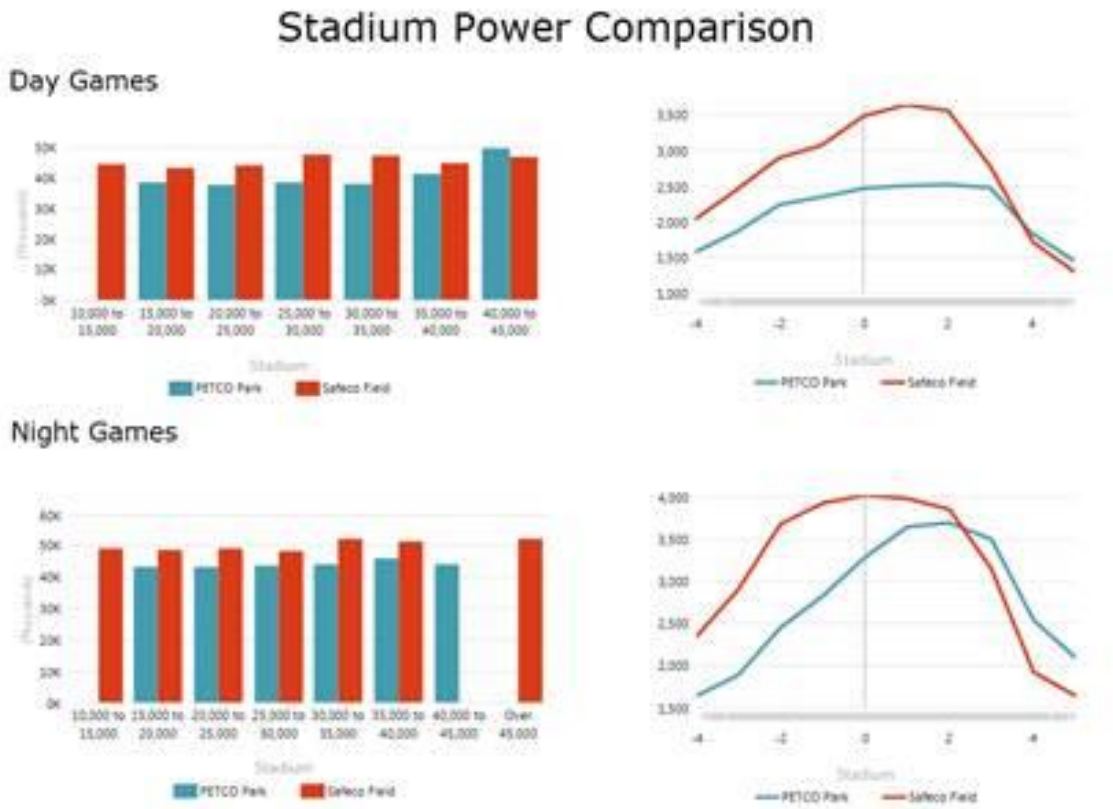
Use by month, time of game and elapsed game time.



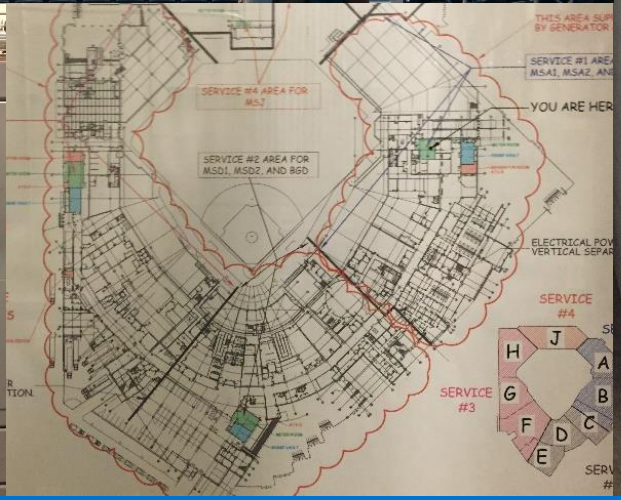


© Copyright 2016 OSIsoft, LLC

Safeco and Petco Game Day Comparisons



© Copyright 2016 OSIsoft, LLC



San Diego Padres Petco Park

© Copyright 2016 OSIsoft, LLC

PI System Architecture


Power Circuits


Irrigation Risers


Chilled Water


Domestic Water


Natural Gas


Fan Experience

Petco Park Assets


Sensor


Sensor


Sensor


Sensor


Sensor


Sensor


Qualcomm EMG


Qualcomm EMG


Qualcomm EMG

Connectivity


PI Connector Node


PI Connector Node


PI Data Archive

PI Asset Framework


PI Coresight

On-Premises PI System Infrastructure (Petco Datacenter)


"Back of House" Operations Screens


"Front of House" Fan Experience Screens and Apps


Reporting, Data Sharing, and other Tools

User Tools and Dashboards

© Copyright 2016 OSIsoft, LLC

Qualcomm Invests in a Sustainable Future

https://www.youtube.com/watch?v=pQRRUG1GLQU

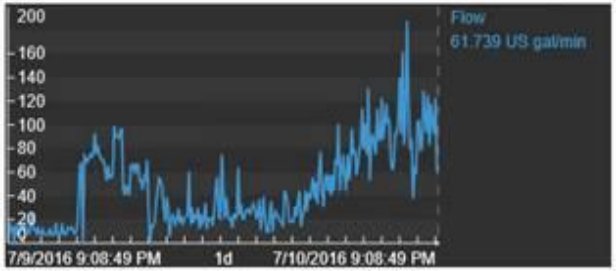
© Copyright 2016 OSIsoft, LLC

Back of House Dashboards

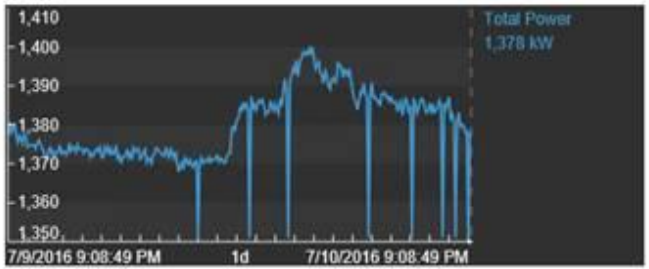
Temperature (F)	Relative Humidity	Dewpoint	Pressure	Visibility	Wind Speed	Wind Direction	Weather
70 °F	76 %	62.1 °F	1,012.3 mb	10 mi	3.5 mi/h	Variable	Mostly Cloudy

% Free Archive Disk Space	% Total Processor Time	Available Memory	System Up Time
98.629 %	3.4504 %	13,804 mb	1.006E+07 s

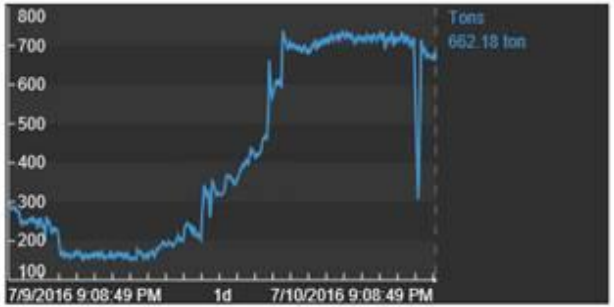
Water Use



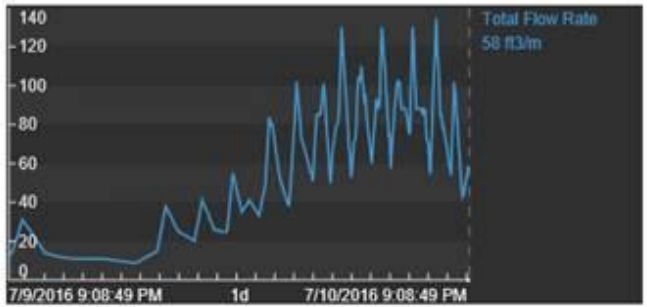
Electricity Use



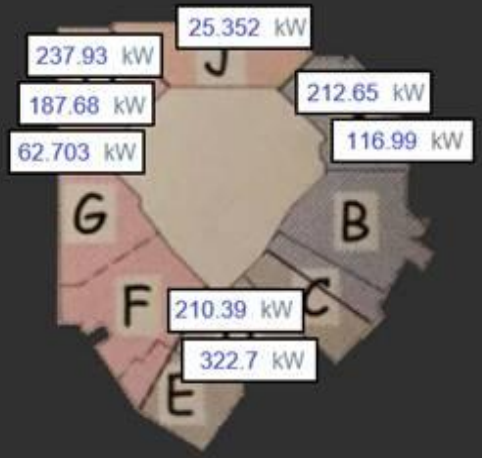
Chilled Water Use



Natural Gas Use

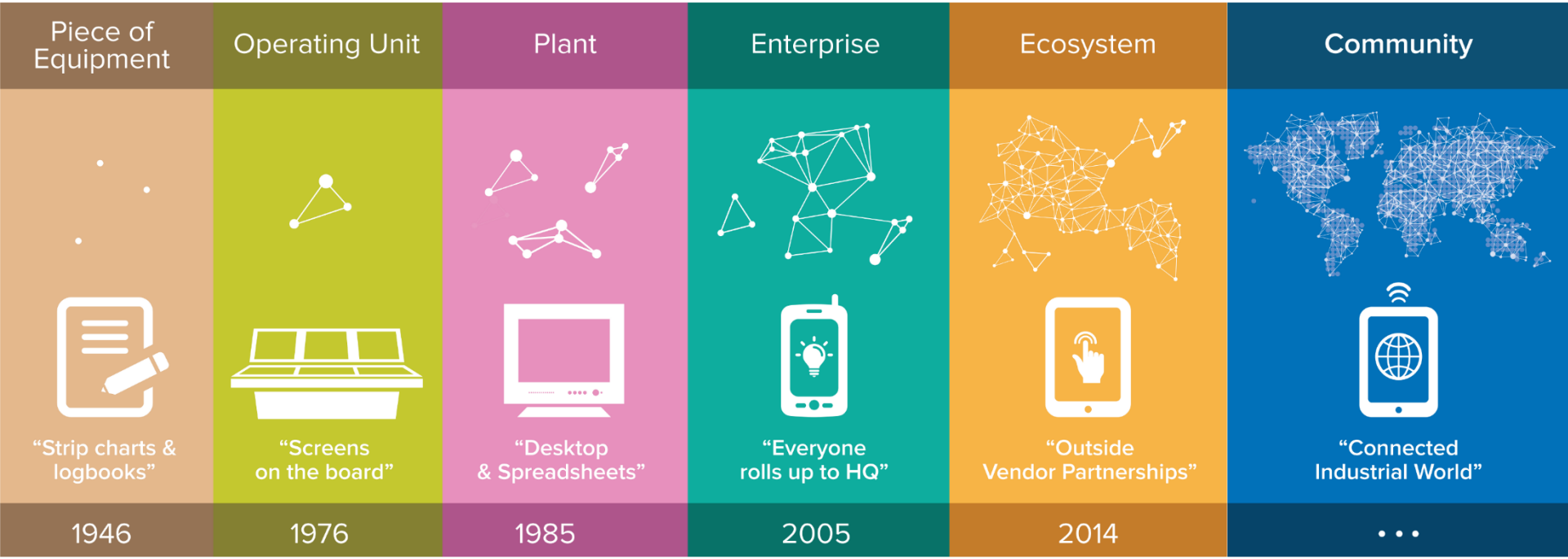


Stadium Power Submetering



© Copyright 2016 OSIsoft, LLC

Evolution of Information Accessibility and Connectivity



© Copyright 2016 OSIsoft, LLC

Example of Community data sharing with the Padres

PetCo Field shares real-time data with their energy supplier, tenants and patrons

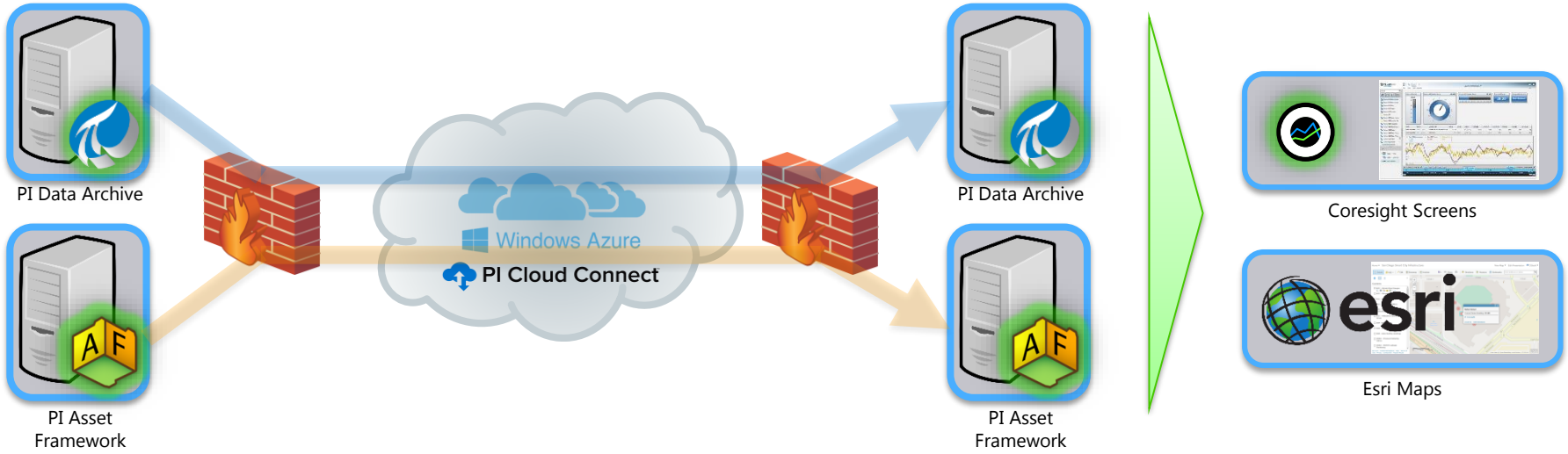
SAN DIEGO PADRES BASEBALL CLUB

SDGE

A Sempra Energy utility®

© Copyright 2016 OSIsoft, LLC

SDG&E EOC Data Sharing



On-Premises PI System Infrastructure (Petco Datacenter)

OSIsoft Cloud-Based Publisher-Subscriber Data Sharing Service

SDG&E On-Premises PI System (SDG&E Data Center)

SDG&E Emergency Operations Center (EOC)

© Copyright 2016 OSIsoft, LLC

OSIsoft®

San Diego Padres & SDG&E: A Community System Story

Mark Guglielmo, Randy McWilliams,
San Diego Padres
Danny Zaragoza, SDG&E

San Diego Padres Started their Digital Transformation and so Can You!

The issues they faced and overcome are the same ones that you all face across all your different industries!

Next, learn from OSIsoft and, most importantly, from your peers how you can achieve a digital transformation!

© Copyright 2016 OSIsoft, LLC

Looking for some coaching? Workshops to fit your needs

PI Discovery Workshop

Learn → Educate → Explore

PI Innovation Workshop

Enable → Execute

Contact your account manager for details

On-site workshops (up to 3 days), targeted at your business use case(s) with your experts and ours, and using your data and your PI System.

© Copyright 2016 OSIsoft, LLC

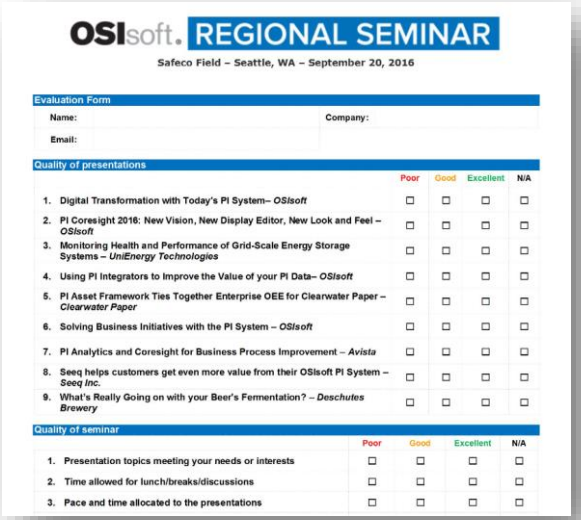
Questions

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

State your
name & company

Please remember to…

Complete the Survey
for this session



OSIsoft. REGIONAL SEMINAR

Safeco Field – Seattle, WA – September 20, 2016

Evaluation Form

Name: Company:

Email:

Quality of presentations

	Poor	Good	Excellent	N/A
1. Digital Transformation with Today's PI System– *OSIsoft*	☐	☐	☐	☐
2. PI Coresight 2016: New Vision, New Display Editor, New Look and Feel – *OSIsoft*	☐	☐	☐	☐
3. Monitoring Health and Performance of Grid-Scale Energy Storage Systems – *UniEnergy Technologies*	☐	☐	☐	☐
4. Using PI Integrators to Improve the Value of your PI Data– *OSIsoft*	☐	☐	☐	☐
5. PI Asset Framework Ties Together Enterprise OEE for Clearwater Paper – *Clearwater Paper*	☐	☐	☐	☐
6. Solving Business Initiatives with the PI System – *OSIsoft*	☐	☐	☐	☐
7. PI Analytics and Coresight for Business Process Improvement – *Avista*	☐	☐	☐	☐
8. Seeq helps customers get even more value from their OSIsoft PI System – *Seeq Inc.*	☐	☐	☐	☐
9. What's Really Going on with your Beer's Fermentation? – *Deschutes Brewery*	☐	☐	☐	☐

Quality of seminar

	Poor	Good	Excellent	N/A
1. Presentation topics meeting your needs or interests	☐	☐	☐	☐
2. Time allowed for lunch/breaks/discussions	☐	☐	☐	☐
3. Pace and time allocated to the presentations	☐	☐	☐	☐

© Copyright 2016 OSIsoft, LLC

Contact Information

LP Page-Morin

lpagemorin@osisoft.com

Sr. Systems Engineer

OSIsoft, LLC

© Copyright 2016 OSIsoft, LLC

Thank You