



## OSIsoft Product Roadmap 2010

John Daniels  
Customer Support Engineer  
OSIsoft, LLC

Empowering Business in Real Time.

© Copyright 2010, OSIsoft LLC. All rights Reserved.

# Agenda



- The Year in Review 2009
- PI System 2010
- Roadmap for Infrastructure
- Roadmap for Clients

# 2009 The Year in Review

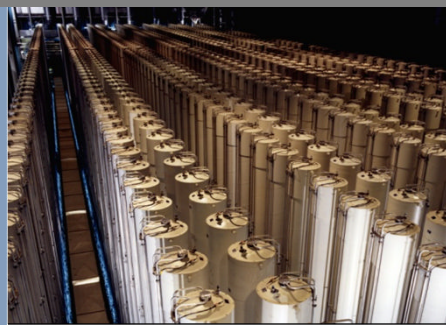


What did OSIsoft accomplish in 2009 to help you?



Security

Critical Facilities  
are Safe



Asset Centric PI

Define Once  
Use Over and  
Over



Localization

Use Worldwide



Scaling, 64 bit

Use PI for more  
data

- PI AF 2.x uses Windows Security since the first release
- The PI Server 3.4.380 can leverage Windows authentication mechanism
- PI Notifications leverages PI AF and PI Server Security





# Security Value Proposition



- True Single Sign-On (SSO)
- Easier to Manage
  - User Accounts in Windows/AD Only
  - Leverage AD Tools and Security Policies
- Upgrade Experience
  - Backward Compatibility
  - Simply Requires PI SDK 1.3.6
- More Secure
  - SSPI\*-based Kerberos or NTLM\*\*
  - Server-Side Authentication Control
- More Flexible
  - Unlimited Access Control Lists (ACLs)

\* *Security Support Provider Interface*

\*\* *NT LAN Manager*



# Asset Centric PI: AF HA



AF-based PI Clients

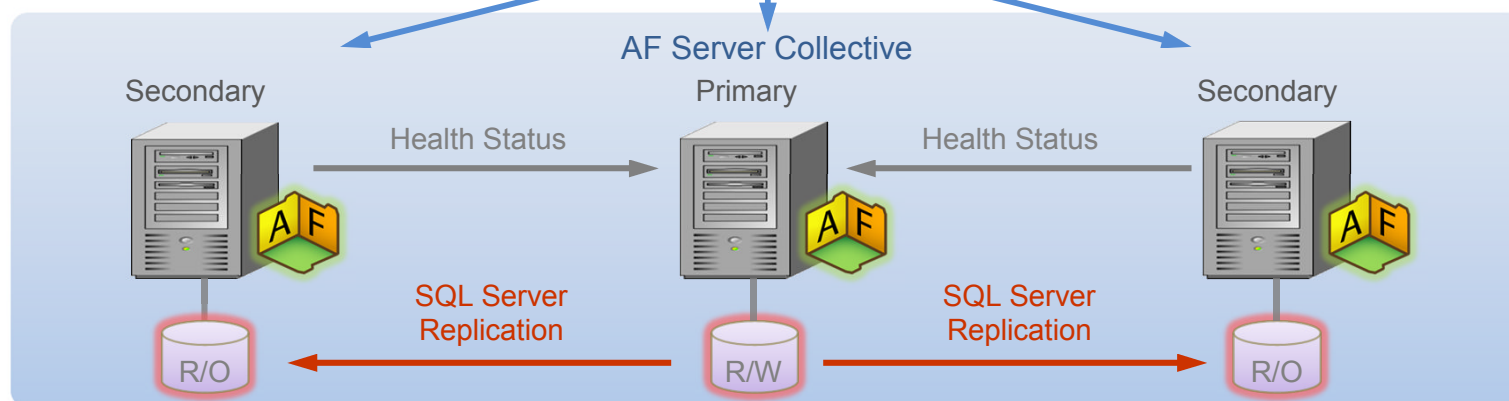
- WebParts
- ProcessBook
- DataLink
- Notifications



AF SDK Library



PI System Explorer



SQL Server  
(primary)

- ☒ Express
- ☒ Standard
- ☒ Enterprise

SQL Server  
(secondary)

- ☒ Express
- ☒ Standard
- ☒ Enterprise

# PI Notifications: The Power of Templates...



## Define information once

- Fewer errors
- Automatically in sync
- Maintenance can scale

## Override where necessary

- Change time rule
- Define specific content
- Add/modify subscribers

Configured from  
AF Elements



Filtered with  
sophisticated  
rules



Active Directory



## Trigger



E-mail or  
Instant Message



Processbook  
MyPI Desktop  
Webparts

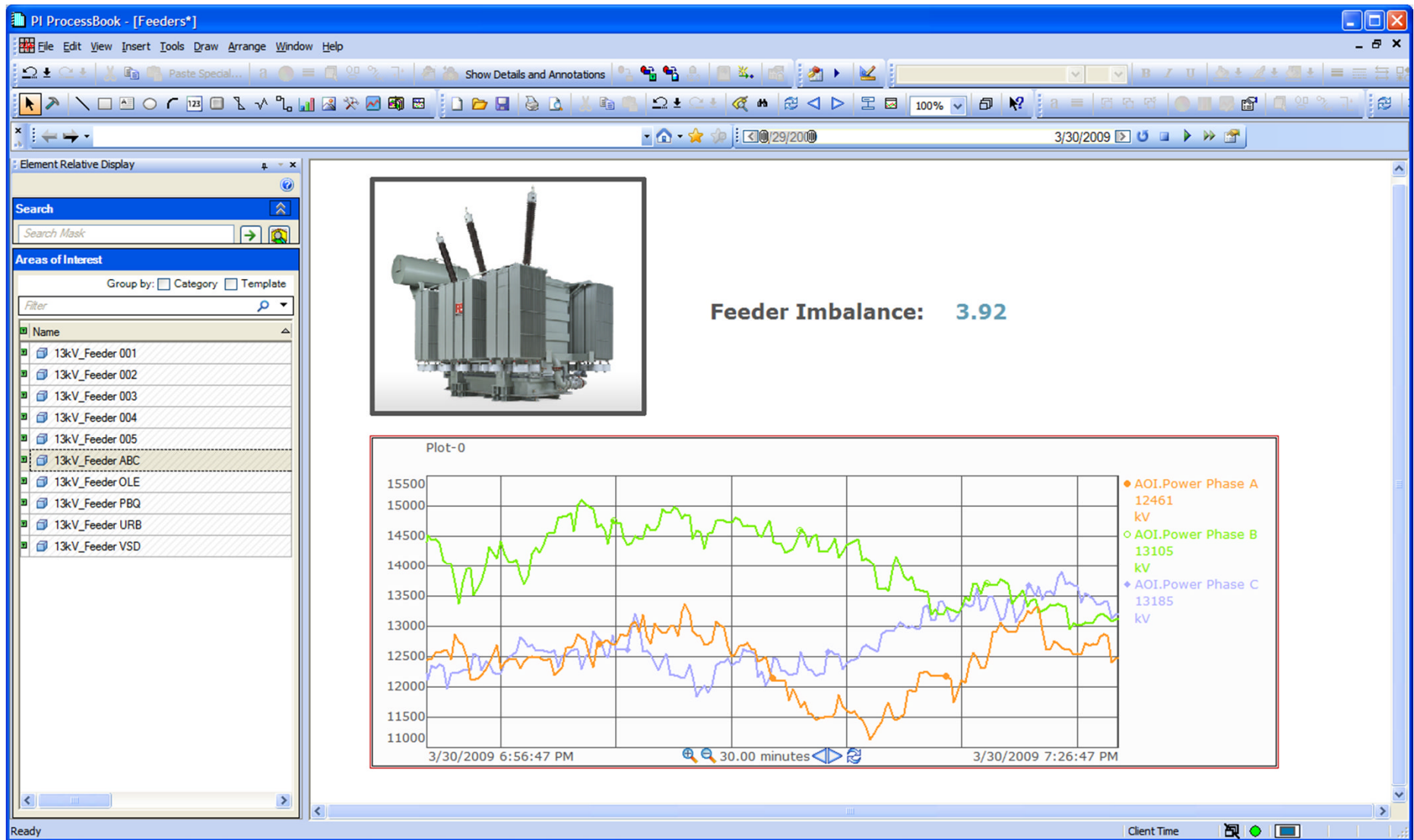


Web Service  
XML

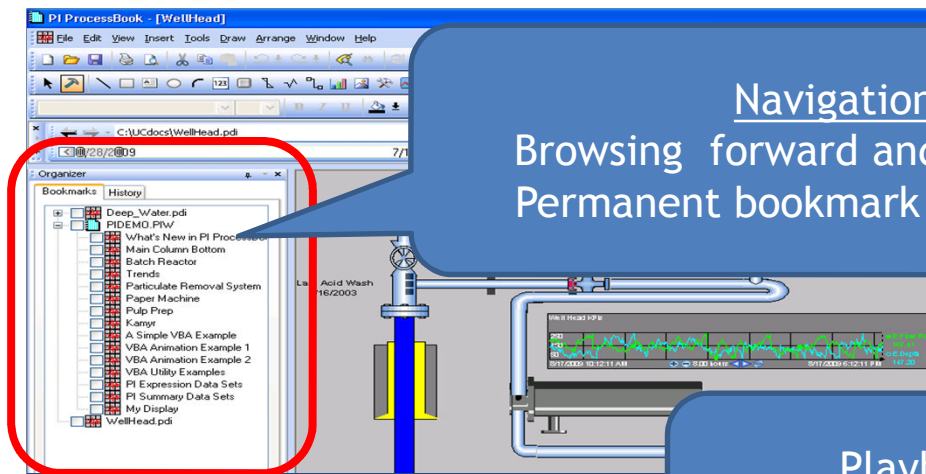


Extensible

# ProcessBook 3.2: Element Relative Displays

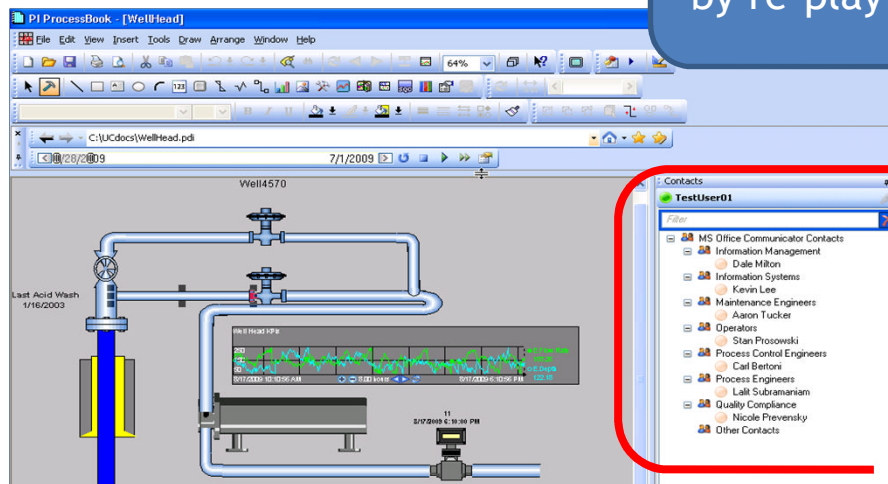


# ProcessBook 3.2: Productivity Enhancements



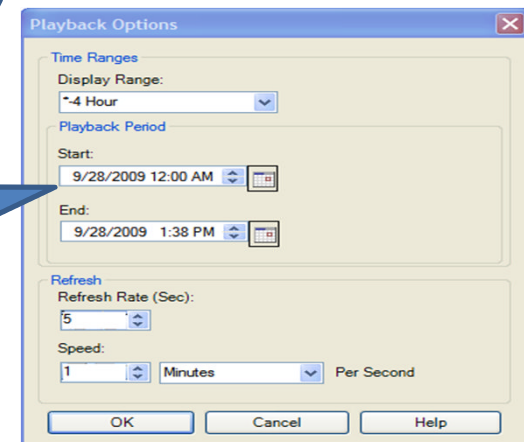
## Navigation

Browsing forward and backwards  
Permanent bookmark of favorites



## Playback

Troubleshoot problems  
by re-playing a display



## Communicator

IM, Email Contacts  
Easily send a PB  
screenshot





# PI WebParts 3.0



**Configure AF Tree View -- Webpage Dialog**

Server: DFP12010RC

Database: Trans DistribuCo

- Trans DistribuCo
  - TransDistribuCo
    - Distribution
      - Assets
        - Eastern District
          - Bighorn Basin
            - Batteries
            - Capacitor
            - Circuit Breaker
            - Load Tap Changer
            - Transformer
              - TR0842
              - TR2003
                - Bushing Degradation
                - DGA Alert
                - Differential Oil Temperature
                - Elevated Oil Temperature
                - Low Nitrogen Pressure
                - LTC2003
              - TR3045
              - TR5620
              - TR9124
            - Gypsy Junction
            - Victory Valley
            - Wolverine
          - Northern District
          - Southern District
          - Western District

Root Node: \\DFP12010RC\Trans DistribuCo\TransDistribuCo

Default Selected Node: \\DFP12010RC\Trans DistribuCo\TransDistribuCo

OK Cancel

**Station Detail - Windows Internet Explorer**

http://transdistco/SitePages/Station%20Detail.aspx

Station Detail

TransDistribuCo 2010 Portal > Station Detail

Welcome to the TransDistribuCo portal!

Home Stations **Station Detail** Transformer Detail

Search this site...

**Stations**

- Eastern District
  - Bighorn Basin
  - Gypsy Junction**
  - Victory Valley
  - Wolverine

**Station Overview**

**Gypsy Junction ST3347**

30.48	30.48	30.48
89.79	89.79	89.79
90.92	90.92	90.92
89.79	89.79	89.79

Diagram showing Gypsy Junction ST3347 with equipment TR4522, TR4967, TR2822, TR7785, and TR6002. Circuits #35, #36, and #37 are shown. Back and Front views are indicated. SLP West is also shown.

**Workorders**

Date	Equipment ID	Order Number	Task	Task Type	Assigned To
2/2/2010 12:00:00 AM	TR4522	2002-1234	DGA OIL SAMPLE	Other Maintenance	Wiggum, Ralph
7/3/2010 12:00:00 AM	TR4522	2002-1234	N2 SYSTEM REPAIR	Other Maintenance	Wiggum, Ralph
4/13/2010 12:00:00 AM	TR4522	2002-3957	N2 SYSTEM REPAIR	Corrective Maintenance	Wiggum, Ralph
9/5/2010 12:00:00 AM	TR4522	2003-1034	TCG TEST - MAIN TANK	New Installation	Krupp, Benny
7/7/2010 12:00:00 AM	TR4522	2003-1034	DGA OIL SAMPLE	Other Maintenance	Wiggum, Ralph

Showing 1 to 5 of 13

Done Local intranet | Protected Mode: Off 100%

# Product Localization: Eight Languages



- Available now
  - PI ProcessBook
  - PI ActiveView
  - PI WebParts
  - PI SDK
- In development
  - PI DataLink
- In plan
  - PI System Explorer
  - PI Notifications
  - PI Manual Logger

- French
- German
- Russian
- Spanish
- Korean
- Japanese
- Brazilian Portuguese
- Simplified Chinese

**hallo** *bonjour*  
*привет*  
*iHola*  
*안녕하세요*  
*こんにちは*  
*Olá*  
*你好*  
*saluton*

Making PI work well on a large scale

- Performance, scalability and throughput for the PI AF and PI Notifications
- New PI SMT 3 plug-ins to manage the PI 3.4.380 security model
- 64 bit support for scale and performance



- Servers:
  - PI Server 3.4.380
  - PI AF 2.1
  - PI Notifications tested as a 32bits running on 64bit
  - PI Utilities Gateway
- Clients
  - PI Web Parts 3.0
  - PI DataLink for Excel Services 4.1
- Data Access
  - PI SDK
  - PI OLEDB
  - PI OLEDB Enterprise
  - PI Web Services



# Why 64-bit Support?



- Most server hardware today is 64 bits
- Microsoft aggressively moving to 64 bits
  - Windows 2008 R2, SharePoint 2010 are 64 bit only
- Allows full utilization of hardware and cache
- Mostly relevant to OSIsoft servers and customer applications
  - Programmatic interfaces are used by servers





# Interfaces: Accomplishments



- **OSIsoft commitment:**
  - 450+ interfaces
  - 20 developers in 6 locations
  - Over 150 person years of development
  - 78 Interface releases during the past year
- **PI3 380 Security for ICU and APS**
- **Support for Vista, 2008 Server, 2008 R2 Server, and Windows 7**
- **New Interfaces** (Modus, ABB 800xA Batch, Wonderware InBatch, Honeywell TotalPlant Batch, GE iBatch, Siemens Spectrum Power TG)
- **AMI Head-End Systems** (Trilliant UnitySuite, Silver Spring Networks UtilityIQ, Grid Net PolicyNet, Elster EnergyAxis)
- **Other Interface Development** (ESC StackVision, BACnet, ACS Prism on Linux, REpower OPC DA, UFL)

# 2009 in Review - Major Releases



- Servers
  - PI Server 3.4.380
  - PI SMT 3.3.1.3
  - AF 2.1
  - PI Notifications 1.1
  - PI Notifications OCS Delivery Channel
  - MCN Health Monitor 1.3.5.2
- Data Access
  - PI SDK - 64-bit 1.3.8.385
  - PI JDBC 1.0.0
  - PI Data Services 3.0.0
  - PI System OLEDB 1.0.0.11
- Clients
  - ProcessBook 3.2.0
  - Active View 3.2.0
  - PI Web Parts 3.0.0
  - DataLink 4.0.3
  - DataLink for Excel Services 4.0.3
  - DataLink for Excel Services 4.1.1.0
  - RtReports 3.3.0.0
  - PI Manual Logger 2.3.0.160
- Additionally
  - 31 Minor Releases
  - 7 Language Packs

# 2009 The Year in Review

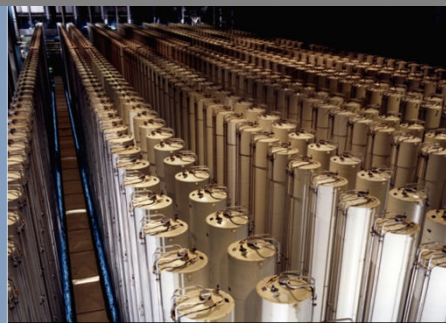


## What did OSIsoft accomplish in 2009 to help you?



### Security

- ✓ PI 380
- ✓ Deployment



### Asset Centric PI

- ✓ ProcessBook
- ✓ WebParts
- ✓ Notifications
- ✓ AF HA



### Localization

- ✓ 8 languages
- ✓ 5 products
- ✓ 3 planned



### Scaling, 64-bit

- ✓ Servers
- ✓ Data Access
- ✓ Web Access

## What are the benefits of PI System 2010?



### Simple

Easy to get started,  
system grows with you



### Relevant

Delivers the most  
important data to right  
people



### Collaborative

Everyone has access to  
the data, easy to share

# What's New in PI System 2010



## PI Clients

- PI WebParts 2010
- PI DataLink 2010
- PI for Office 2010

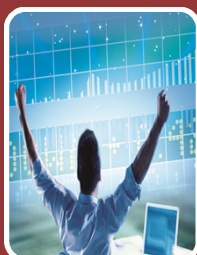
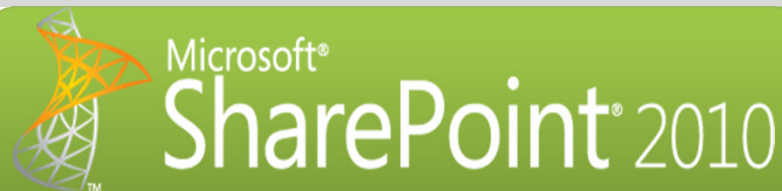
## Business User Experience



## PI Data Access

- PI OLEDB Enterprise 2010
- PI Web Services 2010
- PI JDBC 2010

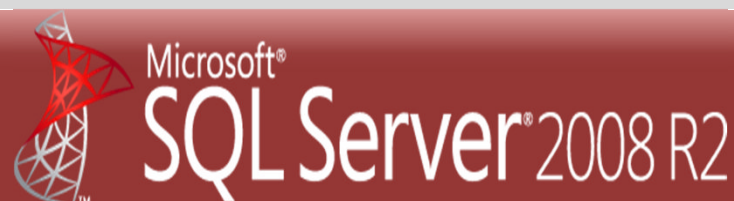
## Business Collaboration Platform



## PI Server

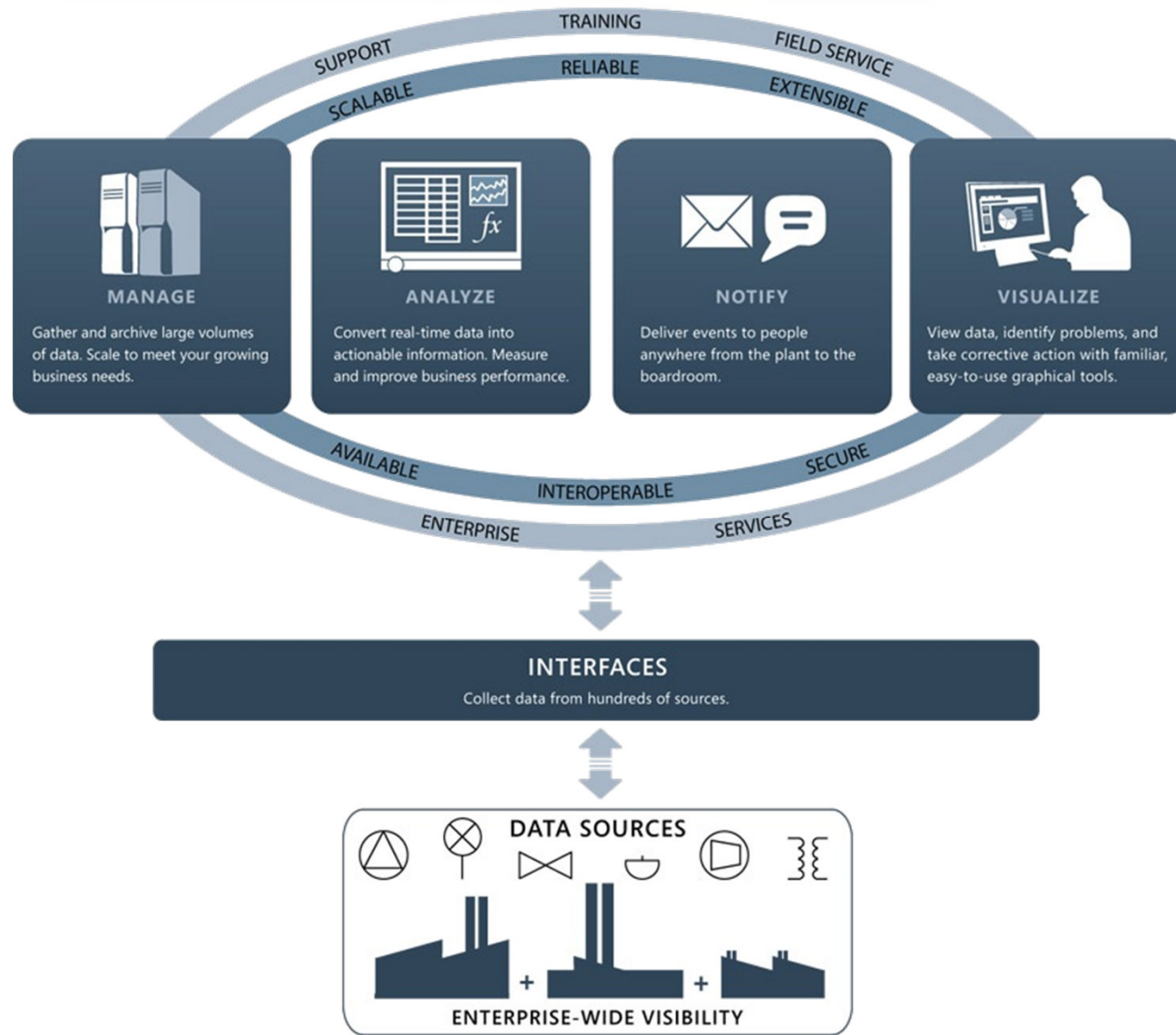
- PI Server 2010
- Assets and Tags
- PI Analytics for StreamInsight

## Data Infrastructure and BI Platform

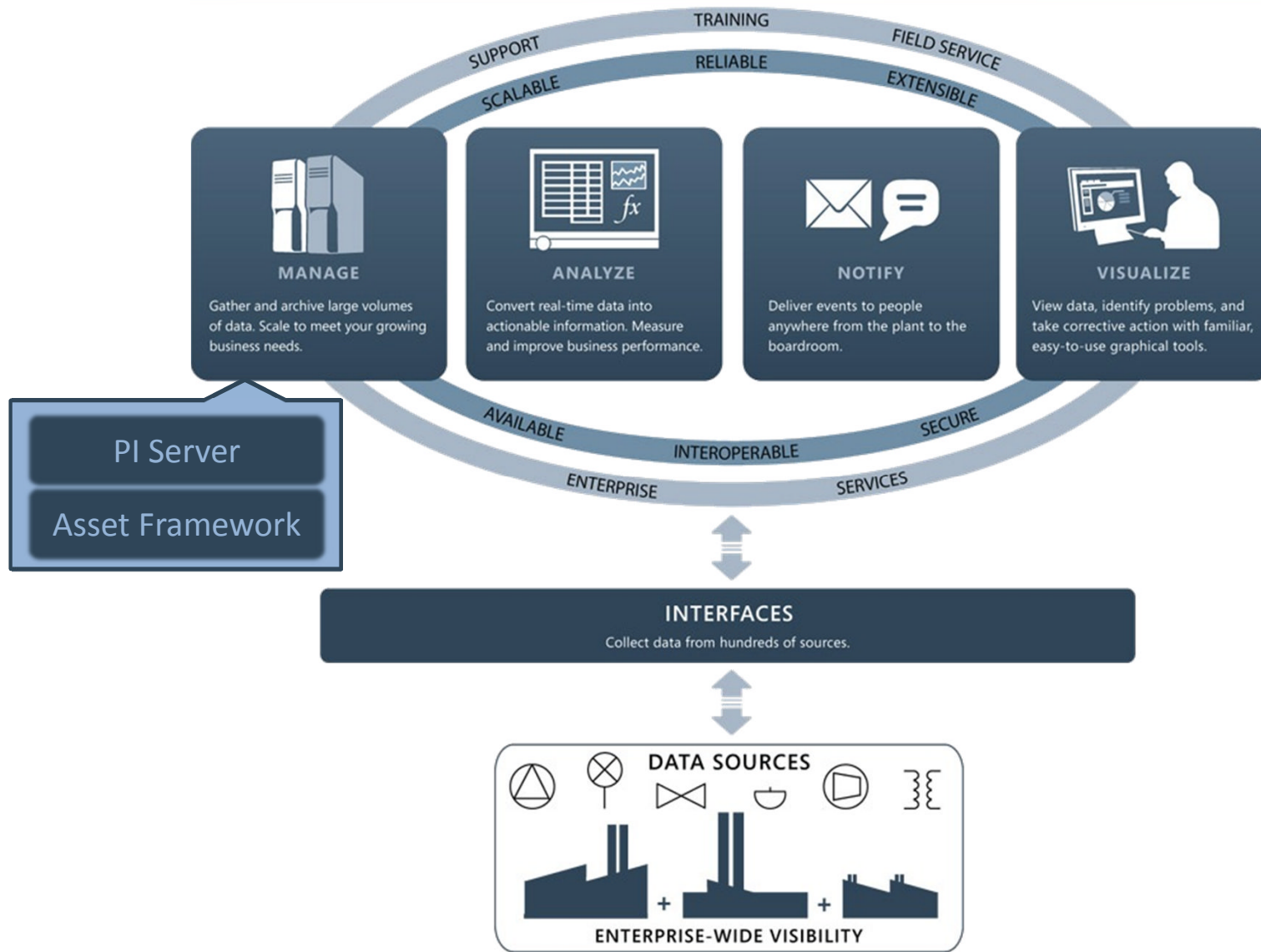




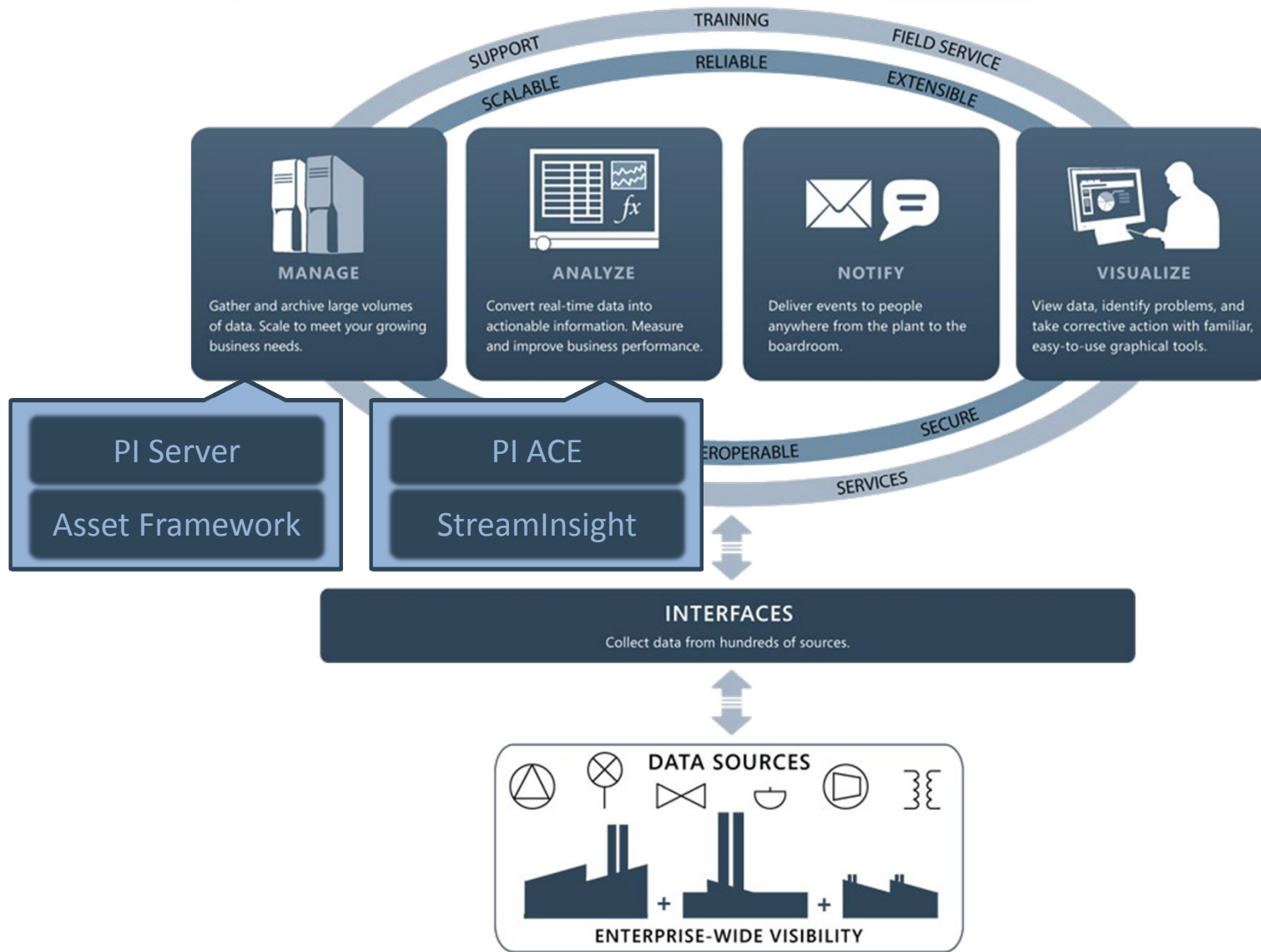
# PI System 2010



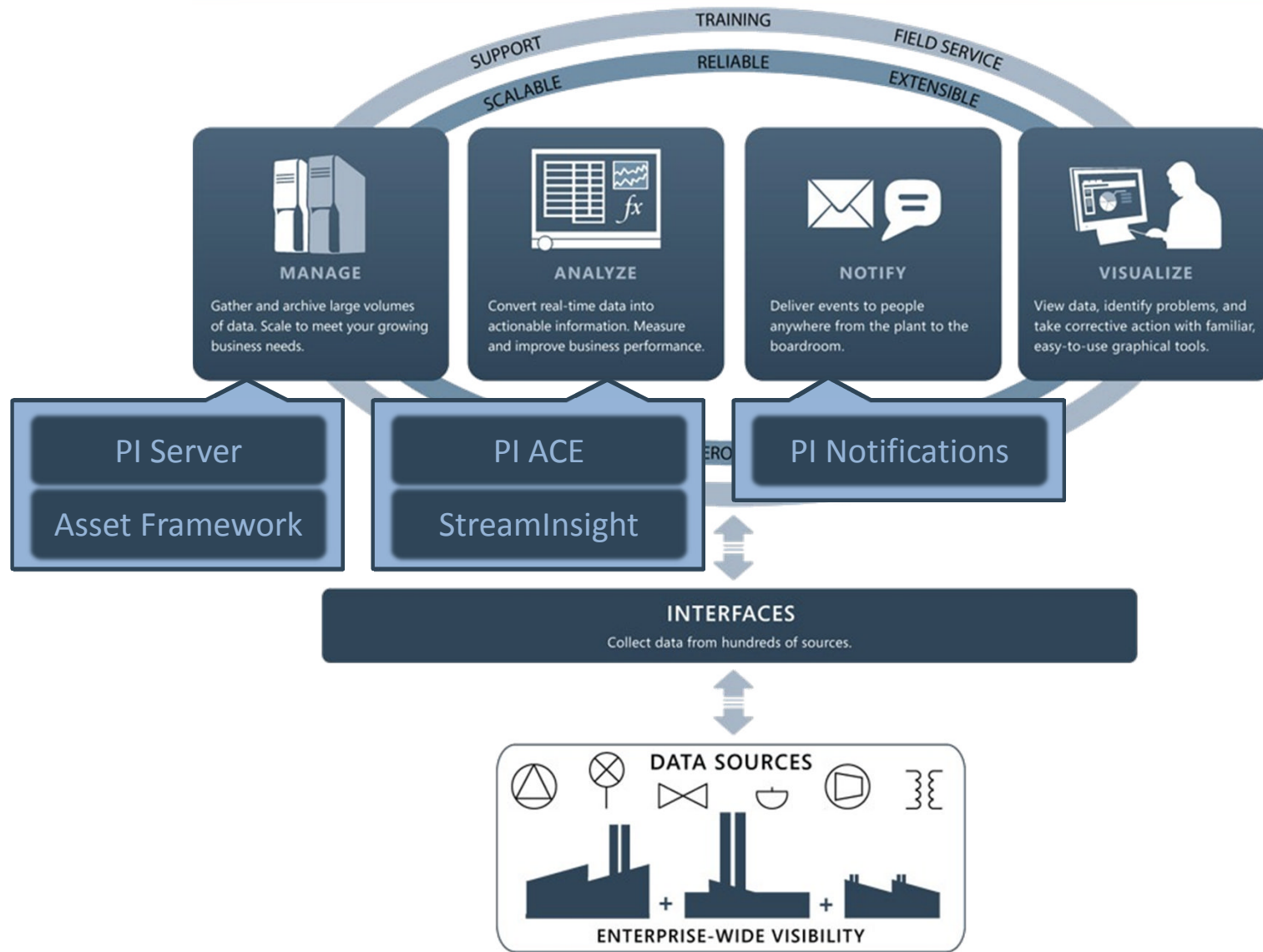
# PI System 2010



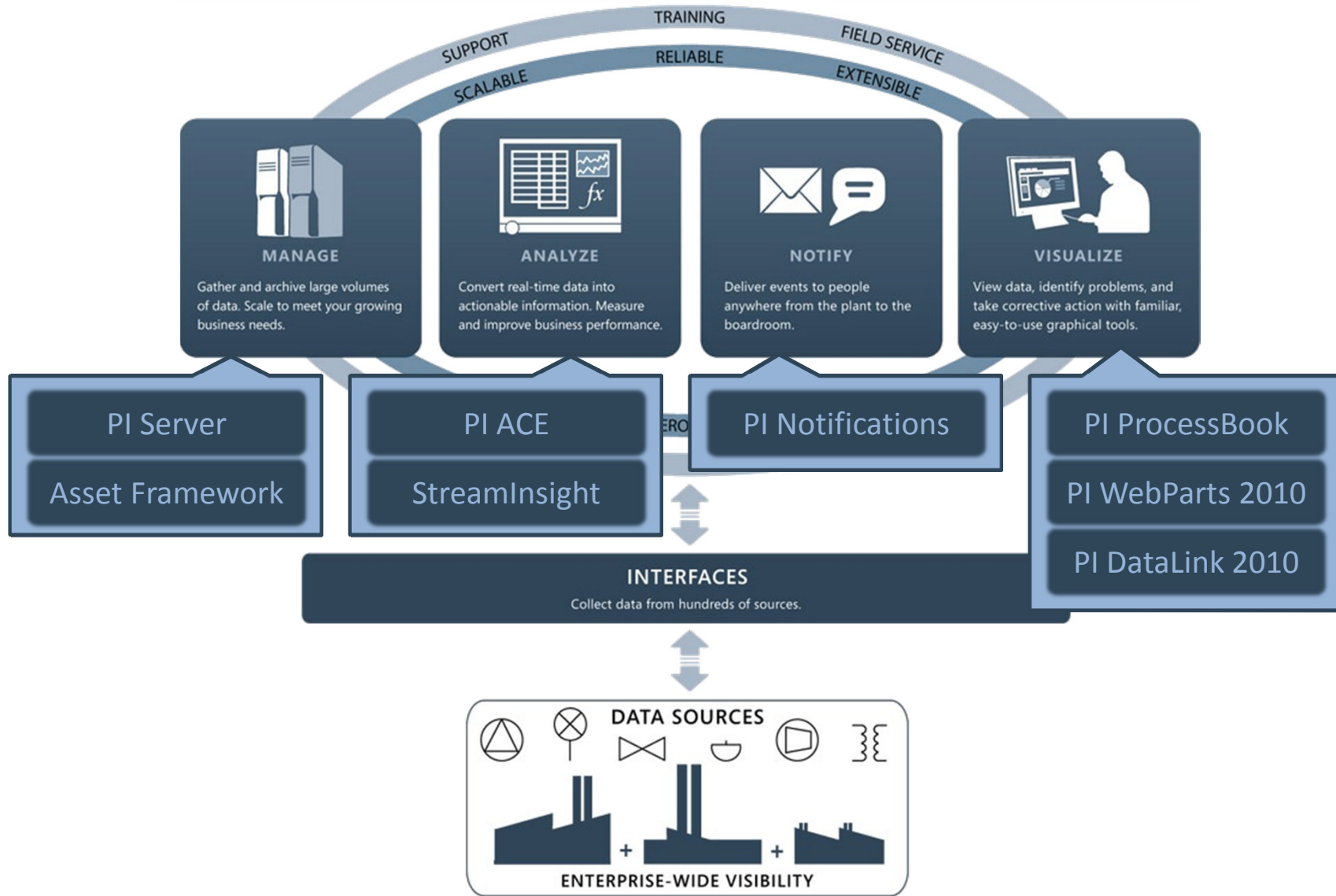
# PI System 2010



# PI System 2010

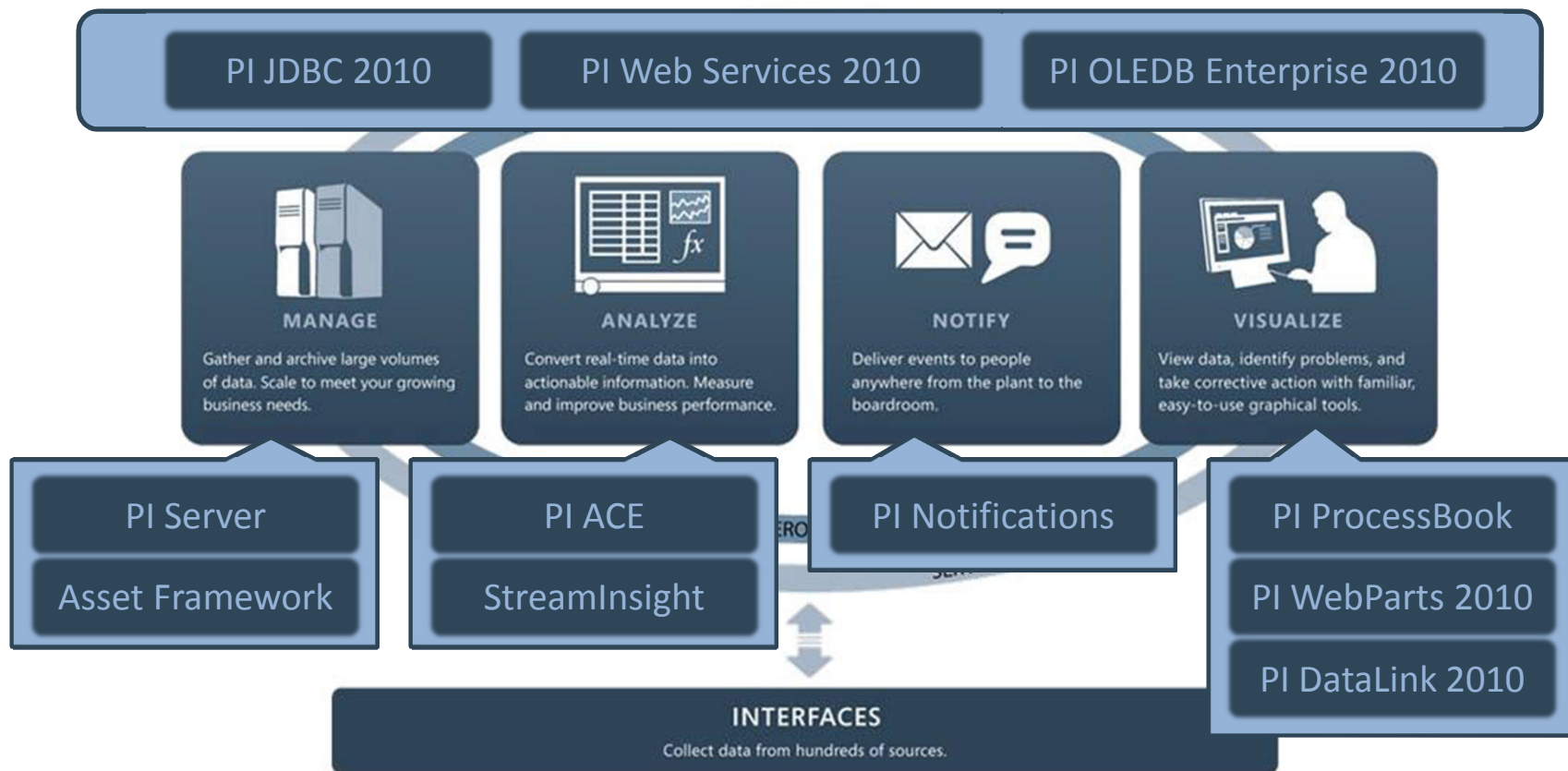


# PI System 2010

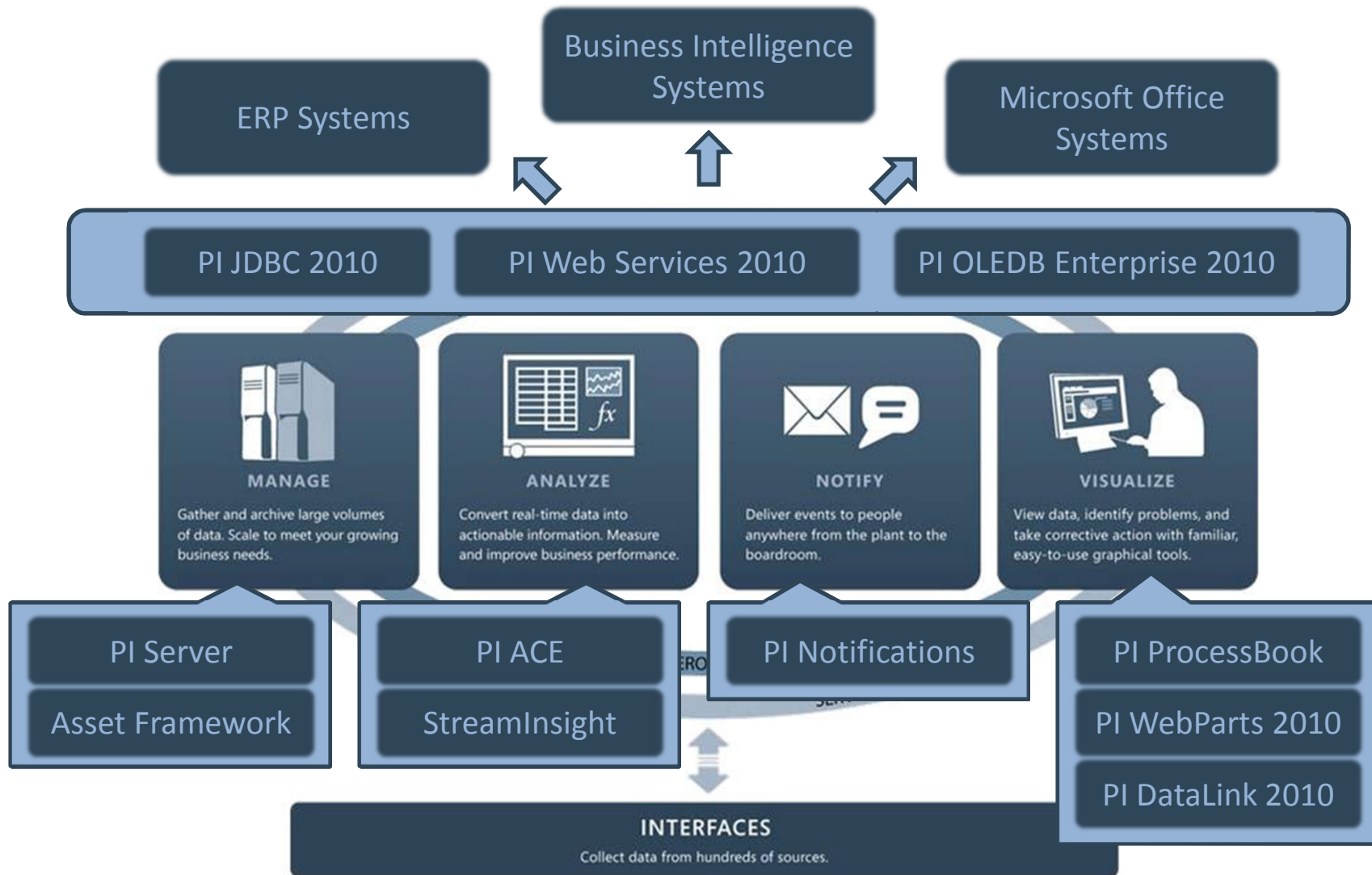


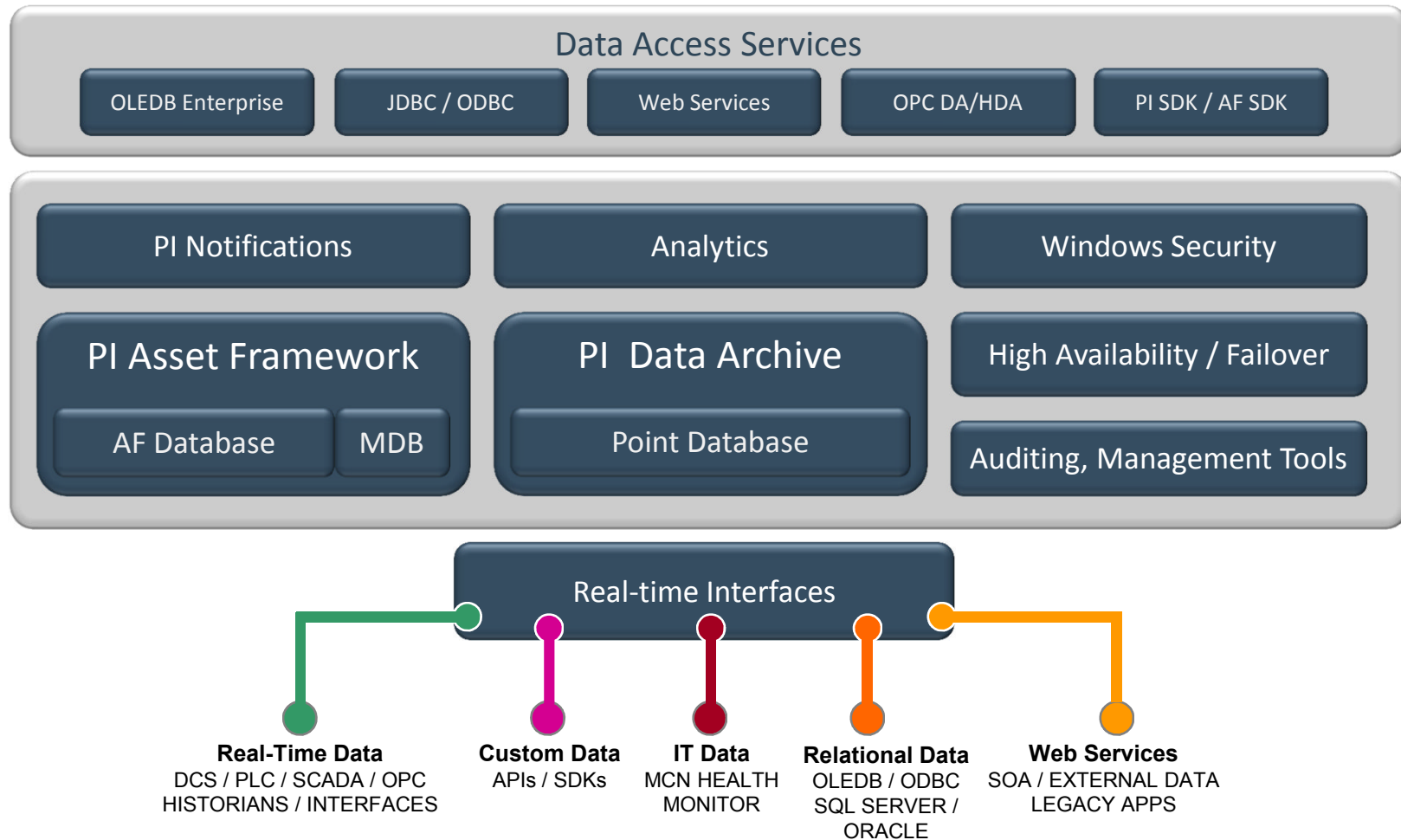


# PI System 2010



# PI System 2010





# PI Asset Framework



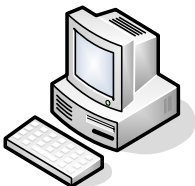
# Migrating Module DB to Asset Framework (AF)



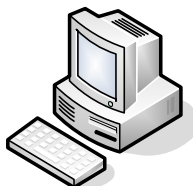
## MDB based Applications



PI DataLink



IT Monitor

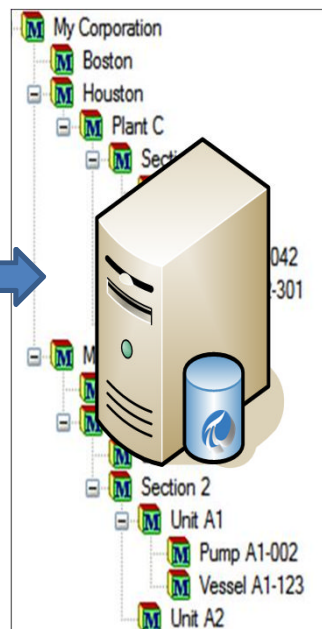


BatchView



PI ACE

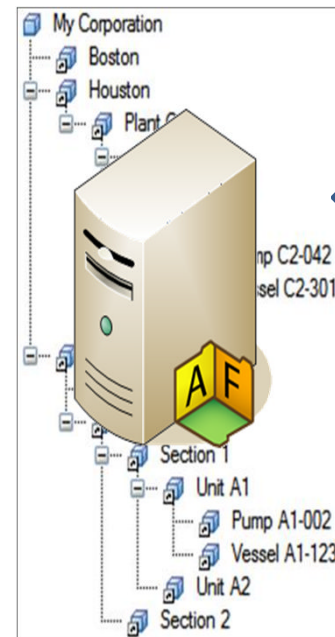
## Module Database



## PI Asset Link Subsystem



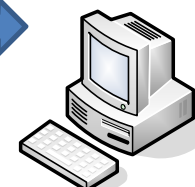
## AF Element Database



## AF based Applications



PI WebParts



PI ProcessBook



Custom via Data Access

# The Need for Event-Driven Analytics



Analytics need to be calculated in real time

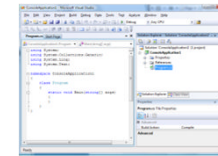
	Database Applications	Event-driven Applications
Methodology	Request - Response	Event - Notification
Query Paradigm	Ad-hoc queries or requests	Continuous standing queries
Latency	Seconds, hours, days	Milliseconds or less
Data Rate	Hundreds of events/sec	Tens of thousands of events/sec or more
Query Semantics	Declarative relational analytics	Declarative relational and temporal analytics



# PI System and StreamInsight Platform



StreamInsight Application Development

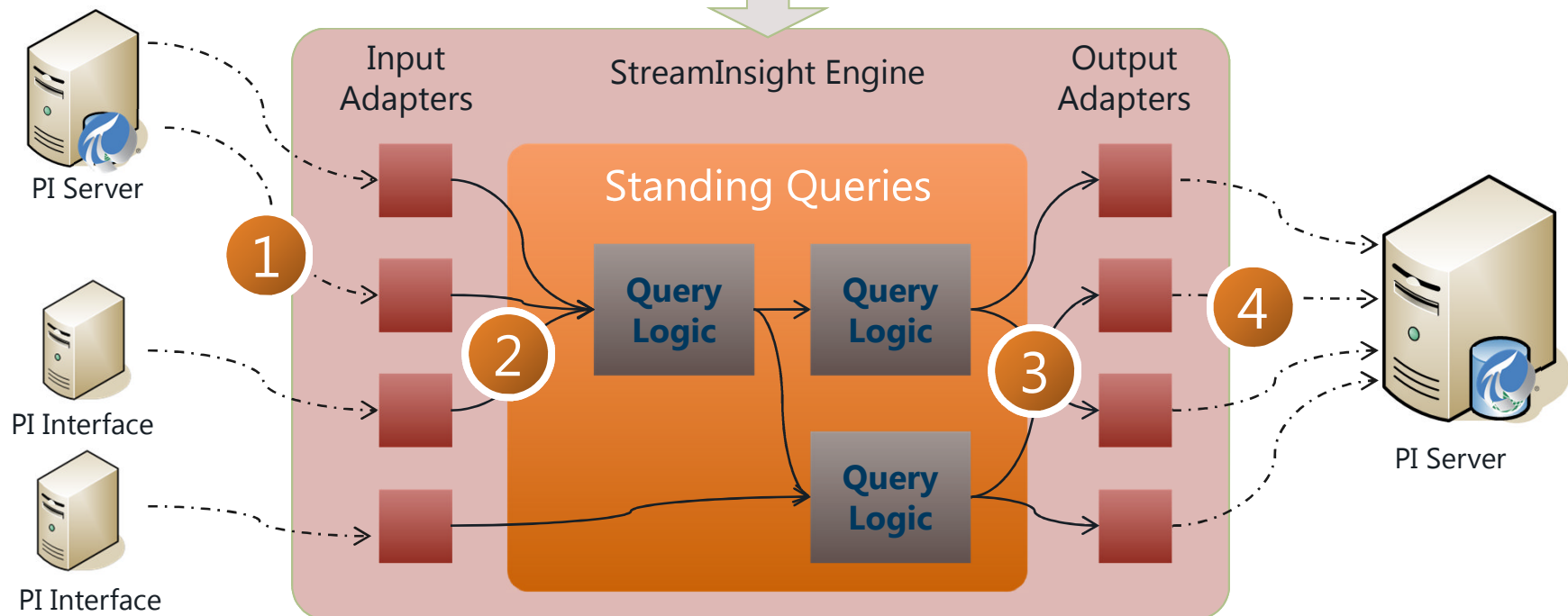


.NET  
C#  
LINQ

StreamInsight Application at Runtime

Event sources

Event targets



- **Process** large volumes of events across multiple data streams in less than a second (memory resident)
- **Manage** your business through historical data mining and continuous insights
- **Support** many events types with rich query semantics
- **Reduce** development cost by utilizing existing skill sets and investments in Microsoft development platform
- **Flexible** deployment options

# PI Data Access: The 2010 Wave



## Data Access Services

JDBC 2010

PI Web  
Services 2010

PI OLEDB  
Enterprise 2010

OPC DA/HDA  
Server 2010

OSIsoft SDK's

## Asset Information / Metadata

PI Asset Framework

## Event Data

Analytics / Notifications

## Relational / Non-time Series Data



## Time Series Data



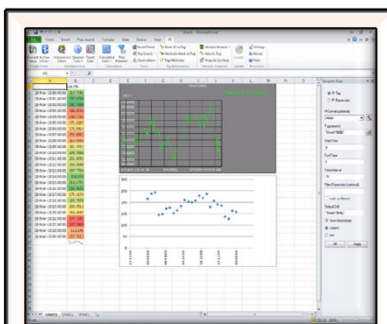
PI Server



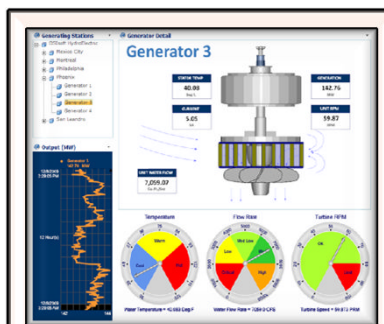
PI Server Collective



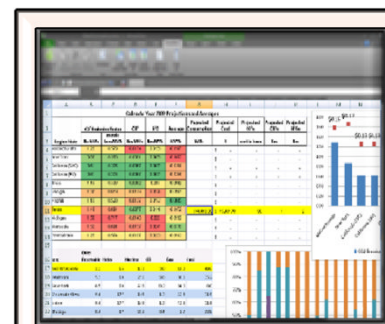
# PI for Office 2010: First Half of 2010



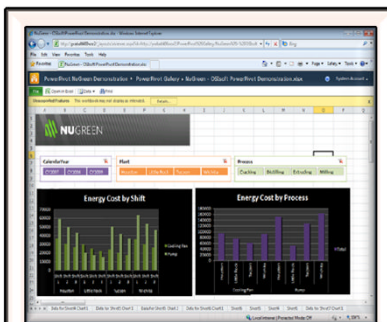
PI DataLink for Excel  
2010



PI WebParts for  
SharePoint 2010



PI DataLink  
Server 2010

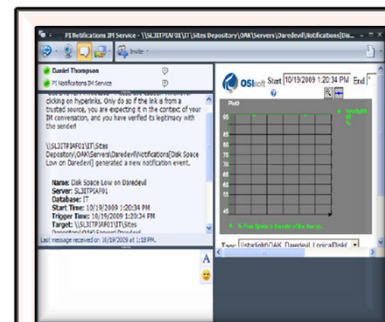


PI and PowerPivot  
for 2010

PI OLEDB  
Enterprise 2010

PI Web Services  
2010

PI Data Access  
Technologies



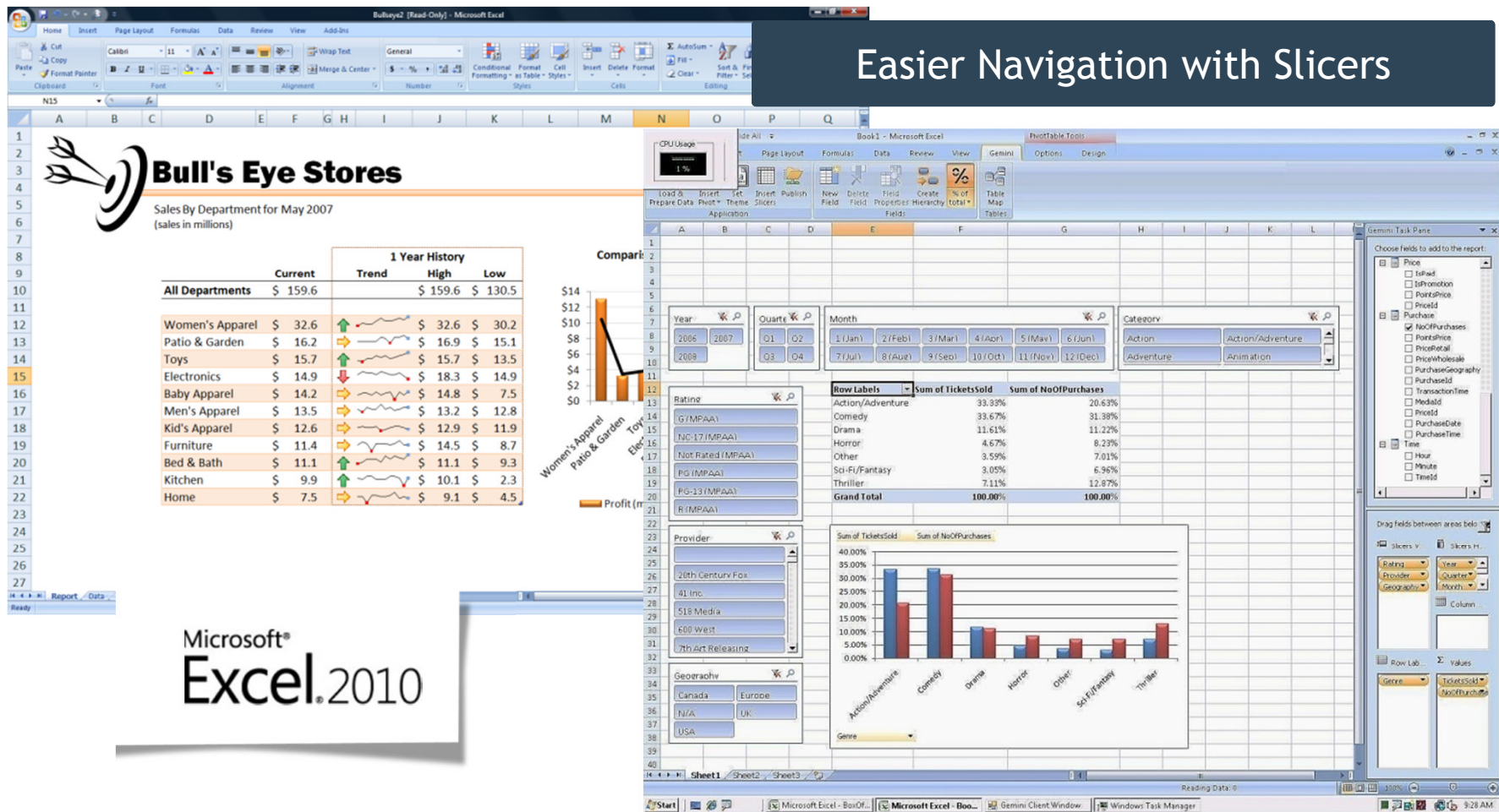
PI System Access  
License

# Powerful Personal Analysis Tools



## Improved Formatting and charts

## Easier Navigation with Slicers





# PI DataLink 2010



Fuel Gas Report and Analysis - Microsoft Excel

Fuel Gas Report and Analysis.xlsx - Windows Internet Explorer

http://dfpiweb2010/NuGreen/Reports/\_layouts/xlviewer.aspx?id=http%3a%2f%2fdfpweb2010%2fN...

Reports ▶ PowerPivot Cubes ▶ Fuel Gas Report and An: Matt Ziegler

File Open in Excel Data Find

	A	B	C	D	E	F	G
1							
2							
3							
4	Timestamp	B309_FG903	B555_FG120	B210_FG005	B235_FG293		
5	26-Apr-10 17:07:27	67.69919586	92.93471527	61.57380295	84.13001251		
6	26-Apr-10 17:02:27	69.40677643	91.1309433	64.05405426	83.35953522		
7	26-Apr-10 16:57:27	68.48088074	91.31063843	67.99434662	84.85340881		
8	26-Apr-10 16:52:27	67.59732819	90.02399445	62.44659805	83.		
9	26-Apr-10 16:47:27	64.29003143	92.38550568	63.10819244	87.1		
10	26-Apr-10 16:42:27	63.14068222	88.09690094	61.33683395	86.4		
11	26-Apr-10 16:37:27	67.10540009	84.7400589	66.60814667	83.7		
12	26-Apr-10 16:32:27	67.34307098	89.38541412	65.41352081	88.87563324		
13	26-Apr-10 16:27:27	65.02715302	92.40144348	65.09230804	90.44684601		
14	26-Apr-10 16:22:27	68.05756378	92.36569214	59.8769455	92.34683228		

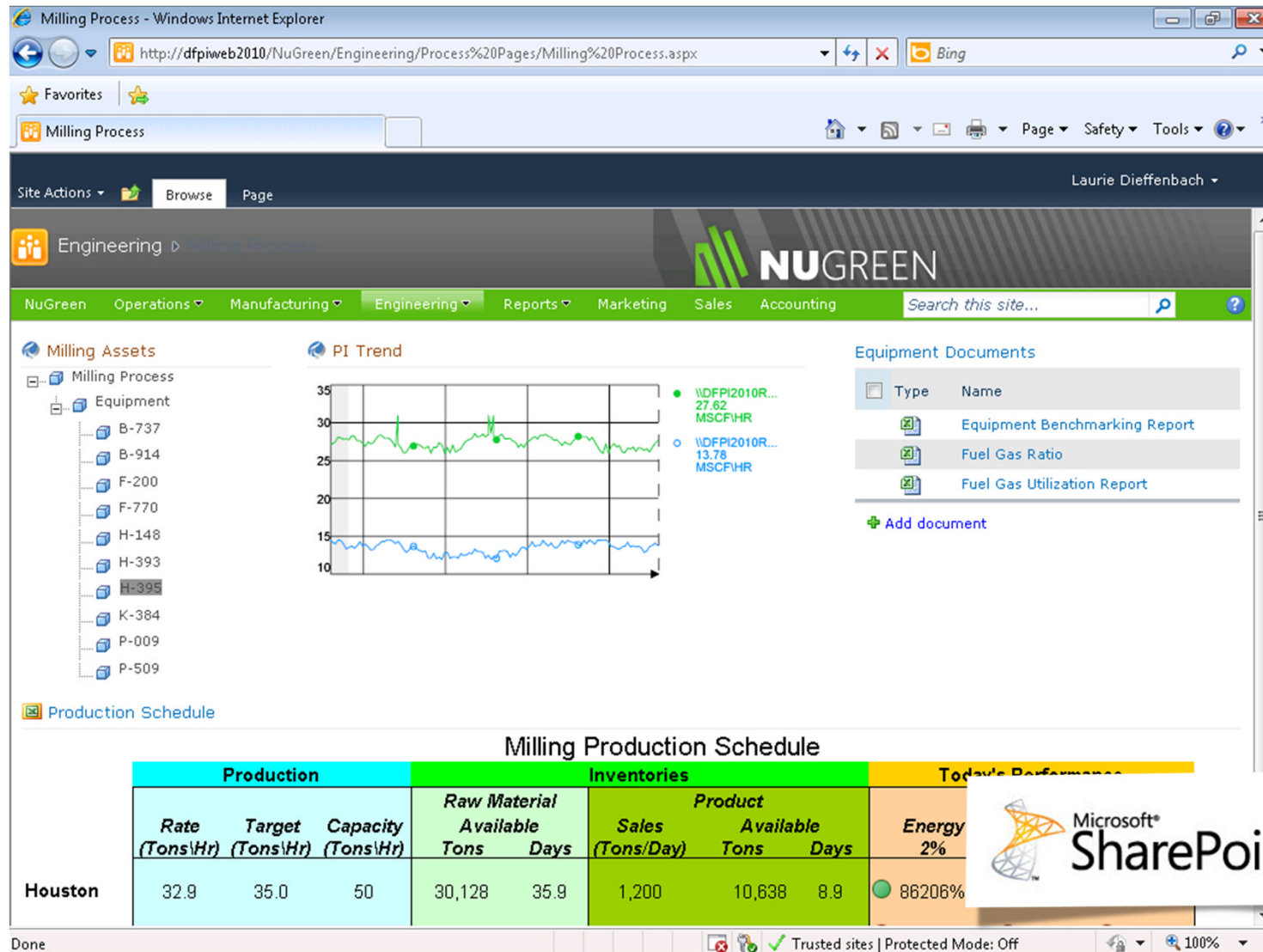
Microsoft Excel 2010

SparkLines DimDate RawTagData Pivot Table

Local intranet | Protected Mode: Off 160%



# PI Web Parts 2010



# Introducing PowerPivot for Excel 2010



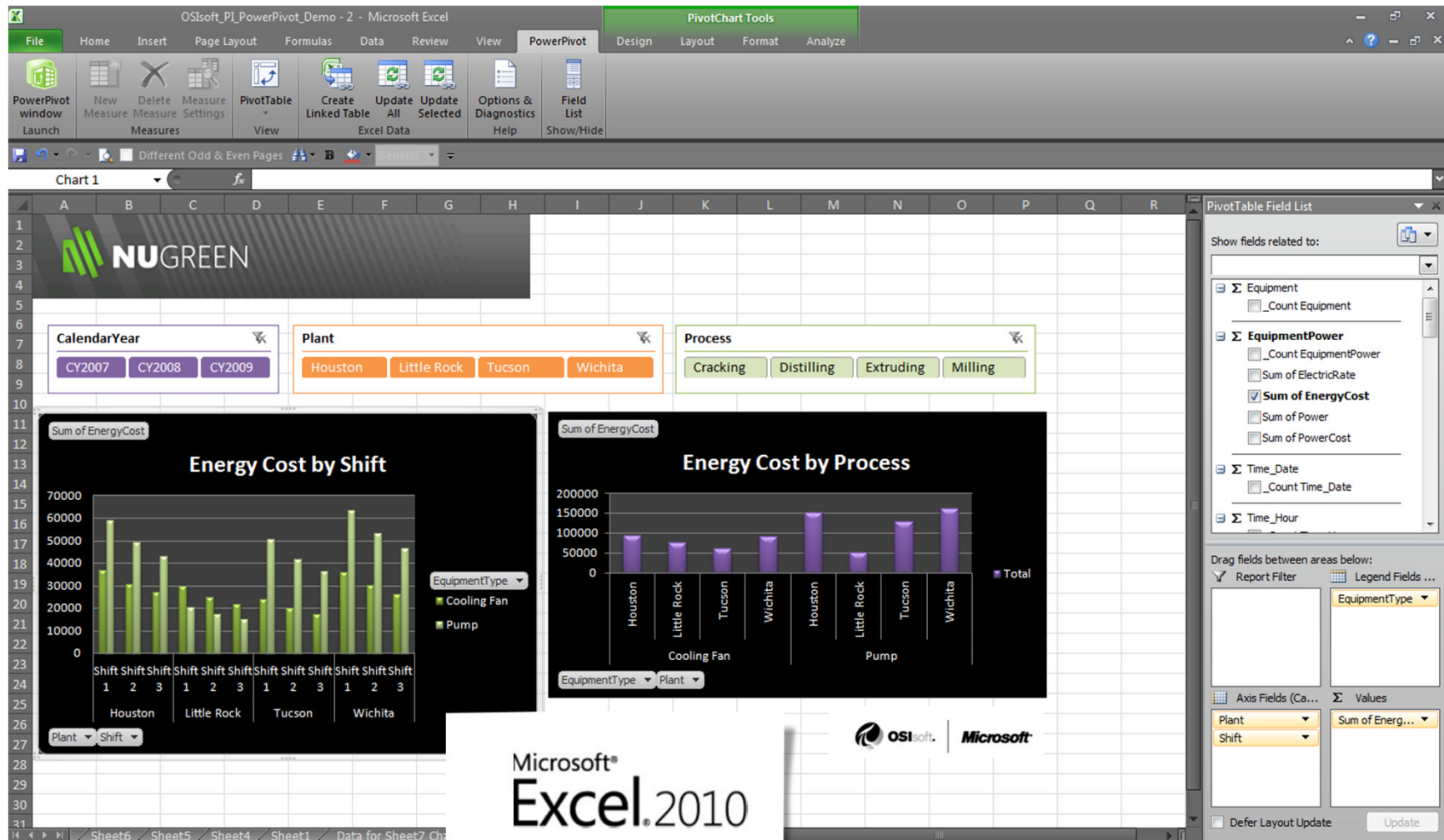
Microsoft®  
**Excel**.2010

## Empowering The End User

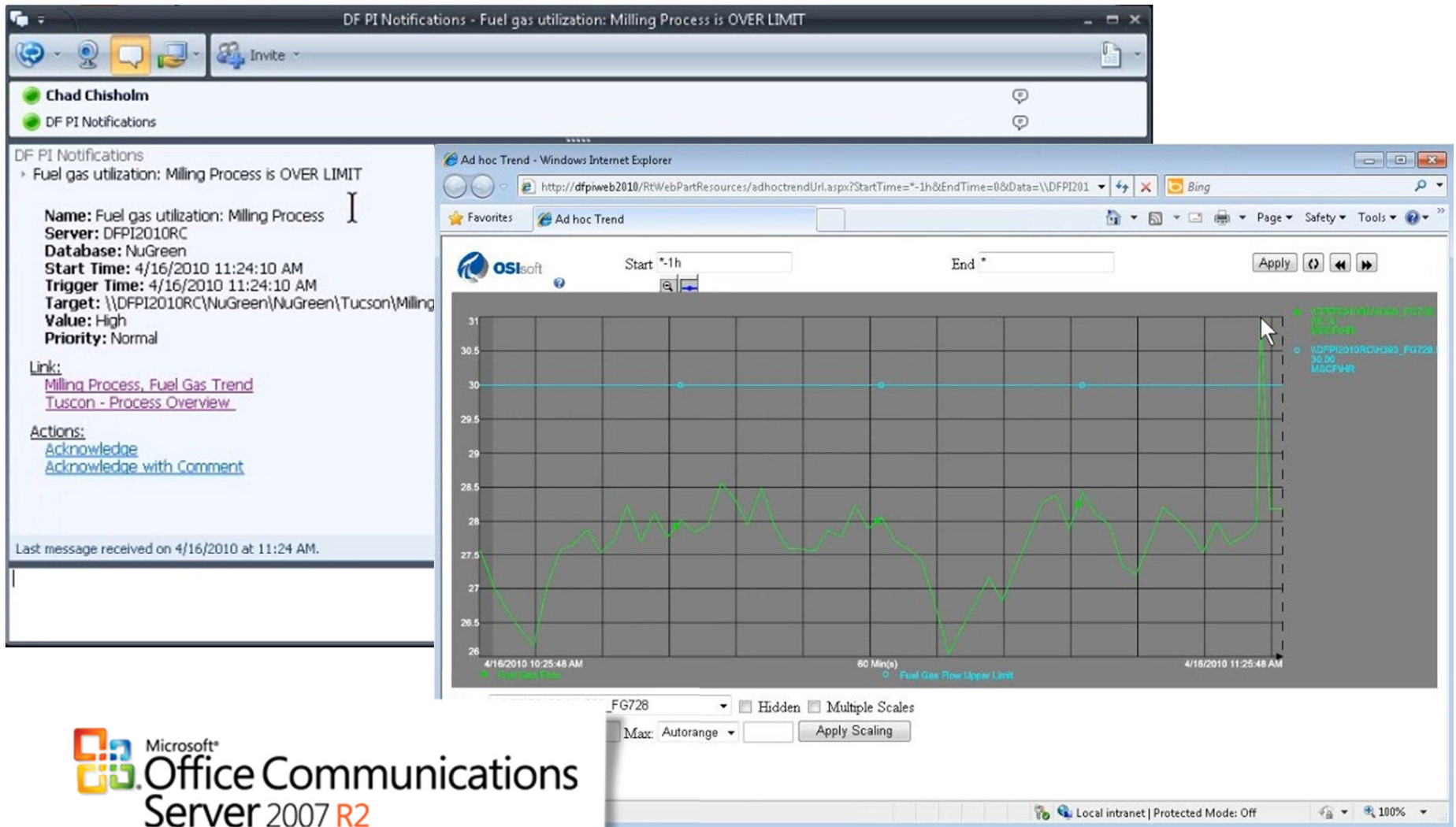
- Enable users to perform self-service analysis and intuitively build their own BI solutions
- Allow users to interactively explore and perform calculations on large data sets
- Integrate data from multiple sources
- Minimize dependence on IT support



# PI and Microsoft PowerPivot



# PI Notifications



Microsoft  
Office Communications  
Server 2007 R2



- ➞ Simple naming and versioning
- ➞ Single PI System package
- ➞ Aligned release schedule



- ➞ Organize PI data around assets
- ➞ Migration of existing asset definitions
- ➞ Integration of PI with business systems
- ➞ New ways to analyze data



- ➞ Use the tools you already know
- ➞ Business Intelligence for the masses
- ➞ Easily share insights with others



- Scalability/Manageability/Performance
  - PI Server
  - PI Notifications
  - PI AF
- User Experience
  - PI System Search
- Analytics
  - PI ACE Performance
  - AF Analytics
  - Edge Processing



- PI Server point database
  - Faster point creation and editing
  - Faster startup time
  - Even larger point counts
- PI Update Manager
  - More concurrent users
  - More sign-ups
  - Faster sign-ups
- AF 2.2
  - Faster insert speed
  - Ability to traverse huge hierarchies

AF Builder for Excel allows creation or modification of:

- Elements
- Templates
- Categories
- Enumeration Sets
- Notifications
- Analyses
- Event Frames

# AF Builder for Excel



The screenshot displays the AF Builder for Excel application interface. The top ribbon includes tabs for Home, Insert, Page Layout, Formulas, Data, Review, View, Developer, Add-Ins, PI, and Team. The PI tab is active, showing a 'PI System' dropdown set to 'PIAFPERF' and a 'Database' dropdown set to 'Chocolate Milk Tutorial'. A 'Refresh' button is also present. The 'Elements' button is highlighted, and its context menu is open, showing options: 'All Elements', 'Browse Elements...', 'Find Elements...', and 'Models'.

Below the ribbon, a data table is visible. The table has columns: 'assetnum', 'description', 'manufacturer', 'serialnum', 'failurecode', 'changedate', and 'changeby'. The data is as follows:

assetnum	description	manufacturer	serialnum	failurecode	changedate	changeby
11200	HVAC System- 50 Ton Cool Cap/ 450000 Btu Heat Cap	TRN	3481-52		2/7/2005 10:09	WILSON
11210	Circulation Fan- Centrifugal/ 20/000 CFM	TRN	3749-9		2/7/2005 10:11	WILSON
11211	Motor Starter- Size 2/440v/3ph/60cy	WES	S2DNGB		2/7/2005 10:11	WILSON
11220	Electrical Control Panel- HVAC System	WES	24096-2		12/7/1999 21:17	MAXIMO
11230	Emergency Generator	WES	32331-4		2/7/2005 10:14	WILSON
11240	Circulation Fan- Centrifugal/ 20/000 CFM	TRN	3749-9		2/4/2005 16:38	WILSON
11250	Circulation Fan- Centrifugal/ 20/000 CFM	TRN	3749-9	BLDGS	2/7/2005 10:14	WILSON
11300	Reciprocating Compressor- Air Cooled/100 CFM	IR	43960		2/7/2005 10:15	WILSON
11340	Motor Starter- Size 4/NEMA 12/440v/3ph/60hz	WES	23-4630		2/7/2005 10:15	WILSON
11400	Boiler- 50,000 Lb/Hr/ Gas Fired/ Water Tube	BWC	66392	BOILERS	2/7/2005 10:16	WILSON
11430	Centrifugal Pump 100GPM/60FT HD	IR	377-9A	PUMPS	2/9/2005 8:01	WILSON
11450	Centrifugal Pump 100GPM/60FTHD	IR	377-9B	PUMPS	2/9/2005 8:24	WILSON
11460	Burner, Gas Fired- For Boiler	BWC	373-RH	BURNERS	12/7/1999 21:27	MAXIMO
11470	Centrifugal Pump 100 GPM, 60 FT-HD	IR	377-9C	PUMPS	2/11/2008 12:31	MAXADMIN
11480	Centrifugal Pump 100 GPM, 60 FT-HD	IR	377-9D	PUMPS	3/30/1999 22:16	MAXIMO

# The Analytics Landscape

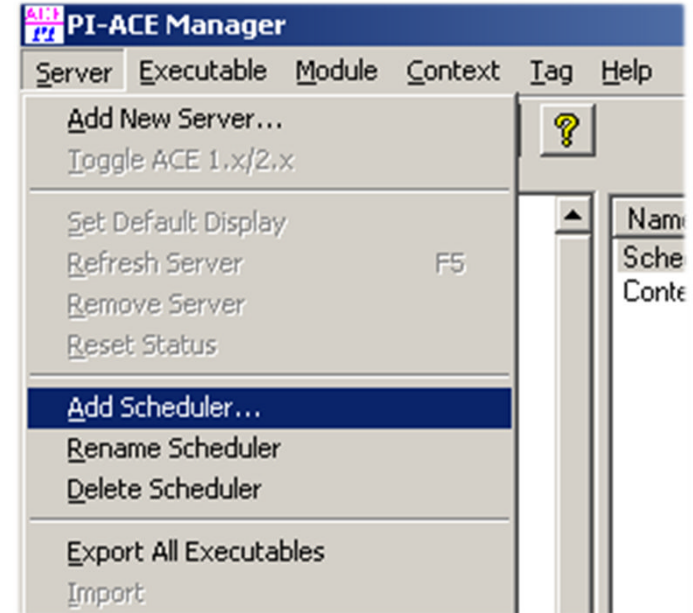


**Focus for 2010**

- PI ACE
- AF Analytics
- Edge Processing

- Native support for 64-bit Windows \*
- Upgrade to .NET code base
- Support for Visual Studio 2010
- Startup optimization \*
- Cache enhancements \*
- PI ACE Schedulers on multiple machines against a single PI Server

\* *Performance enhancement*





- Leverage AF Elements and AF Element Templates
- GUI configuration experience
- Outputs written back to PI
- Same PE Library as in PI Notifications
- No change to existing AF Data References

Analysis

Name: LMTD Calculation Target: HeatExchanger

Analysis Rule

Performance Equation

+ Add = Evaluate

Function Operator Attribute...

Ceiling  
Char  
Compare  
Concat

Input Parameters

+ Add

ColdIn .|Shell Side Inlet Temperature; UOM=°C  
ColdOut .|Shell Side Outlet Temperature; UOM=°C  
HotIn .|Tube Side Inlet Temperature; UOM=°C  
HotOut .|Tube Side Outlet Temperature; UOM=°C

Output Parameters

+ Add

LMTD .|LMTD

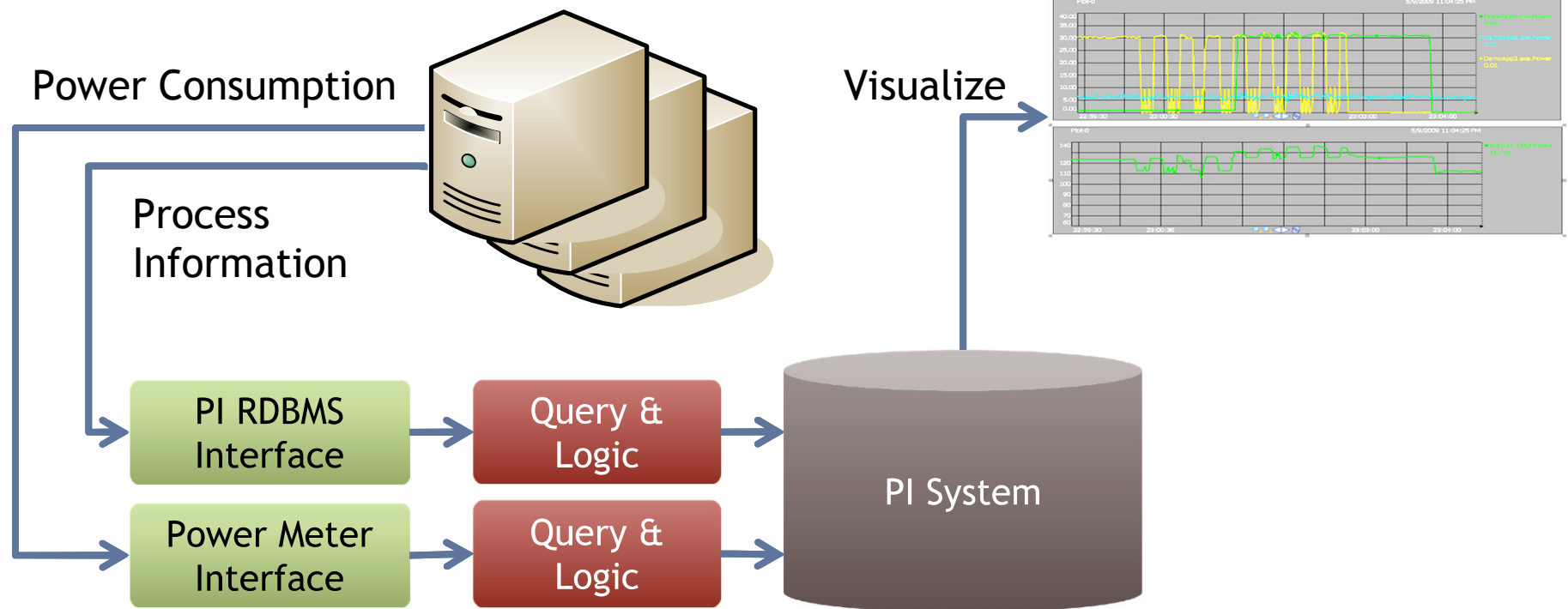
PI Point \\%Server%\%Element%. %Attribute%

Schedule

Hourly

Frequency=3600

# Edge Processing



- Event Frames Database & SDK available
  - CTP (Community Technology Preview)
- Significant partner and customer interest
- Partners now developing
  - Downtime tracking
  - OEE (overall equipment effectiveness)



**OSIsoft**

VIRTUAL CAMPUS

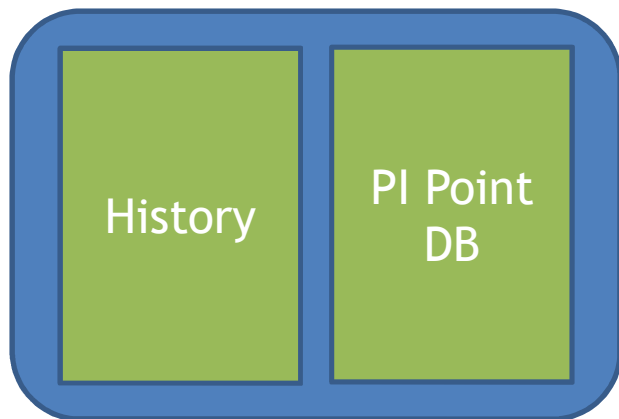
- Data-by-Exception
- Non-timeseries data
- PI System Search
- Bring AF forward
  - Full Manipulations on AF
    - Create
    - Read
    - Update
    - Delete

## Data Buffering

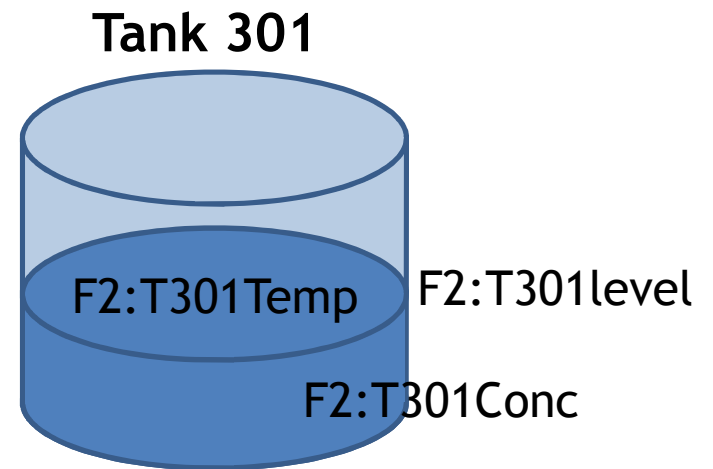
- Important Use Cases
  - Custom Interfaces
  - Applications that write data to PI
  - SQL Applications, writing data to PI OLEDB
- Support for HA
  - Buffering in case of disconnection
  - “Fanning” to a Collective



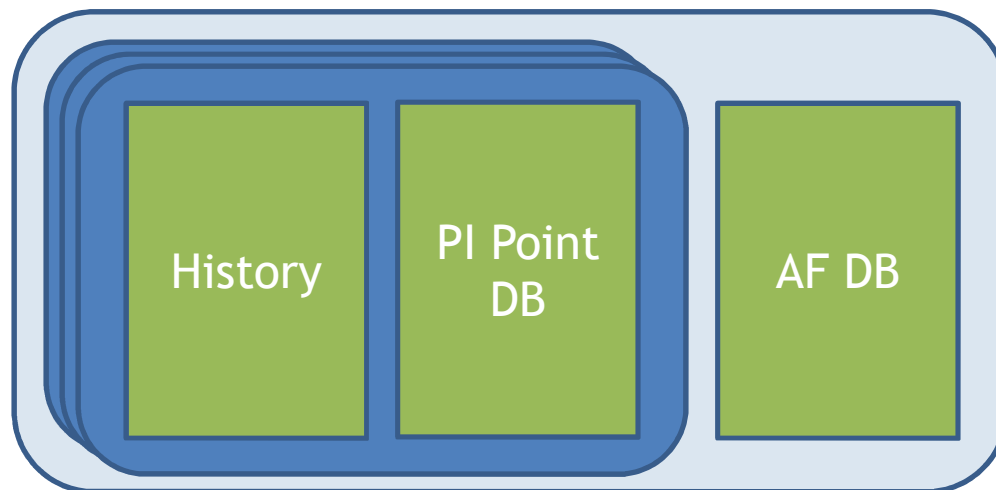
## Search by Point Attributes



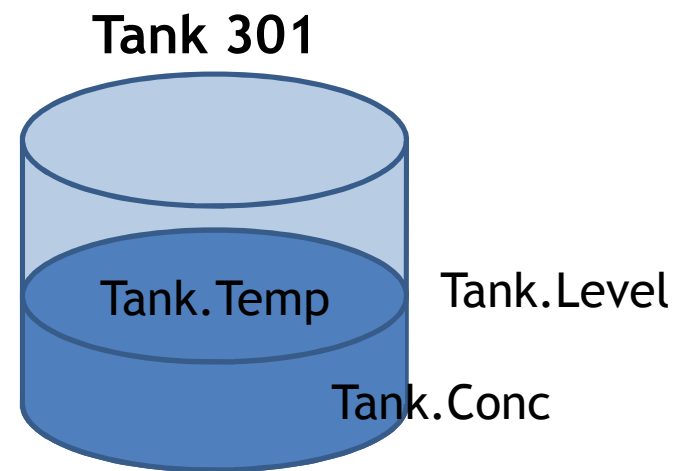
## Search by attribute mask, value



## Elements and Attributes



## Search by mask, type, value



# PI System Clients for 2010- forthcoming



## Simple

Easy to get started, system grows with you



## Relevant

Deliver the most important data to right people



## Collaborative

Everyone has access to the data, easy to share

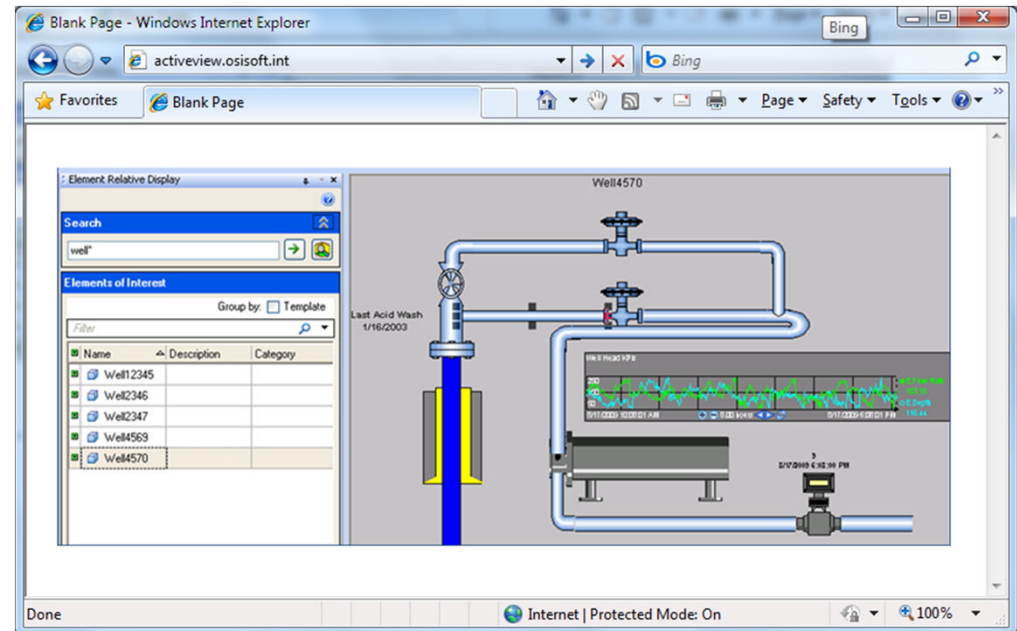
- Asset view of data
- PI System Search
- Better analysis via PowerPivot and BI tools
- Report building
- Publishing for others using Excel Services



# PI ProcessBook and ActiveView



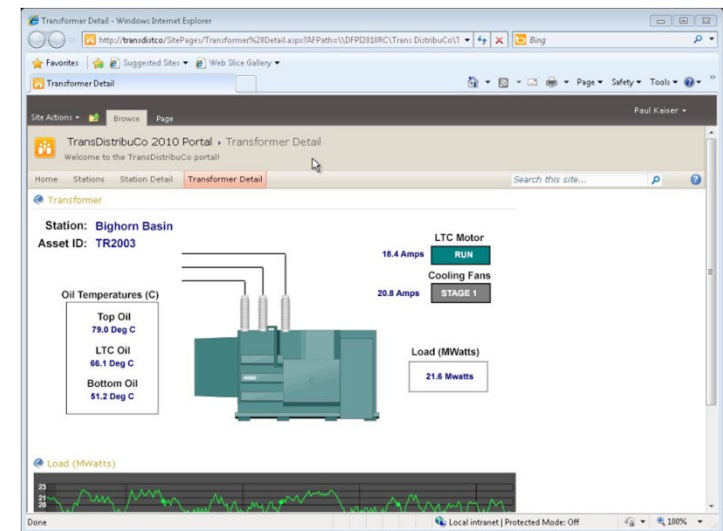
- PI System search
- Docking Windows in ActiveView
- Time Management
- Multi-Language improvements
- Performance



# PI WebParts



- Improved access to asset data
- PI System Search
- Deployment architecture
  - Performance, Scale, Manageability
- Improve User Interaction
- Social SharePoint System







Thank you

© Copyright 2010 OSIsoft, LLC.

777 Davis St., San Leandro, CA 94577