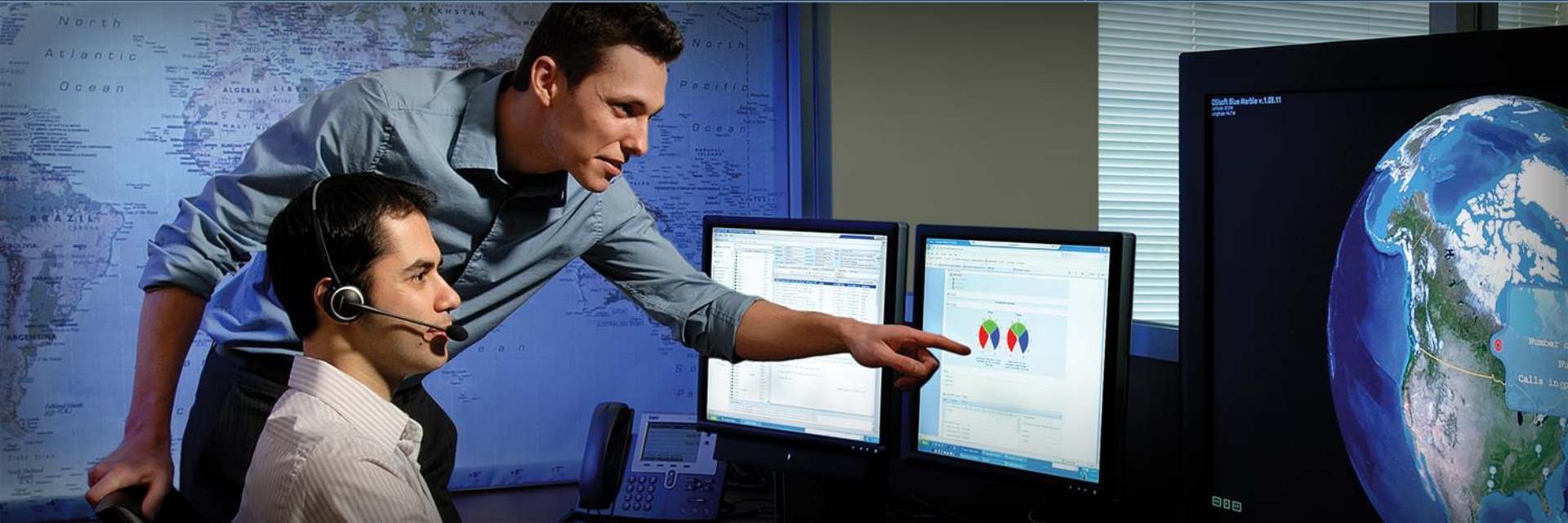




Regional Seminar Series Richmond



PI System Roadmap

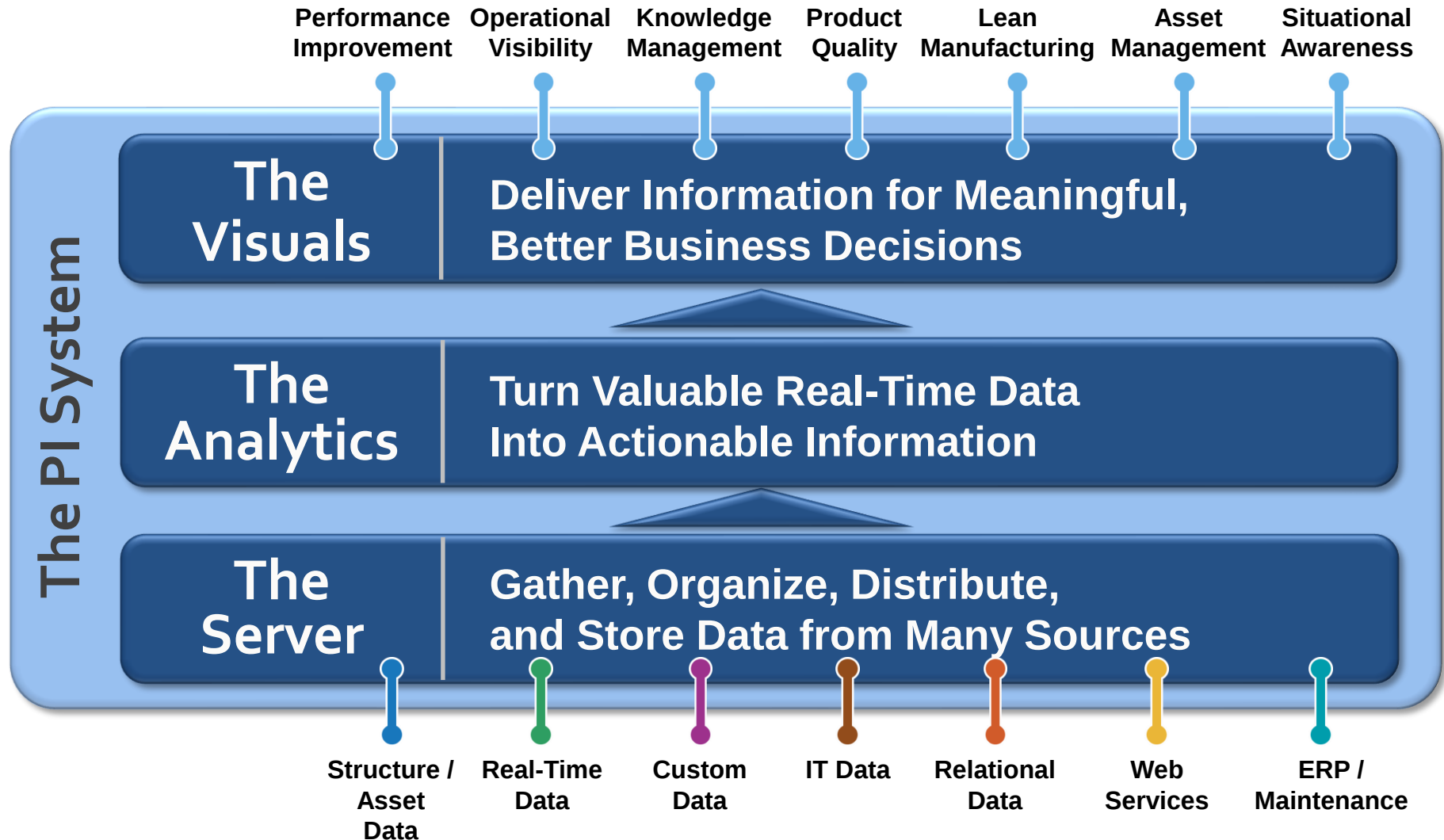
John Baier
Director, Product Management
OSIsoft, Inc.

September 22, 2009

Empowering Business in Real Time.

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Functional Groups of The PI System



Aspects of The PI System



Cross Functional Aspects of the PI System

Scalable

Available

Reliable

Extensible

Secure

Interoperable

**The
Visuals**

**Deliver Information for Meaningful,
Better Business Decisions**

**The
Analytics**

**Turn Valuable Real-Time Data
Into Actionable Information**

**The
Server**

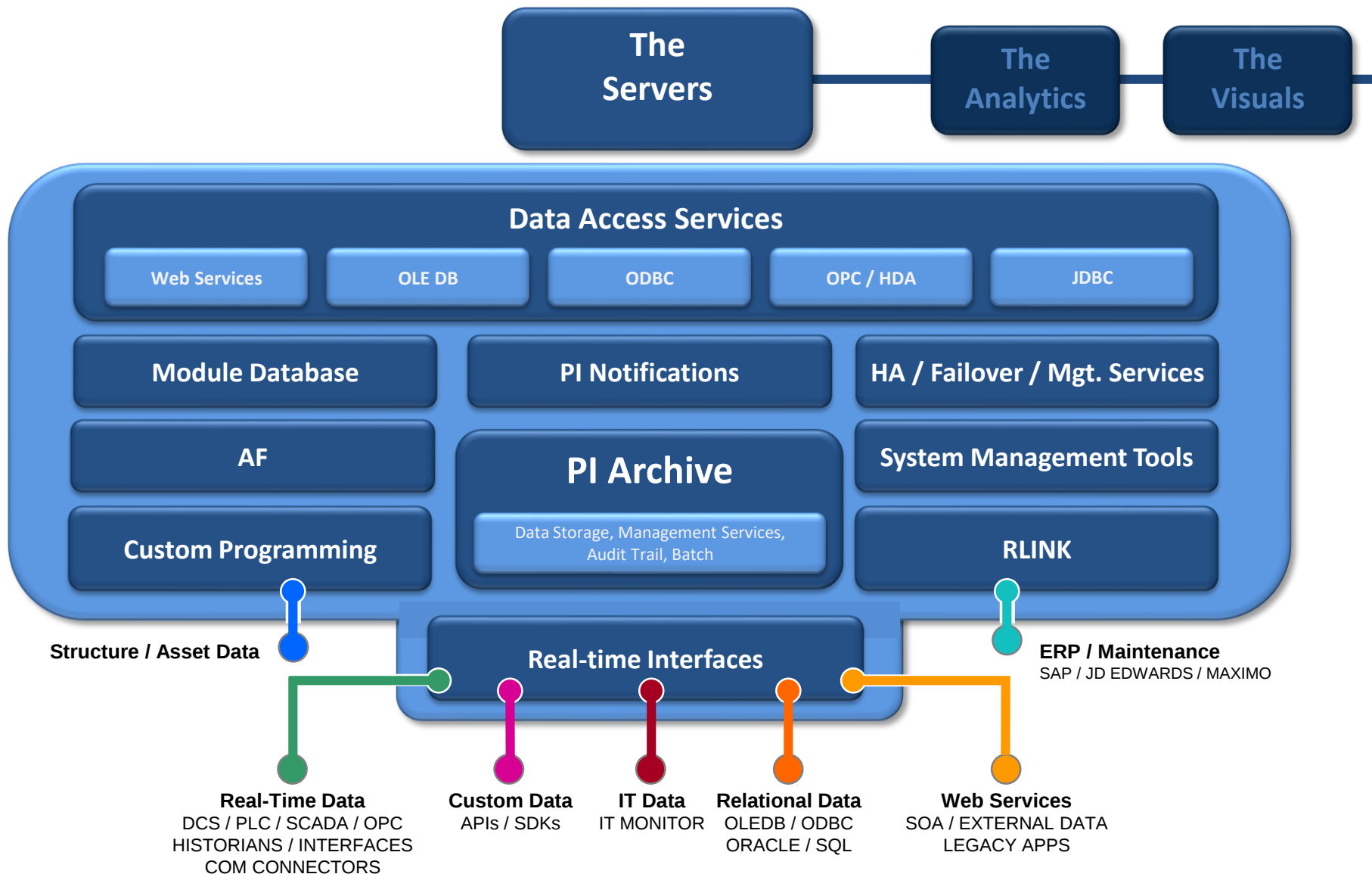
**Gather, Organize, Distribute,
and Store Data from Many Sources**

- Security
- Scalability
 - 64-bit Support
- High Availability
- Establish Single Data Context Model - AF
- Usability / Productivity Improvements

The Servers



The PI Servers



3 concurrent releases for 3 themes

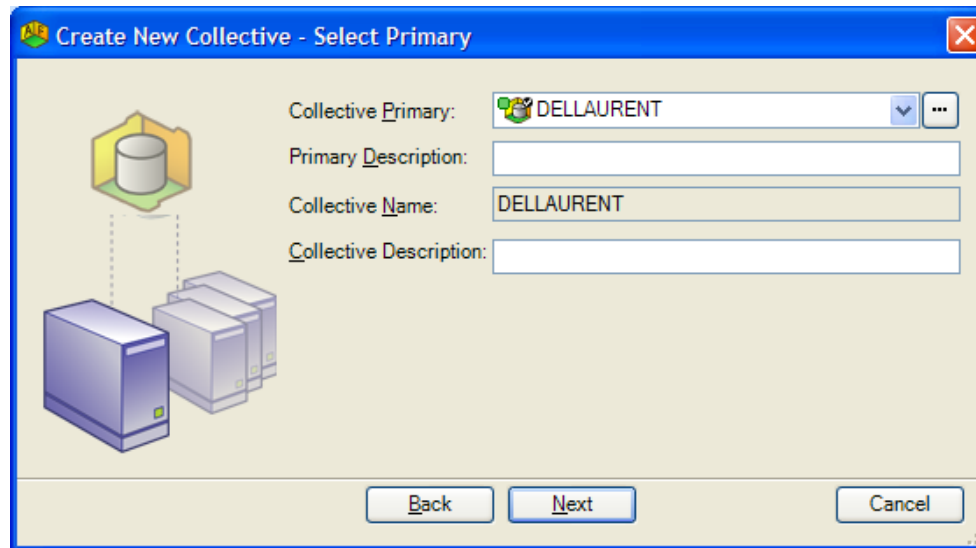


- Releases
 - PI Server 3.4.380 with Windows Integrated Security
 - Released Yesterday (Sept 21)!
 - PI AF 2.1
 - Released 4 weeks ago
 - PI Notifications 1.1
 - In Final Test, Will release in 2 weeks
- Integration with Windows Security
- High Availability
- More Scalability and Manageability

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



- The PI Server has been HA for almost 3 years
 - Released in Q1 2007
- PI Notifications has been HA since the first release
 - Released in Q1 2008
- PI AF 2.1 is now Highly Available



- Better performance, scalability and throughput for the PI Server, PI AF and PI Notifications
- Support for 64bits
 - Native support for the PI Server and PI AF
 - PI Notifications tested as a 32bits running on 64bits
- New PI SMT 3 plug-ins to manage the new security model
- Improved manageability for PI Notifications leveraging PI AF Notifications templates



PI Server 3.4.380 WIS



Technical Overview and 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
 - No More Default User, PIWorld
- More Flexible
 - Unlimited Access Control Lists (ACLs)

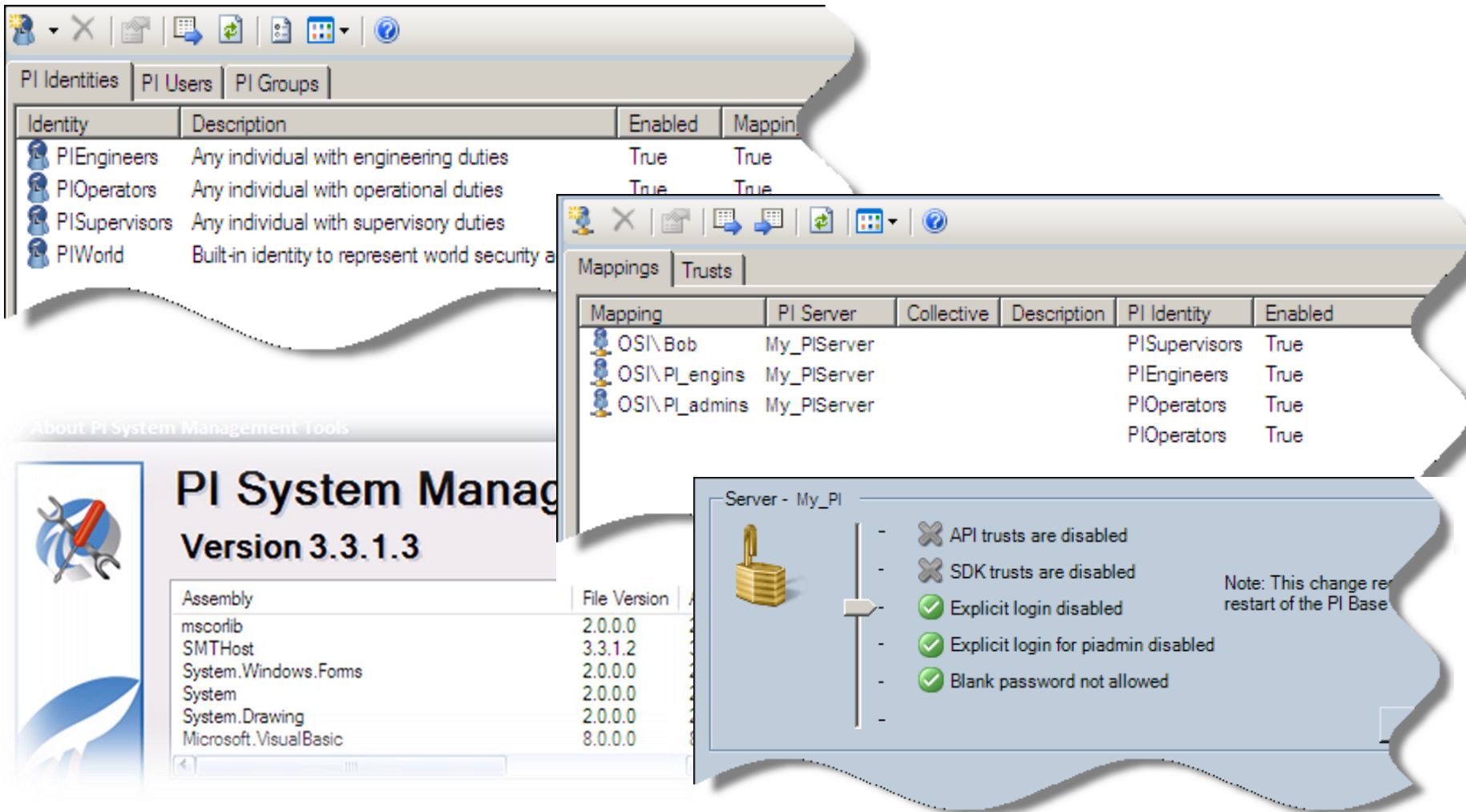


Point	Point Security	Data Security
SINUSOID	Asia-Pacific: A(r) Antarctica: A(r,w) Americas: A(r) Europe: A(r)	Green: A(r)

*Security Support Provider Interface

** NT LAN Manager

Improved System Management Tools (PI SMT 3.3)



The screenshot displays the PI System Management Tools (PI SMT 3.3) interface. The main window is titled "PI System Management Tools" and shows the "PI Identities" tab. Below the tabs, there is a table listing identities:

Identity	Description	Enabled	Mappin
PIEngineers	Any individual with engineering duties	True	True
PIOperators	Any individual with operational duties	True	True
PISupervisors	Any individual with supervisory duties		
PIWorld	Built-in identity to represent world security a		

Below the table, there is a section titled "About PI System Management Tools" and a "PI System Management Tools Version 3.3.1.3" section. The "Assembly" table lists the following components and their file versions:

Assembly	File Version
mscorlib	2.0.0.0
SMTHost	3.3.1.2
System.Windows.Forms	2.0.0.0
System	2.0.0.0
System.Drawing	2.0.0.0
Microsoft.VisualBasic	8.0.0.0

The "Mappings" tab is also visible, showing a table of mappings:

Mapping	PI Server	Collective	Description	PI Identity	Enabled
OSI\Bob	My_PIServer			PISupervisors	True
OSI\PI_engins	My_PIServer			PIEngineers	True
OSI\PI_admins	My_PIServer			PIOperators	True
				PIOperators	True

A configuration window titled "Server - My_PI" is open, showing a list of settings:

- ☒ API trusts are disabled
- ☒ SDK trusts are disabled
- ☒ Explicit login disabled
- ☒ Explicit login for piadmin disabled
- ☒ Blank password not allowed

Note: This change requires a restart of the PI Base.

New with the PI Server 3.4.380 Release



The screenshot displays the 'sinusoid - Point Builder - PI System Management Tools' application. The left sidebar shows the 'System Management Tools' menu with 'Point Builder' selected. The main window is divided into 'Server', 'Point', 'Point Security', and 'Data Security' tabs. The 'Point Security' tab is active, showing a list of users and groups: piadmin, piadmins, PIEngineers, and PIWorld. A callout box highlights the security permissions for the piadmin user, showing a list of permissions: Read, Write, and Execute. A 'Select' dialog box is open, showing a list of users and groups available for selection. The dialog box has a 'Type' dropdown set to 'All' and a list of users and groups with their descriptions. The 'PIOperators' user is selected in the list.

Point Security

piadmin: A(r,w) | piadmins: A(r,w) | PIEngineers: A(r) | PIWorld: A(r)

Select

Select from server LG380

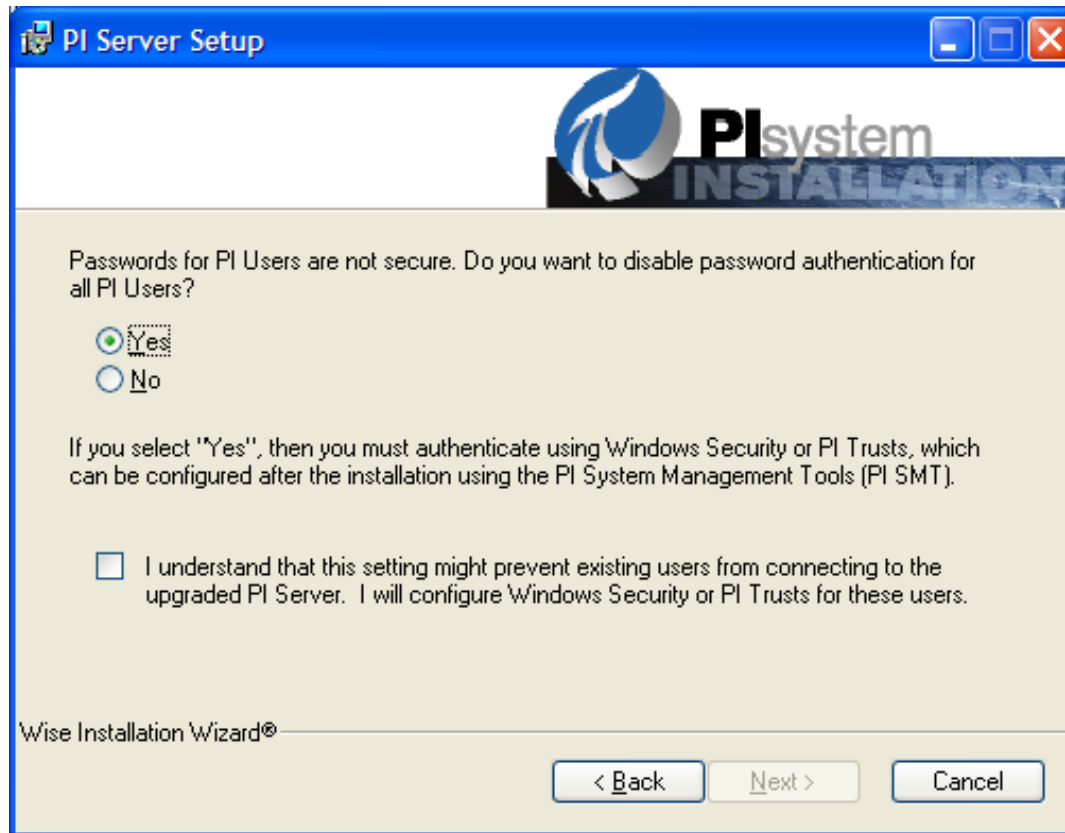
Type: All

Name	Description
piadmin	The administrative PI User with unrestricted access
piadmins	The administrative PI Group formerly named "piadmin"
pidemo	The generic PI User
PIEngineers	Any individual with engineering duties
PIOperators	Any individual with operational duties
PISupervisors	Any individual with supervisory duties
piusers	The generic PI Group formerly named "piuser"

OK Cancel

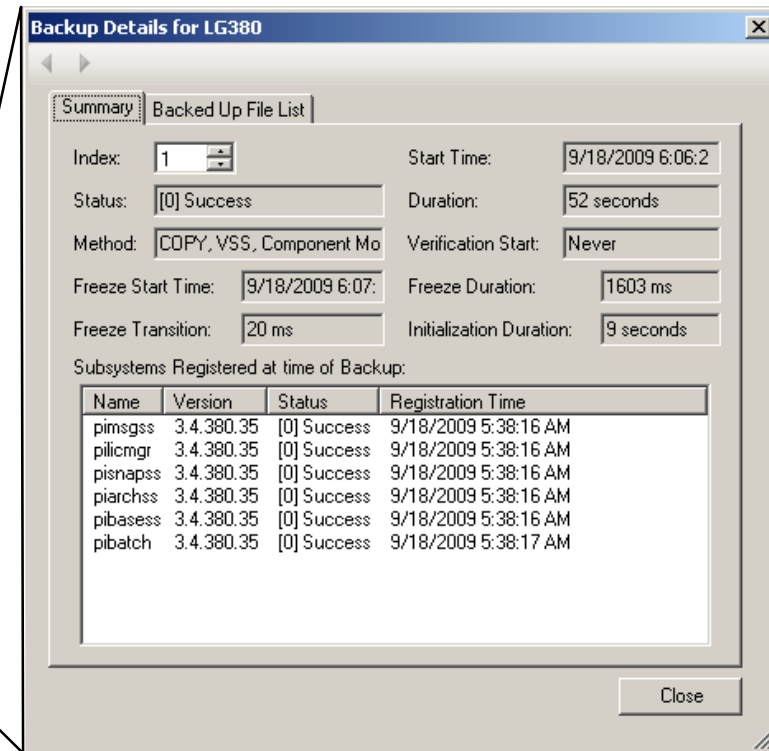
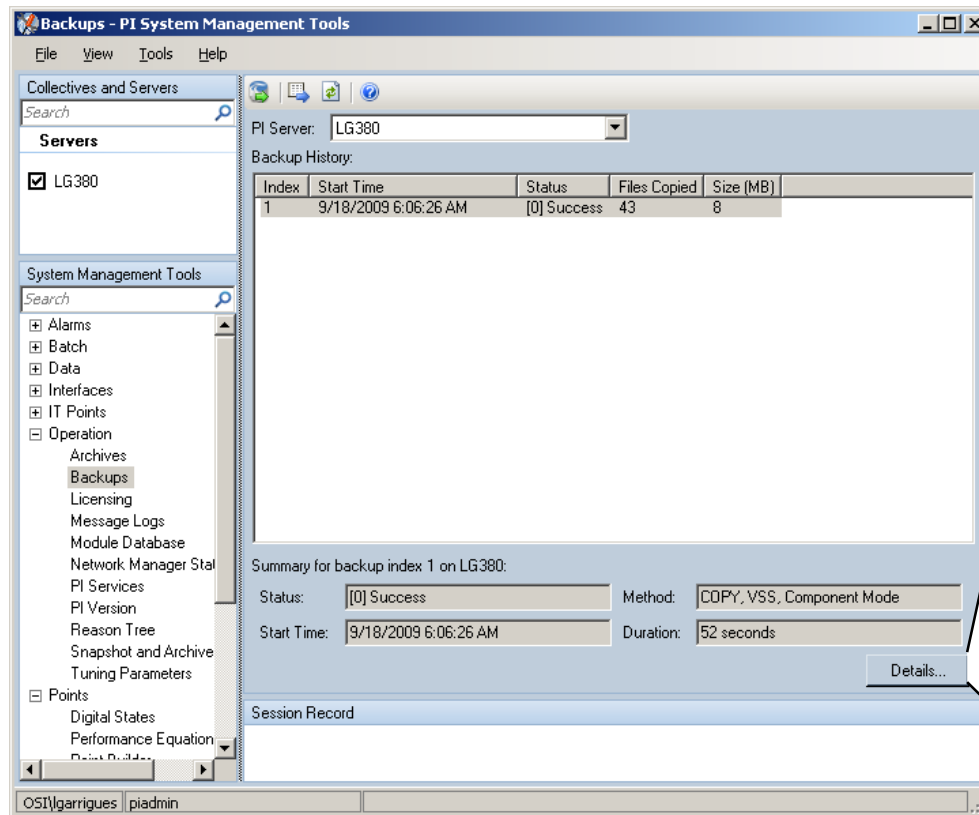
Setup

- Secure configuration by default, with database consistency checks during upgrade



PI Backups

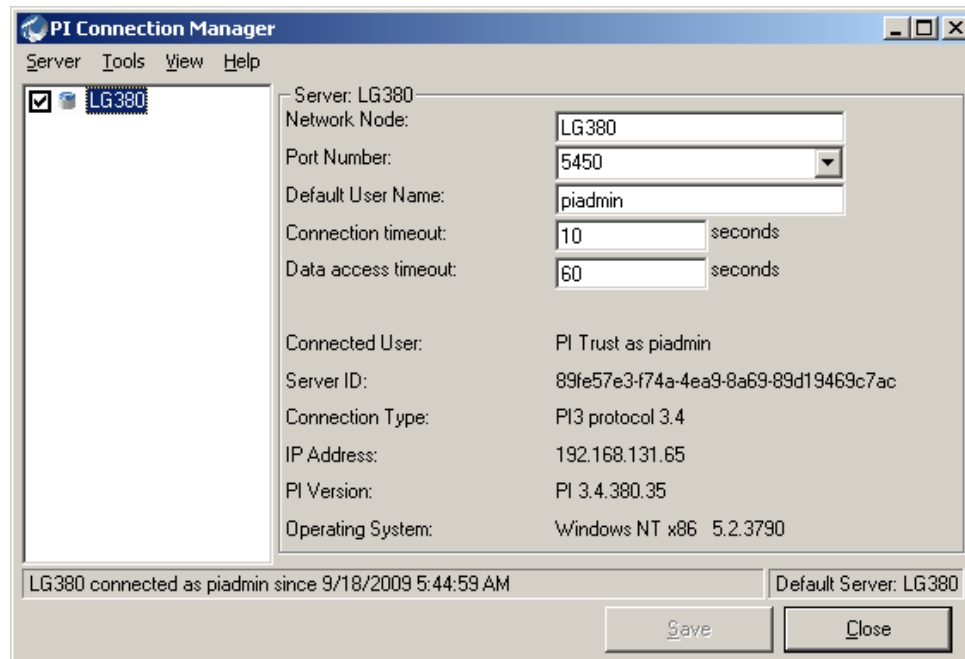
- Added support for incremental backups, verified backups, and a full backup history



Clients apps and the 3.4.380 release



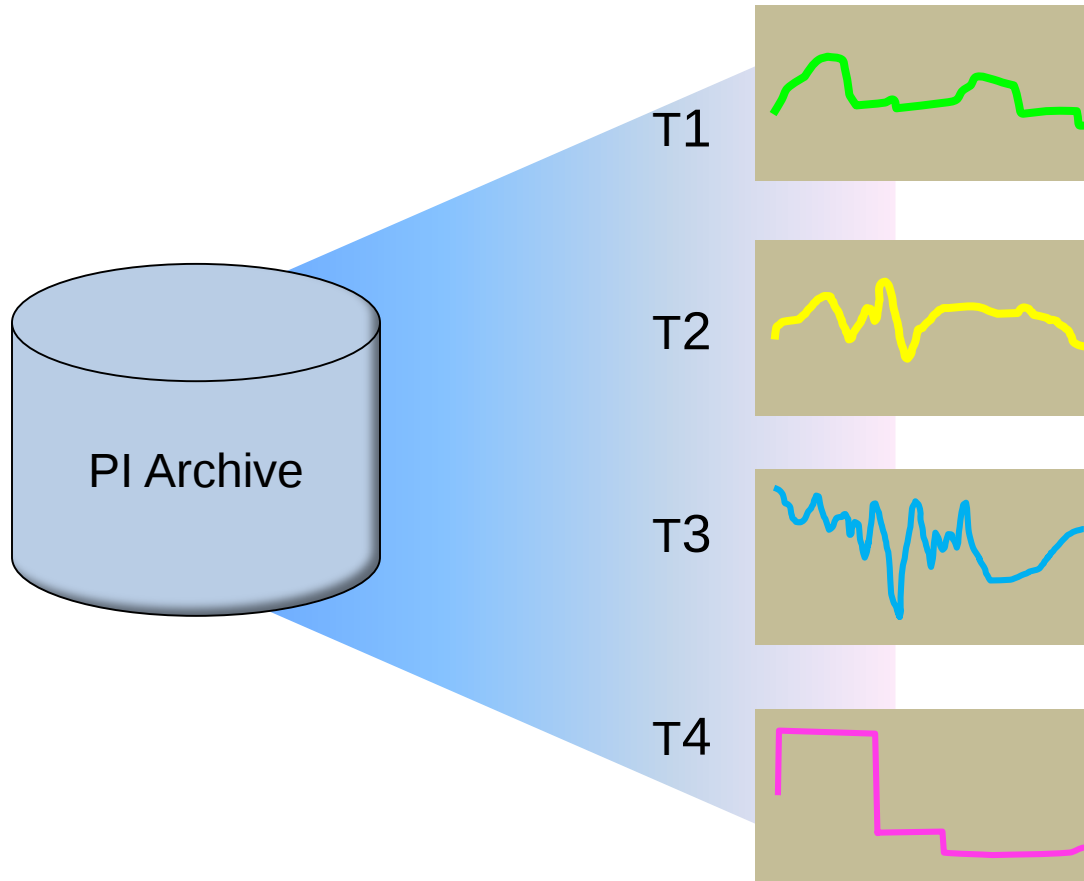
- Clients apps only need to upgrade the PI SDK 1.3.6 (released in Q3 2008) to take advantage of the new Security Model
- Most clients, like PI ProcessBook 3.1 and PI Datalink 4.x are already shipping with the PI SDK 1.3.6



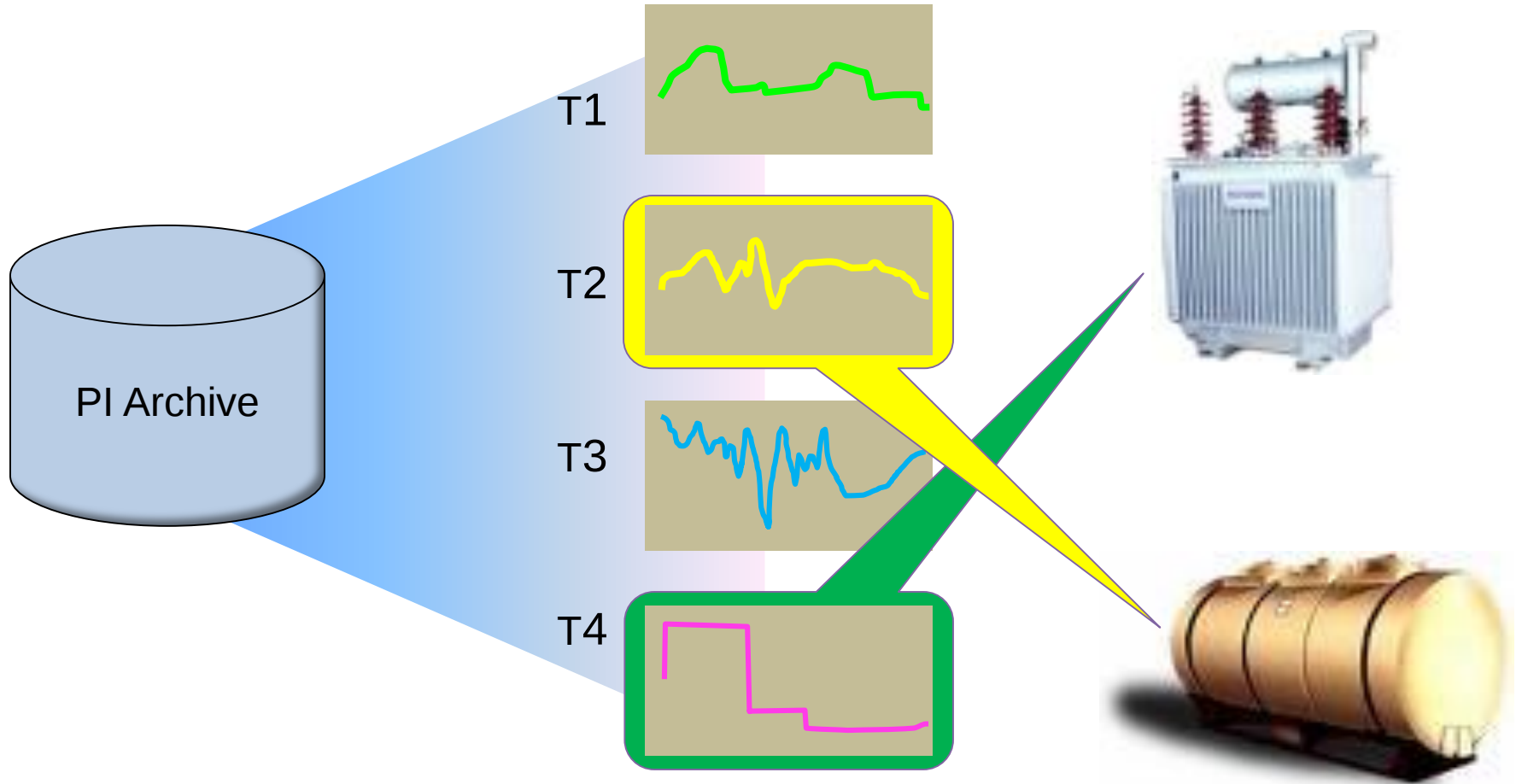
The PI AF Server



PI is about time series ... and tags!



But Tags mostly relate to assets



Who is using AF today?



Oil & Gas

- Shell, Chevron, TOTAL



Power Generation, T&D

- AMI, Xcel Energy, AEP, DTE, KCPL, Hydro-Quebec



Pulp & Papers

- Appleton, International Paper, Tembec



Data Centers

- Microsoft, HP, Cornell

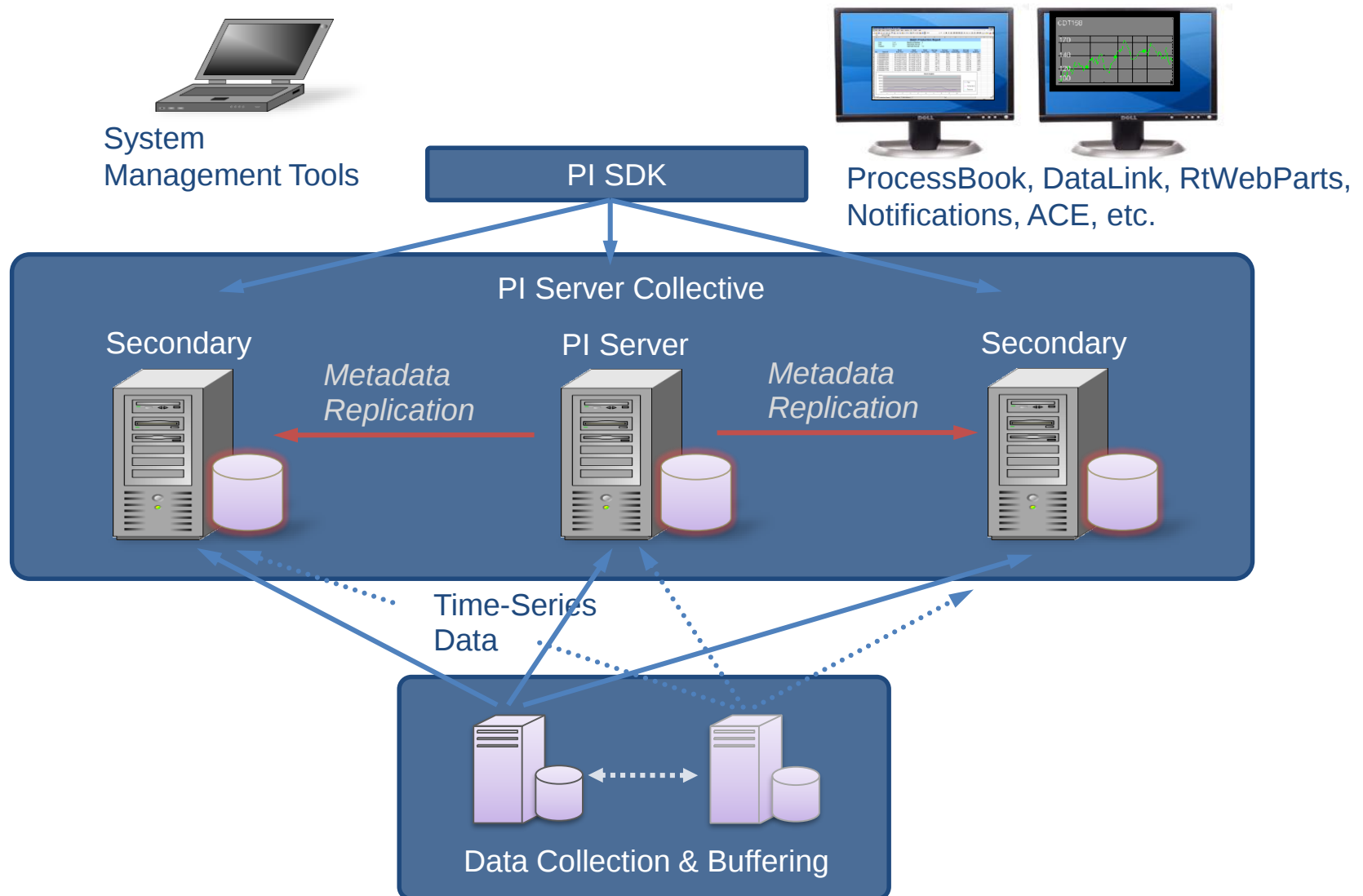
PI AF 2.1



Technical Overview and Value proposition

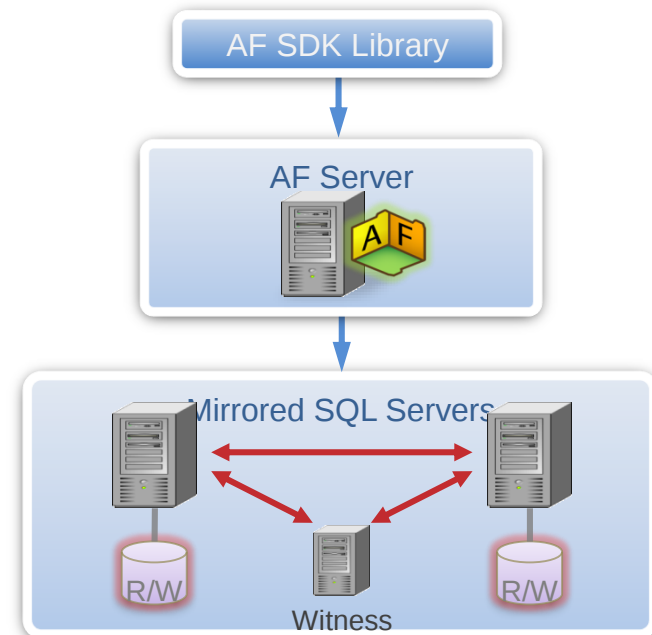
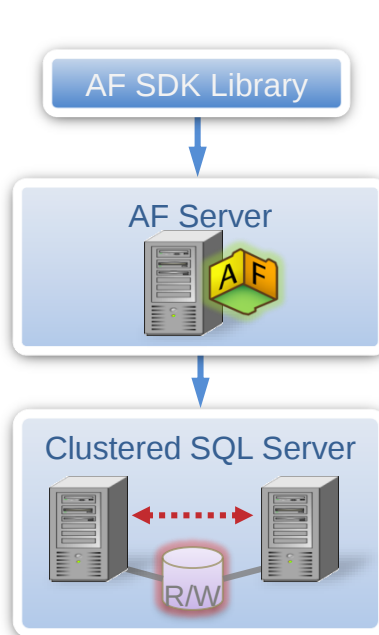
- Network Failure
- Administrative/User Failure
- Upgrades and Migrations
 - Hardware
 - Operating System Software (Patches)
 - Applications Software

PI High Availability Architecture

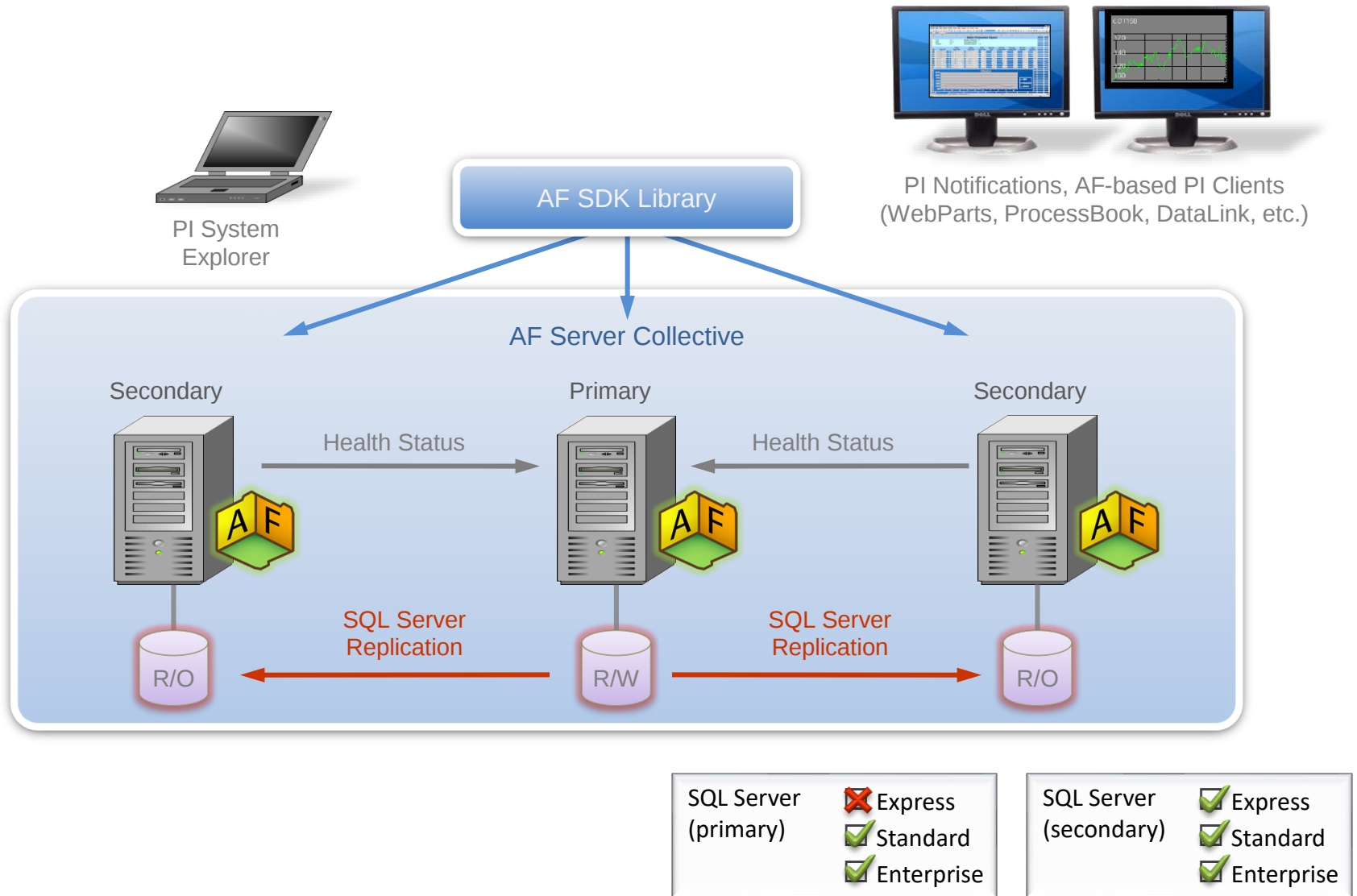


High Availability for AF 2.1

- Support for Clustering, Mirroring, and Replication (HA)
- Conceptually very similar to HA for the PI Server
 - Automatic Failover for clients
 - SQL replication for the AF database



AF 2.1 HA Collective



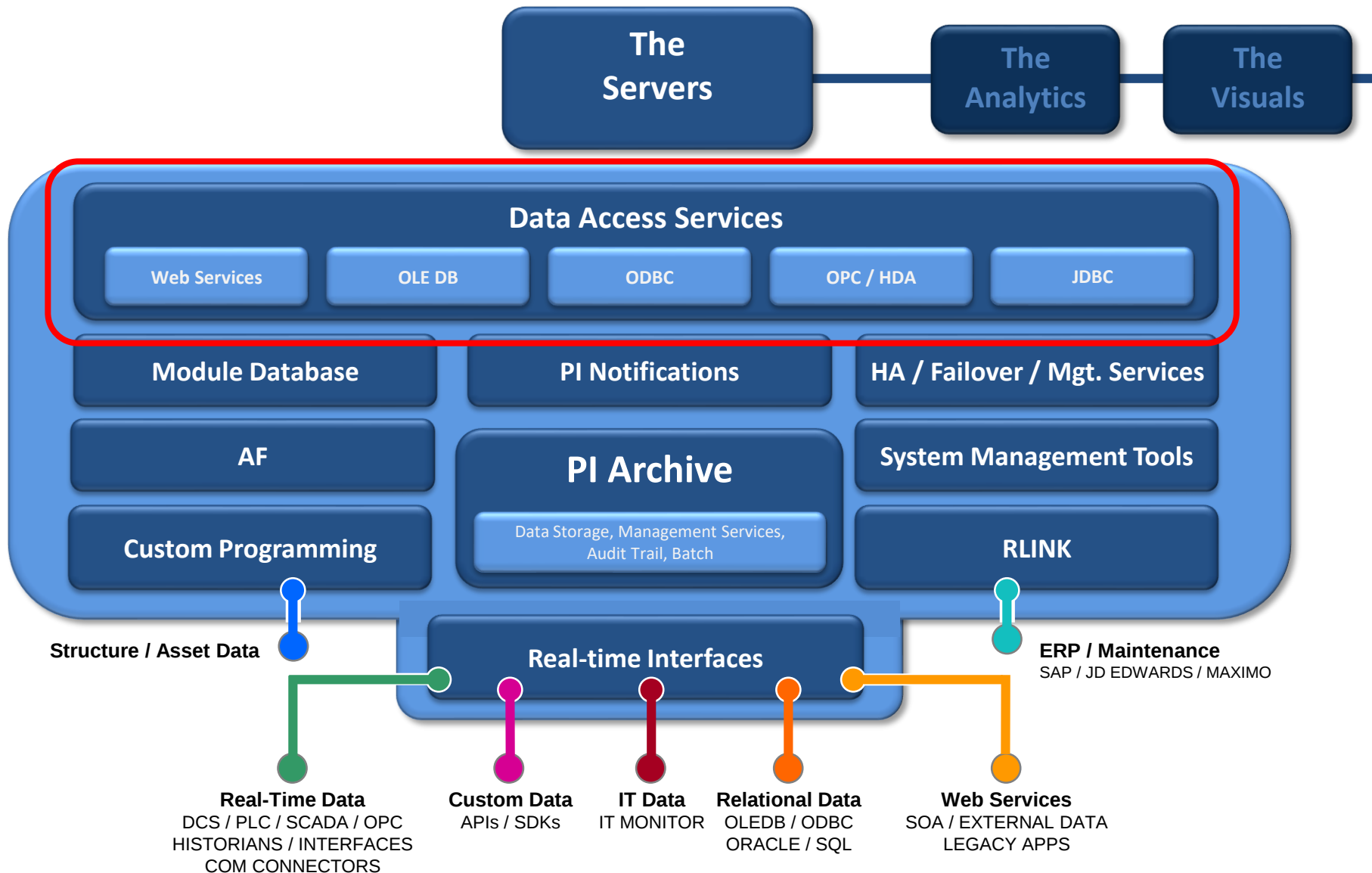
- 2.0 Server was 64-bit capable
- Can use either 32 or 64 bit SQL Server
 - 2005 or 2008
- Same install kit for 32 vs. 64 bit versions of AF Client or AF Server
- PI System Explorer can run as a 32 bit application on 64 bits



Data Access

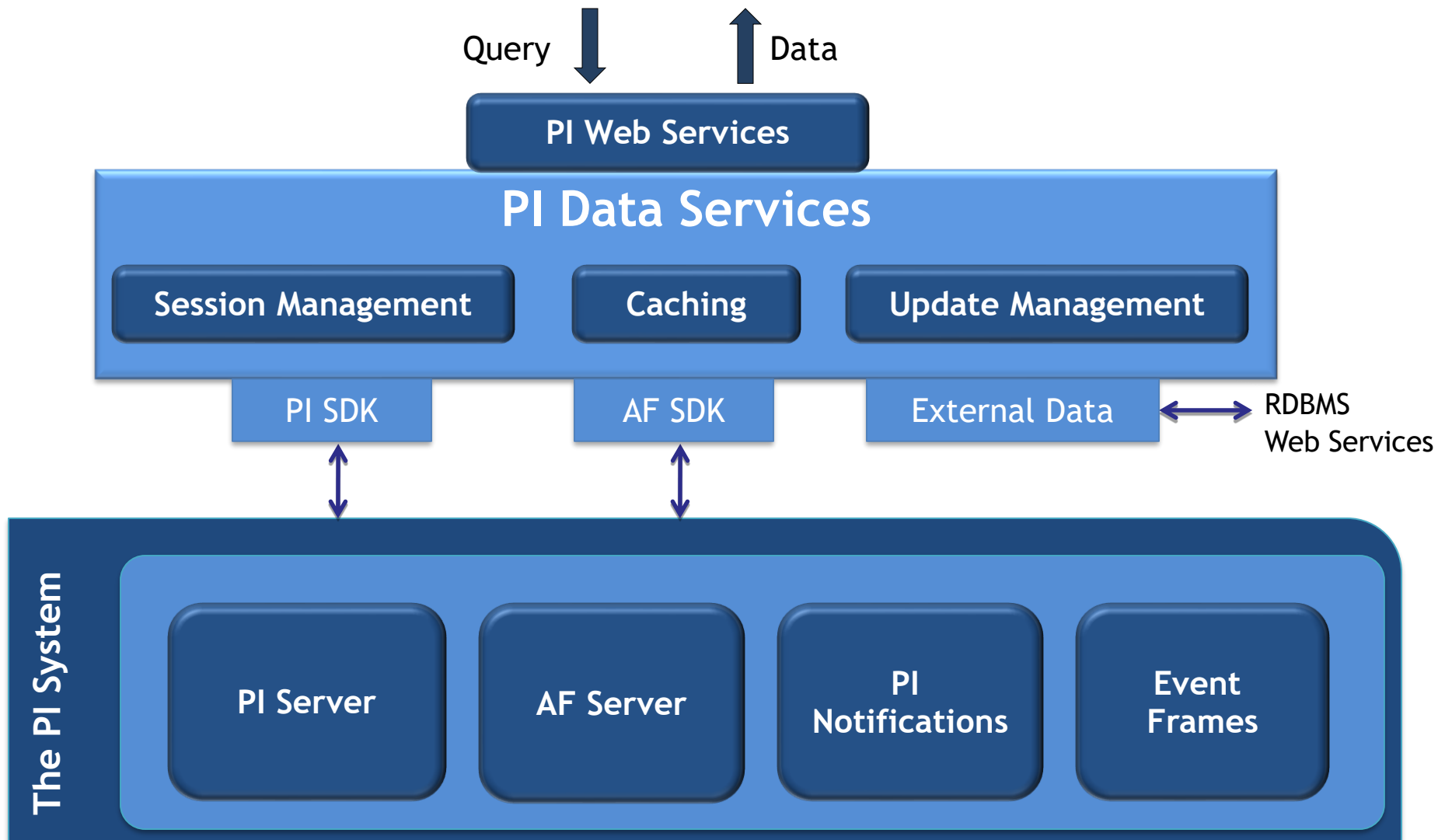


The PI Servers



- Collection of all products that offer programmatic data access to all or part of the PI System
 - SQL tools
 - PI OLEDB Provider
 - PI JDBC Driver (*available on OSIsoft vCampus*)
 - PI ODBC Client
 - Web Services
 - PI Web Services (*CTP available on OSIsoft vCampus*)
 - OPC
 - OPC DA/HDA Server
 - OPC UA Server (*CTP available on OSIsoft vCampus*)
 - SDKs (for partners/developers)
 - PI SDK
 - AF SDK

- Integrate with 3rd party products (SQL, Office, SAP)
- Create reports (SQL Reporting Services, Crystal Reports, Cognos, etc)
- Share PI data on the Web (SharePoint, ASP.NET, etc)
- Enterprise Application Integration - EAI (BizTalk, Tibco, etc)
- Extract, Transform and Load PI data - ETL (SQL, SAP BO, etc)
- Combine PI with data in other systems (SQL, Oracle, etc)
- Online Analytical Processing - OLAP (SQL)
- Visualize with HMI (OPC clients)
- Develop custom interfaces to PI system
- Manage PI systems
- Support virtually any custom application in any programming language on any platform!



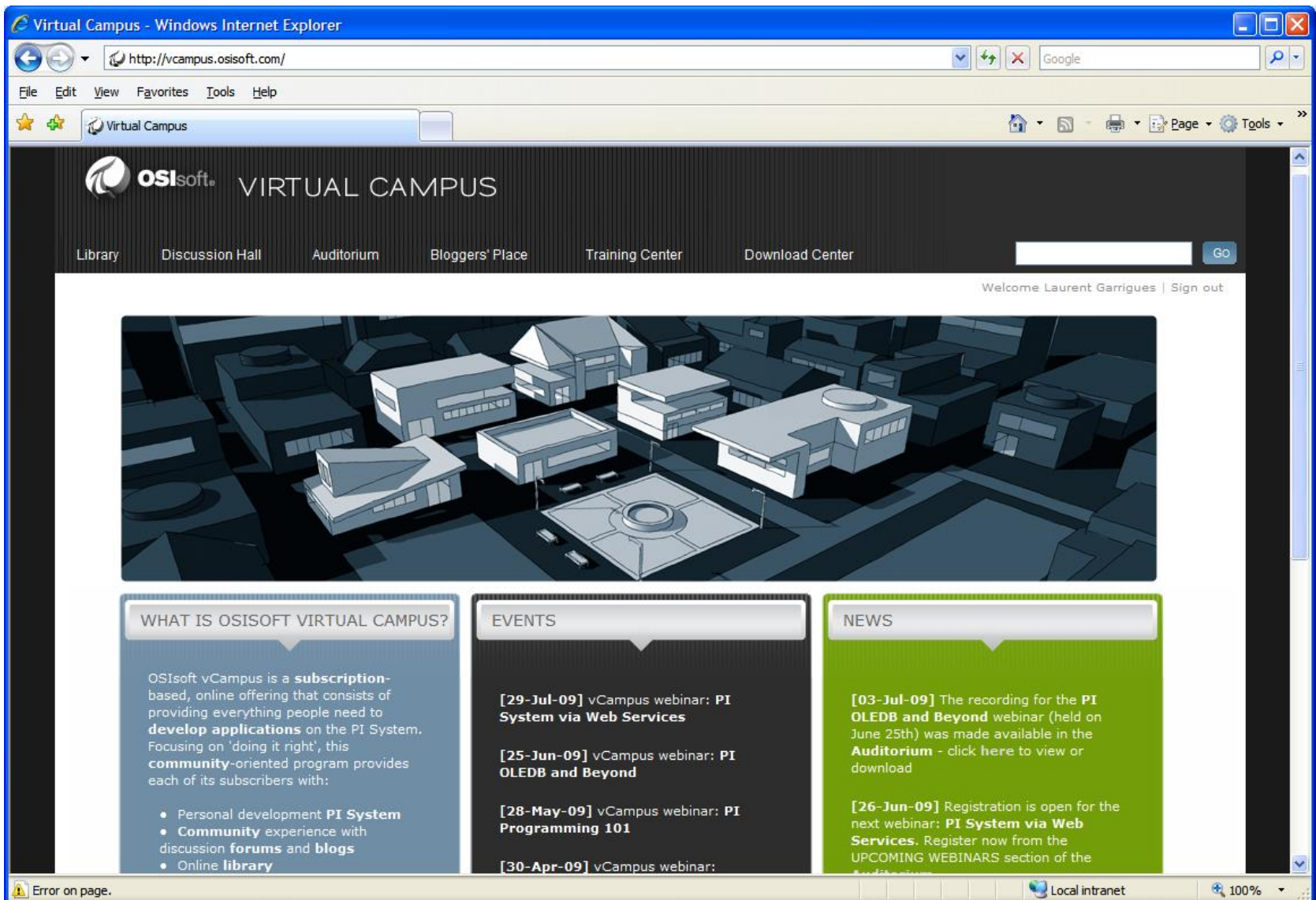
- PI Data Services (Baseline Services) (Q4 2009)
 - Support both 32-bit and 64-bit providers
- PI Web Services Technical Preview (*Q4 2009*)
 - OSIsoft vCampus online, hosted environment
- PI OLEDB 3.3 (*Released*)
 - Support both 32-bit and 64-bit providers
- PI OLEDB 4.0 (1Q 2010)
 - Support for entire PI system, both Tags and AF
- PI JDBC 1.0 (*Released*)
 - JDBC-OLEDB Bridge for Windows and Linux, OSIsoft vCampus

- OPC DA/HDA Server 1.2.6 (*Released*)
 - Achieved Self-Certification Logo from OPC Foundation
- PI OPC UA Server Technical Preview (*Released*)
 - OSIsoft vCampus online, hosted environment
- PI SDK 1.3.8 (*Released*)
 - Support for both 32-bit and 64-bit providers
- AF SDK 2.1 (*Released*)
 - Support for both 32-bit and 64-bit providers
- PI SDK 1.4.0 (1Q 2010)
 - Client-side buffering for manually entered data, ACE calculations writing to PI, and custom SDK-based interfaces

OSIsoft vCampus



- Includes access to all programmatic interfaces to PI System: AF/AN SDK, PI OLEDB/ODBC, PI SDK, OPC DA/HDA/UA Server
- Development license for programmatic interfaces
- Runtime licensing (CAL)
- Programming examples and documentation
- PI Virtual Campus - community collaboration site
 - Forums
 - Blogs



OSIsoft Product Roadmap

- Major Release
- Minor Release

Jul Aug Sep Oct Nov Dec Q1 '10 Q2 '10

Server

PI Server (3.4.380)

AF (2.1)

Notifications (1.1)

SMT (3.3.0.4)

MS Platform for CEP (1.0)

OCS Delivery Channel (1.1)

TBD

Data Access

PI SDK (1.4)

PI API (1.6.2)

PI System OLEDB (1.0)

PI Data Services (3.0)

PI JDBC (1.0)

OPC UA Server (1.0)

Web Services

SAP AMI Package

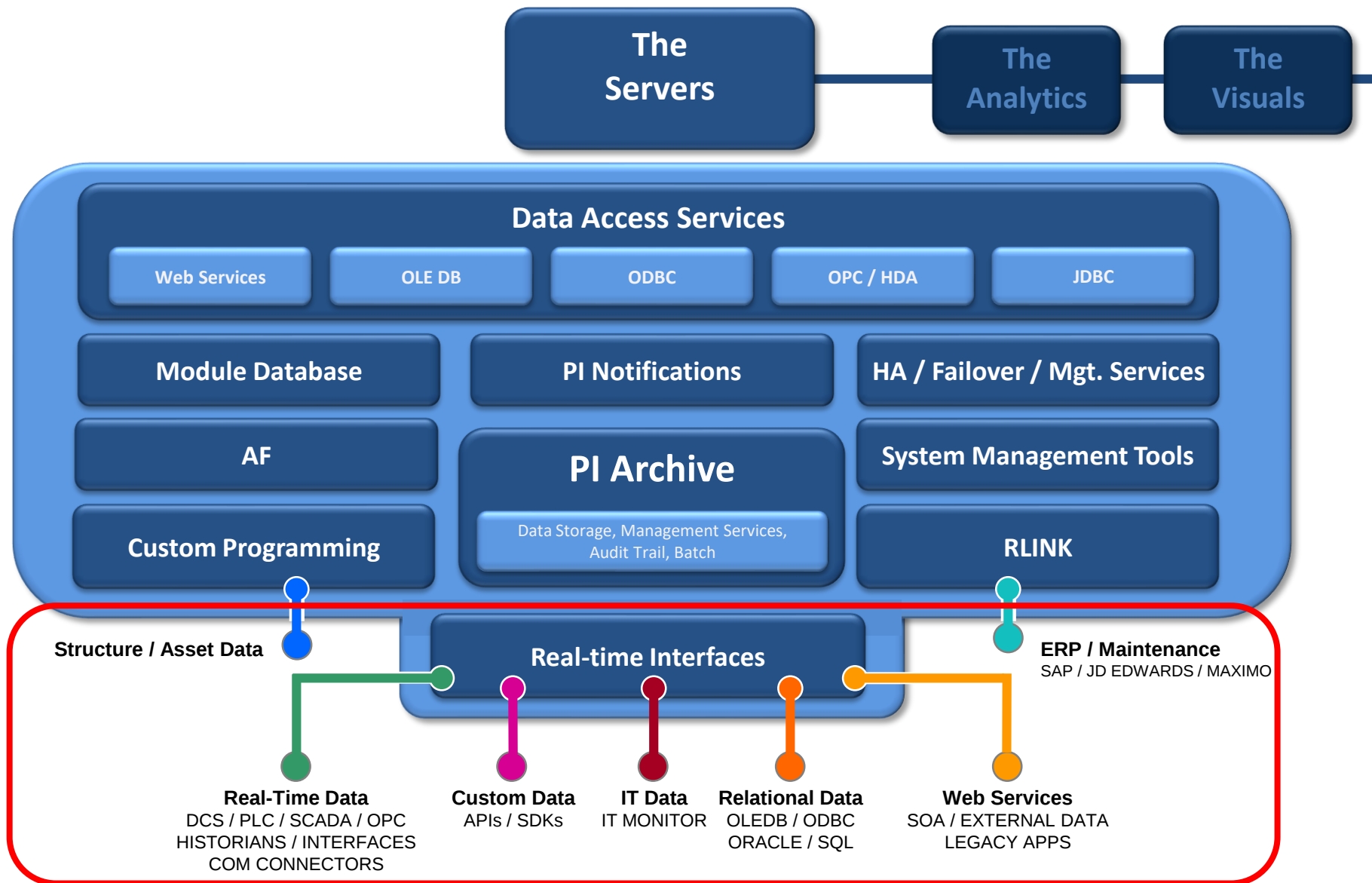
PI ProfileView (2.2)

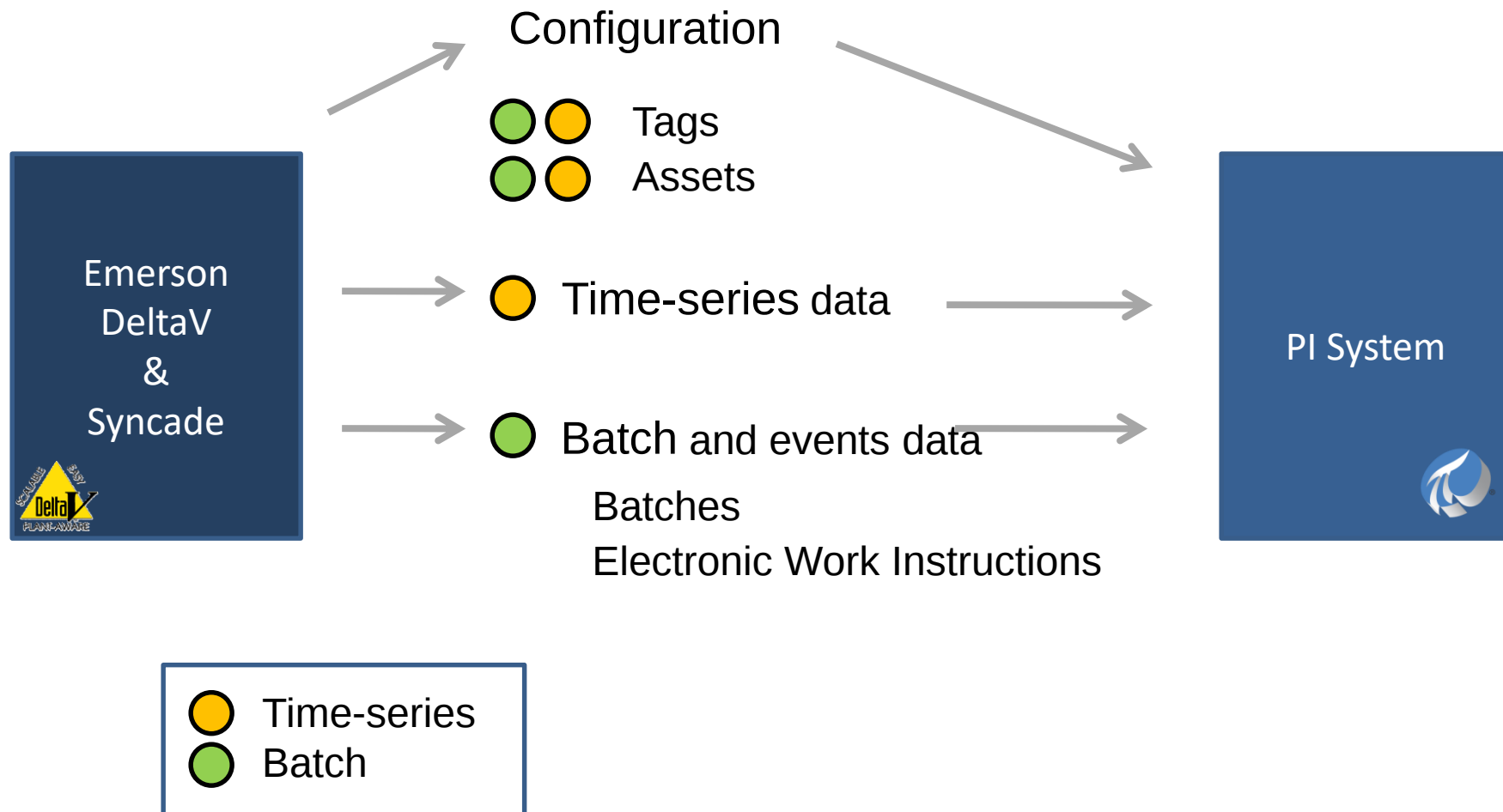
TBD

PI Interfaces



The PI Servers





OSIsoft Product Roadmap – Interfaces

- Major Release
- ▲ Minor Release

Jul Aug Sep Oct Nov Dec Q1 '10 Q2 '10

General Interfaces

AutoPointSync (1.2.5.0)

PI UFL (3.2.0)

RDBMS (3.17.0)

WITSML (1.0)

IT Monitor

Power Meter (1.0)

ICU (1.5.0)

TBD

TBD

OPC Interfaces

PI OPC UA Interface (1.0)

PI OPC Interface (2.4.0)

TBD

TBD

Batch Interfaces

ABB 800xA (1.0.0)

Siemens Simatic PCS7 (1.0.0)

Wonderware InBatch (1.0.0)



OSIsoft Product Roadmap – Vendor Specific Interfaces

 Major Release
 Minor Release

Jul Aug Sep Oct Nov Dec Q1 '10 Q2 '10

Vendor Specific Interfaces

BACNet (1.0.2)

ACS Prism (1.1.0)

DNP3 (3.0.2)

Bailey Infi90 (1.8.4)

Bailey System 6 (1.3.0)

Yokogawa FAST/Tools (1.2.3)

Foxboro (2.4.0)

Foxboro SCADA (1.3.5)

GE Cimplicity (1.2.3)

Max1000 (1.1.0)

Modbus (2.49.0)

XML (1.3.0)

IPMI (1.0)

ABB Advant (5.3.0)

Cal ISO Dispatch (2.0.0)

Hartman & Braun ConlinkX (2.27.0)

Siemens Power TG (1.0.0)

NRC Emergency Response

PI to NRCERDS

SAFER Weather Station (1.0)

Thermotron 8800 Controller (1.0)

TBD

PI Analytics



The Analytics within the PI System



The
Server

The
Analytics

The
Visuals

Advanced Computing Engine (ACE)

PI Notifications

RtReports

Enterprise Services

PI Analytics

(PI Performance Equations, PI Totalizers, PI Alarms, PI RTSQC)

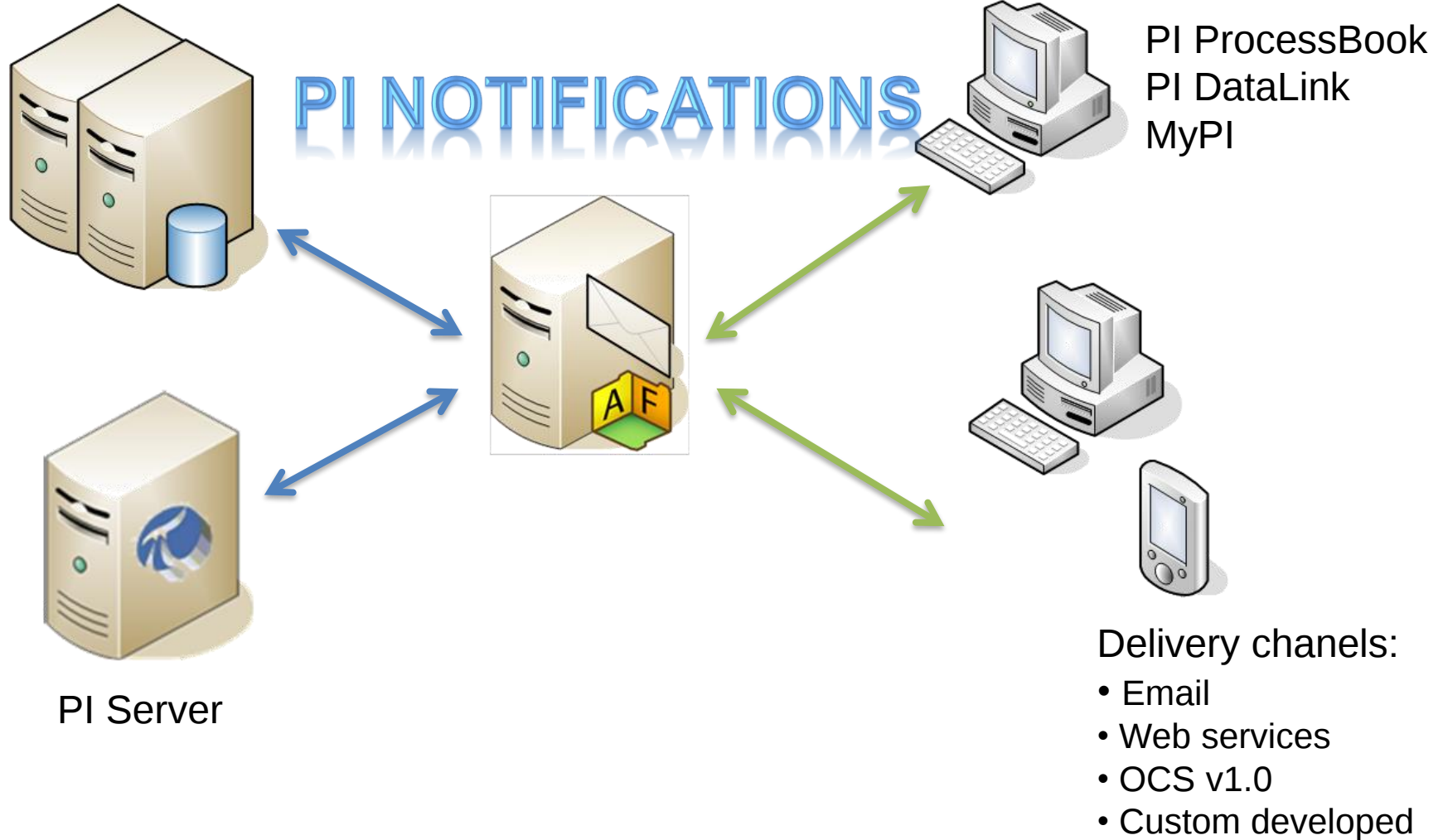
PI Notifications 1.1



Technical Overview and Value proposition

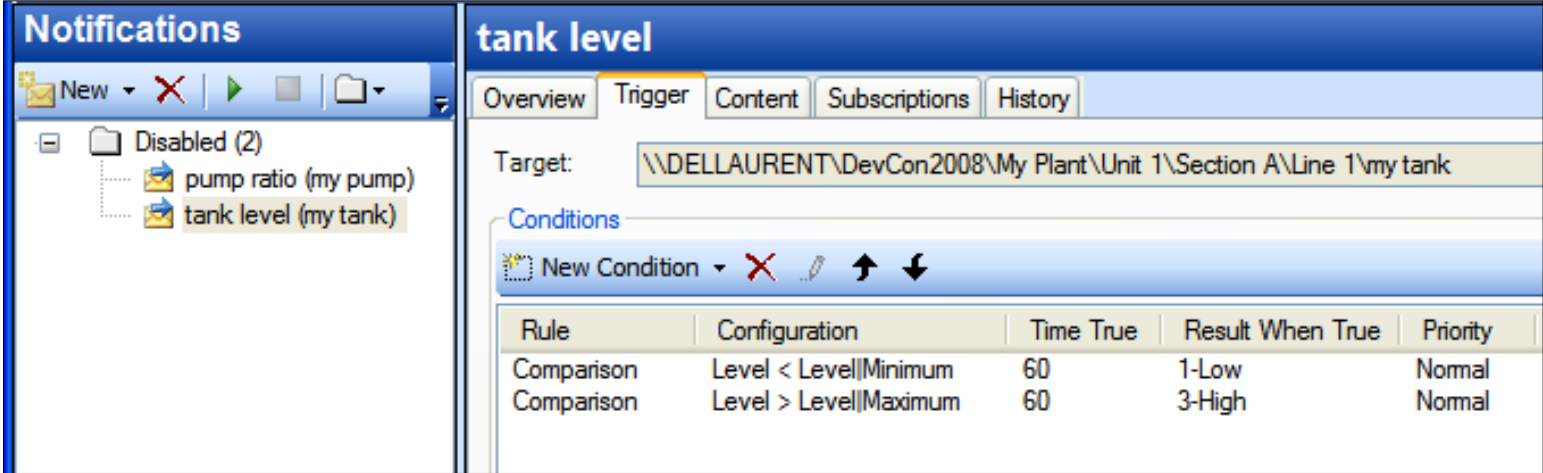
PI Notifications Architecture reminder

Others data sources



Performance improvements

- Can support up to 10k Notifications with multiples rules per Notifications server

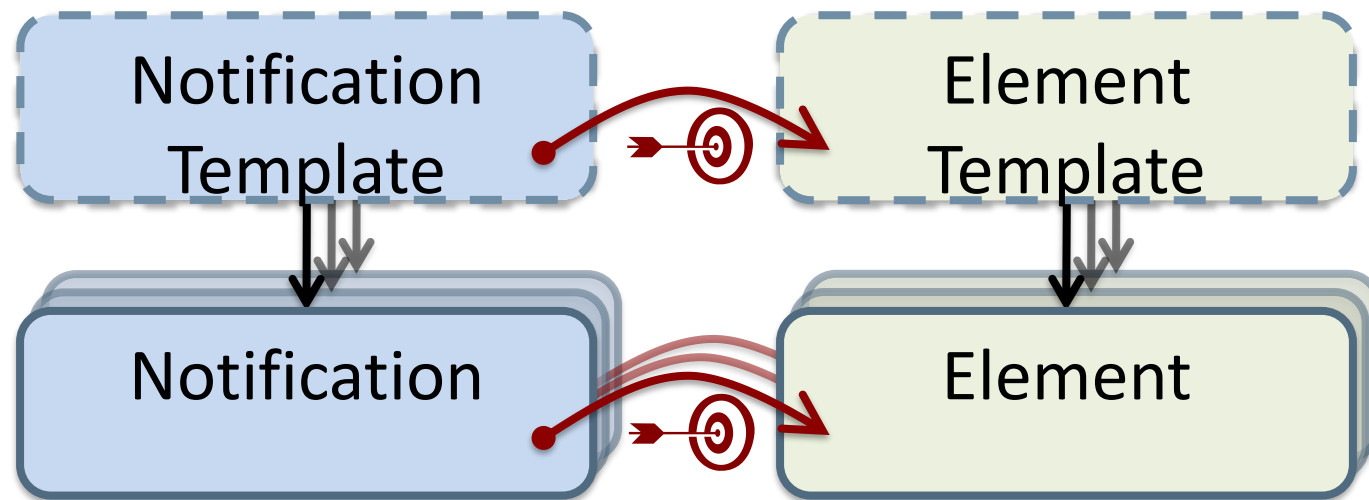


The screenshot displays the PI Notifications application interface. On the left, a tree view under 'Notifications' shows a 'Disabled (2)' folder containing 'pump ratio (my pump)' and 'tank level (my tank)'. The main window is titled 'tank level' and has tabs for 'Overview', 'Trigger', 'Content', 'Subscriptions', and 'History'. The 'Trigger' tab is active, showing a 'Target' field with the path '\\DELLAURENT\DevCon2008\My Plant\Unit 1\Section A\Line 1\my tank'. Below this is a 'Conditions' section with a 'New Condition' button. A table lists the configured rules:

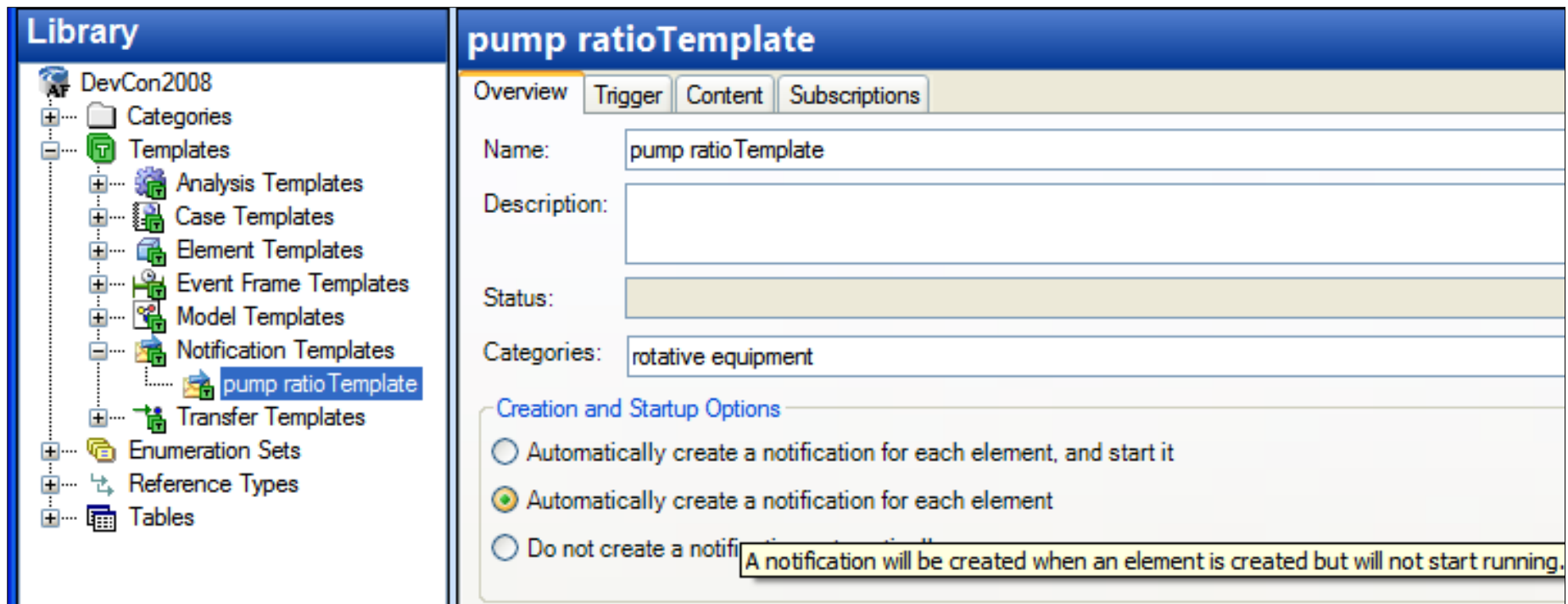
Rule	Configuration	Time True	Result When True	Priority
Comparison	Level < Level Minimum	60	1-Low	Normal
Comparison	Level > Level Maximum	60	3-High	Normal

- Can process up to 60k events/minute

- Performance Improvements (start-up and retrieval)
- Notification Templates enable rapid and automatic creation of maintainable notifications



- Notification templates
 - Automate the creation and maintenance process



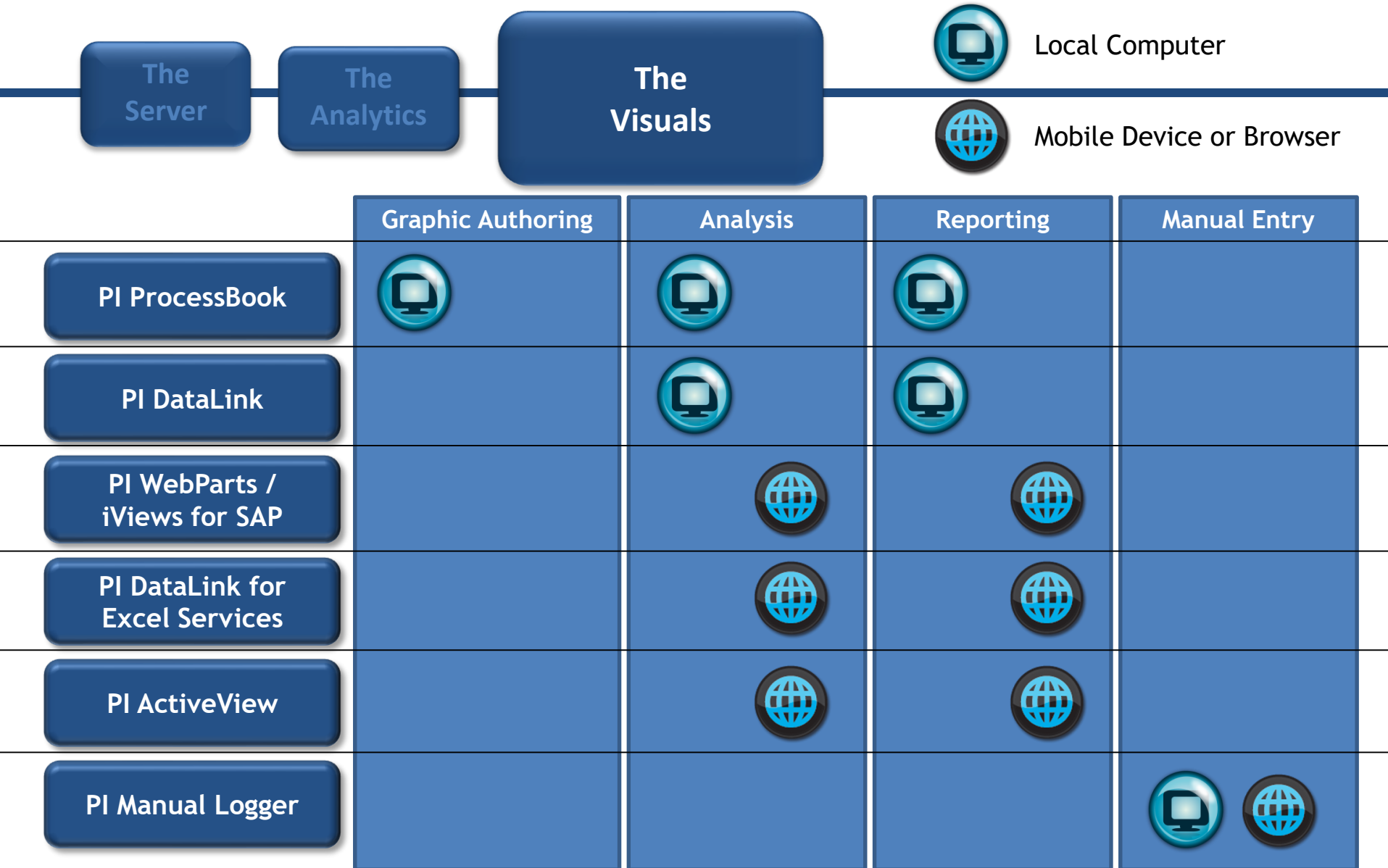
The screenshot displays the 'Library' pane on the left, which contains a tree view of the software's structure. Under the 'Templates' folder, 'Notification Templates' is expanded, and 'pump ratioTemplate' is selected. The right pane shows the configuration for 'pump ratioTemplate' with tabs for 'Overview', 'Trigger', 'Content', and 'Subscriptions'. The 'Overview' tab is active, showing fields for 'Name' (pump ratioTemplate), 'Description', 'Status', and 'Categories' (rotative equipment). Below these fields is a section titled 'Creation and Startup Options' with three radio button options: 'Automatically create a notification for each element, and start it', 'Automatically create a notification for each element' (which is selected), and 'Do not create a notification'. A tooltip is visible over the selected option, stating: 'A notification will be created when an element is created but will not start running.'

- Native Office Communication Server 2007 R2(OCS)delivery channel
 - v1.0 scheduled for release in October 2009
 - Support presence and Instant Messaging (IM)
 - Will ship as a new plug-in for PI Notifications 1.1
 - Applications available for major cell phones
 - Windows Mobile
 - BlackBerry
 - iPhone
- Can use Email service to send an SMS message (offered by most wireless providers)

The Visuals



The Visuals within the PI System

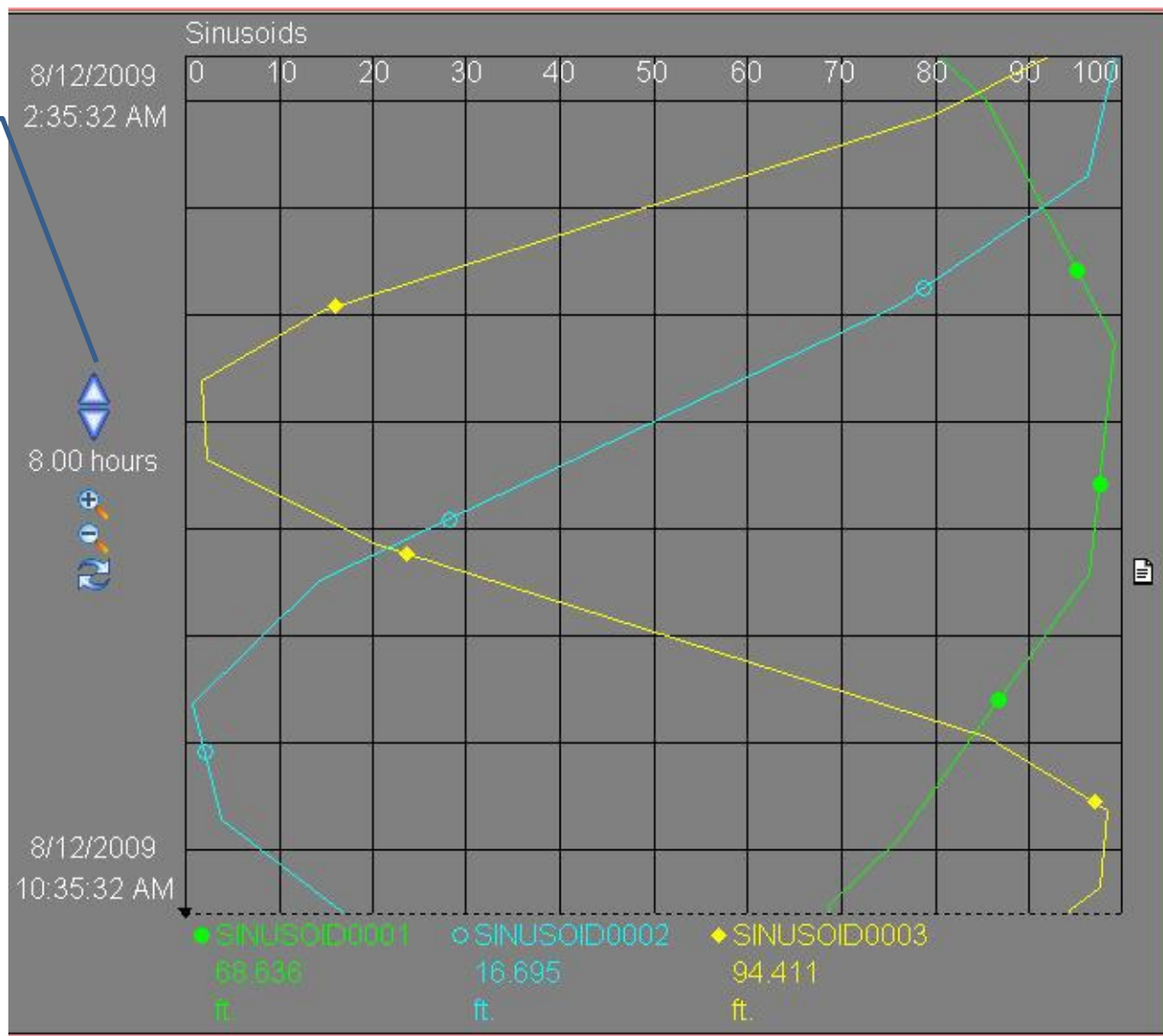


PI ProcessBook

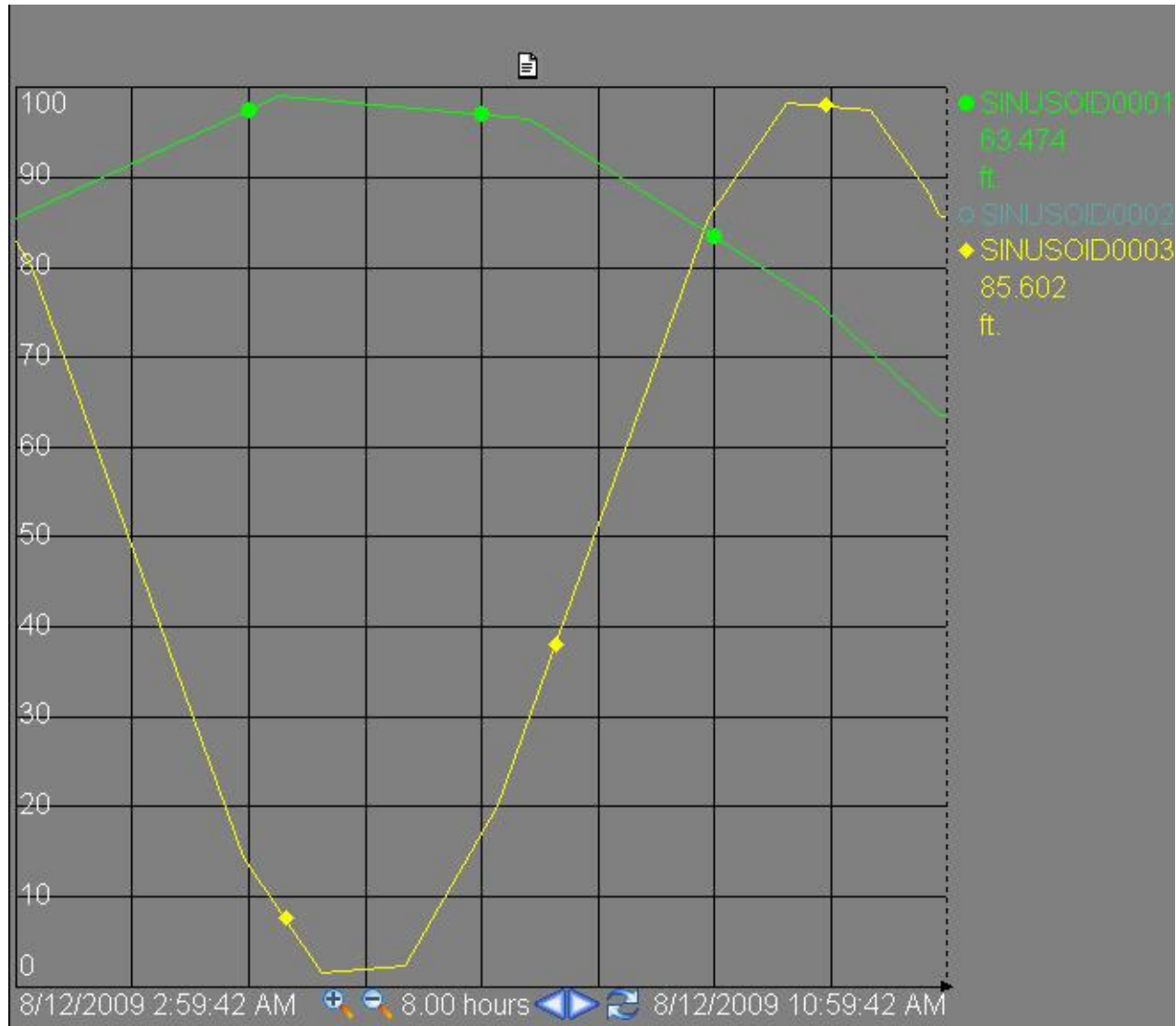


- Easier Symbol Formatting
- Quick Trend Zoom & Pan
- Data Details in a table
- Annotations on PI events
- Vertical Trends available
- Linear Regression Line on trends
- Tooltip Statistics on all dynamic symbols
- Drag and Drop symbol configuration

Scroll
Zoom
Revert

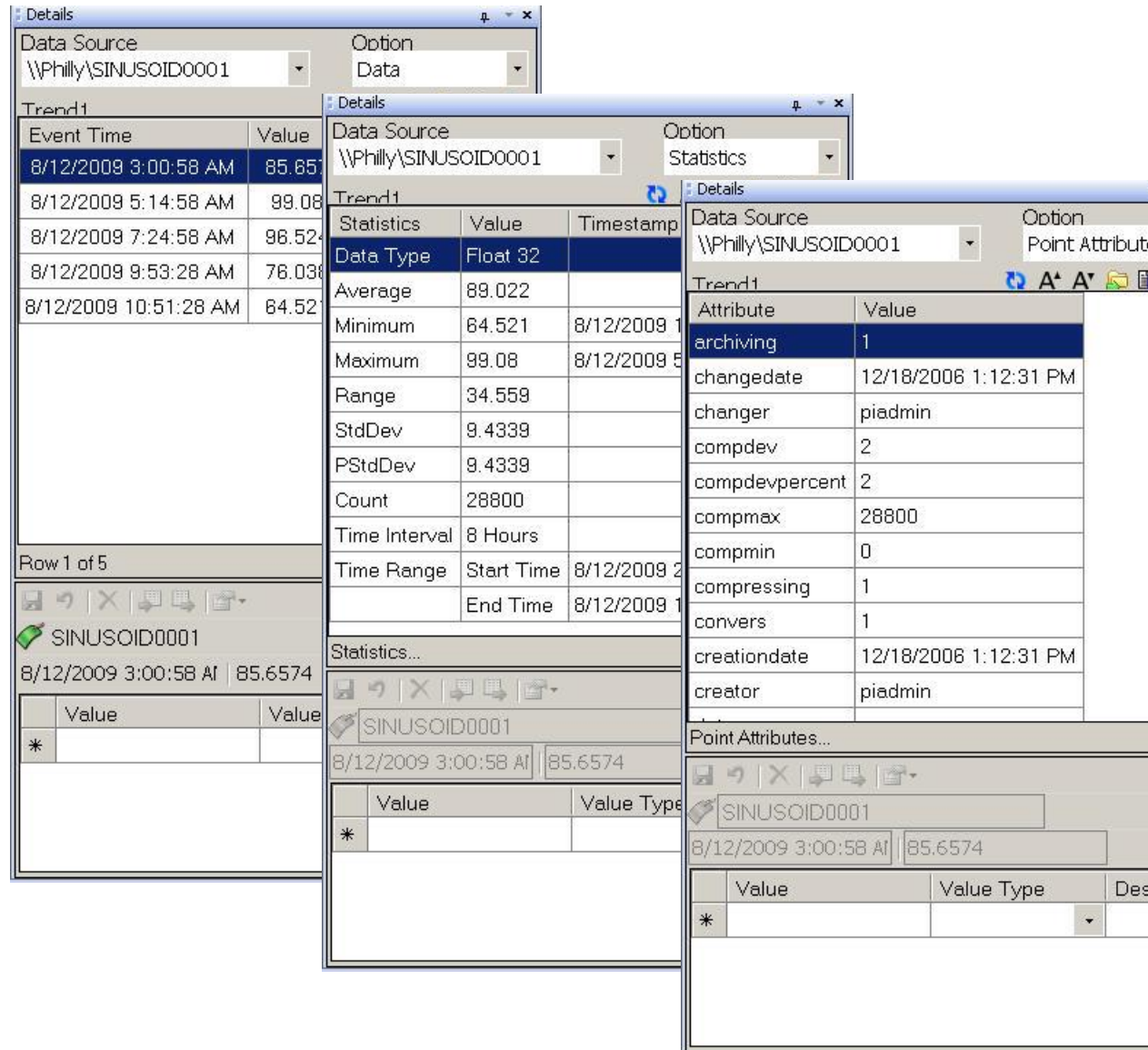


Hide/Show Individual Traces



Details Pane

- Data
- Statistics
- Point Attributes



The image displays three overlapping screenshots of the OSIsoft Details Pane, illustrating the different views available for a data point.

Left Pane (Data View): Shows a table of data points for the data source `\\Philly\SINUSOID0001`. The table has columns for Event Time and Value.

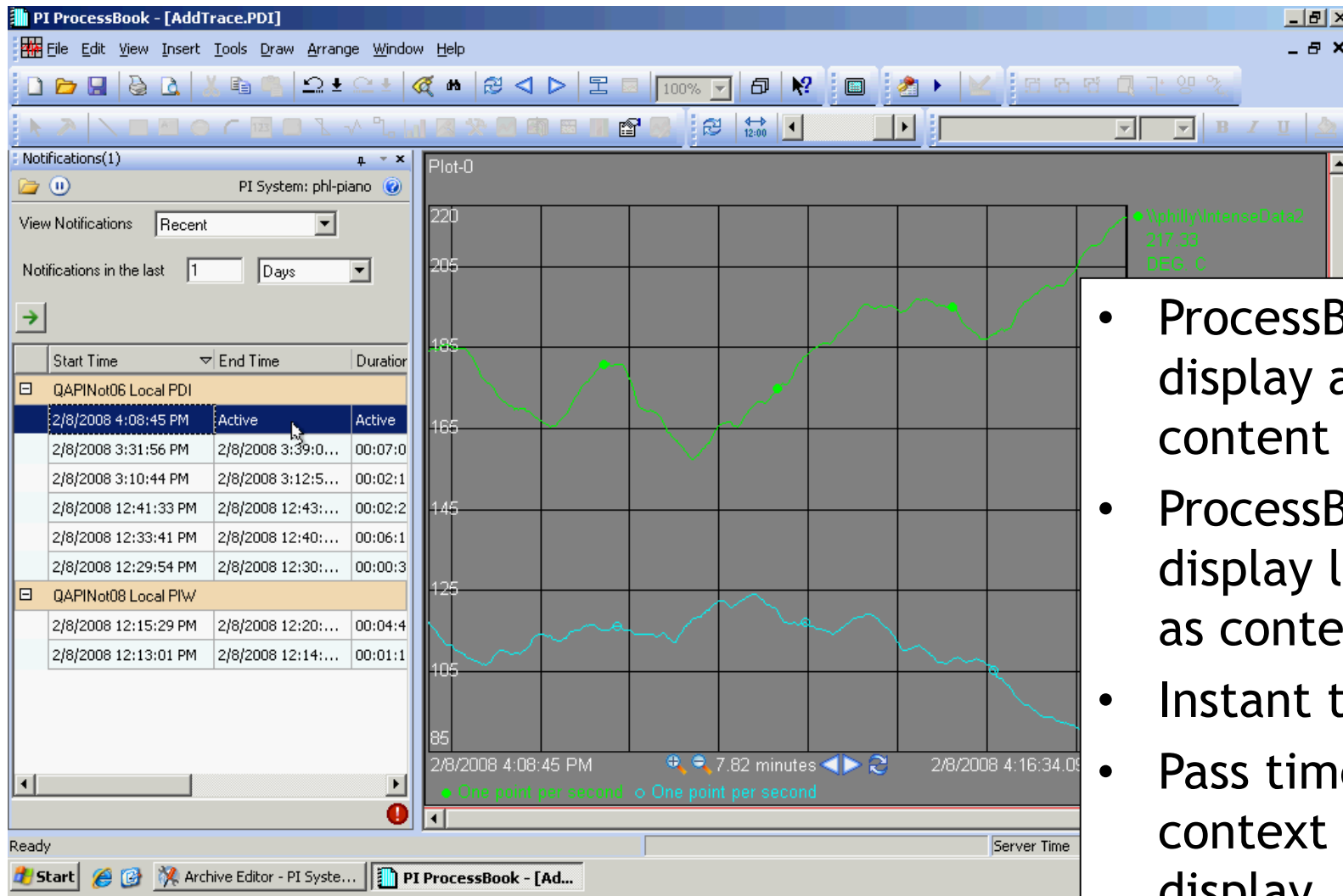
Event Time	Value
8/12/2009 3:00:58 AM	85.6574
8/12/2009 5:14:58 AM	99.08
8/12/2009 7:24:58 AM	98.52
8/12/2009 8:53:28 AM	76.03
8/12/2009 10:51:28 AM	84.52

Middle Pane (Statistics View): Shows statistical data for the same data source. The table has columns for Statistics, Value, and Timestamp.

Statistics	Value	Timestamp
Average	89.022	
Minimum	84.521	8/12/2009 10:51:28 AM
Maximum	99.08	8/12/2009 5:14:58 AM
Range	34.559	
StdDev	9.4339	
PStdDev	9.4339	
Count	28800	
Time Interval	8 Hours	
Time Range	Start Time	8/12/2009 2:00:00 AM
	End Time	8/12/2009 10:00:00 AM

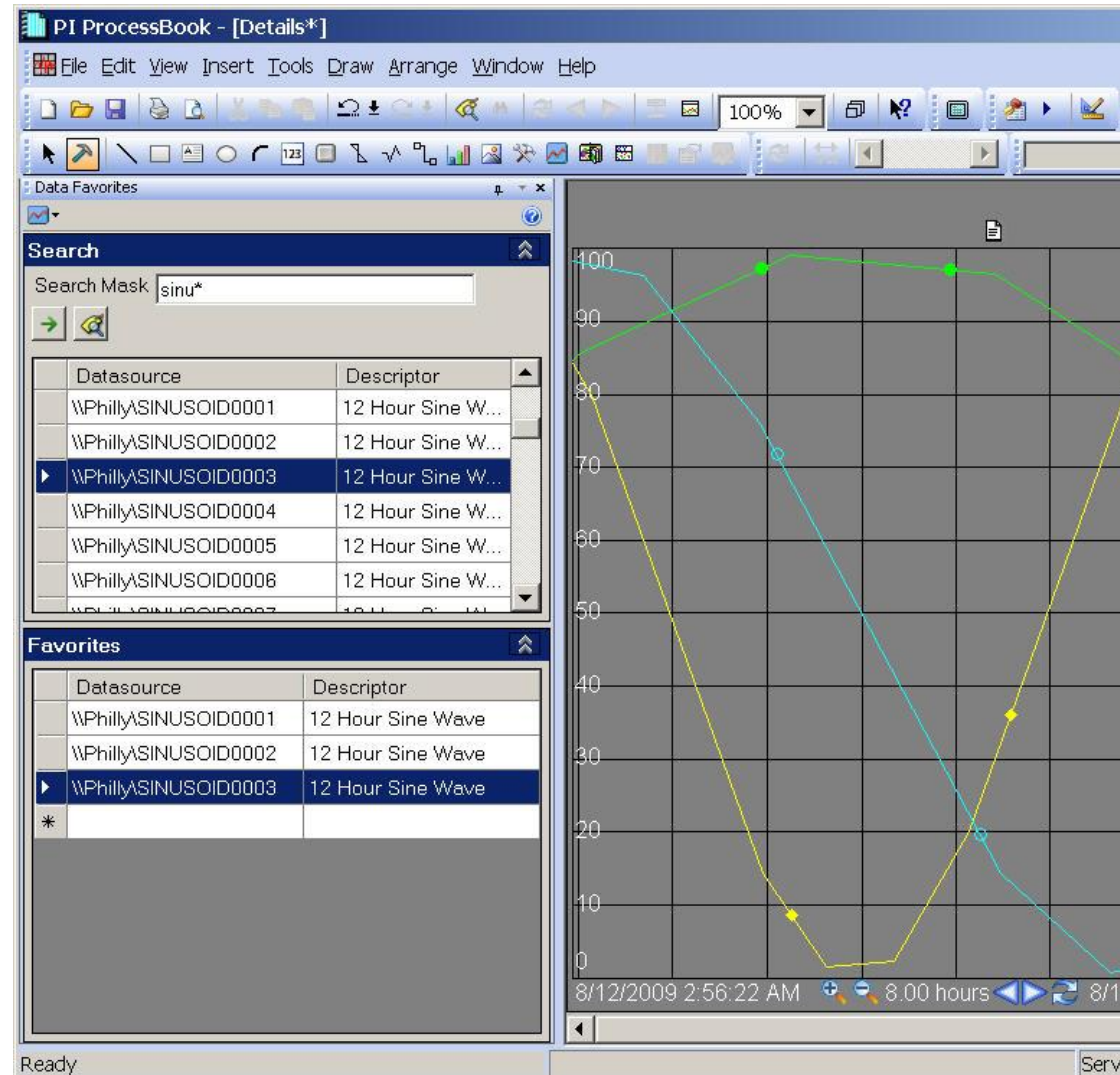
Right Pane (Point Attributes View): Shows point attributes for the same data source. The table has columns for Attribute and Value.

Attribute	Value
archiving	1
changedate	12/18/2006 1:12:31 PM
changer	piadmin
compdev	2
compdevpercent	2
compmax	28800
compmin	0
compressing	1
convers	1
creationdate	12/18/2006 1:12:31 PM
creator	piadmin

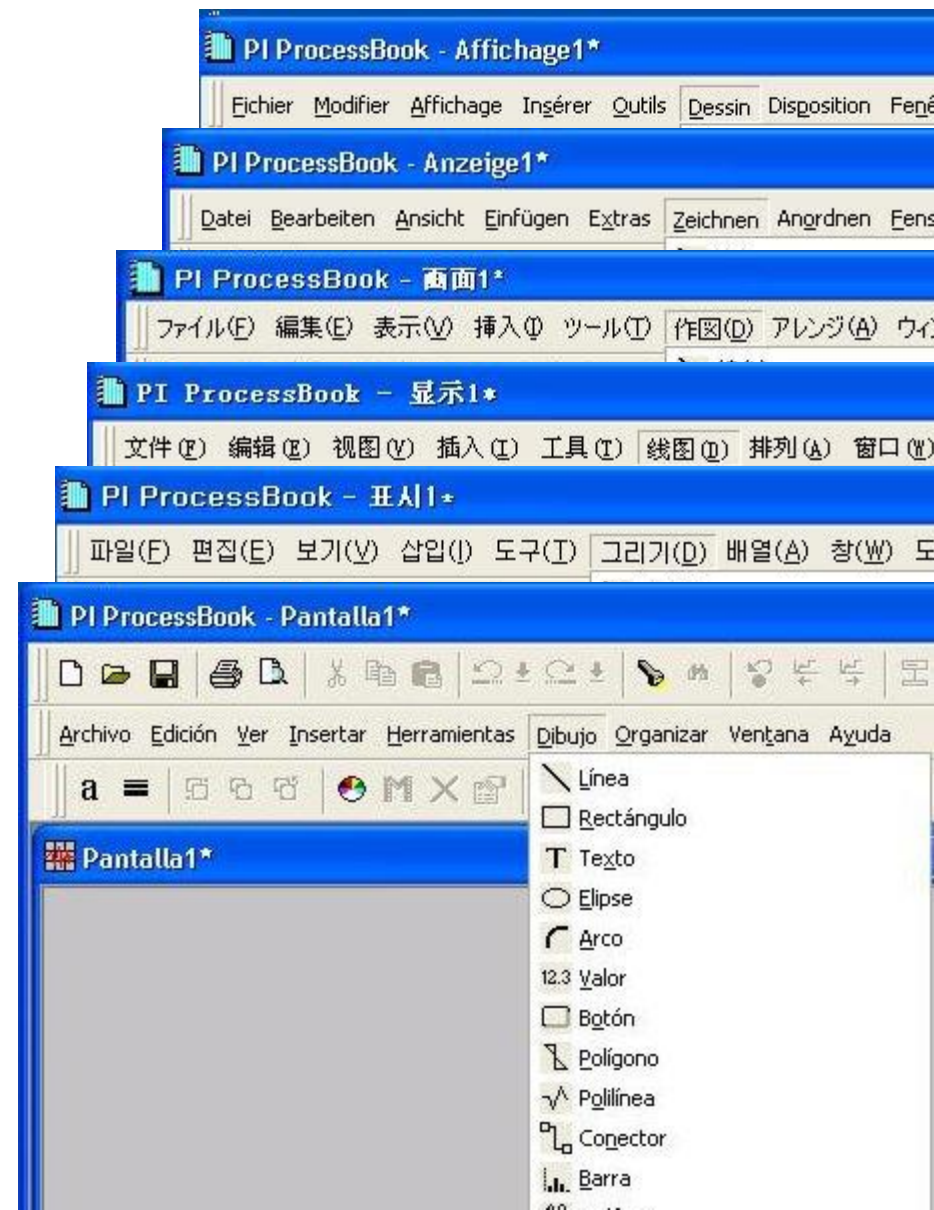


- ProcessBook display as content
- ProcessBook display linked as content
- Instant trend
- Pass time context to display

- Search
 - To Display Elements
 - From Search
 - From Favorites
 - To Other applications (Microsoft Excel)
- Favorites



- ProcessBook and ActiveView
 - English
 - French
 - German
 - Spanish
 - Simplified Chinese
 - Japanese
 - Korean
 - Russian (*coming soon*)
 - Brazilian Portuguese (*coming soon*)
- BatchView
 - Japanese



- ProcessBook 3.1 (October 2008 - *Released*)
 - Windows security integration
 - PI Notifications integration
 - Trending enhancements
- ProcessBook 3.2 (September 2009)
 - AF Element Relative Displays
 - Display Playback
 - Display Browsing and Bookmarking
 - Office Communicator collaboration integration
 - Statistical Quality Control (SQC) symbol now included

PB 3.2 - AF Element Relative Displays

PI ProcessBook - [WellHead]

File Edit View Insert Tools Draw Arrange Window Help

64%

C:\UCdocs\WellHead.pdi

7/1/2009

Element Relative Display

Search

well*

Elements of Interest

Group by: ☐ Template

Filter

Name	Description	Category
Well12345		
Well2346		
Well2347		
Well4569		
Well4570		

Well4570

Last Acid Wash 1/16/2003

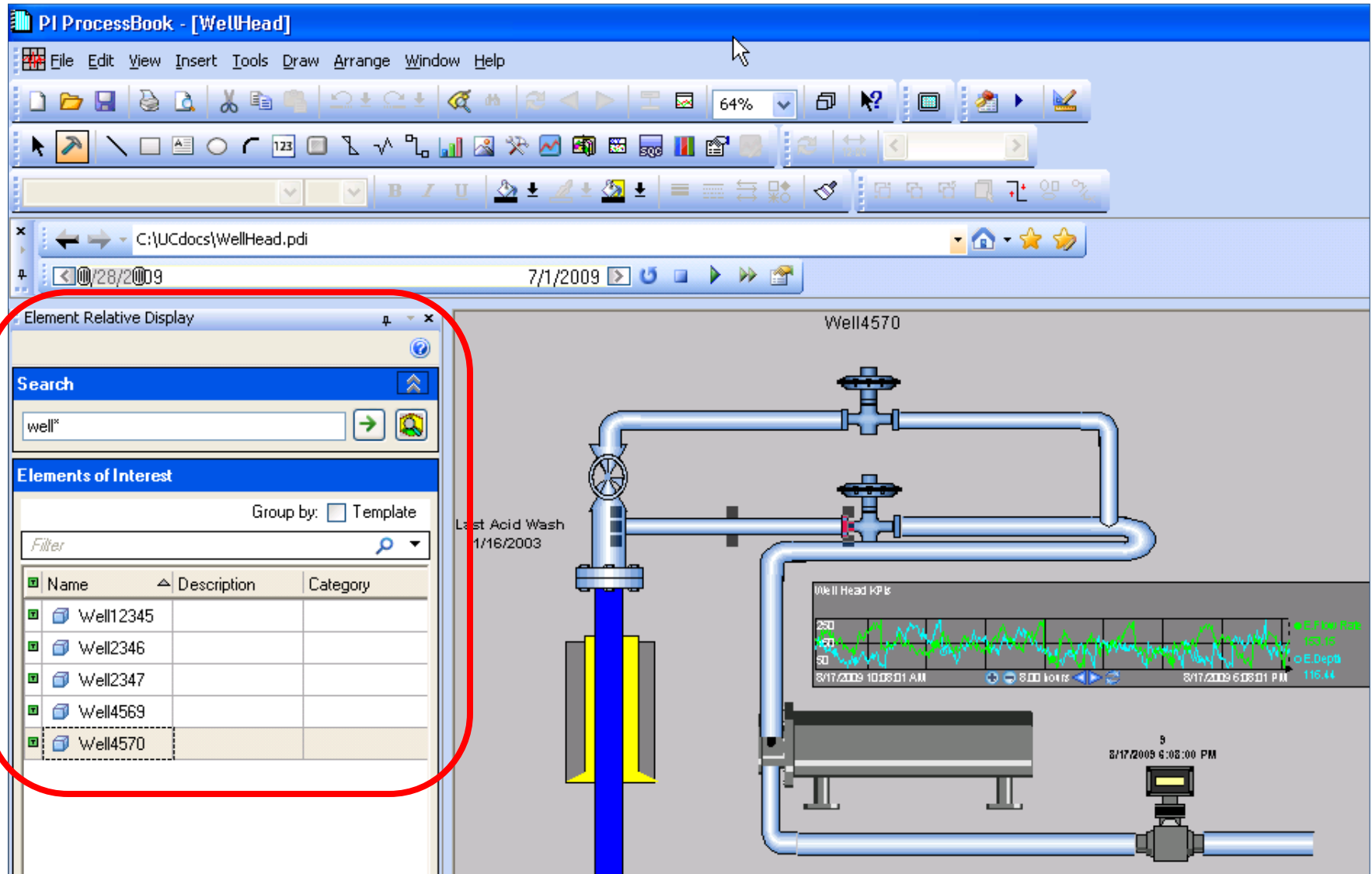
Well Head KPIs

250
150
50

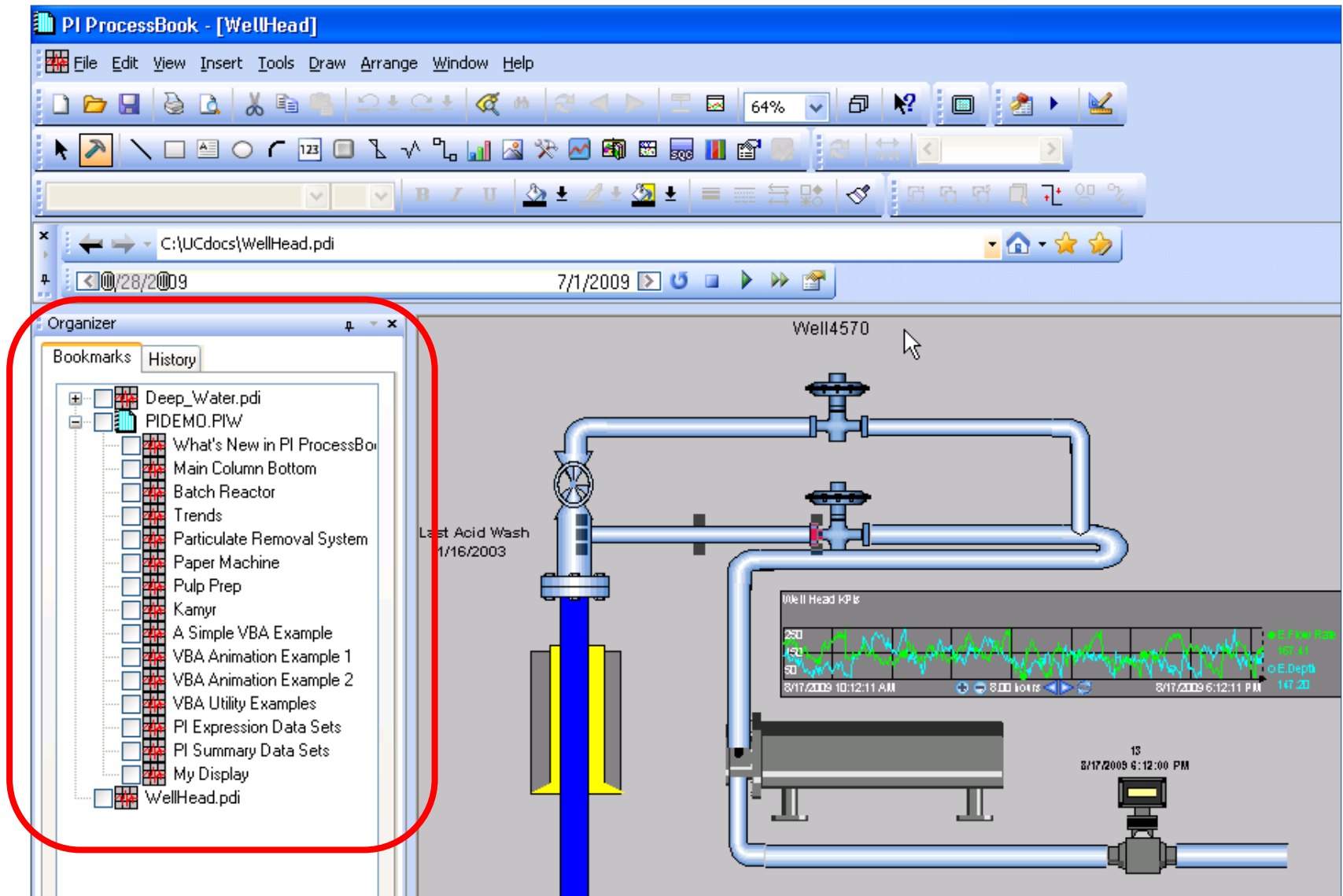
8/17/2009 10:05:01 AM 8:00 hours 8/17/2009 6:05:01 PM

Well Flow Rate 153.15
Well Depth 116.44

5
8/17/2009 6:05:00 PM



PB 3.2 - Display Browsing and Bookmarking

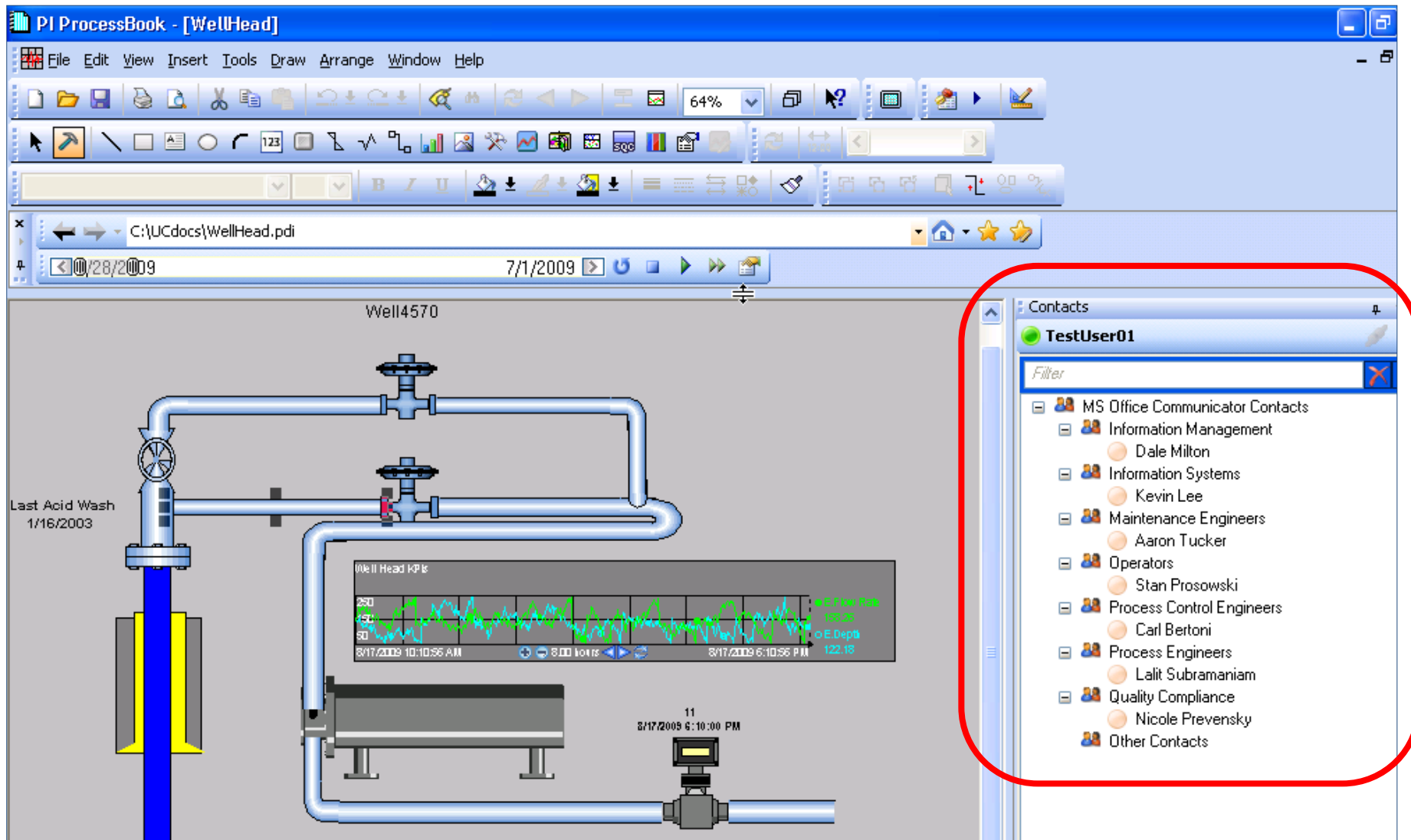


The screenshot displays the PI ProcessBook interface for a process named "WellHead". The main window shows a process diagram with blue pipes, valves, and a yellow wellhead. A mouse cursor is hovering over a valve labeled "Well4570". A text label "Last Acid Wash 1/16/2003" is visible. A graph titled "Well Head KPIs" shows a line chart with green and blue data series, with values ranging from 50 to 250. The x-axis shows dates from 8/17/2009 10:12:11 AM to 8/17/2009 6:12:11 PM. A legend on the right indicates "Flow Rate" (green) and "E. Deph" (blue). A timestamp "13 8/17/2009 6:12:00 PM" is shown at the bottom right.

The "Organizer" window is open on the left, showing a "Bookmarks" tab. The bookmark list includes:

- Deep_Water.pdi
- PIDEMO.PIW
- What's New in PI ProcessBook
- Main Column Bottom
- Batch Reactor
- Trends
- Particulate Removal System
- Paper Machine
- Pulp Prep
- Kamyr
- A Simple VBA Example
- VBA Animation Example 1
- VBA Animation Example 2
- VBA Utility Examples
- PI Expression Data Sets
- PI Summary Data Sets
- My Display
- WellHead.pdi

PB 3.2 - Office Communicator Integration



DataLink

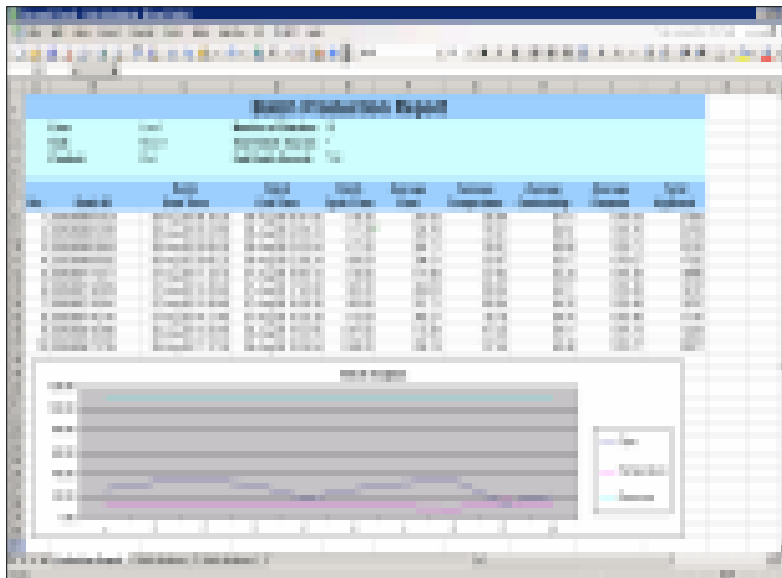


PI DataLink:

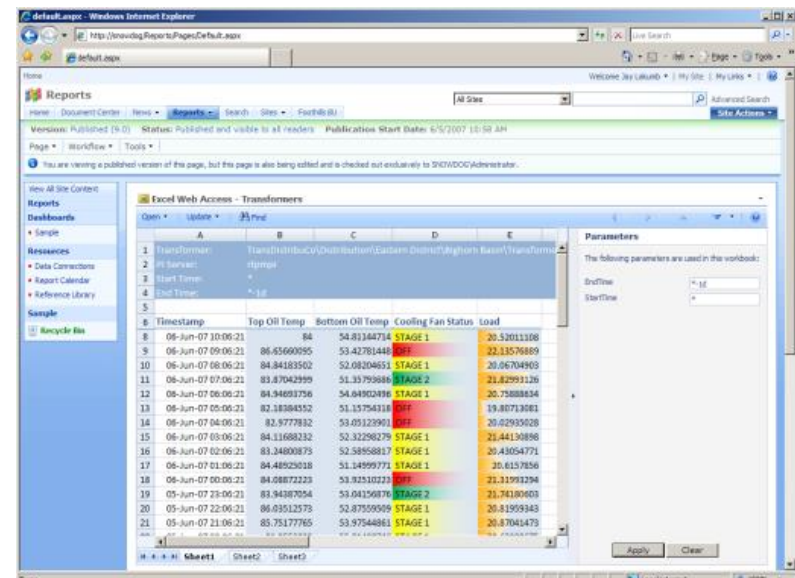
- Excel add-in for access to real-time and historical PI data

PI DataLink for Excel Services (DLES):

- DataLink spreadsheets on the Web



DataLink



DataLink for Excel Services

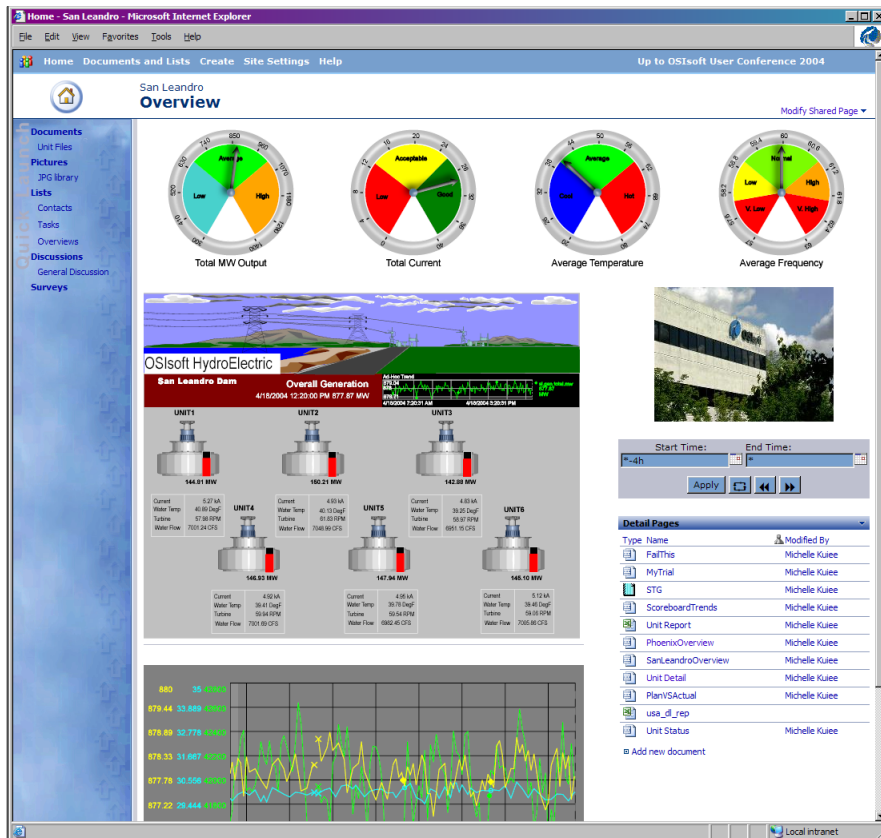
- DataLink 4.1 (*Released*)
 - Support for automatic updating
- DataLink for Excel Services 4.1 (Q4 2009)
 - Support for 64-bit SharePoint 2007
- See “OSIsoft Products and Office 2007 Compatibility FAQ” on Tech Support site
- DataLink 5.0 (2H 2010)
 - Support for Office 2010
 - Better Business Intelligence Support
 - Pivot Tables / Slicers

PI WebParts / iViews

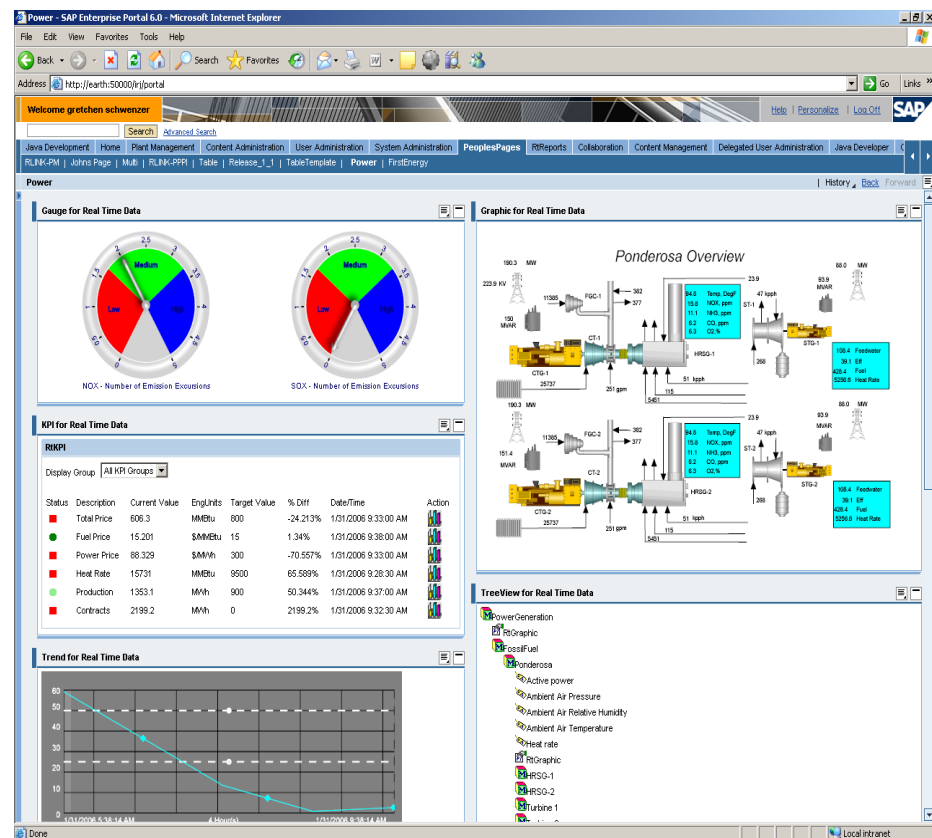


- Integration and Collaboration
- Access to Process Information
- Analysis and Reporting

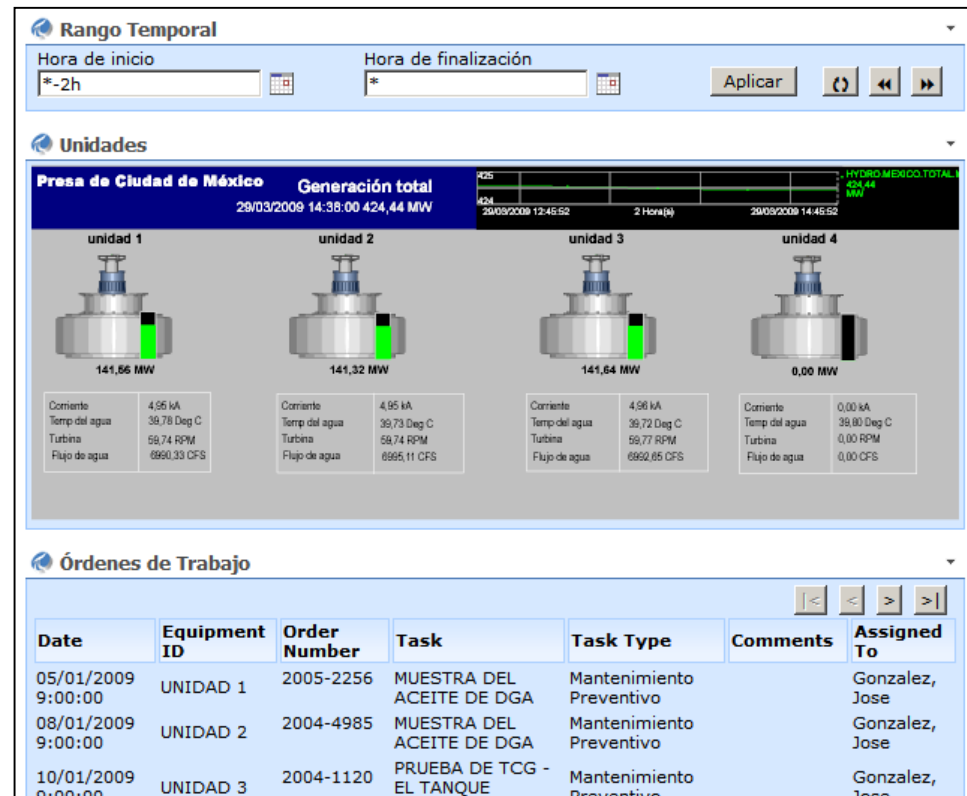
PI WebParts example



iViews example



- RtWebParts 2.2 (September 2008 - *Released*)
- 8 Language Packs (March 2009 - *Released*)
 - Japanese
 - Simplified Chinese
 - Korean
 - French
 - Brazilian Portuguese
 - German
 - Spanish
 - Russian



- PI WebParts 3.0 (Q42009)
 - Product will be officially rebranded PI WebParts
 - Support for 64-bit operating systems
 - Support for AF
- PI WebParts 4.0 (2H 2010)
 - Support for Office 2010
 - Enhanced AF Support
 - Support for Microsoft Silverlight

OSIsoft Product Roadmap

- Major Release
- ▲ Minor Release

Jul Aug Sep Oct Nov Dec Q1 '10 Q2 '10

Client

Desktop

ProcessBook (3.2)

BatchView (3.2)

Datasheet Control (2.0.1)

DataLink (4.1)

Manual Logger (2.3)

Web

PI WebParts (3.0)

ActiveView (3.2)

DataLink Excel Services (4.0.3)

RtPM Business Pkg (70.1.1)

TBD

TBD



Server:

- PI Server 3.4.380 - *Released* September 2009 (Security)
- PI AF 2.1 - August 2009 (64-bit, HA) *Released*
- PI Notifications 1.1 - September 2009 (OCS, Templates)
- PI Data and Web Services - December 2009 (64-bit)
- PI Server 3.5 - 1Q 2010 (MDB to AF)

Clients:

- PI ProcessBook 3.2 - *Released* September 2009 (AF relative displays, Usability)
- PI WebParts 3.0 - 4Q 2009 (64-bit, AF Support)
- PI DataLink 4.1 for Excel Services (64-bit)



Thank you

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777 Davis St., Suite 250 San Leandro, CA 94577