OSIsoft® UC 2010

Real Time Information — Currency of the New Decade

Hilton San Francisco Union Square | San Francisco, CA

April 26-28, 2010

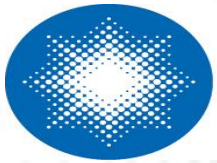
How Constellation Uses Technology in Power Gen.

Constellation Energy :
Power Generation Group

Chul Kim (MCITP)– Technical Lead
PI Administrator
Sentinel Administrator

Agenda

- Introduction
- Technology Overview
- PM&D Process
- Benefits



Constellation Energy®

ABOUT Constellation Energy

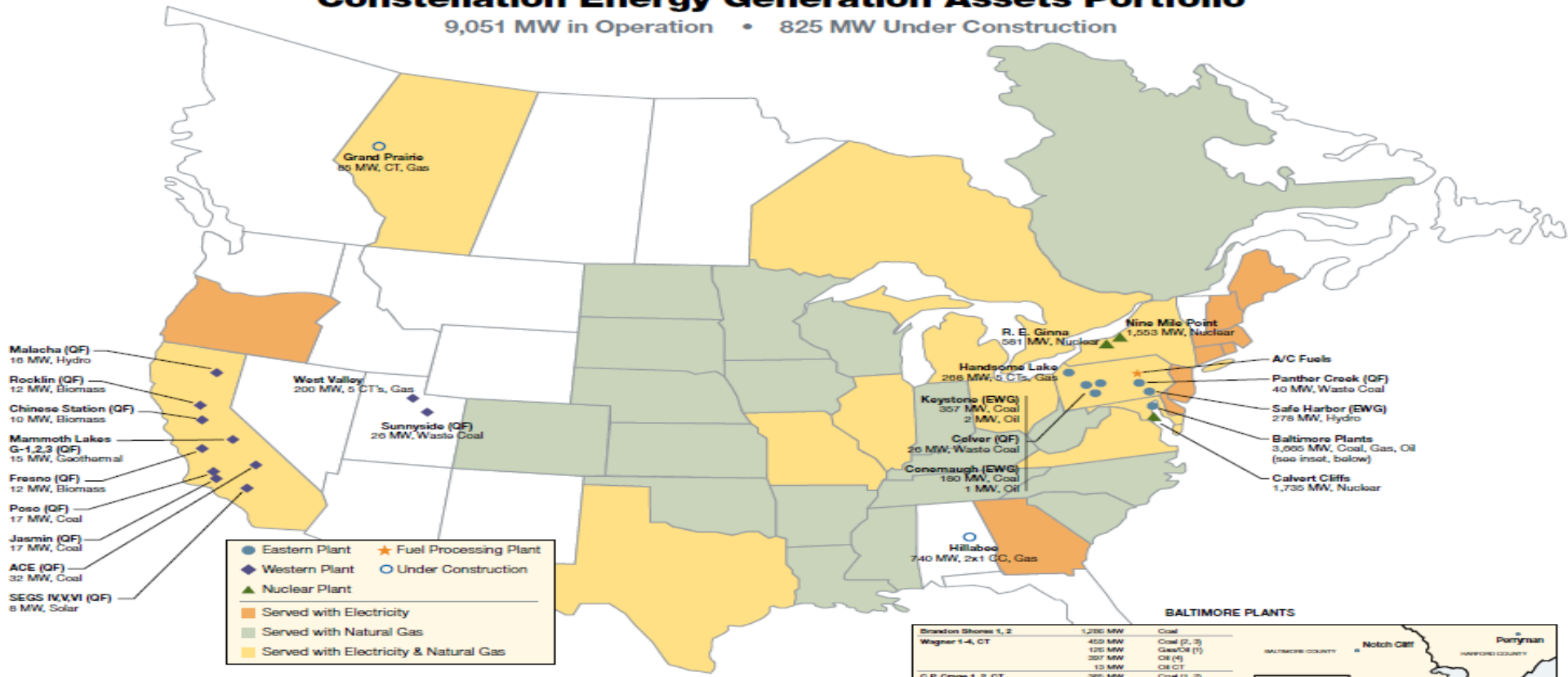
- Power Generation
- Coal, Natural Gas, Renewables (Wind), Nuclear
- All over the country
- Just purchased 2 Gas plants in Texas
- Recently started Wind farm project in northwest Maryland

Constellation Energy®

Criterion Wind Farm

Constellation Energy Generation Assets Portfolio

9,051 MW in Operation • 825 MW Under Construction



BALTIMORE PLANTS

Brandon Shores 1, 2	1,286 MW	Coal
Wagner 1-4, CT	459 MW	Coal (2, 3)
	125 MW	Gas/Oil (1)
	397 MW	Oil (4)
	13 MW	Oil CT
C.P. Crane 1, 2, CT	385 MW	Coal (1, 2)
	14 MW	Oil CT
Riverside 4, 6, 7, 8	74 MW	Gas Steam (4)
	115 MW	Gas/Oil CT (6)
	39 MW	Oil CT (7, 8)
Westport 5	121 MW	Gas CT
Gould Street	97 MW	Gas
Philadelphia Road 1-4	64 MW	Oil CT
Notch Cliff 1-6	120 MW	Gas CT
Perryman 1-4, 51	206 MW	Oil CT (1-4)
	149 MW	Gas/Oil CT (51)

Constellation Energy®

Updated October 2008 by the Constellation Energy Commercial Analysis Group
Please contact Print & Digital Media Services at http://myconstellation/portal/site/pdms for copies of this map.

Business Challenges

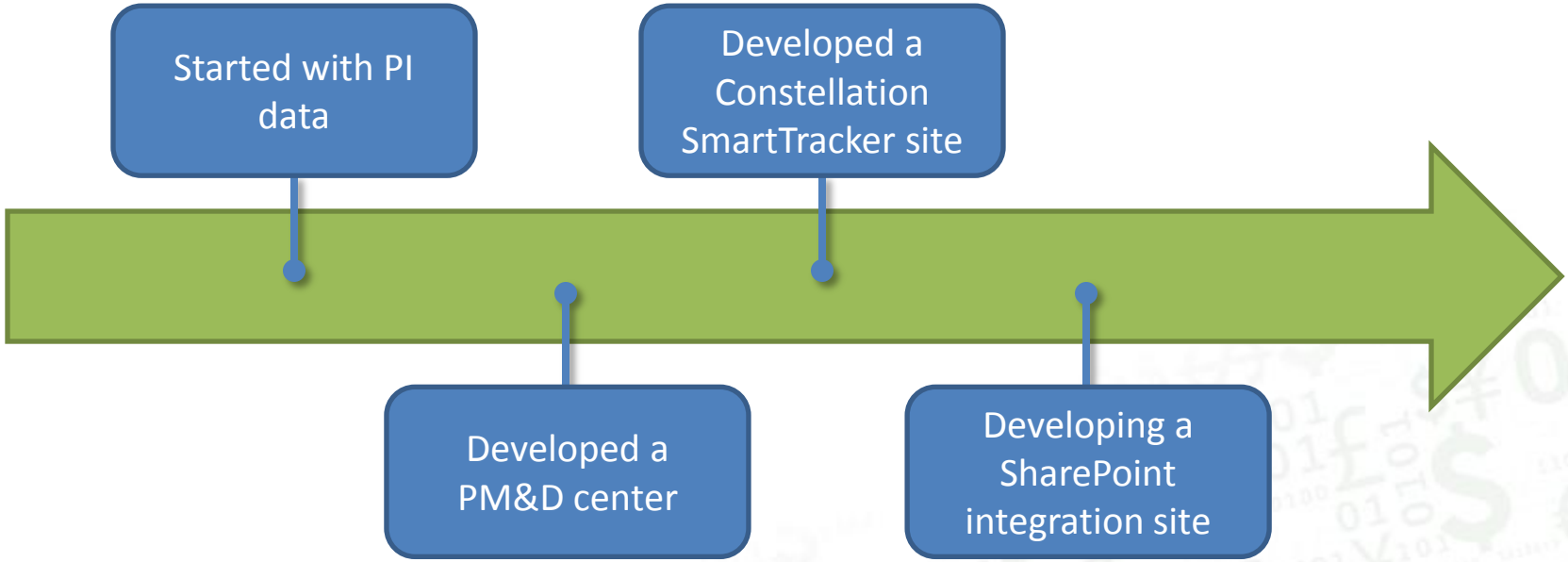
How do we determine whether certain asset conditions are normal what is out of expected ranges?

If we do see anomalies: Is it critical? Seasonal? Testing?

Human element – will the plant engineers comply with PM&D analysts? How do they Collaborate?

How do we prevent extensive false alarms?

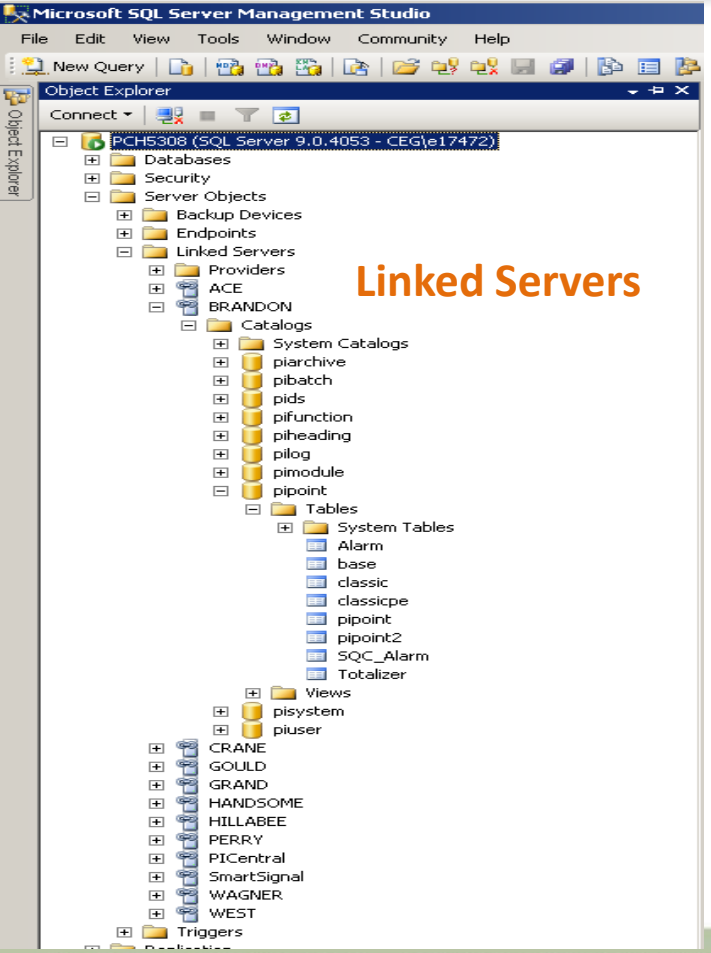
Technology Progression



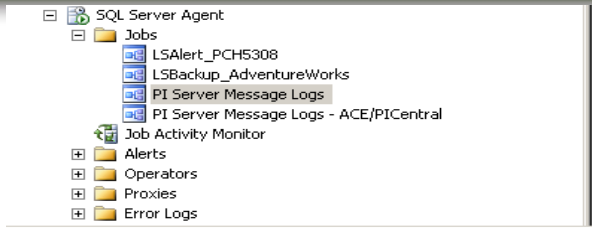
Our Source For Data and Diagnosis

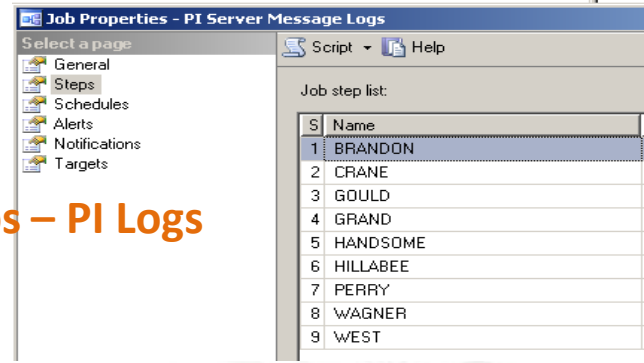
OSIsoft

PI Daily Admin



Linked Servers





Daily Scheduled Jobs – PI Logs

Sql Server – PI OLEDB allows powerful data manipulation abilities

PI Admin

Emails

	Kim, Chul S	Perry Message Log	Wed 4/21/2010 9:01 AM	6 KB
	Kim, Chul S	Hillabee Message Log	Wed 4/21/2010 9:01 AM	4 KB
	Kim, Chul S	Handsome Message Log	Wed 4/21/2010 9:01 AM	5 KB
	Kim, Chul S	PICentral Message Log	Wed 4/21/2010 9:01 AM	6 KB
	Kim, Chul S	ACE Message Log	Wed 4/21/2010 9:00 AM	51 KB
	Kim, Chul S	Gould Message Log	Wed 4/21/2010 9:00 AM	9 KB

Message delivered in Table format through SQL Server XML

To: Kim, Chul S; Lorber, Bart J
Cc:
Subject: Perry Message Log

Perry PI Server Error Log

Date and Time	Error Message
Apr 20 2010 6:28PM	Postevent failed: [-109] Value at This Time Already Exists Point ID: 1920, User ID: 7, mode: noreplace Event time: 20-
Apr 20 2010 6:28PM	Postevent failed: [-109] Value at This Time Already Exists Point ID: 1921, User ID: 7, mode: noreplace Event time: 20-

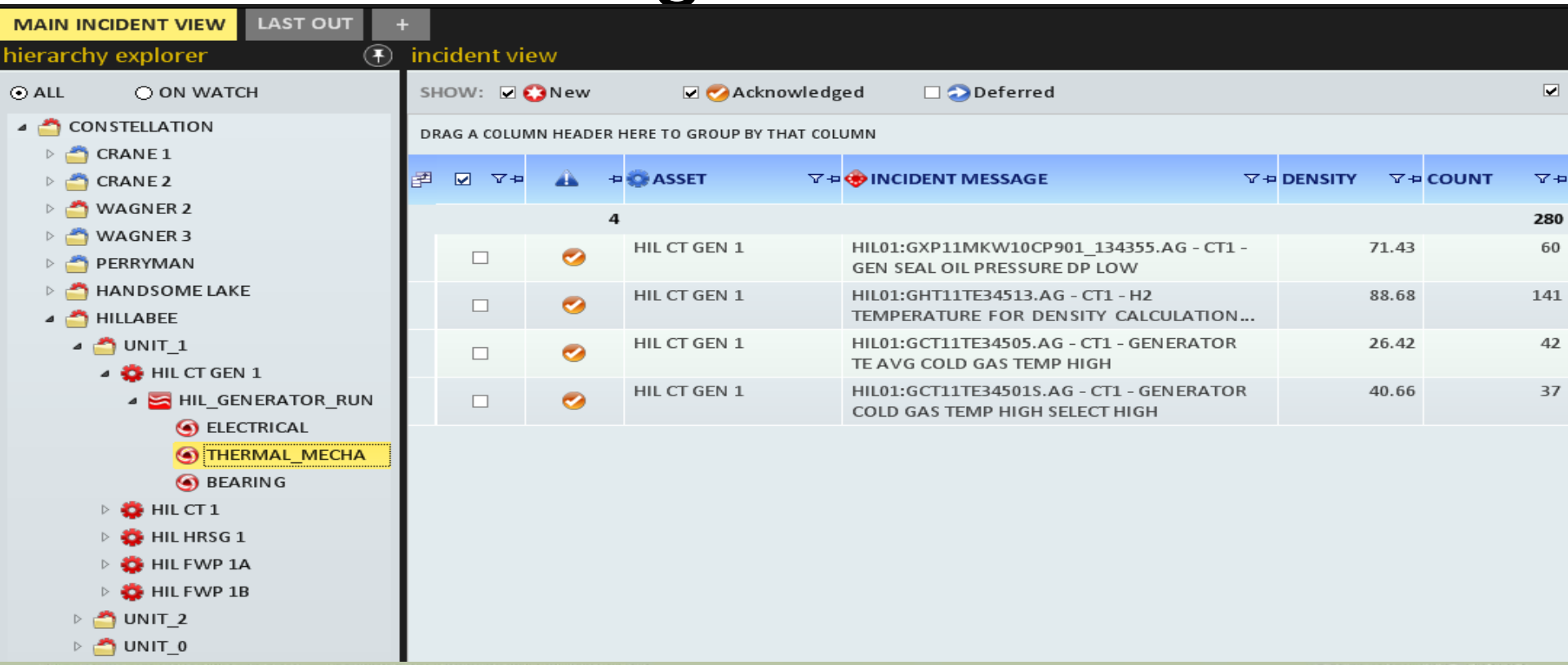
Avoiding Surprises

SMARTSIGNAL

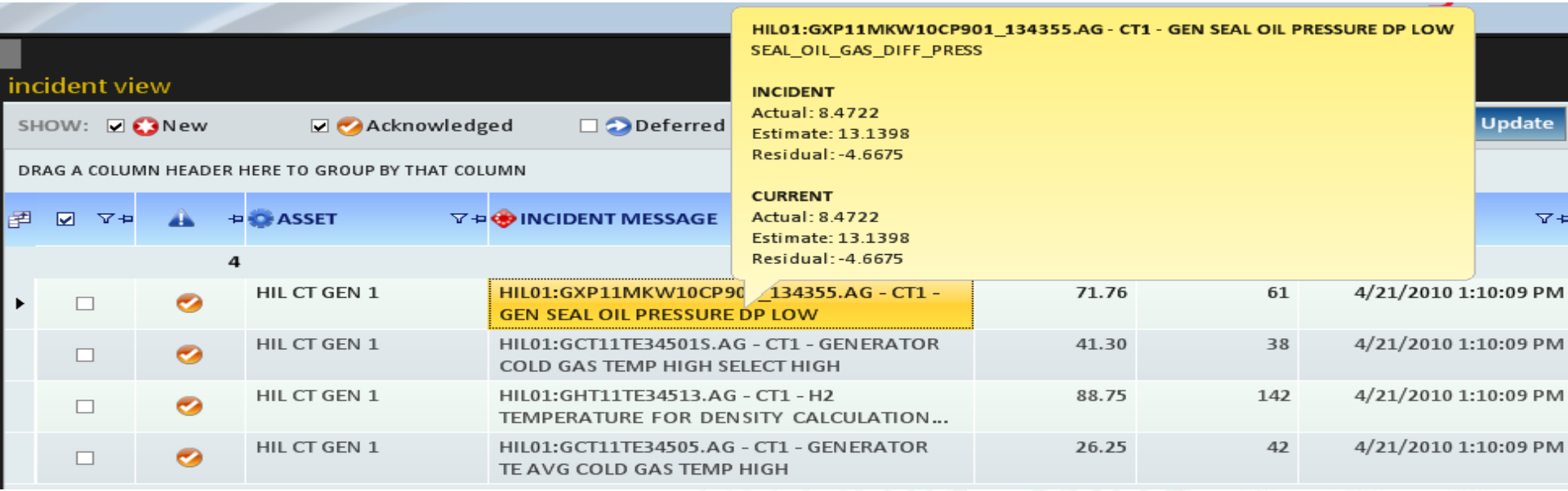
CEG : SmartTracker

Edit	Asset	Notification Description	Status	Assigned To	Priority	Action	Modified	Modified By	Source PI Tag Name
	W3 FW Heater 33	HAW03 33 HEATER LEVEL	Request for WBE	Tracy Harper	LOW	Sensor OFF	3/24/2010 10:31 AM	Sylvester, James L	HAW03FLLLV008R 33 HEATER LVL DEMAND
	C2 BFP 21	CRANE UNIT 2 BFP	Response for Analyst	Jim Sylvester	LOW	Sensor OFF	3/16/2010 11:29 AM	Harper, Tracy L	CPC02FPTTE360 BFPTURBTHRUST BRG FACE REAR
	W3 HP Steam Turbine Mech	WAGNER UNIT 3 TURBINE MECH	Response for Analyst	Jim Sylvester	LOW	Retrain	3/16/2010 10:41 AM	Harper, Tracy L	
	W3 FD Fan 32	HAW UNIT 3 32 FD FAN HAW03BFTTE229 INBRD BEARING TEMP	Response for Analyst	Jim Sylvester	LOW	Retrain	3/12/2010 10:35 AM	Harper, Tracy L	HAW03BFTTE229 32 FD FAN INBRD BRG TEMP
	W3 FD Fan 31	WAGNERS UNIT 3 31 FD FAN INBRD BRG TEMP	Response for Analyst	Jim Sylvester	LOW	Retrain	3/12/2010 8:55 AM	Harper, Tracy L	HAW03BFTTE225 31 FD FAN INBRD TEMPS
	W3 Condenser	WAGNER UNIT 3 CONDENSER	Response for Analyst	Jim Sylvester	LOW	Sensor ON	3/12/2010 8:18 AM	Harper, Tracy L	
	C2 FW Heater 26	CRANE UNIT 2 26 FEEDWATER HEATER	Response for Analyst	Jim Sylvester	LOW	Retrain	3/11/2010 12:42 PM	Harper, Tracy L	
	C2 FW Heater 23	CRANE UNIT 2 23 HEATER LEVEL	Response for Analyst	Jim Sylvester	LOW	Retrain	3/11/2010 10:43 AM	Harper, Tracy L	CPC02:FLZIP111.AG
	C2 ID Fan 21	CRANE UNIT 2 21 ID FAN	Request for WBE	Tracy Harper	LOW	Retrain	3/9/2010 9:11 AM	Sylvester, James L	CPC02BFTTE725 21 ID FAN OUTBOARD BRG METAL TEMP
	C2 BFP 21	CRANE UNIT 2 BFP TURBINE	Request for WBE	Tracy Harper	LOW	Retrain	3/9/2010 7:54 AM	Sylvester, James L	CPC02FPZIP107 BFP TURBINE GOVERNOR POS DEMAND

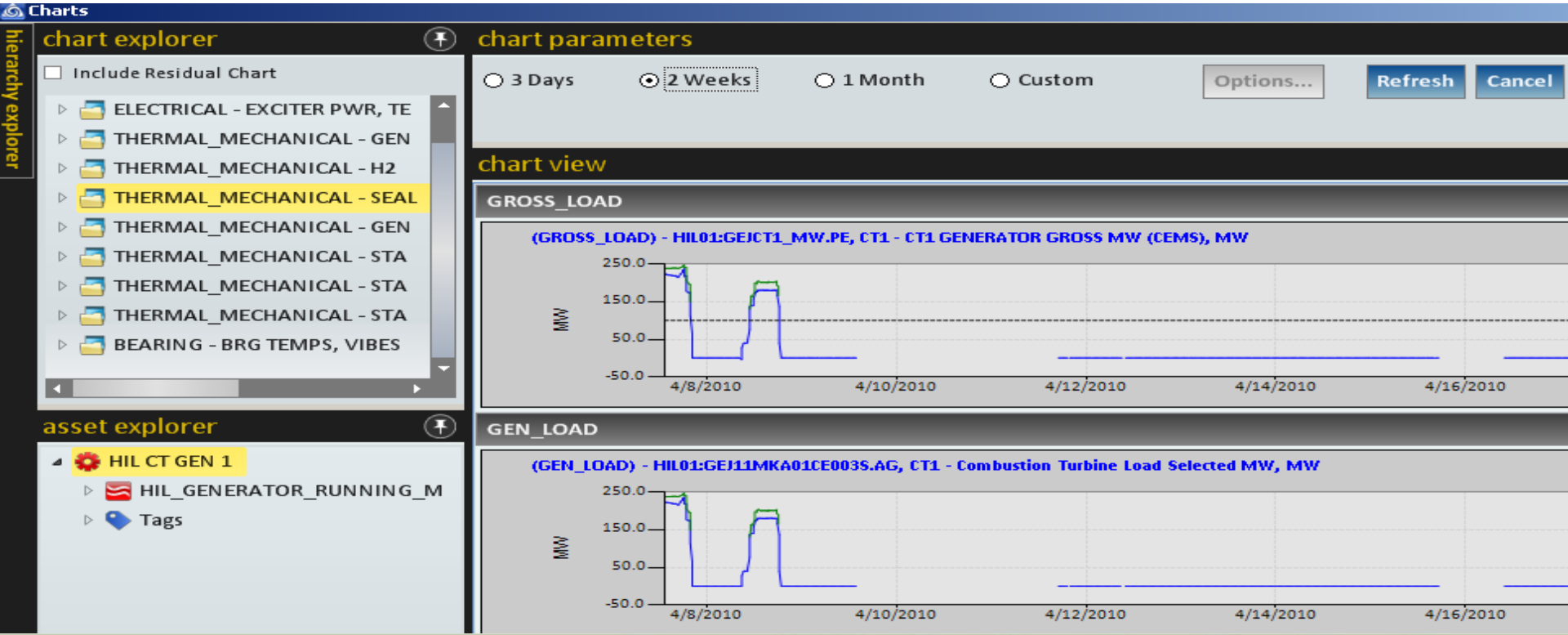
SmartSignal : Sentinel



SmartSignal : Sentinel



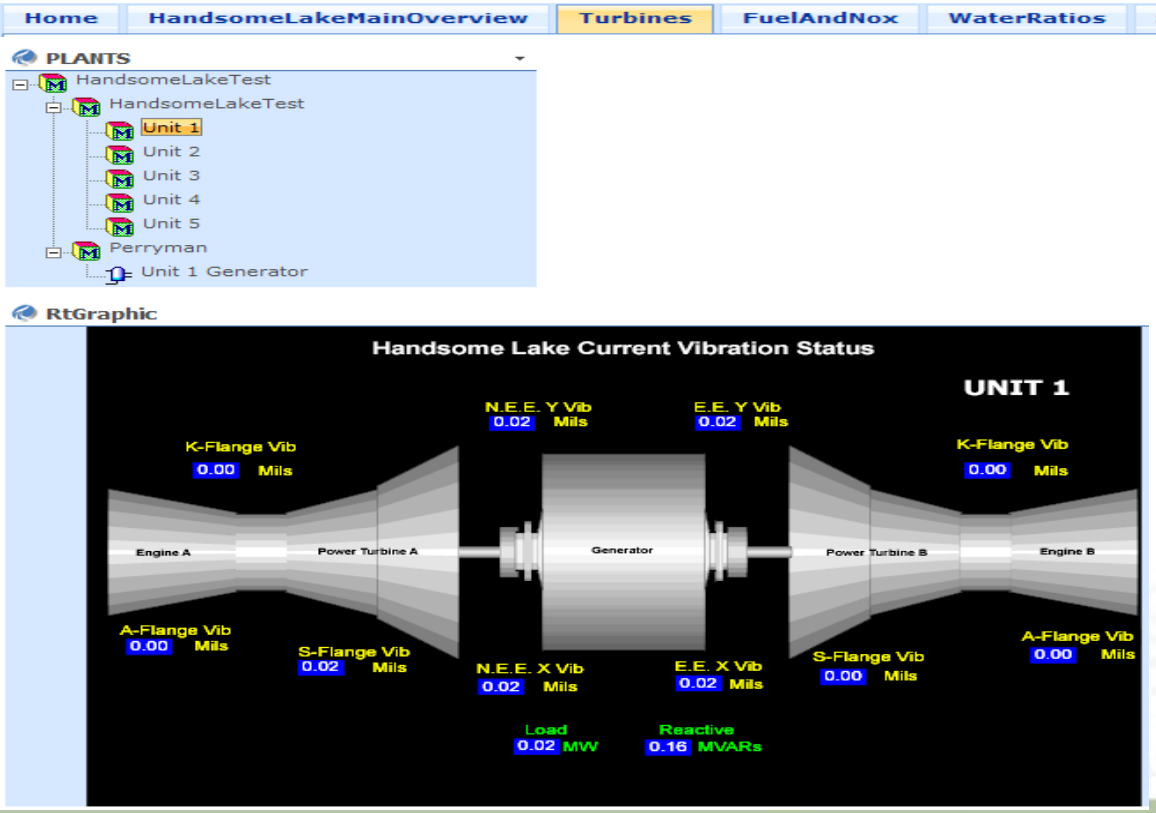
SmartSignal : Sentinel



Collaboration and Data Delivery

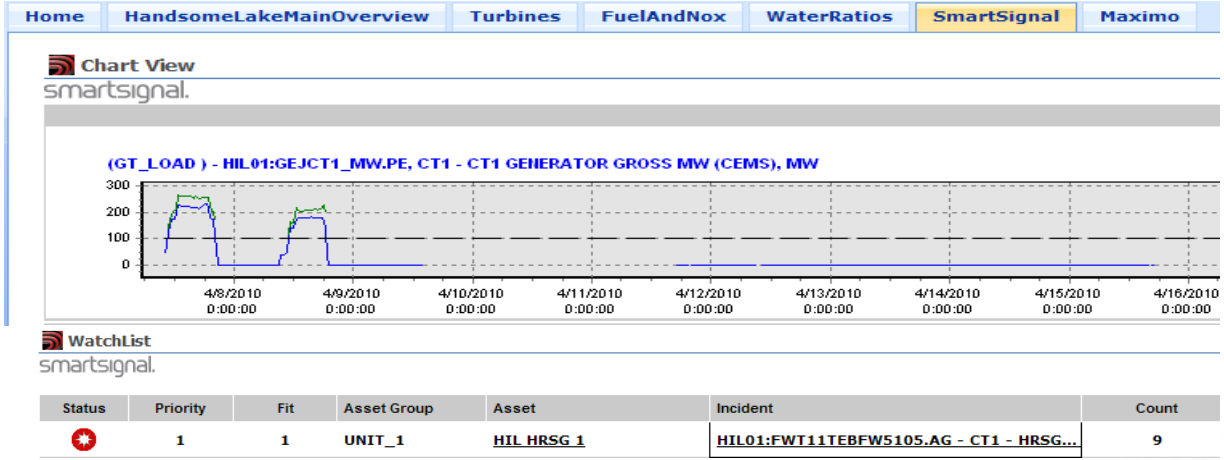
SHAREPOINT

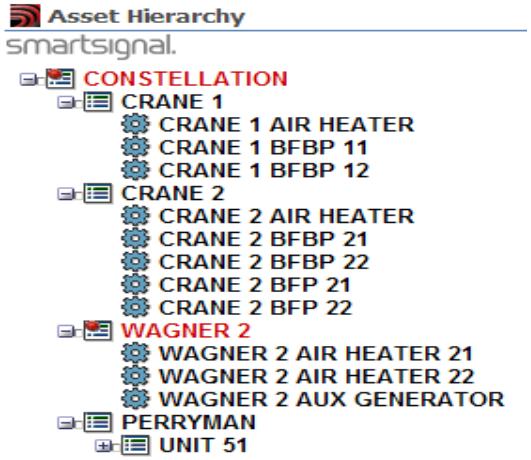
SharePoint Solution



Developing a SharePoint integration site to facilitate PM&D Center processes.

SharePoint Solution

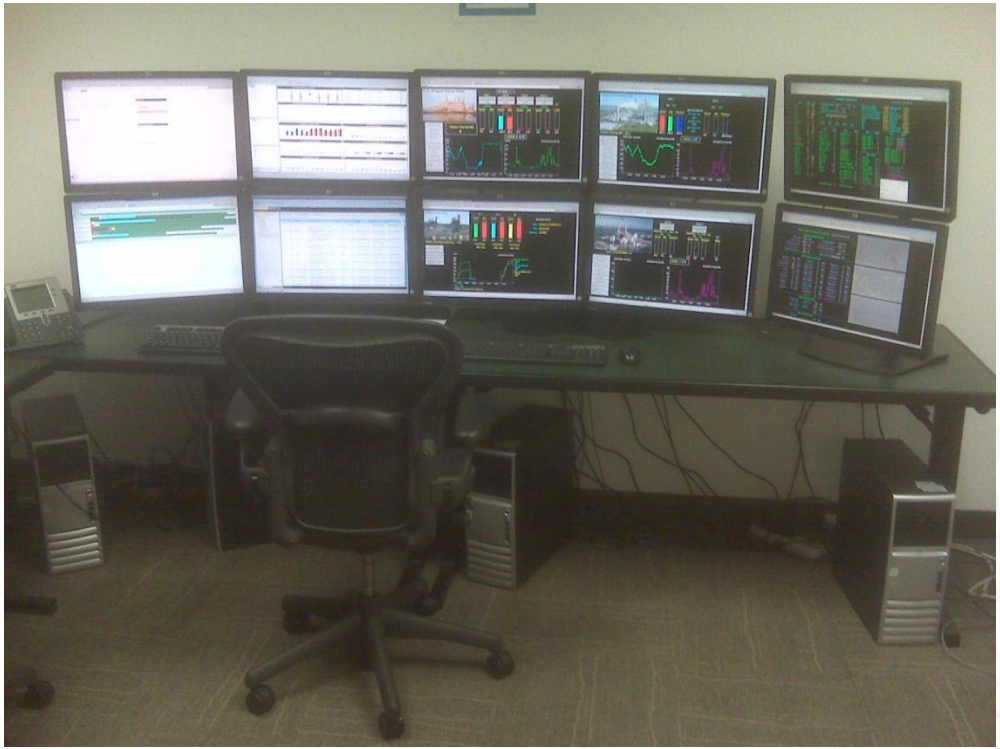




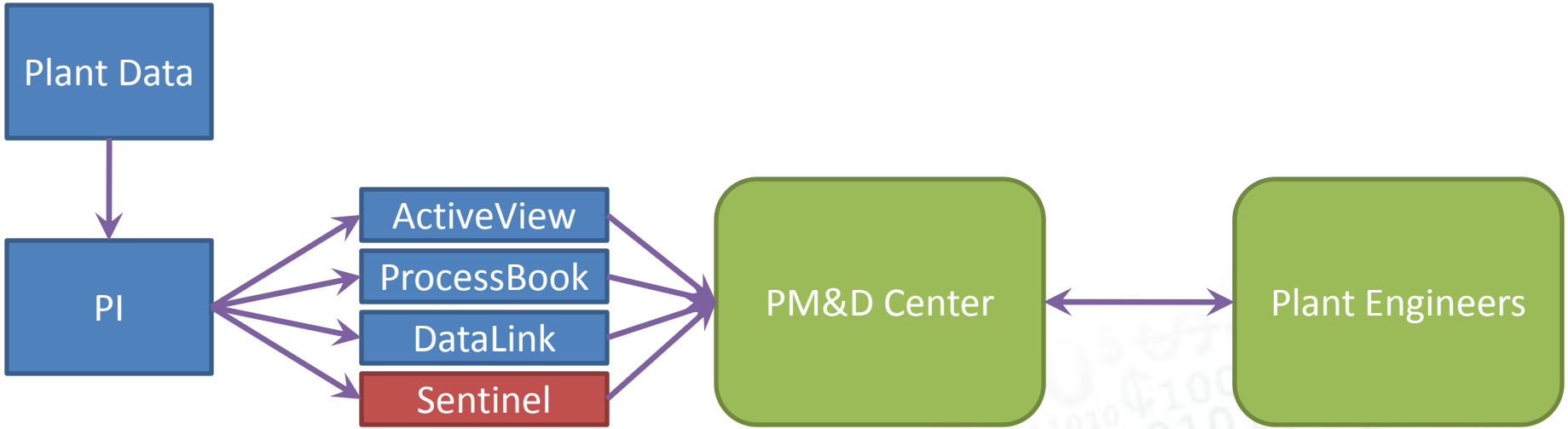
Examples

PM&D CENTER

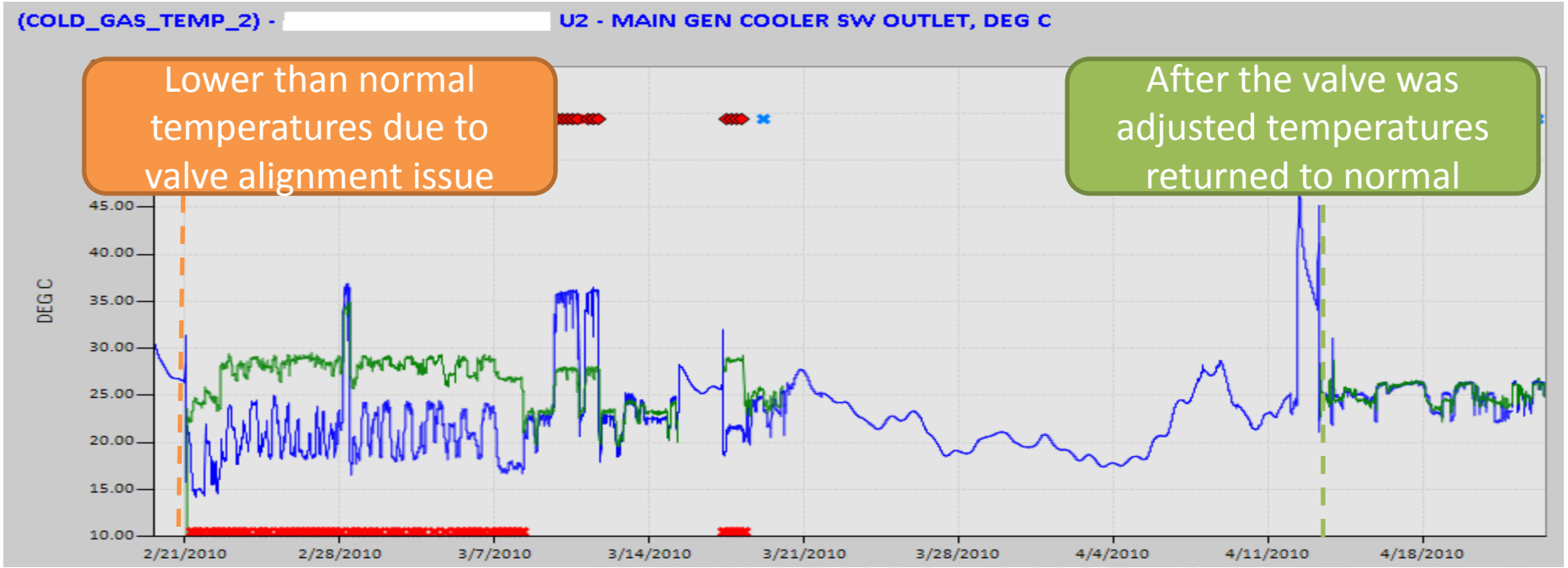
Avoid Surprises



How It Comes Together



Hydrogen Coolers



Other Examples

Constellation Energy

BOILER FEED PUMP

Stator temperatures were increasing.

Upon investigation the plant found that filters were clogging with ash.

Results

- Increased Productivity
- Visibility and Coverage
- Data Integration
- One Version of the Truth
- Reliability
- Compliance – NERC standards
- Scalability
- Availability – 24/7

Constellation Energy®

Tangible Benefits

- Proactive notification
- Return on Investment by catching failures before they happen
- Avoid costs – labor, parts, replacing things that don't need to be
- Downtime avoidance

Intangible Benefits

- Sense of control
- Awareness of asset health versus time-based maintenance
- Reduced waste (labor, parts, etc.)
- Prevent unnecessary labor & maintenance

Future Plans

- Move monitoring to SharePoint with PI WebParts and SmartSignal WebParts
- Integrate critical business applications and data to new shared environment
- Expansion of PI Module Database
- Migration to AF
- Continue to develop communication efforts with plant personnel

Thank you