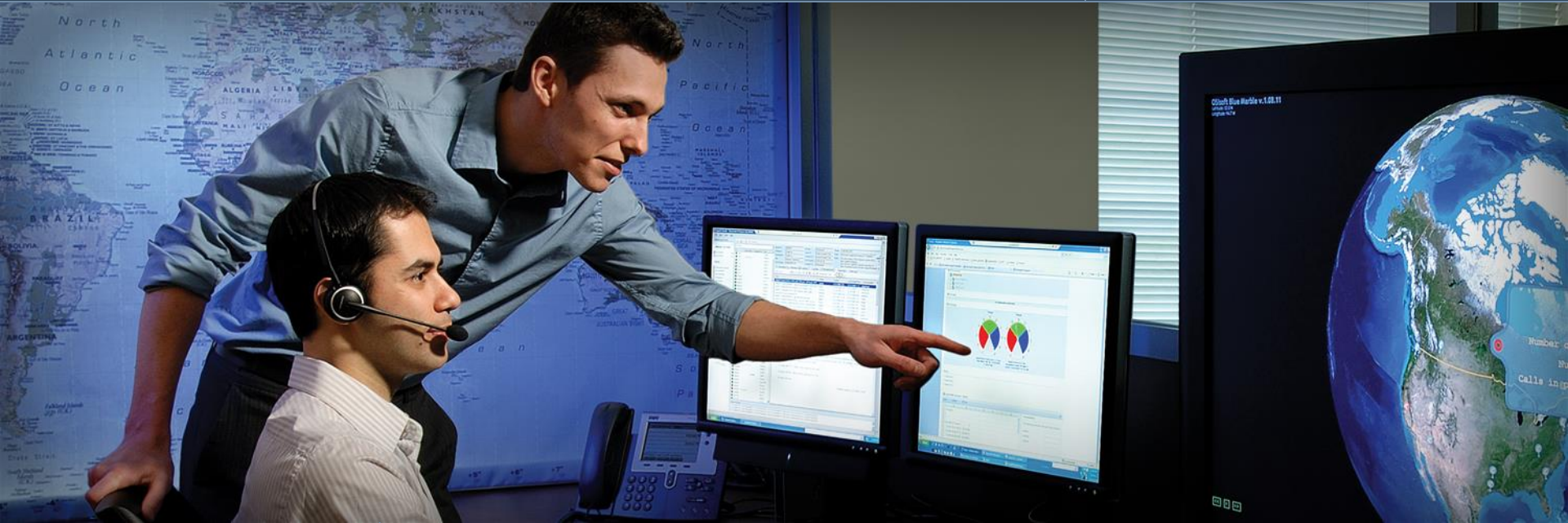




OSIsoft®

Regional Seminar Series



PI System Roadmap

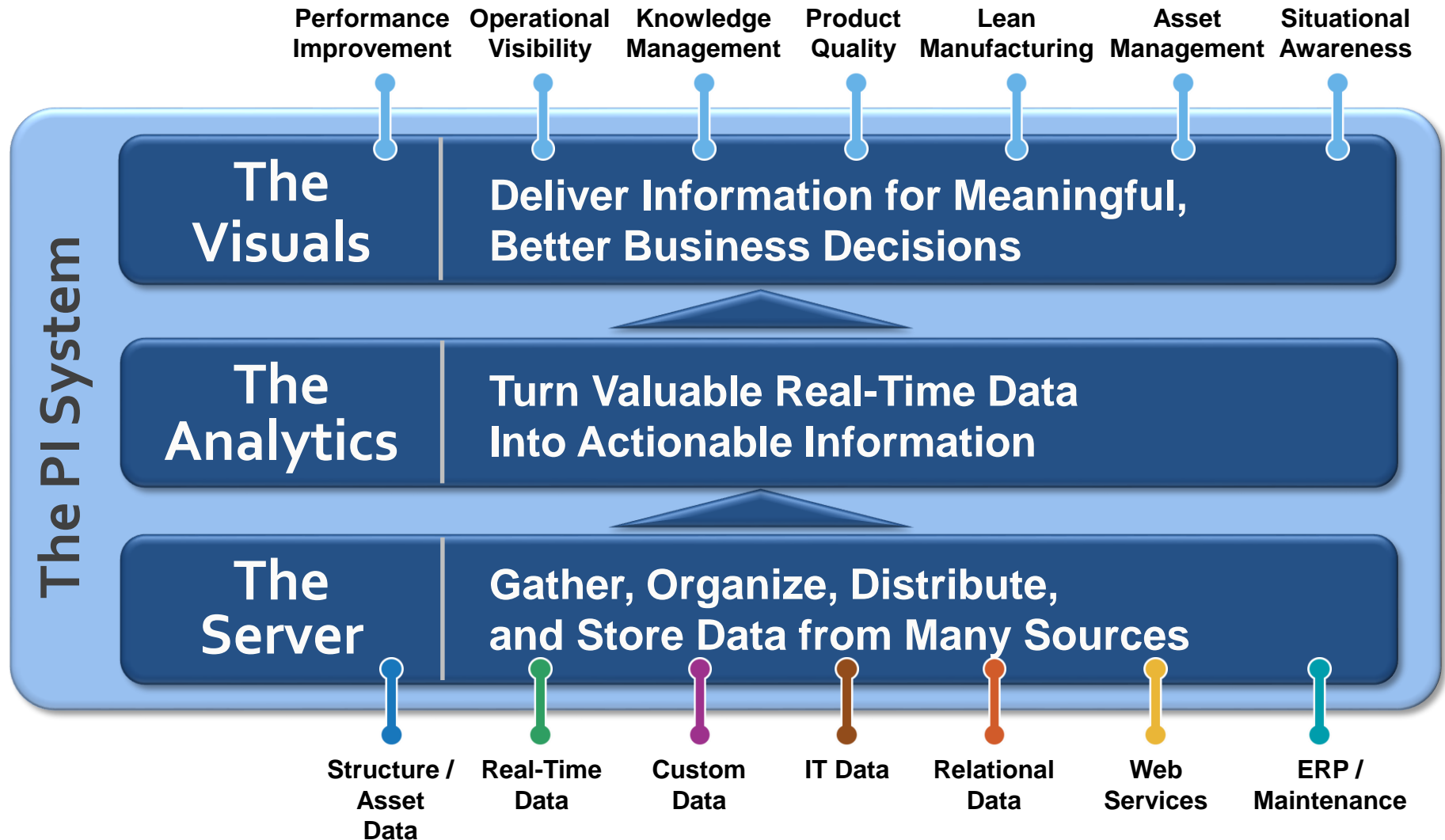
Tamara Carbaugh
Product Management
OSIsoft, LLC.

November 5, 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**

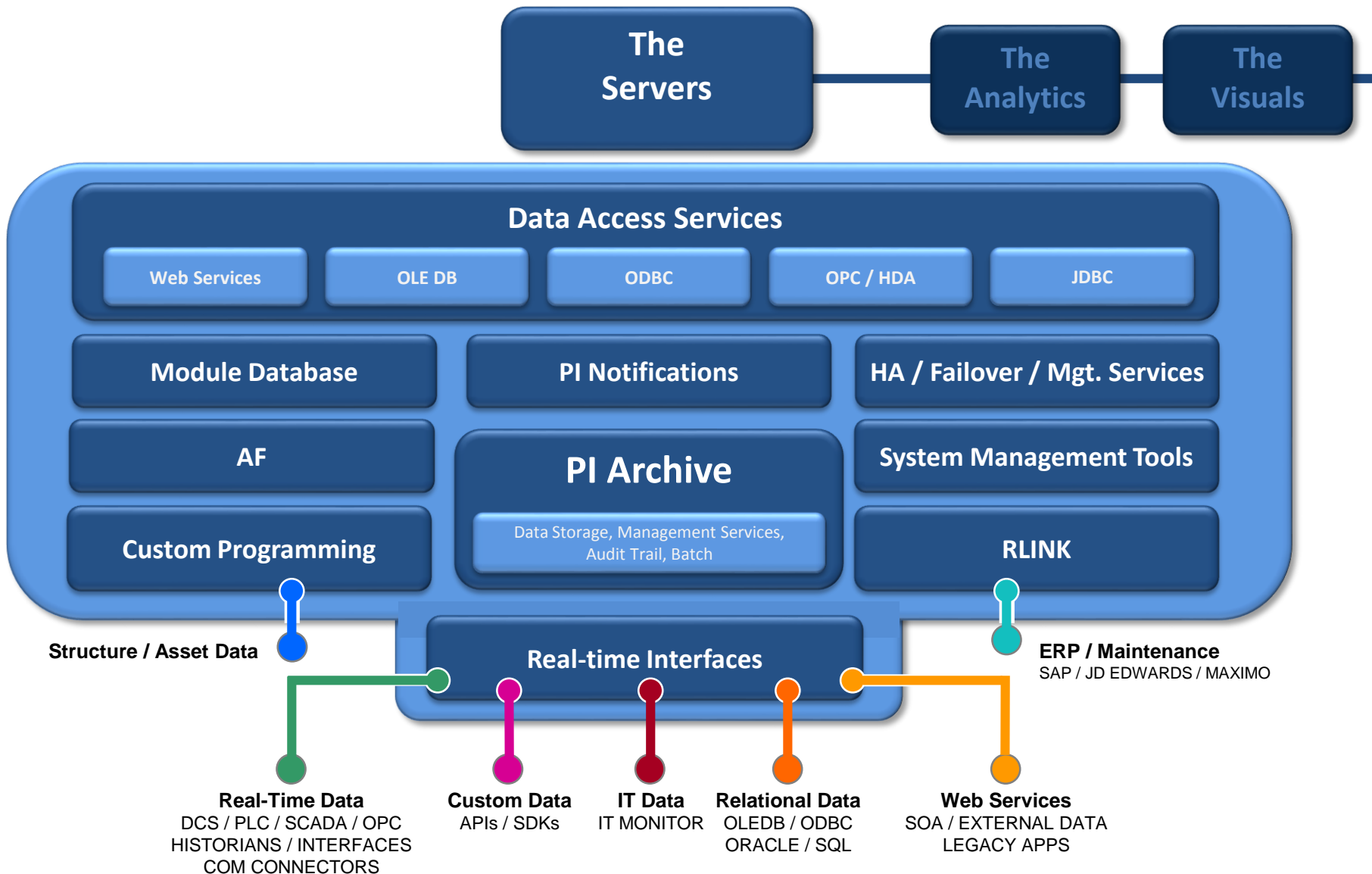
**Gather, Organize, Distribute,
and Store Data from Many Sources**

- 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

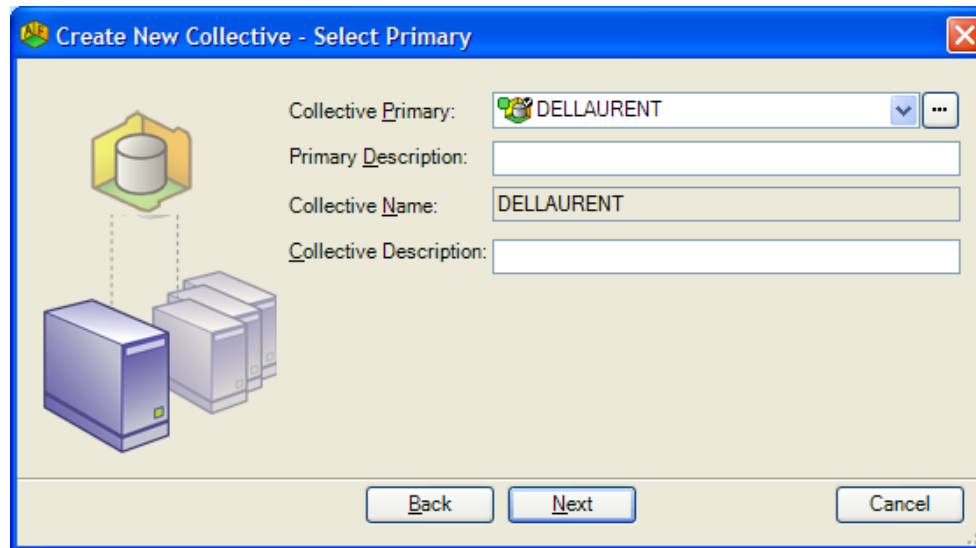


- Releases
 - PI Server 3.4.380 with Windows Integrated Security
 - Released September 21, 2009
 - PI AF 2.1
 - Released September 1, 2009
 - PI Notifications 1.1
 - Released September 30, 2009
- Integration with Windows Security
- High Availability
- More Scalability and Manageability

- 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)

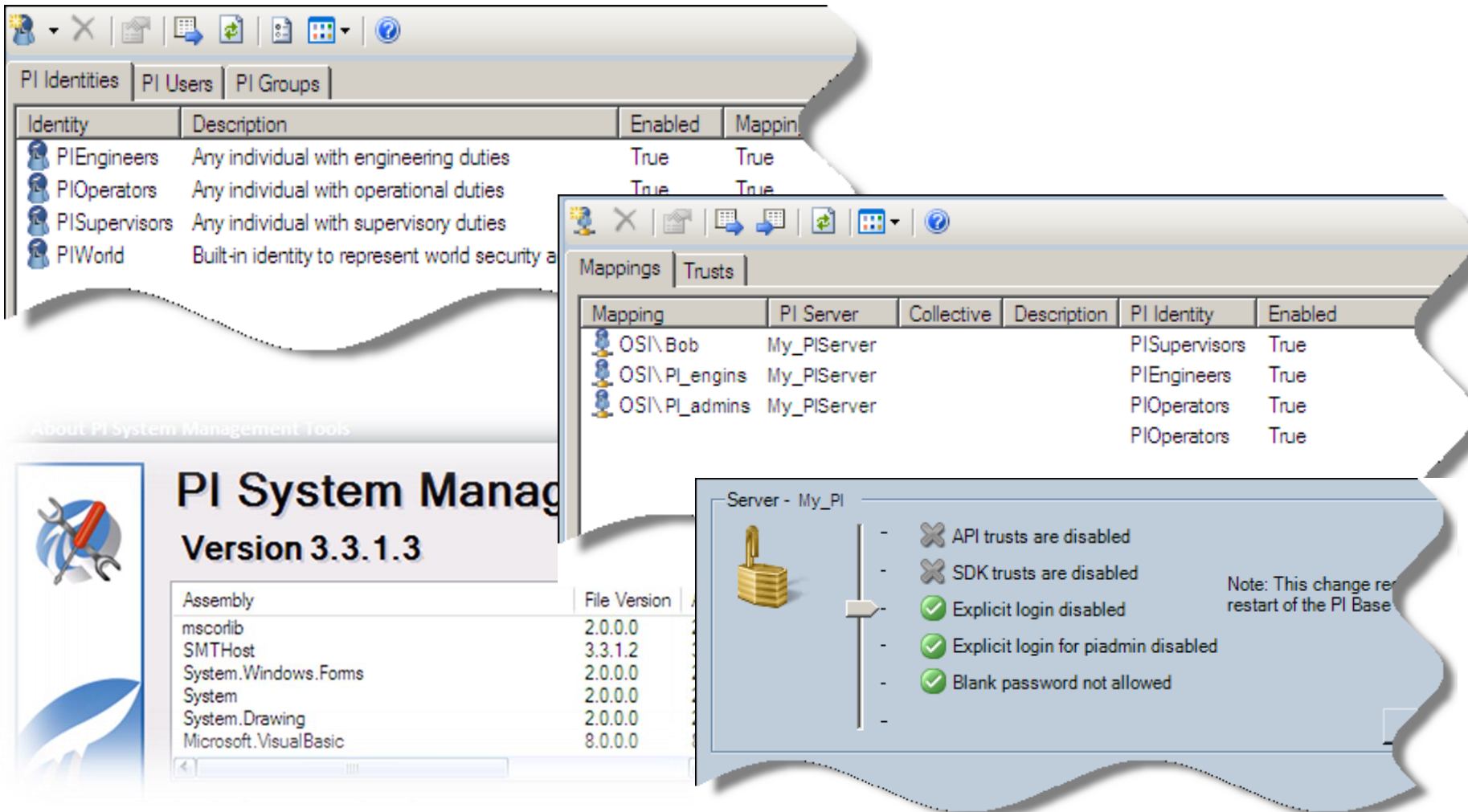


Point	Point Security	Data Security
SINUSOID	Asia-Pacific: A(r) Antarctica: A(r,w) Americas: A(r) Europe: A(r)	Green: A(r)

*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 shows the 'PI Identities' tab with a list of identities and their descriptions. Below this, the 'About PI System Management Tools' window is visible, showing the version 3.3.1.3 and a list of assemblies and their file versions.

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		

The 'Mappings' tab is also visible, showing a list of mappings and their descriptions.

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

The 'Server - My_PI' window shows a list of security 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



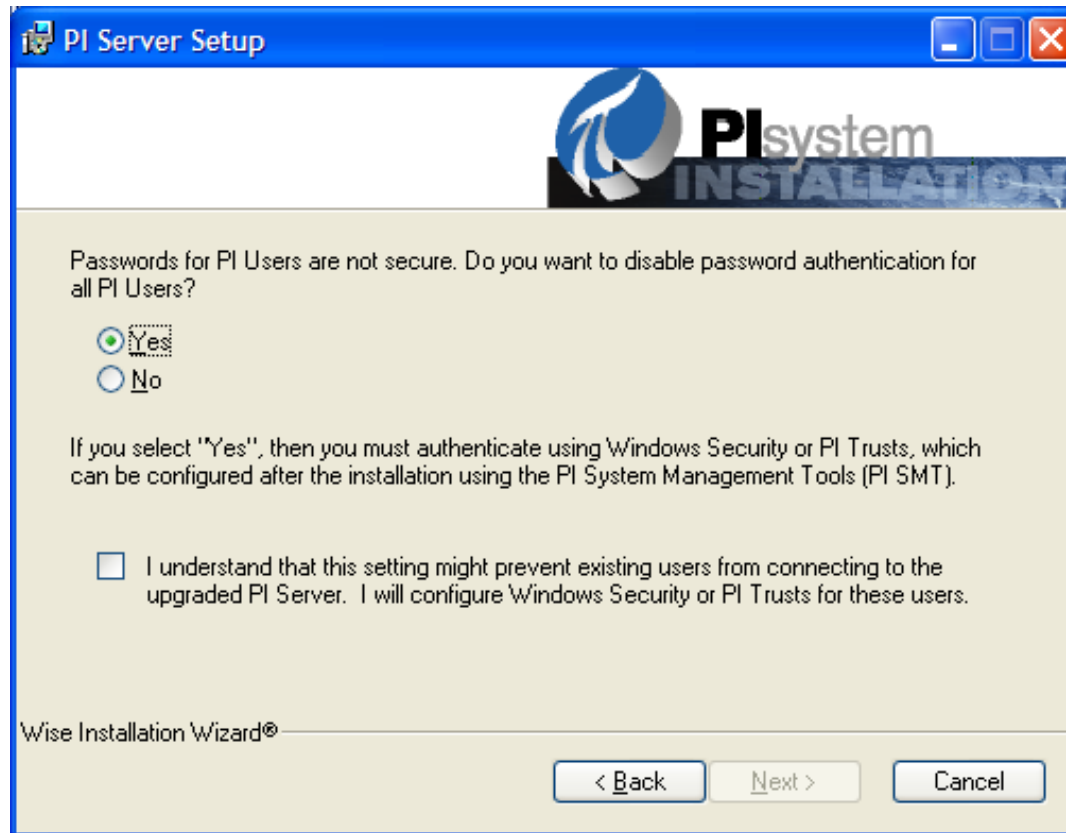
The screenshot displays the 'sinusoid - Point Builder - PI System Management Tools' application. The left sidebar shows the 'System Management Tools' menu with 'Point Builder' selected. The main window is divided into 'Server', 'Point', 'Point Security', and 'Data Security' tabs. The 'Point Security' tab is active, showing a list of users and groups: piadmin, piadmins, PLEngineers, and PIWorld. A callout box highlights the security string: `piadmin: A(r,w) | piadmins: A(r,w) | PLEngineers: A(r) | PIWorld: A(r)`. A 'Select' dialog box is open, showing a list of users and groups from server LG380. The 'Type' is set to 'All'. The list includes:

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"

The 'PIOperators' user is selected. The 'Add' button is visible at the bottom of the dialog.

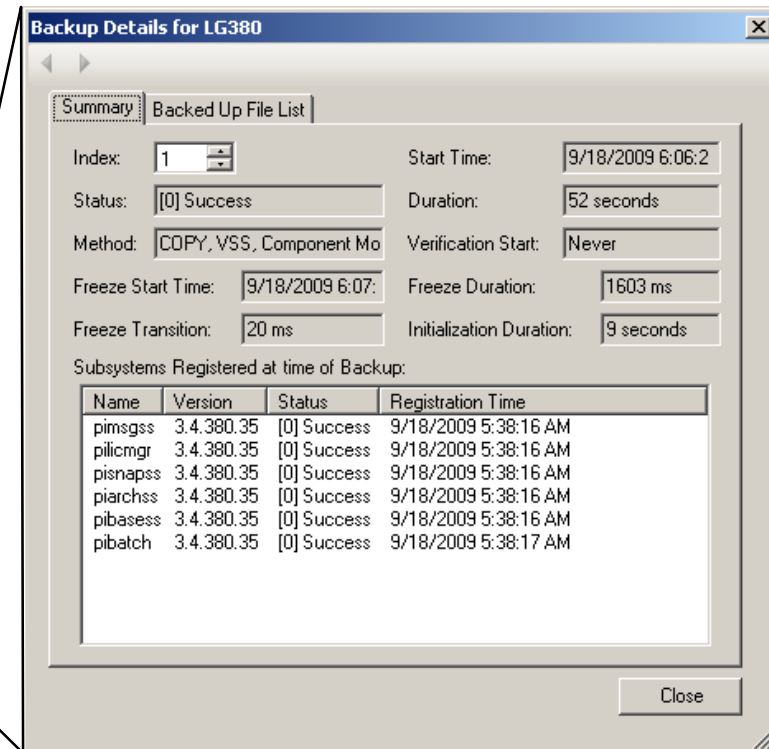
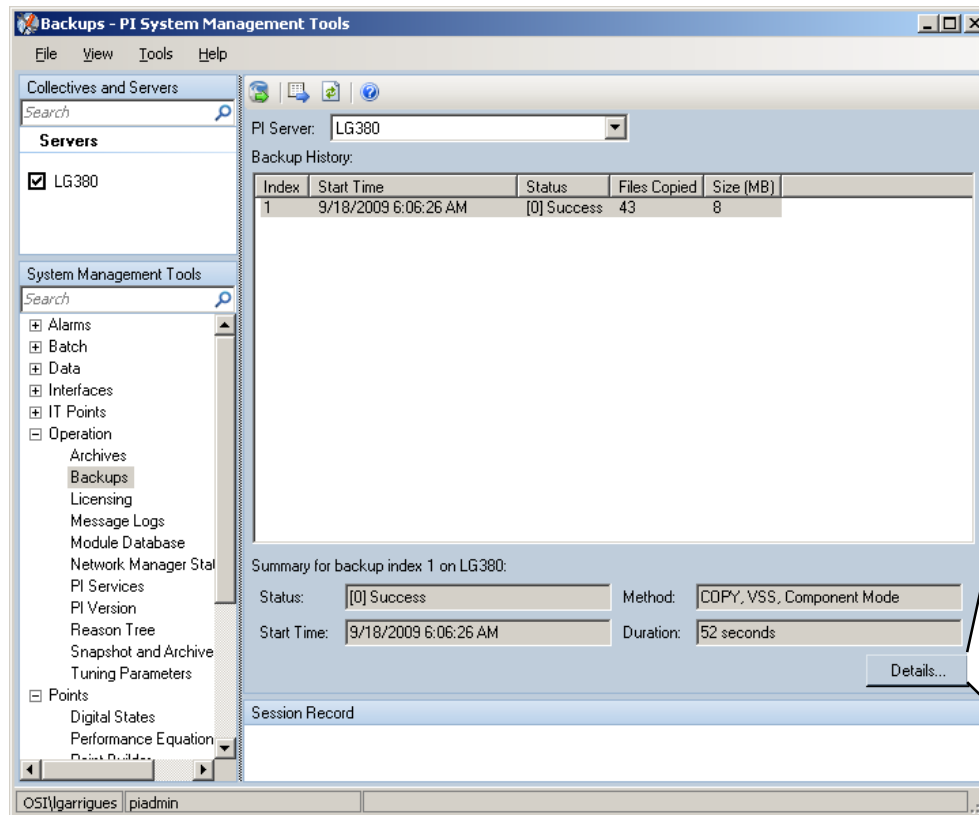
Setup

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



PI Backups

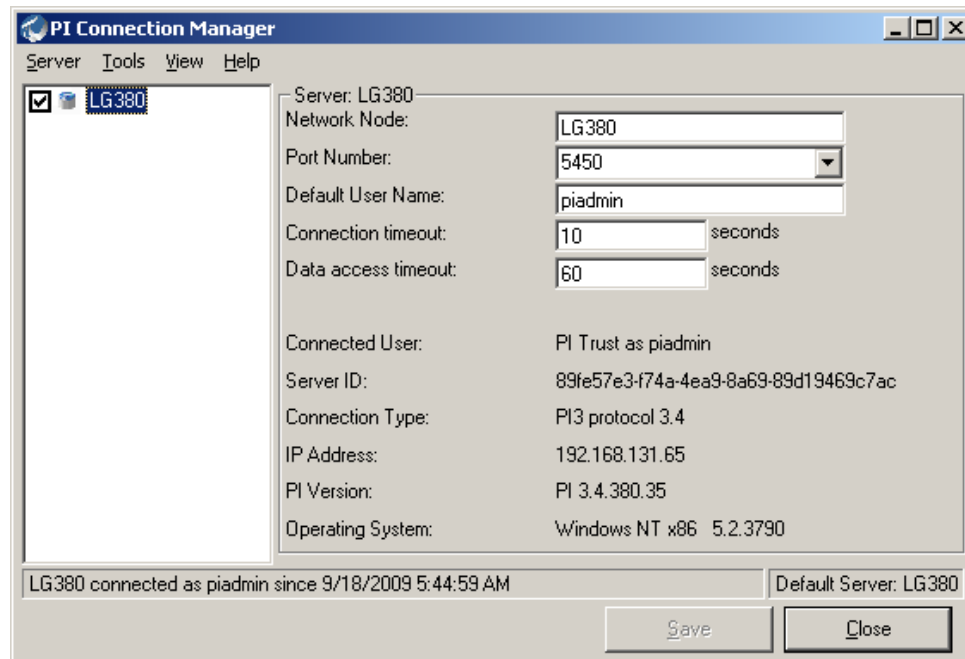
- Added support for incremental backups, verified backups, and a full backup history



Clients apps and the 3.4.380 release



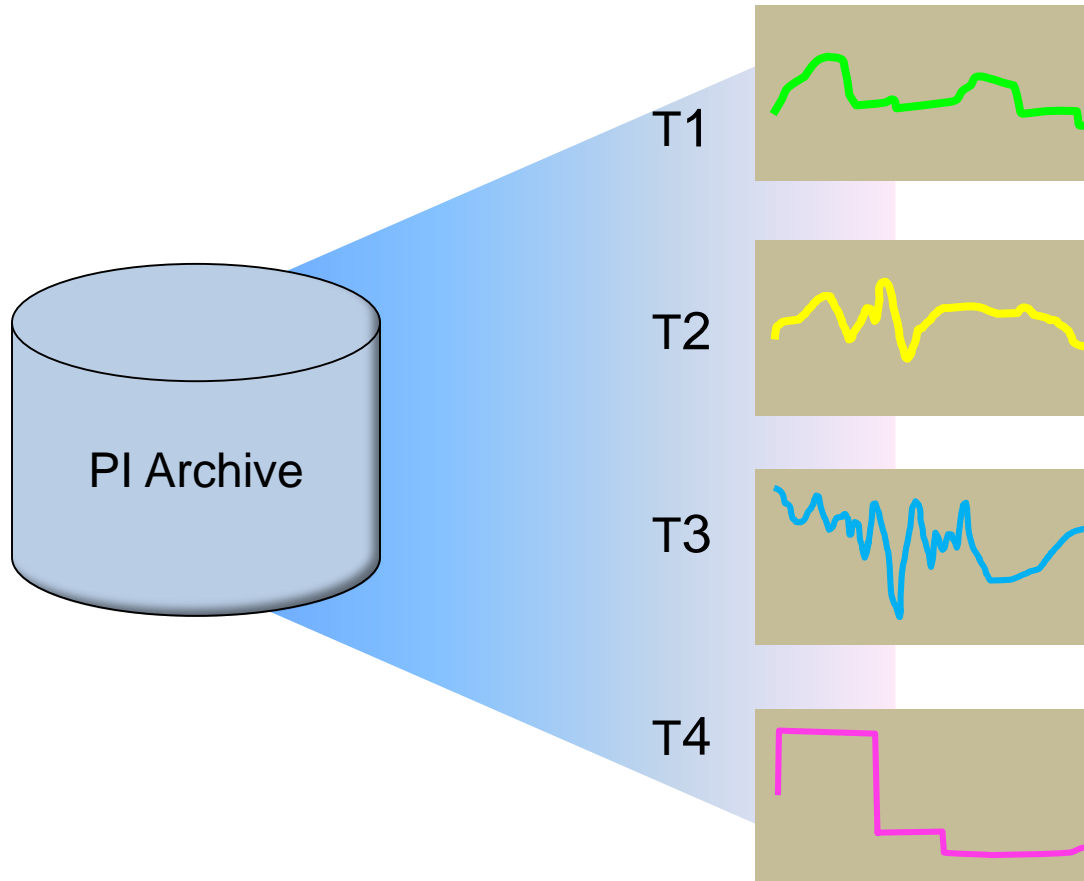
- Clients apps only need to upgrade the PI SDK 1.3.6 (released in Q3 2008) to take advantage of the new Security Model
- Most clients, like PI ProcessBook 3.1 and PI Datalink 4.x are already shipping with the PI SDK 1.3.6



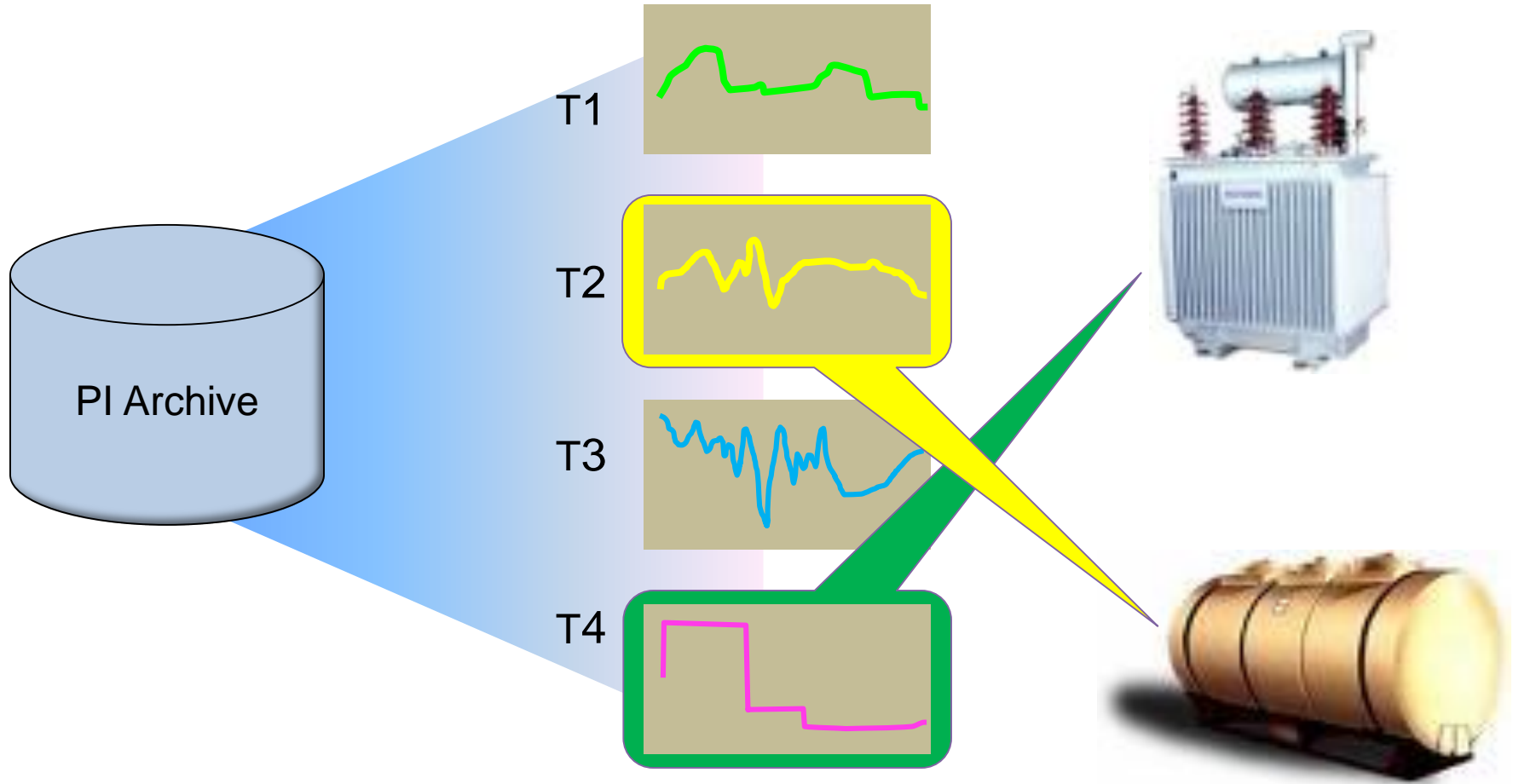
The PI AF Server



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

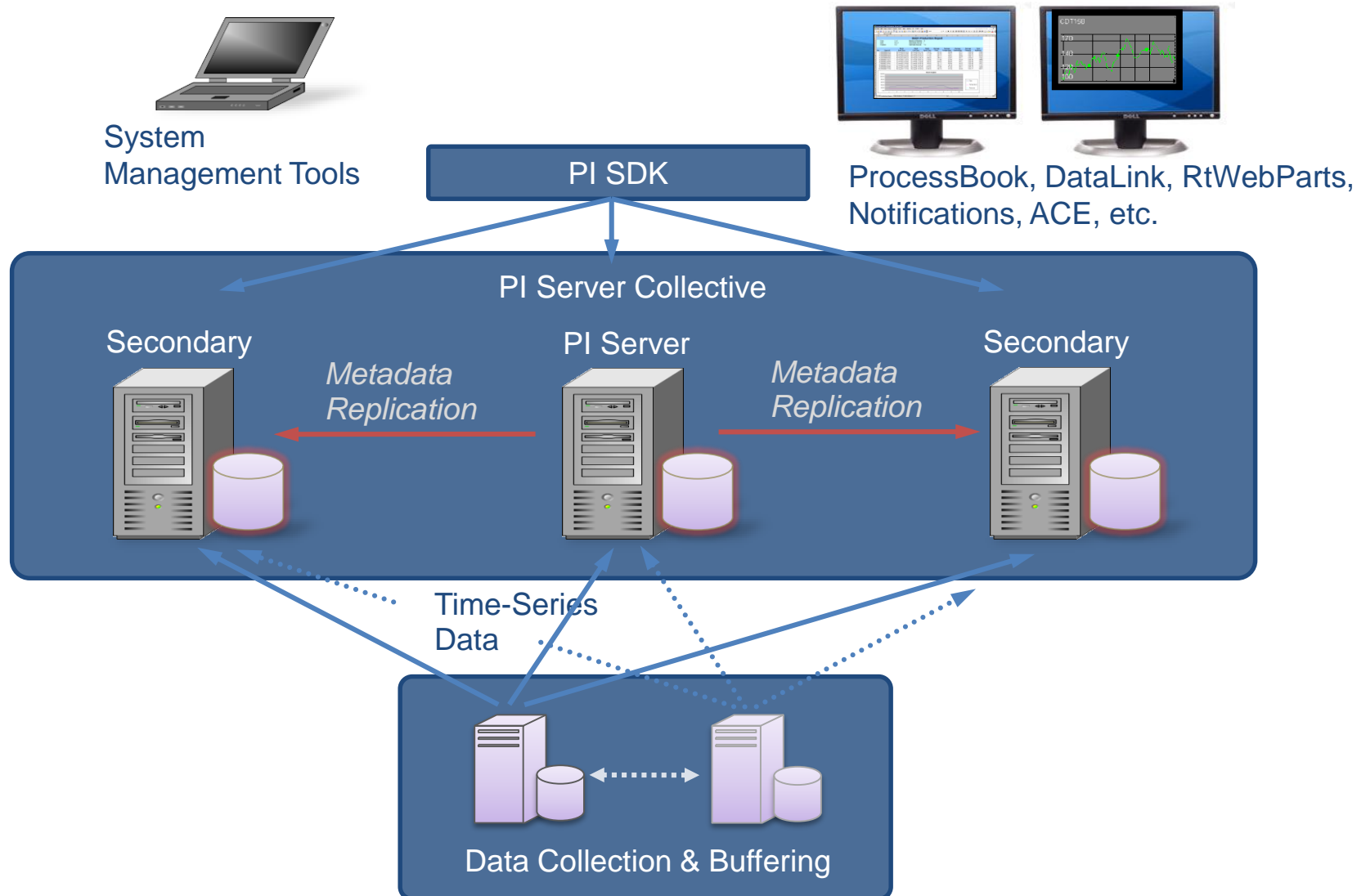
PI AF 2.1



Technical Overview and Value proposition

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

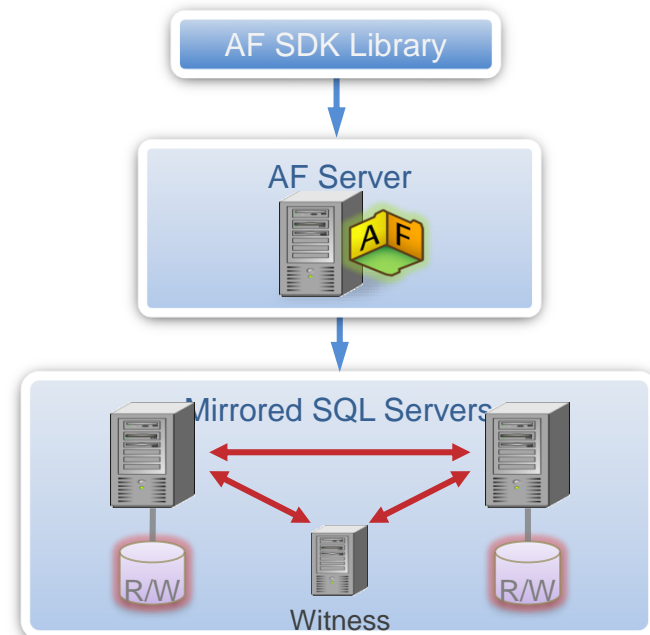
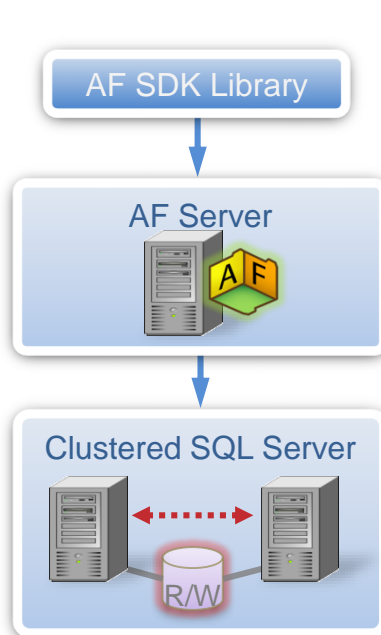
PI High Availability Architecture



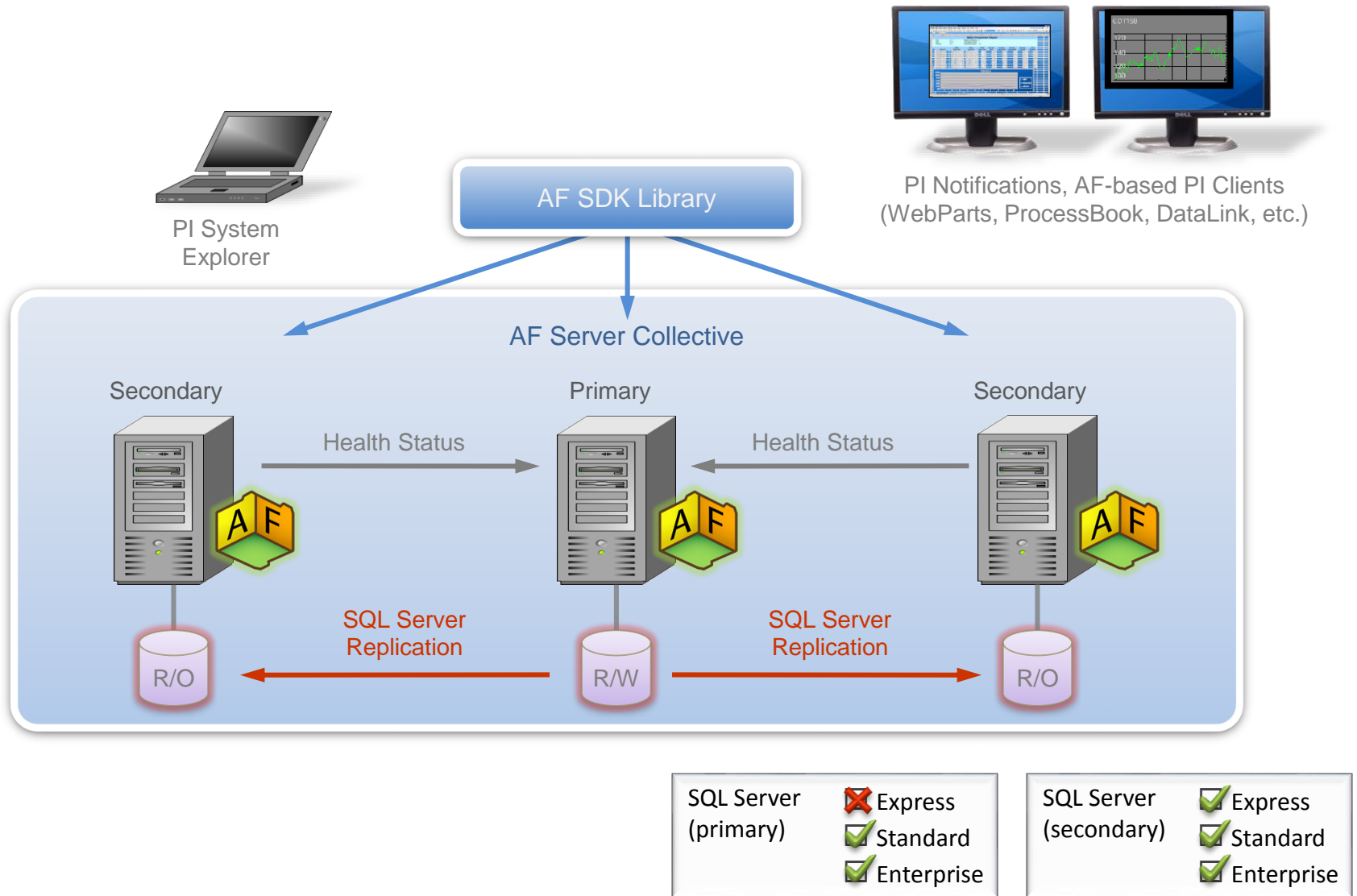
High Availability for AF 2.1



- 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



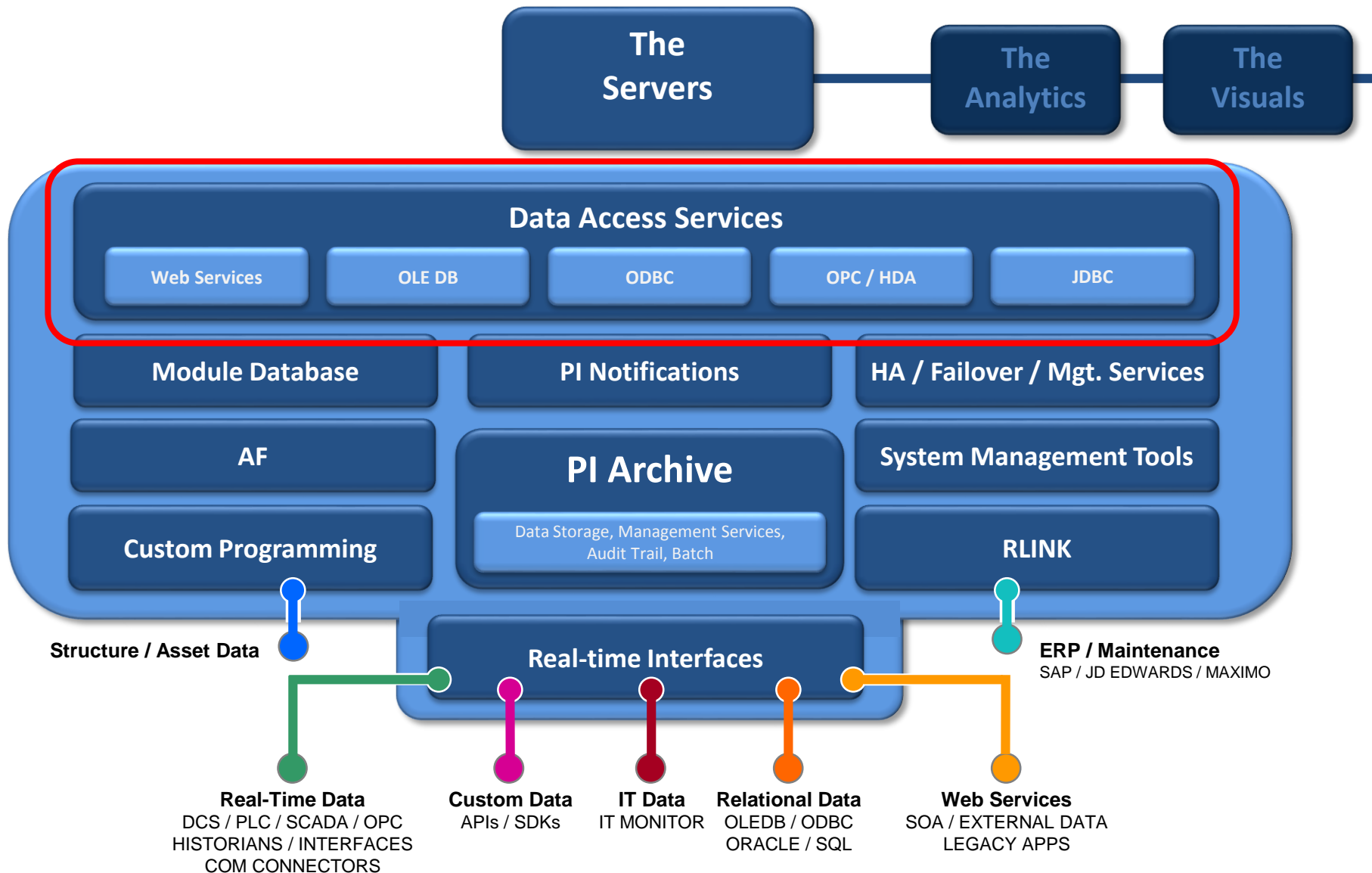
- 2.0 Server was 64-bit capable
- Can use either 32 or 64 bit SQL Server
 - 2005 or 2008
- Same install kit for 32 vs. 64 bit versions of AF Client or AF Server
- PI System Explorer can run as a 32 bit application on 64 bits



Data Access

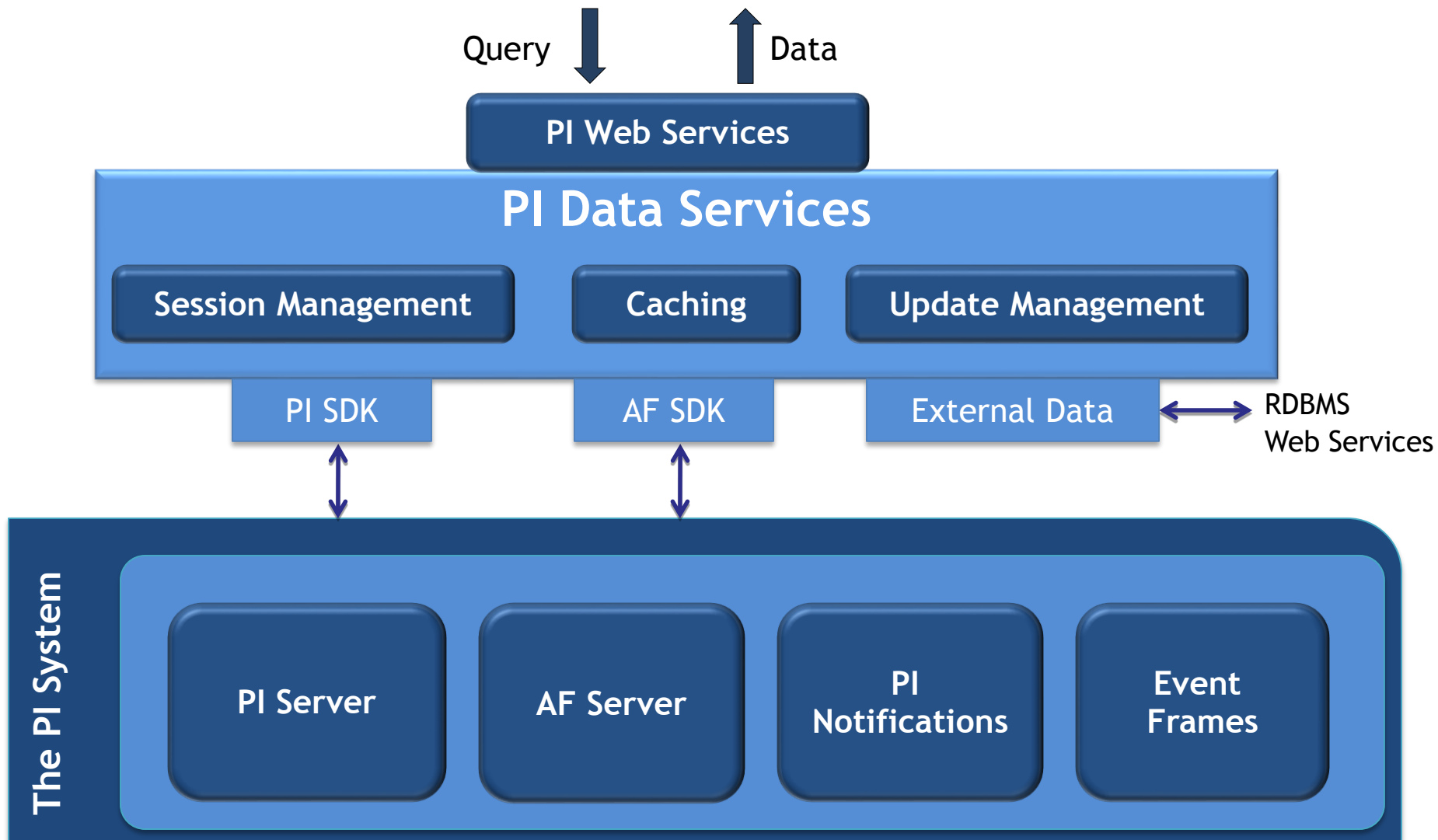


The PI Servers



- 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!



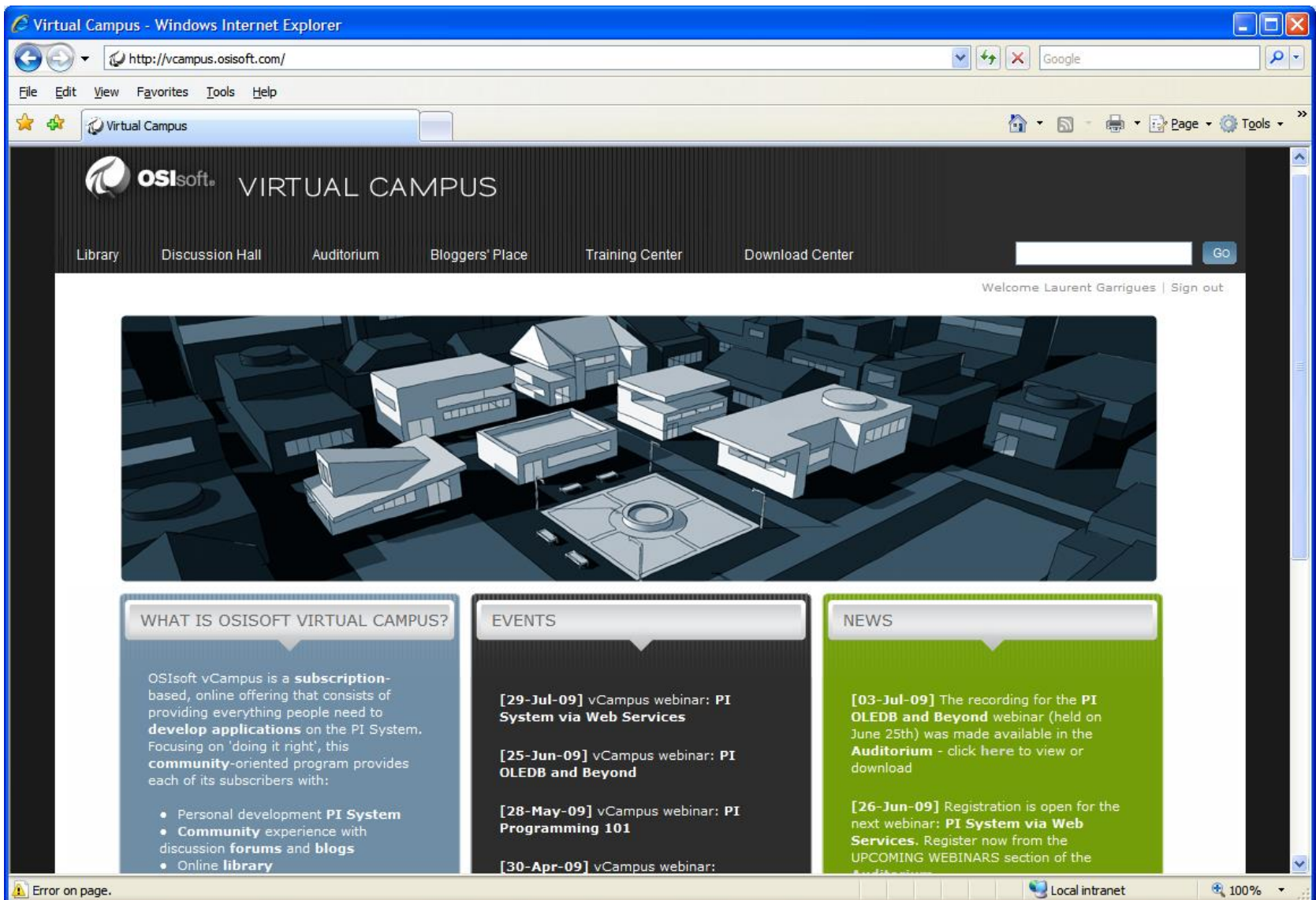
- PI Data Services (Baseline Services) (Q4 2009)
 - Support both 32-bit and 64-bit providers
- PI Web Services Technical Preview (*Available*)
 - OSIsoft vCampus online, hosted environment
- PI OLEDB 3.3 (*Released*)
 - Support both 32-bit and 64-bit providers
- PI OLEDB 4.0 (1Q 2010)
 - Support for entire PI system, both Tags and AF
- PI JDBC 1.0 (*Available*)
 - 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 (PI Access Licensing - PAL)
- Programming examples and documentation
- PI Virtual Campus - community collaboration site
 - Forums
 - Blogs



OSIsoft Product Roadmap

■ Major Release
▲ Minor Release



Oct Nov Dec Jan Feb Mar Q2'10 Q3 '10

Server

PI Server (3.5.385)

AF (2.2.x)

Notifications (1.2.x)

ACE (2.2.x)

SMT (3.3.0.4)

Audit Viewer (1.3.x)

Edge Processing Analytics (1.0.x)

CTP

Data Access

PI SDK (1.4.x)

PI API (1.6.2)

PI OLEDB Provider (4.0.x)

PI Data Services (3.0.x)

PI JDBC (1.1.x)

OPC UA Server (1.0.x)

Web Services (1.0.x)

OSIsoft-MDUS (1.0.x)

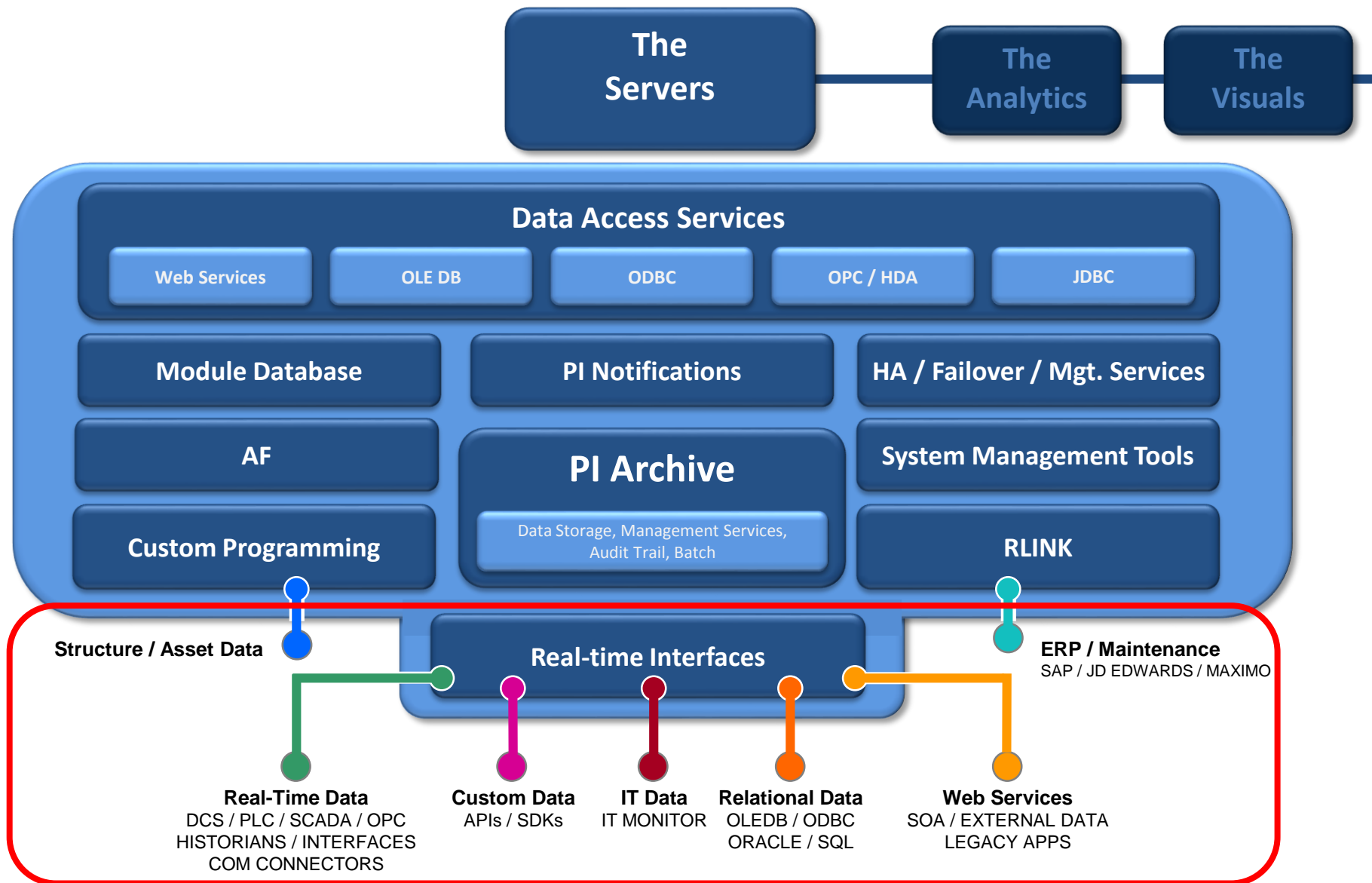
CTP

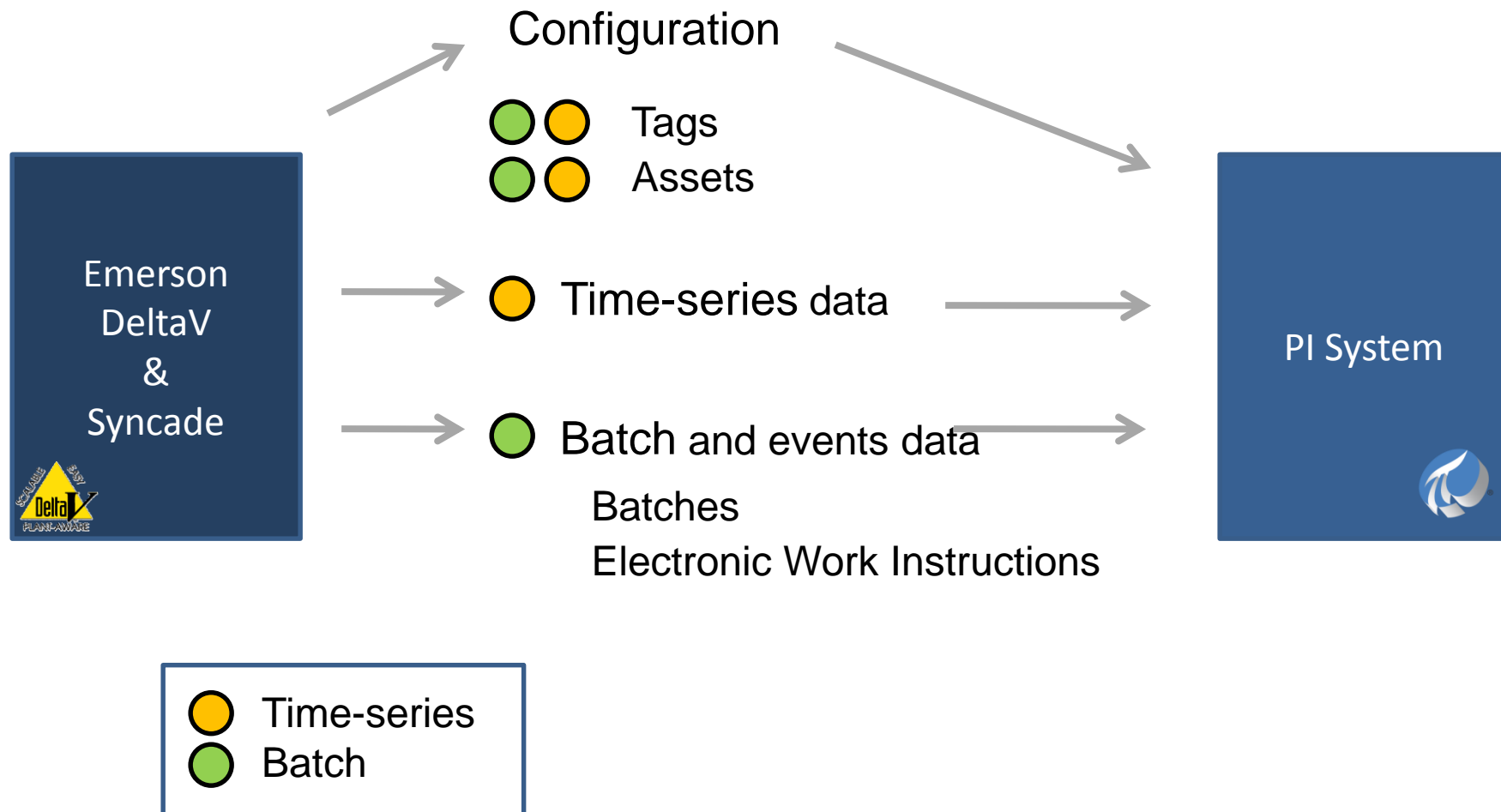
CTP

PI Interfaces



The PI Servers





OSIsoft Product Roadmap - Interfaces

■ Major Release
▲ Minor Release



Oct Nov Dec Jan Feb Mar Q2'10 Q3 '10

General Interfaces

AutoPointSync (1.2.6)								TBD
PIUFL (3.2.0)			▲					
RDBMS (3.17.0)			▲					
WITSML plug-in (1.0.x)			■					
ICU (1.5.0)								TBD
SNMP (1.5.0)			▲					
TCPResponse (1.2.0)			▲					

OPC Interfaces

PI OPC UA Interface (1.0.x)								TBD
PI OPC Interface / DA (2.4.0.0)								TBD

Batch Interfaces

Siemens Simatic PCS7 (1.0.0)		■						
Wonderware InBatch (1.0.0)		■						

Power Meter Interfaces

Elster (1.0.x)						■		
Tiilliant Unity (1.0.x)						■		
Grid Net PolicyNet (1.0.x)						■		
Silver Springs Network UtilityIQ (1.0.x)					■			

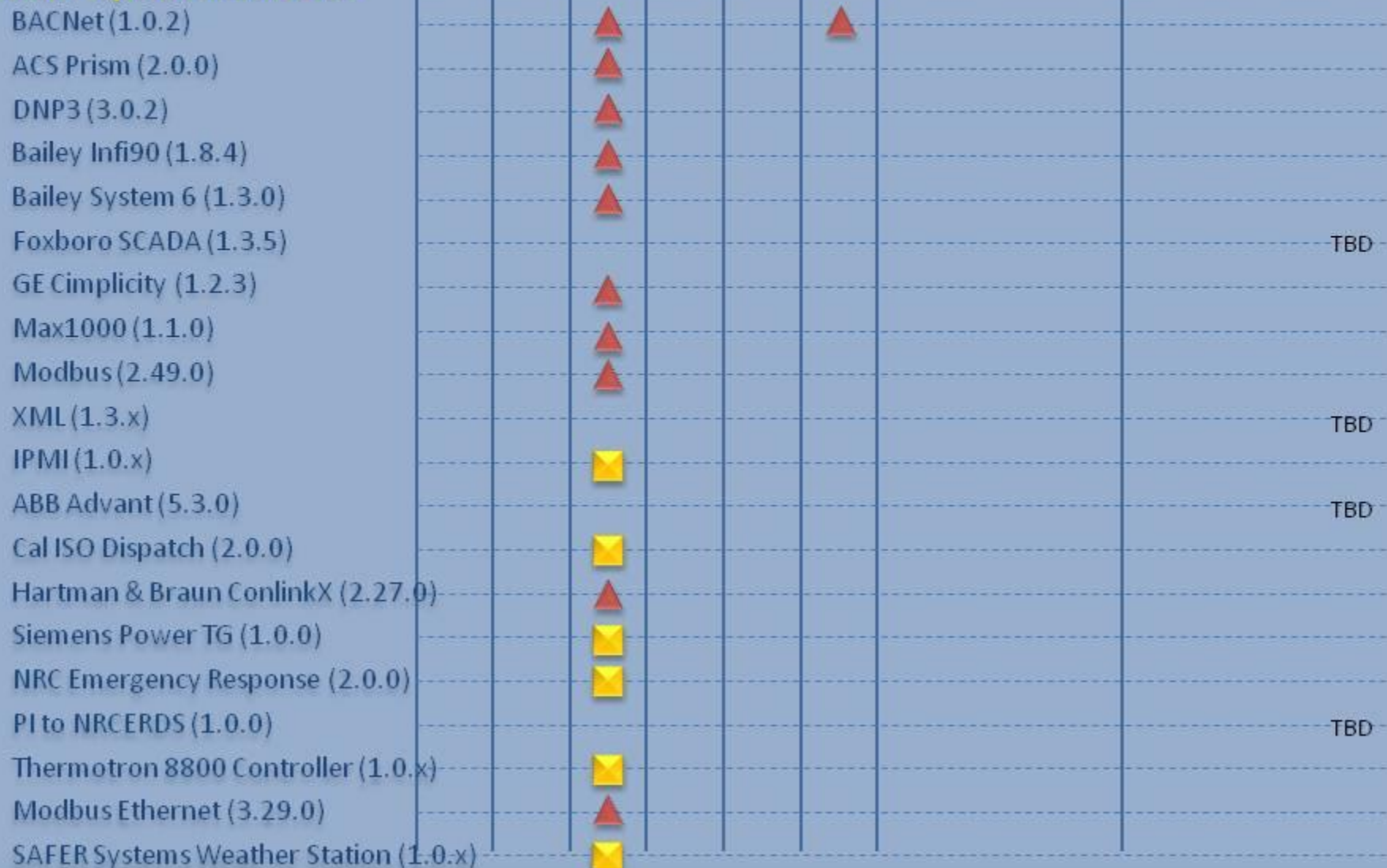
OSIsoft Product Roadmap - Vendor Specific Interfaces

■ Major Release
▲ Minor Release



Oct Nov Dec Jan Feb Mar Q2'10 Q3 '10

Vendor Specific Interfaces



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)

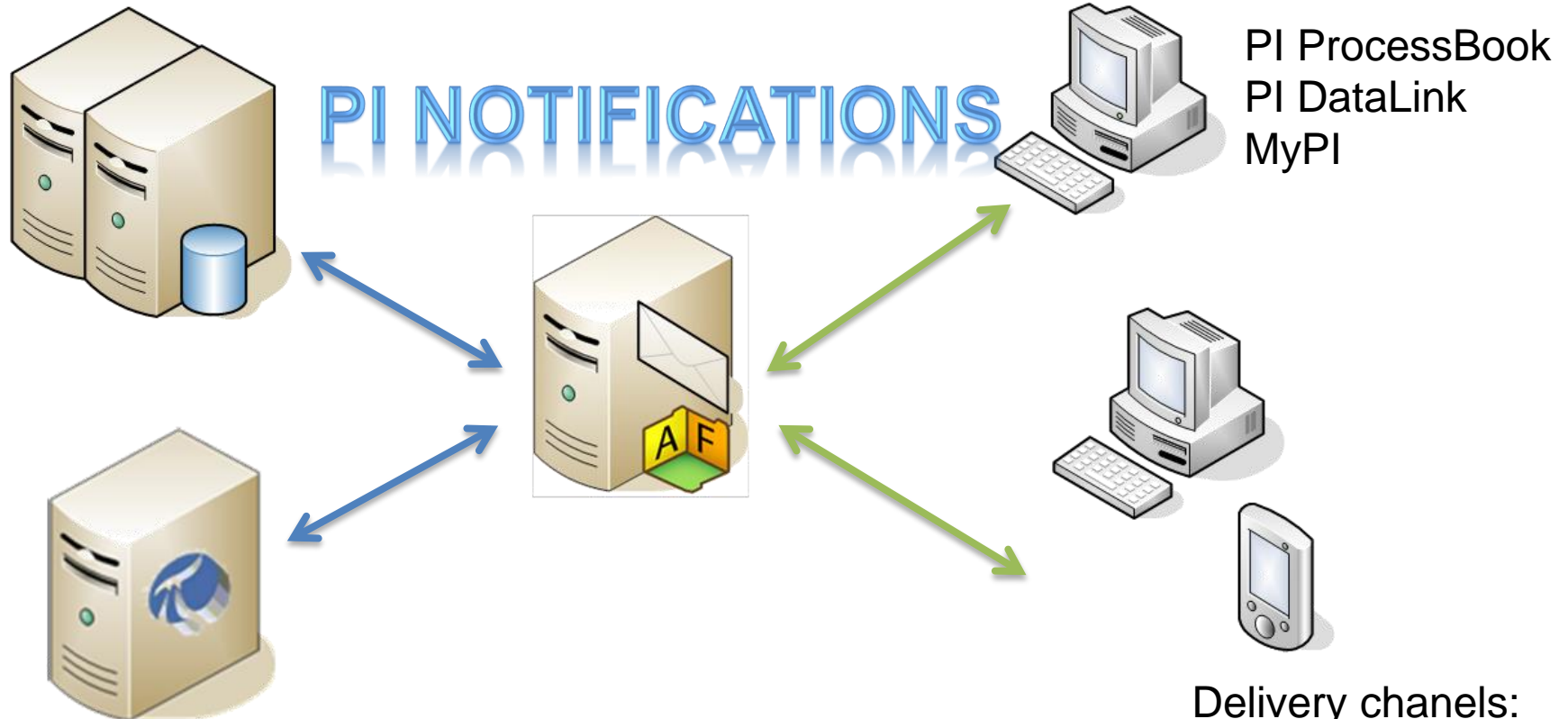
PI Notifications 1.1



Technical Overview and Value proposition

PI Notifications Architecture reminder

Others data sources



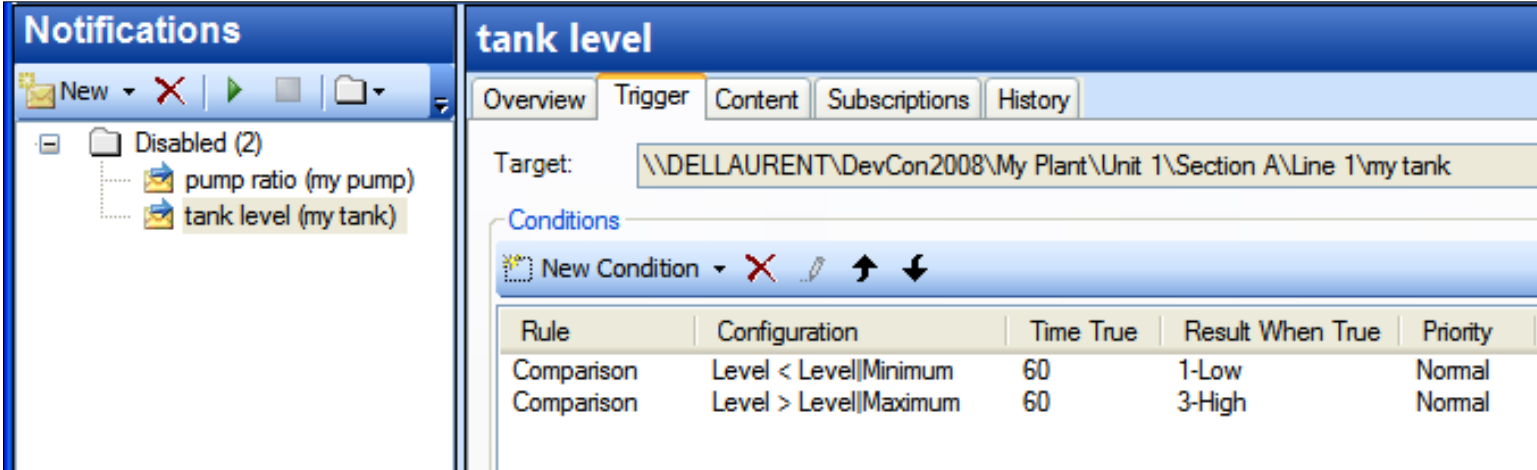
PI Server

Delivery channels:

- Email
- Web services
- OCS v1.0
- Custom developed

Performance improvements

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

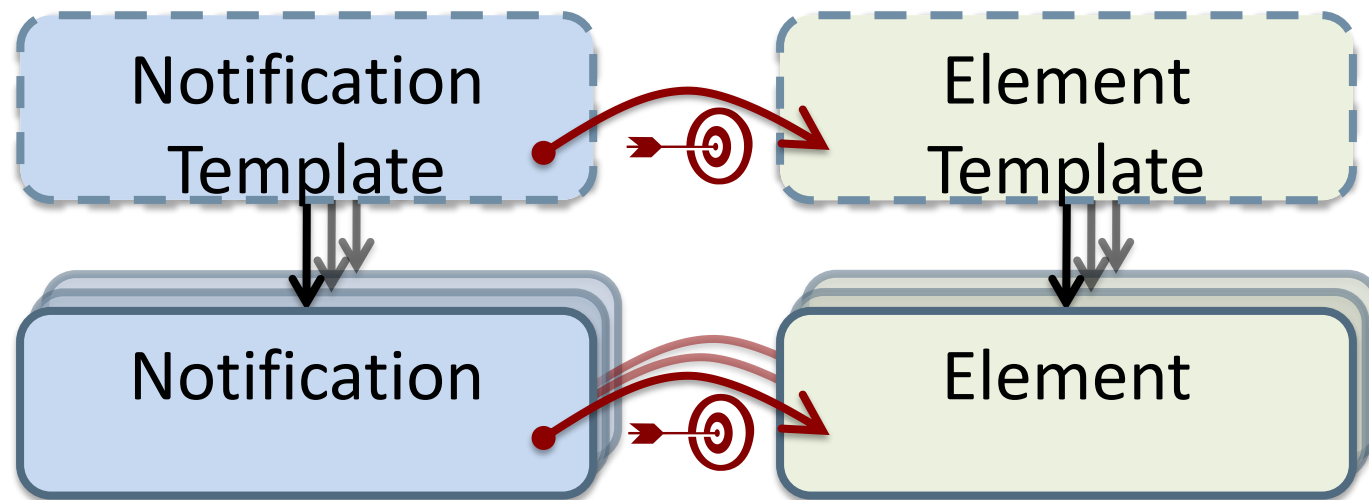


The screenshot displays the PI Notifications application interface. On the left, a tree view under 'Notifications' shows a 'Disabled (2)' folder containing 'pump ratio (my pump)' and 'tank level (my tank)'. The main window is titled 'tank level' and has tabs for 'Overview', 'Trigger', 'Content', 'Subscriptions', 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 and a table of rules.

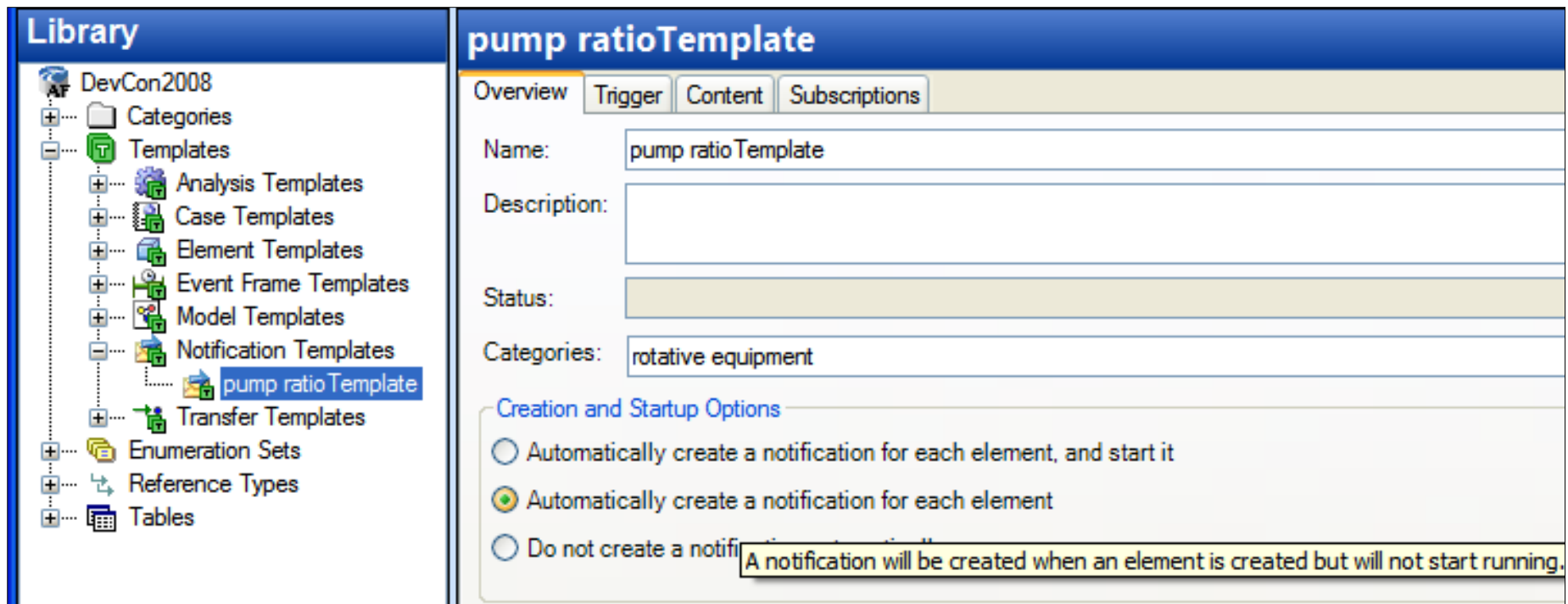
Rule	Configuration	Time True	Result When True	Priority
Comparison	Level < Level Minimum	60	1-Low	Normal
Comparison	Level > Level Maximum	60	3-High	Normal

- 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, showing a tree structure of templates. The 'pump ratioTemplate' is selected under 'Notification Templates'. The main pane shows the configuration for this template, with tabs for 'Overview', 'Trigger', 'Content', and 'Subscriptions'. The 'Overview' tab is active, showing fields for Name, Description, Status, and Categories. The 'Creation and Startup Options' section is expanded, showing three radio button options. The second option, 'Automatically create a notification for each element', is selected. A tooltip is visible over the third option, stating: 'A notification will be created when an element is created but will not start running.'

Library

- DevCon2008
 - Categories
 - Templates
 - Analysis Templates
 - Case Templates
 - Element Templates
 - Event Frame Templates
 - Model Templates
 - Notification Templates
 - pump ratioTemplate**
 - Transfer Templates
 - Enumeration Sets
 - Reference Types
 - Tables

pump ratioTemplate

Overview | Trigger | Content | Subscriptions

Name: pump ratioTemplate

Description:

Status:

Categories: rotative equipment

Creation and Startup Options

- ☐ Automatically create a notification for each element, and start it
- ☒ Automatically create a notification for each element
- ☐ Do not create a notification

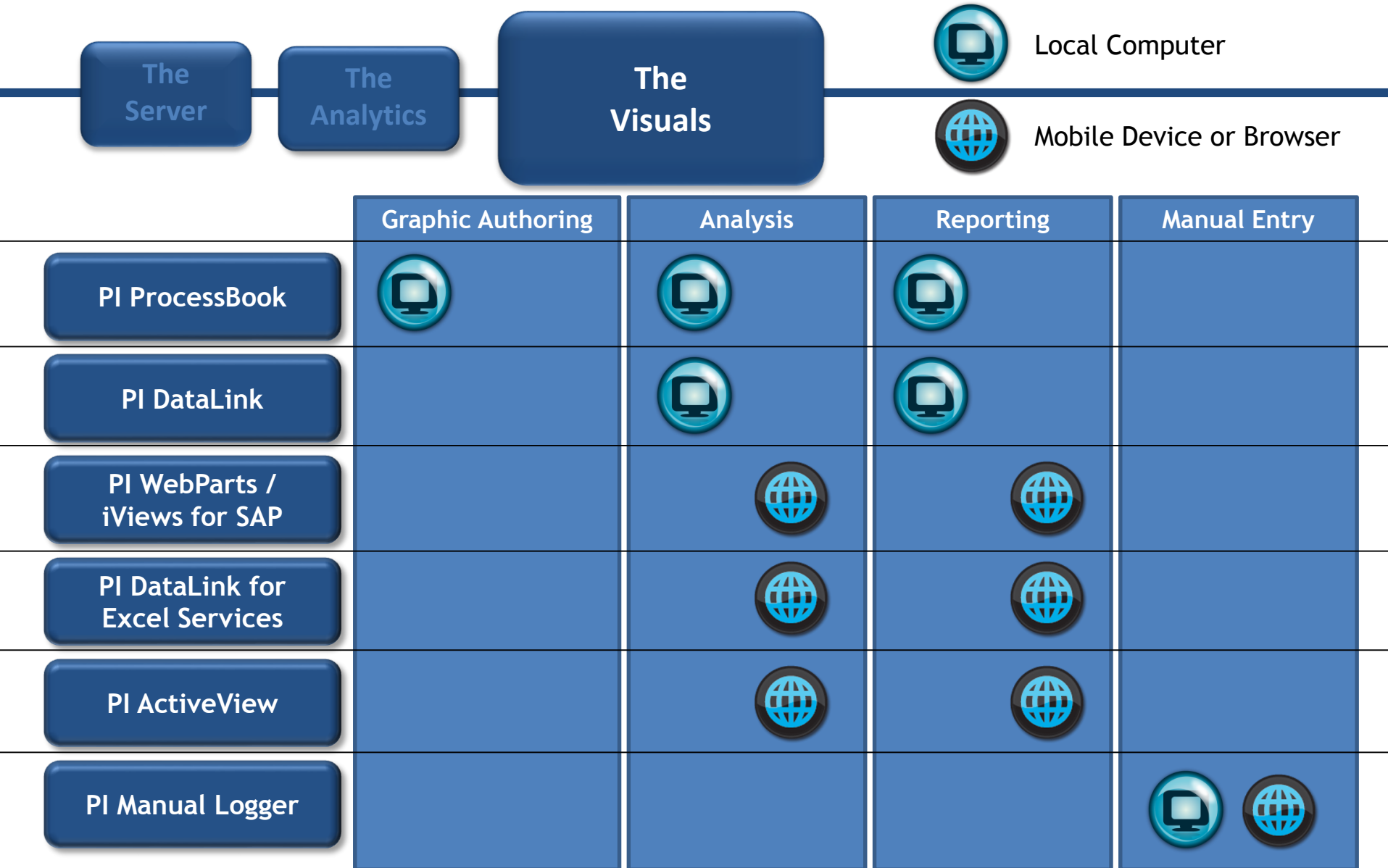
A notification will be created when an element is created but will not start running.

- Native Office Communication Server 2007 R2(OCS)delivery channel
 - v1.0 (*Released*)
 - 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

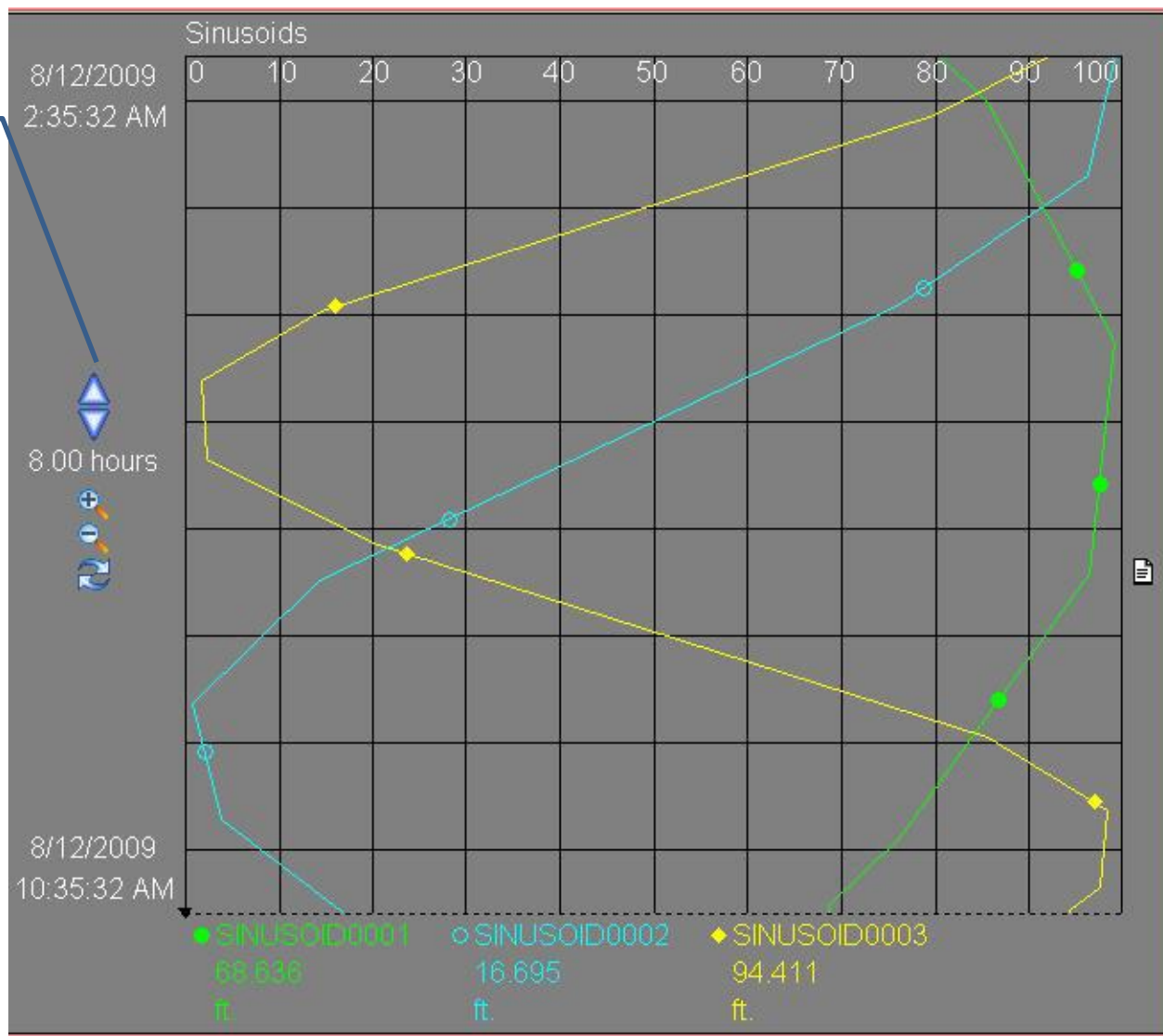


PI ProcessBook

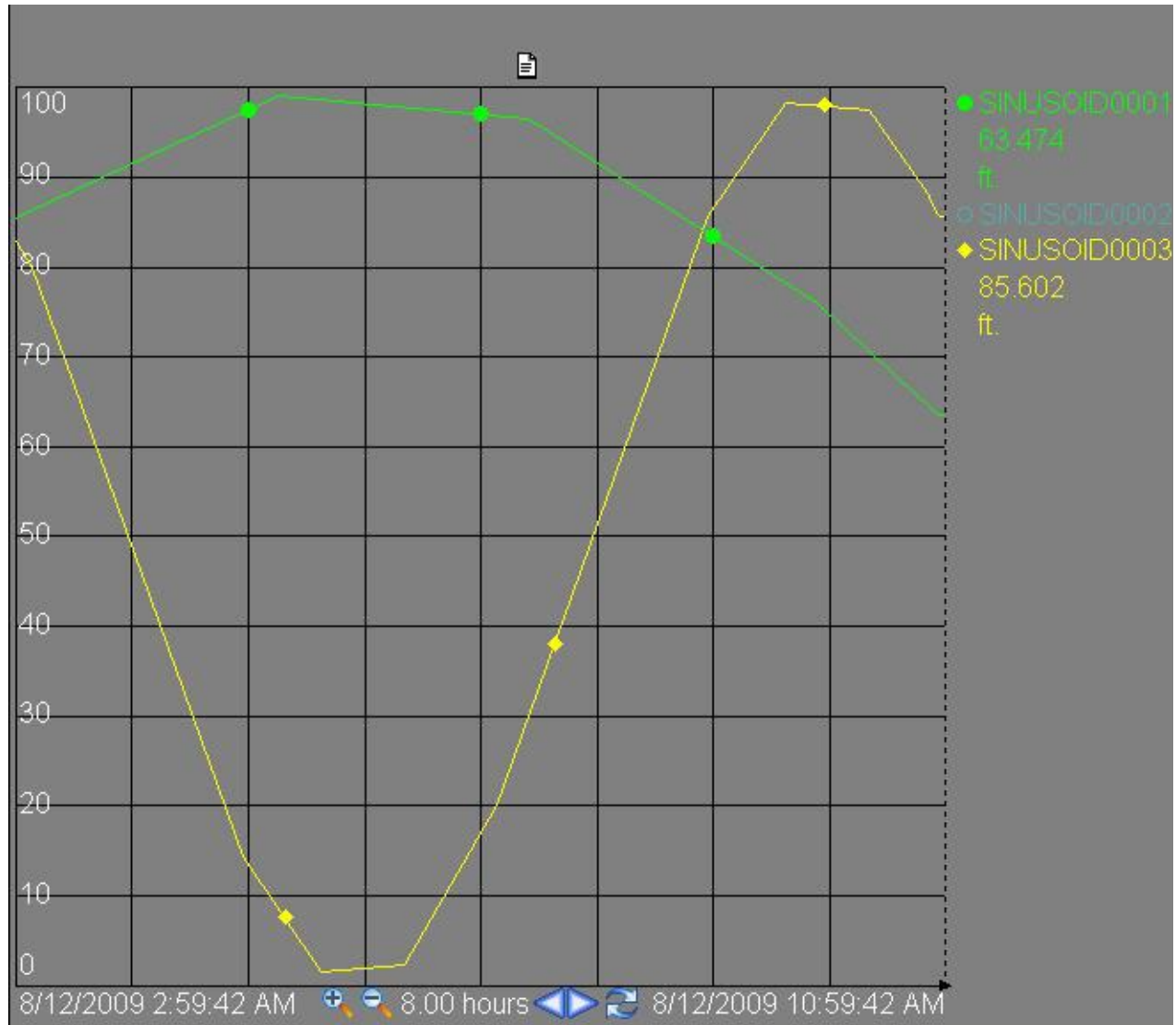


- Easier Symbol Formatting
- Quick Trend Zoom & Pan
- Data Details in a table
- Annotations on PI events
- Vertical Trends available
- Linear Regression Line on trends
- Tooltip Statistics on all dynamic symbols
- Drag and Drop symbol configuration

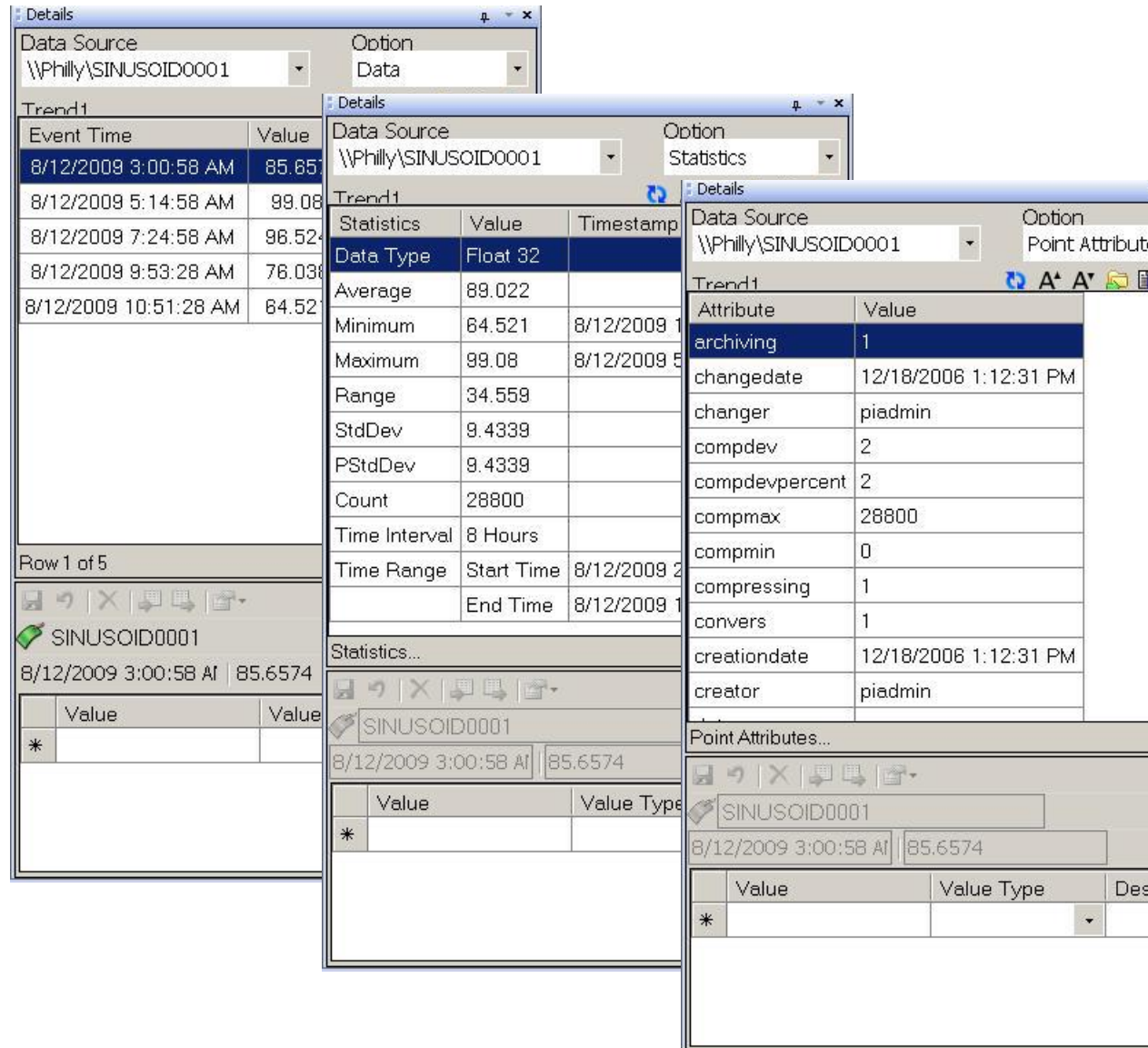
Scroll
Zoom
Revert



Hide/Show Individual Traces



- 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

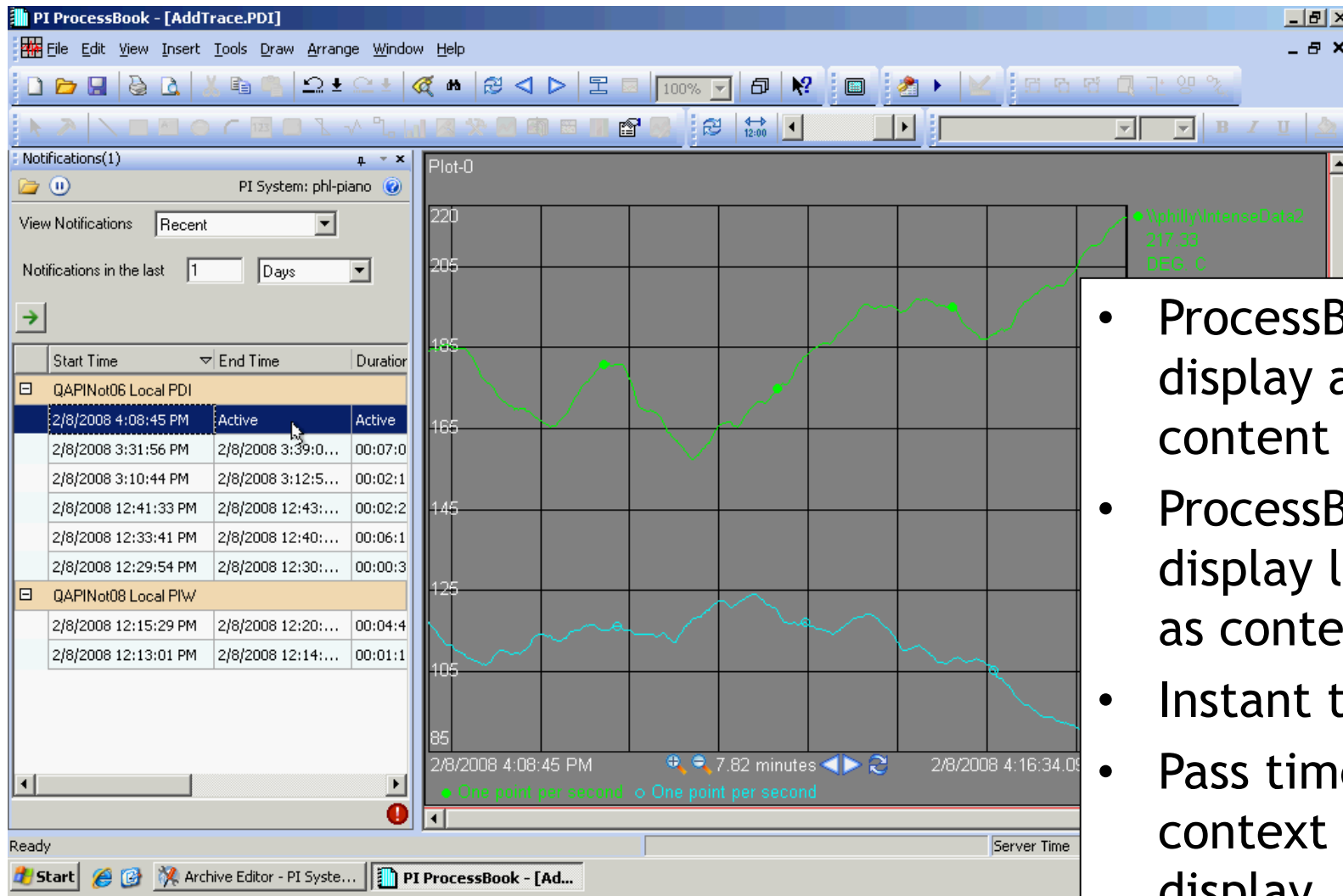
Middle Pane (Statistics View): Shows statistical data for the same data source. The table has columns for Statistics, Value, and Timestamp.

Statistics	Value	Timestamp
Average	89.022	
Minimum	84.521	8/12/2009 1
Maximum	99.08	8/12/2009 5
Range	34.559	
StdDev	9.4339	
PStdDev	9.4339	
Count	28800	
Time Interval	8 Hours	
Time Range	Start Time 8/12/2009 2	
	End Time 8/12/2009 1	

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

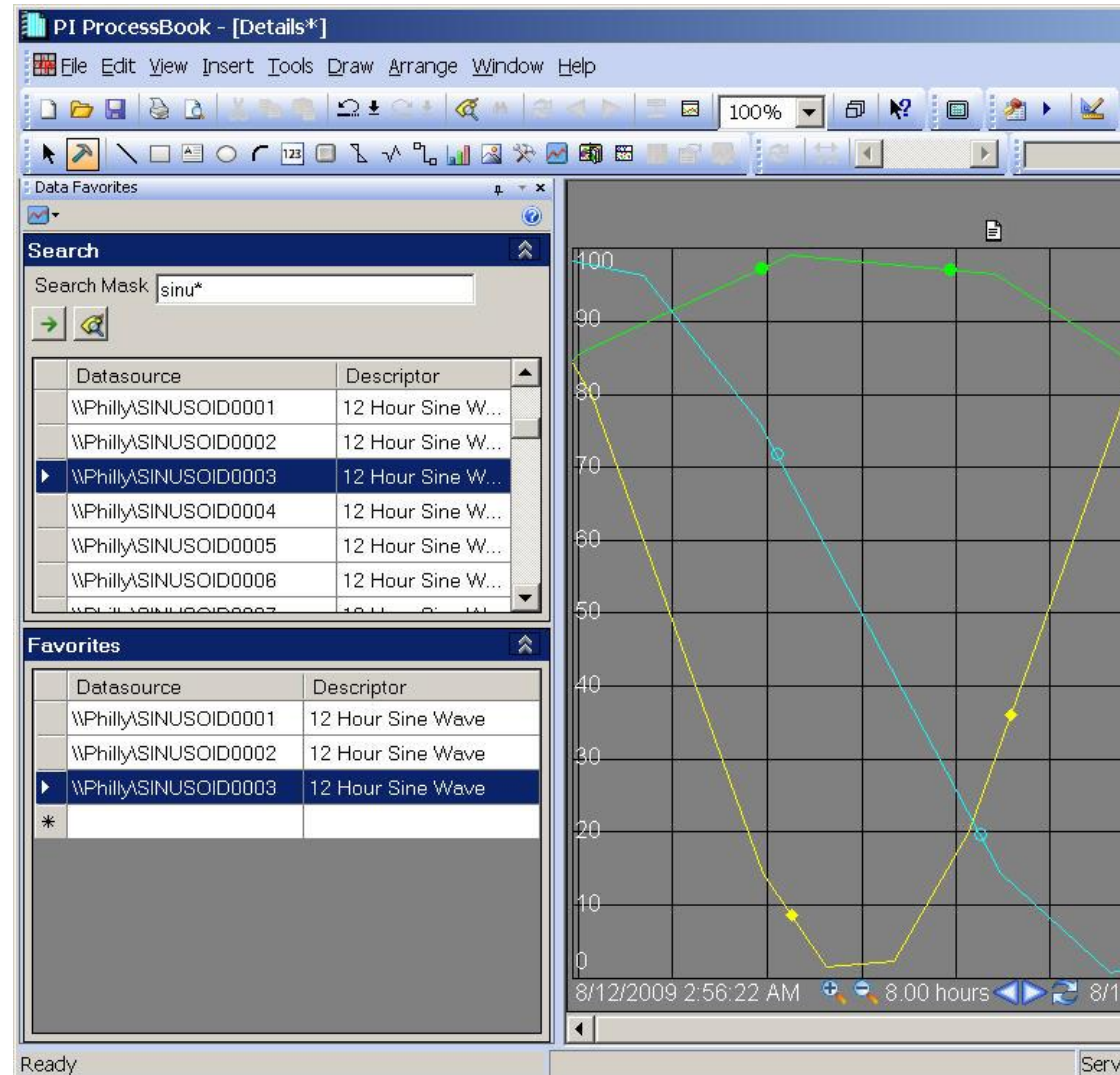
Attribute	Value
archiving	1
changedate	12/18/2008 1:12:31 PM
changer	piadmin
compdev	2
compdevpercent	2
compmax	28800
compmin	0
compressing	1
convers	1
creationdate	12/18/2008 1:12:31 PM
creator	piadmin

PI Notifications

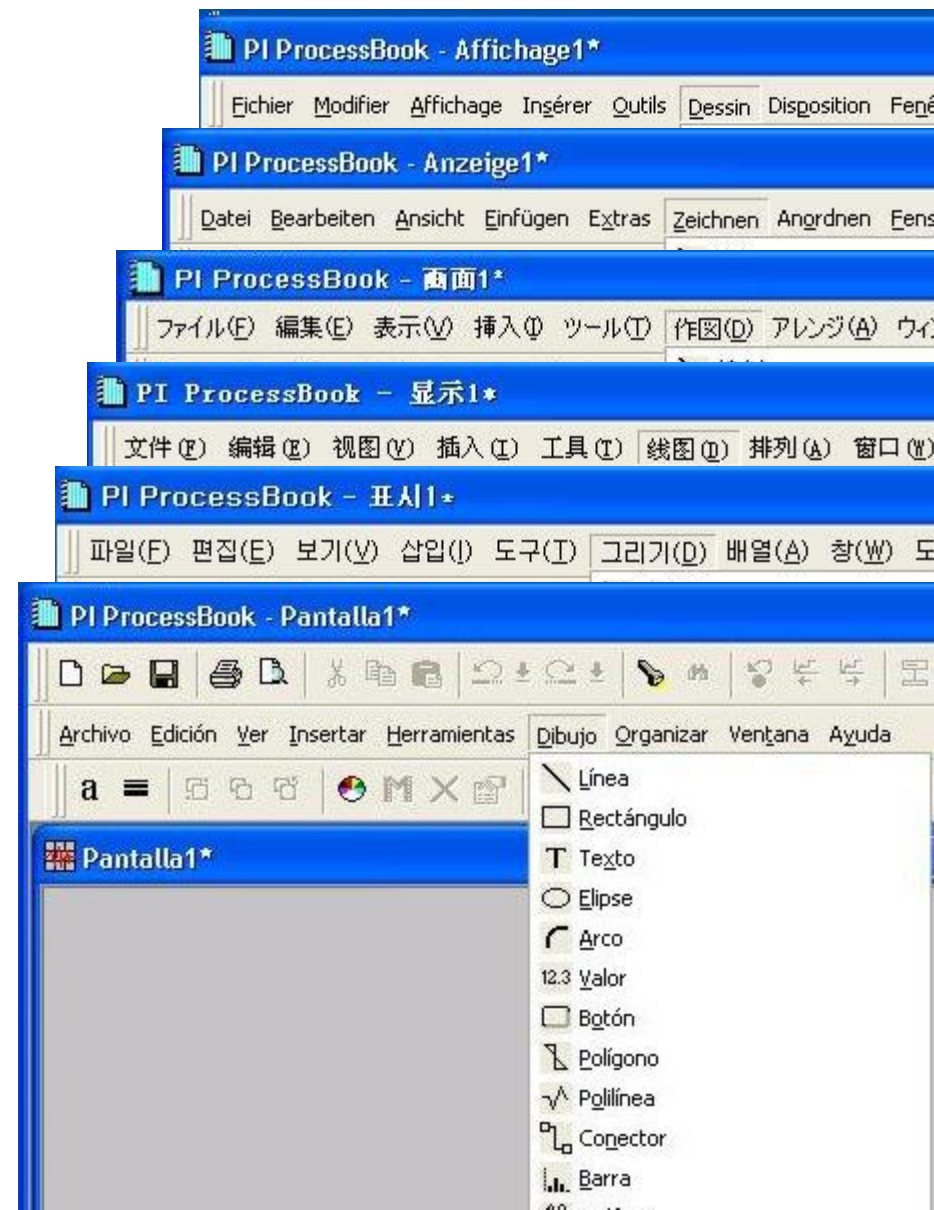


- ProcessBook display as content
- ProcessBook display linked as content
- Instant trend
- Pass time context to display

- 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 (*Released - Oct 2008*)
 - Windows security integration
 - PI Notifications integration
 - Trending enhancements
- ProcessBook 3.2 (*Released*)
 - 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

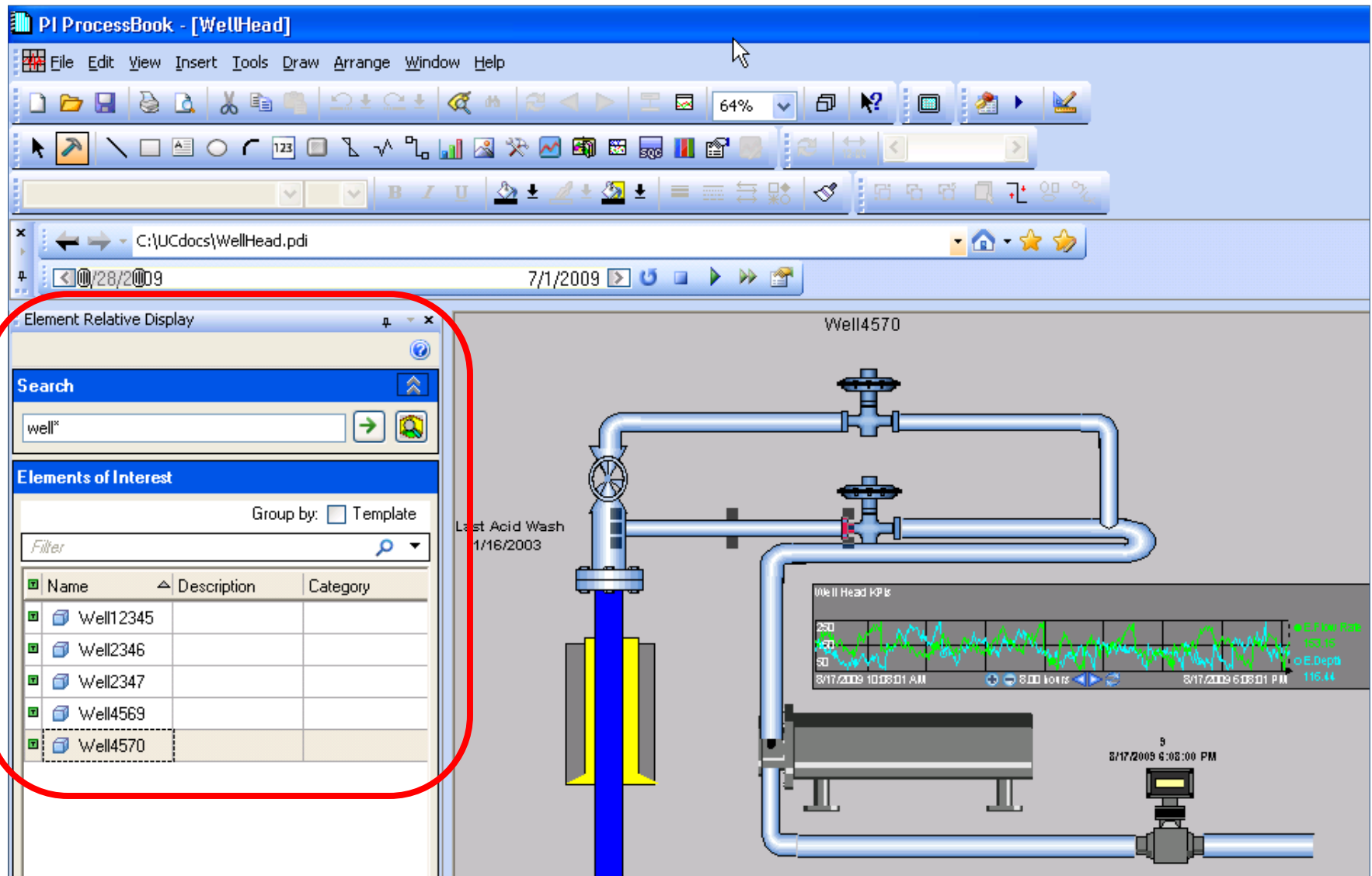
Well Head KPI's

250
150
50

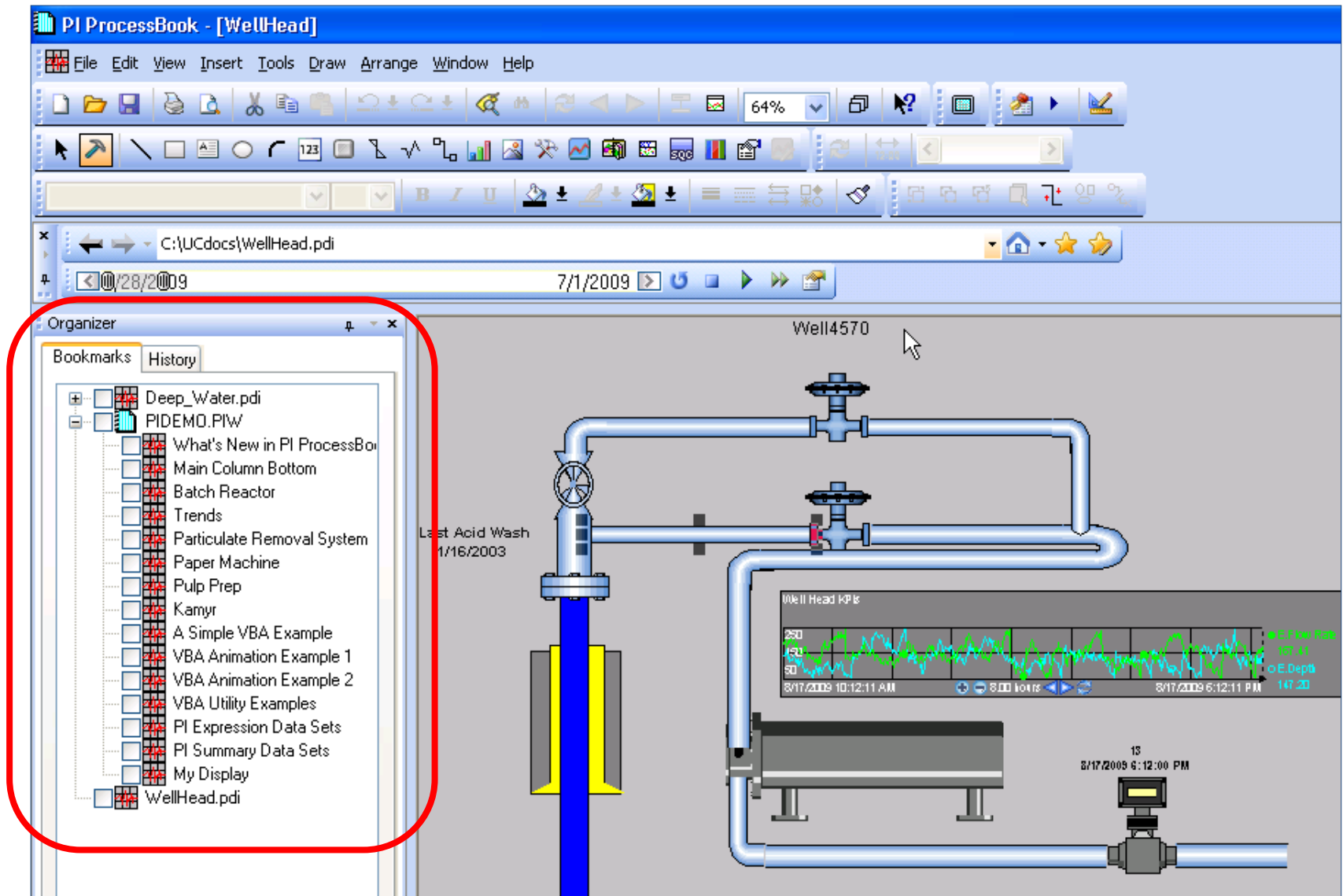
8/17/2009 10:05:01 AM 8:00 hours 8/17/2009 6:05:01 PM

Well Flow Rate 153.15
Well Depth 116.44

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



PB 3.2 - Display Browsing and Bookmarking

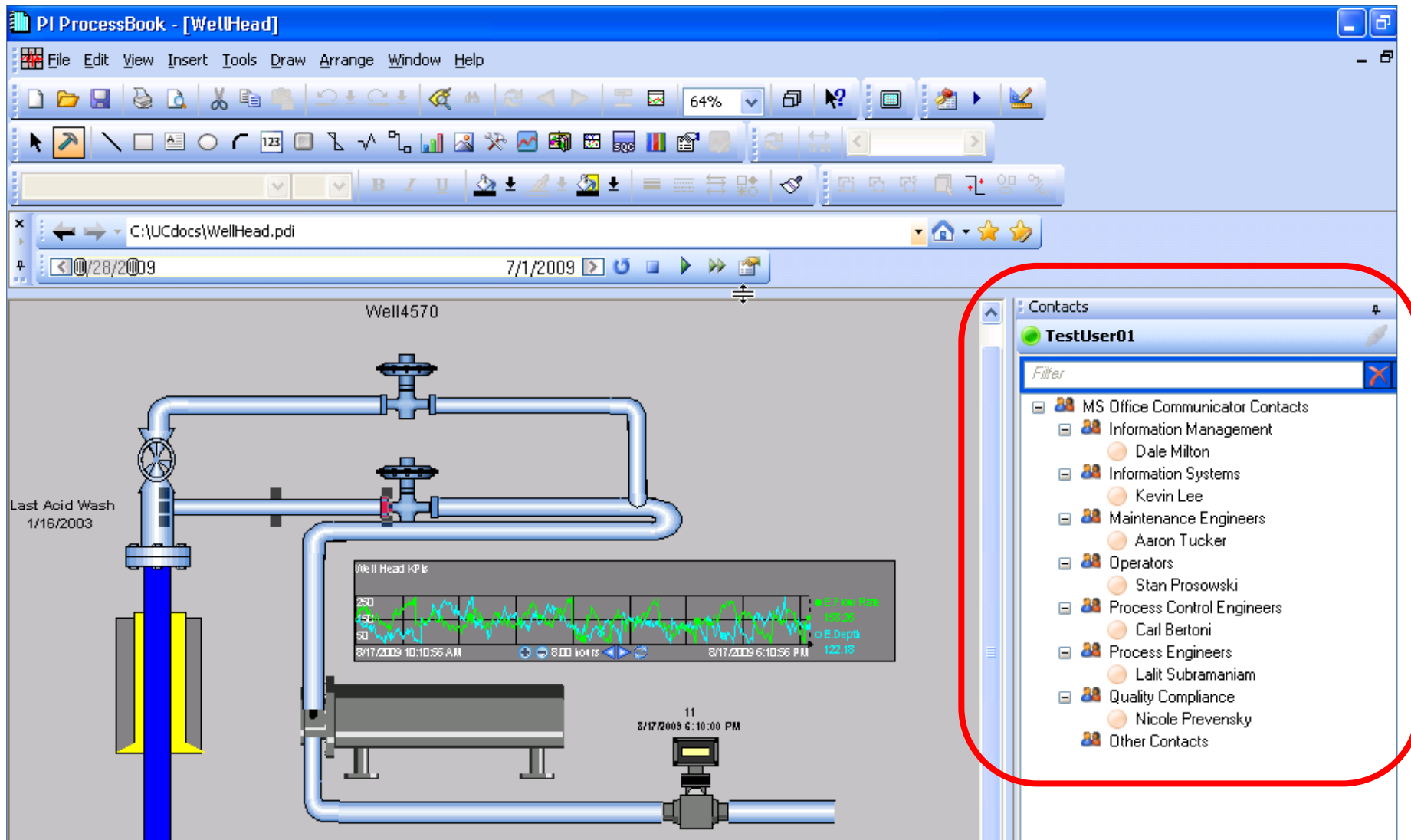


The screenshot displays the PI ProcessBook interface for a process named "WellHead". The main window shows a process diagram with blue pipes, valves, and a yellow wellhead. A mouse cursor is hovering over a valve labeled "Well4570". A text label "Last Acid Wash 1/16/2003" is visible. A graph titled "Well 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.

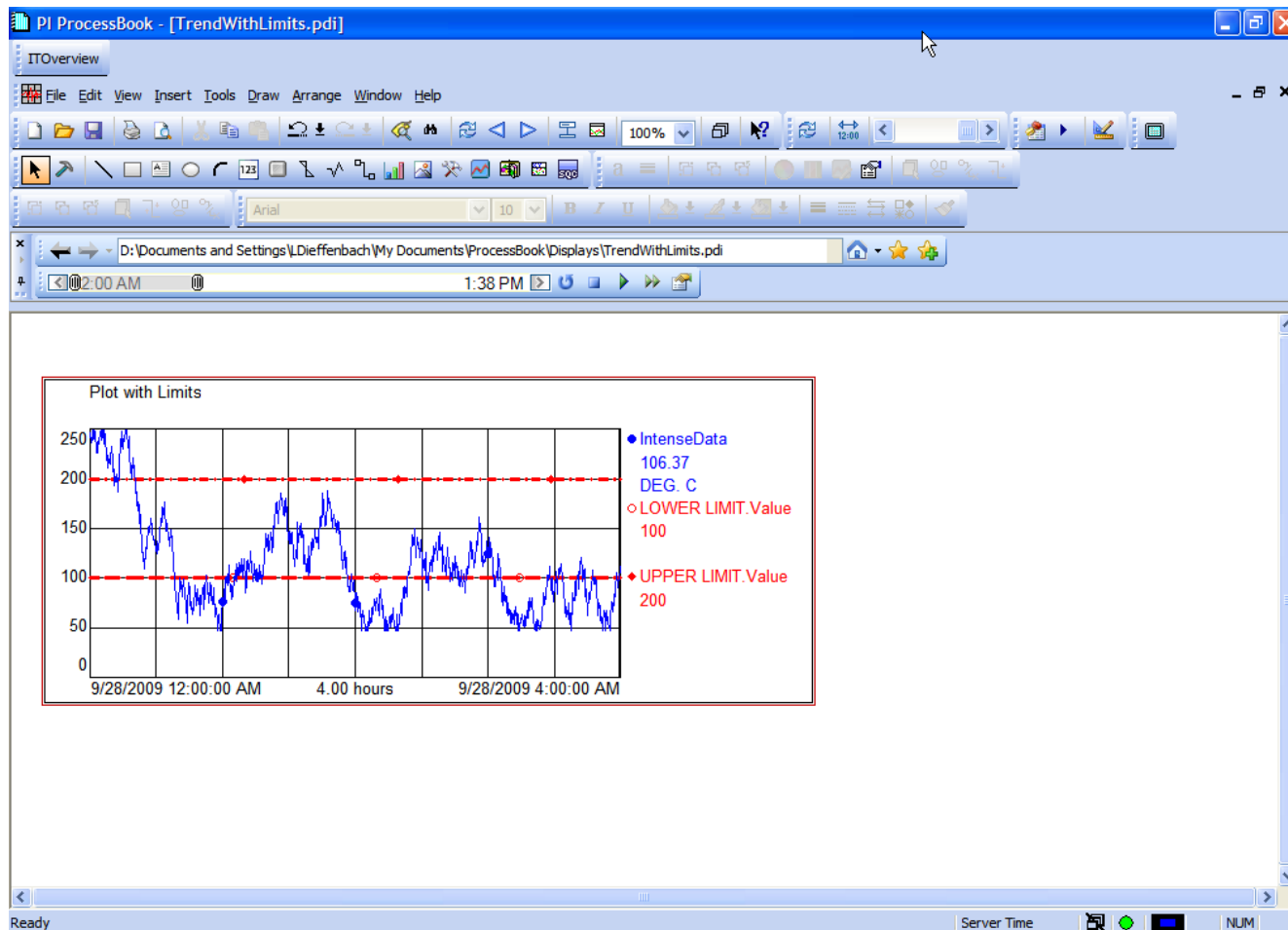
The "Organizer" window is open on the left, showing a "Bookmarks" tab. The bookmark list includes:

- 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

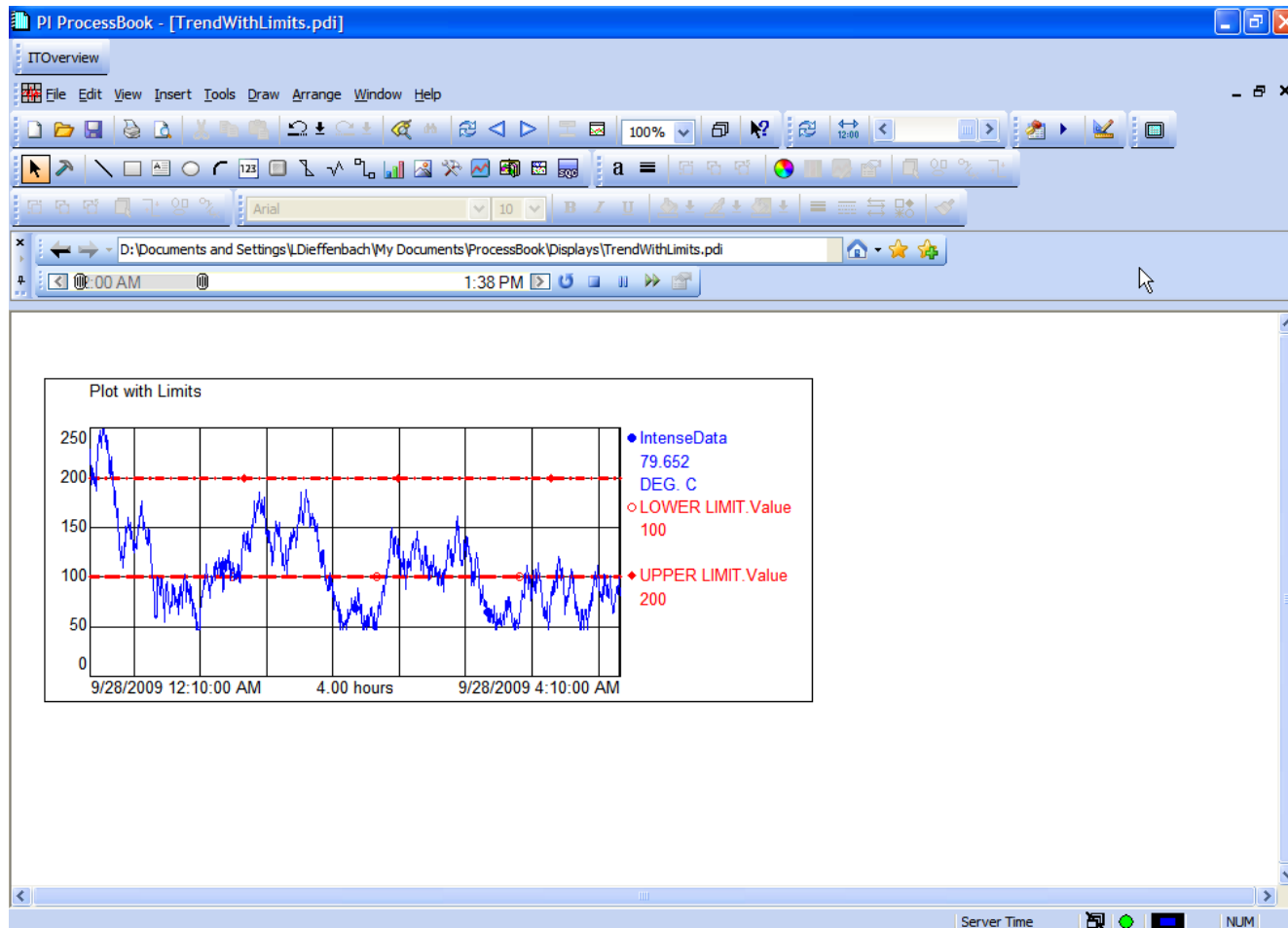
PB 3.2 - Office Communicator Integration



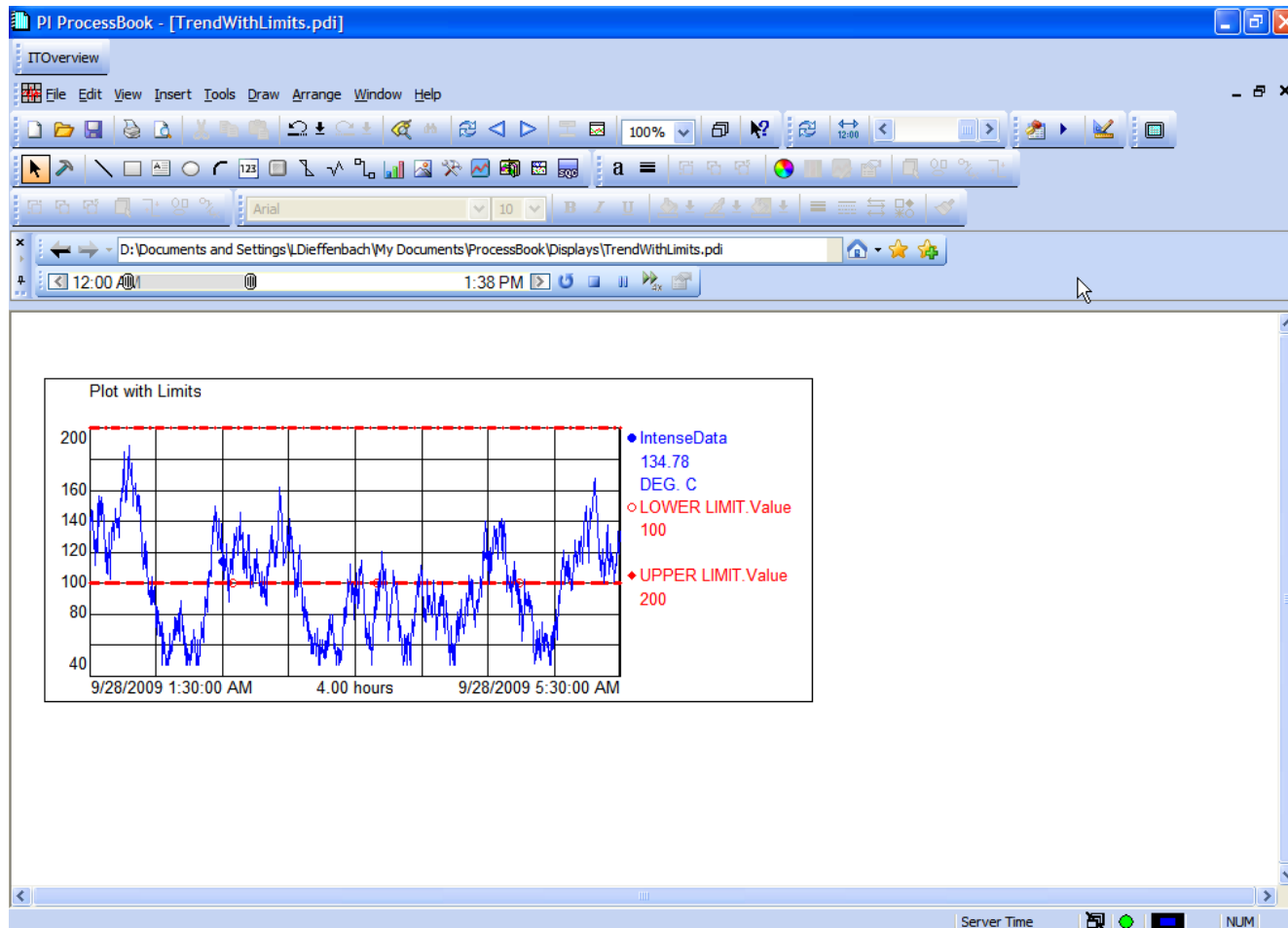
ProcessBook Playback Feature



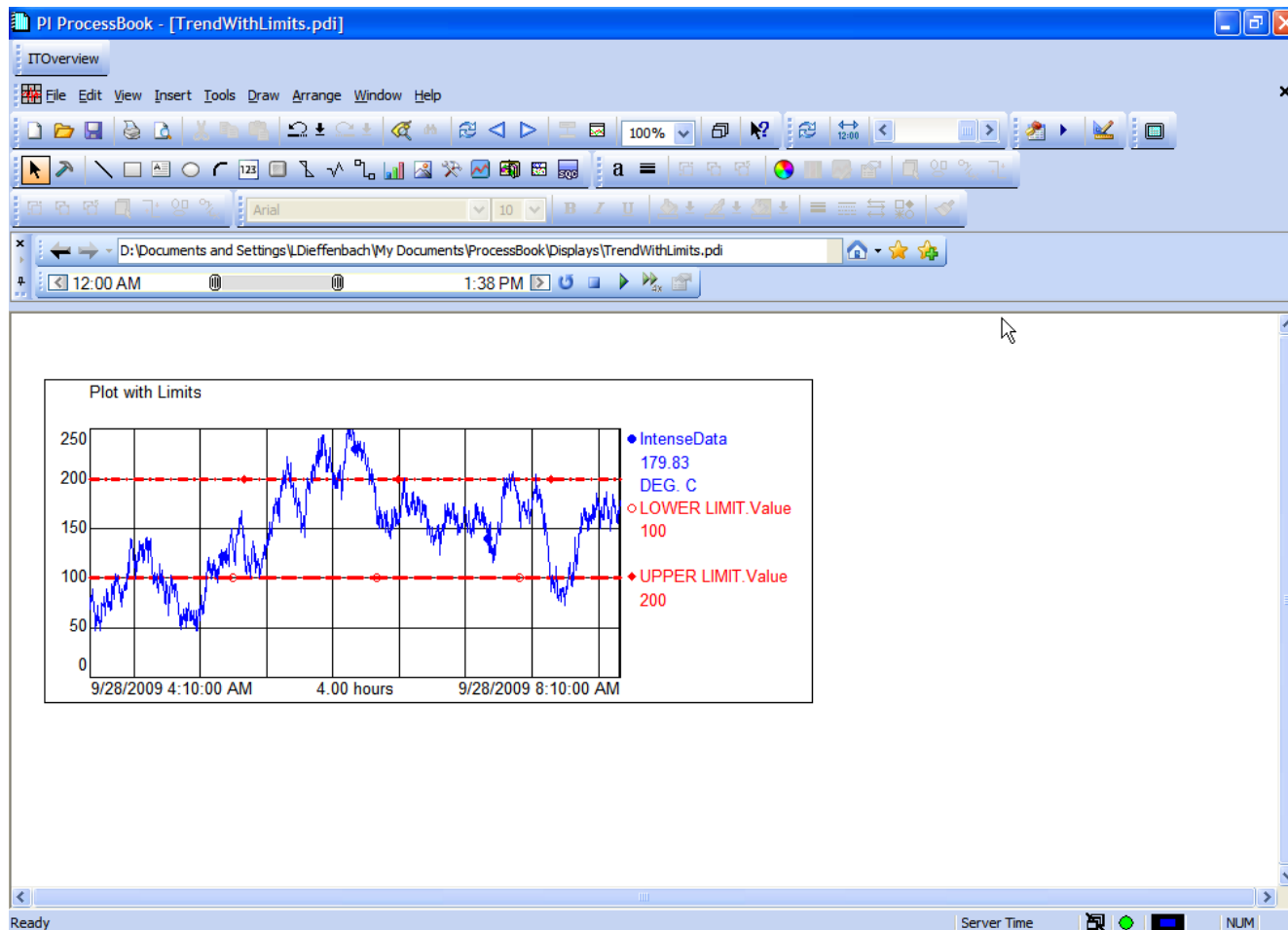
ProcessBook Playback Feature



ProcessBook Playback Feature



ProcessBook Playback Feature



ProcessBook Playback Options

Playback Options [X]

Time Ranges

Display Range:
*-4 Hour [v]

Playback Period

Start:
9/28/2009 12:00 AM [calendar icon]

End:
9/28/2009 1:38 PM [calendar icon]

Refresh

Refresh Rate (Sec):
5 [spinners]

Speed:
1 [spinners] Minutes [v] Per Second

OK Cancel Help

DataLink

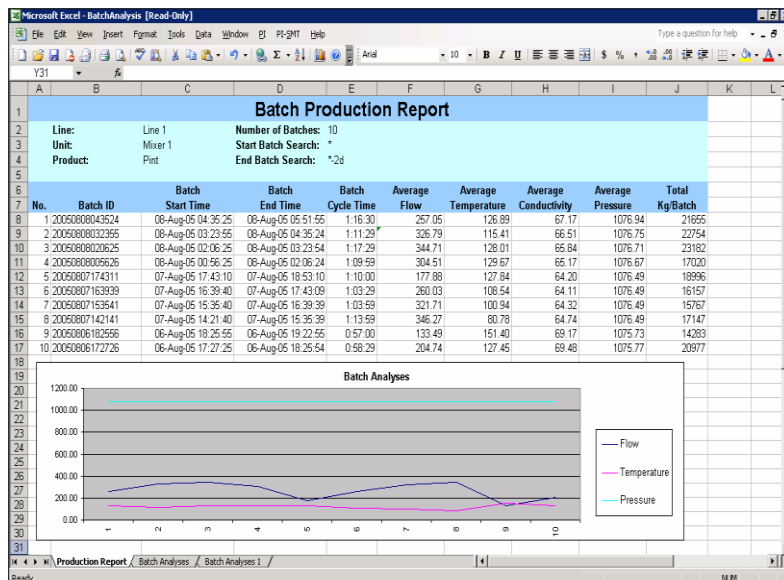


PI DataLink:

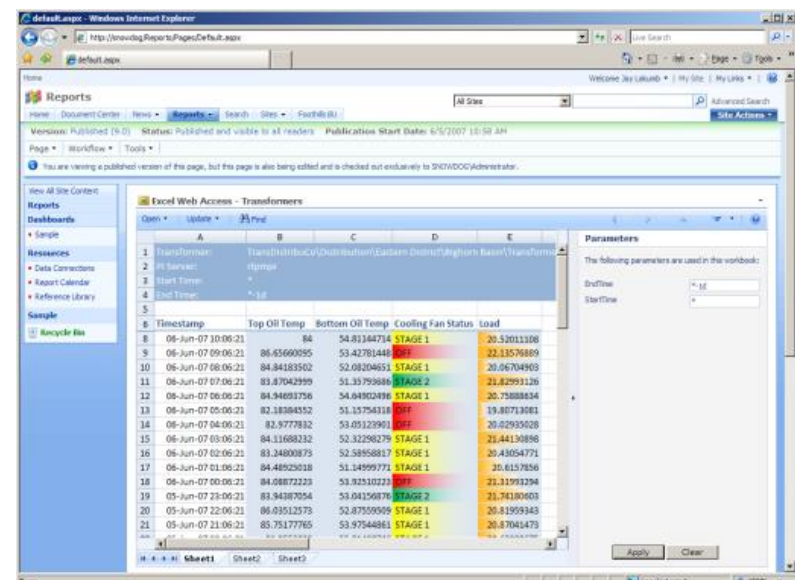
- Excel add-in for access to real-time and historical PI data

PI DataLink for Excel Services (DLES):

- DataLink spreadsheets on the Web



DataLink



DataLink for Excel Services

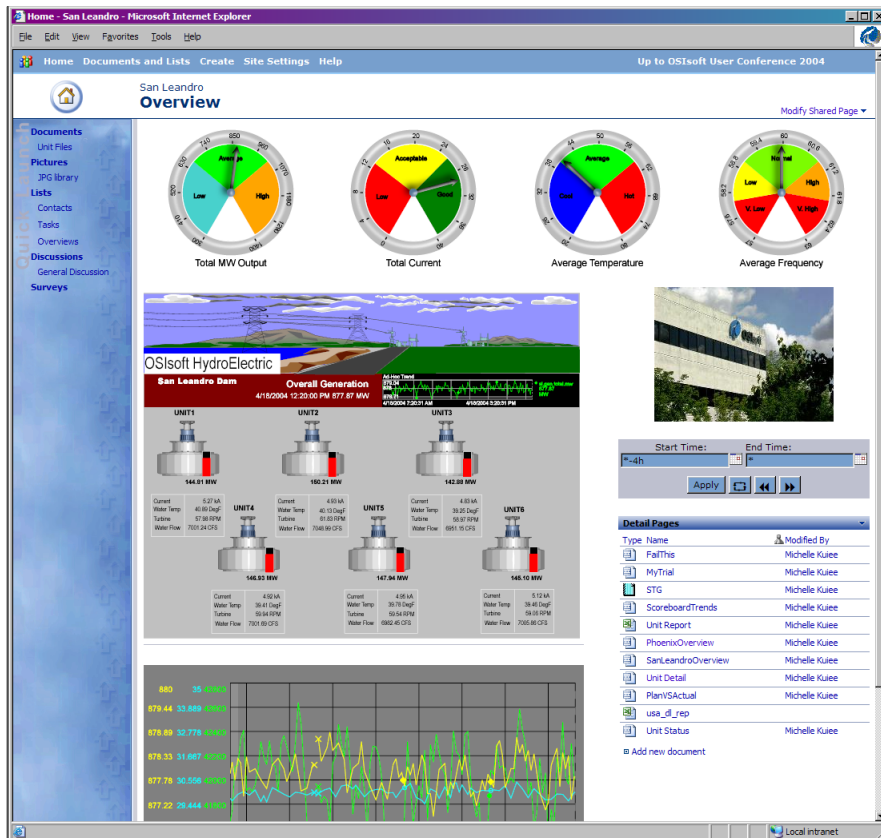
- DataLink 4.1 (*Released*)
 - Support for automatic updating
- DataLink for Excel Services 4.1 (Q4 2009)
 - Support for 64-bit SharePoint 2007
- See “OSIsoft Products and Office 2007 Compatibility FAQ” on Tech Support site
- DataLink 5.0 (2H 2010)
 - Support for Office 2010
 - Better Business Intelligence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

PI WebParts / iViews

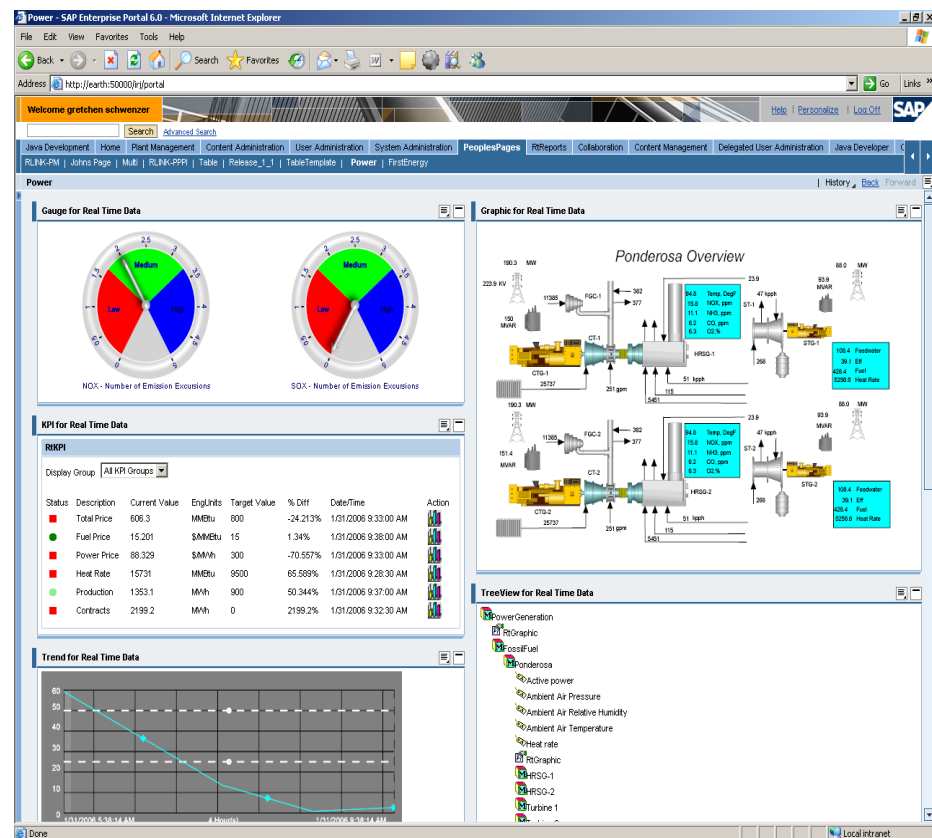


- Integration and Collaboration
- Access to Process Information
- Analysis and Reporting

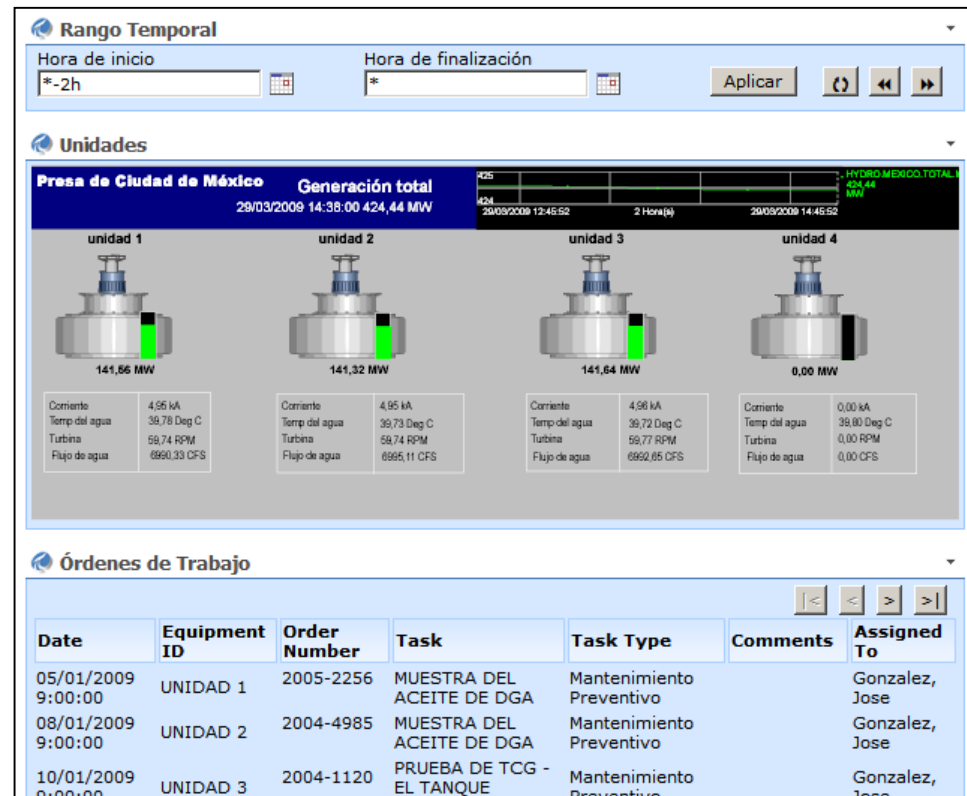
PI WebParts example



iViews example



- RtWebParts 2.2 (*Released Sept 2008*)
- 8 Language Packs (*Released Mar 2009*)
 - 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



Oct Nov Dec Jan Feb Mar Q2'10 Q3 '10

Client

Desktop

ProcessBook (3.2.x)

DataLink (4.1.x)

Manual Logger (2.3.x)

ProfileView (2.2.x)

Web

PI WebParts (3.0.x)

ActiveView (3.2.x)

DataLink Excel Services (4.1.x)

RtPM Business Pkg (70.1:1)

TBD



Server:

- PI Server 3.4.380 - *Released* September 2009 (Security)
- PI AF 2.1 - (64-bit, HA) *Released* August 2009
- PI Notifications 1.1 - (OCS, Templates) *Released* Sept 09
- 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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