



Coming Soon! To a PI System Near You

Presented by John Baier
Director, Product Management

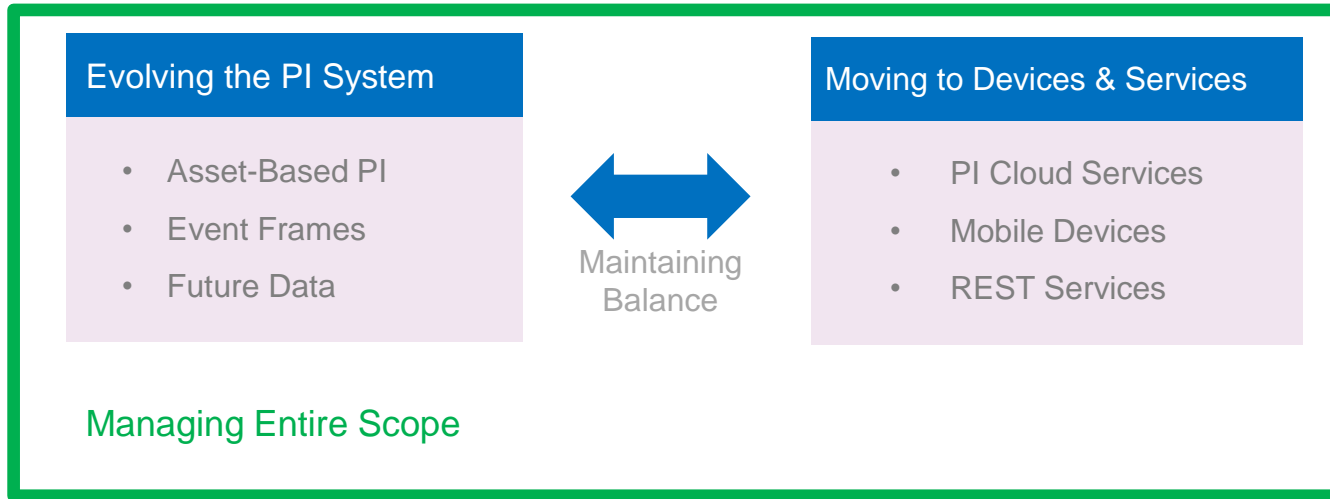
Agenda and Expectations

- This presentation assumes:
 - You know the PI System basics
 - You understand the modern PI System – AF, EF, Notifications, etc.
- What is coming to the PI System
 - Now → 18 months
- Date Ranges – Less Specific Further Out
- All information is subject to change
- We want your feedback!

“Every day I wake up and ask, ‘how can I **flow data better, **manage** data better, **analyze** data better?’”**

Rollin Ford, CIO Wal-Mart

2013 Priorities



PI System Themes



Broad Scale

More Data
High Performance
Cloud / Hybrid



Asset Based PI

Asset Context
Standardize
Reuse many times



Event Frames

Capture Important
Events and
Related Data



Visualization

Many roles
Different formats
Any device

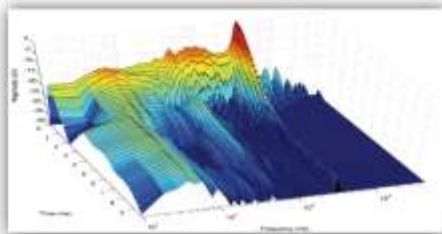


Broad Scale



PI SERVER 2012

(SCALABILITY: 20+ MILLION PI TAGS)



Syncro Phasors

4.8K data streams, 120Hz
3 years online
Unique Events: 55 Trillion
Estimated Data: 430TB

430TB



Data Center

100K cells, 2M breakers
10 years online
Unique Events: 105 Trillion
Estimated Data: 840TB

840TB



Automated Metering

20M meters, 5-min reads
7 years online
Unique Events: 177 Trillion
Estimated Data: 1,410TB

1,410
TB







Fleet Monitoring

1K assets, 1M points
10 years online
Unique Events: 6,307 Tr
Estimated Data: 50,460TB

50,460
TB

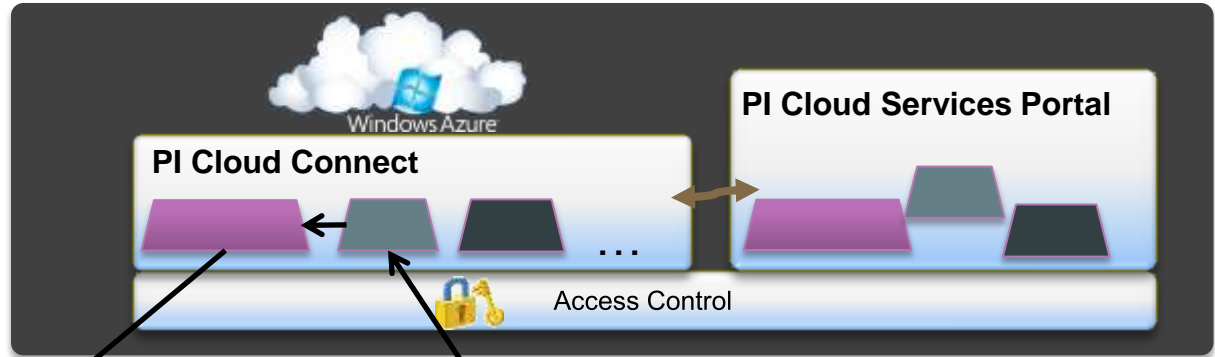
2012 vs. 2010: The Final Sheet

	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



PI Cloud Connect

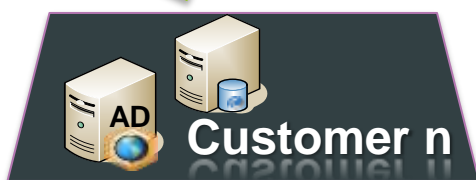
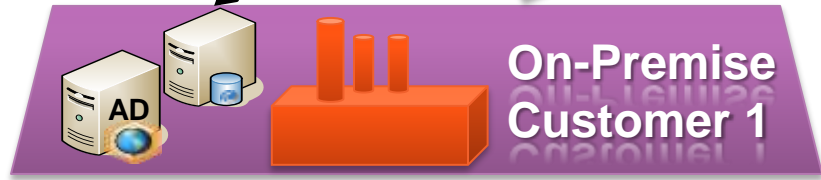
B2B Scenarios
PI to PI
AF to AF



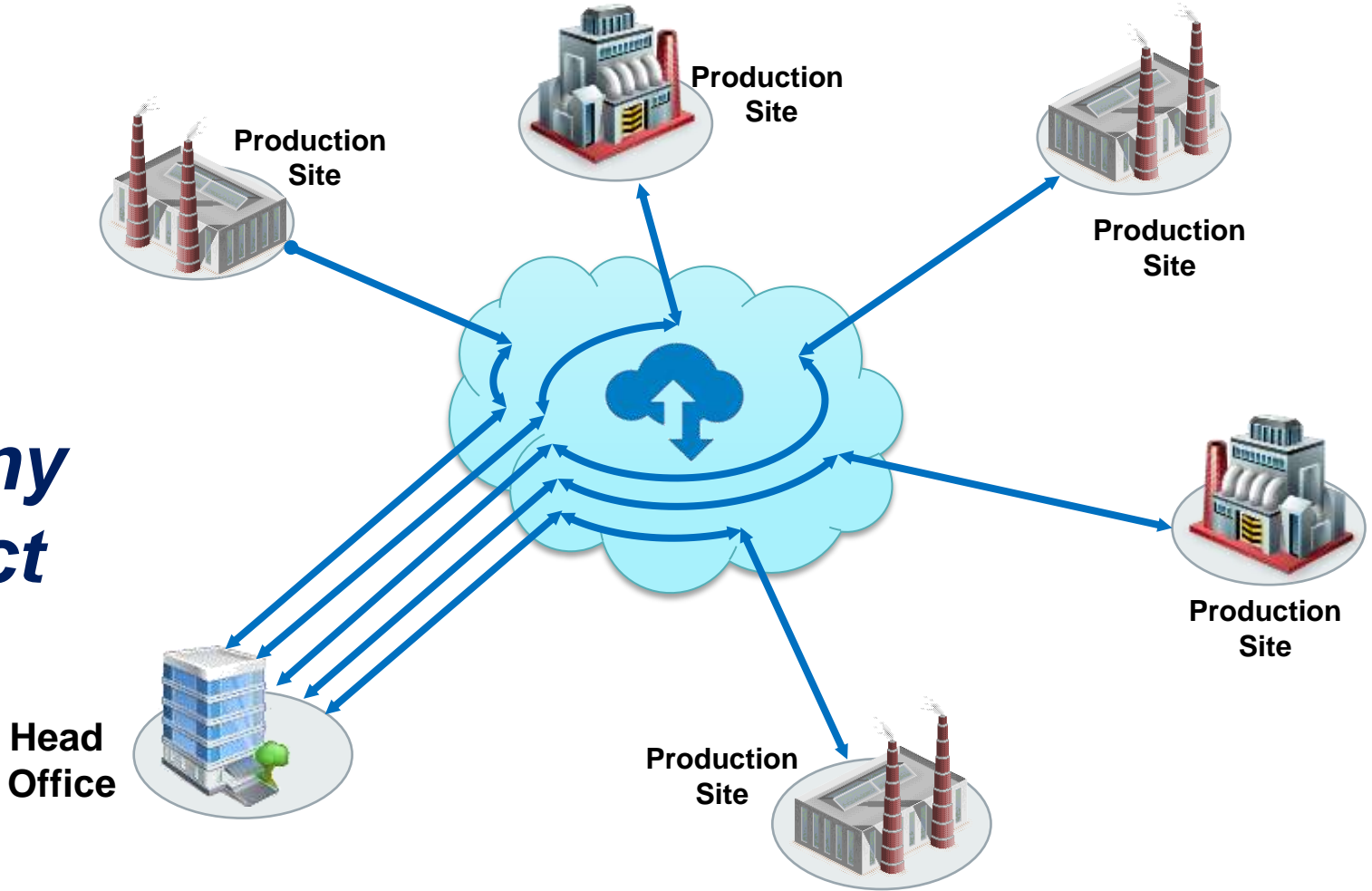
Secure WAN/LAN Connection

Secure WAN/LAN Connection

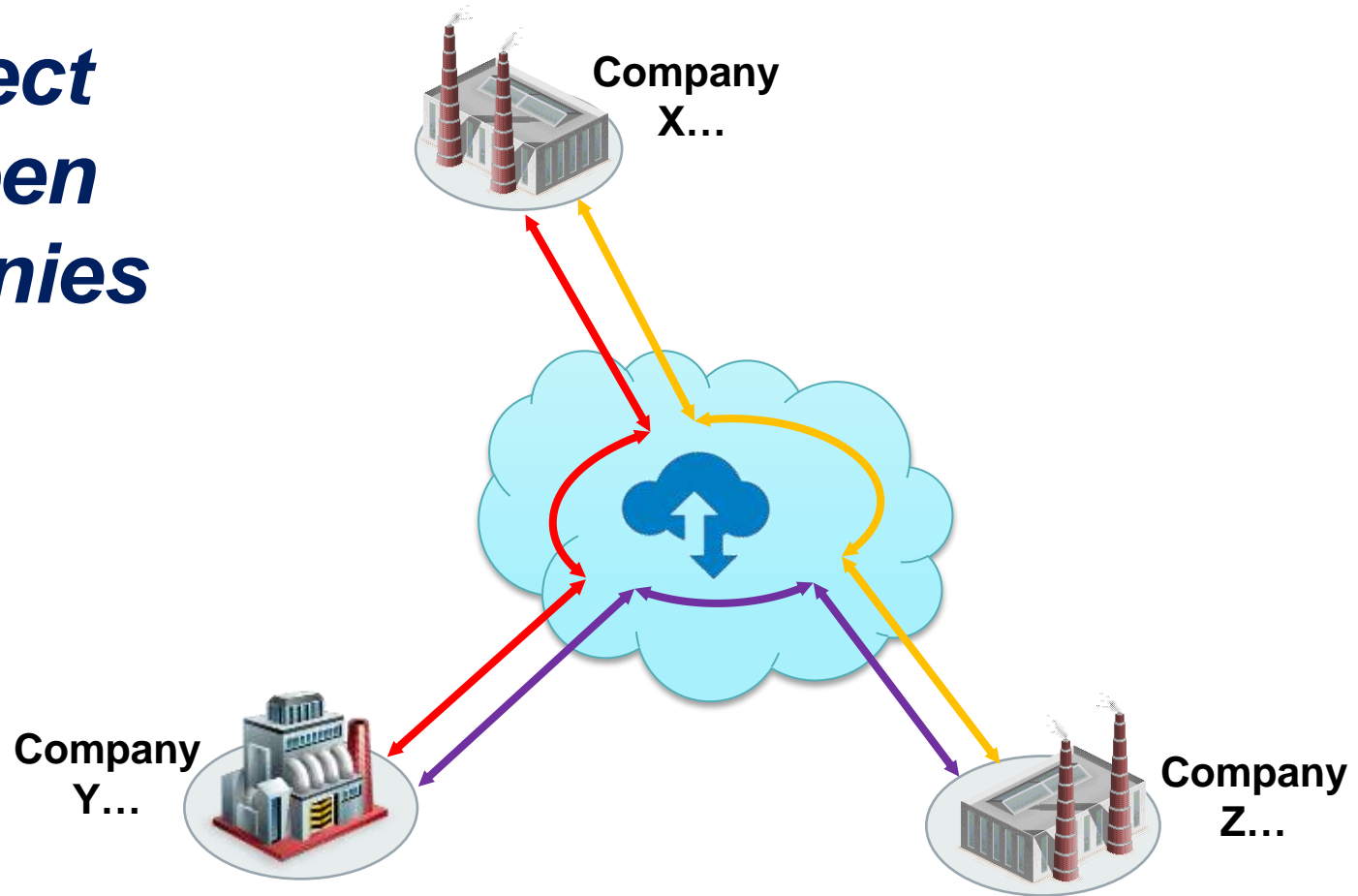
Secure WAN/LAN Connection



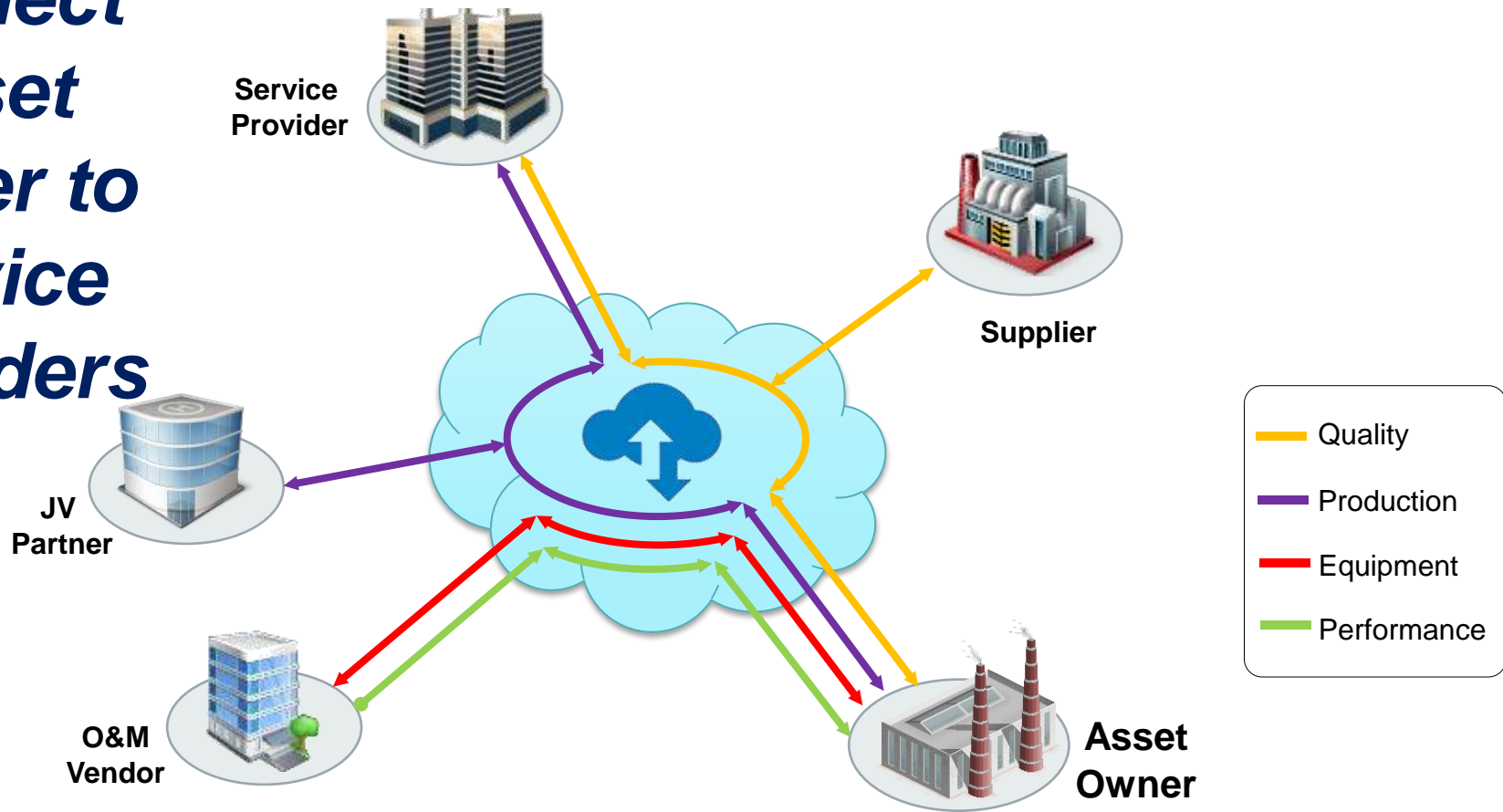
Intra Company Connect



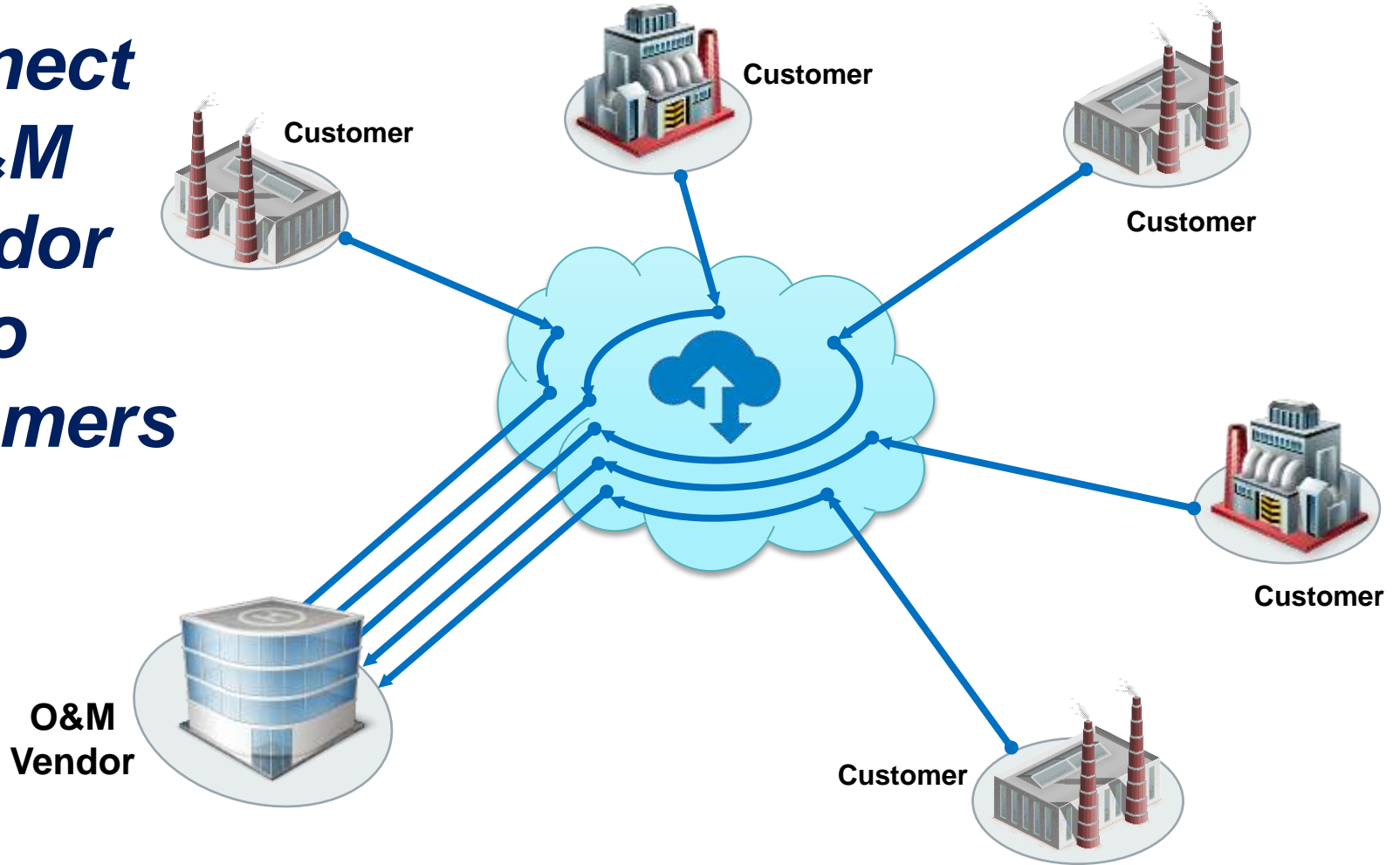
Connect Between Companies



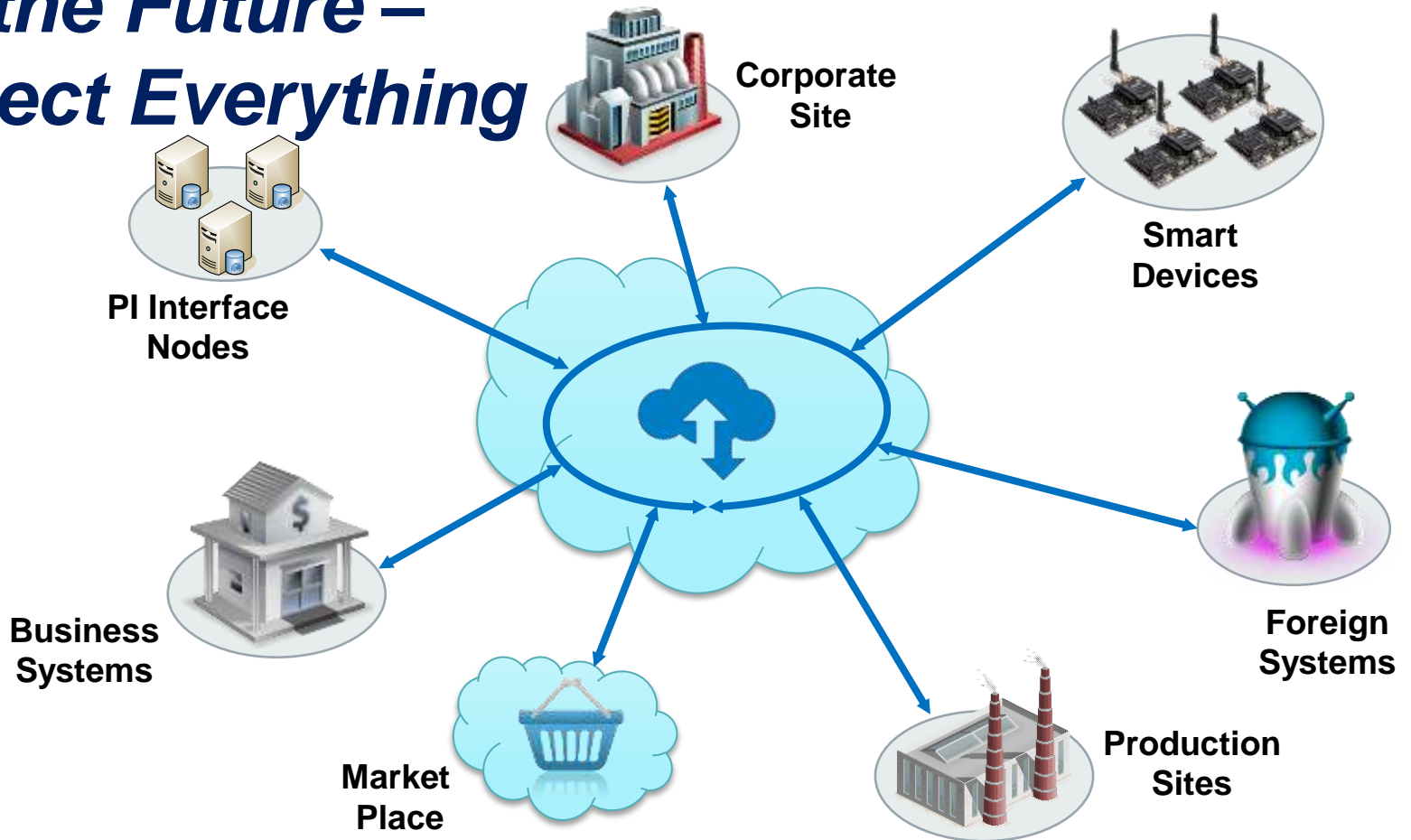
Connect Asset Owner to Service Providers



Connect O&M Vendor To Customers



In the Future – Connect Everything





Asset Based PI



A Complete Picture of Your Asset

Real-time values

- Inlet pressure
- Inlet flow
- Ambient temperature

Asset details

- Name
- Make
- Model

External Databases

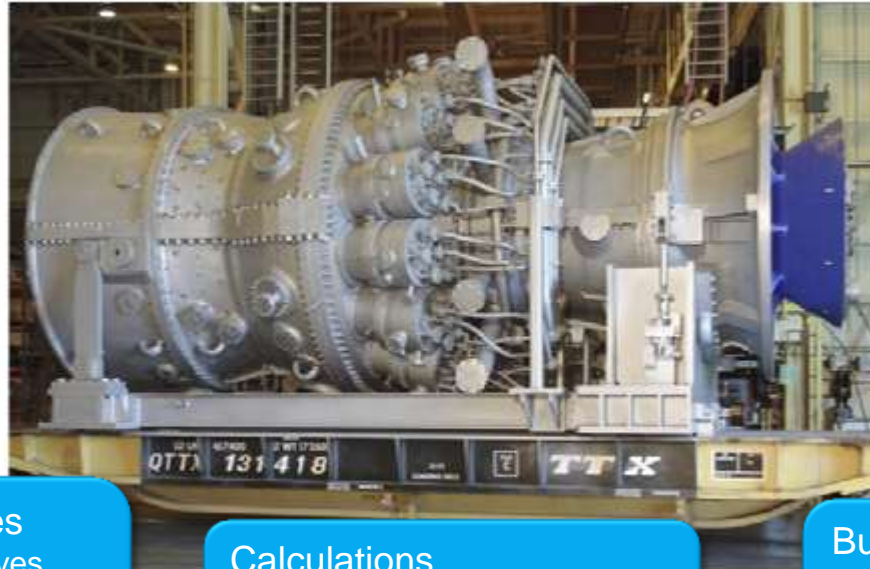
- Performance curves
- Last service date
- Design documents
- Inspection best practice

Calculations

- Performance calculations
- KPI's

Business Events

- Downtime
- Startup
- Excursions



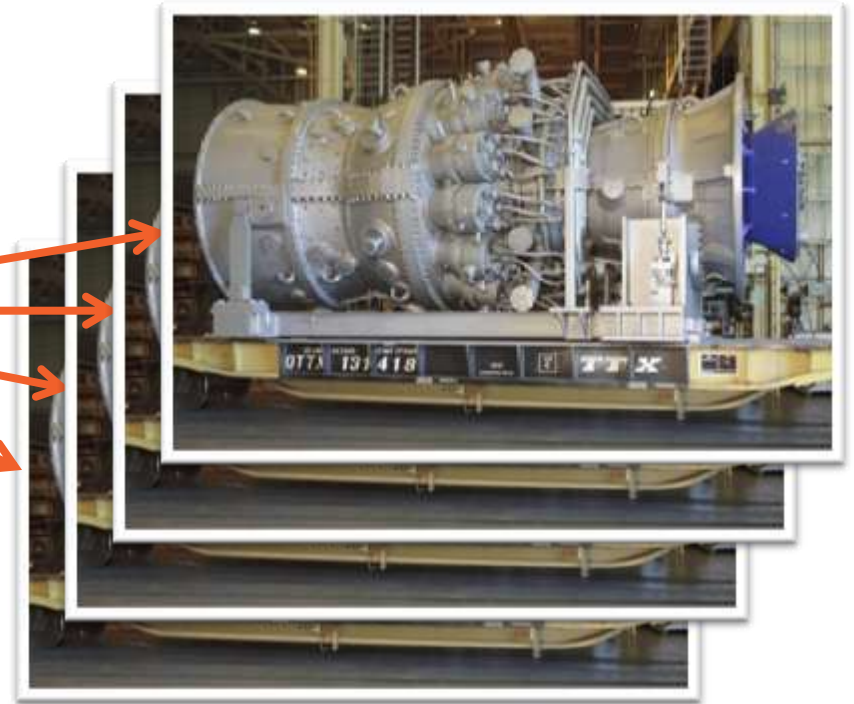
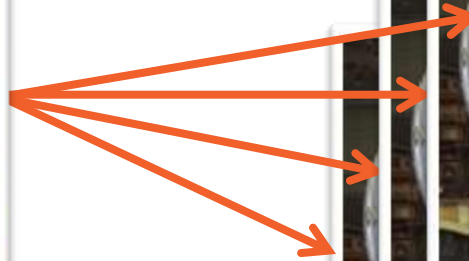
Real-time Values

- Exhaust temperature
- Exhaust flow
- Measured MW output

Notifications

- Performance excursions
- Temperature difference
- High temperature

A Common View for Similar Assets



Asset-relative reports in PI DataLink 2013

Windtopia_4 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View PI DataLink

A1 'Grand Ridge Wind Farm'

Grand Ridge Wind Farm		Unit Summary		
		Turbines In Production	Faulted	Average
97.8 %		6	0	97.8
29250.21 \$				
2366577.40 \$				
7	Installed Capacity:	9000 kW		
8	Instant Power:	4379 kW		
9				
10	Exp.Capacity Factor:	38 kW		
11	Actual Factor:	48.66 kW		
12				
13	MTD Generation:	4448453.75 kWh		
14	Daily Generation:	54981.60 kWh		
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

	Current	Previous Month	YTD	Plan
Average Capacity Factor (%)	46.6	34.0	240.0	38.0
Average Generation (MWh)	4448453.8	2.2	13.0	29.4
Operating Efficiency (%)	104.7	92.8	94.8	98.0
Number of Employees	4	5	N/A	7
Regulation Non-Compliance	1	1	2	2

Period	Operating Efficiency (%)	Capacity Factor (%)
1	120	5
2	80	5
3	105	65
4	105	25
5	115	25
6	100	25
7	95	68
8	105	20

Explore assets with PI Coresight 2012 R2



New Undo Redo Messages


Power Generation Farms

Help

\\DFPIAF\Windtopia\Wind Power Generation Fleet

- Big Buffalo Wind Farm
- Black Mesa Wind Farm
- Black Wolf Wind Farm
- Deep Valley Wind Farm
- Eldorado Wind Farm
- Grand Ridge Wind Farm
- White Bear Wind Farm
- Wild River Wind Farm
- Windy Valley Wind Farm

Search

Related Assets (10)

Cart

Big Buffalo Table

Start

Deep Val... Revenue

134.35

Deep Val...y Energy

252.53

Name	Value	Units	Trend
Big Buffalo Wind Farm Farm Availability	76.986	%	
Big Buffalo Wind Farm Farm Expected Power	9.119	kW	
Big Buffalo Wind Farm Farm Total Power	-36	kW	

Name	Value	Units	Trend
Black Mesa Wind Farm Farm Availability	72.235	%	
Black Mesa Wind Farm Farm Expected Power	12.833	kW	
Black Mesa Wind Farm Farm Total Power	-65	kW	

● Big Buffalo Wind Farm|Farm Total Power -36 kW
 ○ Black Mesa Wind Farm|Farm Total Power -65 kW
 ◆ Grand Ridge Wind Farm|Farm Total Power -26 kW



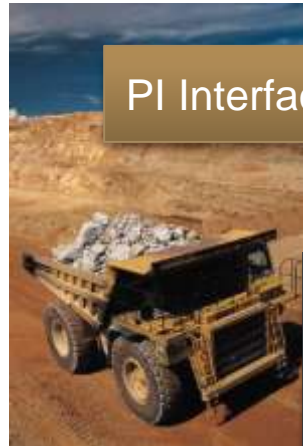
3/23/2012 5:48:09 AM

1h
8h
1d
1w
1mo

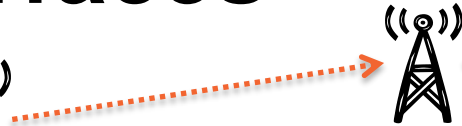
Now
3/23/2012 6:48:09 AM



Smart Interfaces



PI Interface

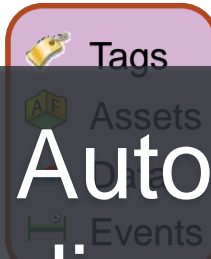


- Tags
- Assets
- Data
- Events

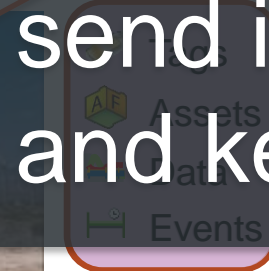


PI Interface

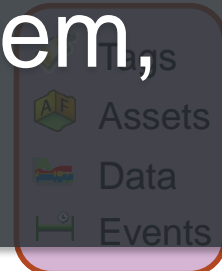
Automatically discover your data, send it to your PI System, and keep it in sync.



- Tags
- Assets
- Data
- Events



- Tags
- Assets
- Data
- Events



- Tags
- Assets
- Data
- Events

PI Interface





Asset Based Analytics

Asset Based Analytics Use Case

Extruding Process

Boiler Efficiency = $AVG(B1..Bn)$

Boiler1

Flow Out

Fuel Flow Rate

Efficiency = $(\text{Flow Out} / \text{Fuel Flow Rate} * 3.14)$

Boiler2

Flow Out

Fuel Flow Rate

Efficiency

Boiler3

Flow Out

Fuel Flow Rate

Efficiency



Boiler
Template



Or myProgrammedCalc (Flow Out, Fuel Flow Rate)



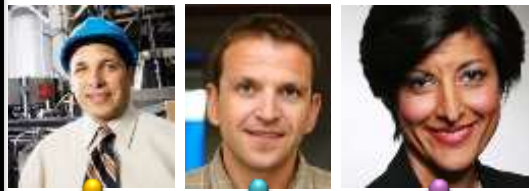


Event Frames





Information Challenges



PI Event Frames

Events Shorten the Time to Insight



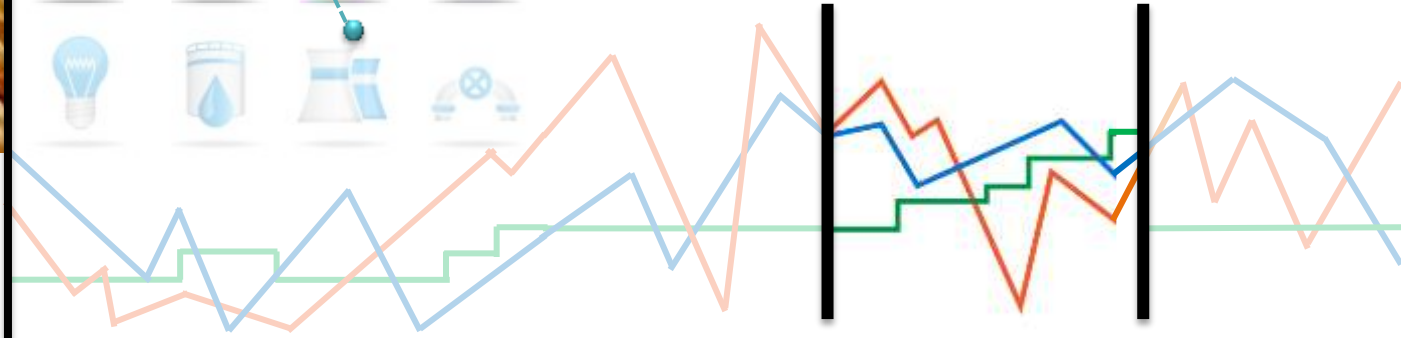
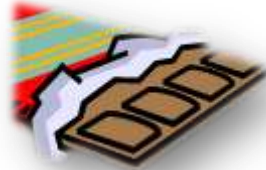
Too High!



Downtime



Batches





PI Event Frames Generator + PI Event Frames Interface Mgr



Generate Events via Trigger Tags
 Assign to an Event Frame Template
 Populate Event Frame Name
 Populate Event Frame Attributes
 Assign to Element

PI Event Frames Interface Manager

The Current Interface is : PIEFGEN3

Event Frames Structure
 Configure the event frames structure to define when event frames are created, on which template the event frames are based, and which elements and attributes are associated with the event frame.

Settings

- Interface Selection
- File Selection
- Server Information
- Event Frames Structure**
- Templates
- Time Settings
- Operational Settings
- Save Settings

Options

- Test Configuration
- Service Configuration
- Converter

EFConfig_Tree

- Truck 1 Roundtrip
 - Waiting to Load
 - Loading
 - Running Empty
 - Running Loaded
 - Dumping
 - Truck 2 Roundtrip
 - Truck 3 Roundtrip
 - Truck 4 Roundtrip
 - Truck 5 Roundtrip

Truck 1 Roundtrip Other Settings

Configuration Name: Truck 1 Roundtrip

Event Frame Template: Truck RoundTrip Template

Active Point: Truck1_Trigger

Behavior: Pulse Stop Include Zeroth State (Continuous)

Strings indicating zeroth state:

Event Frame Name:

Use Active Point value

Use Static Name

Use this PPoint value: Mine Truck 1.RouteName

Attribute Name	Configuration	Value
Driver	PPoint	Mine Truck 1.Driver
Route	PPoint	Mine Truck 1.Route
Comment	Not Included	
Description	Not Included	

Go to Templates

Truck 1 Roundtrip Other Settings

Add Reference Elements in the grid below.

The Primary Reference Element is: \\DFPIAF\OSI Mining\Trucks\Mine Truck 1.

Default Settings

Enable

Debug Messages

Merge Consecutive

Recovery Time: day(s)

Evaluation Delay: second(s) Set to -1 to Evaluate At End

Event Generation using Asset Based Analytics



|Efficiency

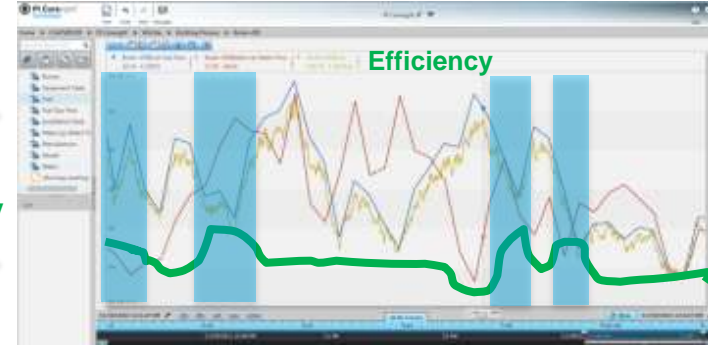
|Fuel Flow Rate

|Flow Out



myEF

|Efficiency



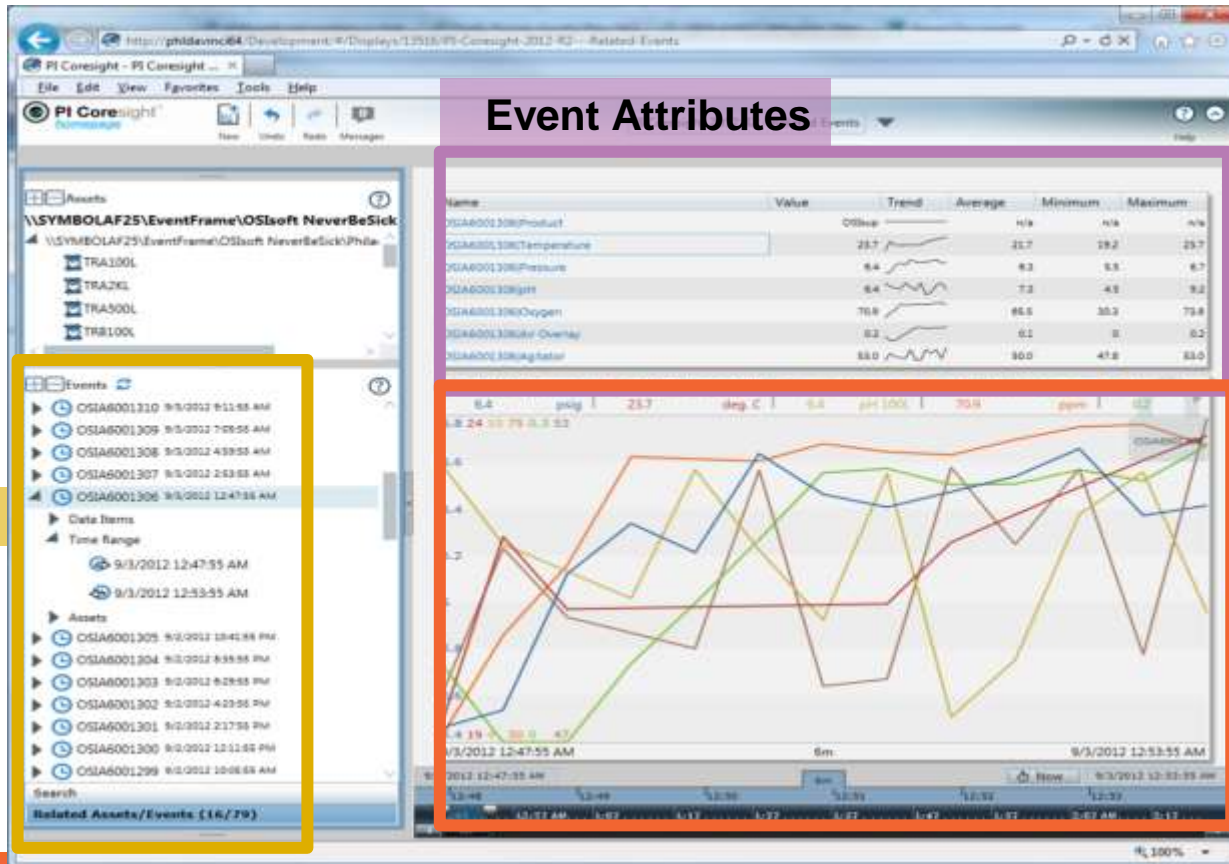
Efficiency = (Flow Out / Fuel Flow Rate * 3.14)



myEF.Start = (Efficiency > LIMIT)

myEF.End = (Efficiency < LIMIT) AND (Fuel Flow Rate > 80)

PI Coresight 2012 R2 and Events



Event Discovery

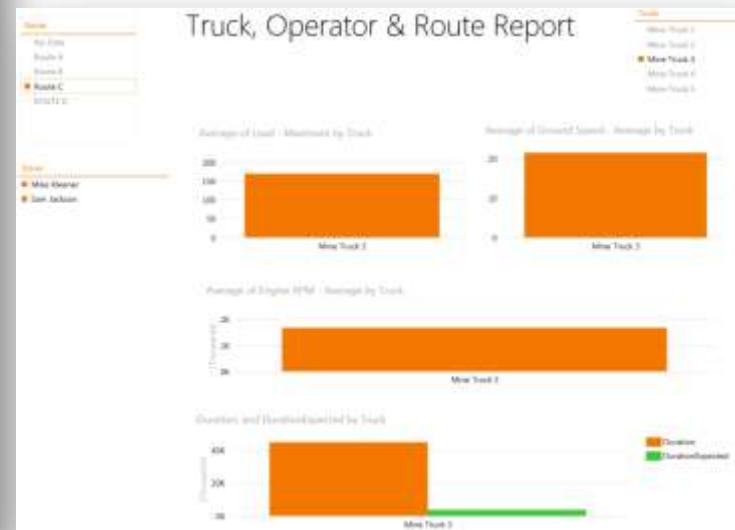
Event Trending

Truck, Operator & Route Report



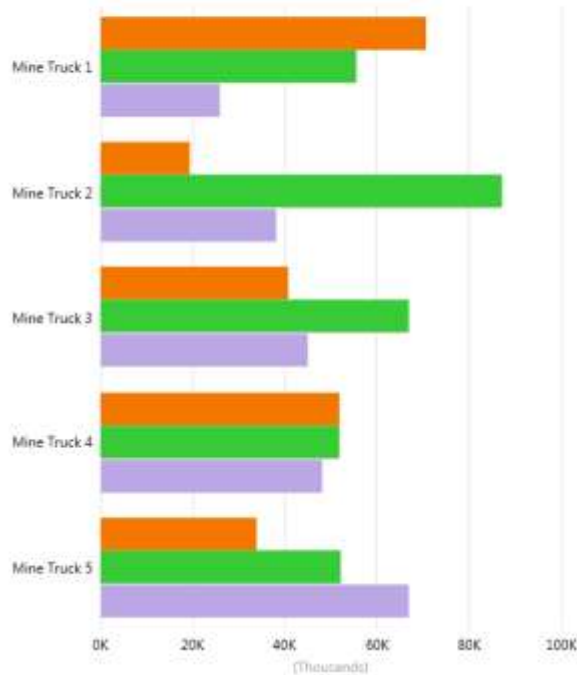
Truck Fleet Monitoring:
Filter on Route, Truck, or Driver

Truck, Operator & Route Report

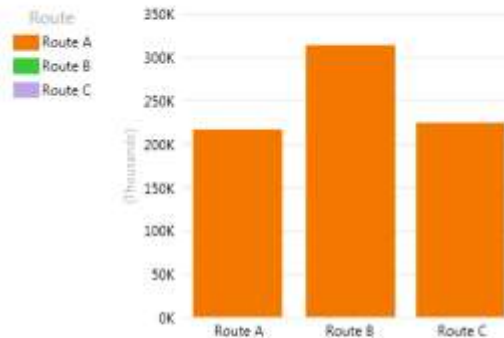


RoundTrip Cumulative Duration by Truck & Route

Duration by Truck, and Route



Duration by Route



2012

2013

2014

FUTURE

4Q

1H

2H

1H

See PI System Roadmap on Tech Support site for updates

Wave 2 – PI Event Frames for the Mainstream

Wave 3 – PI Batch to PI Event Frames [+]

★ **PI Event Frames Generator**
Trigger Hierarchical Events (Tags)
Trigger Batches, PI BaGen Migration

PI Interfaces
 for BES / MES
Batch Events

★  Batch Intf

PI System Access
Event Integration

★

PI Coresight
Related Events

★

PI DataLink (TBD)
Events in Excel

PI Coresight (TBD)
Hierarchical Events

PI ProcessBook (TBD)
Recent Events

PI AF Asset Based
 Analytics (TBD)
Event Detection

PI Data Archive (TBD)
Batch to EF Migration



Product	Theme
PI AF	Audit Trail Viewer
PI Coresight	Event Overlay Trending
PI Coresight Mobile	Events in Your Pocket
RtReports	EF Integrated into Compliance Reports
PI Manual Logger	Log Events / Event Attributes
PI Notifications	Event Subscription & Notification
PI Data Archive	Batch Link / Redirection [TBD]

* Items in green indicate that development has started, but release projections are not yet available.

NOTE: Future dates are subject to change. Last Updated: 04-17-2013

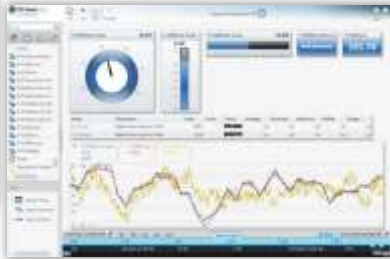


Visualization

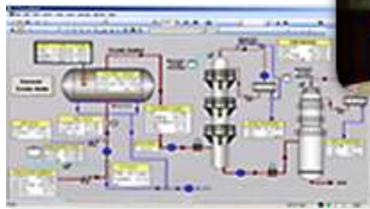


PI Visualization Suite

PI Coresight:
Ad Hoc Analysis &
Collaboration



PI WebParts: Composite
Apps, Shared broadly

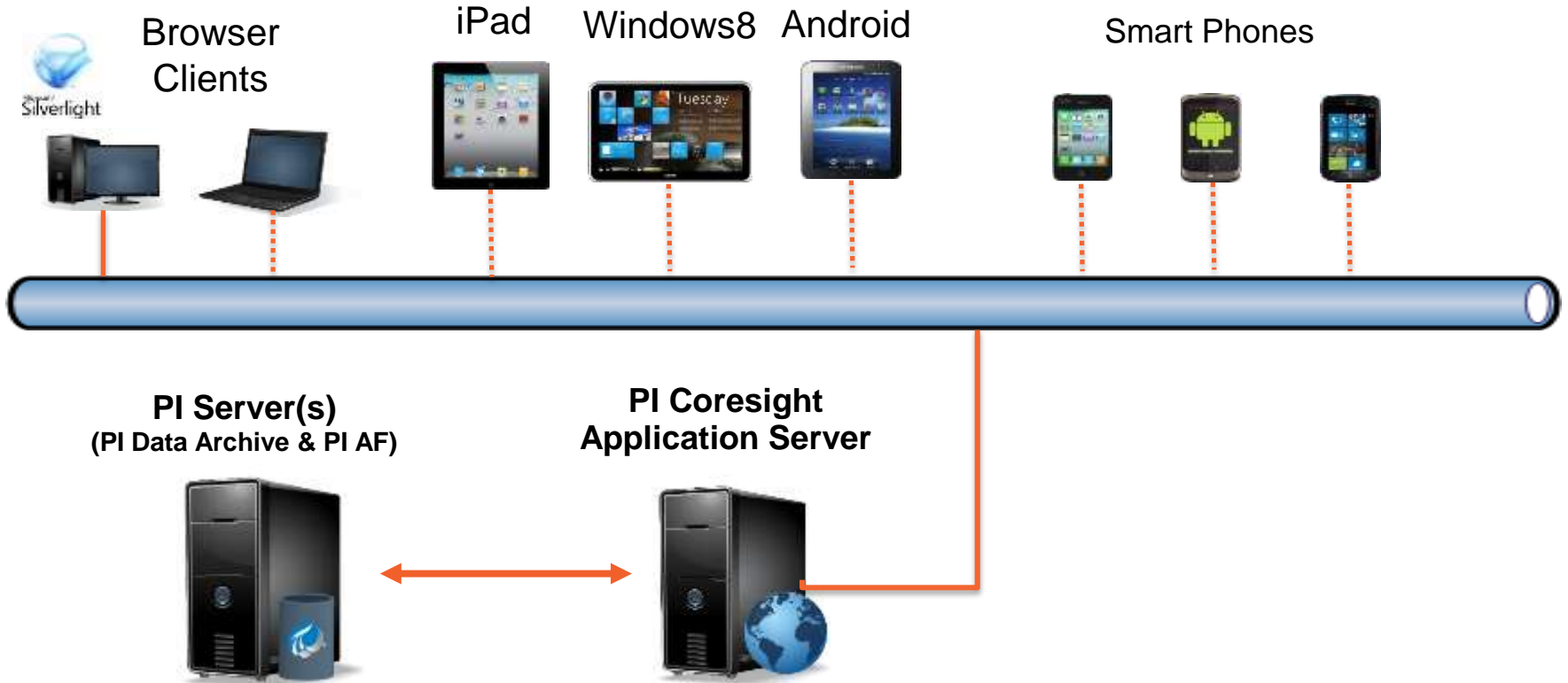


PI ProcessBook:
Display authoring and
Process monitoring

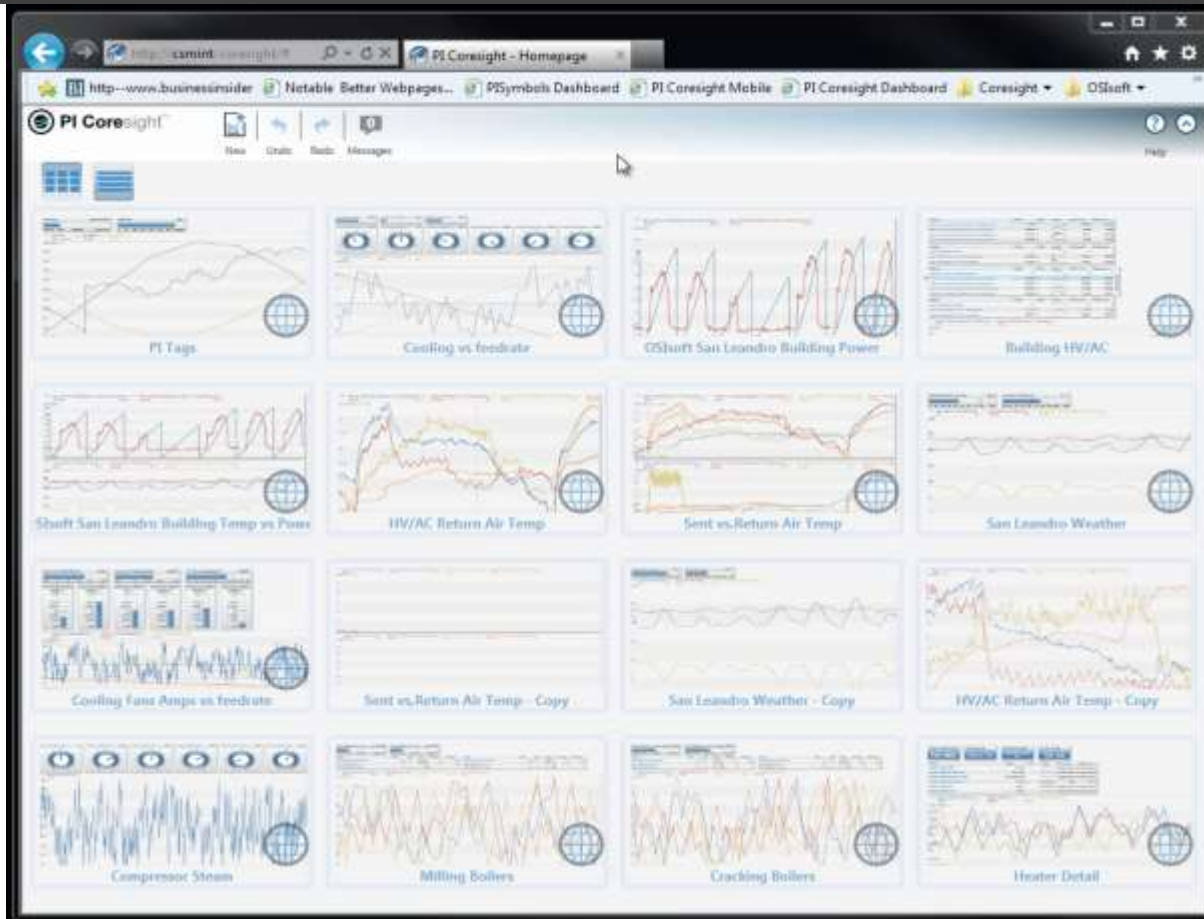
PI DataLink:
Reporting and
analytics in Microsoft
Excel



PI Coresight with Mobile Clients



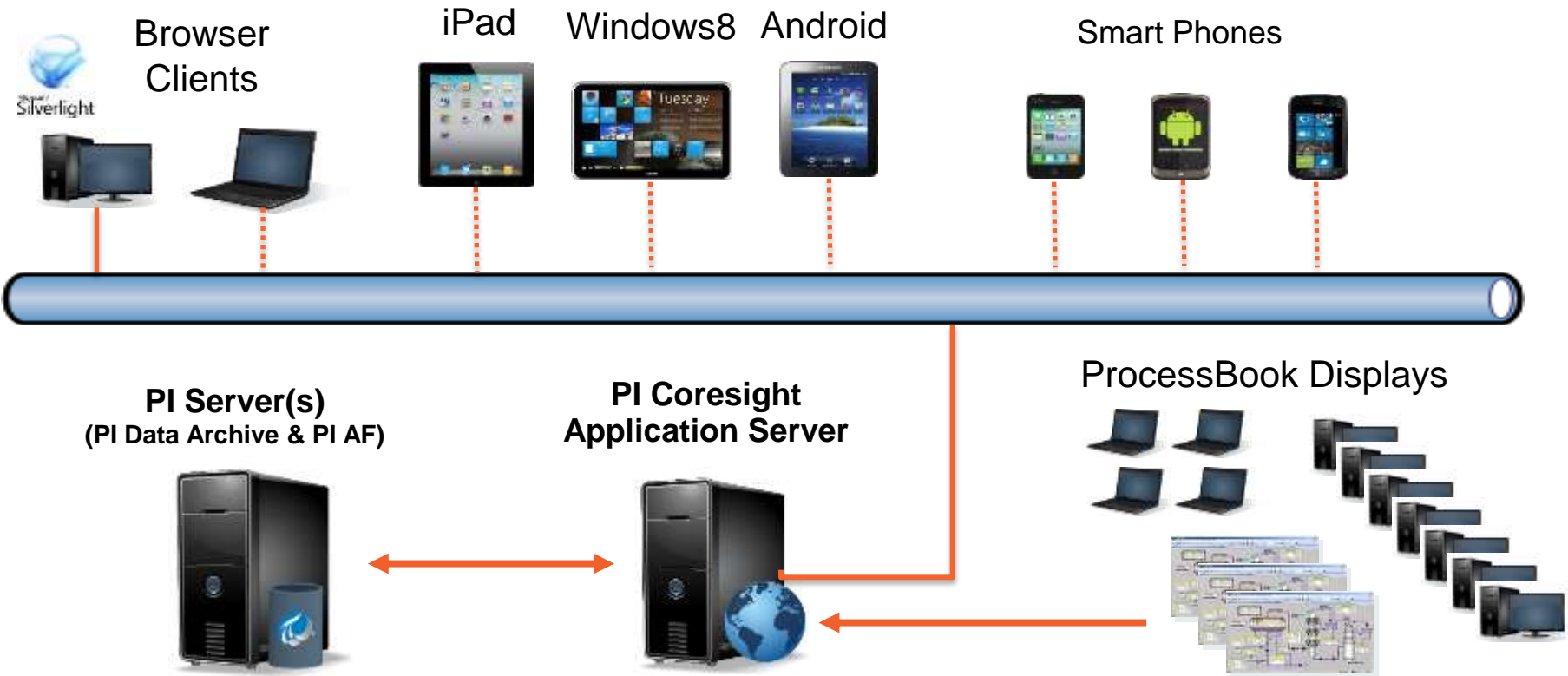
PI Coresight iPad Demo



PI Coresight Phone Demo



PI Coresight – ProcessBook Display Viewer



PI WebParts 2013

- The Latest Platforms

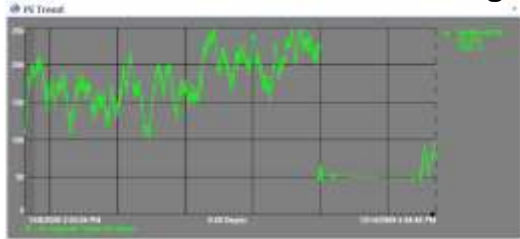


- The Latest Browsers
 - On the Latest Devices



- The Latest Technology

Native Browser SVG Rendering



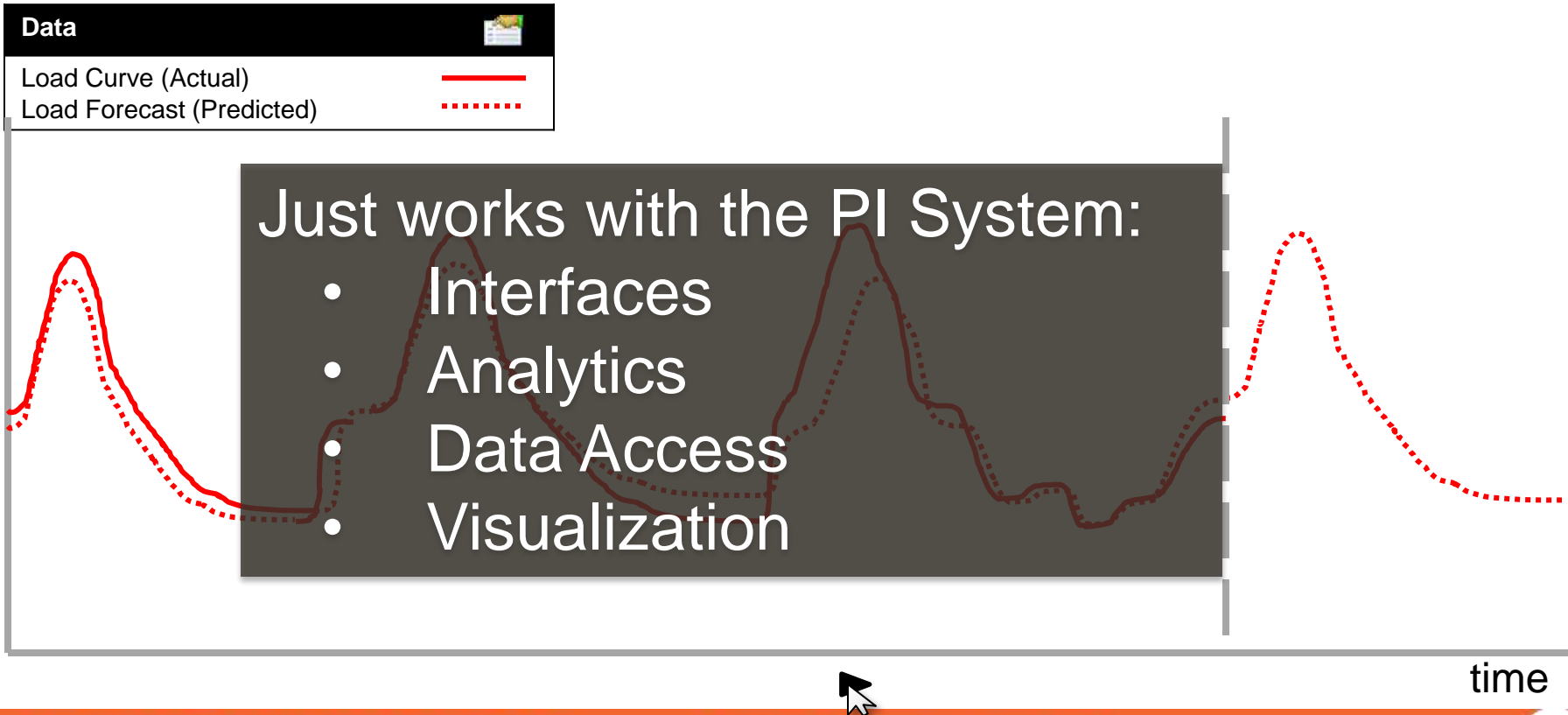
WSP Solution Deployment





Future Mid 2014 and Beyond

Future Data Coming in 2014



PI System Access - Evolution

PI System SDK

A single high performance SDK that allows you to access all PI System data

RESTful
Web Services

Modern web service standard, ideally suited for mobile and cloud

Enterprise
Integration

Rich business system integration made easy (ERP, BI, Geo-spatial)

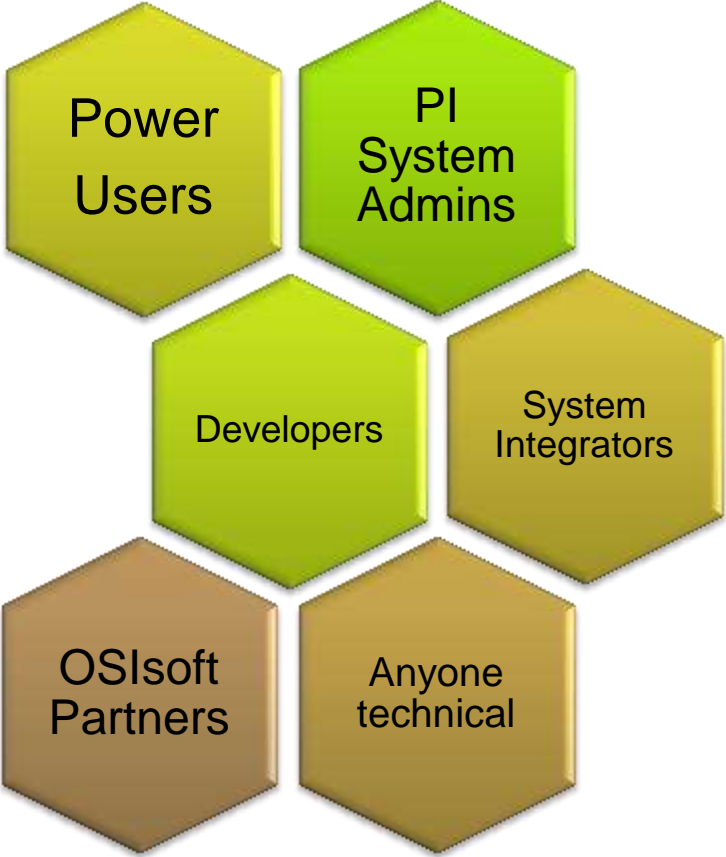
Get hands on knowledge of how to use and get value from the PI System

 **OSIsoft.** DECEMBER 3 - 6, GRAND HYATT SAN FRANCISCO

vCampus Live! 2013

WHERE PI GEEKS MEET 

SAVE THE DATE



Stay Up-To-Date on the Web

- PI System Roadmap on OSIsoft Technical Support Site

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



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Director, Marketing
OSIsoft, LLC



THANK

YOU

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