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The Power of a Data Infrastructure: The PI System® Explained

Why a Data Infrastructure

Electrical Power



Water Systems



Transportation



Communication



Data



Sustainable

Reliable

Accessible

Enabling

Organized

Challenges for Fossil Fuel Based Generation



Reliability and Availability

Condition based maintenance

Key Performance indicators

Reducing forced outages

Unit trips

Licenzantrag



Flexibility and ramping

Minimum load reduction

Ramping

Cycling

Start up monitoring

Temperature excursions



Fleet Optimization

Economic dispatch

Outage planning & scheduling

Alternative fuel use

Market bidding strategy

Ancillary services



Regulatory Requirements

Outage reporting

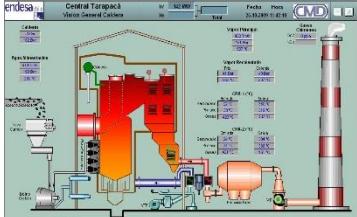
Environmental regulations

Best Available Control Tech

Emissions monitoring

Discharge water

Reliability Regulations



Operations Performance

Heat Rate and cycle efficiency

Controllable Losses

Turbine Efficiency

Boiler efficiency

Gas turbine performance

Challenges for Transmission and Distribution



Transmission Automation

Renewable energy, wholesale deregulation, and advanced monitoring from PMUs provide a wide range of new transmission challenges and opportunities



Distribution Automation

Substation Automation, Intelligent Electronic Devices, Smart Switches and advanced communications highlight new frontiers in utility operations



Automated Metering Infrastructure

AMI represents the #1 source of new, high volumes of data. Can you manage the inflow of information and make it work for you?



Smart Homes

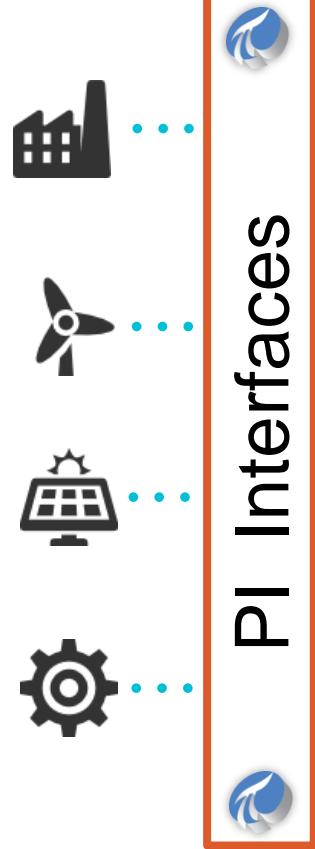
Home automation opens up new business opportunities for the creative utility. Services, home security, demand management all enable new operations



Distributed Generation

A paradigm shift in the utility business is being driven by low cost PV solar. Customers are becoming generation sources. How prepared is your utility to cope?

PI System Infrastructure

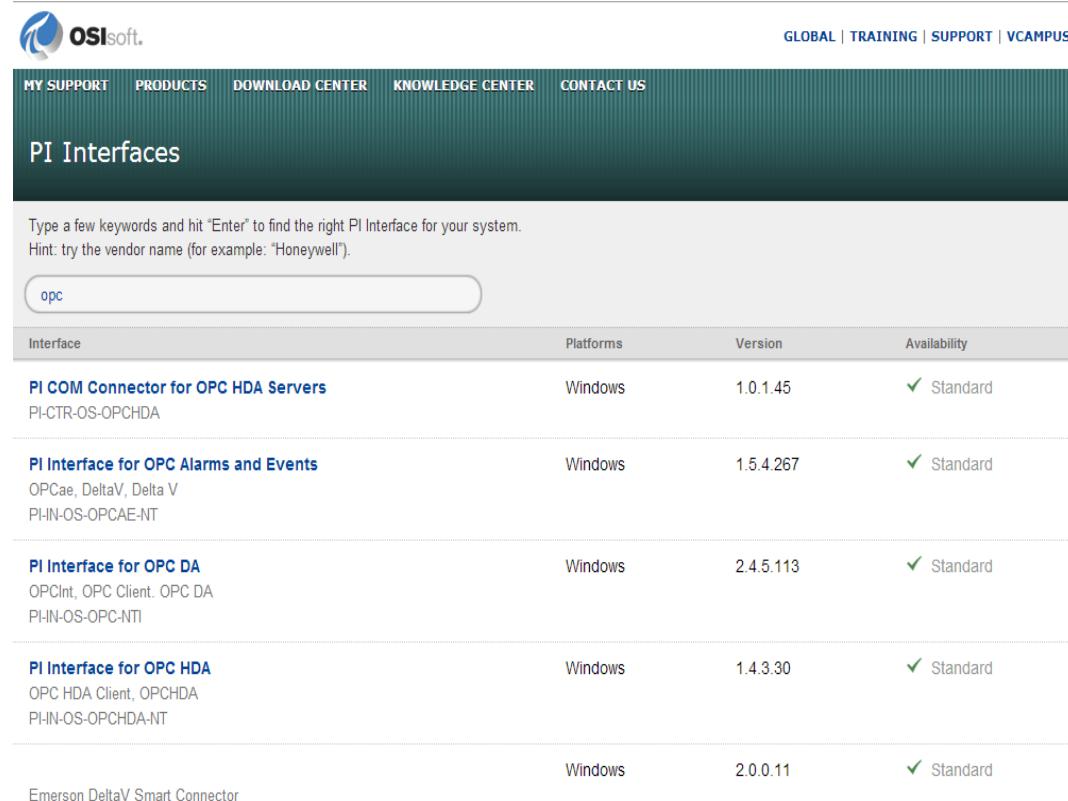


*The pump is not
working. What's the
problem?*



PI Interfaces

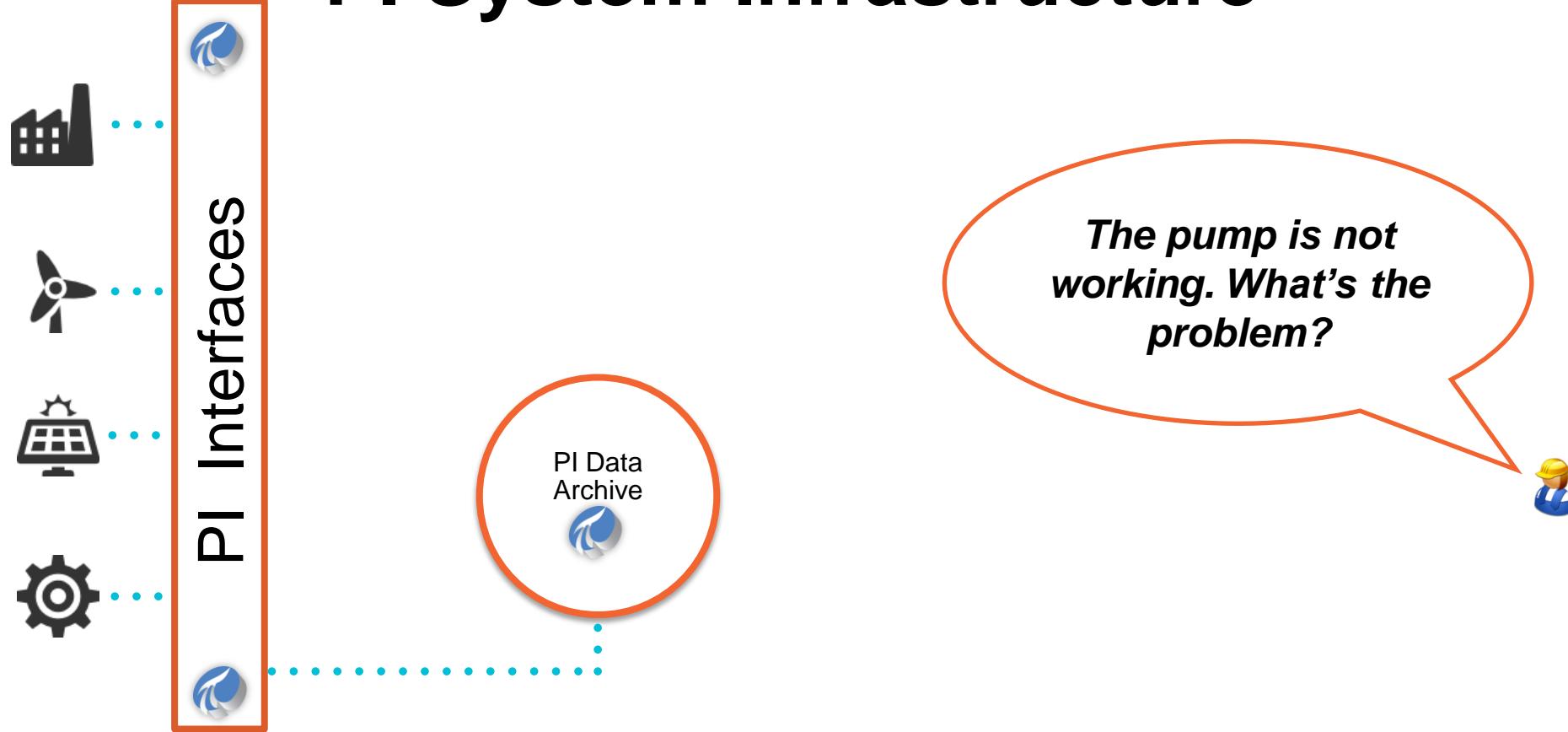
- More than **450** interfaces
- Support multiple **protocols** and **data sources**
 - OPC, Modbus, SNMP, Text File, ODBC
- Robust and reliable



The screenshot shows a search results page for PI Interfaces. At the top, there's a navigation bar with links for MY SUPPORT, PRODUCTS, DOWNLOAD CENTER, KNOWLEDGE CENTER, and CONTACT US. The main title is "PI Interfaces". Below the title, there's a search bar containing the text "opc". A descriptive message says: "Type a few keywords and hit "Enter" to find the right PI Interface for your system. Hint: try the vendor name (for example: "Honeywell")." The search results table has columns for Interface, Platforms, Version, and Availability. There are five rows of results:

Interface	Platforms	Version	Availability
PI COM Connector for OPC HDA Servers PI-CTR-OS-OPCHDA	Windows	1.0.1.45	✓ Standard
PI Interface for OPC Alarms and Events OPCae, DeltaV, Delta V PI-IN-OS-OPCAE-NT	Windows	1.5.4.267	✓ Standard
PI Interface for OPC DA OPCInt, OPC Client, OPC DA PI-IN-OS-OPC-NTI	Windows	2.4.5.113	✓ Standard
PI Interface for OPC HDA OPC HDA Client, OPCHDA PI-IN-OS-OPCHDA-NT	Windows	1.4.3.30	✓ Standard
Emerson DeltaV Smart Connector	Windows	2.0.0.11	✓ Standard

PI System Infrastructure



PI Data Archive

- Optimized for **real time** data **streams** - TAGS

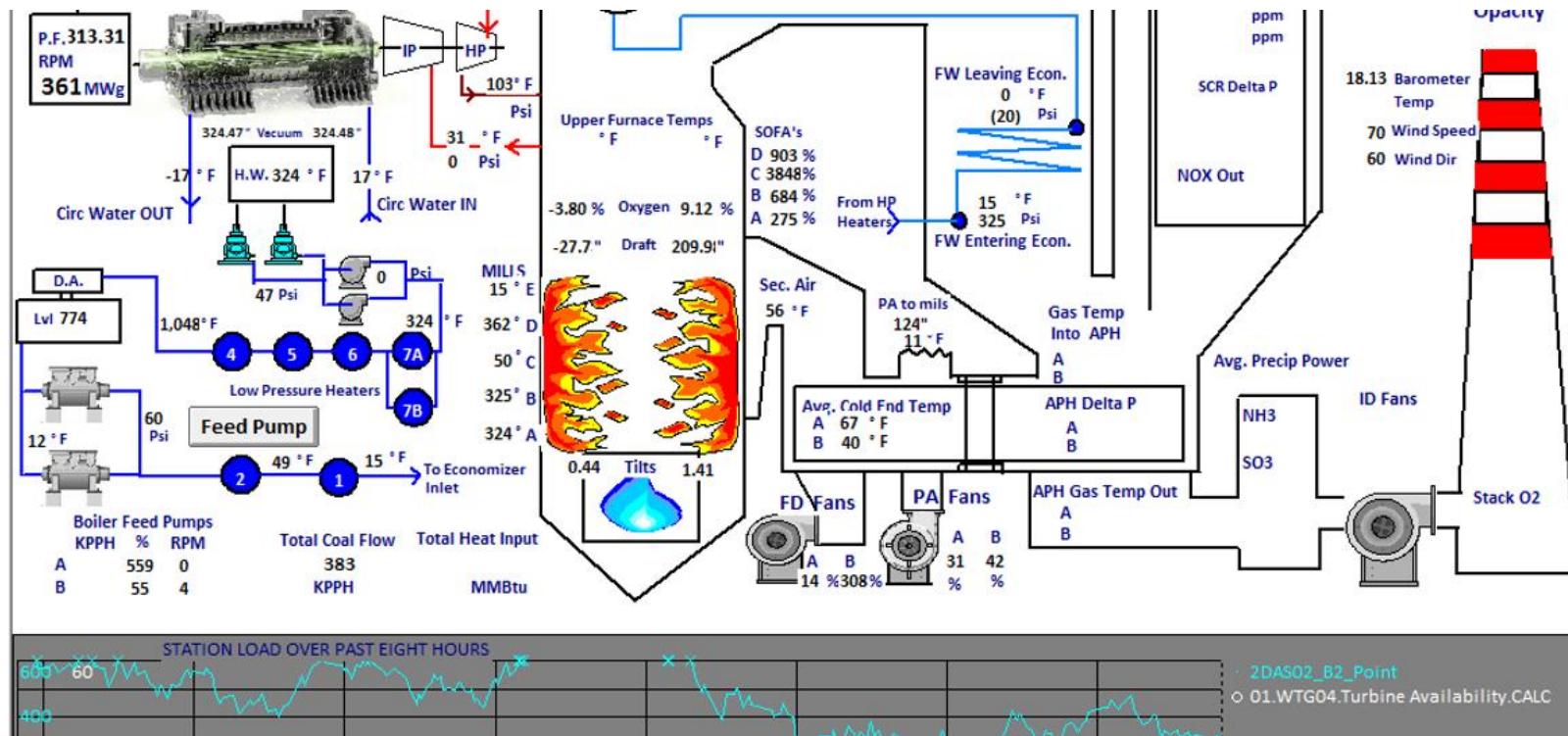
TAG	TIME	VALUE	STATUS
TIC1001.PV	23-MAY-08 11:01:02	12.3	GOOD
LIC30211.PV	23-MAY-08 11:01:03	198.4	GOOD
...

- Designed to archive data for **millions** of tags and **tens** of years

PI Data Archive 2012

	2010	2012	Delta
Max Point Count	2-3M	20M+	5-10x
Startup Time	>10 min/Mpts	<30 sec/Mpts	20x
Point Creation	<100 pt/sec	500-2K pt/sec	5-200x
Tag Searching	Variable, Non-Linear	Constant or Linear	N/A
Max Update Signups	<200K	10M+	50x
Update Signup Rate	<2K/sec	>100K/sec	50x
Data Out (Archive)	<1M ev/sec	>10M ev/sec	10-20x
Data In (Snapshot)	<200K ev/sec	>1M ev/sec	5-10x
Data In (Archive)	<100K ev/sec	>500K ev/sec	5-10x
Archive Shifts	>1 min/GB	<10 sec/GB	6-12x
Online Archives	<10K files	>50K files	5-10x
Backup Speed	>5 min/GB	<1 min/GB	5-10x
Offline Reprocessing	>15 min/GB	30 sec/GB	30x

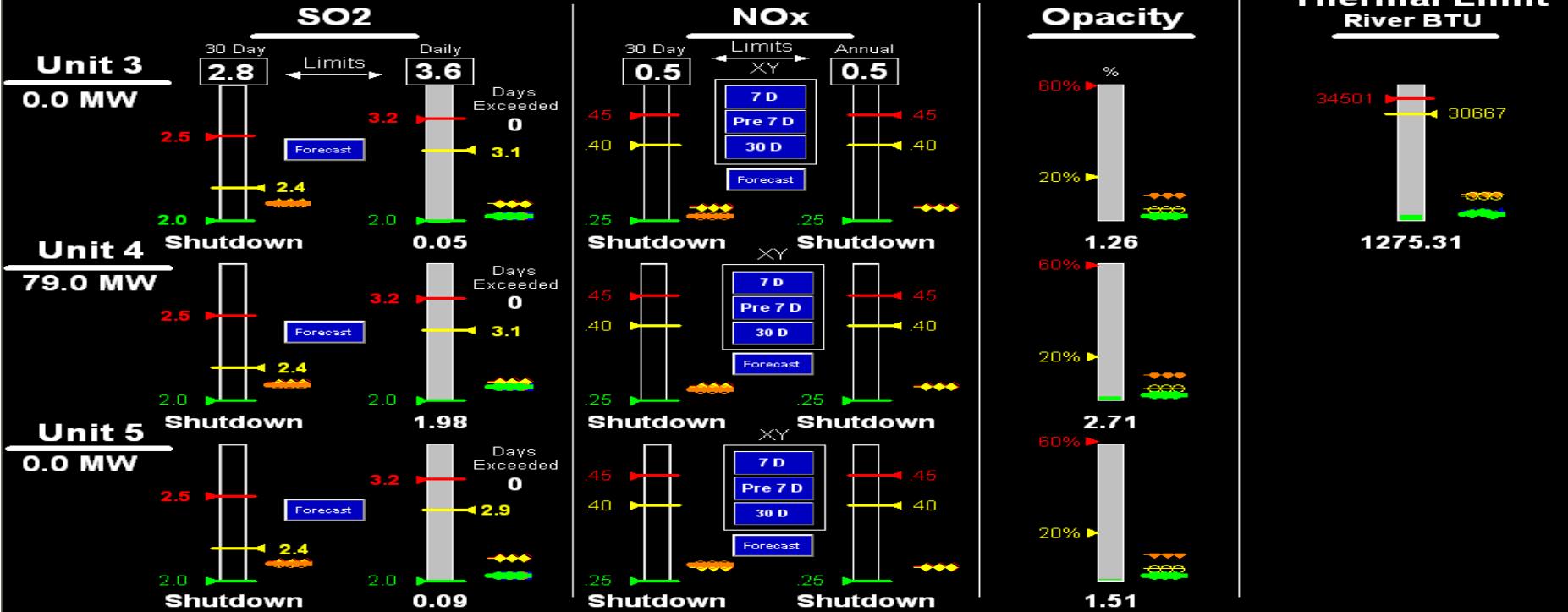
Plant Overview – Boiler and Turbine Cycle



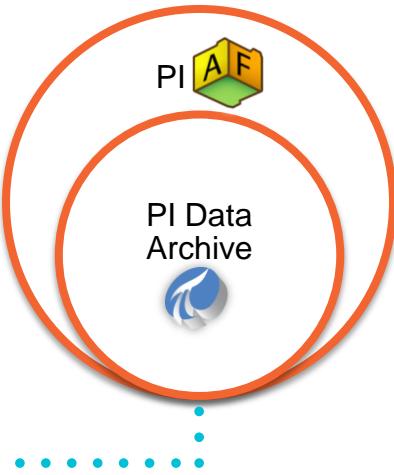
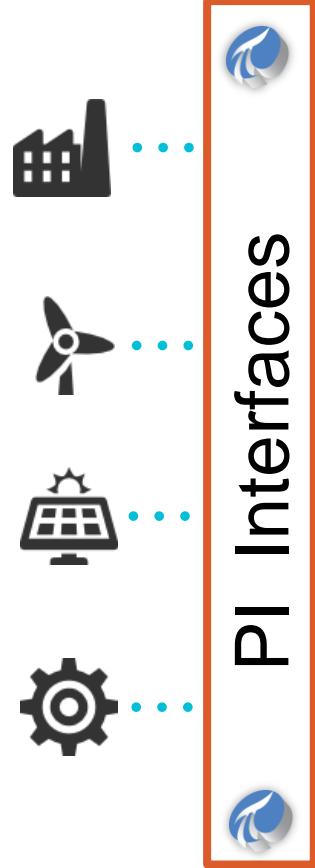
Environmental Parameters Monitoring

Environmental Monitoring Summary

5/20/2009 8:19:13.01501 AM



PI System Infrastructure

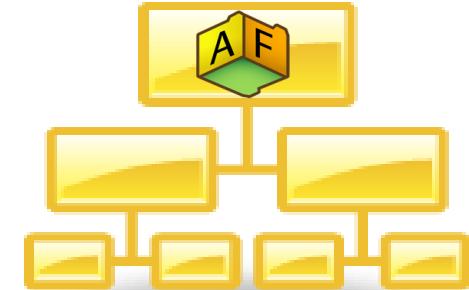


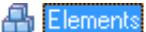
The pump is not working. What's the problem?



PI Asset Framework (PI AF)

- Organize your assets' data in a **hierarchical**, **scalable**, **secure**, and **extensible** database
- Model data from **different PI Servers**
- Relate **non time-series** data sources
- Integrate with tools **analyses** and **notifications** tools





Boilers
Equipment
NuGreen

Houston

Cracking Process

Equipment

B-210
B-235
F-321
F-409
H-2043
H-230
K-304
K-556
P-214
P-456
P-560

Extruding Process

Milling Process

Little Rock

Tucson

Wichita

Pumps

P-007
P-009
P-020
P-099
P-101

The Big Picture

Analyses

- Efficiency analysis
- Key Performance Indicators (KPI)

Events

- Downtime
- Startup
- Failure

Notifications

- High speed
- Rotor failure
- Low pressure

Time-series

- In-Flow
- Pressure
- Vibration data

Asset details

- Name
- Model
- Manufacturer

External data

- Performance curves
- Last maintenance date
- Design documents
- Best operating procedures



Distribution Circuit Breaker Monitoring



- Flexibility for user to configure
- Allows for simple (one click) navigation
- Easy searching circuits
- No need to remember display numbers

Pump Report

Asset Analysis using PI DataLink

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW ADD-INS Load Test PI DATALINK PI BUILDER POWERPIVOT Team John K. Maytum

G27 Duration Minutes

Search Start	1/10/2014 0:00	10-Jan-14 00:00:00	Site Name	San Leandro Power Plant	G	H	I	J	K	L	M	N	O	P
Search End	*	29-Apr-14 06:40:12	Unit Name	Unit 1										
			Pump Name	Boiler Feed Pump #1										

Pump Information [PI AF]

UOM	VIBRATION DATA		PRESSURES			BEARING TEMPERATURE					
	Inboard Bearing Vibration X	Inboard Bearing Vibration Y	Outboard Bearing Vibration X	Outboard Bearing Vibration Y	Bearing Oil Pressure	Control Oil Pressure	Discharge Pressure	Suction Pressure	Inboard Bearing Temperature	Outboard Bearing Temperature	UOM
mils	mils	mils	mils	psi	psi	psi	psi	deg F	deg F	deg F	
Value at Start: 10-Jan-14 00:00:00	156	139	150	155	15.04	32.33	3675.56	16.17	135.82	122.56	Value at Start: 10-Jan-14 00:00:00
Value at End: 29-Apr-14 06:40:12	134	133	150	157	15.04	32.24	3748.38	128.95	134.98	123.24	Value at End: 29-Apr-14 06:40:12
Minimum	0.05	0.05	0.04	0.04	2.11	29.82	-76.94	-4.00	7184	73.44	Minimum
Average	0.88	1.38	1.00	1.04	13.62	33.06	2300.38	112.12	114.72	105.87	Average
Maximum	2.36	21.00	2.13	188	19.68	41.14	4081.45	211.26	142.40	127.20	Maximum
StDev	0.65	24.2	0.75	0.73	4.44	1.00	1856.58	54.57	25.64	18.17	StDev

Pump Events [PI EF] (999)

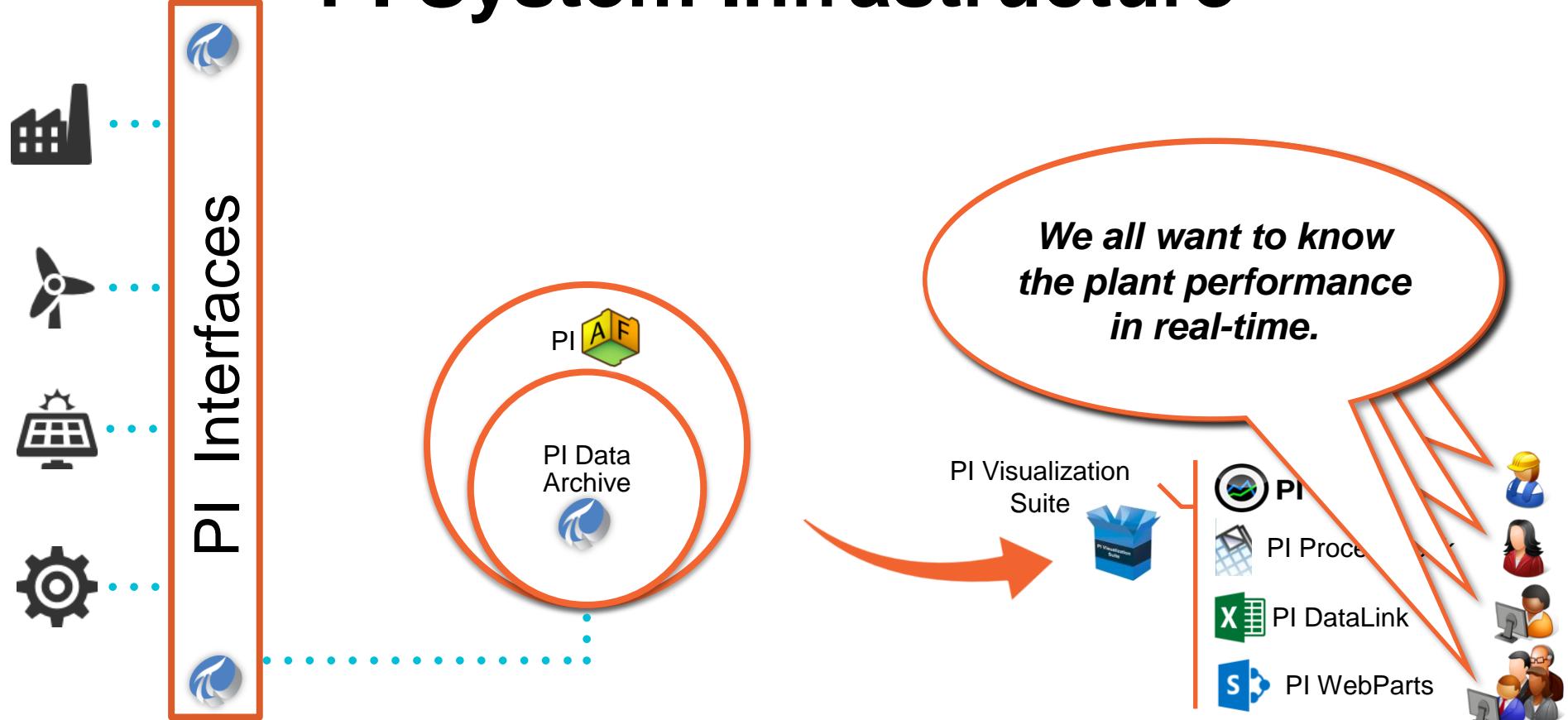
Event name	Start time	End time	Duration	Event template	Duration Minutes
Boiler Feed Pump #1 - Boiler Feed Pump Low Discharge Flow	10-Jan-14 00:00:00	11-Jan-14 06:40:00	16:40:00	Boiler Feed Pump Low Discharge Flow	1840.0
Boiler Feed Pump #1 - Boiler Feed Pump Low Discharge Flow	10-Jan-14 00:00:00	11-Jan-14 06:40:00	16:40:00	Boiler Feed Pump Low Discharge Flow	1840.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	10-Jan-14 00:00:00	10-Jan-14 05:55:00	0:05:55:00	Boiler Feed Pump Cavitation Anomaly	55.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	10-Jan-14 00:00:00	10-Jan-14 05:55:00	0:05:55:00	Boiler Feed Pump Cavitation Anomaly	55.0
Boiler Feed Pump #1 - Boiler Feed Pump Bearing Temp	10-Jan-14 06:35:00	10-Jan-14 07:00:00	0:02:55:00	Boiler Feed Pump Bearing Temp	25.0
Boiler Feed Pump #1 - Boiler Feed Pump Bearing Temp	10-Jan-14 06:35:00	10-Jan-14 07:00:00	0:02:55:00	Boiler Feed Pump Bearing Temp	25.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	10-Jan-14 03:35:00	11-Jan-14 11:30:00	11:55:00	Boiler Feed Pump Cavitation Anomaly	1555.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	10-Jan-14 03:35:00	11-Jan-14 11:30:00	11:55:00	Boiler Feed Pump Cavitation Anomaly	1555.0
Boiler Feed Pump #1 - Boiler Feed Pump Bearing Temp	10-Jan-14 11:45:00	10-Jan-14 12:05:00	0:02:00:00	Boiler Feed Pump Bearing Temp	20.0
Boiler Feed Pump #1 - Boiler Feed Pump Bearing Temp	10-Jan-14 11:45:00	10-Jan-14 12:05:00	0:02:00:00	Boiler Feed Pump Bearing Temp	20.0
Boiler Feed Pump #1 - Boiler Feed Pump Bearing Temp	11-Jan-14 01:30:00	11-Jan-14 01:50:00	0:02:00:00	Boiler Feed Pump Bearing Temp	20.0
Boiler Feed Pump #1 - Boiler Feed Pump Bearing Temp	11-Jan-14 01:30:00	11-Jan-14 01:50:00	0:02:00:00	Boiler Feed Pump Bearing Temp	20.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	11-Jan-14 07:35:00	11-Jan-14 07:50:00	0:01:55:00	Boiler Feed Pump Cavitation Anomaly	15.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	11-Jan-14 07:35:00	11-Jan-14 07:50:00	0:01:55:00	Boiler Feed Pump Cavitation Anomaly	15.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	11-Jan-14 08:20:00	11-Jan-14 08:30:00	0:01:00:00	Boiler Feed Pump Cavitation Anomaly	10.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	11-Jan-14 08:20:00	11-Jan-14 08:30:00	0:01:00:00	Boiler Feed Pump Cavitation Anomaly	10.0
Boiler Feed Pump #1 - Boiler Feed Pump Bearing Temp	11-Jan-14 08:25:00	11-Jan-14 08:50:00	0:02:55:00	Boiler Feed Pump Bearing Temp	25.0

999 <>Boiler Feed Pump #1>> Events

Boiler Feed Pump Suction Pressure Anomaly, 82
Boiler Feed Pump Low Pump Speed, 28
Boiler Feed Pump Bearing Temp, 36
Boiler Feed Pump Low Discharge Flow, 233
Boiler Feed Pump Control Oil Pressure Anomaly, 20
Boiler Feed Pump Cavitation Anomaly, 1555.0

Boiler Feed Pump Low Discharge Flow, 32%
Boiler Feed Pump Control Oil Pressure Anomaly, 20%
Boiler Feed Pump Bearing Temp, 8%
Boiler Feed Pump Low Pump Speed, 7%
Boiler Feed Pump Cavitation Anomaly, 52%

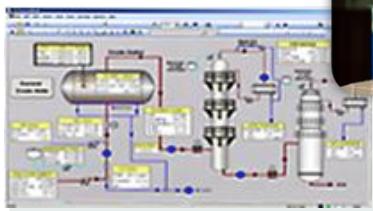
PI System Infrastructure



Visualization Landscape

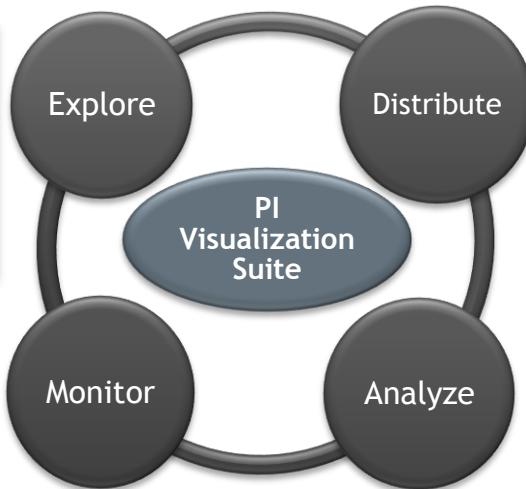
PI Coresight

Collaboration and ad hoc analysis



PI ProcessBook

Authoring tool for process displays and trends



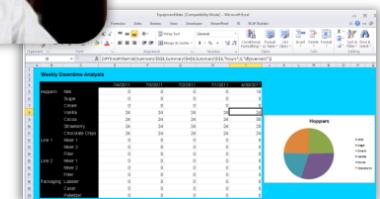
PI WebParts

Composite web applications



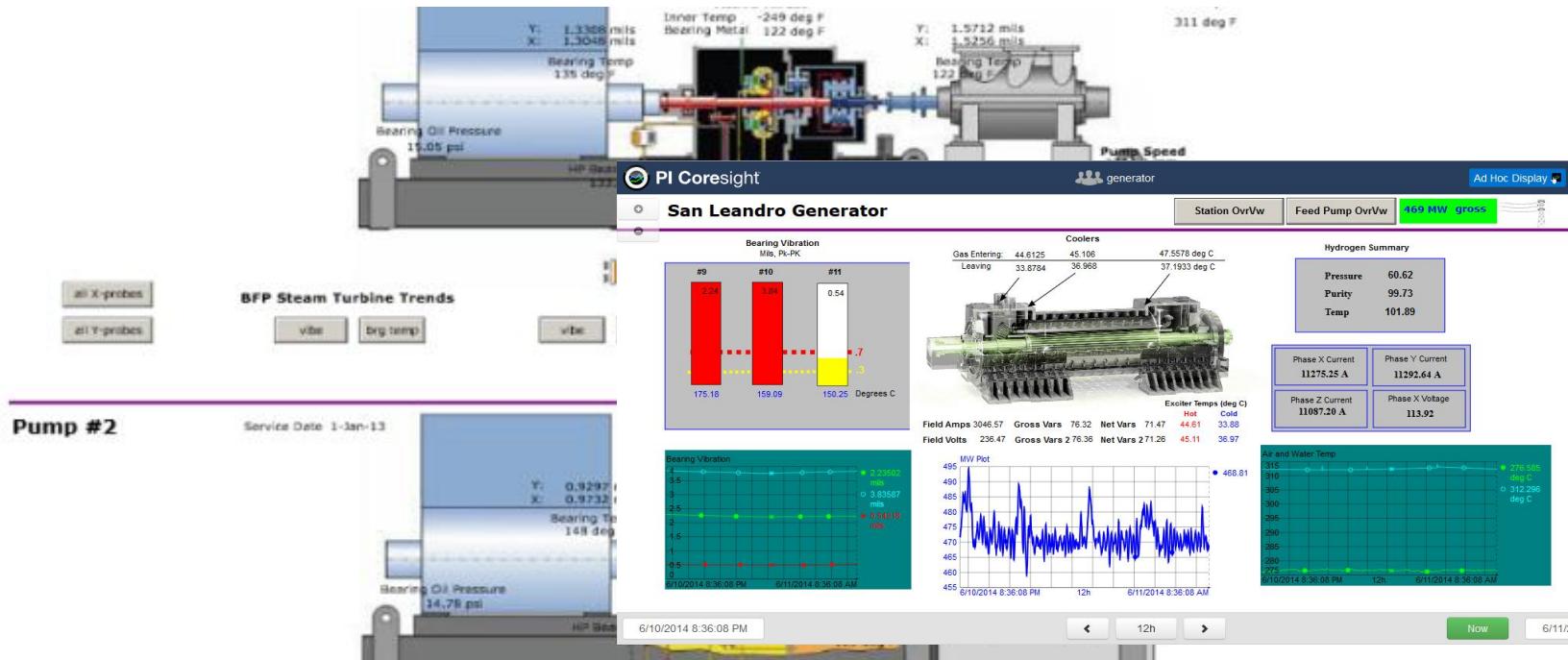
PI DataLink

Reports and data analysis



Web Based Operational Views

PI Coresight allows access to operational displays from any HTML5 compliant device



IEC Holding. Technological and commercial dispatching – Element relative Display



ОАО «ГК»
АРМ Коммерческого диспетчера

Навигация по объектам

- ТЭЦ2
 - ГТП-110
 - ТГ1
 - ТГ2
 - ТГ3
 - ТГ4
 - ГТП-220
 - ТГ5
 - ТГ6

Отчеты

- Отчет Работа на БР
- Отчет Форма №10
- Отчет Форма №14
- Отчет КДУ за смену

Контроль отклонений

Час	Факт	ППБР	ПБР	УДГ	ИС-	ИС+	ЦБР+	ЦБР-
1	14,5	12	12	14	-	0,5	600	450
2	13,2	11	11	13	-	0,2	780	580
3	11,9	10	10	12	0,1	-	560	570
4	11,0	9	9	11	-	-	540	460
5	12,1	10	10	12	-	0,1	540	116
6	13,3	11	11	13	-	0,3	660	238
7	13,8	12	12	14	0,2	-	345	345
8	15,0	13	13	15	-	-	415	453

Генерация часовая ТГ-1

Генерация ГТП-110

Выход на значение 125
Вернуться к работе по ПБР

С момента К моменту С момента К моменту

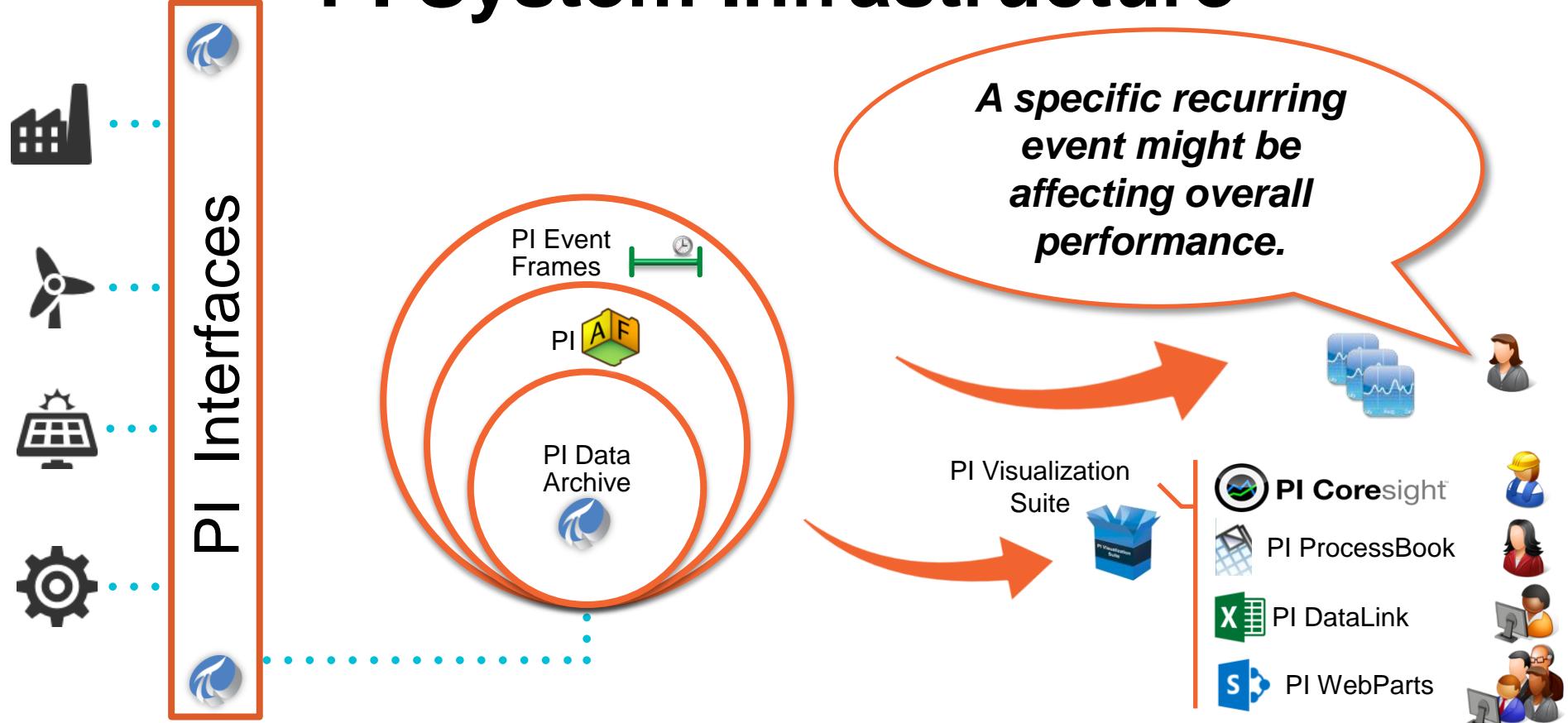
Дата 15.08.2007	Дата 15.08.2007	Дата 15.08.2007	Дата 15.08.2007
Время 8:25:00	Время 10:45:00	Время 12:00:00	Время 13:30:00

Описание Голосовая команда: ...
Перейти к выполнению голосовой команды

Описание Вернуться к ПБР...1
Перейти к плану ПБР

Trusted sites

PI System Infrastructure



Bookmarks for your Real-Time Data

PI Event Frames

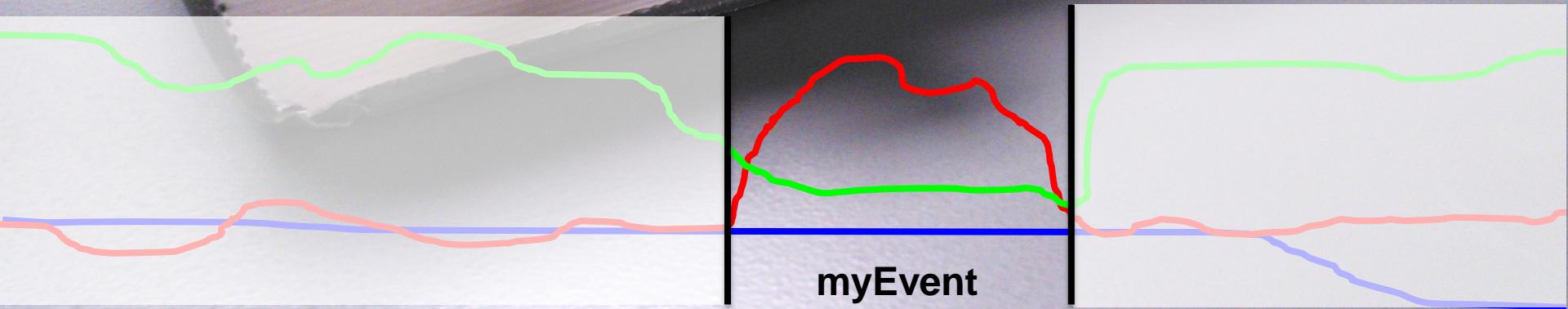


Start

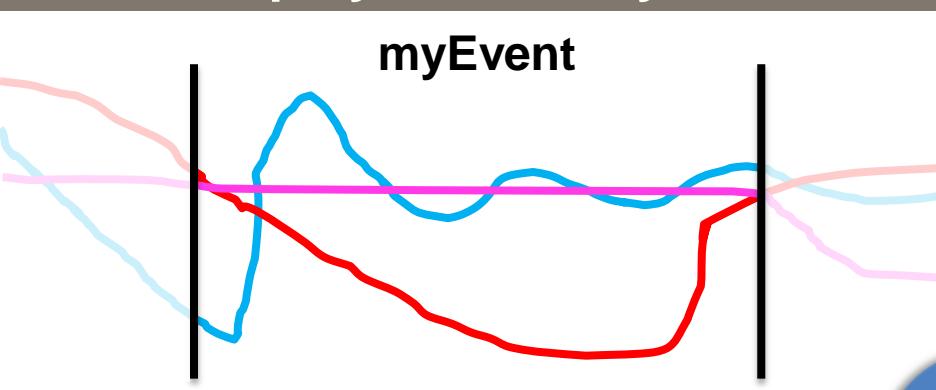


End

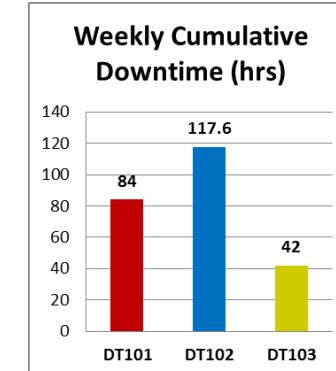
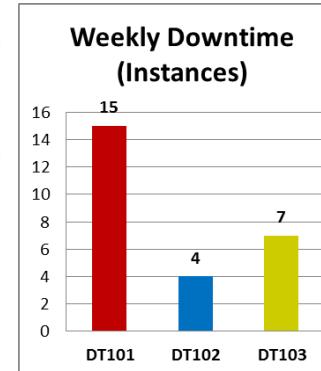
Your
Data



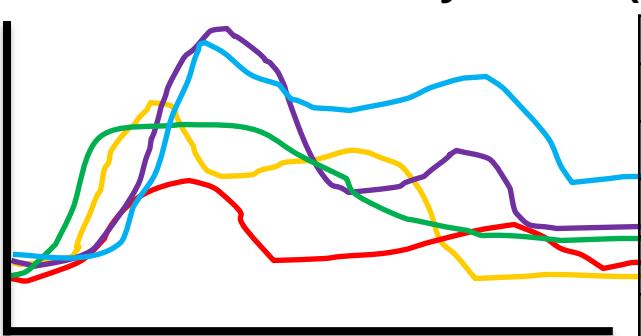
Simplify Data Analysis



Perform Asset Comparisons



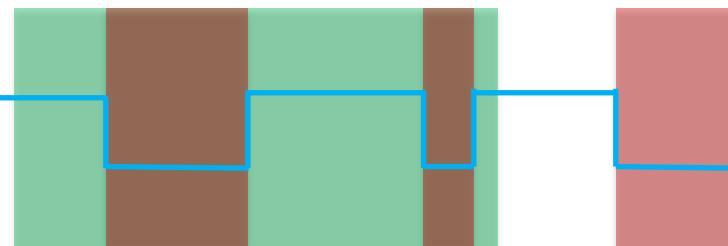
Event Overlay Trend (Temp.)



Name	Temp.Max
EF1	122.47
EF2	109.34
EF3	112.73
EF4	98.61
EF5	125.24

Downtime Events for Product XYZ

Product XYZ (1)
Downtime (2)



Perform Event Comparisons

Discover Event Interrelationships

Pump Report

Asset and Event Analysis using PI DataLink with AF and Event Frames

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW ADD-INS Load Test PI DATALINK PI BUILDER POWERPIVOT Team John K. Maytum

G27 Duration Minutes

Search Start	1/10/2014 0:00	10-Jan-14 00:00:00	Site Name	San Leandro Power Plant
Search End	*	29-Apr-14 06:40:12	Unit Name	Unit 1
			Pump Name	Boiler Feed Pump #1

Pump Information [PI AF]

UOM	Inboard Bearing Vibration X	Inboard Bearing Vibration Y	Outboard Bearing Vibration X	Outboard Bearing Vibration Y	Bearing Oil Pressure	Control Oil Pressure	Discharge Pressure	Suction Pressure	Inboard Bearing Temperature	Outboard Bearing Temperature	UOM
	mils	mils	mils	mils	psi	psi	psi	psi	deg F	deg F	deg F
Value at Start: 10-Jan-14 00:00:00	156	139	150	155	15.04	32.33	3675.56	16.17	135.82	122.56	Value at Start: 10-Jan-14 00:00:00
Value at End: 29-Apr-14 06:40:12	134	133	150	157	15.04	32.24	3748.38	128.95	134.98	123.24	Value at End: 29-Apr-14 06:40:12
Minimum	0.05	0.05	0.04	0.04	2.11	29.82	-76.94	-4.00	7184	73.44	Minimum
Average	0.88	1.38	1.00	1.04	13.62	33.06	2300.38	112.12	114.72	105.87	Average
Maximum	2.36	21.00	2.13	188	19.68	41.14	4081.45	211.26	142.40	127.20	Maximum
StDev	0.65	2.42	0.75	0.73	4.44	1.00	1856.58	54.57	25.64	18.17	StDev

Pump Events [PI EF] (999)

Event name	Start time	End time	Duration	Event template	Duration Minutes
Boiler Feed Pump #1 - Boiler Feed Pump Low Discharge Flow	10-Jan-14 00:00:00	11-Jan-14 06:40:00	164:00:00	Boiler Feed Pump Low Discharge Flow	1840.0
Boiler Feed Pump #1 - Boiler Feed Pump Low Discharge Flow	10-Jan-14 00:00:00	11-Jan-14 06:40:00	164:00:00	Boiler Feed Pump Low Discharge Flow	1840.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	10-Jan-14 00:00:00	10-Jan-14 05:55:00	0:05:55:00	Boiler Feed Pump Cavitation Anomaly	55.0
Boiler Feed Pump #1 - Boiler Feed Pump Cavitation Anomaly	10-Jan-14 00:00:00	10-Jan-14 05:55:00	0:05:55:00	Boiler Feed Pump Cavitation Anomaly	55.0
Boiler Feed Pump #1 - Boiler Feed Pump B	10-Jan-14 06:35:00	10-Jan-14 07:00:00	0:02:55:00	Boiler Feed Pump Bearing Temp	25.0
Boiler Feed Pump #1 - Boiler Feed Pump B	10-Jan-14 06:35:00	10-Jan-14 07:00:00	0:02:55:00	Boiler Feed Pump Bearing Temp	25.0
Boiler Feed Pump #1 - Boiler Feed Pump C	10-Jan-14 03:35:00	11-Jan-14 11:30:00	11:55:00	Boiler Feed Pump Cavitation Anomaly	1555.0
Boiler Feed Pump #1 - Boiler Feed Pump C	10-Jan-14 03:35:00	11-Jan-14 11:30:00	11:55:00	Boiler Feed Pump Cavitation Anomaly	1555.0
Boiler Feed Pump #1 - Boiler Feed Pump B	10-Jan-14 11:45:00	10-Jan-14 12:05:00	0:02:00:00	Boiler Feed Pump Bearing Temp	20.0
Boiler Feed Pump #1 - Boiler Feed Pump B	10-Jan-14 11:45:00	10-Jan-14 12:05:00	0:02:00:00	Boiler Feed Pump Bearing Temp	20.0
Boiler Feed Pump #1 - Boiler Feed Pump B	11-Jan-14 01:30:00	11-Jan-14 01:50:00	0:02:00:00	Boiler Feed Pump Bearing Temp	20.0
Boiler Feed Pump #1 - Boiler Feed Pump B	11-Jan-14 01:30:00	11-Jan-14 01:50:00	0:02:00:00	Boiler Feed Pump Bearing Temp	20.0
Boiler Feed Pump #1 - Boiler Feed Pump C	11-Jan-14 07:35:00	11-Jan-14 07:50:00	0:01:55:00	Boiler Feed Pump Cavitation Anomaly	15.0
Boiler Feed Pump #1 - Boiler Feed Pump C	11-Jan-14 07:35:00	11-Jan-14 07:50:00	0:01:55:00	Boiler Feed Pump Cavitation Anomaly	15.0
Boiler Feed Pump #1 - Boiler Feed Pump C	11-Jan-14 08:20:00	11-Jan-14 08:30:00	0:01:00:00	Boiler Feed Pump Cavitation Anomaly	10.0
Boiler Feed Pump #1 - Boiler Feed Pump C	11-Jan-14 08:20:00	11-Jan-14 08:30:00	0:01:00:00	Boiler Feed Pump Cavitation Anomaly	10.0
Boiler Feed Pump #1 - Boiler Feed Pump B	11-Jan-14 08:25:00	11-Jan-14 08:50:00	0:02:55:00	Boiler Feed Pump Bearing Temp	25.0

999 <>Boiler Feed Pump #1>> Events

Boiler Feed Pump Suction Pressure Anomaly, 82

Boiler Feed Pump Low Pump Speed, 28

Boiler Feed Pump Bearing Temp, 36

Boiler Feed Pump Low Discharge Flow, 233

Boiler Feed Pump Vibration Anomaly, 528

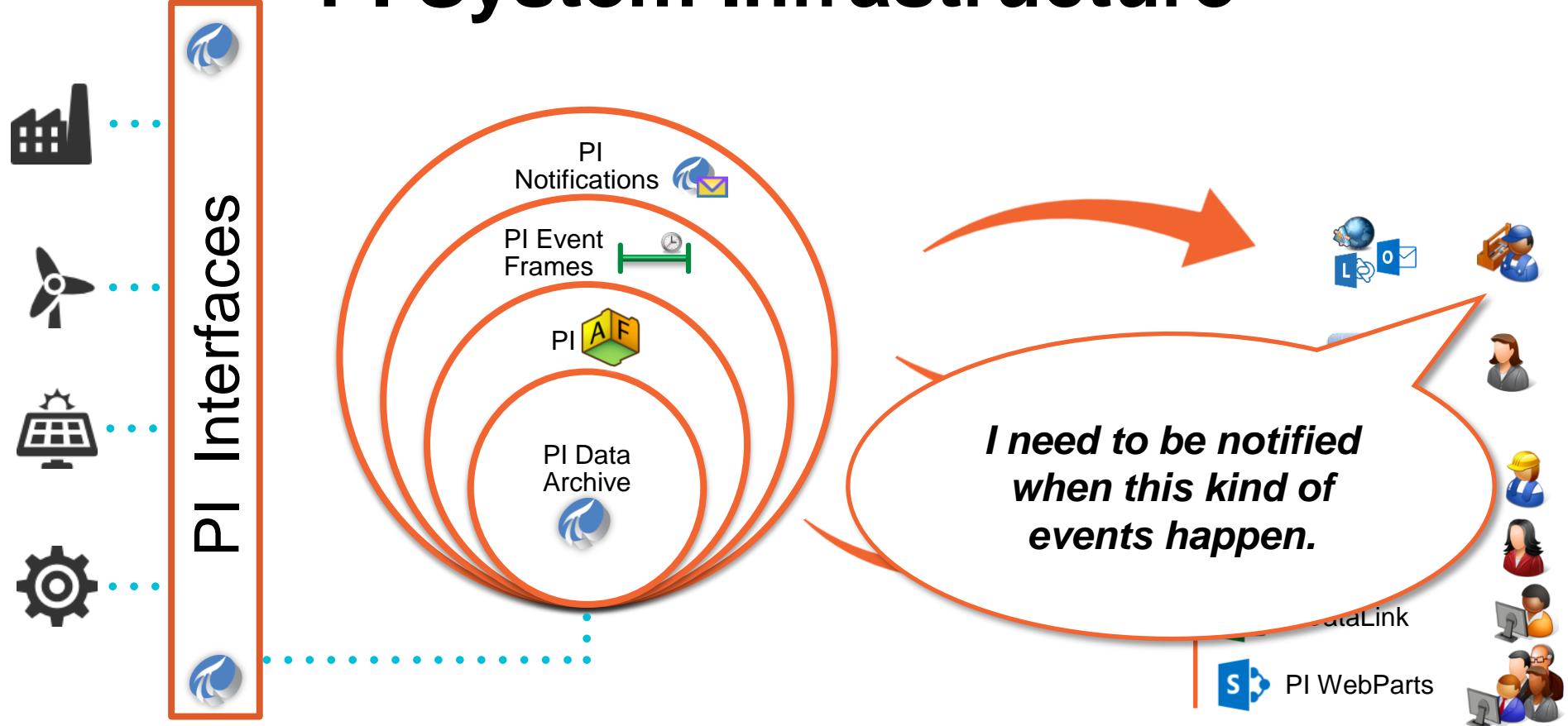
Boiler Feed Pump Control Oil Pressure Anomaly, 20

Boiler Feed Pump Adhoc Analysis

Adhoc Asset and event based analysis in PI Coresight



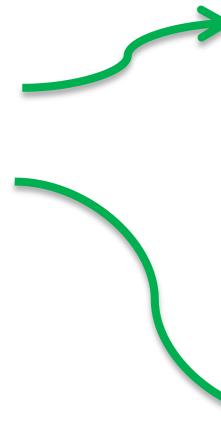
PI System Infrastructure



PI Notifications Keeps You Informed



DELIVER



From: PINotAdmin
To: Mariana Sandin
Cc:
Subject: Transformer TR0842 Load is in

[Instant PI WebParts Trend](#)
[Acknowledge With Comment](#)
[Acknowledge](#)

Name:	Transformer Load -
State:	High
Trigger Time:	7/29/2012 9:07:01
Start Time:	7/29/2012 9:07:01
End Time:	1/1/1970 12:00:00
Triggering Conditions:	Load > 22
Target:	TR0842

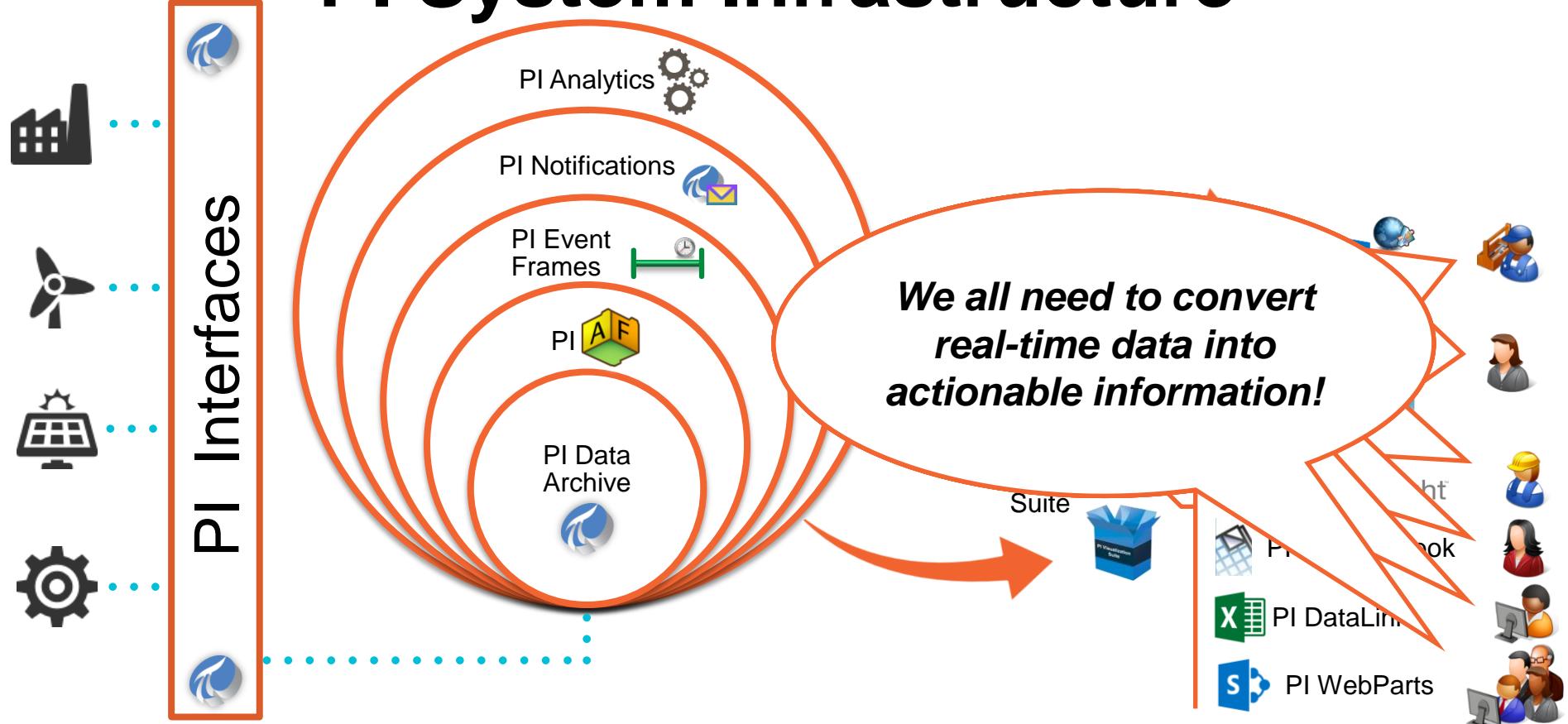
Wind Farm availability is under 70%
DF PI Notifications - Offline
IM Call Video Share
notifications/test/int
Wind Farm availability is under 70%
Name: Wild River Wind Farm
Server: DFPIAF
Database: Windtopia
Start Time: 8/1/2012 2:30:00 PM Pacific Daylight Time (GMT-07:00:00)
Trigger Time: 8/1/2012 2:45:00 PM Pacific Daylight Time (GMT-07:00:00)
Target: Wind Power Generation Fleet/Wild River Wind Farm
State: OutsideControl
Priority: Normal
Link:
Wind Farm Overview
Actions: Acknowledge
Last message received
Redirect Ignore



Web Service

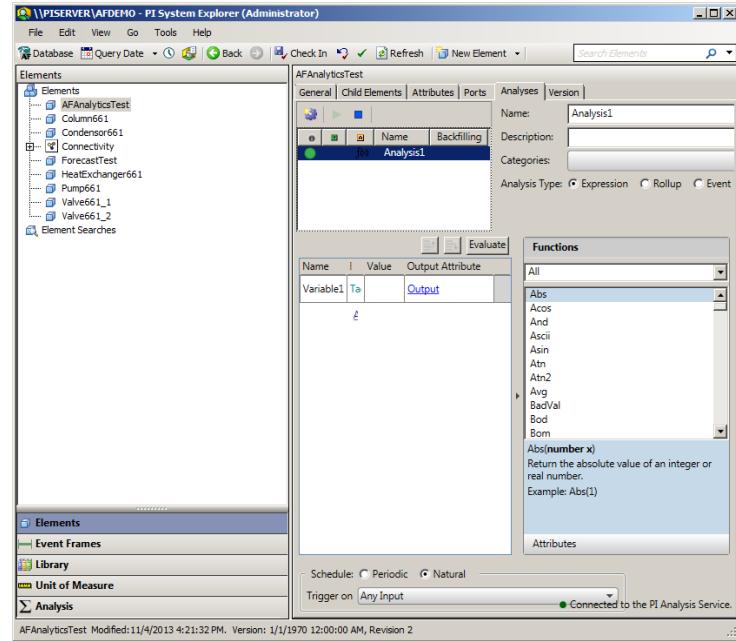


PI System Infrastructure



PI Analytics

- Transforms operational data into **actionable information**
- The analyses are:
 - Created by configuration or programming
 - Triggered periodically or on events
 - Consulted on-demand or historized



Advanced Equipment Monitoring



Plant Notifications

Screenshot of a plant monitoring software interface showing notifications and data analysis.

ARRANQUE TG42 LEAD CICAS4

Número Arranque	190
Tiempo en FSNL (min)	2
Cierre del Int. Generación	06/12/2010 07:14
Tiempo desde Ignición hasta Premix (min)	62.7
Tiempo en cerrar bypass AP desde FSNL TG42 (min)	45.3

ARRANQUE TV CICAS4

Inicio rodaje	06/12/2010 07:33
Tiempo en FSNL (min)	1.3
Cierre del Int. Generación	06/12/2010 07:45
Temp TV (°C) - Tipo Arranque	536 - CALIENTE
Stress Máximo/Permitido	-2.1 / Bajo

TEMP CARCASA TV (°C - eje X) Vs TIEMPO ARR TG (min - eje Y). (CICAS4 TG42 LEAD). (Arranques del último año)

CONSUMO TRANSFORMADORES AUXILIARES CON TG PARADA - CIARC - 2007 - 2008

TIEMPO AUXILIAR	2007	2008
	ENERGIA (MWh)	ENERGIA (MWh)
TG1	14.04.1	2.3
TG2	12.950.2	2.1
TG3	-	292.6
TG4	-	18.536.6

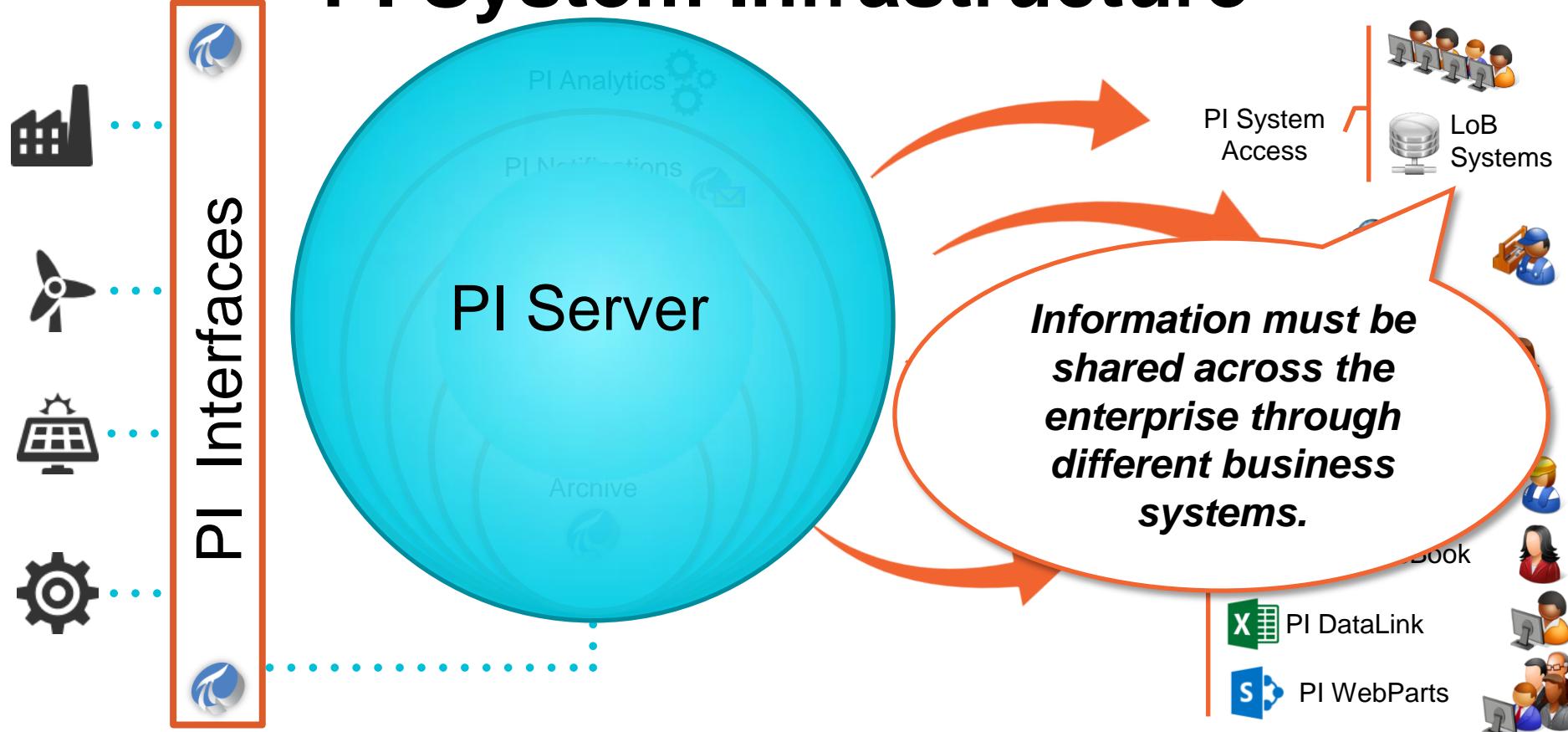
CONSUMO TRANSFORMADORES AUXILIARES CON TG PARADA - CIARC - AGOSTO 09

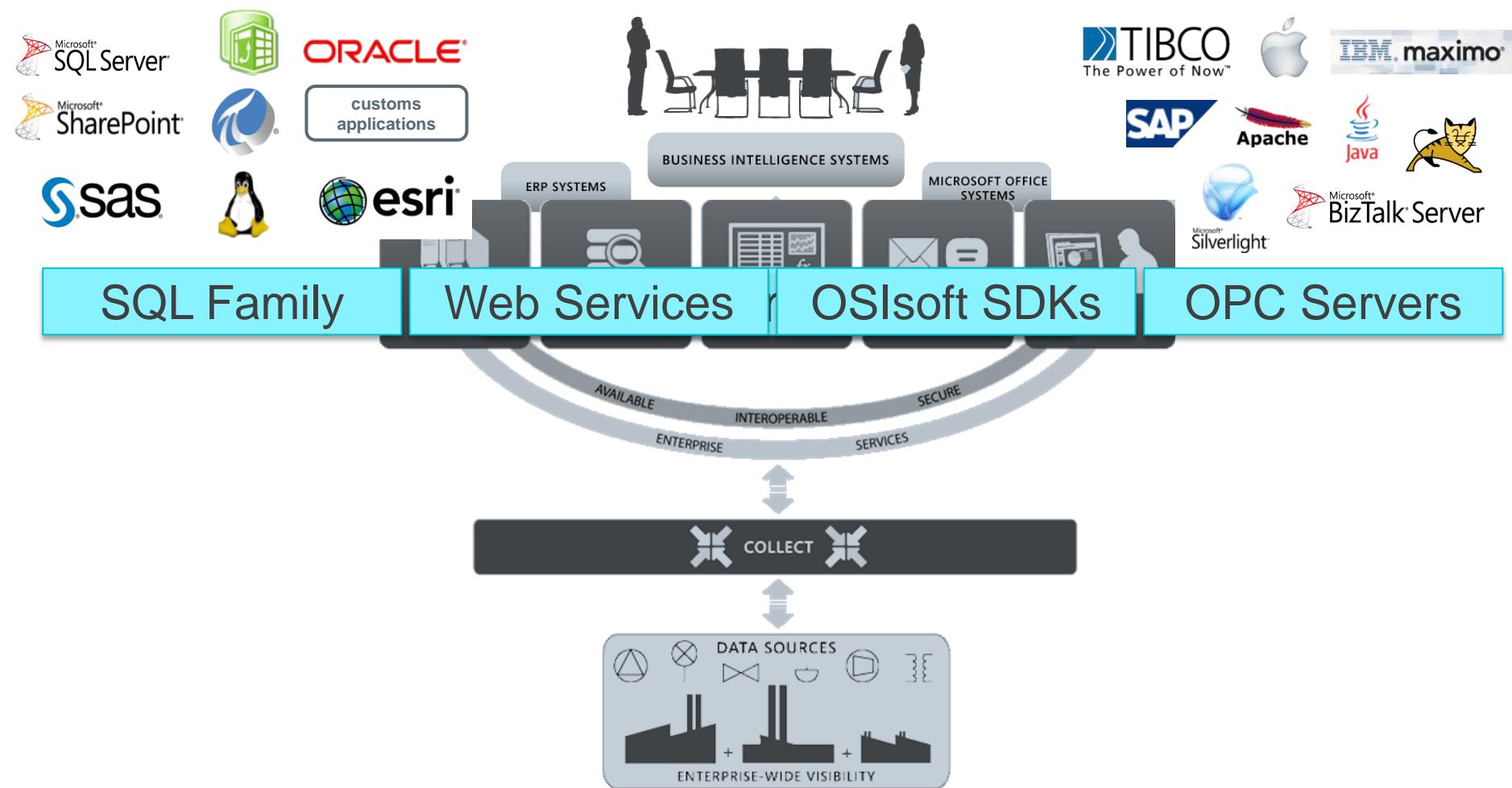
TIEMPO AUXILIAR	MENSUAL	ANUAL
	ENERGIA (MWh)	ENERGIA (MWh)
TG1	454.8	2.3
TG2	322.9	4.4
TG3	347.7	3.3
TG4	6.468.7	4.4

ENERGIA (MWh) POR BLOQUES DE HORAS DESDE EL ARRANQUE CICAS4

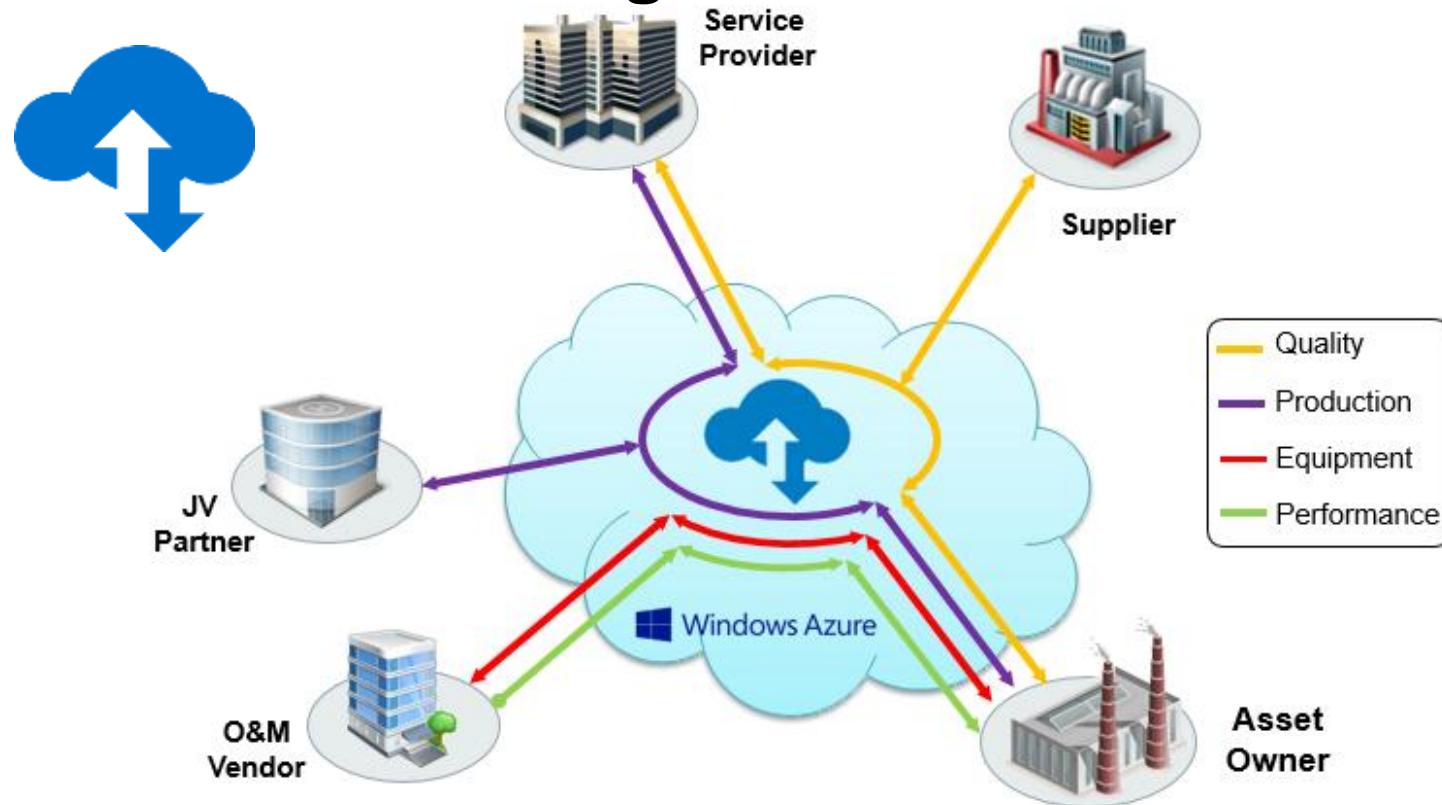
	7:00	8:00	9:00	10:00	11:00	12:00
CASADA DCG	35	120	-	-	-	-
REAL	35	198	-	-	-	-

PI System Infrastructure





PI System Data Sharing – PI Cloud Connect





- ESRI is the maker of **ArcGIS**, the leading product of Geographical Information Systems (**GIS**).
- Rely on the PI System infrastructure to **combine GIS** data with **real-time** information

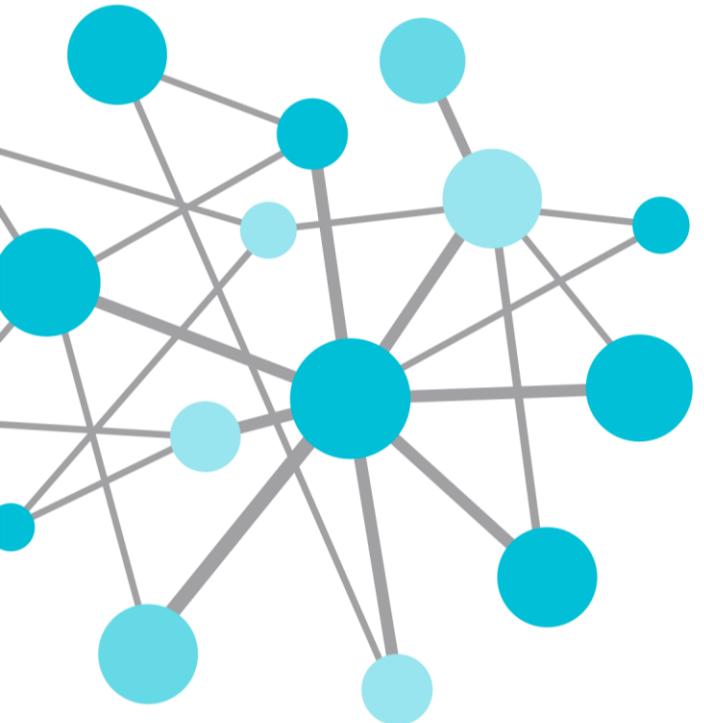
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OSIsoft, LLC



THANK
YOU

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