



OSIsoft®  
**REGIONAL  
SEMINARS** 2012  
The **Power** of **Data**



# Find Opportunities, Gain Insights, Generate Value – what you can do with access to PI System data

Presented by **OSIsoft**

Tom LeBay Product Manager

“Data is your only weapon for improved performance.”

Dr. Don Paul, Vice President CTO, Chevron

# Who Uses the PI System?

- Renewable Energy Dispatch Operator
- Control Room Operator
- Operations Supervisor
- Operations Lead
- Transmission Dispatcher
- System Dispatch
- Pipeline Controller
- Planning/Reliability Engineer
- SCADA Engineer
- Power Operations Engineer
- Automation Engineer
- Project Engineer
- Control Systems Engineer
- Process Engineer
- Process Control Engineer
- Commercial Engineer
- MES/PIMS Engineer
- Technical Service Engineer
- PI System Engineer
- Real Time Systems Engineer
- Instrument and Control Engineer
- Gas Engineer
- Performance Engineer
- Operations Engineer
- Systems Engineer
- Electrical Engineer
- Utility Engineer
- Power Systems Engineer
- Reconciliation Engineer
- Reservoir Engineer
- Reliability Engineer
- Generation Engineer
- Plant Engineer
- Bioprocess Equipment Engineer
- Mechanical Engineer
- Domain Expert Engineering
- EMS Engineer
- Automation MES Engineer
- Process Development Engineer

# More PI System Users

- PI Application Engineer
- Sr. Manager, O&M IT Applications
- IT Manager - Mill Applications
- Refining I.T. Manager
- Data Systems Administrator
- Application Support Analyst
- Manufacturing IT Architect
- Data Systems Analyst
- Director of Application Development
- Tech Support for Operations
- IT Director, Consumer Packaging
- Global PI - Business Solutions Architect
- Process Systems Application Engineer
- IT Business Partner
- Applications Support Lead
- Director, Sustainable IT
- Information Security Engineer
- Product Line Manager
- Control System Supervisor
- System performance manager
- DCS Supervisor
- IT Applications Manager
- Plant Manager
- Maintenance Manager
- Global Production Volumes Manager
- PI System Manager
- Development Manager
- Maintenance Team Leader
- Product Engineering Mgr
- IT Operations Manager
- Managing Director
- Operations Manager
- Business Development Manager
- Central Heating & Cooling Plant Manager
- Global Production Services Manager
- Director, Midstream Operations North
- Director, Smart Network Operations
- IT - Director
- Hydro Generation Supervisor
- Manager, Data Analytics
- Infrastructure Manager
- Manufacturing Process Information Manager
- Program Manager

# And the list goes on...

- Market sales Manager Utilities
- EMS Supervisor
- Asset Management Program
- Mine Superintendent
- Division Manager
- Business Development Manager
- Supply Operations Supt.
- Program Manager, Pipeline & Power Industrial Control & Operating Environment
- Supervisor, EMS SCADA Systems
- Mgr, Plant I.T.
- Manager, Process Control & EIT Program, XPS
- Plant Optimization & NERC CIP Compliance Manager
- Process Controls Software Manager
- Director of Platform Product Management
- Electrical & Control Systems Manager
- Business Relationship Manager
- Control Syst. Suprv.
- Technical Services Supervisor
- Scada & Process Control Supervisor
- Maintenance Supervisor Process control/IT
- Financial Systems Analyst
- Reliability Analyst
- Principal Operations Systems Analyst
- Business Systems Analyst
- Senior Sustainability Advisor
- Business Analyst
- Energy Systems Analyst
- Performance Analysis
- Real-Time Analyst
- Senior Sourcing Analyst
- Analyst Industrial IT
- IT Analyst
- Energy Analyst
- Engineering Analyst
- Wind Resource Data Analyst
- Hydro Analyst
- Quality Analyst
- EMS Analyst
- Process Systems Analyst
- Mill Application Analyst
- Process Computing Analyst
- Operations Analyst

# Typical Users of the PI System

- Operators
- Supervisors
- Process Engineers
- Maintenance

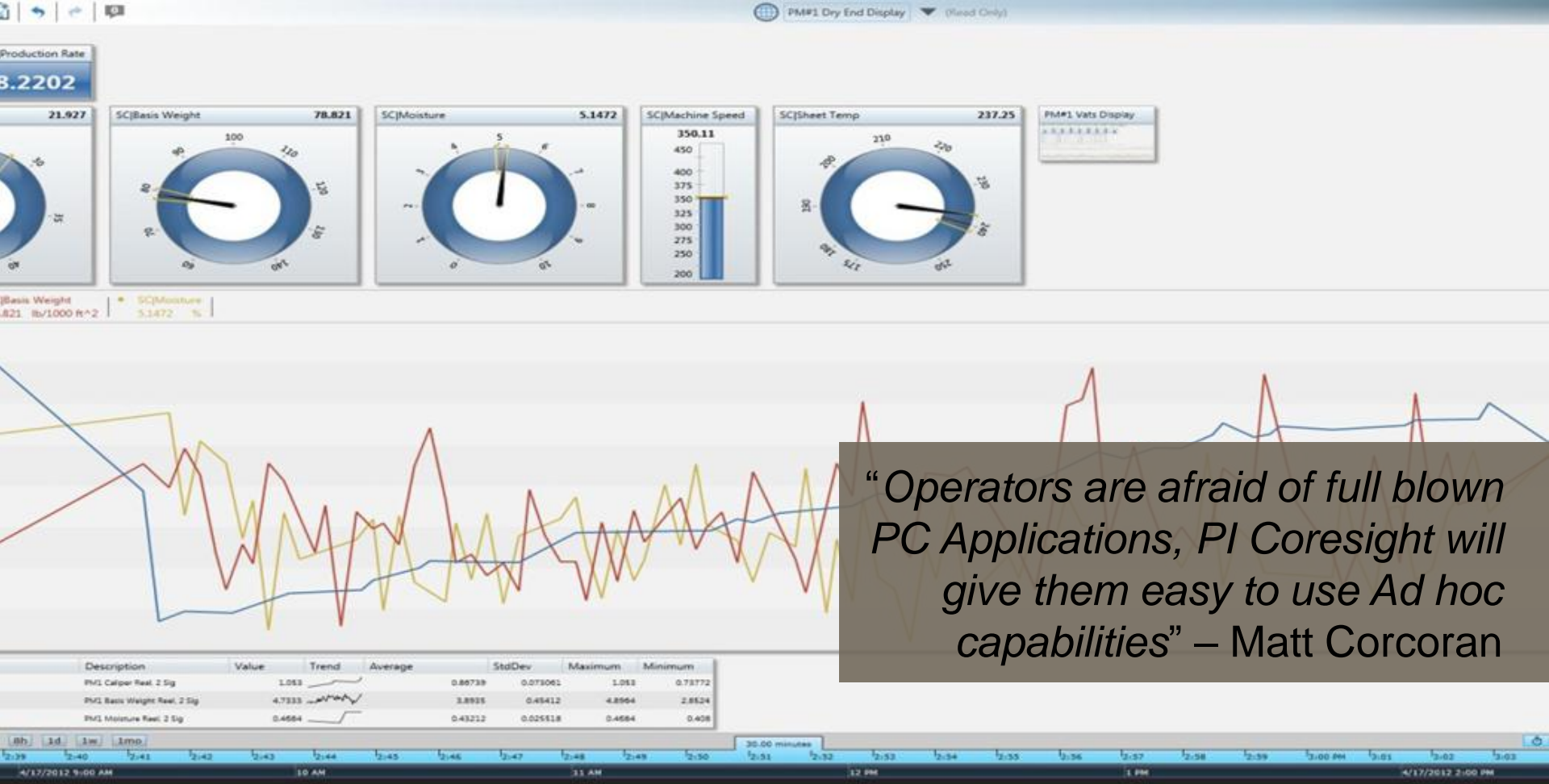
# How Does PI System Data Help?

- Provide current status outside of control room
- Allow Situational Awareness for quick decision-making
- Support troubleshooting operations problems
- Measure effectiveness over time
- Compare performance
- Monitor equipment health
- Measure quality



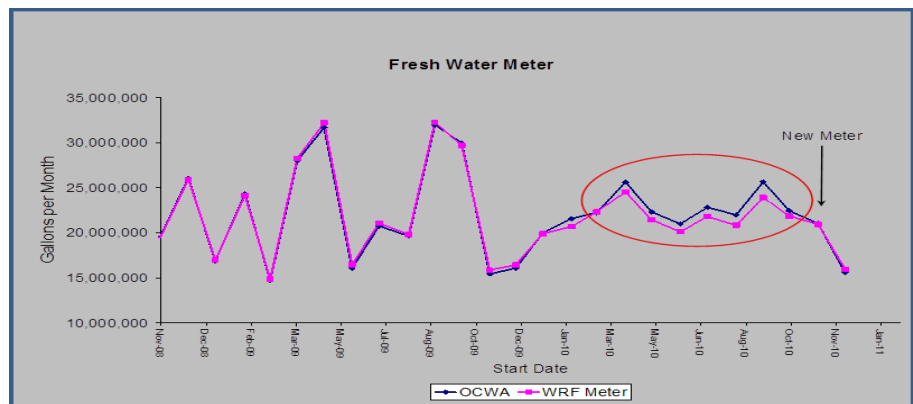
# RockTenn

- Needed to bring Users together
  - Interesting use cases emerging from mills
  - Corporate provided some ideas but Mills were interested in developing their own
- PI System Power User Group
  - Build cross Mill relationships
  - Promote idea sharing
  - Friendly competition promotes learning and initiative



*“Operators are afraid of full blown PC Applications, PI Coresight will give them easy to use Ad hoc capabilities” – Matt Corcoran*

# RockTenn Water Bill in Excel



- Real time water usage stored in the PI System and analyzed in Excel using PI DataLink
- Found a faulty water meter installed by Utility company
- Overcharging for Effluent treatment due to a build up on the Effluent meter

# Glatfelter Paper Lab Technician

- Contest where multiple unique user-created projects were aimed at making the job easier, improving product quality, tracking costs and saving money
- Wants to see status of operations without leaving the lab
- Built his own display that checks additives and other key properties

# #7 Paper Machine Overview

ABB Head Position: 232 inches

Grade Code:   
 BW:   
 Deckle: 171.86 "   
 Wire Speed: 2083 FPM   
 Reel Speed: 2155 FPM   
 Moisture: %   
 ASH: %



Sheet Status



Sizing   
 Starch: GPM   
 Water: GPM   
 Clay / Starch:   
 Oil flow: GPM



Broke Chest #1: 7.67 FT   
 Broke Chest #2: -0 FT



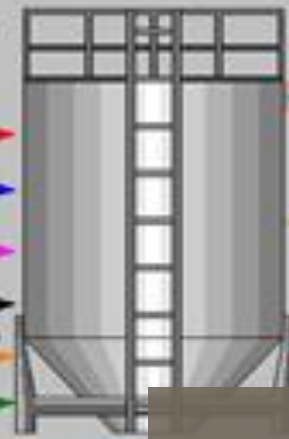
Couch Vac: In Hg   
 Stock Flow: GPM



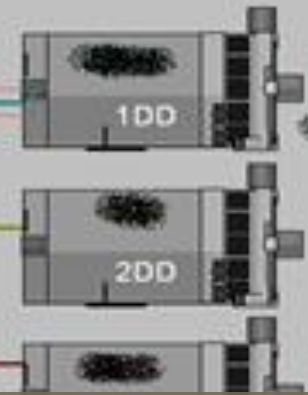
Main: PSI   
 A/S: PSI



Flow	Usage #/Ton
ASA GPM	
Polymer GPM	
Cato GPM	
GW GPM	
TiO2 GPM	
Clay GPM	



Broke Cons: %   
 Short Cons: %   
 Pine Cons: %   
 T.S. Cons: 4 %   
 Couch Cons: 3 %



Short GPM   
 2DD -4 GPM   
 Pine

## Paper Machine Overview Glatfelter

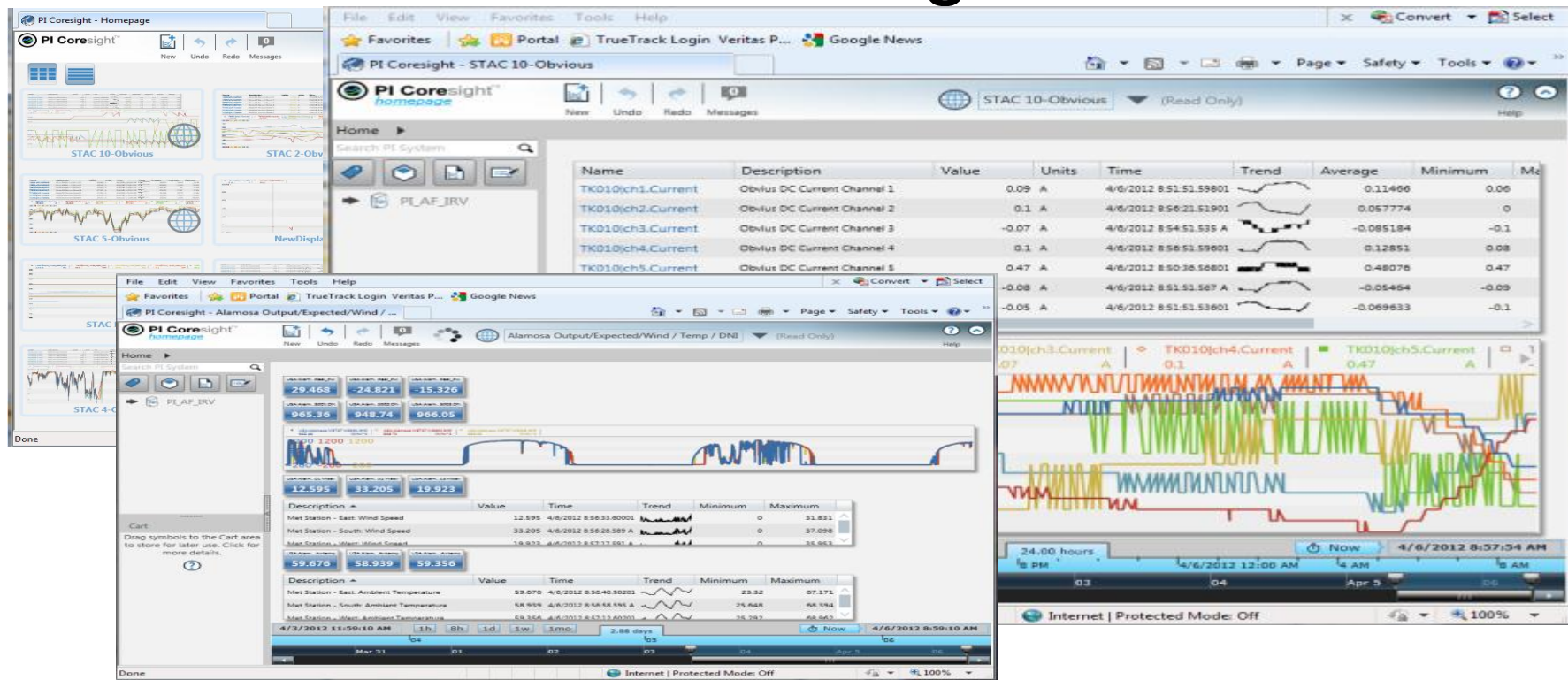
Coated Broke flow: GPM   
 Uncoated broke flow: GPM



# Amonix Remote Asset Monitoring

- Needed to monitor performance of remote equipment, starting with nothing
- Wanted an easy, low cost data system
  - Low Cost of maintenance
  - Easy to maintain from Remote (unmanned) locations
  - Full end-to-end system

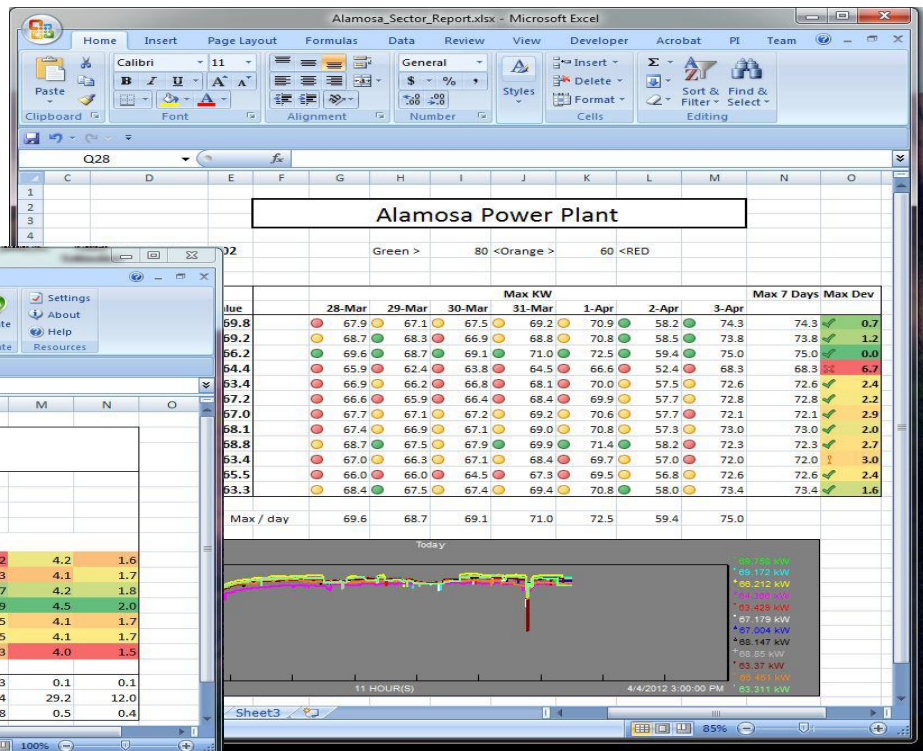
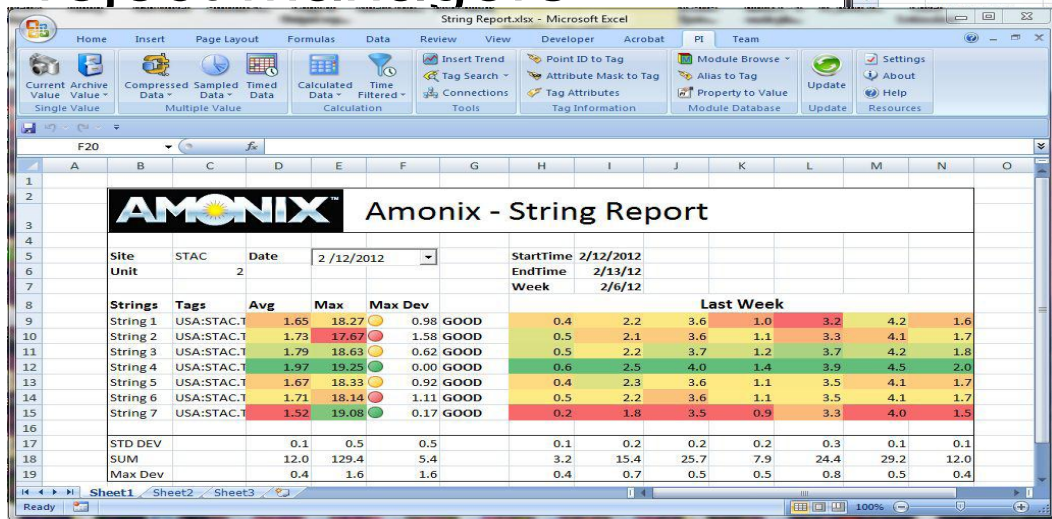
# Amonix Field monitoring





# Amonix Standard Reporting

- Engineers
- Project Managers





# Amonix Expertise

- New to the PI System
- No formal training
- Made use of YouTube learning channel

# Other Audiences for PI Data

- Executives
  - CFO
  - CEO
  - President
  - Chief Sustainability Officer
  - Vice President
  - Director
  - Chief Technical Officer
  - VP Field Operations
  - VP, Marketing
  - CIO Manufacturing
  - Vice President Product Development
  - Vice President of Sales
  - Chairman
  - VP of Operations and COO
  - Board Member
  - Vice President of Technical Services
  - Vice President Global Sales and Marketing
  - Vice President of Engineering
  - Vice President, Marketing
  - Vice President Condition Monitoring
  - Vice President Corporate Communications
  - Vice President of Marketing & Business Dev.
  - Vice President Predictive Equipment Health Management
  - Vice President Program Management
  - Vice President - Global Strategies and Solutions
  - Vice President, Operations and Business Development
  - Executive in Information Management for Production Operation
- Business Analysts
- Customers
- Public
- Contractors
- Vendors

# Some Atypical Uses of the PI System

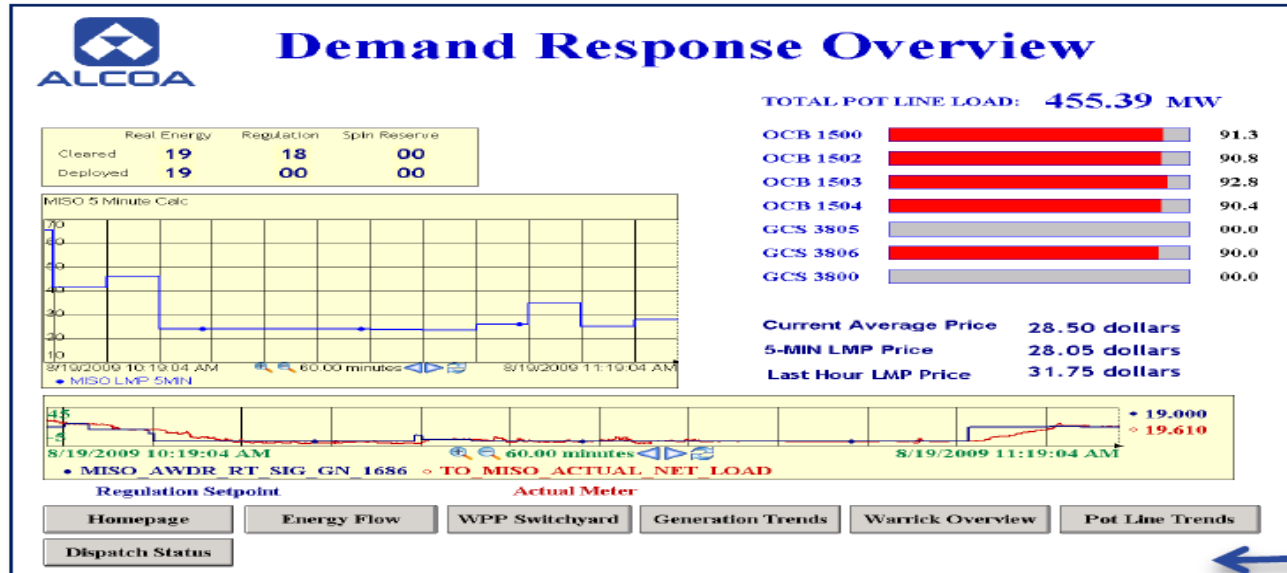
- Feeding into cost/profit - Alcoa Demand Response
- Sustainability initiatives – Seattle Mariners facility management
- Reducing energy use across businesses in Vermont – IBM
- Monitoring a computing infrastructure – Weill Cornell

# Alcoa Power Markets Coordinator

- Wanted to balance plant power needs against ability to generate revenue from local ISO
- Must coordinate both demand and capability
- Needs real time data to work

# Alcoa Demand Response Data

## Warrick Demand Response



Real Time  
Data

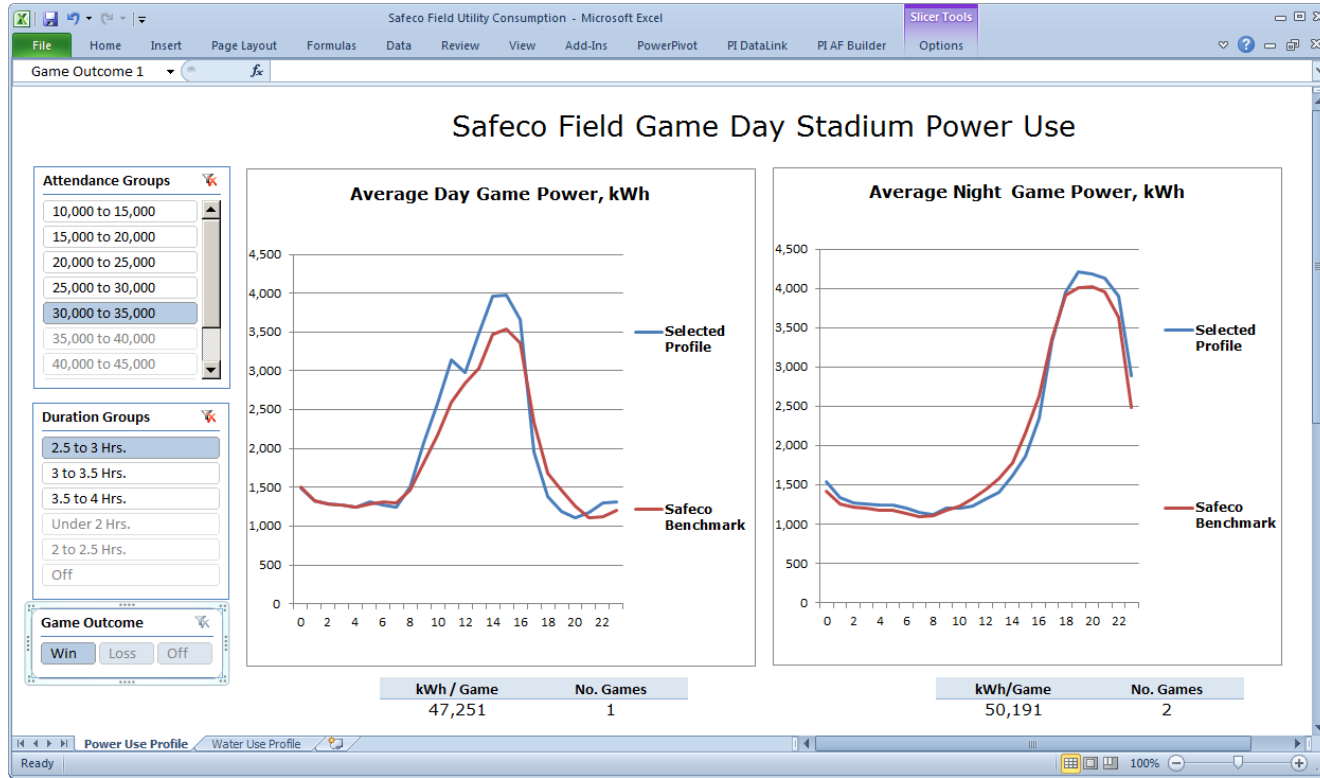
Customer  
Driven

Hyperlinks

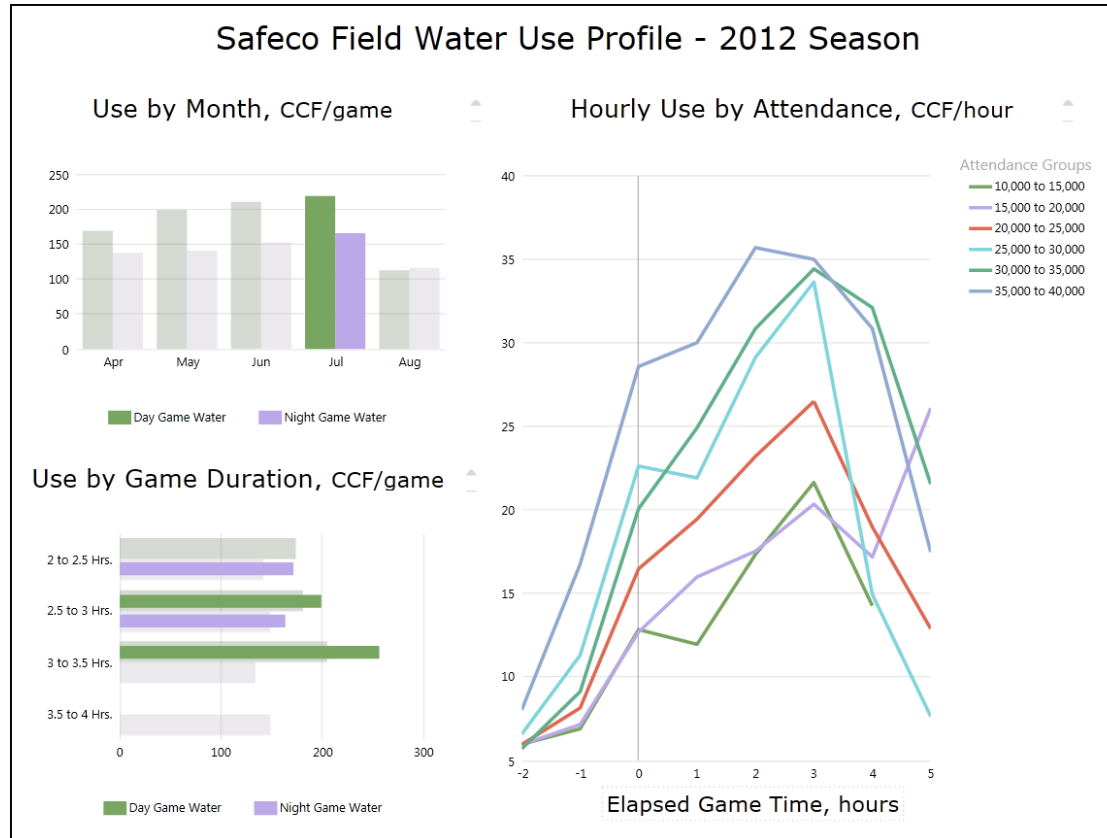
# Facility Operations

- Vice President of Ballpark Operations
- Wanted to reduce the amount of waste (recycling) and utility use (power, water)
- Data and competition (with other similar facilities) driving change
- PI System data shows him when the roof is opened, when there is a lot of kitchen exhaust, the difference made by changing parking garage lighting...

# Stadium Sustainability



# Stadium Sustainability





# Ballpark Operations

- Making data available to Engineers, Security, and Control Room Operators allows them to gauge current performance
- Seeing results drives process improvement
- Must be easy to get to
- Seeing performance data allows them to adjust operations to improve over time

# Facility Monitoring

## Utility Dashboard

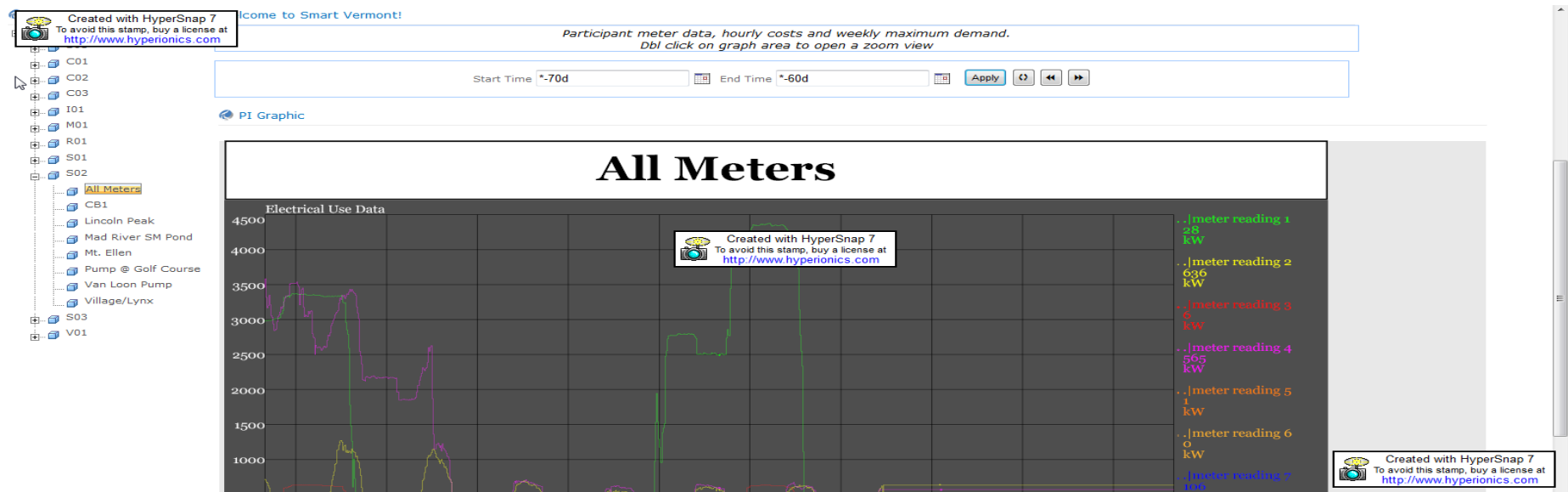
- Real time information
- Automated event reports
- Share and compare with MLB



# Vermont Businesses

- Collaboration among businesses in Vermont to reduce power use
- Part of smart grid initiative
- Sharing data across business entities
- Data viewed by business analysts, facility operators and administrators to affect usage patterns by reducing system demands, improving efficiency and providing a financial return
- Sharing best practices within a community

# Business Collaboration



# Weill Cornell Medical College

- High power computers used for research
- Needed to monitor and publish availability
- Wanted to conserve power used by compute clusters



OF  
PHYSIOLOGY  
AND  
BIOPHYSICS

**Public kiosk showing  
computing status**



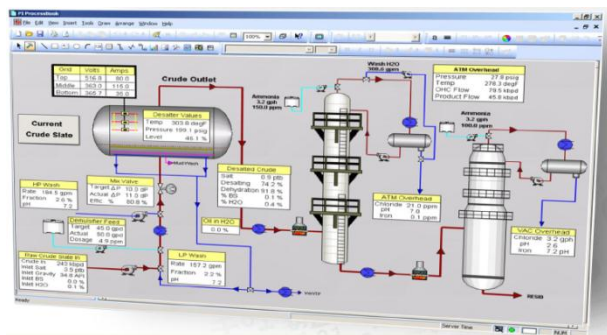
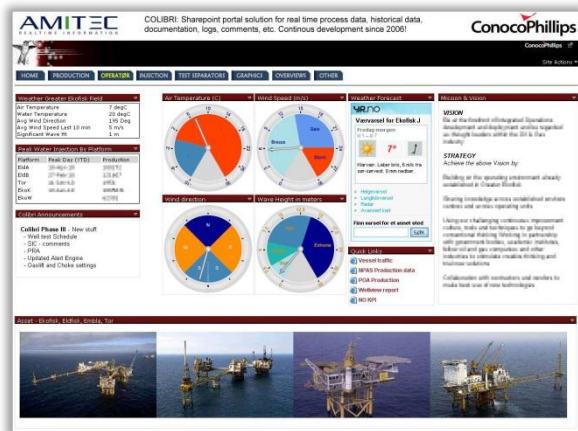
Many more  
stories on  
the OSIsoft  
web site

# Providing Data for Your Users

- Some users need data they can work with to investigate
- Some users need to see previous data
- Some users just need to see current data



# Pick the Tool that Best Suits



Boxboard Stock Prep -- Extraction Plate, Rotor & Screen Basket Run Days					
Equipment	Target Days	Actual Days	Last Change Date	Comment	Next Change Assuming Continuous Operation
1 Filter Pulper Extraction Plate Time	270	421/2010	Date updated by Jbraha		1/20/2011
2 Filter Pulper Rotor Time	270	421/2010	Date updated by Jbraha		1/20/2011
3 Turbo Extraction Plate Time	135	1/7/2011	Holes in extraction plate, shut down to change		5/22/2011
4 Turbo Rotor Time	135	1/7/2011	Date updated by Jbraha		5/22/2011
5 Filter North Primary Screen Basket Time	360	2/24/2010	Date updated by Jbraha		1/20/2012
6 Filter South Primary Screen Basket Time	360	1/6/2011	Date updated by Jbraha		1/20/2012
7 Filter Tertiary Screen Basket Time	360	8/25/2010	Date updated by Jbraha		7/21/2011
8 Filter Pulper Extraction Plate Time	270	11/3/2010	Date updated by Jbraha		8/6/2011
9 Filter Pulper Rotor Time	270	11/3/2010	Date updated by Jbraha		10/6/2011
10 Filter Secondary Screen Basket Time	360	10/6/2010	Date updated by Jbraha		10/6/2011
11 Filter Primary Screen Basket Time	360	7/20/2010	Date updated by Jbraha		7/20/2011
12 Filter Tertiary Screen Basket Time	360	4/26/2010	Date updated by Jbraha		4/26/2011
13 Filter Secondary Screen Basket Time	360	3/10/2010	Date updated by Jbraha		3/10/2011
14 Filter Primary Screen Basket Time	360	10/26/2010	Date updated by Jbraha		5/4/2011
15 Filter Tertiary Screen Basket Time	360	10/26/2010	Date updated by Jbraha		5/4/2011

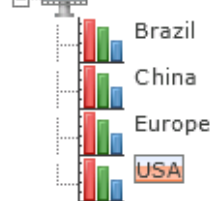
# PI WebParts

- You have a SharePoint environment and want to make use of its support by IT
- Your users need to see a collection of information from different sources, including the PI System
- Your users don't want to build new displays
- You want to provide navigation that guides different audiences to the content they need

## Report Type

## Region

### Country View



## PI TimeRange

Start Time \*-2h

End Time \*

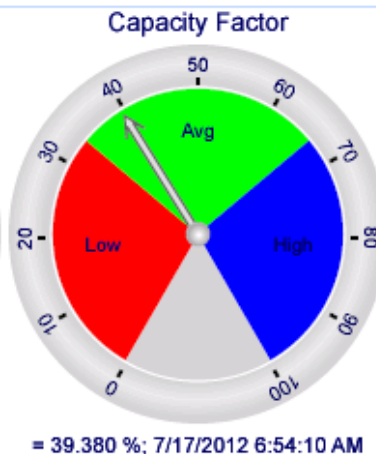
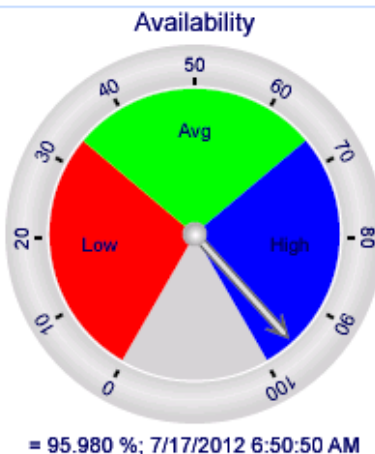
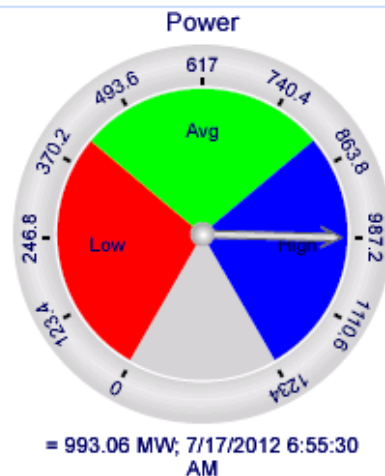
Apply

↺

⏮

⏭

## Real Time KPIs



## Economical Data



### Dataset

Energy Price per MWh  
Daily Revenue  
Running Turbines  
Yearly Revenue

### Time

7/17/2012 6:58:00 AM  
7/17/2012 6:50:10 AM  
7/17/2012 6:51:00 AM  
7/17/2012 6:50:20 AM

### Value

769 USD  
0.15746 MUS\$  
789 Unit(s)  
396.16 MUS\$

# PI WebParts dashboard

# PI Coresight

- Your users need to explore data quickly or look at quick displays built by others
- Your users don't want to install anything
- You have no SharePoint environment



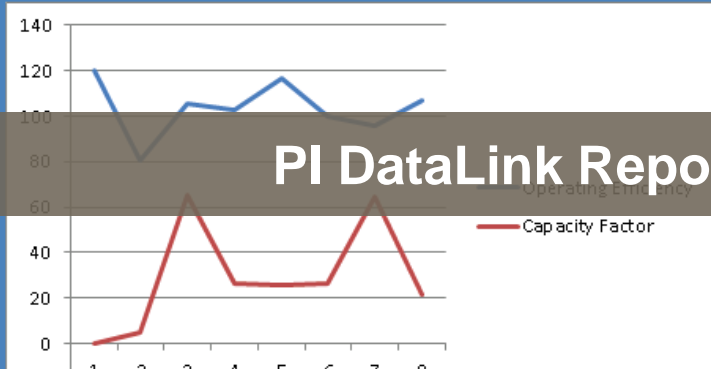
PLEASE  
PAUSE  
FOR  
DEMO

# PI DataLink

- Your users expect to work with numbers
- Your users want to build their own reports
- Your users are comfortable with Excel
- Your users want Excel charts

	A	B	C	D	E	F	G	H	I
1	<b>Grand Ridge Wind Farm</b>								
2	Black Wolf Wind Farm	56.7	%						
3	Deep Valley Wind Farm								
4	Eldorado Wind Farm								
5	Grand Ridge Wind Farm	2488.19	\$						
6	White Bear Wind Farm	212696.12	\$						
7	Wild River Wind Farm								
8	Windy Valley Wind Farm								
9	Yellow Creek Wind Farm								
10	Installed Capacity:	9000	kW						
11	Instant Power:	858	kW						
12									
13	Exp.Capacity Factor:	38	kW						
14	Actual Factor:	9.53	kW						
15									
16	MTD Generation:	399804.73	kWh						
17	Daily Generation:	4677.04	kWh						
18									
19									
20									
21									
22									
23									
24									
25									

Unit Summary				
Turbines In Production	Faulted	Average		
6	0	56.7		
Current	Previous Month	YTD	Plan	
Average Capacity Factor (%)	9.1	34.0	240.0	38.0
Average Generation (MWh)	399804.7	2.2	9.2	29.4
Operating Efficiency (%)	114.2	102.8	105.1	98.0
Number of Employees	4	5	N/A	7
Regulation Non-Compliance	1	1	2	2

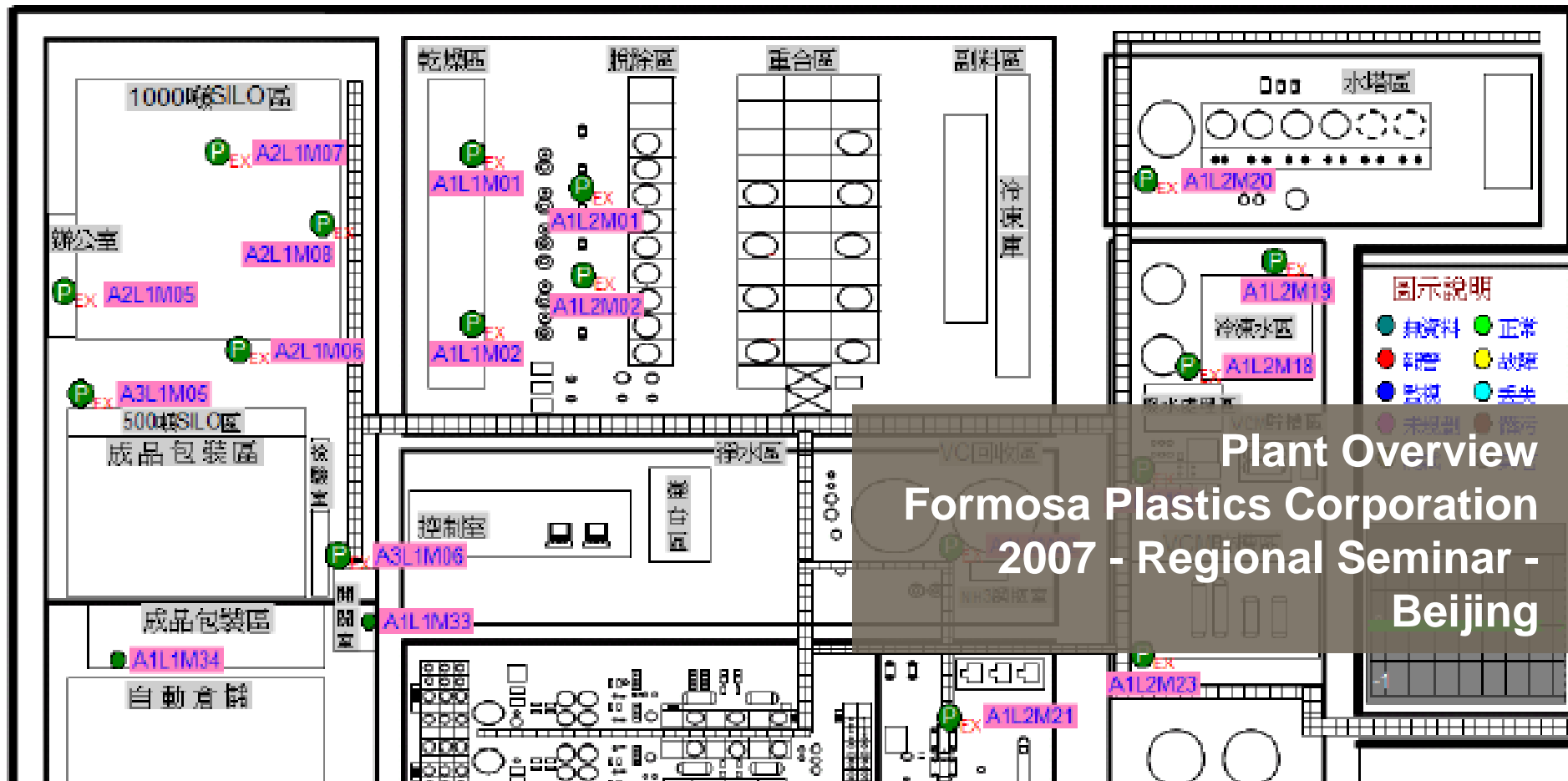


# PI ProcessBook

- Your users want to build their own graphical displays
- Or
  - You have a group that builds displays for others
- Your users need to monitor how the process is progressing
- Your users need customized behavior or layout







## Plant Overview Formosa Plastics Corporation 2007 - Regional Seminar - Beijing

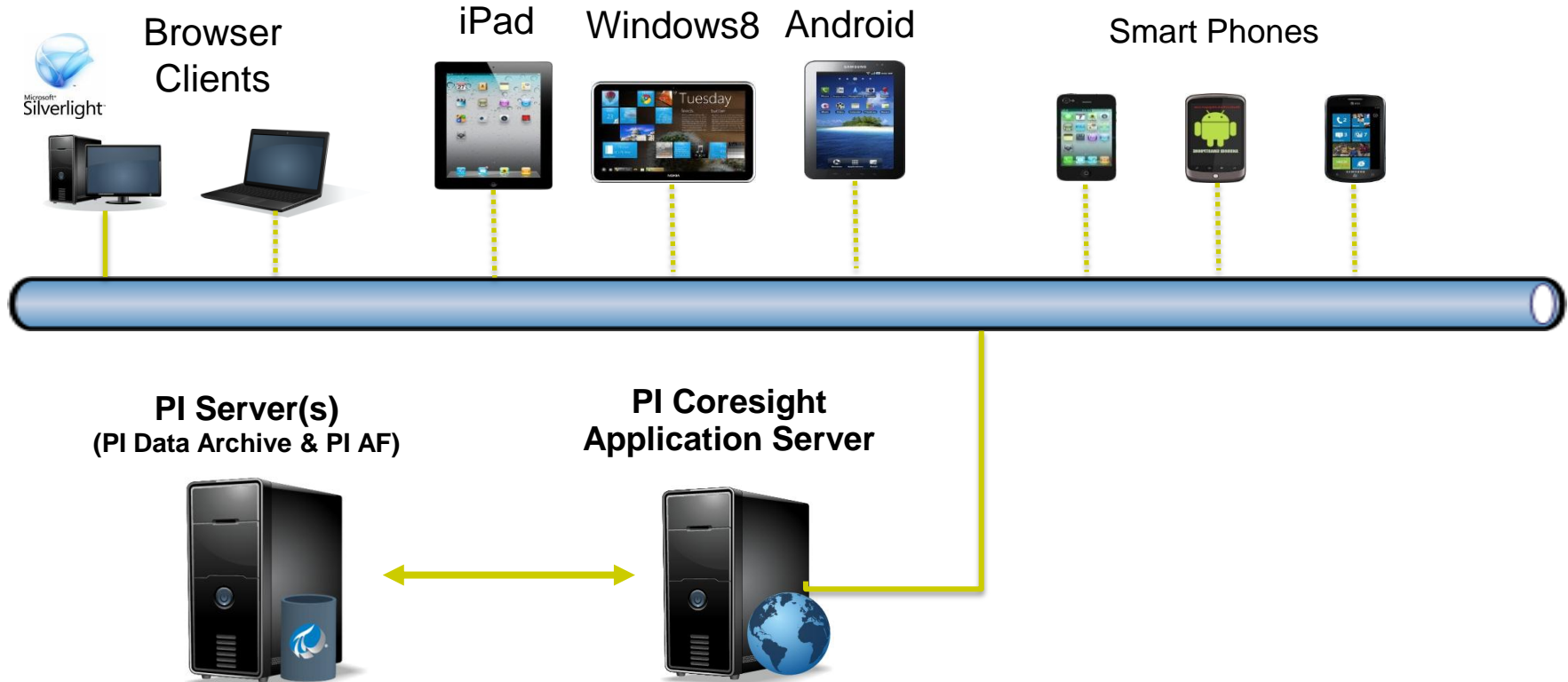


**What's Next?**

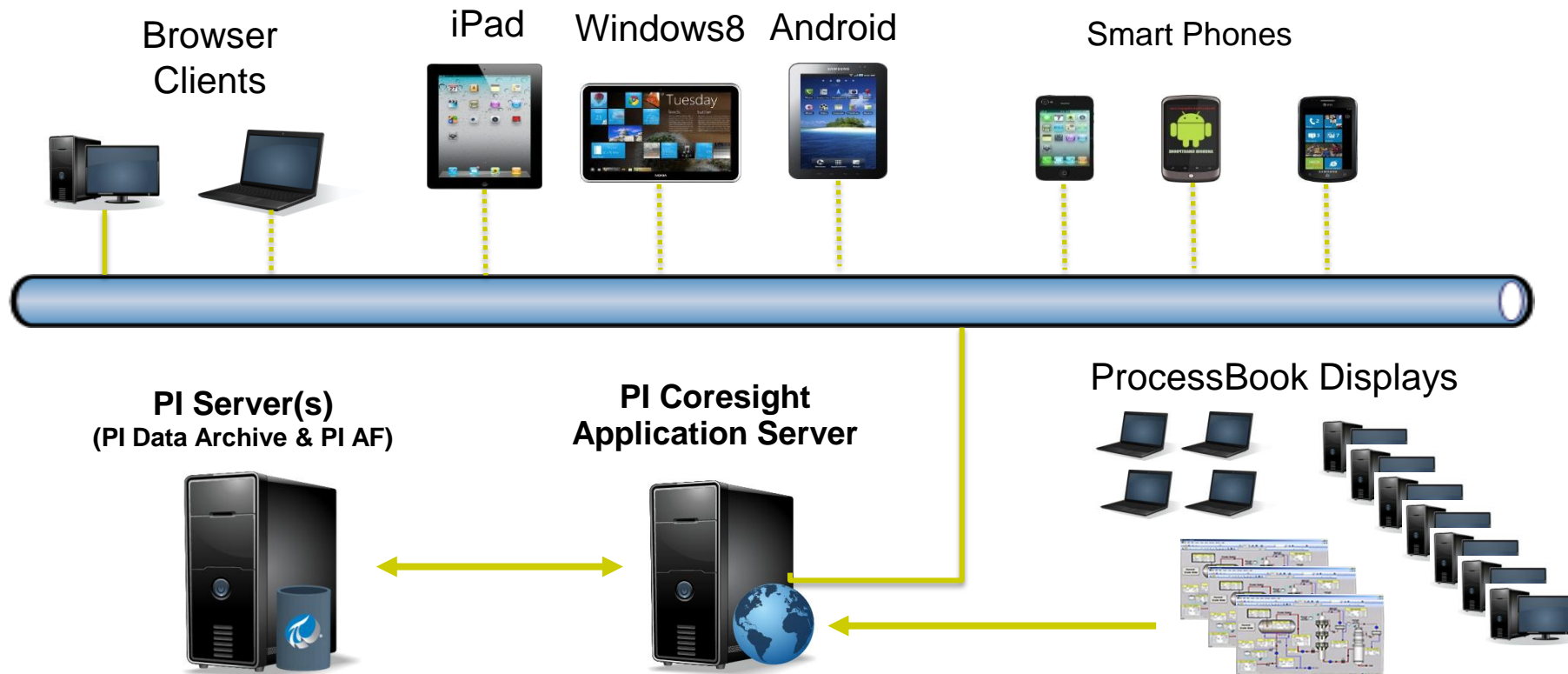
# PI System Data Everywhere

- Cloud options for sharing data
- Support for PI System displays on a variety of devices

# PI Coresight with Mobile Clients



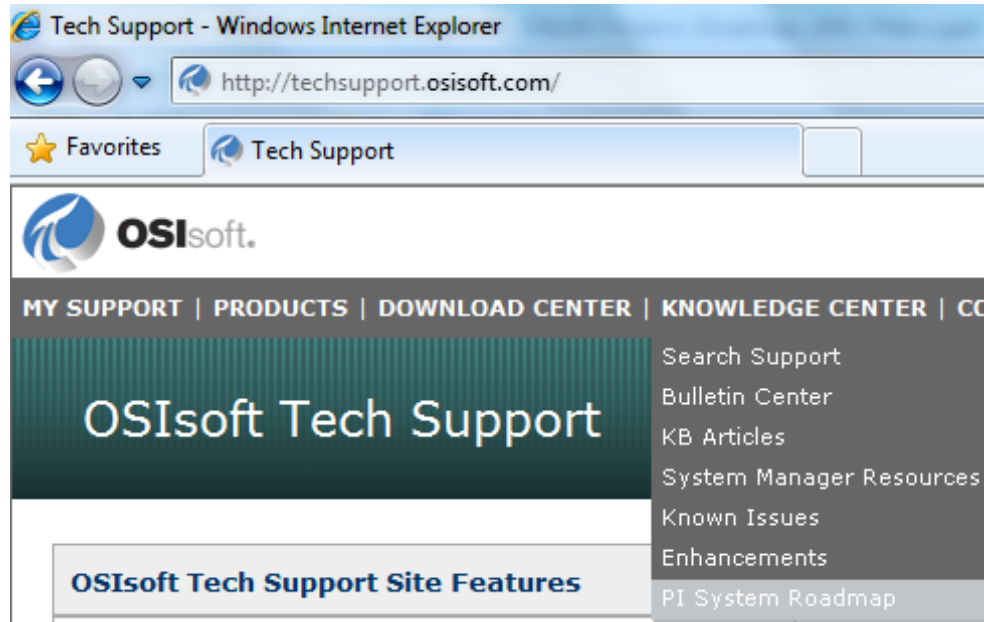
# PI Coresight – ProcessBook Display Viewer



# Stay Up-To-Date on the Web

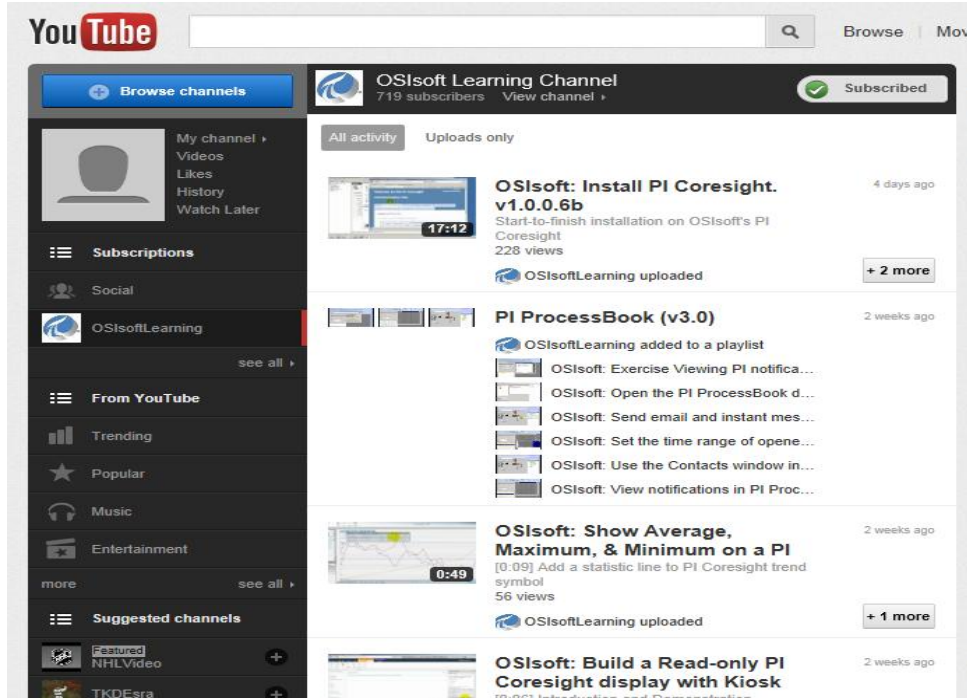
- PI System Roadmap on OSIsoft Technical Support Site

<http://techsupport.osisoft.com/techsupport/NonTemplates/roadmap.aspx>





# OSIssoft Learning Channel on YouTube



The screenshot shows the YouTube channel page for "OSIssoft Learning Channel". The channel has 719 subscribers and is marked as "Subscribed". The main content area displays a list of videos under the "Uploads only" tab. The first video is "OSIssoft: Install PI Coresight. v1.0.0.6b", which is 17:42 long and has 228 views. Below it is a video titled "PI ProcessBook (v3.0)" with a duration of 0:49 and 56 views. The third video is "OSIssoft: Show Average, Maximum, & Minimum on a PI" with a duration of 0:09 and 56 views. The fourth video is "OSIssoft: Build a Read-only PI Coresight display with Kiosk" with a duration of 0:03. The left sidebar shows the channel's navigation menu, including "Subscriptions", "Social", "From YouTube", "Trending", "Popular", "Music", "Entertainment", and "Suggested channels".



On-Demand Learning at  
Your Fingertips



Watch us on  
YouTube



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- Director, Midstream Operations North
- Director, Smart Network Operations
- IT - Director
- Hydro Generation Supervisor
- Manager, Data Analytics
- Infrastructure Manager
- Manufacturing Process Information Manager
- Program Manager
- Executives**
  - CEO
  - CFO
  - President
  - Chief Sustainability Officer
  - Vice President
  - Chairman
  - Chief Technical Officer
  - VP Plant Operations
  - VP Marketing
  - COO Manufacturing
  - Vice President Product Development
  - Vice President of Sales
  - Chairman
  - VP of Operations and COO
  - Board Member
  - Vice President of Technical Services
  - Vice President Chief Sales and Marketing
  - Vice President of Engineering
  - Vice President, Marketing
  - Vice President Contract Marketing
  - Vice President Corporate Communications
  - Vice President of Marketing & Business Dev.
  - Vice President Facilities Equipment Health Management
  - Vice President Program Management
  - Vice President - Global Strategy and Solutions
  - Vice President, Operations and Business Development
  - Executive in Information Management for Production Operation
- Business Analysts
- Customers
- Public
- Contractors
- Vendors



# THANK YOU

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