



OSIsoft Product Roadmap 2010

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OSIsoft, LLC Houston, TX

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Empowering Business in Real Time.

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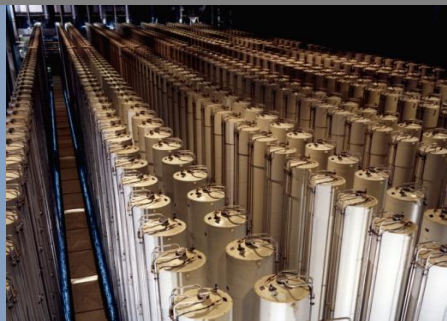
- The Year in Review 2009
- PI System 2010
- Roadmap for Infrastructure
- Roadmap for Clients

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

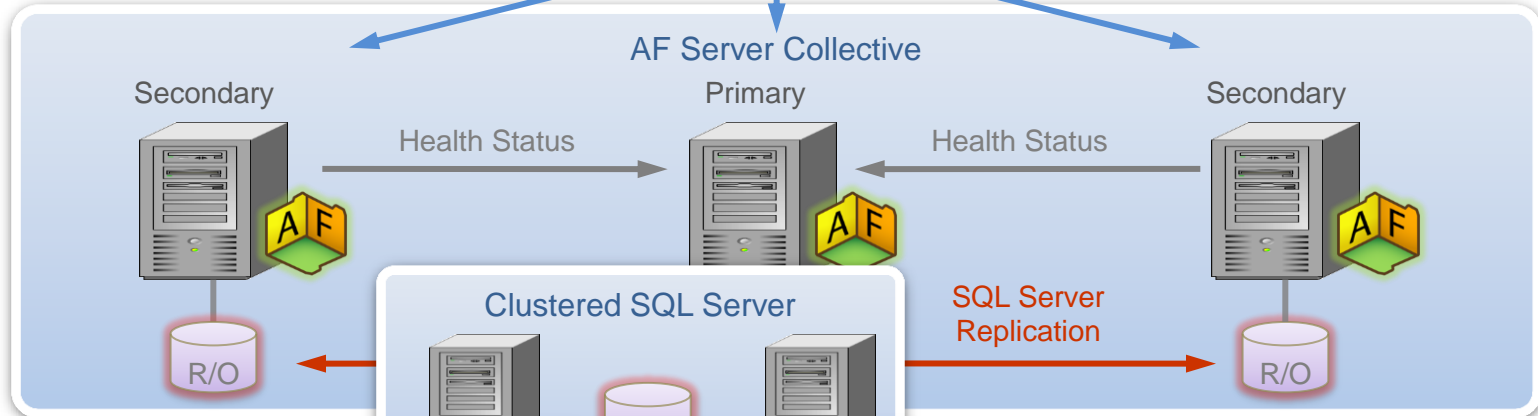
- WebParts
- ProcessBook
- DataLink
- Notifications



AF SDK Library

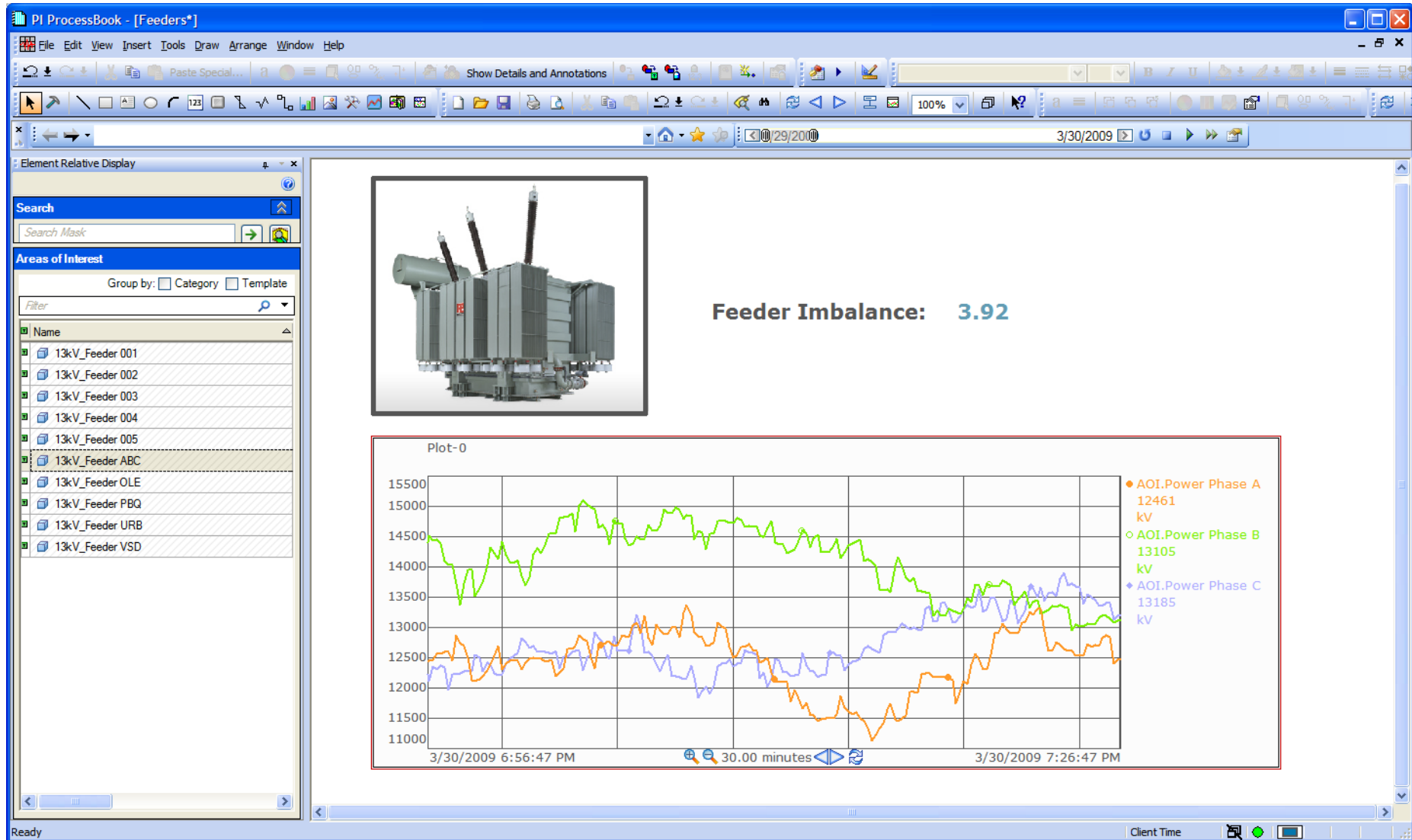


PI System Explorer

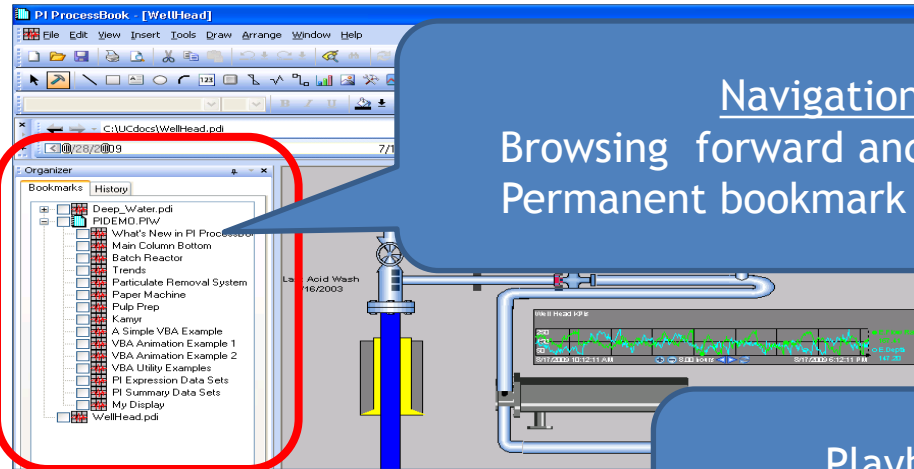


SQL Server (primary)	<input checked="" type="checkbox"/> Express	SQL Server (secondary)	<input checked="" type="checkbox"/> Express
	<input checked="" type="checkbox"/> Standard		<input checked="" type="checkbox"/> Standard
	<input checked="" type="checkbox"/> Enterprise		<input checked="" type="checkbox"/> Enterprise

ProcessBook 3.2: Element Relative Displays

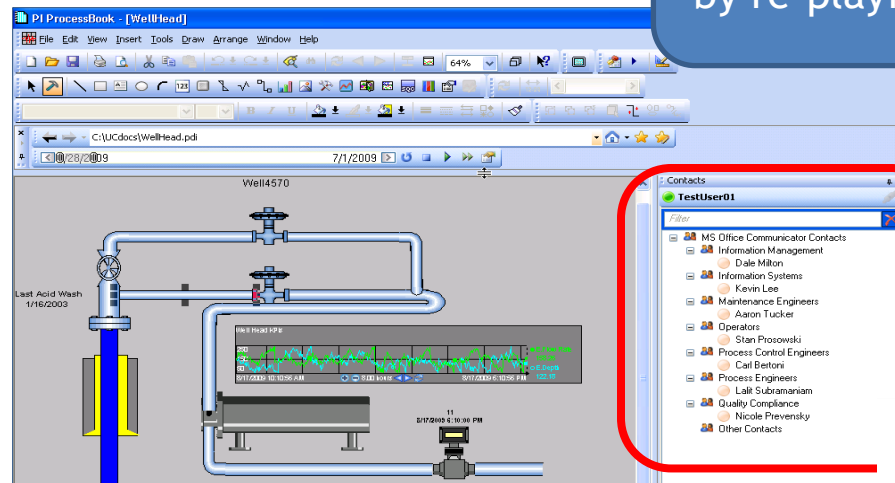


ProcessBook 3.2: Productivity Enhancements



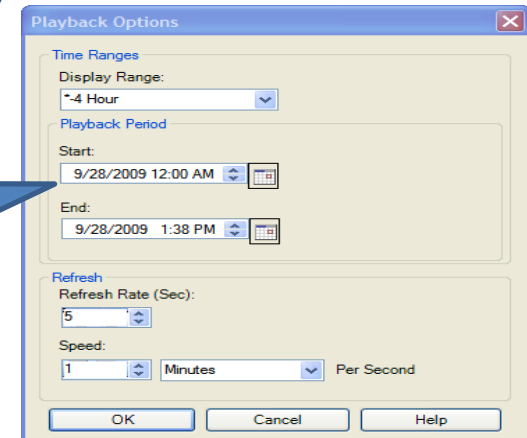
Navigation

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



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

Site Actions Browse Page Paul Kaiser

TransDistribuCo 2010 Portal Station Detail

Welcome to the TransDistribuCo portal!

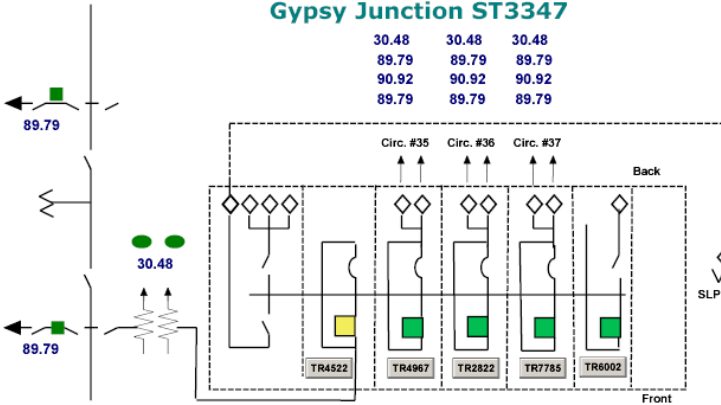
Home Stations Station Detail Transformer Detail Search this site...

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 |



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



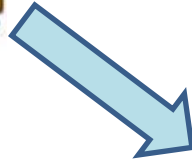
Define information once

- Fewer errors
- Automatically in sync
- Maintenance can scale

Override where necessary

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

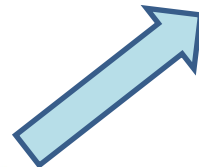
Configured from
AF Elements



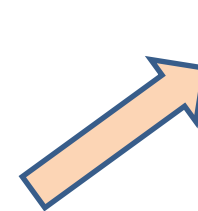
Filtered with
sophisticated
rules



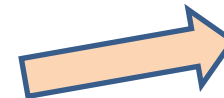
Active Directory



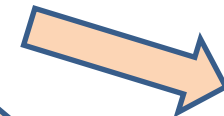
Trigger



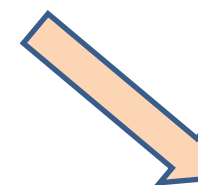
E-mail or
Instant Message



Processbook
MyPI Desktop
Webparts



Web Service
XML



Extensible

- 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



- **OSIsoft commitment:**
 - 440 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)

- 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

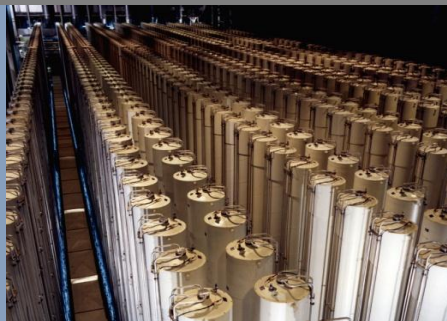
- 31 Minor Releases
- 7 Language Packs

What did OSIsoft accomplish in 2009 to help you?



Security

- ✓ PI 380
- ✓ Deployment



Asset Centric PI

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



Localization

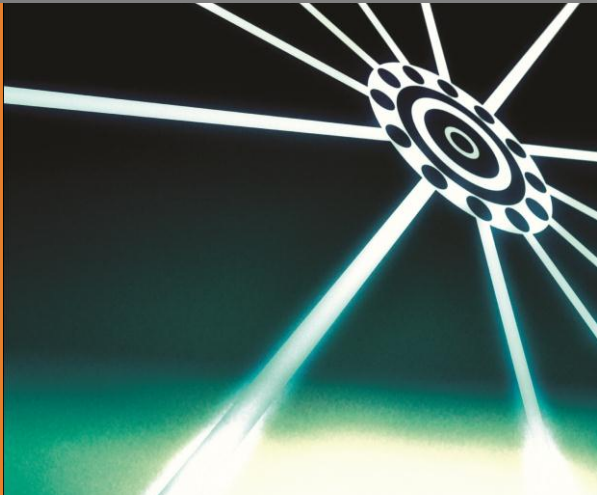
- ✓ 8 languages
- ✓ 5 products
- ✓ 3 planned



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

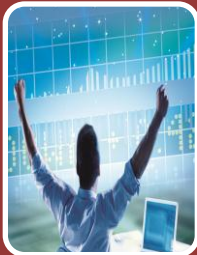
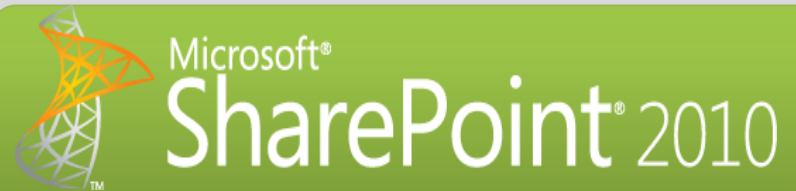
Business User Experience



PI Data Access

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

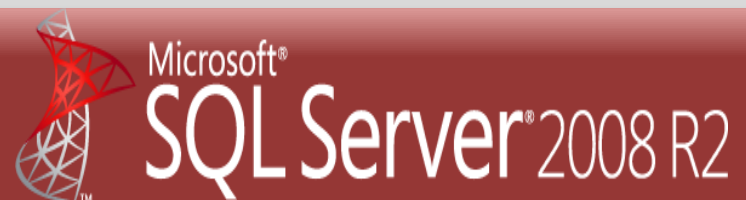
Business Collaboration Platform

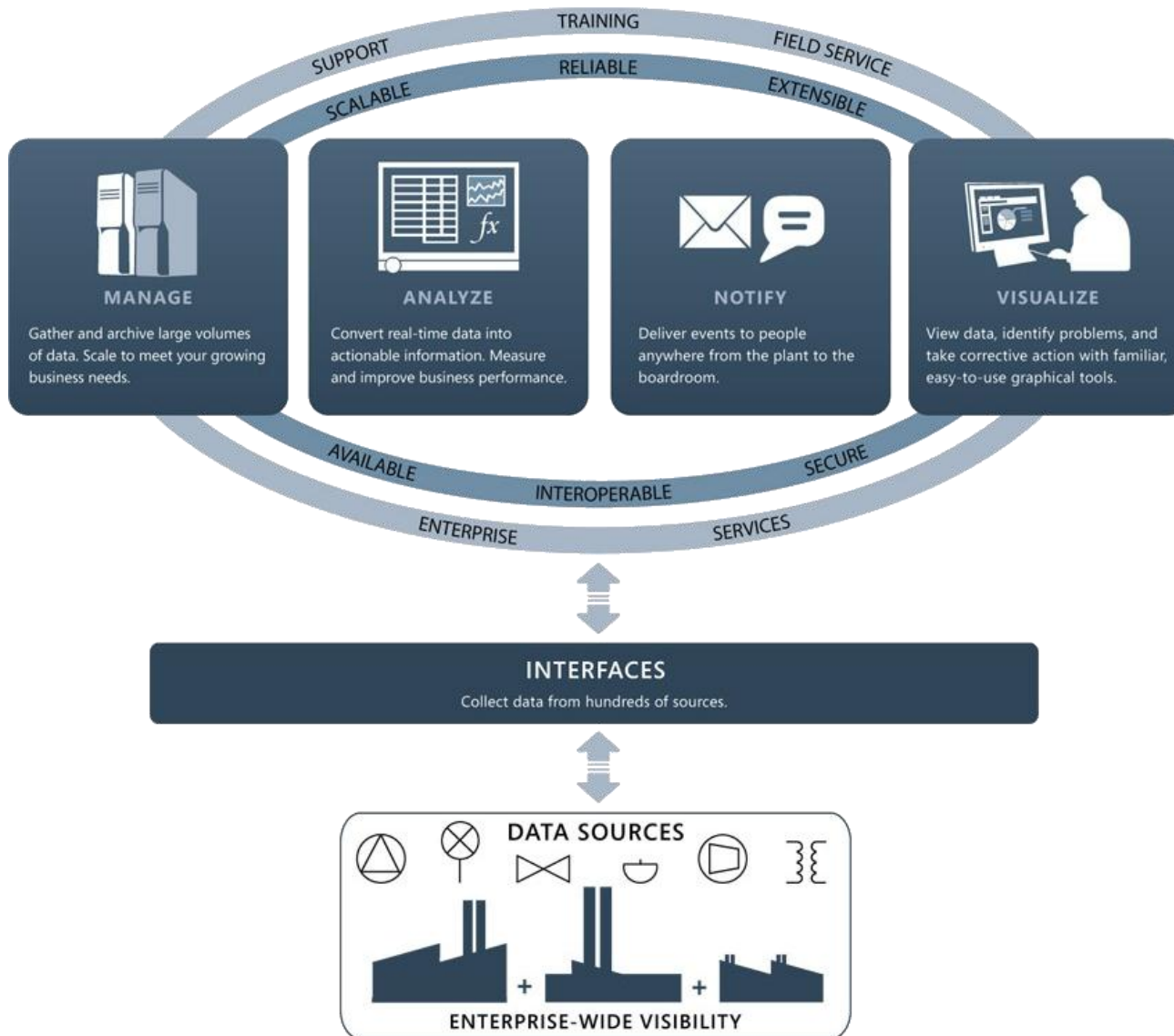


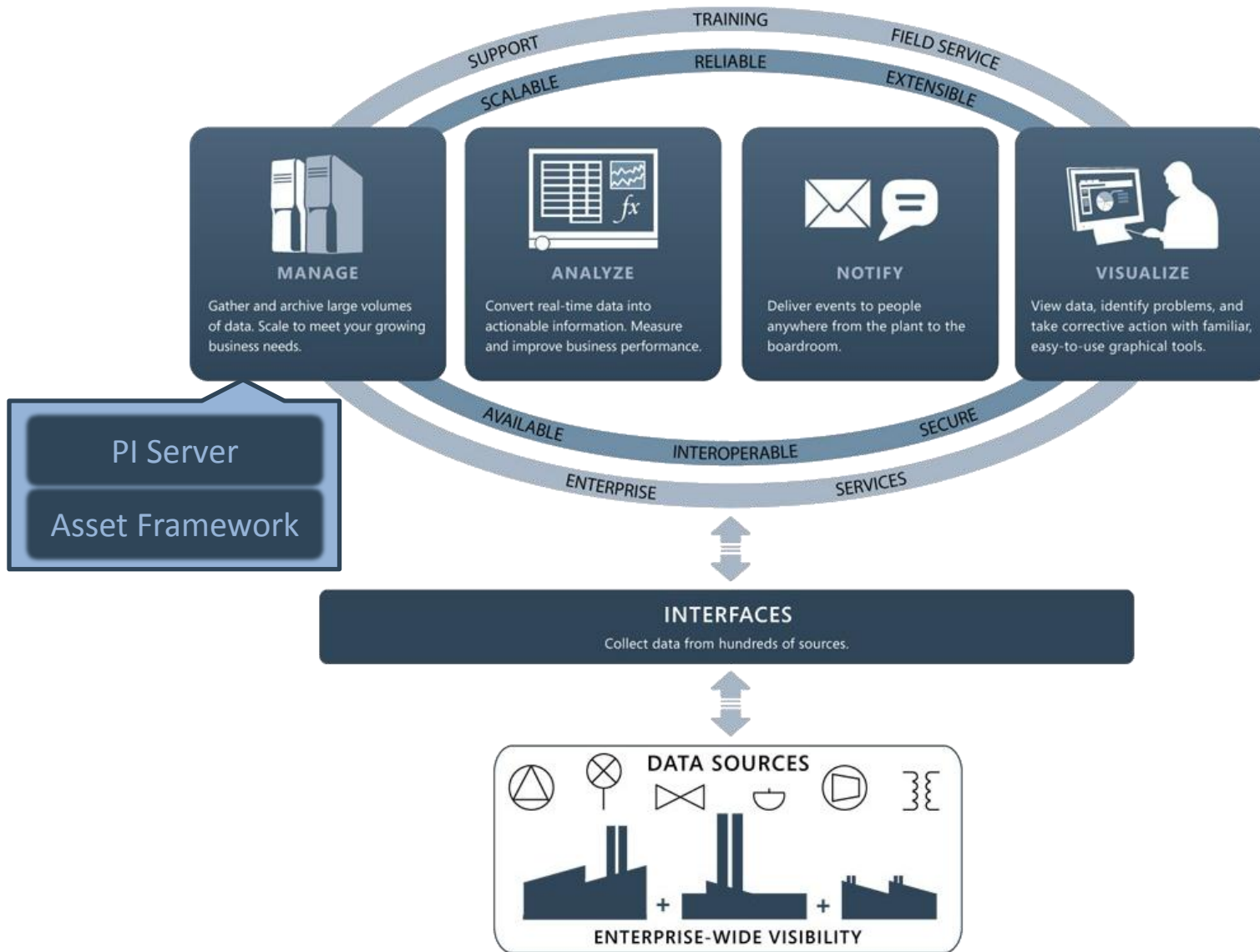
PI Server

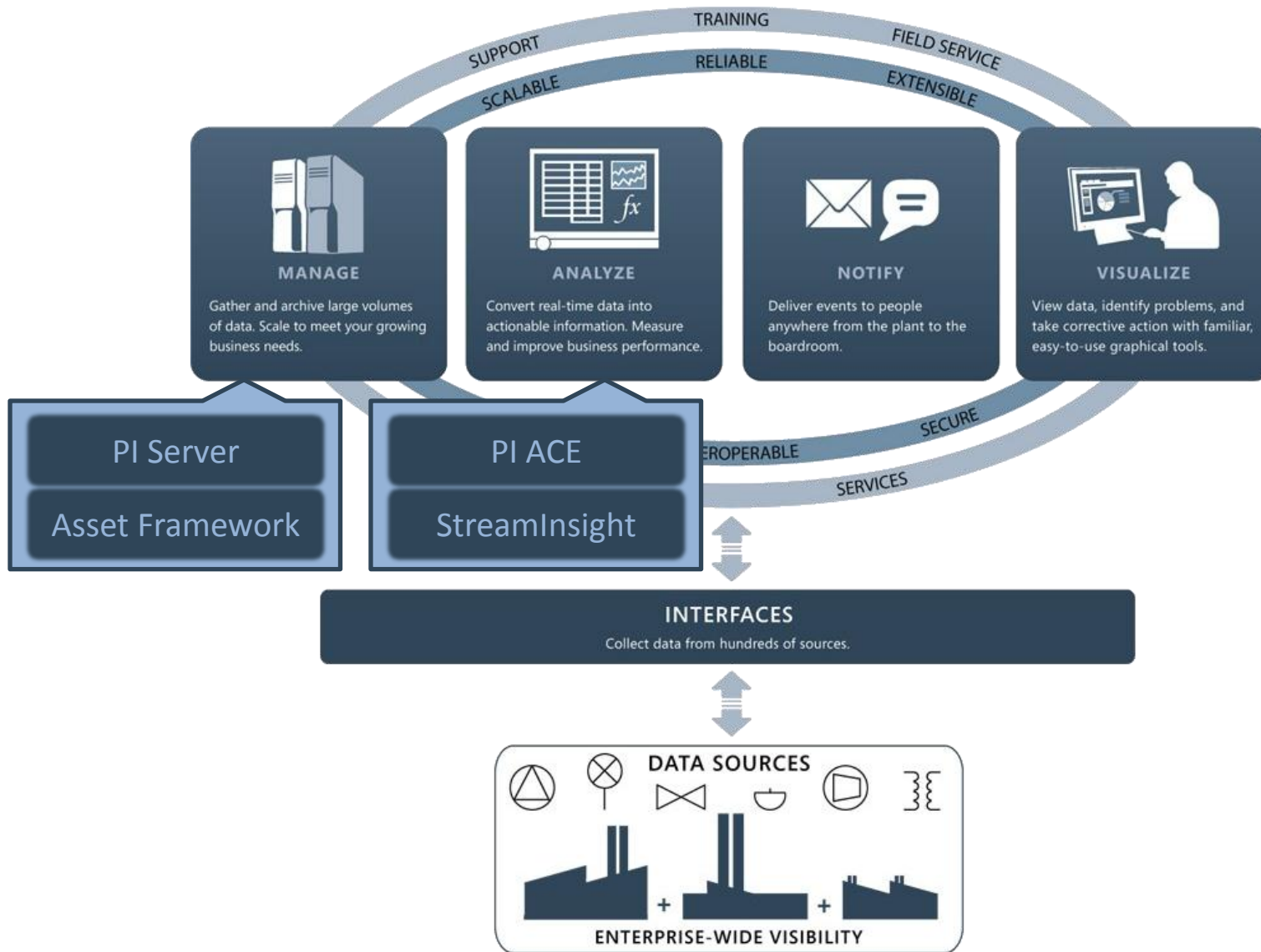
- PI Server 2010
- Assets and Tags
- PI Analytics for StreamInsight

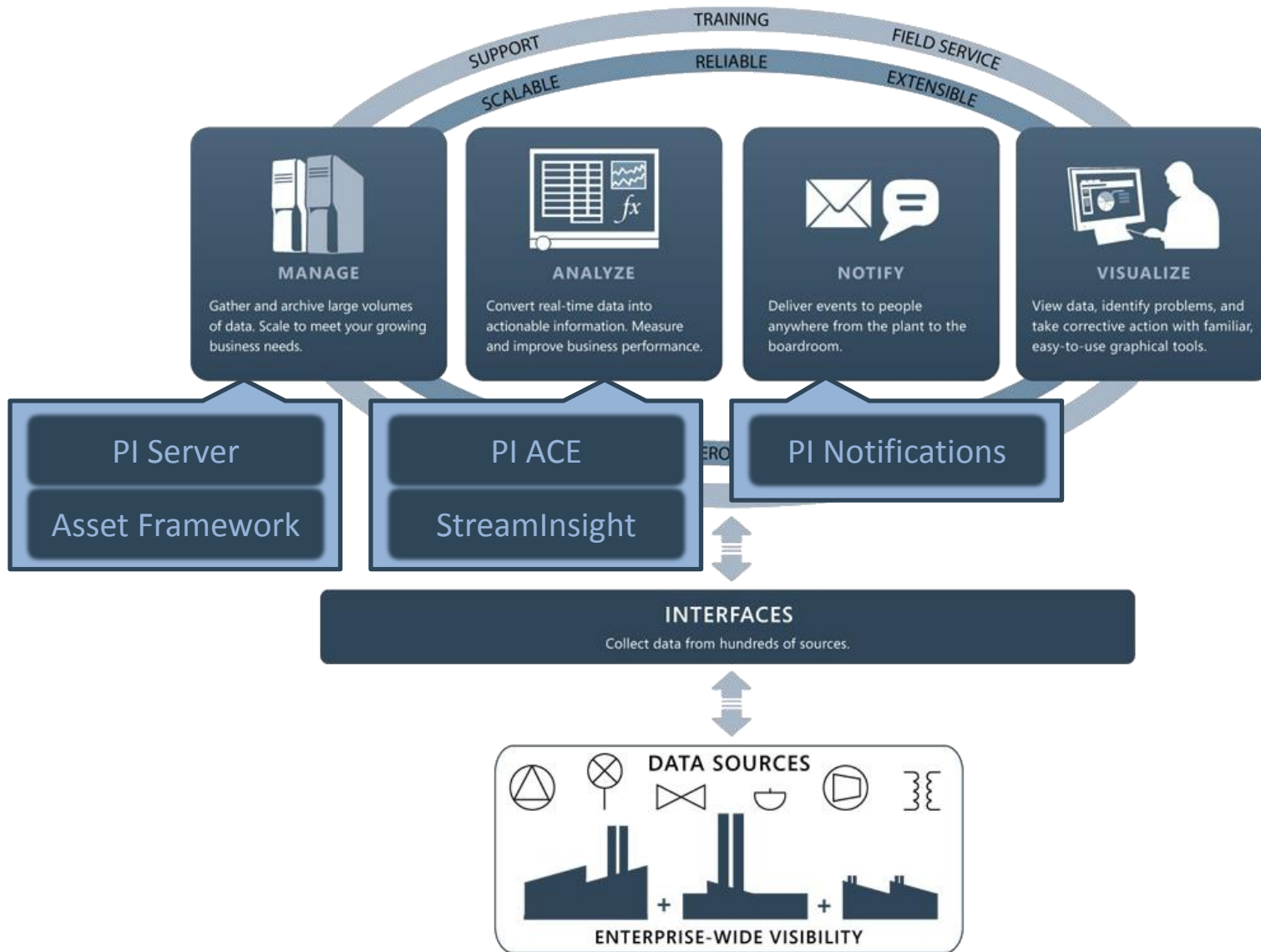
Data Infrastructure and BI Platform

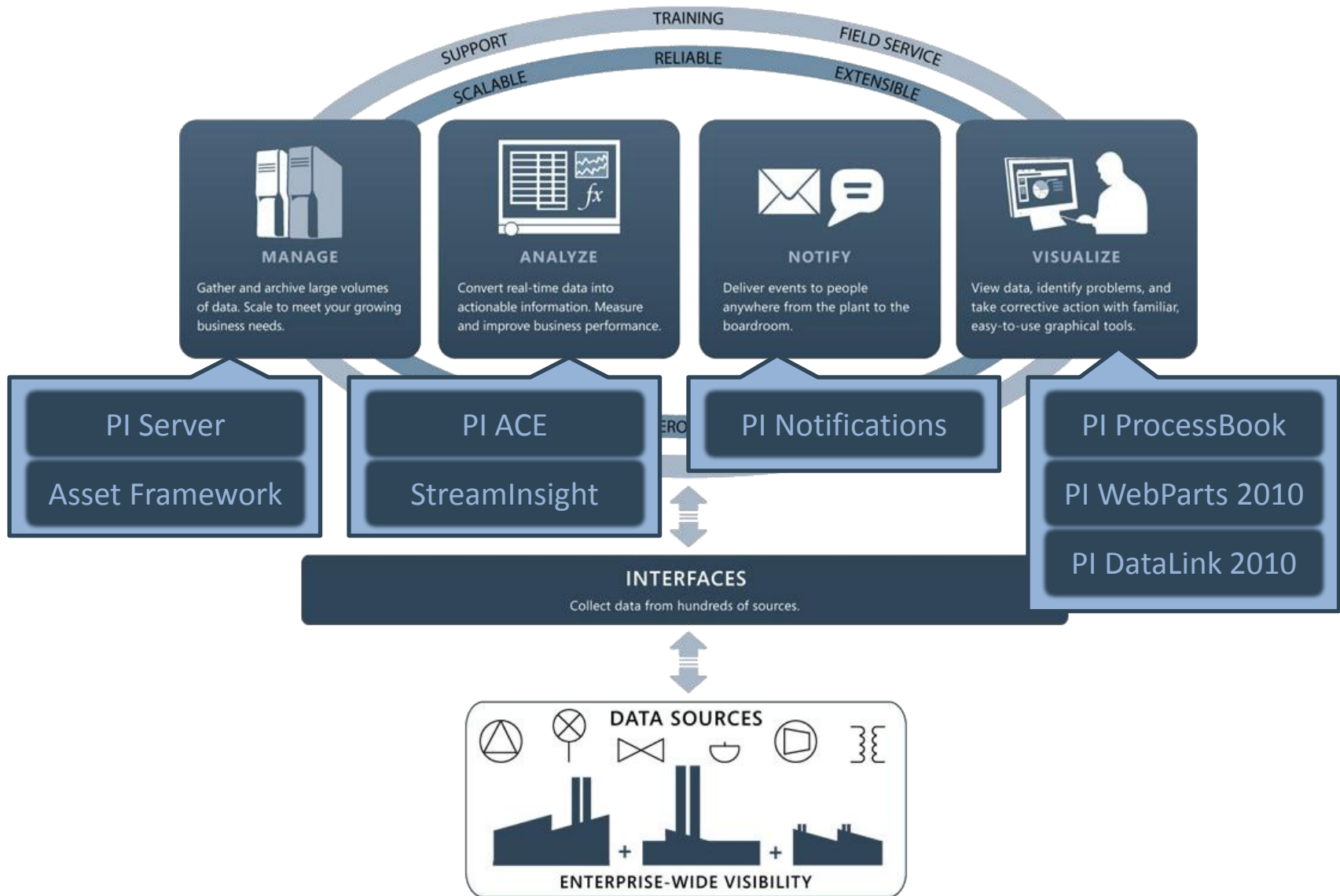


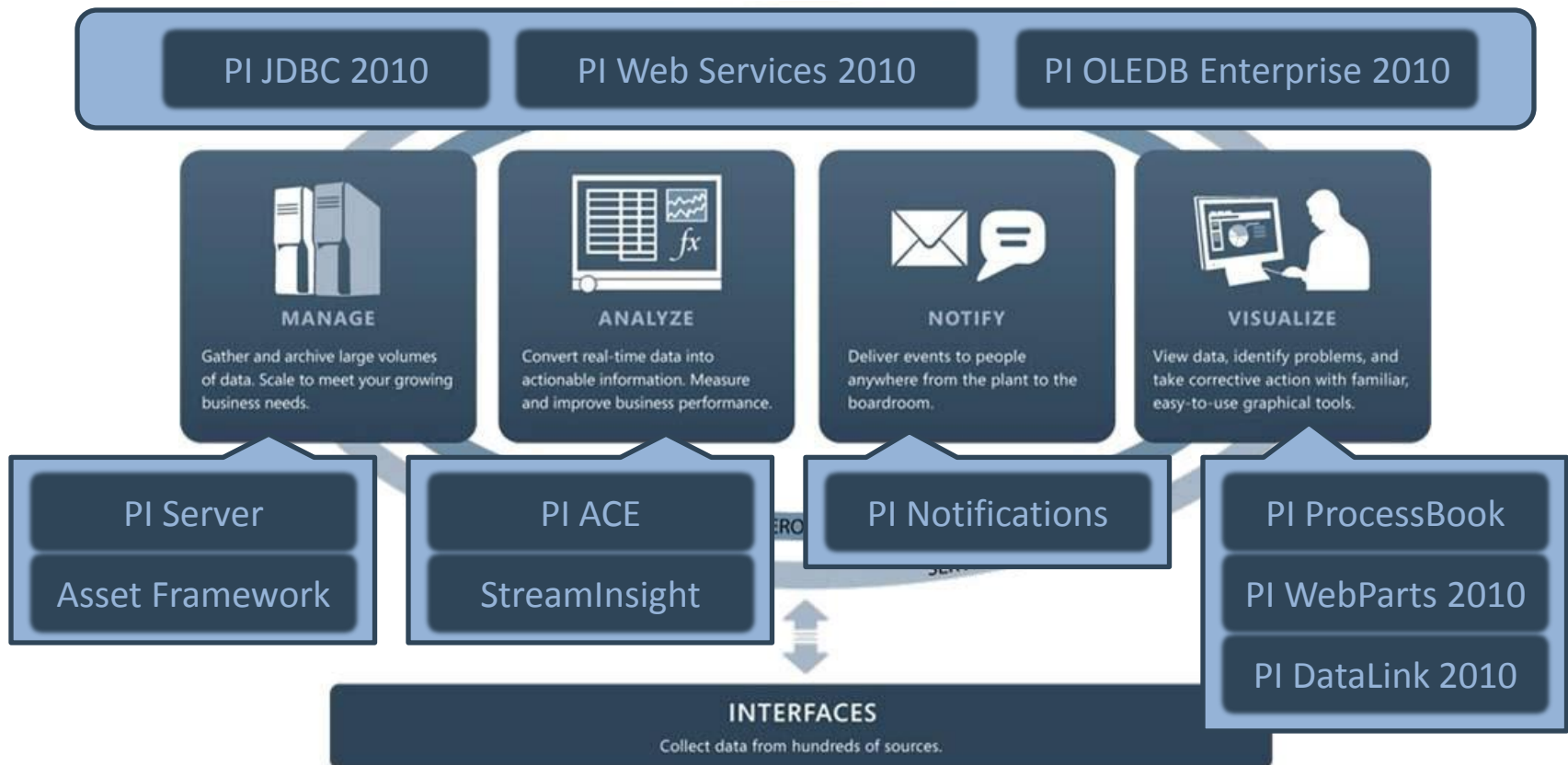


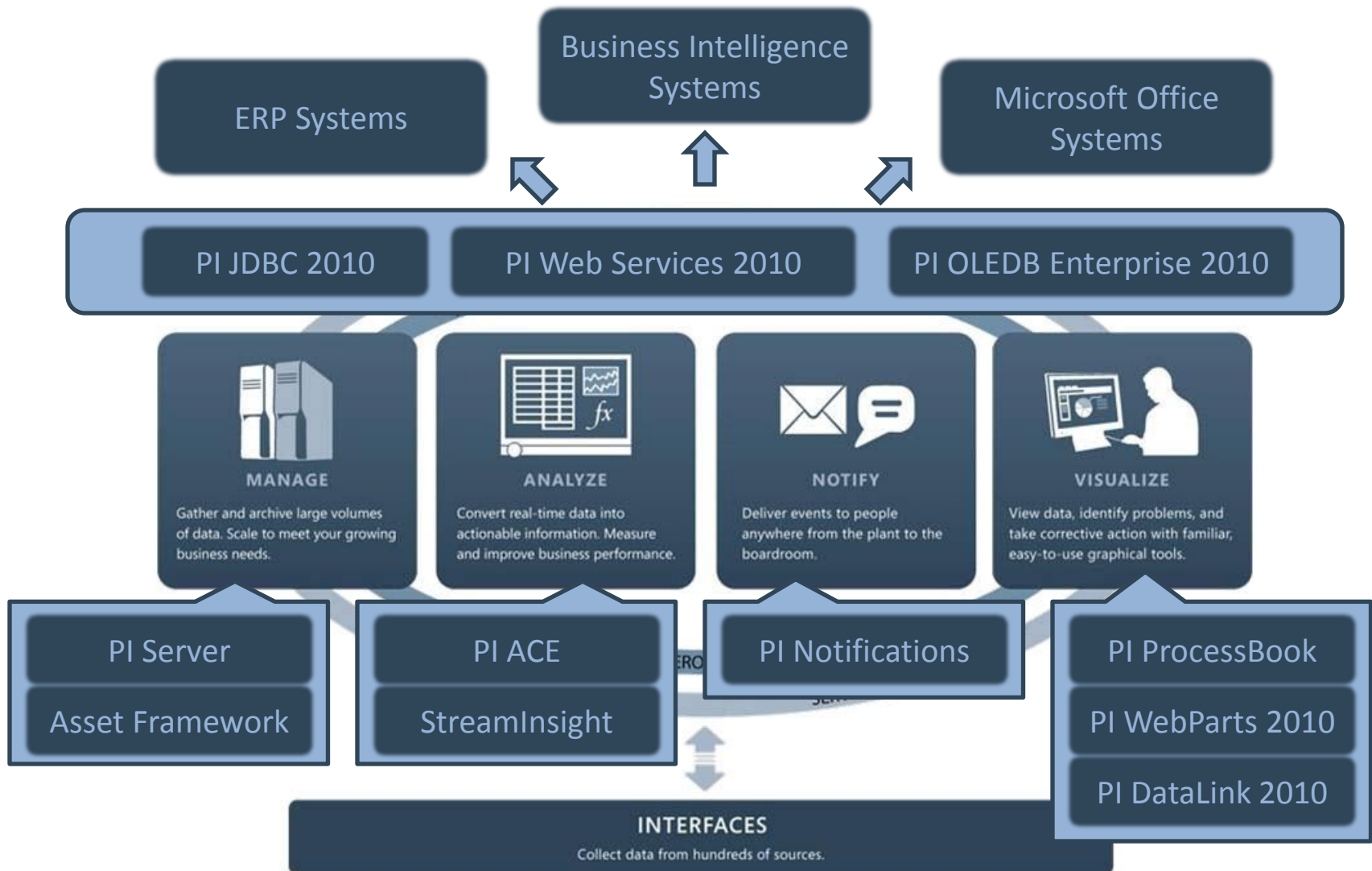


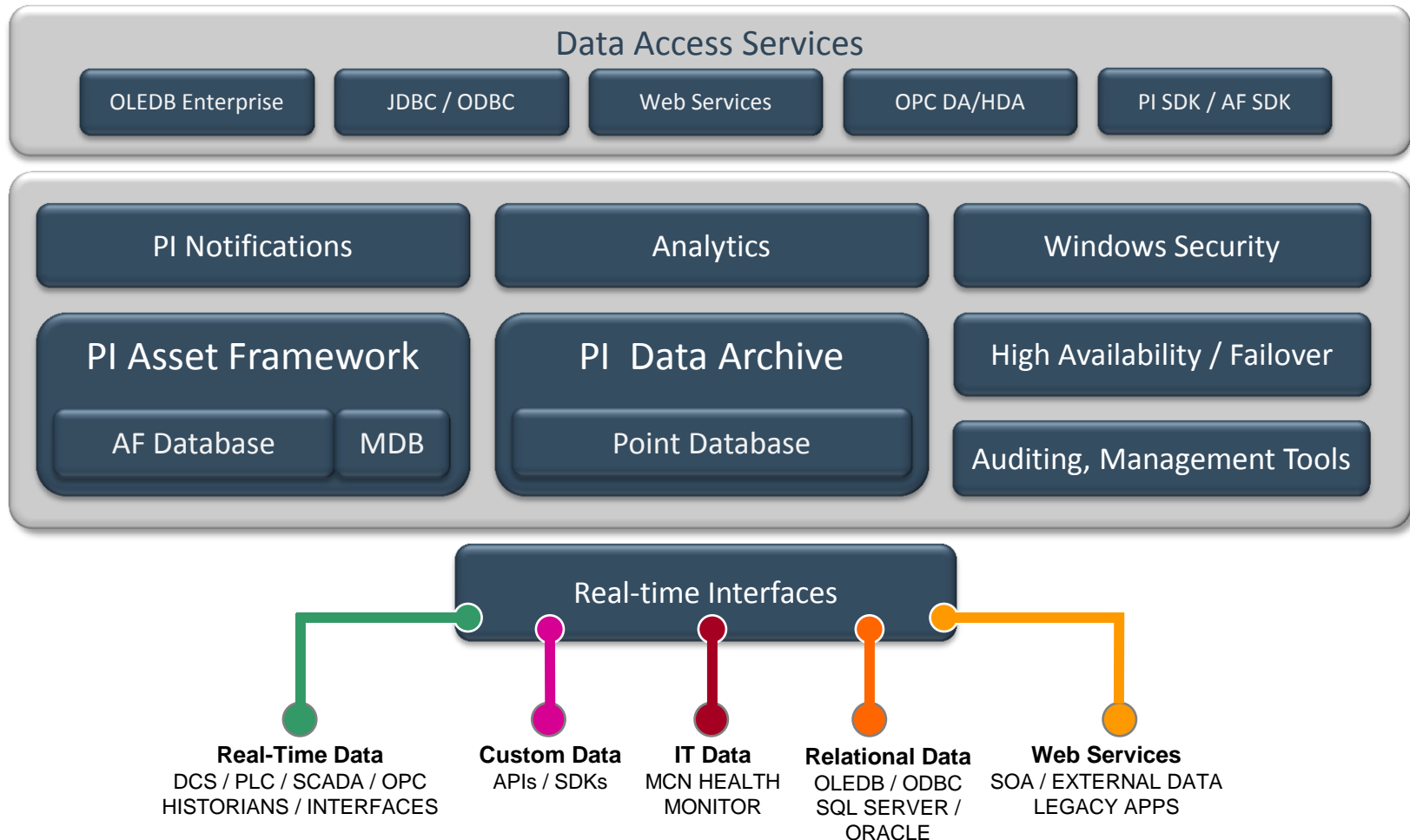












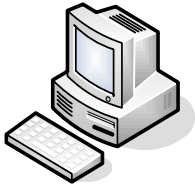


Migrating Module DB to Asset Framework (AF)

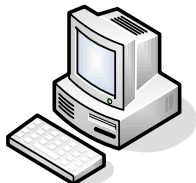
MDB based Applications



PI DataLink



IT Monitor

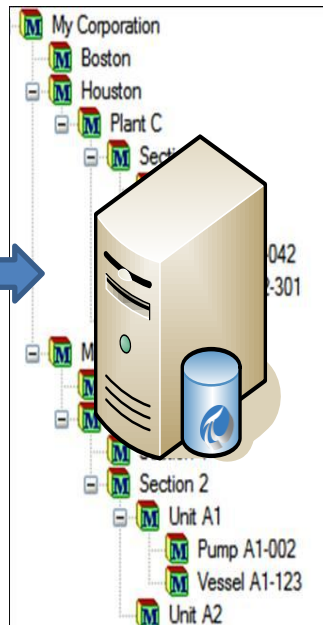


BatchView



PI ACE

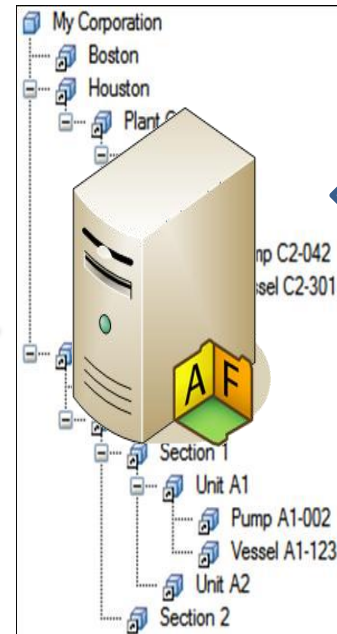
Module Database



PI Asset Link Subsystem



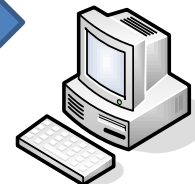
AF Element Database



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

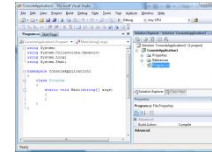
| | Database Applications | Event-driven Applications |
|-----------------|----------------------------------|---|
| Methodology | Request - Response | Event - Notification |
| Query Paradigm | Ad-hoc queries or requests | Continuous standing queries |
| Latency | Seconds, hours, days | Milliseconds 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 |

- **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 System and StreamInsight Platform



StreamInsight Application Development

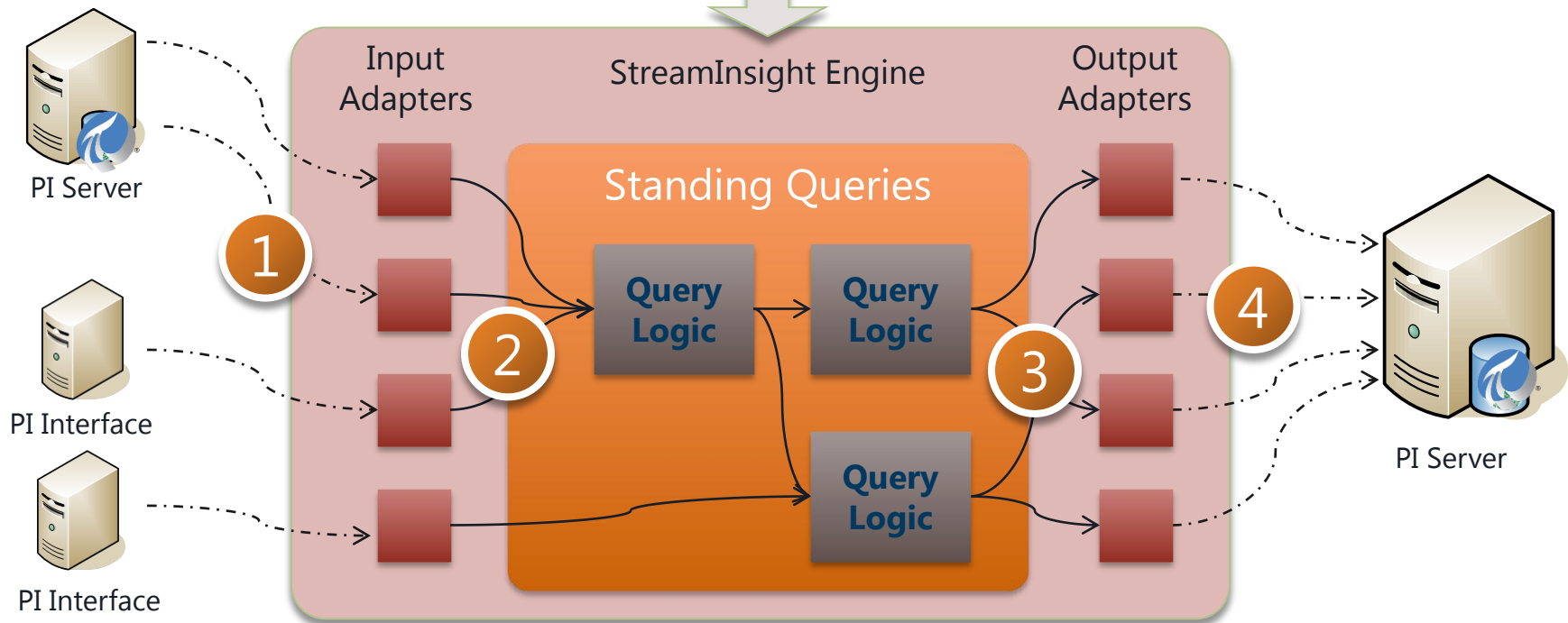


.NET
C#
LINQ

StreamInsight Application at Runtime

Event sources

Event targets



PI Data Access: The 2010 Wave



SAP NetWeaver™



Microsoft®
SQL Server®
Analysis/Reporting Services



Microsoft®
BizTalk® Server



ORACLE®



TIBCO
The Power of Now™



Microsoft®
SharePoint®

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



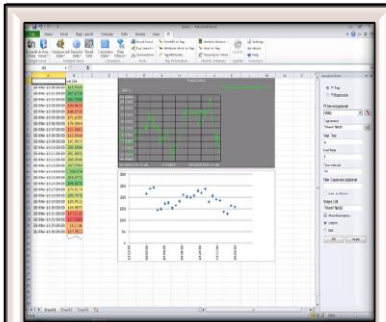
PI Server



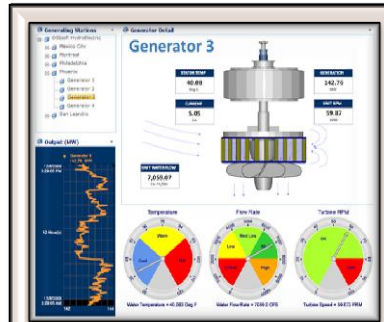
PI Server Collective



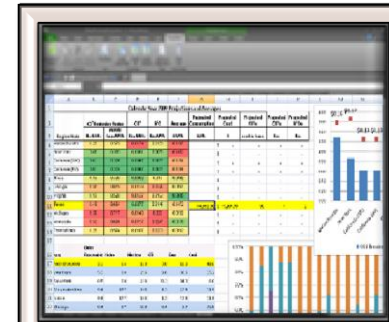
PI for Office 2010: First Half of 2010



PI DataLink for Excel
2010



PI WebParts for
SharePoint 2010



PI DataLink
Server 2010

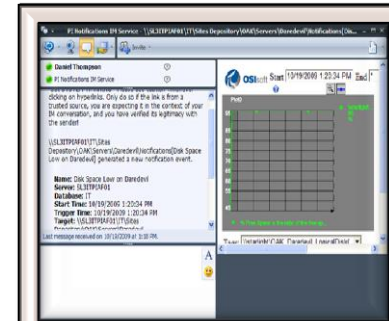


PI and PowerPivot
for 2010

PI OLEDB
Enterprise 2010

PI Web Services
2010

PI Data Access
Technologies



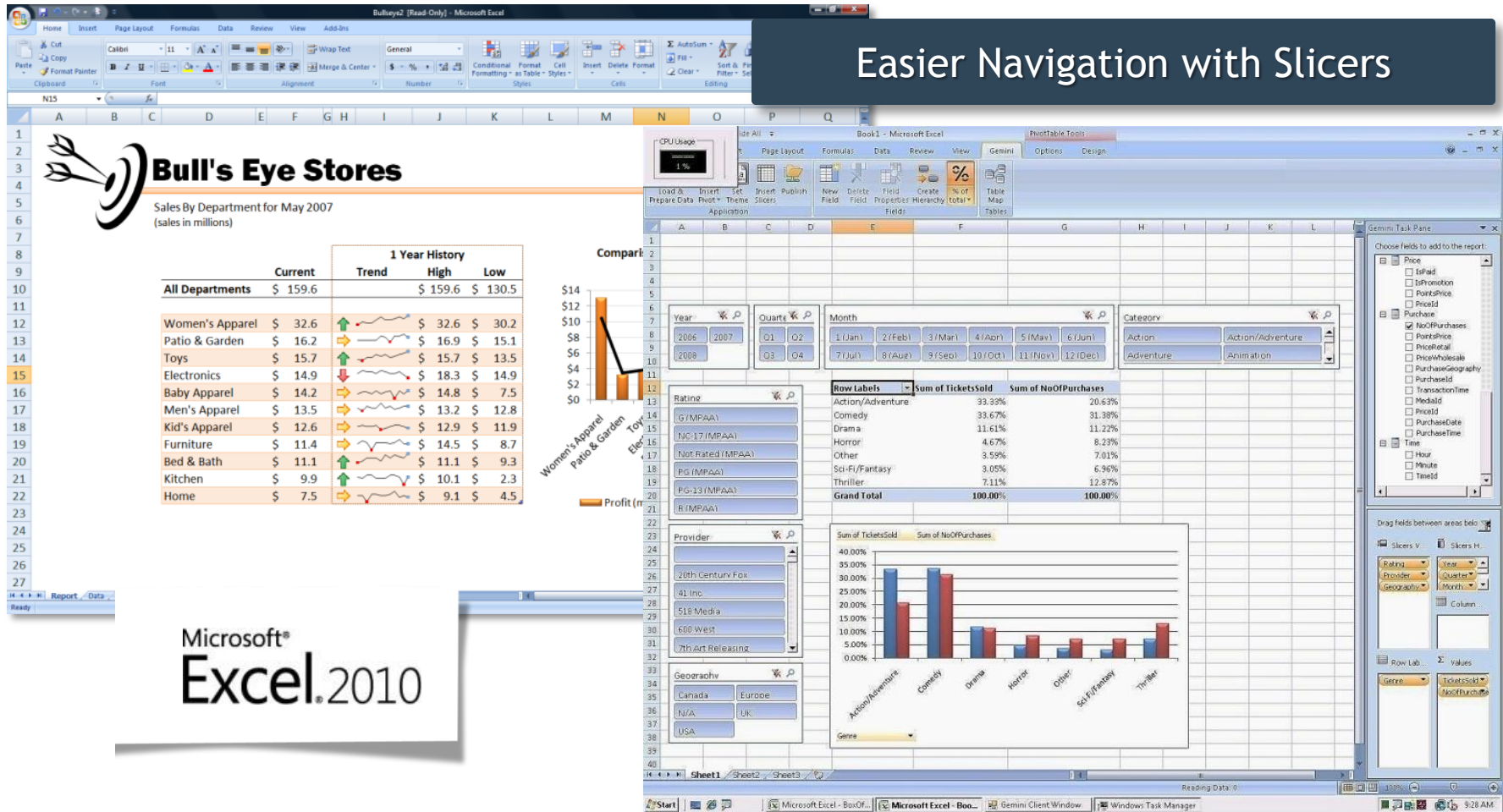
PI System Access
License

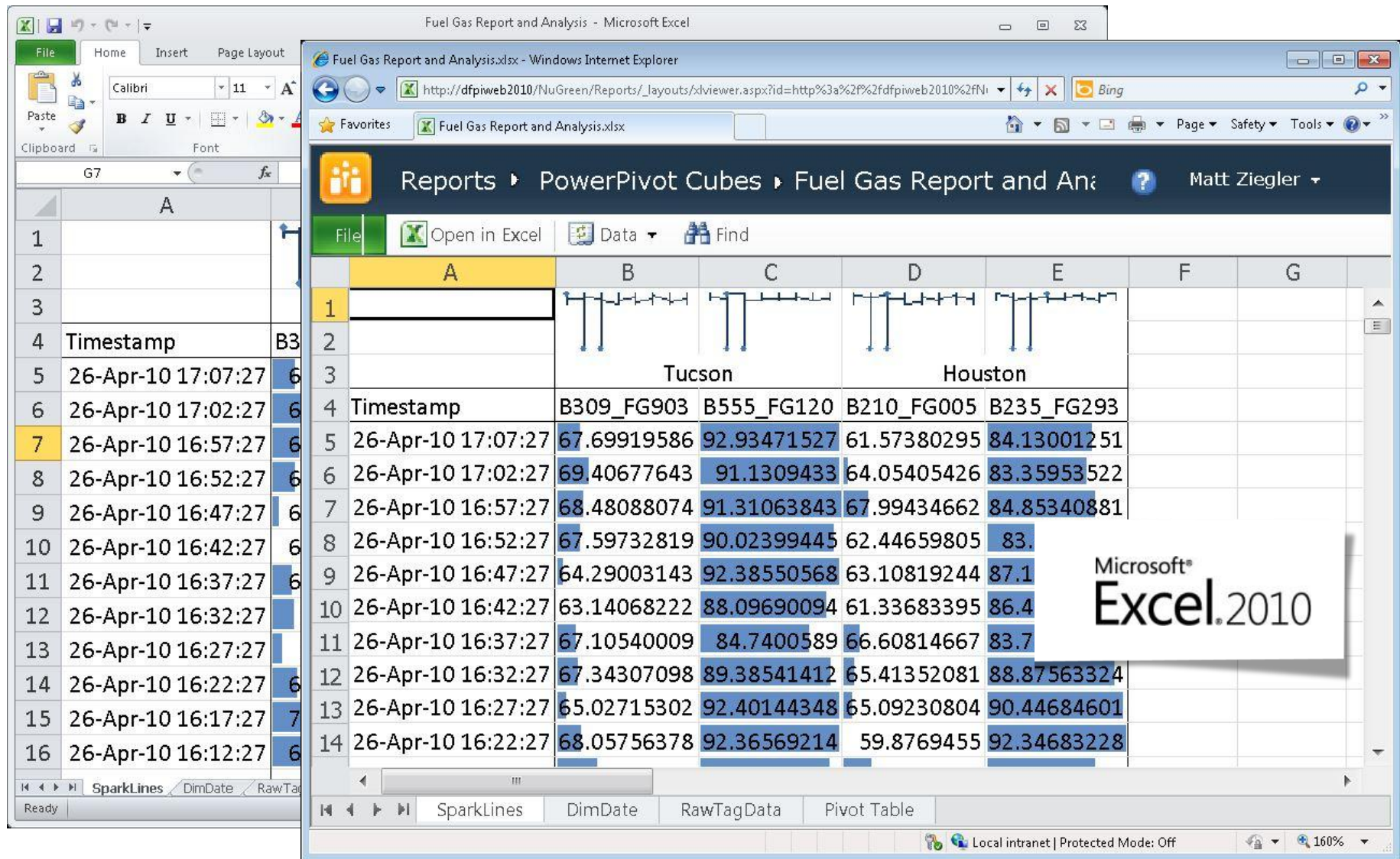
Powerful Personal Analysis Tools



Improved Formatting and charts

Easier Navigation with Slicers





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%2fdapiweb2010%2fN...

Reports ▶ PowerPivot Cubes ▶ Fuel Gas Report and Analysis

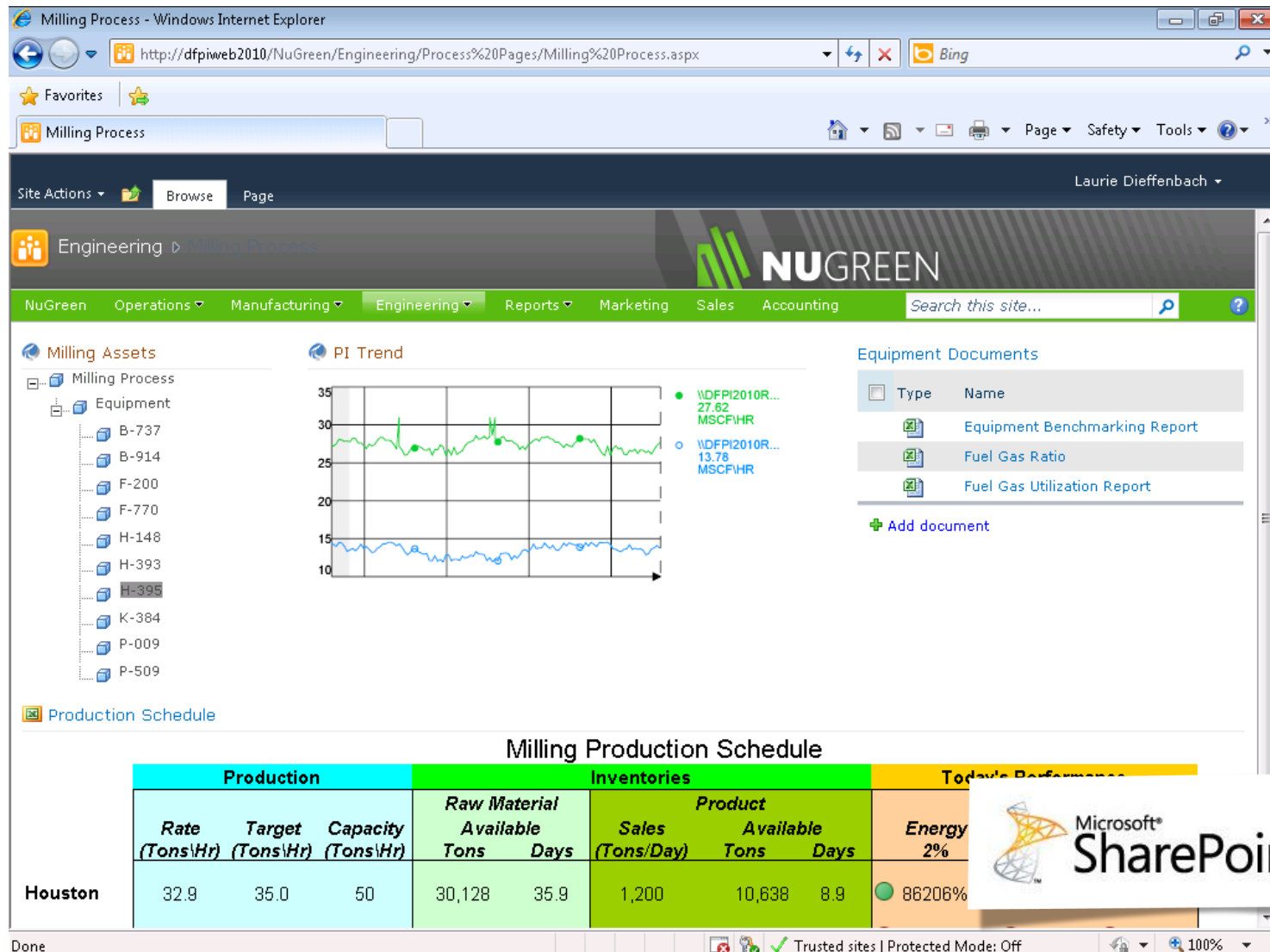
File Open in Excel Data Find

| | 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

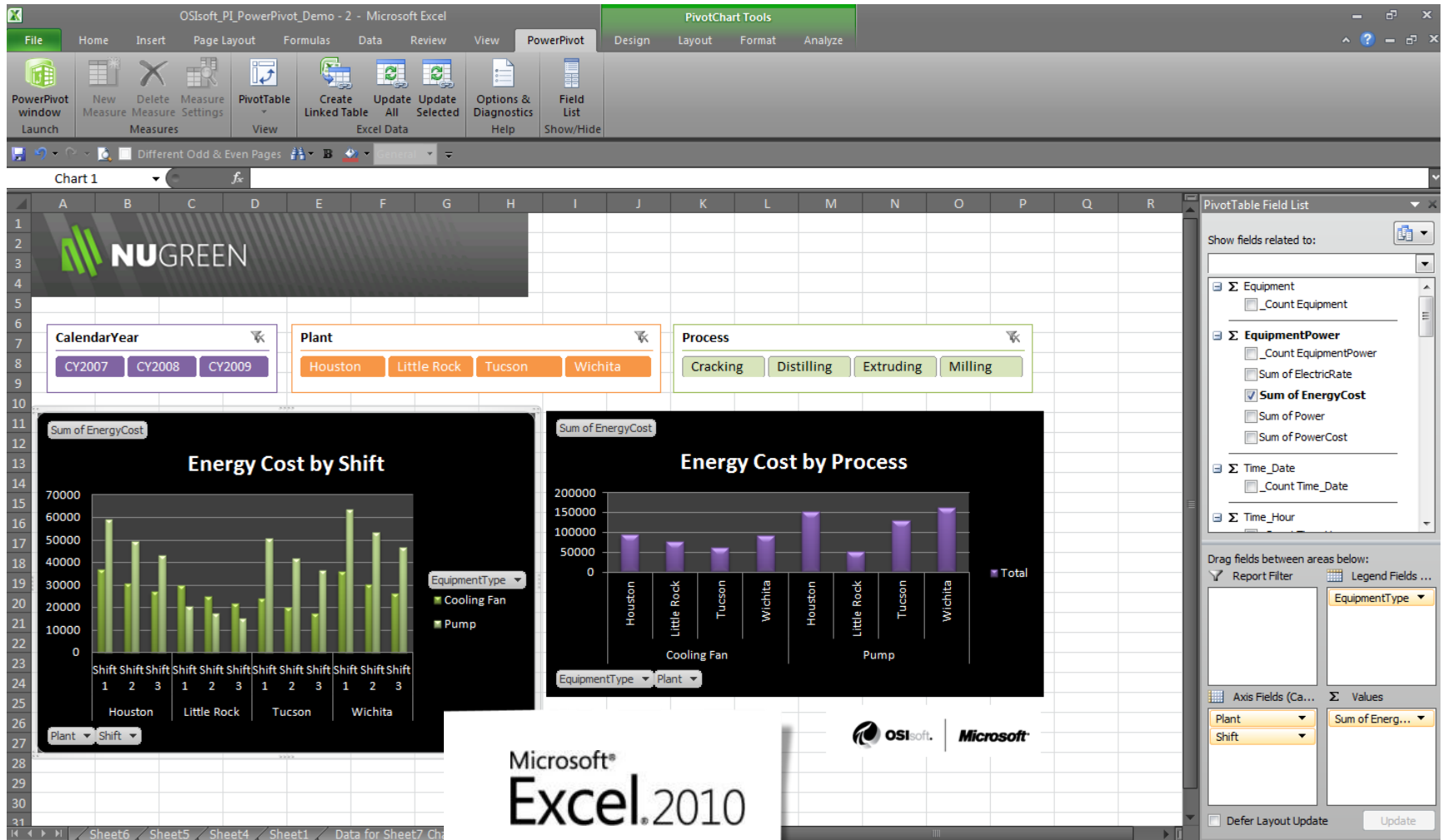
Local intranet | Protected Mode: Off



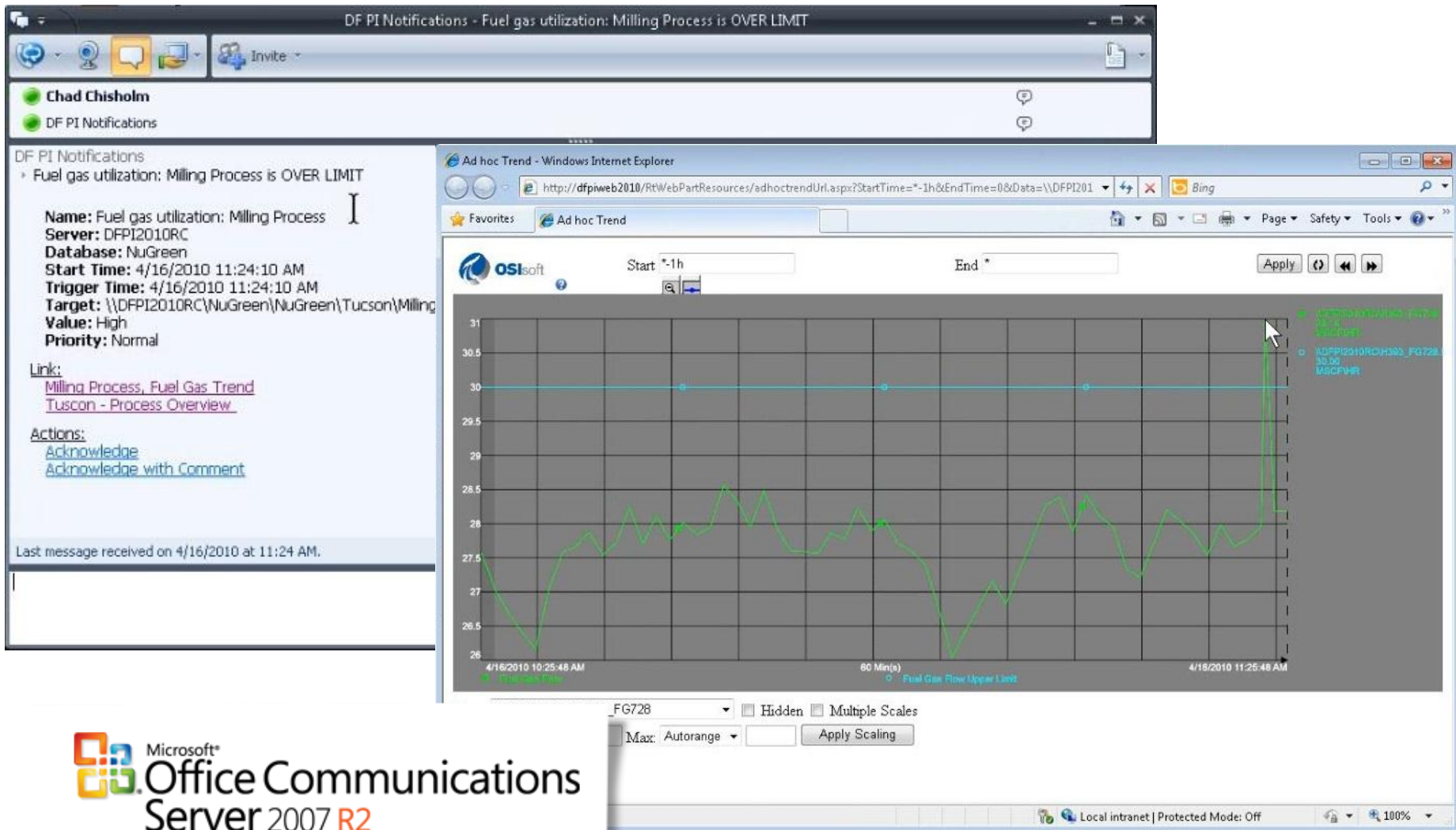


-
- The image shows a man pointing at a computer screen displaying a large table of data. The table has columns for Date, Description, Amount, and various currency codes. A yellow arrow points to the 'Date' column. A yellow box highlights the 'Purchase' button and the 'Date' column header. A yellow box highlights the 'Media' button and the 'Date' column header. A yellow box highlights the 'Rows: 101,411,707' text.

PI and Microsoft PowerPivot



PI Notifications



Simple

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

Relevant

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

Collaborative

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

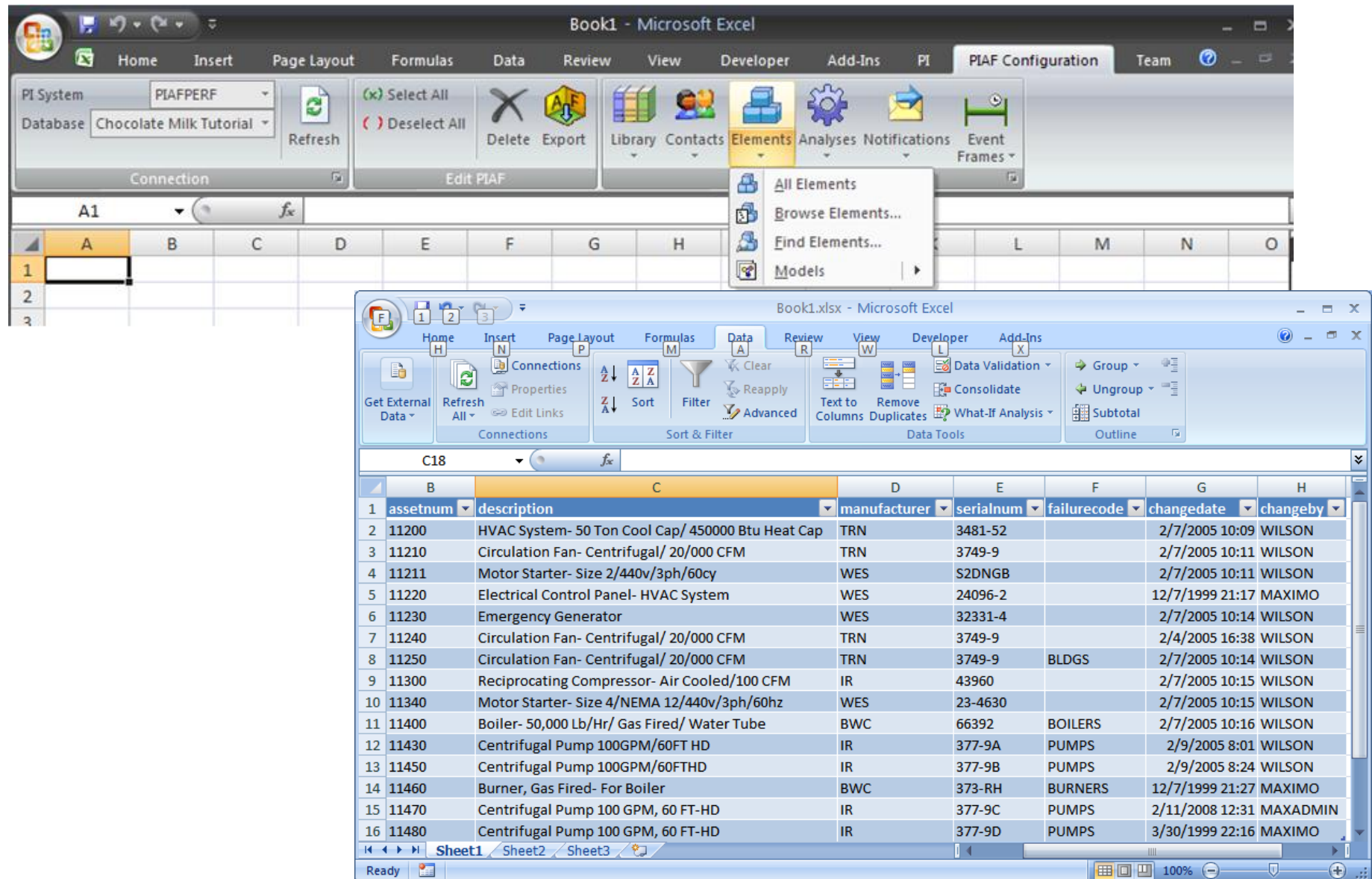
- Scalability/Manageability/Performance
 - PI Server
 - PI Notifications
 - PI AF
- User Experience
 - PI System Search
- Analytics
 - PI ACE Performance
 - AF Analytics
 - Edge Processing

- 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



Book1 - Microsoft Excel

PI System: PIAFPERF
Database: Chocolate Milk Tutorial

Refresh

Select All
Deselect All

Delete Export

Library Contacts Elements Analyses Notifications Event Frames

Context Menu:
All Elements
Browse Elements...
Find Elements...
Models

Book1.xlsx - Microsoft Excel

| | B | C | D | E | F | G | H |
|----|----------|---|--------------|-----------|-------------|-----------------|----------|
| | assetnum | description | manufacturer | serialnum | failurecode | changedate | changeby |
| 1 | 11200 | HVAC System- 50 Ton Cool Cap/ 450000 Btu Heat Cap | TRN | 3481-52 | | 2/7/2005 10:09 | WILSON |
| 2 | 11210 | Circulation Fan- Centrifugal/ 20/000 CFM | TRN | 3749-9 | | 2/7/2005 10:11 | WILSON |
| 3 | 11211 | Motor Starter- Size 2/440v/3ph/60cy | WES | S2DNGB | | 2/7/2005 10:11 | WILSON |
| 4 | 11220 | Electrical Control Panel- HVAC System | WES | 24096-2 | | 12/7/1999 21:17 | MAXIMO |
| 5 | 11230 | Emergency Generator | WES | 32331-4 | | 2/7/2005 10:14 | WILSON |
| 6 | 11240 | Circulation Fan- Centrifugal/ 20/000 CFM | TRN | 3749-9 | | 2/4/2005 16:38 | WILSON |
| 7 | 11250 | Circulation Fan- Centrifugal/ 20/000 CFM | TRN | 3749-9 | BLDGS | 2/7/2005 10:14 | WILSON |
| 8 | 11300 | Reciprocating Compressor- Air Cooled/100 CFM | IR | 43960 | | 2/7/2005 10:15 | WILSON |
| 9 | 11340 | Motor Starter- Size 4/NEMA 12/440v/3ph/60hz | WES | 23-4630 | | 2/7/2005 10:15 | WILSON |
| 10 | 11400 | Boiler- 50,000 Lb/Hr/ Gas Fired/ Water Tube | BWC | 66392 | BOILERS | 2/7/2005 10:16 | WILSON |
| 11 | 11430 | Centrifugal Pump 100GPM/60FT HD | IR | 377-9A | PUMPS | 2/9/2005 8:01 | WILSON |
| 12 | 11450 | Centrifugal Pump 100GPM/60FTHD | IR | 377-9B | PUMPS | 2/9/2005 8:24 | WILSON |
| 13 | 11460 | Burner, Gas Fired- For Boiler | BWC | 373-RH | BURNERS | 12/7/1999 21:27 | MAXIMO |
| 14 | 11470 | Centrifugal Pump 100 GPM, 60 FT-HD | IR | 377-9C | PUMPS | 2/11/2008 12:31 | MAXADMIN |
| 15 | 11480 | Centrifugal Pump 100 GPM, 60 FT-HD | IR | 377-9D | PUMPS | 3/30/1999 22:16 | MAXIMO |

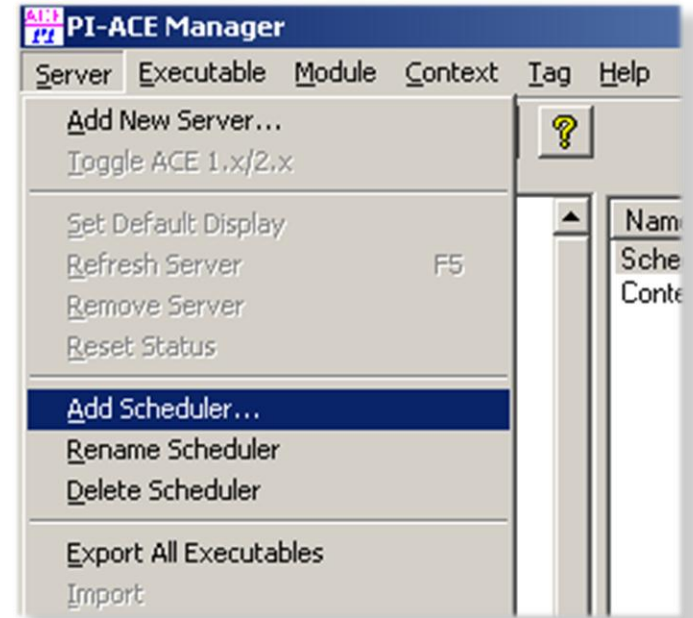
| | | Programming | Configuration |
|---------------|---------|---|---|
| Tag Context | PI Tags | PI SDK (Custom applications), PI ACE | PI PE, PI Totalizers, PI Alarms, PI RT SQC |
| Asset Context | PI MDB | PI SDK (Custom applications), PI ACE | None |
| | PI AF | <ul style="list-style-type: none">• AF Data References• AF Analysis Rules• AF SDK (Custom applications) | <ul style="list-style-type: none">• AF Analytics• AF Formula (PE syntax)• New Analysis Rules• Scheduling (Clock & Event)• Export results to PI tags |

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

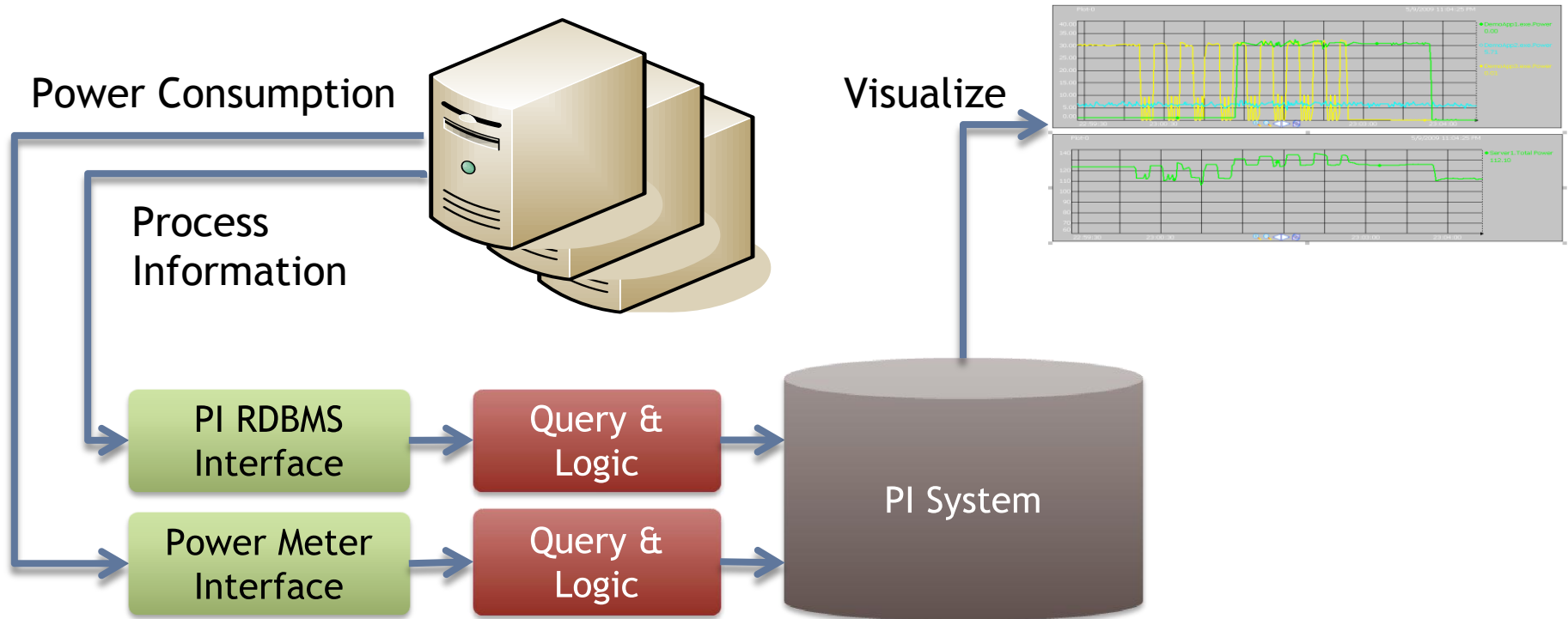
PI Point

\\%Server%\%Element%. %Attribute%

Schedule

Hourly

Frequency=3600



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



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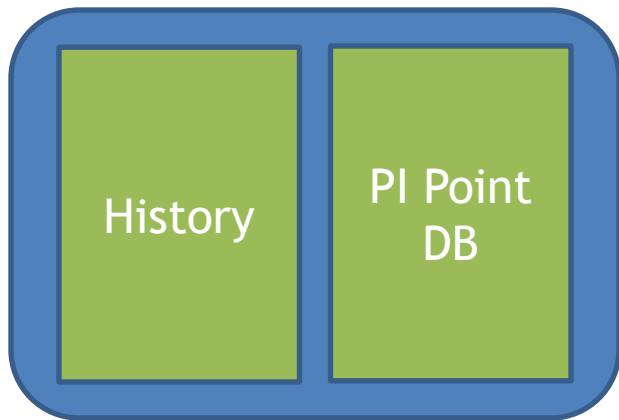
VIRTUAL CAMPUS

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

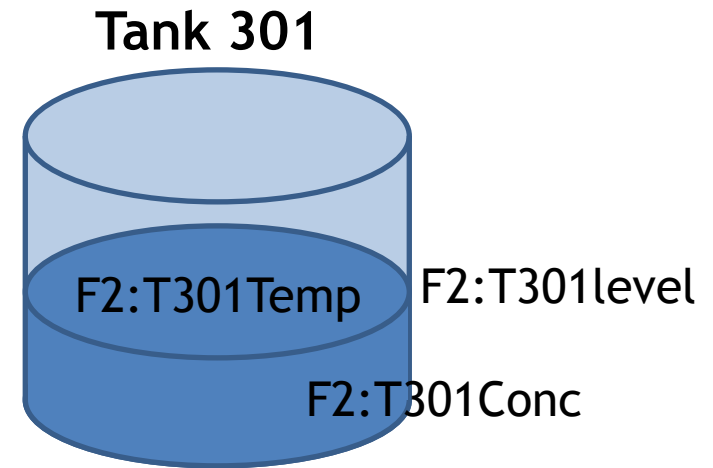
Data Buffering

- 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

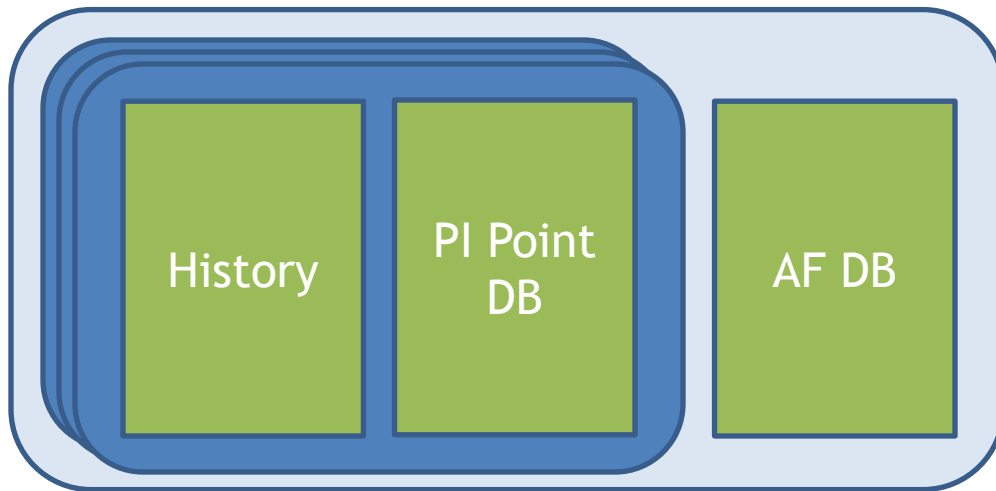
Search by Point Attributes



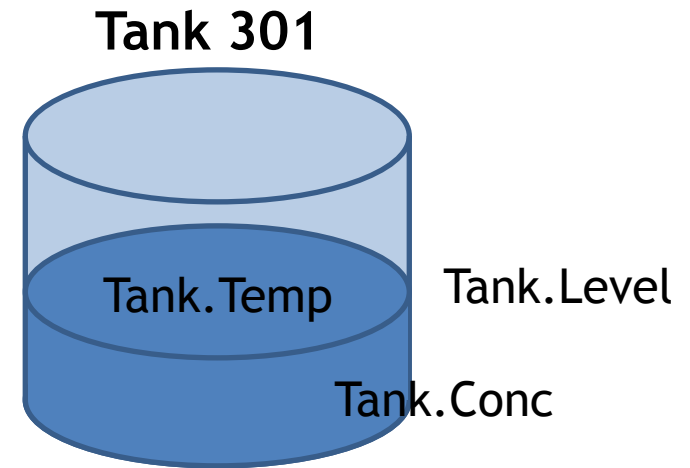
Search by attribute mask, value



Elements and Attributes



Search by mask, type, value





Simple

Easy to get started, system grows with you



Relevant

Deliver the most important data to right people



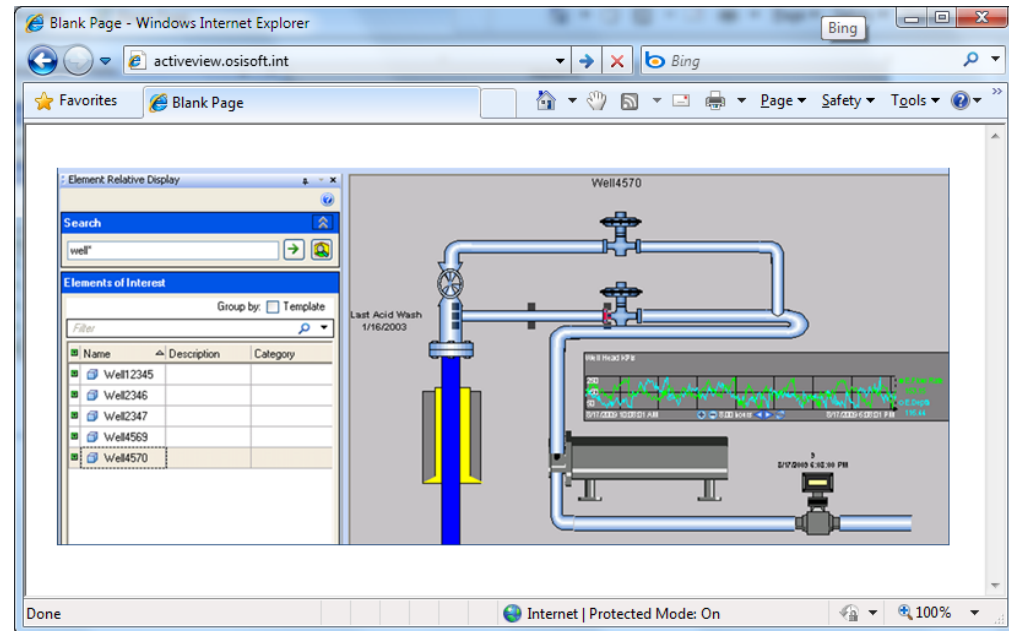
Collaborative

Everyone has access to the data, easy to share

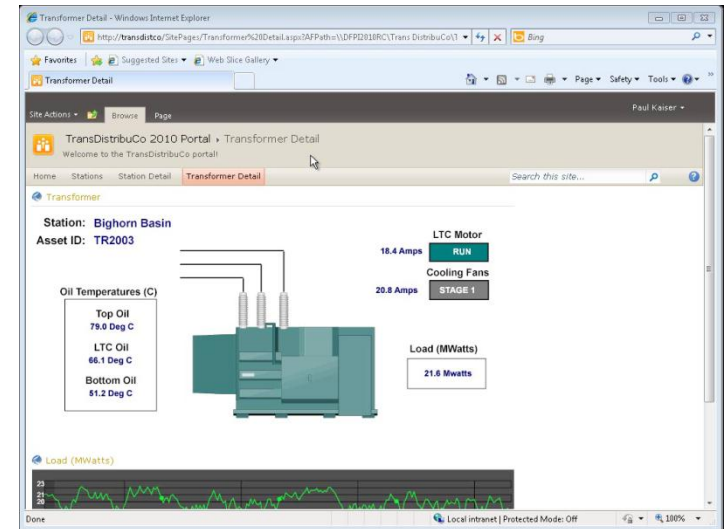
- Asset view of data
- PI System Search
- Better analysis via PowerPivot and BI tools
- Report building
- Publishing for others using Excel Services



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



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





Thank you

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