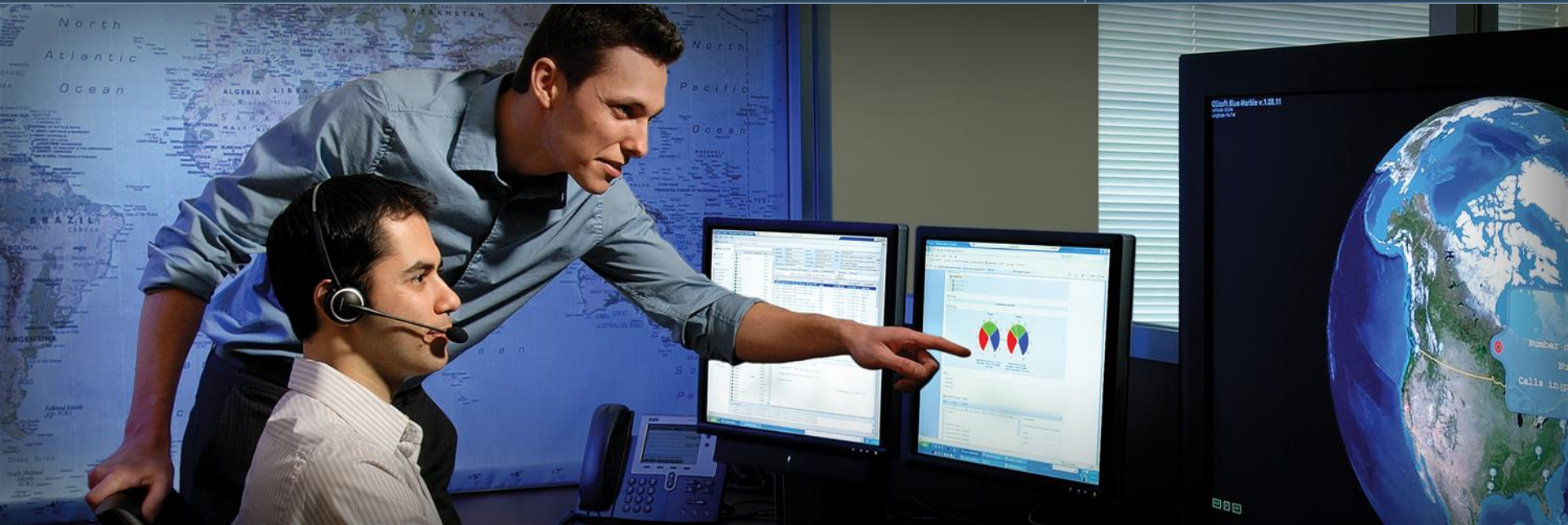




OSIsoft®

Regional Seminar Series



## PI System Roadmap

John Baier  
Director, Product Management  
OSIsoft

July 17, 2009

Empowering Business in Real Time.

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# Functional Groups 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**

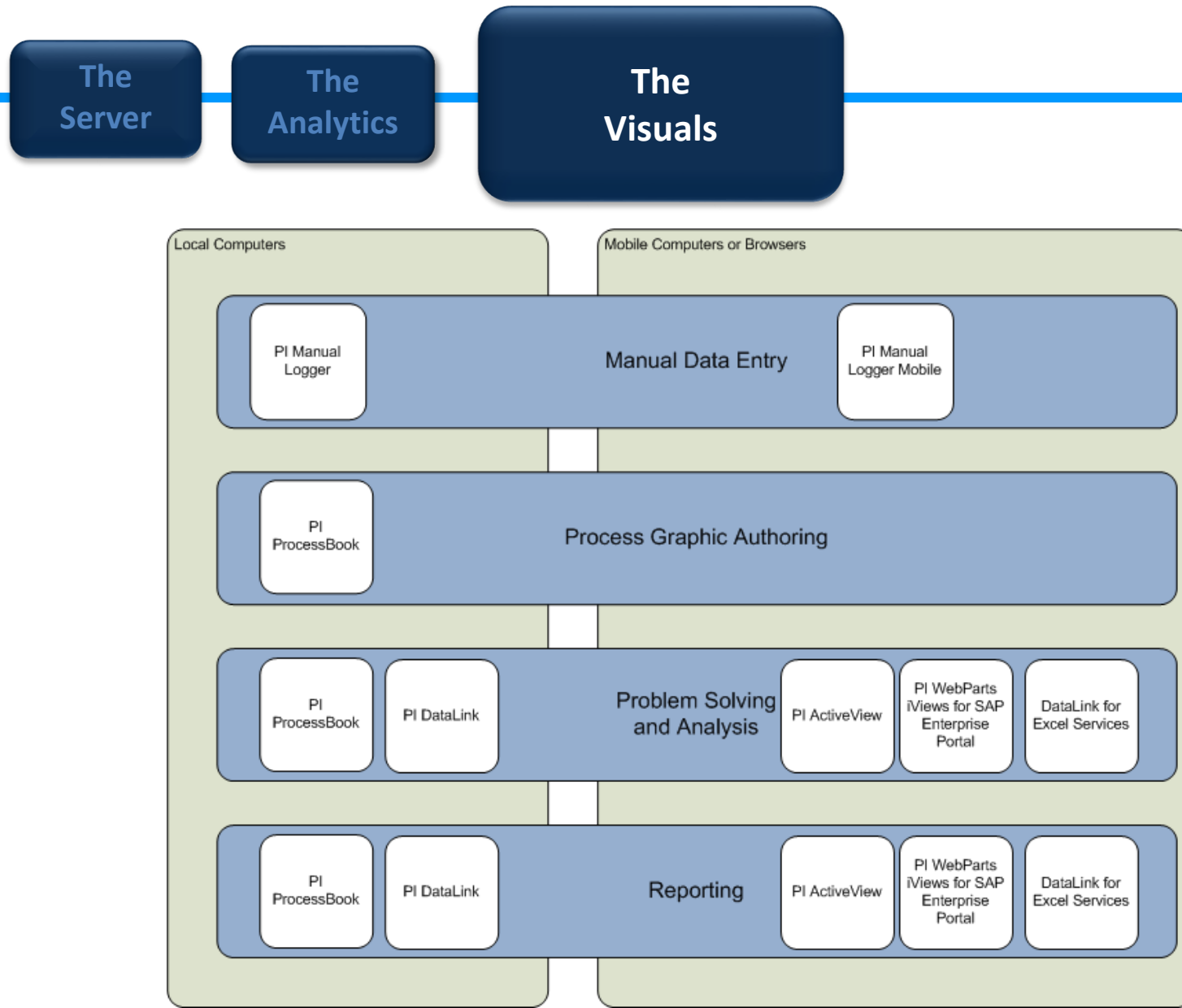
**The  
Server**

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

# The Visuals



# The Visuals within the PI System

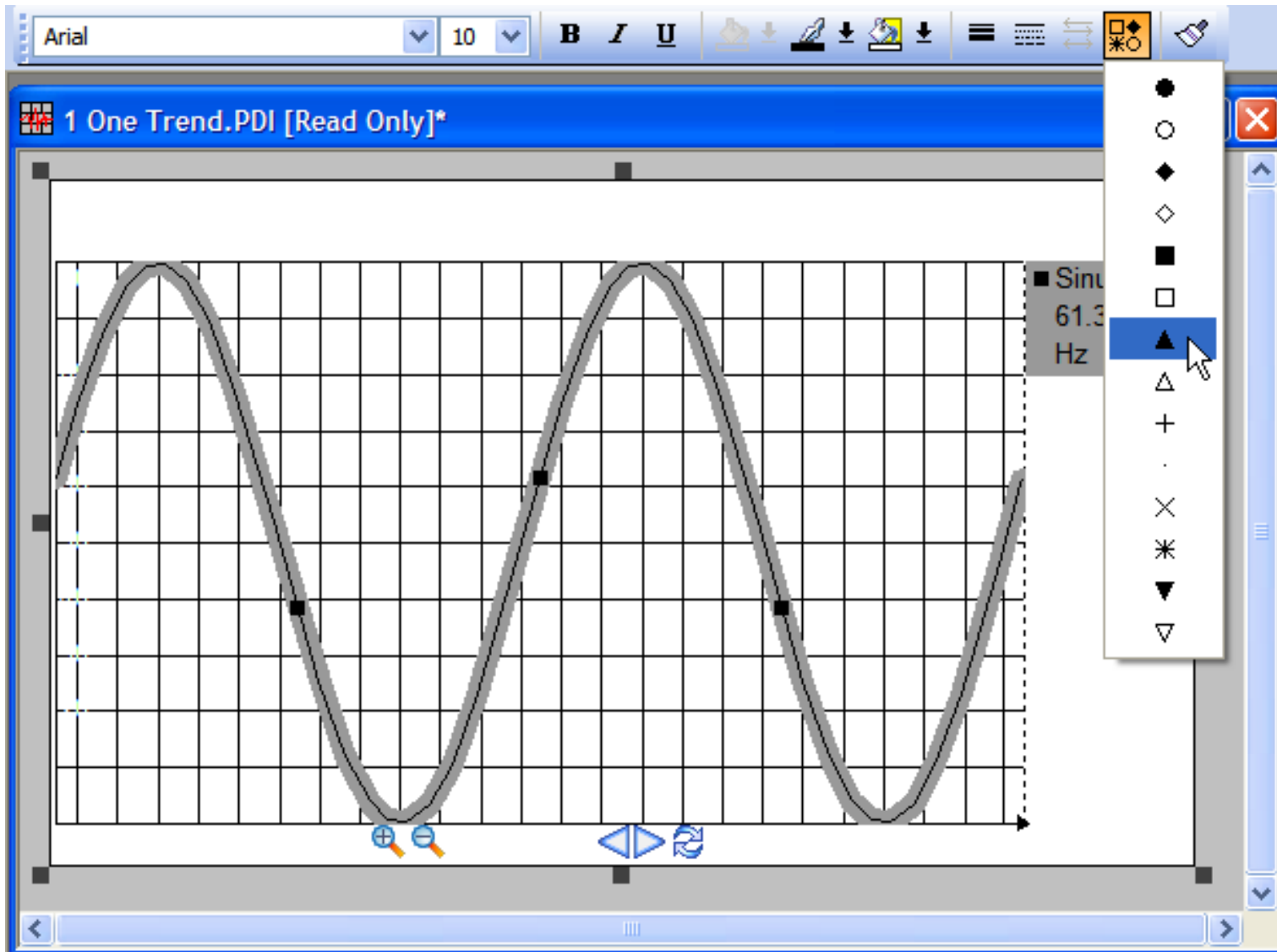


# PI ProcessBook

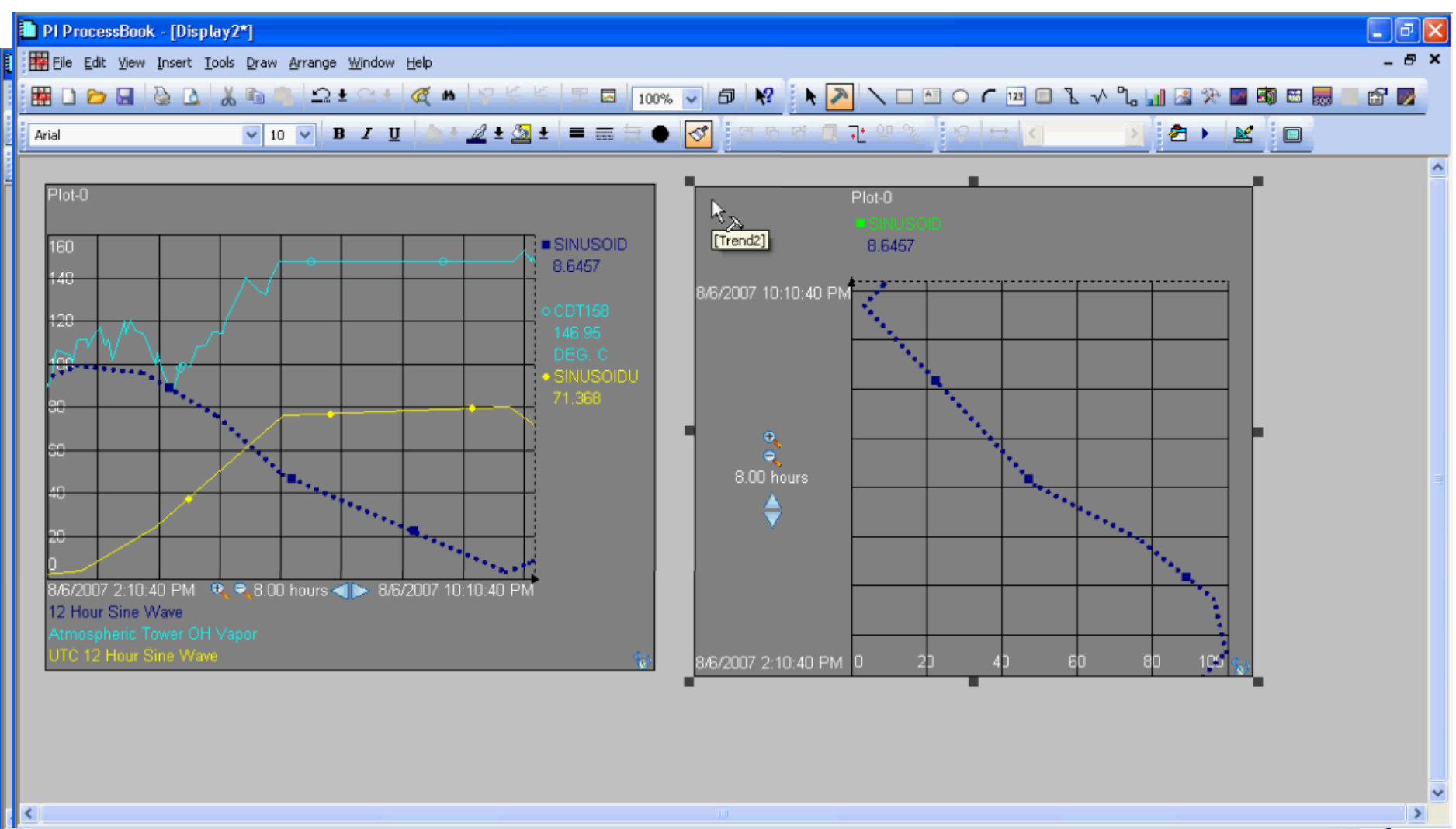


- Easier Symbol Formatting
- Quick Trend Zoom & Pan
- Data Details in a table
- Annotations on PI events
- Vertical Trends available
- Linear Regression Line on trends
- Tooltip Statistics on all dynamic symbols
- Drag and Drop symbol configuration

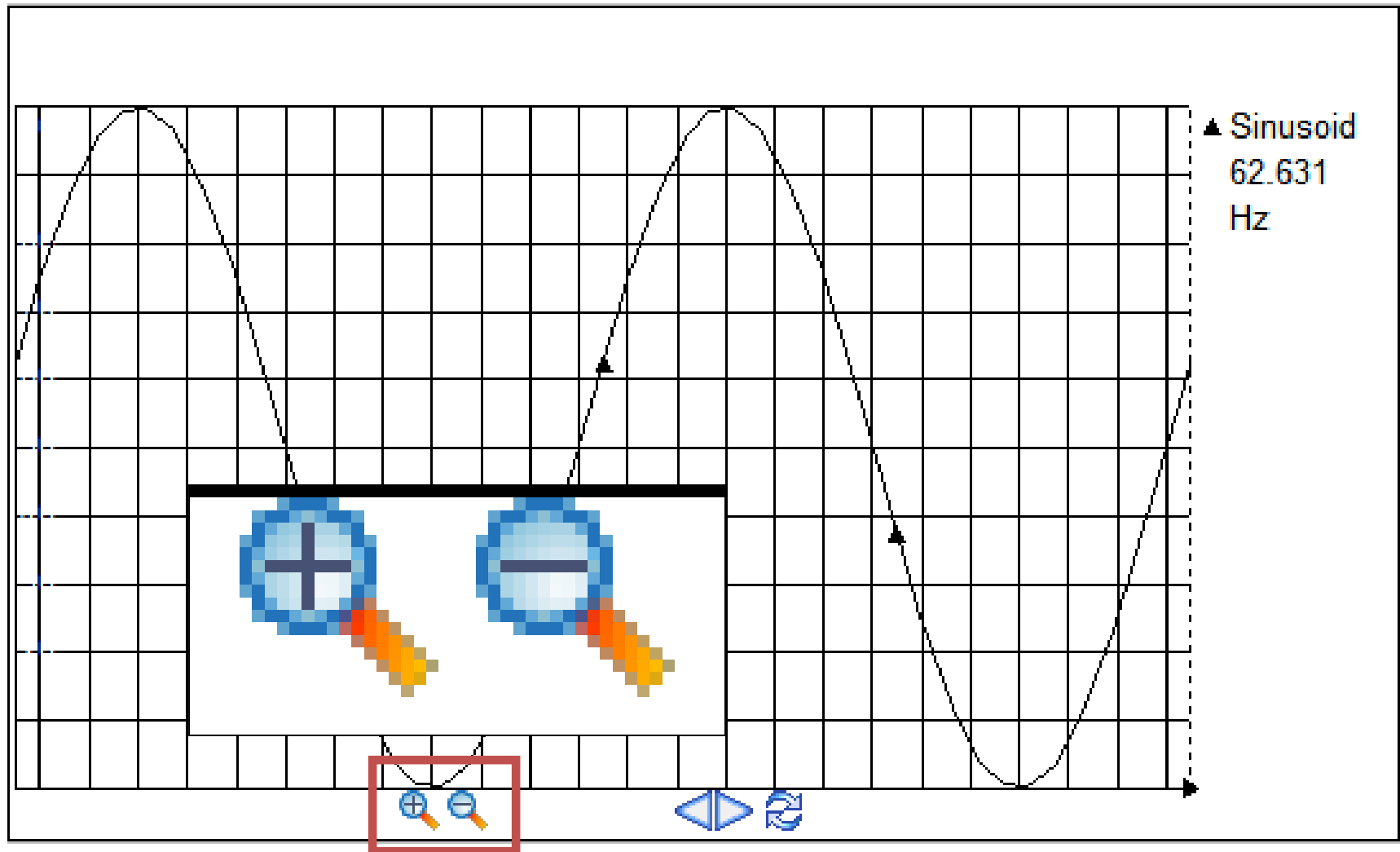
# Symbol Formatting Toolbar



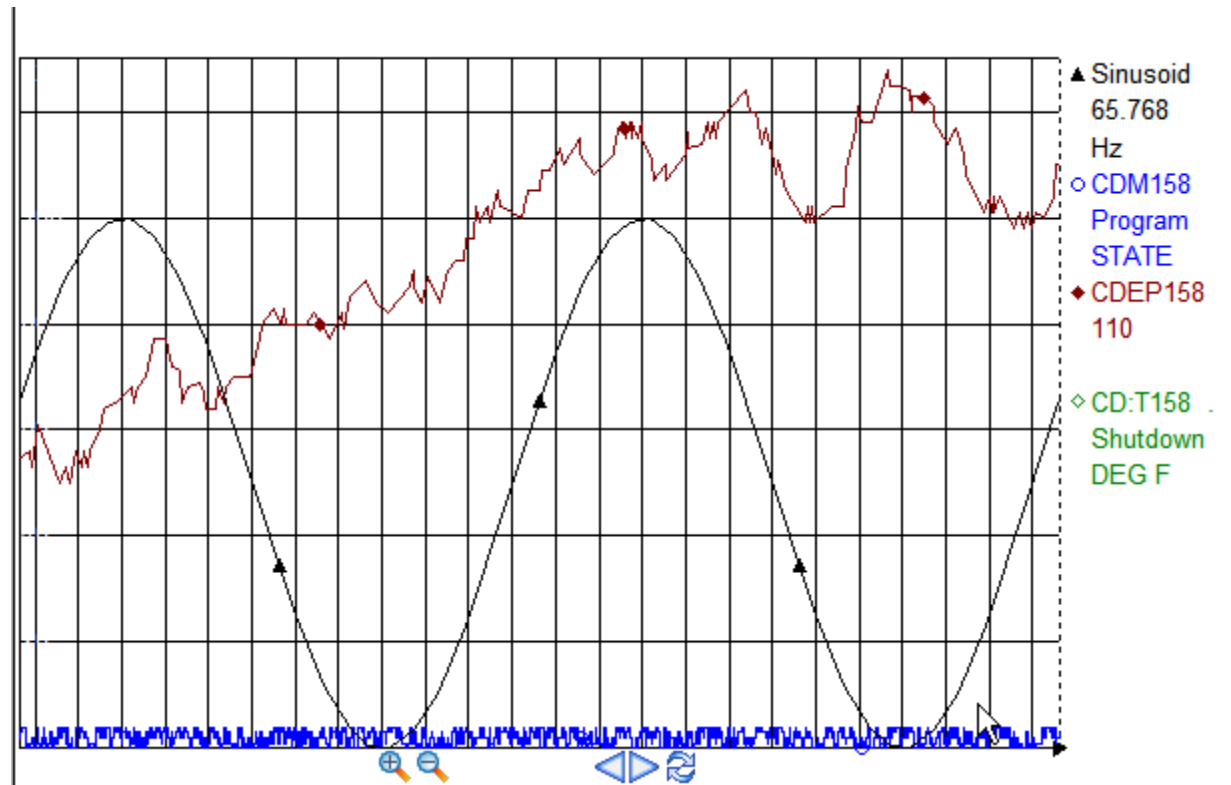
# Format Paintbrush



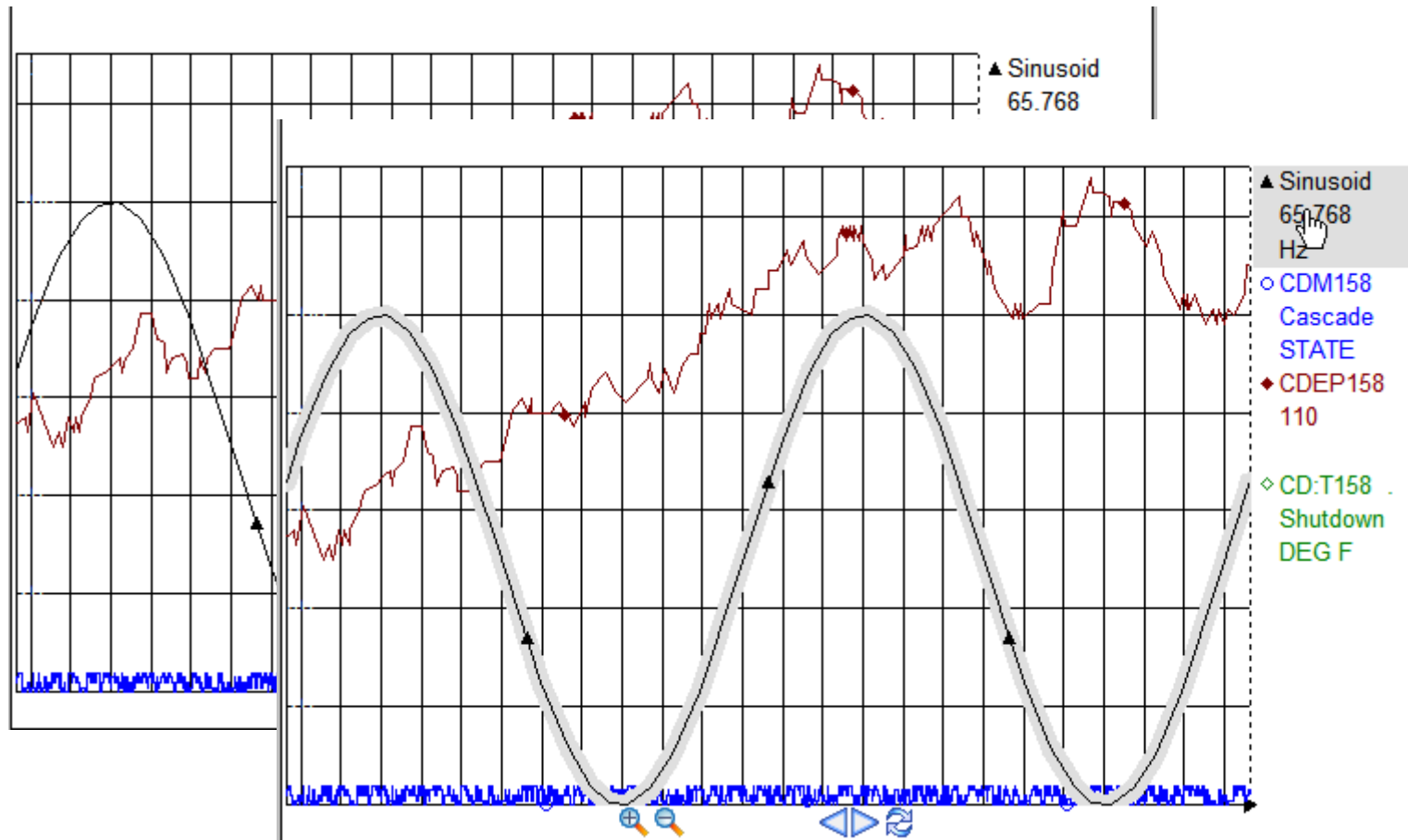
# Zoom In / Zoom Out 2x



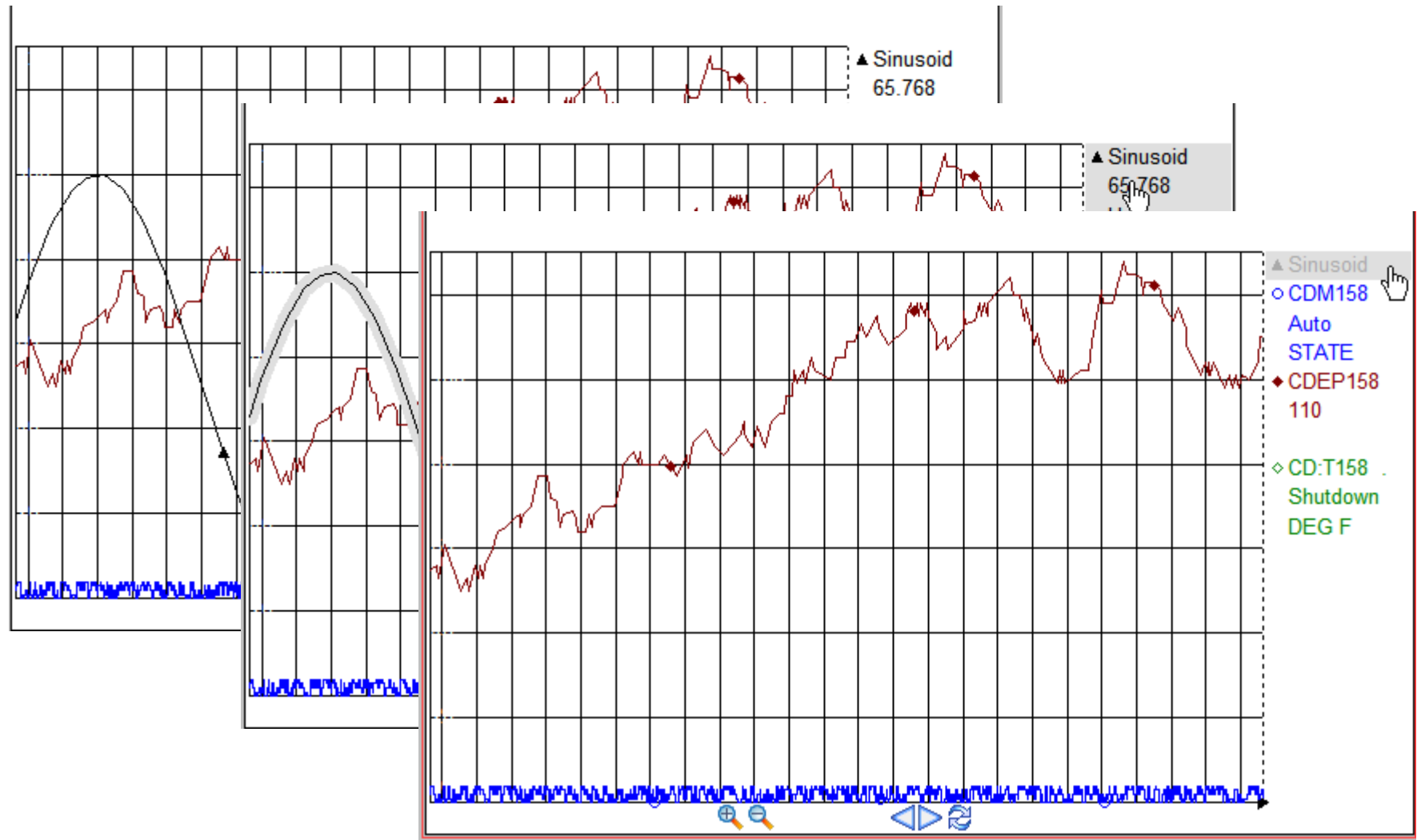
# Hide/Show Individual Traces



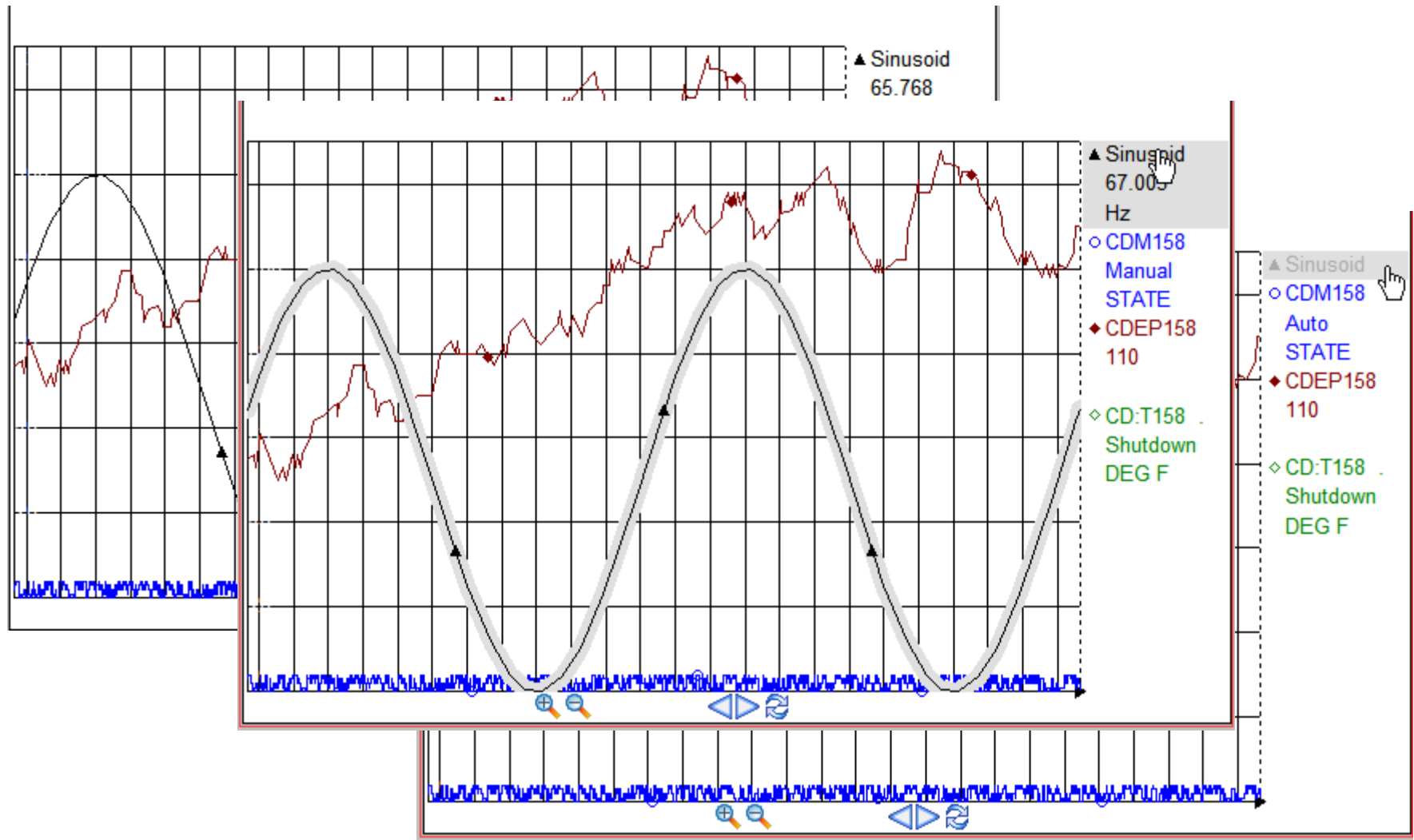
# Hide/Show Individual Traces



# Hide/Show Individual Traces

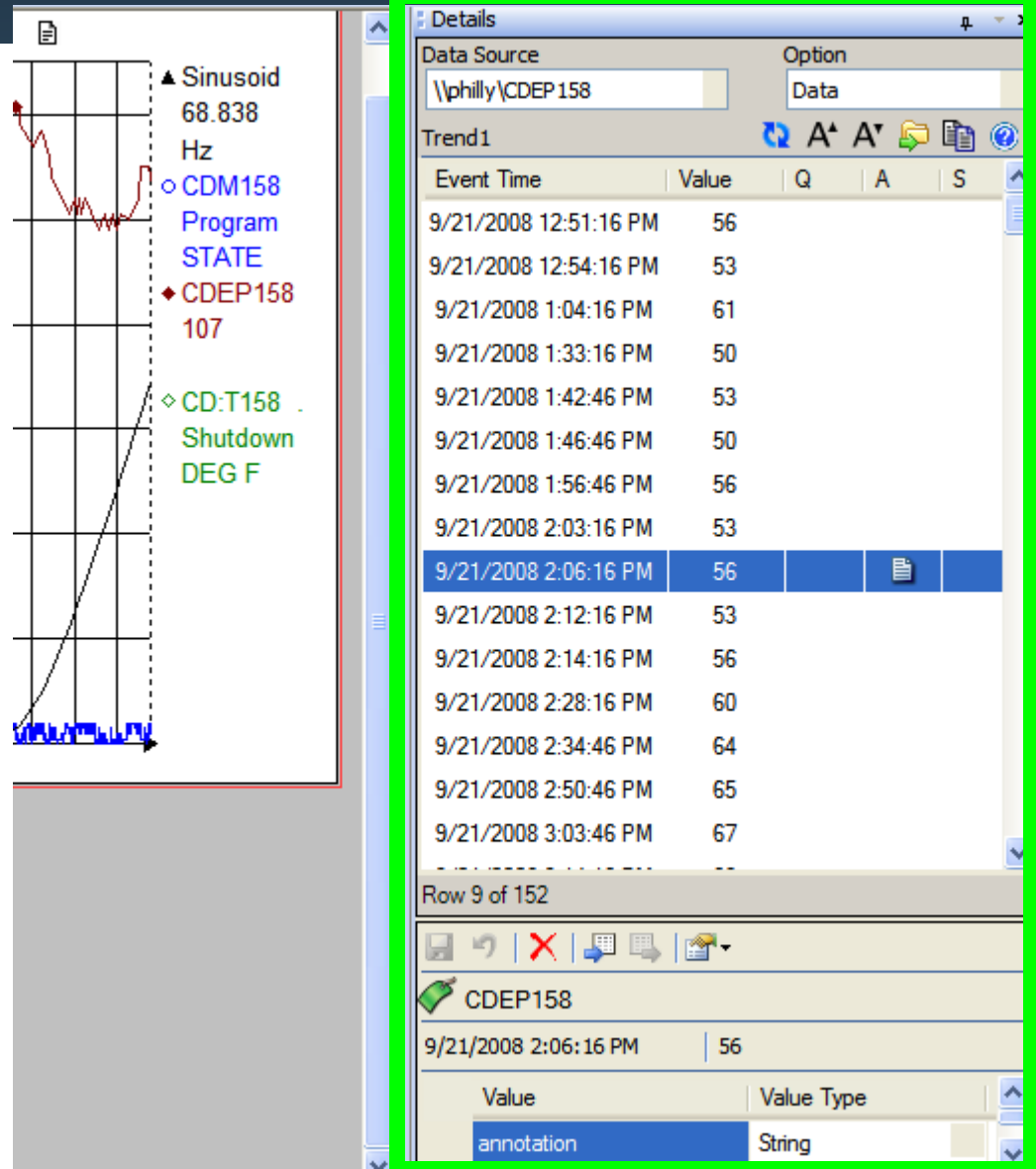


# Hide/Show Individual Traces

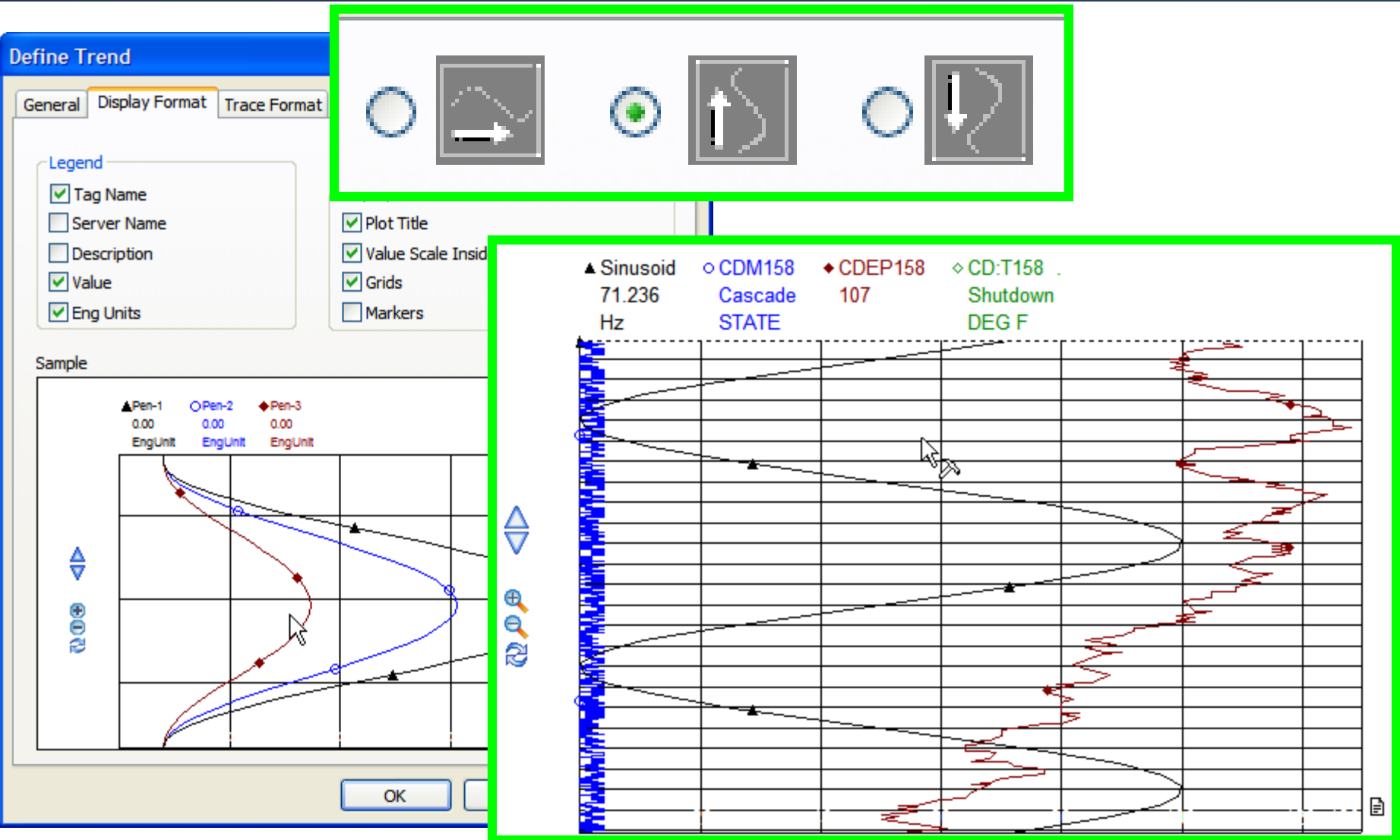


# Details Pane

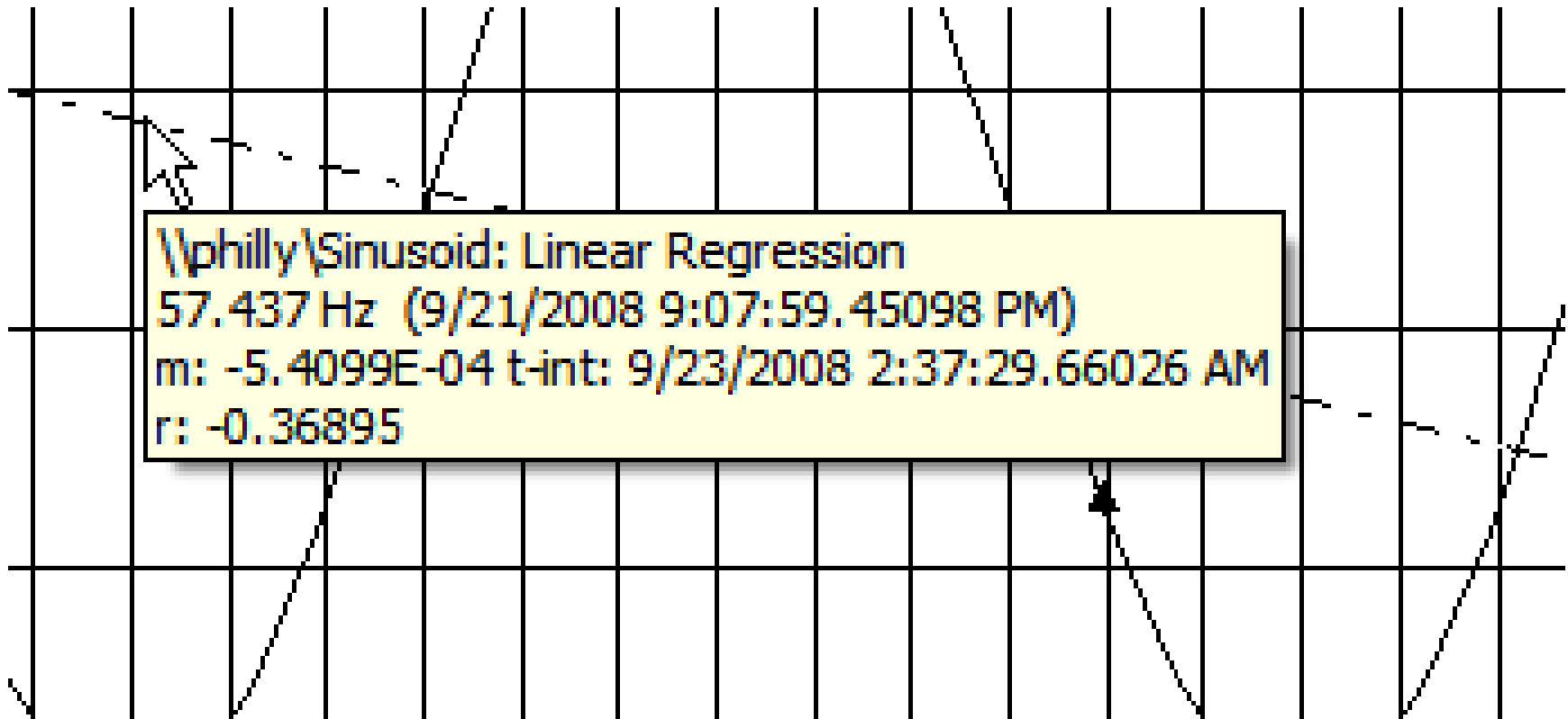
- Events
- Annotations



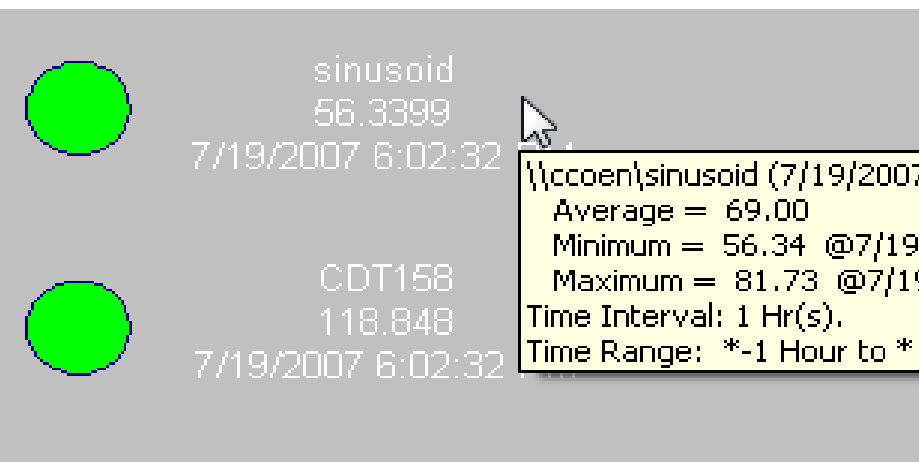
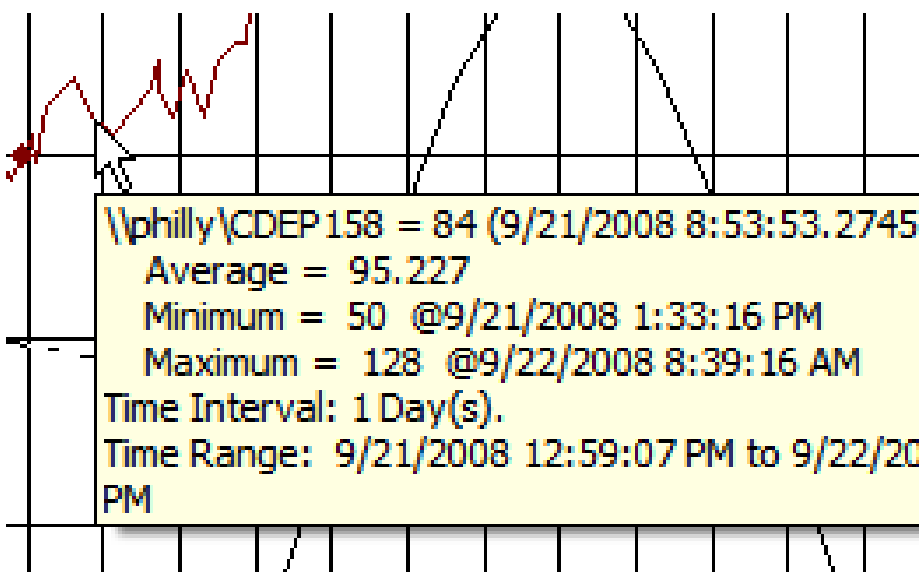
# Vertical Trends



# Trend Regression Line



# Statistics: ToolTips and Details



Details		
Data Source		Option
\\philly\CDEP 158		Statistics
Trend1		
Statistics	Value	Timestamp
Data Type	Int 32	
Average	95.302	
Minimum	50	9/21/2008 1:33:16 PM
Maximum	128	9/22/2008 8:39:16 AM
Range	78	
StdDev	20.116	
PStdDev	20.116	
Count	86400	
Time Interval	1 Day	
Time Range	Start Time	9/21/2008 1:01:12 PM
	End Time	9/22/2008 1:01:12 PM

# Data Favorites

Data Favorites

123

Search

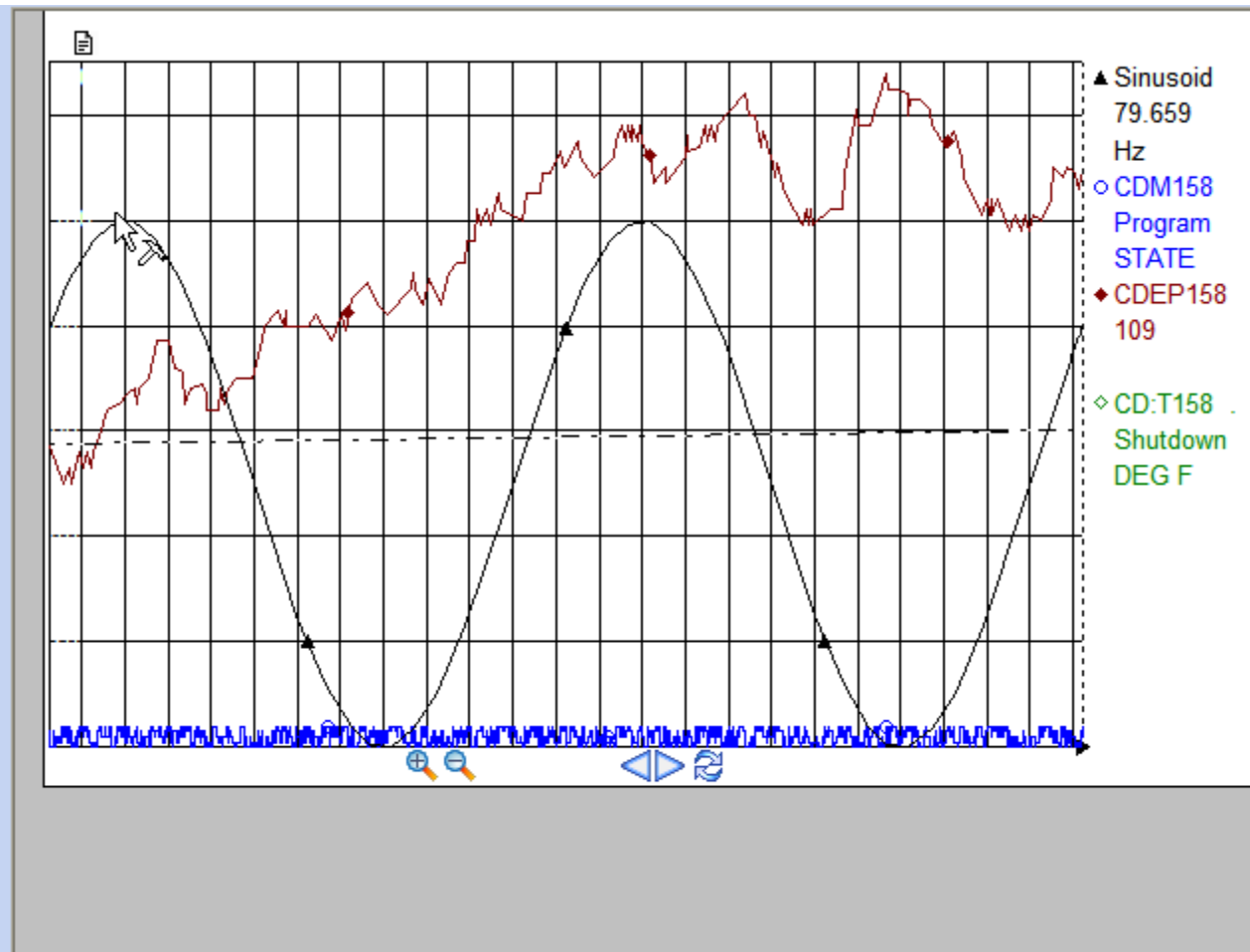
Search Mask

cd\*

Datasource	Descriptor
\\philly\39:FC034.PV	CDH 1 CHARGE RATE
\\philly\CD:26506	12 Hour Sine Wave
\\philly\CD:BRI .	Brian's Test tag with a ...
\\philly\CD:F144 .	Crude charge
\\philly\CD:T158 .	Atmospheric tower OH...
\\philly\CDEP158	Light Naphtha End Point
\\philly\CDEP158M1	Light Naphtha End Point
\\philly\CDEP158P4	Light Naphtha End Point

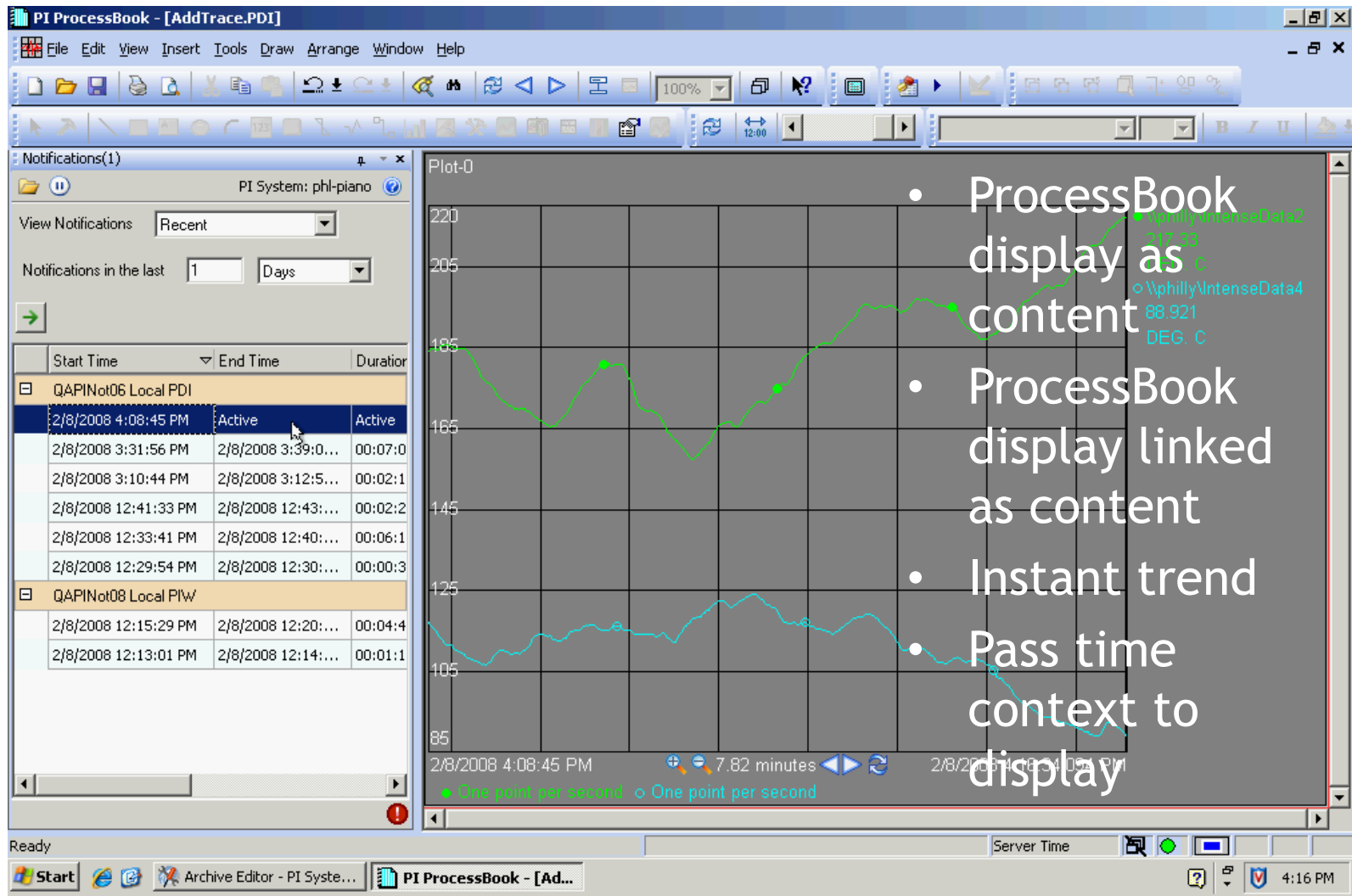
Favorites

Datasource	Descriptor
\\philly\CD:T158 .	Atmospheric tower OH v...
\\philly\CDEP158	Light Naphtha End Point
\\philly\CDM158	Light Naphtha End Point...
\\philly\IntenseData	One point per second



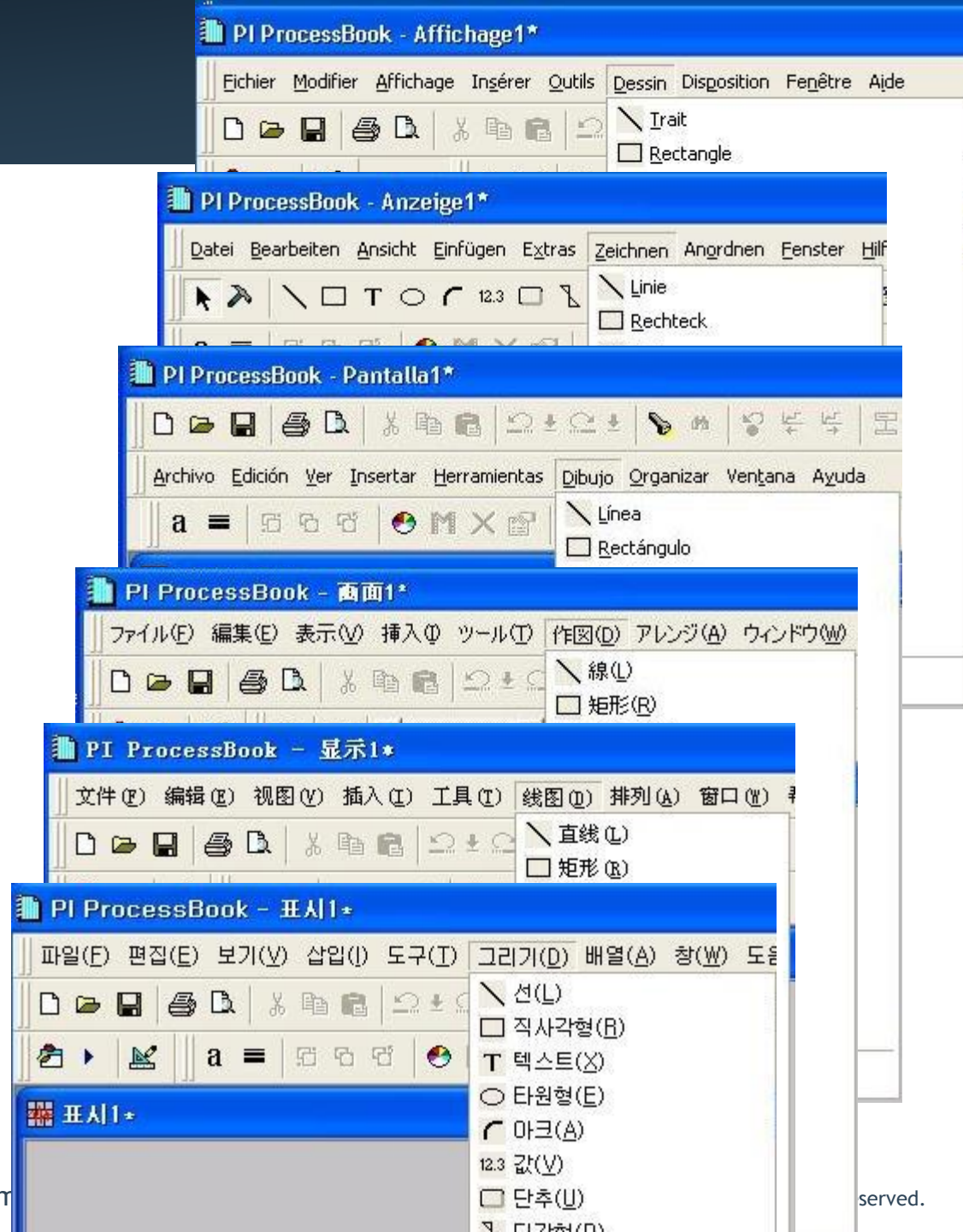
- From Favorites list
- From Search results
- From other applications (e.g., Excel)
- Add to existing trends
- Create new symbols (Trend, XY plot, Bar, Value)
  
- Build mode only
- Data Favorites window

# PI Notifications



# Localization

- ProcessBook and ActiveView
  - English, French, German, Spanish, Simplified Chinese, Japanese, Korean
  - Russian and Brazilian Portuguese coming
- BatchView
  - Japanese



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

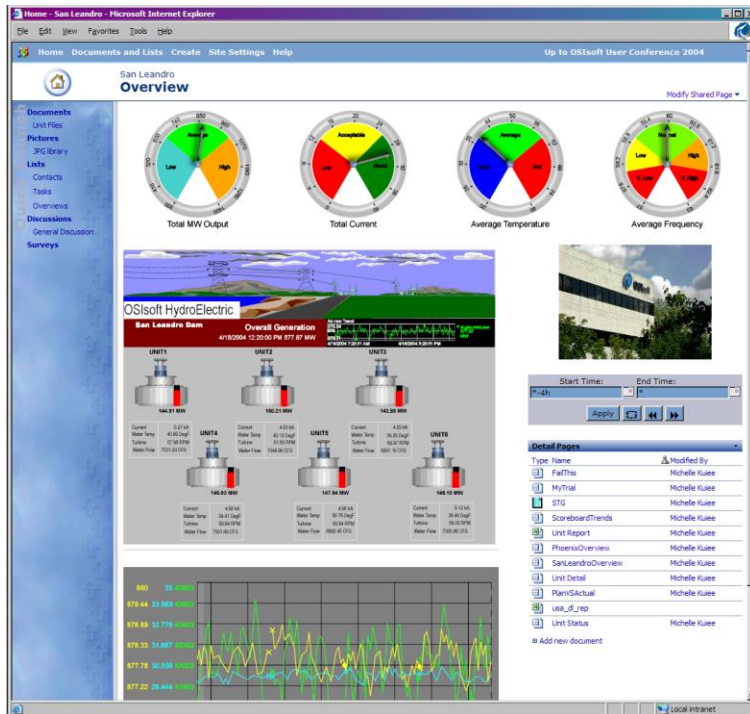
## PI WebParts / iViews



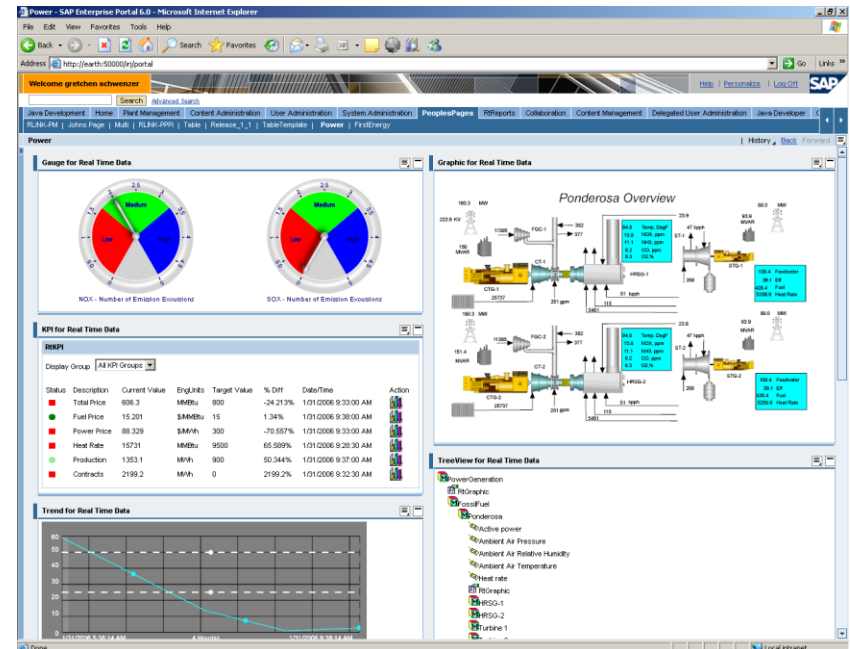
- Give users the ability to investigate real-time information - including time-series, relational, and web services information - all within a familiar Internet browser-based environment.



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



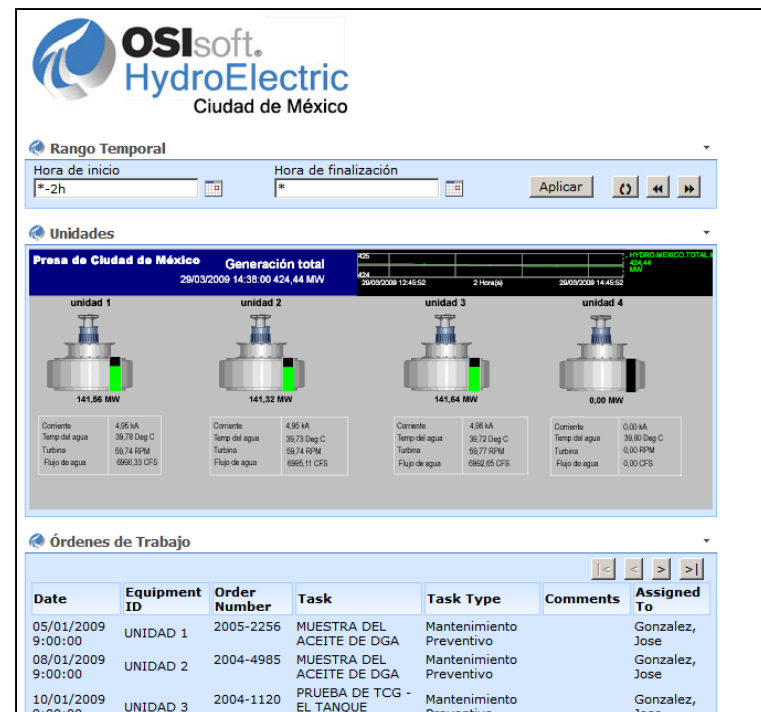
PI WebParts example



iViews example

- Extend real-time information from a small set of power PI users to a broader set of decision makers across the organization
- Integrate KPIs across business units
- Consistently present business rules throughout the organization
- Increase production stability
- Optimize production
- Reduce production losses

- Released September 2008
- No new version of RtBaseline Services (data handling components)
- 8 Language Packs released March 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 (2010)
  - Support for Microsoft Silverlight
  - Support for Sharepoint 2010

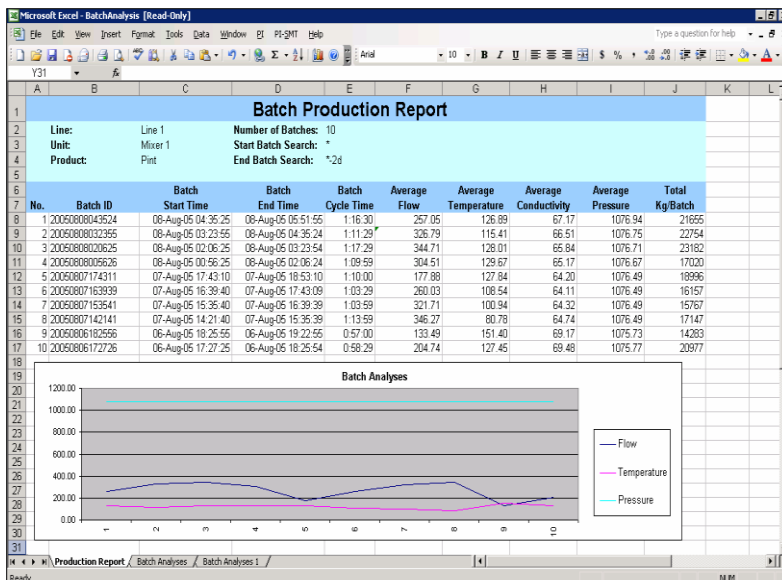
# DataLink



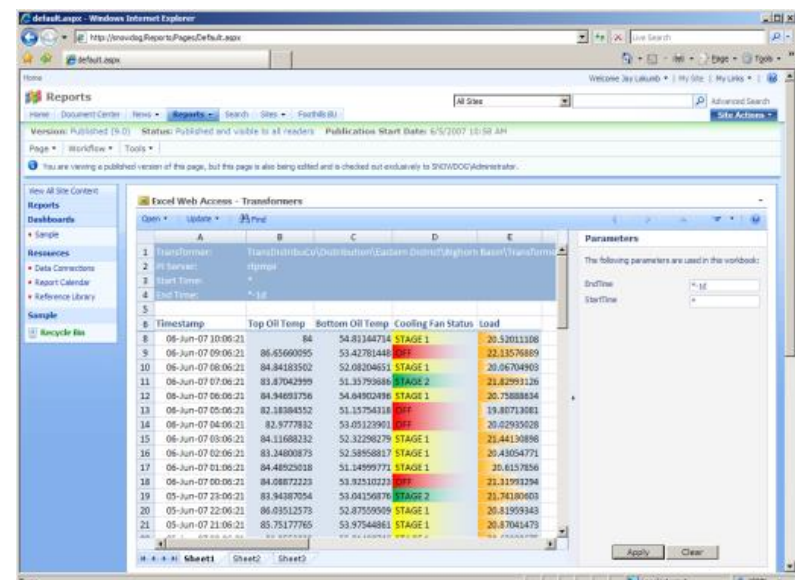
# DataLink and DataLink for Excel Services



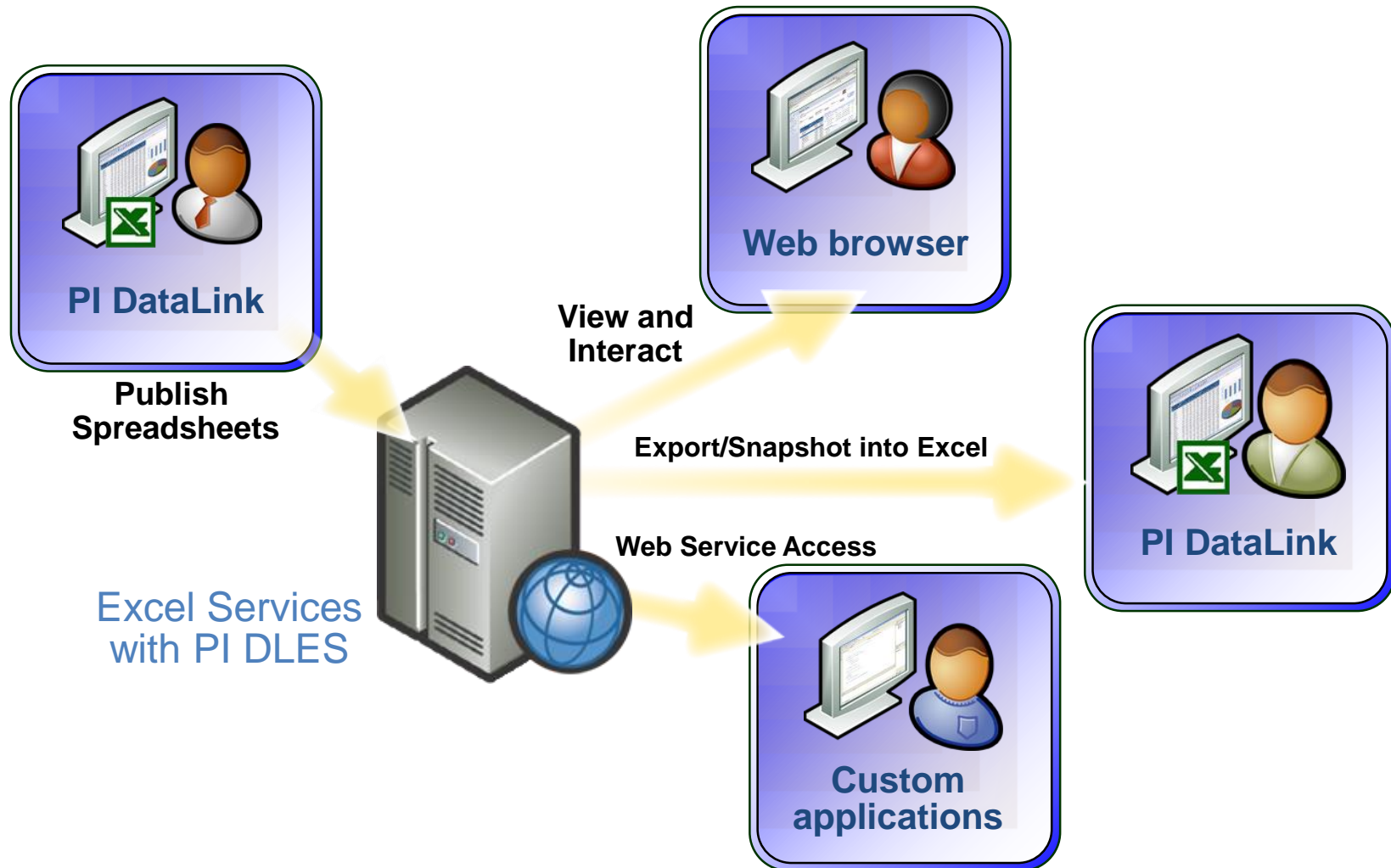
- DataLink is an Excel add-in that allows users to access real-time and historical data in PI
- PI data in Excel can then be used for reporting, data mining, analysis, and collaboration
- DataLink for Excel Services allows users to calculate and view DataLink spreadsheets on the Web
- DLES works with PI WebParts to create dynamic, interactive dashboards



DataLink



DataLink for Excel Services



- DataLink 4.1 (Current)
  - 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

# PI Manual Logger

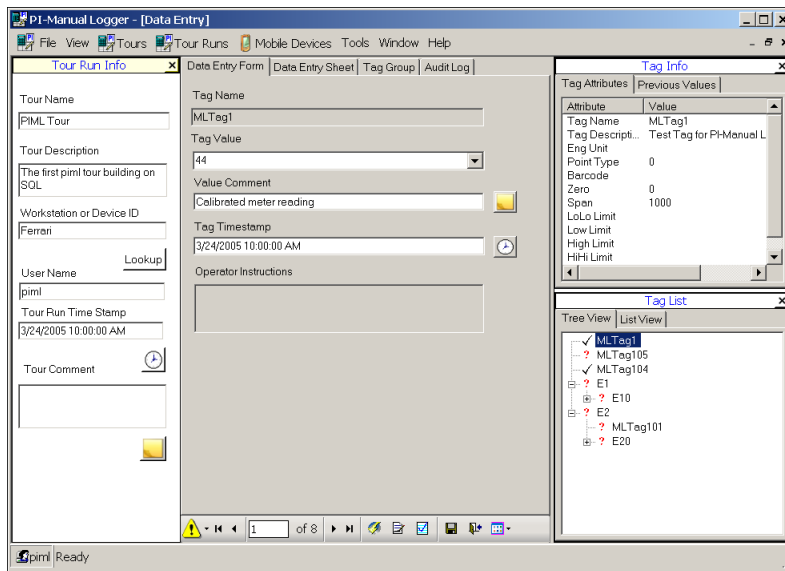


# PI Manual Logger Overview



- With PI Manual Logger, you can easily, securely, and reliably record data on PCs and handheld devices.
- Once stored in PI, this data is available throughout the enterprise for review and analysis.

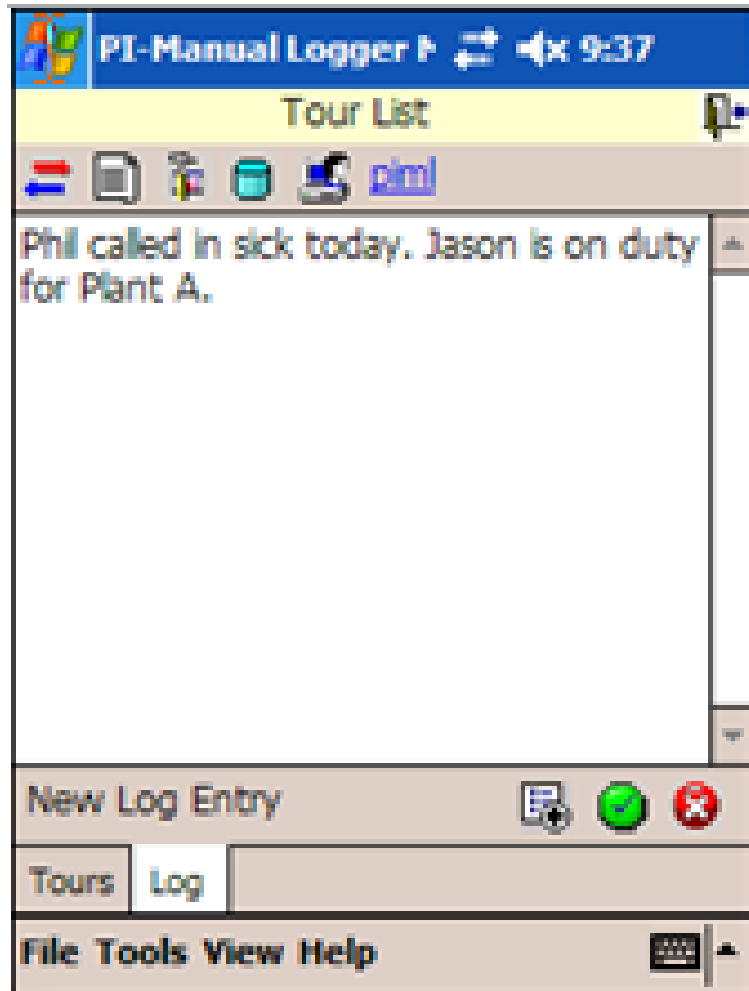
ML Client



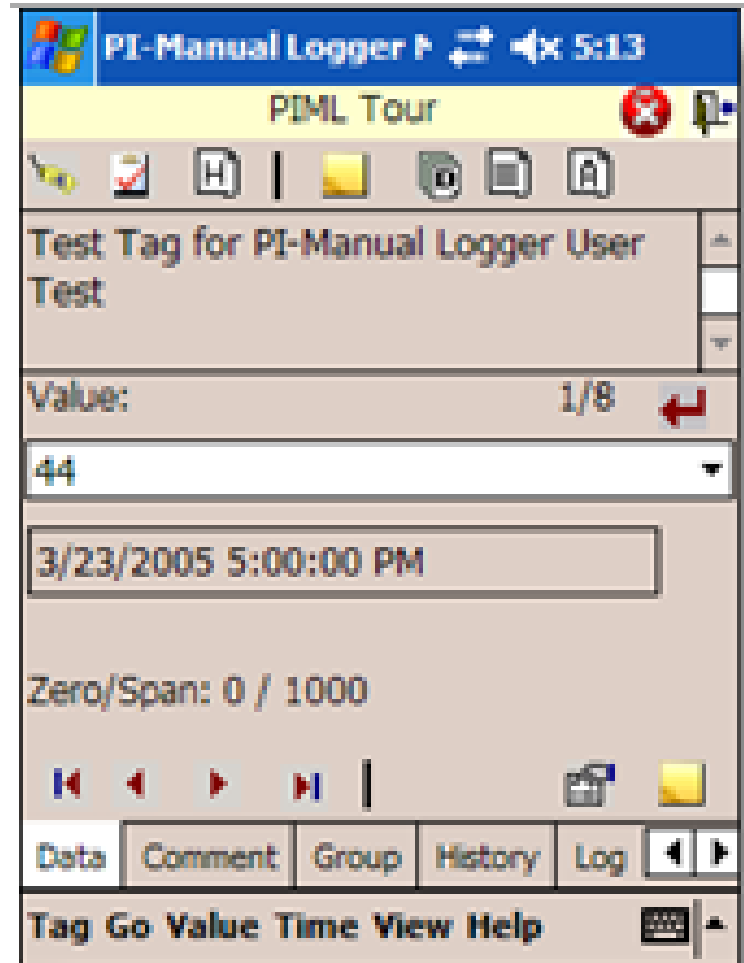
ML Mobile



# Log Entry and Data Entry

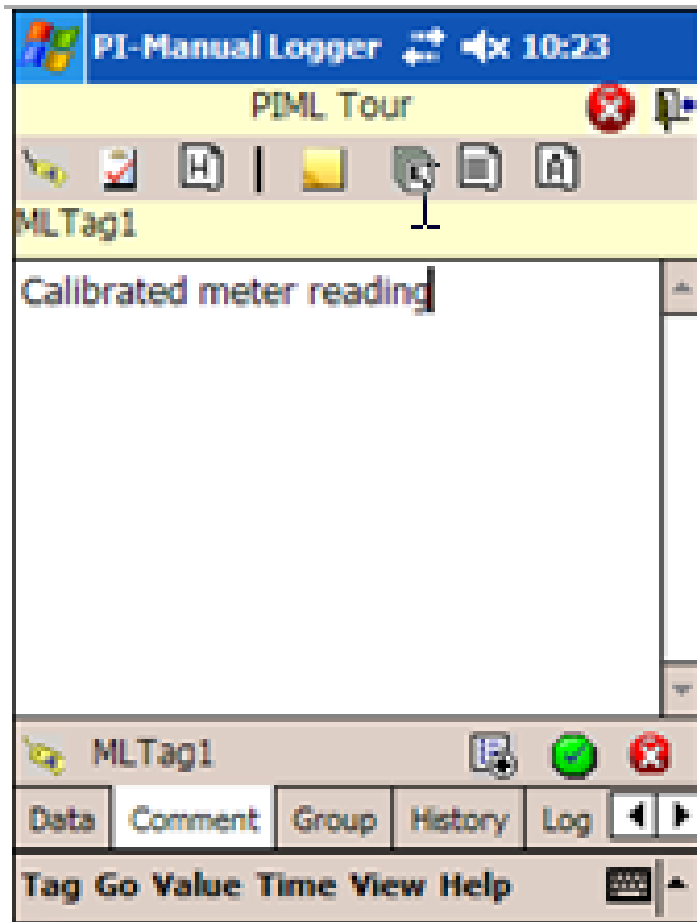


Log Entry Screen

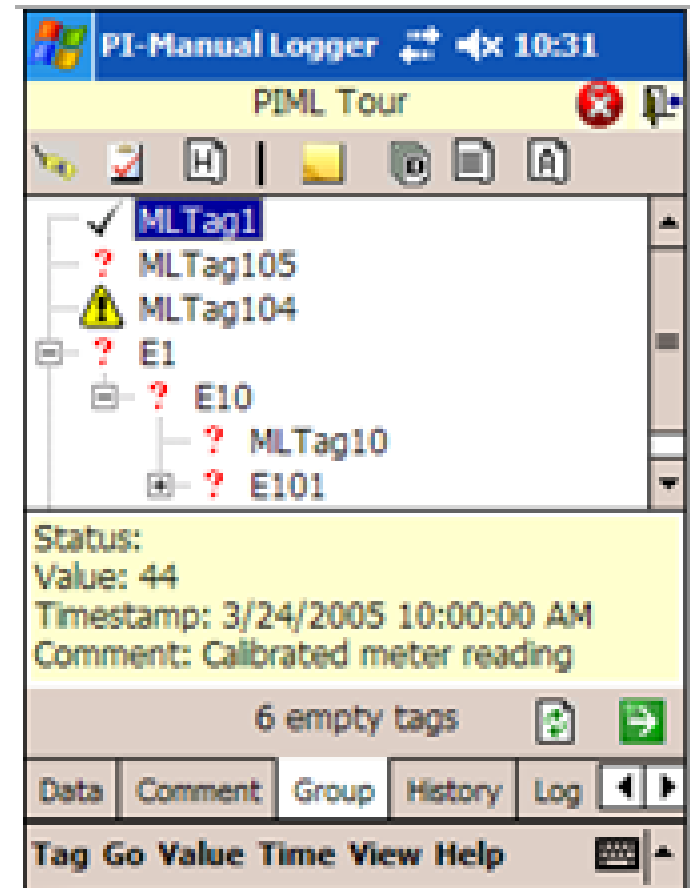


Main Data Entry Screen

# Comment Entry and Tag List



Comment Entry Screen



Tag List Screen

- Manual Logger 2.2
  - Support for Windows Vista
  - Support for Windows Mobile 6.0 devices
  - Conditional Manual Data Entry
- Manual Logger 2.x (future)
  - Windows security integration
  - PI Notifications integration
  - Replicated data with HA PI
  - Support for WM 6.1/7 devices

■ Major Release  
▲ Minor Release

## OSIsoft Product Roadmap

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

### Client

#### Desktop

ProcessBook (3.2)

SQC Add-in (3.1.0.1)

BatchView (3.1.4)

Datasheet Control (2.0.1)

DataLink (4.1.0)

Manual Logger (2.2.1.134)

#### Web

PI WebParts (3.0)

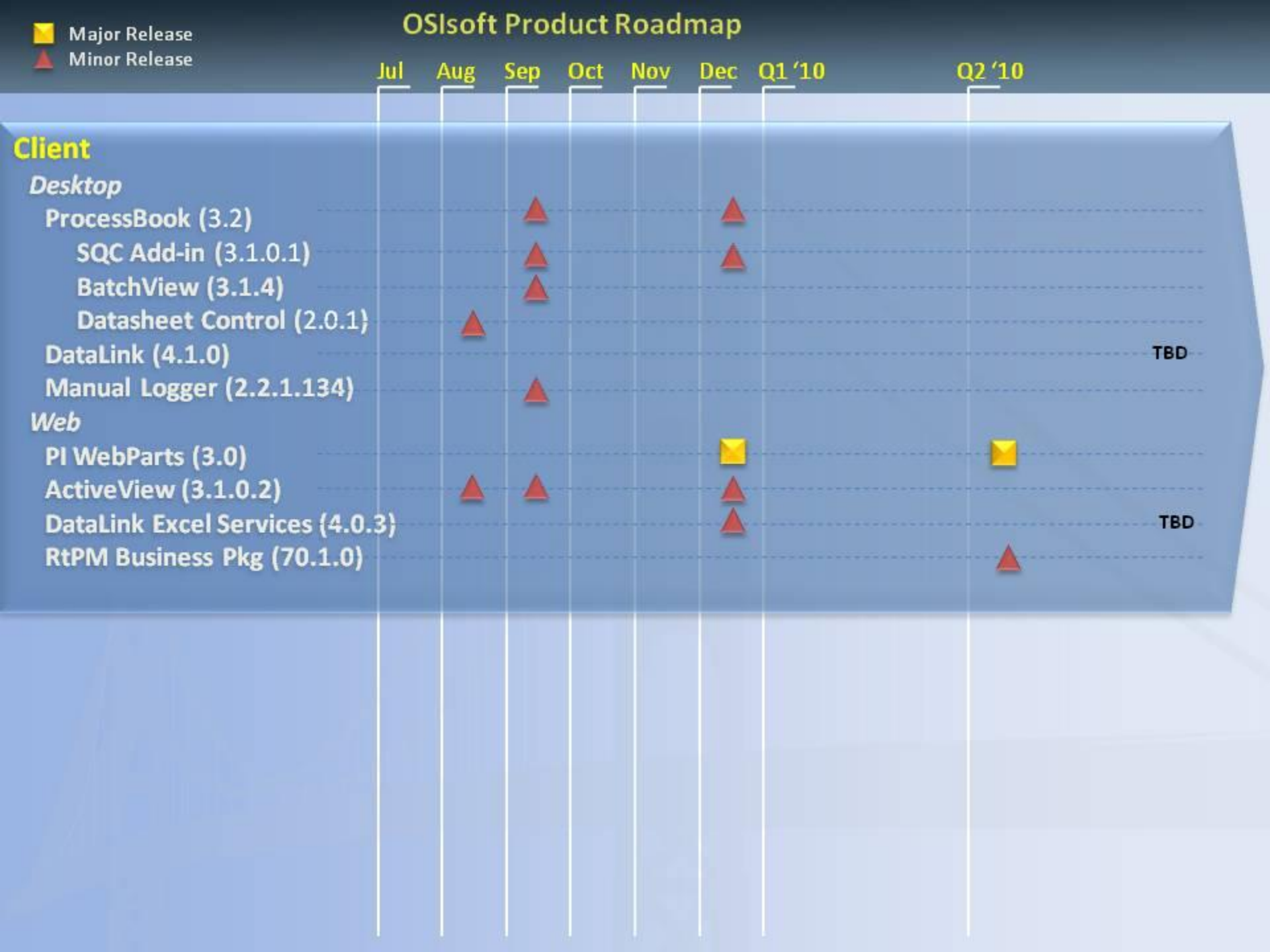
ActiveView (3.1.0.2)

DataLink Excel Services (4.0.3)

RtPM Business Pkg (70.1.0)

TBD

TBD



# PI Analytics



# The Analytics within the PI System



The  
Server

The  
Analytics

The  
Visuals

Advanced Computing Engine (ACE)

PI Notifications

RtReports  
Compliance & Standard

Enterprise Services

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

# The Analytics landscape today



		Configuration Experience	Programming Experience
Specific context (PI tags)		PI PE PI Totalizers PI Alarms PI RT SQC	PI ACE Custom application (PI SDK)
Generic context	PI MDB	None	PI ACE Custom applications (PI SDK)
	PI AF	AF Formula Data Reference No scheduling, no output to PI	Custom AF Data References Custom AF Analysis Rules Custom applications (AF SDK)

# The Analytics landscape tomorrow



		Configuration Experience	Programming Experience
Specific context (PI tags)		<b>PI PE, PI Totalizers</b> <b>PI Alarms, PI RT SQC</b>	<b>PI ACE</b> <b>Custom application (PI SDK)</b>
Generic context	PI MDB	None	<b>PI ACE</b> <b>Custom applications (PI SDK)</b>
	PI AF	<b>AF Analysis Rules</b> <ul style="list-style-type: none"> <li>•PE syntax</li> <li>•AF formula DR syntax</li> <li>•Additional ARs (roll-up etc.)</li> </ul> <b>Clock &amp; Event based scheduling</b> <b>Export results to PI tags</b>	<b>Custom AF Data References</b> <b>Custom AF Analysis Rules</b> <b>Custom applications (AF SDK)</b>

Primary objective

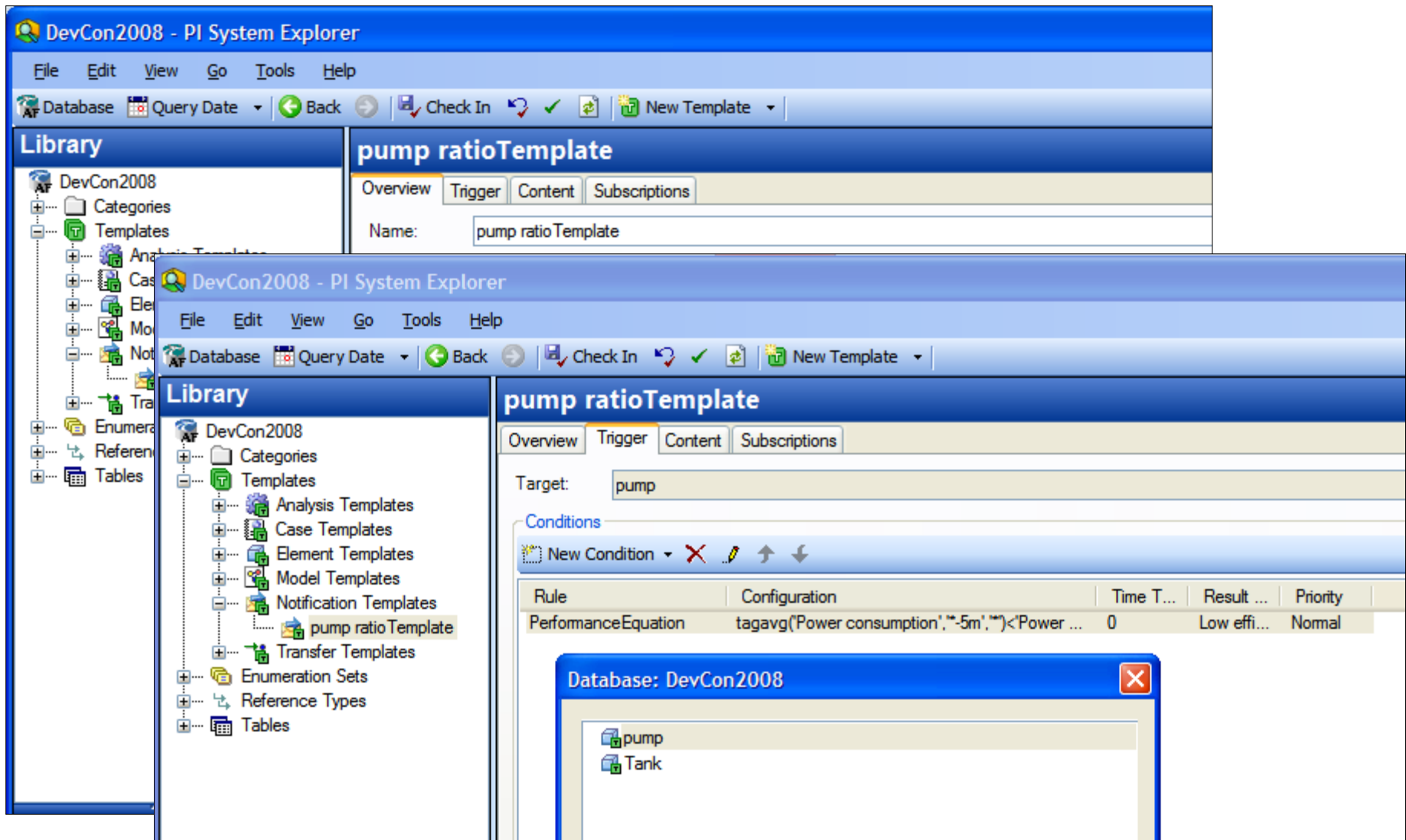
Secondary objective

# PI Notifications



- Performance improvements
  - Up to 10k Notifications with multiples rules
  - Up to 60k events/minute
- Notification templates
- Release candidate for July2009
  
- Native Office Communication Server (OCS) delivery channel
  - Scheduled for release in July 2009
  - Shipped as a new plug-in for v1.1

# PI Notifications templates



The screenshot displays the DevCon2008 - PI System Explorer interface. The main window shows the 'pump ratioTemplate' configuration. The left pane lists the 'Library' structure, including 'DevCon2008', 'Categories', 'Templates', 'Analysis Templates', 'Case Templates', 'Element Templates', 'Model Templates', 'Notification Templates', 'Transfer Templates', 'Enumeration Sets', 'Reference Types', and 'Tables'. The 'pump ratioTemplate' is selected under 'Notification Templates'. The right pane shows the 'Overview' tab for the template, with the 'Name' field set to 'pump ratioTemplate'. Below this, the 'Target' is set to 'pump'. The 'Conditions' section shows a table with one condition:

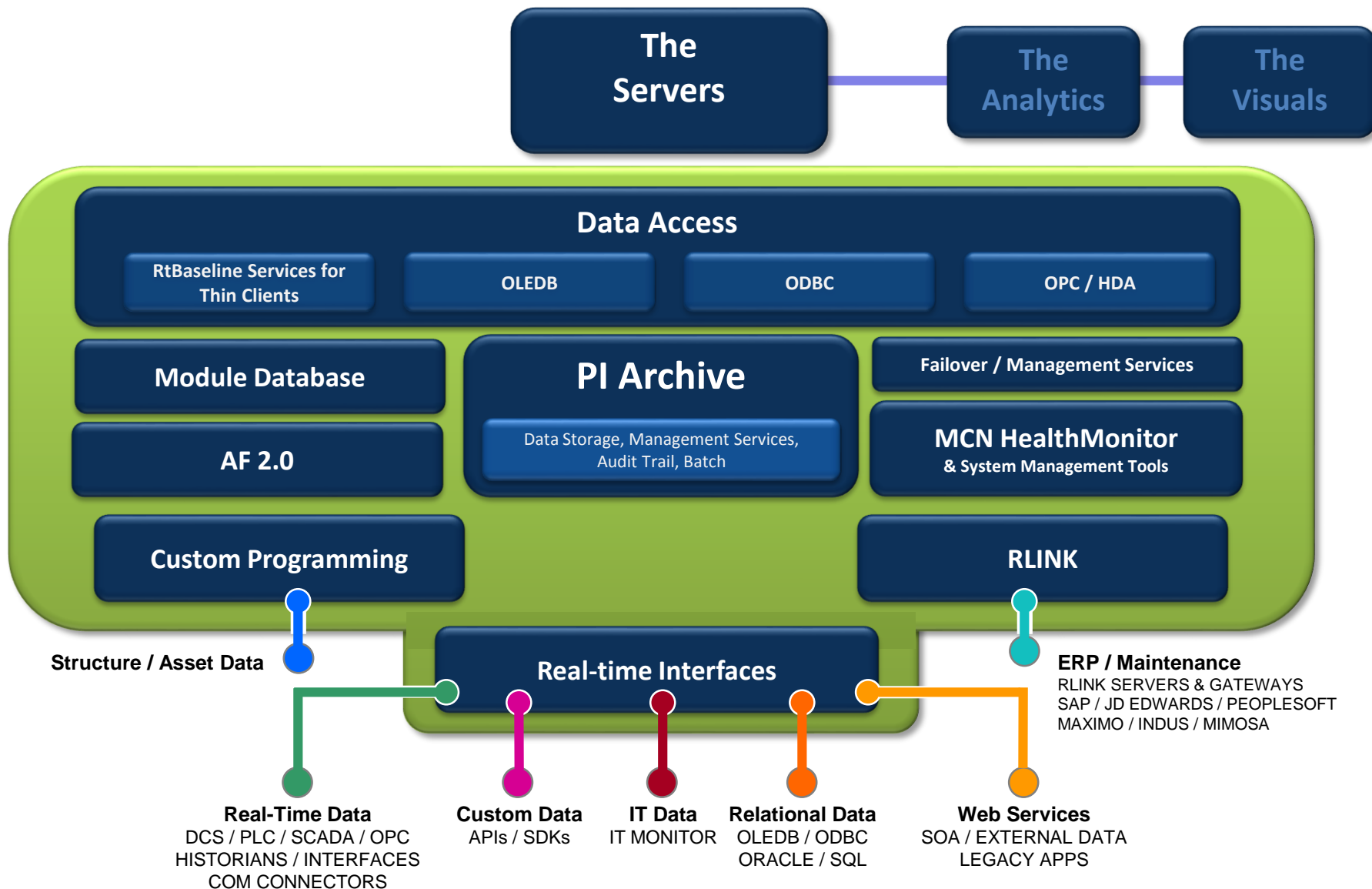
Rule	Configuration	Time T...	Result ...	Priority
PerformanceEquation	tagavg('Power consumption', '-5m', '') < 'Power ...	0	Low effi...	Normal

A small dialog box titled 'Database: DevCon2008' is open, showing a list of objects: 'pump' and 'Tank'.

# The Servers



# The PI Servers Today



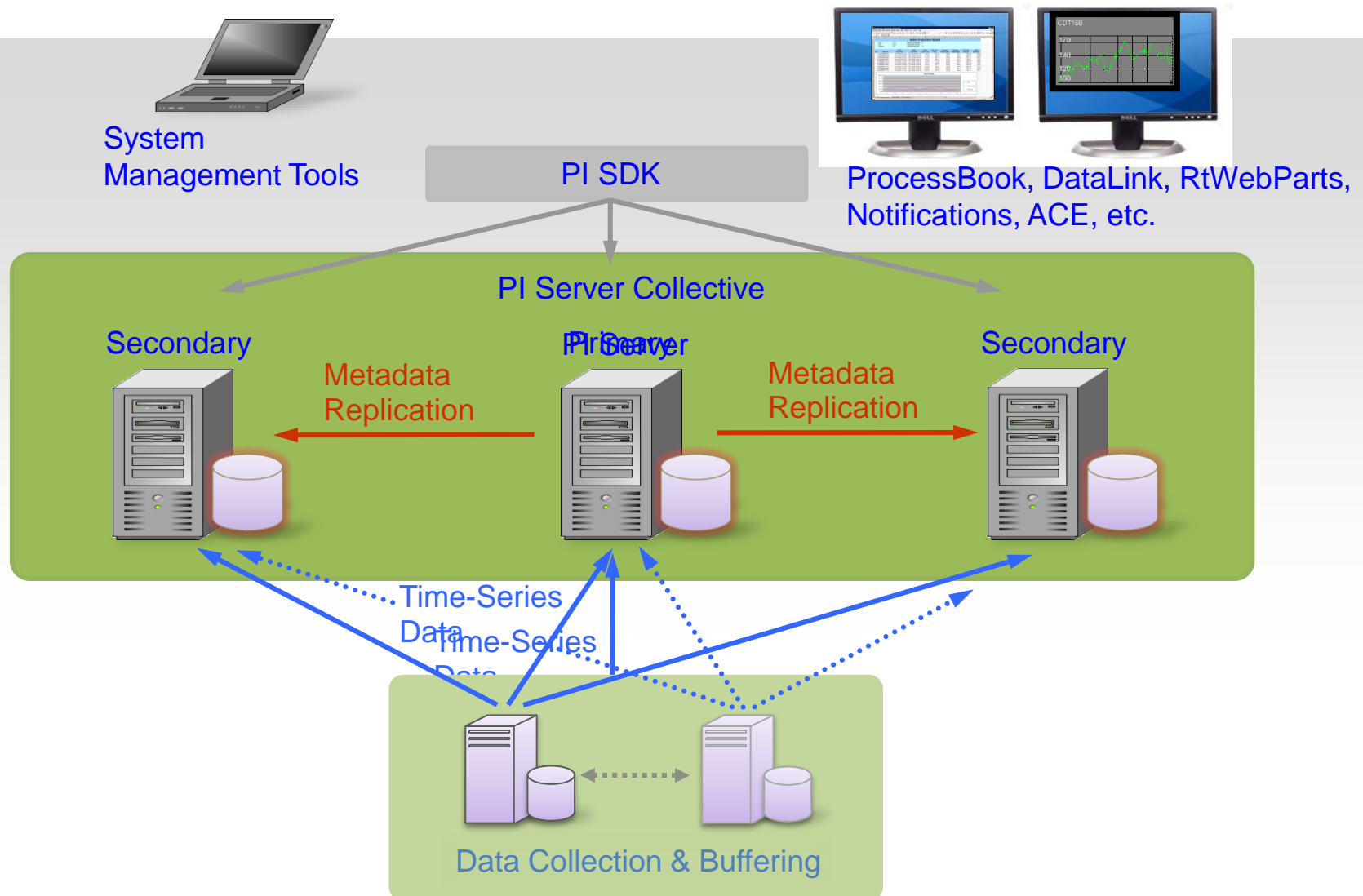
# The PI Server



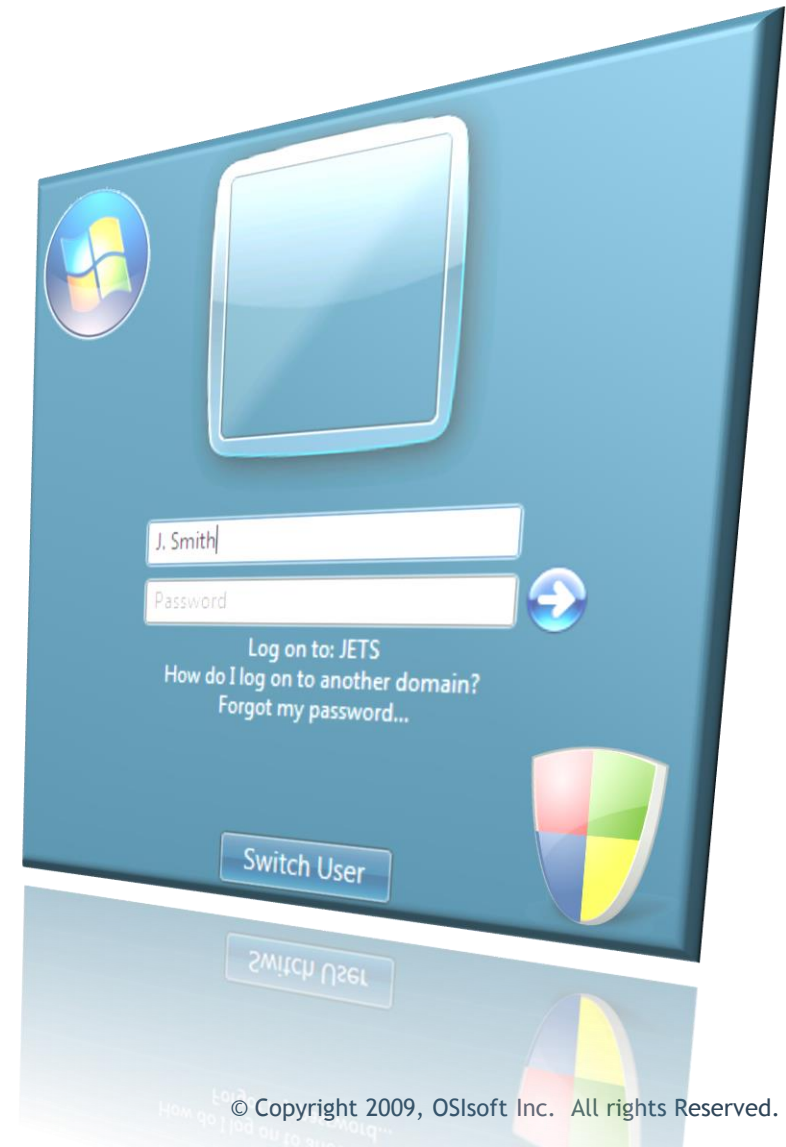
- Network Failure
- Administrative/User Failure
- Upgrades and Migrations
  - Hardware
  - Operating System Software (Patches)
  - Applications Software

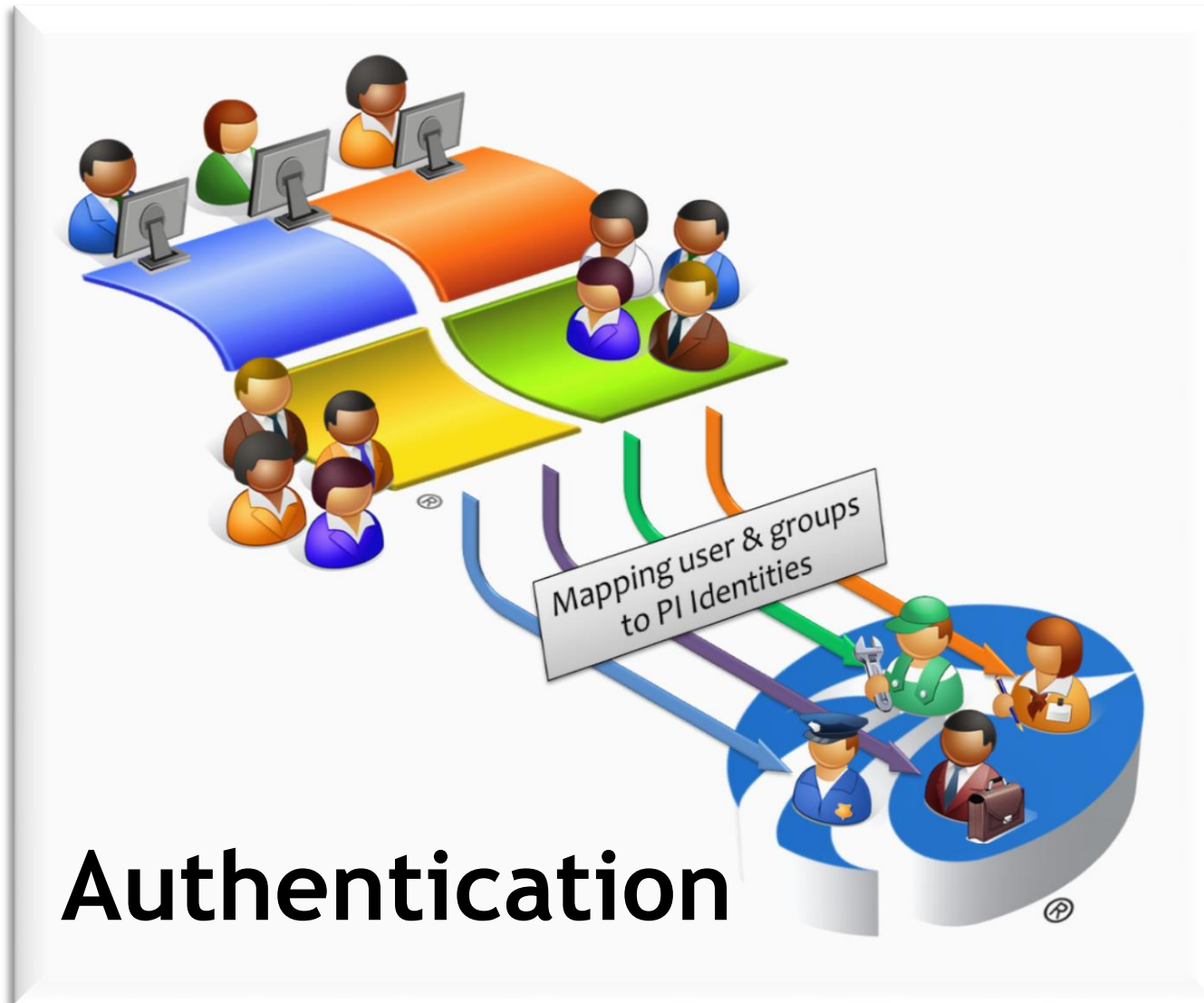
- How much downtime can you afford?
  - $365 \text{ Days} \times 24 \text{ Hours} = 8760 \text{ Hours/year}$
  - 99.7% uptime = 26.3 hours of downtime/year
  - 99.9% uptime = 8.7 hours of downtime/year

# PI High Availability Architecture

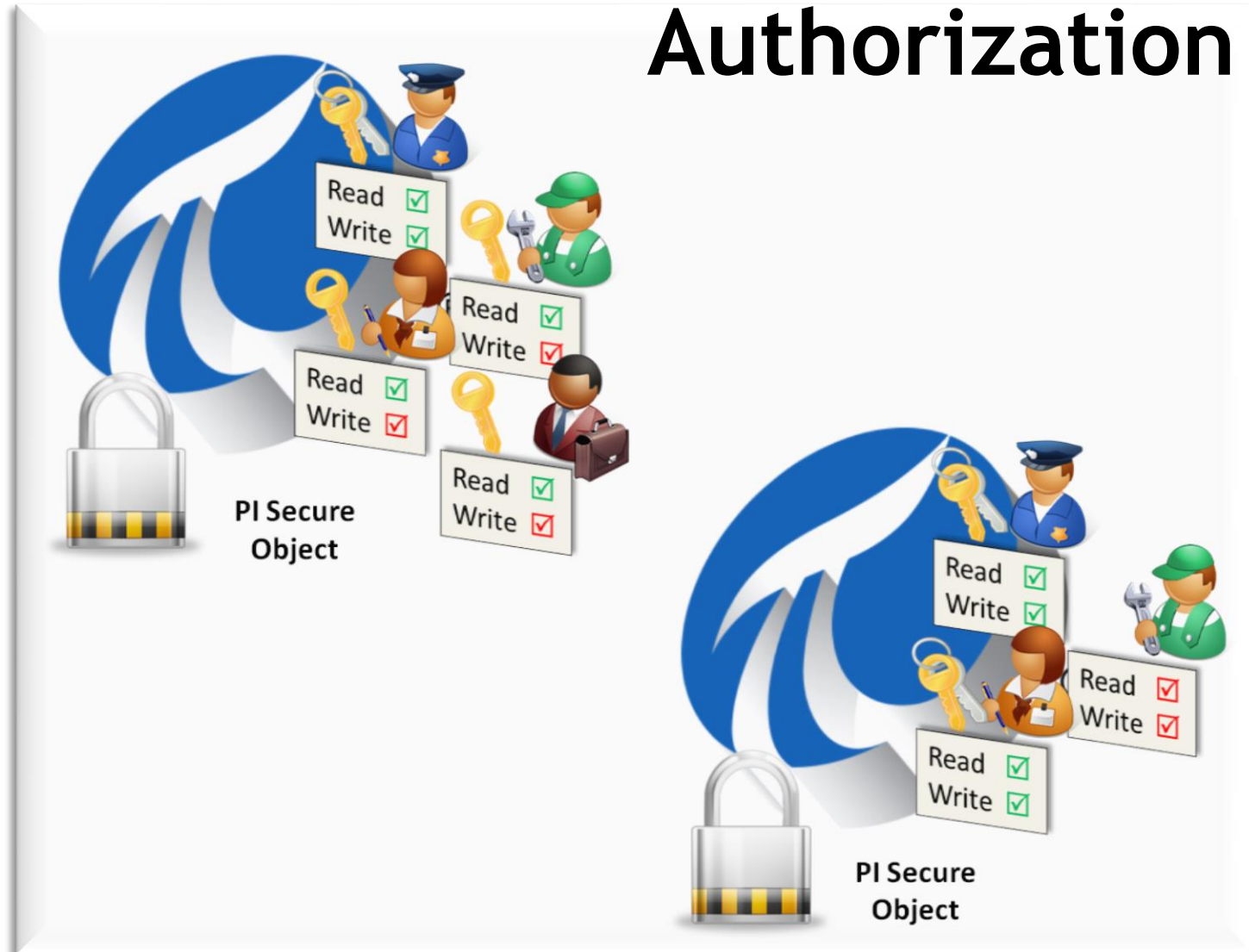


- **Easier to manage**
  - Windows Integrated Security
- **More secure**
  - Authentication from the OS
- **More flexible**
  - Combine users/groups
- **Backward compatible**
  - Smooth transition
- **In line with AF 2.x security**





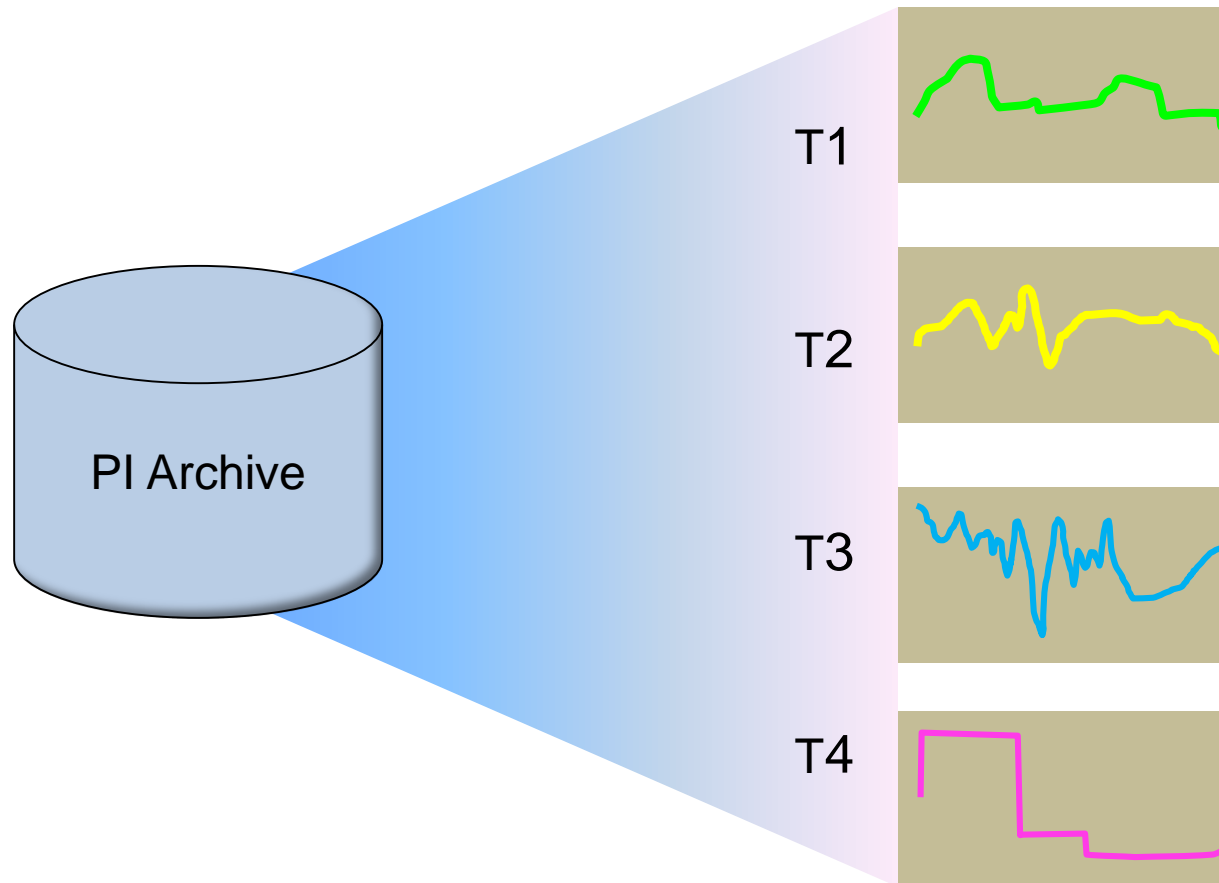
## Authorization



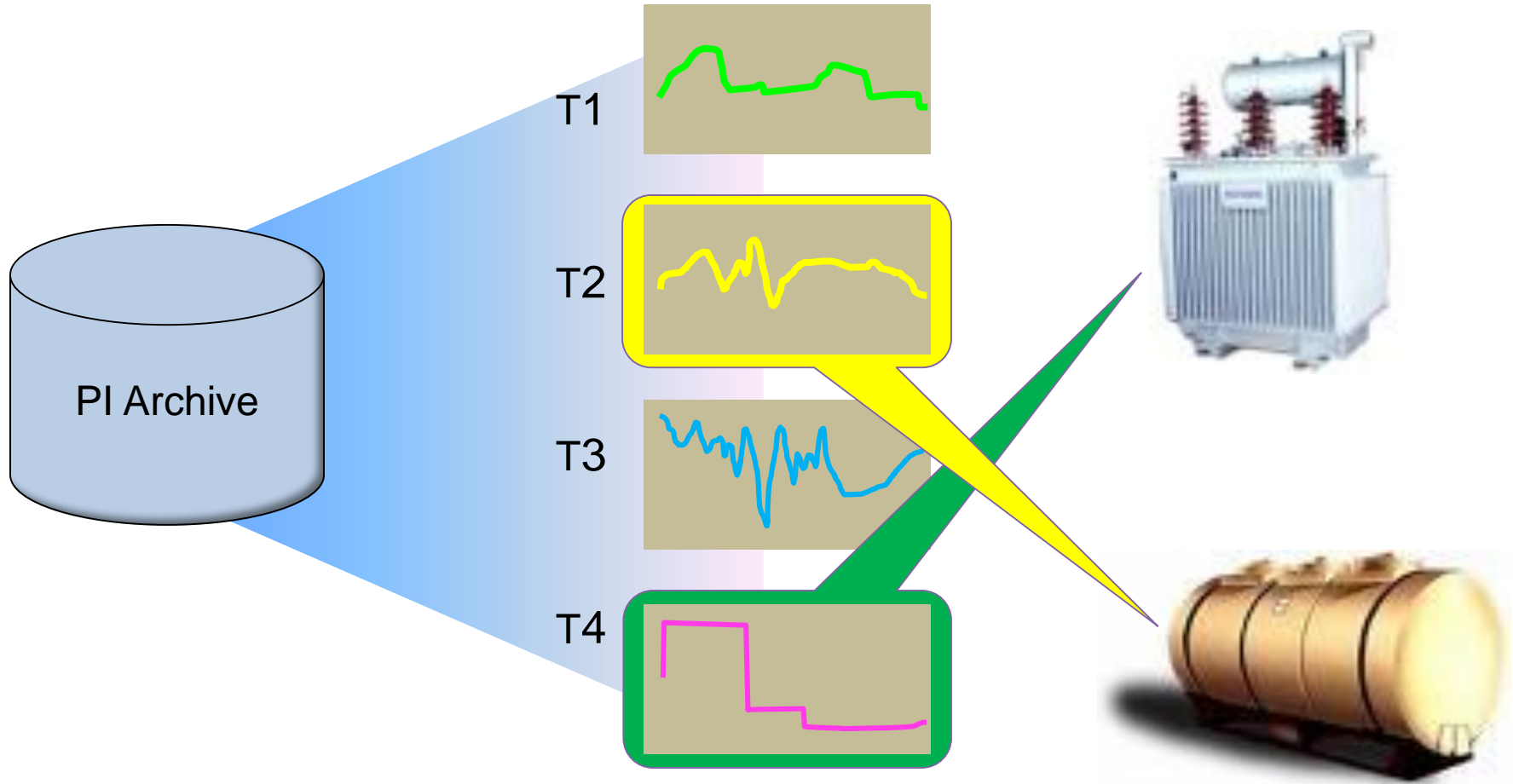
# The PI AF Server



# PI is about time series ... and tags!



# But Tags mostly relate to assets



# What is PI AF 2.x?

## PI AF 2.0 is ...

A set of tools for organizing data around your processes, operations, facilities and organization to support an information model.

## Helping You to ...

structure your data in a meaningful way to search and view it in the right context so problems can be solved faster.

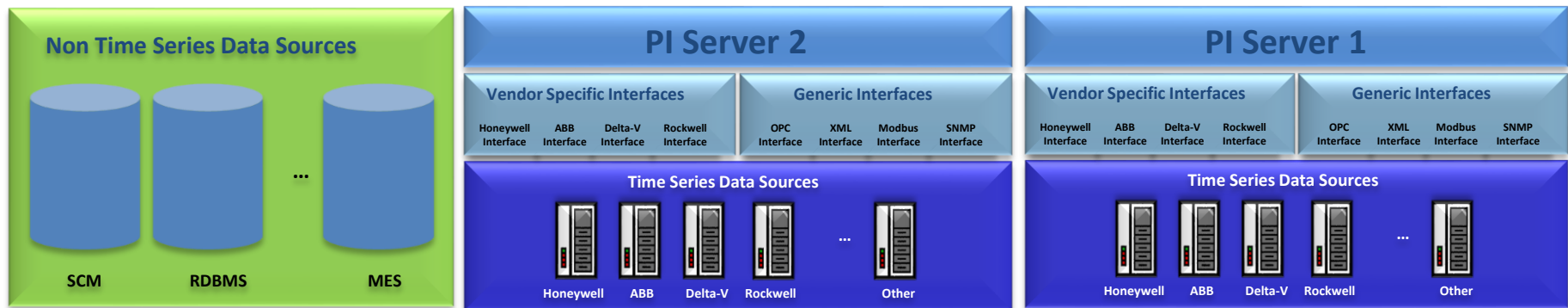
AF stands for either

- *Application Framework*
  - Users can build applications on top of AF
- *Analysis Framework*
  - AF is great to host calculations
- *Asset Framework*
  - AF is equipment centric

- Structures/organizes the data by asset
- Spans multiple PI Systems
- Incorporates non time series data



**Asset/Equipment centric access to information**



# Who uses AF 2 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

- High Availability
  - Conceptually Very similar to HA for the PI Server
  - Automatic Failover for clients
  - SQL replication for the AF database
- Notifications support
  - New Notifications template object
- 64 bit support
- Ready for Localization support

- Performance improvements
- Indexed attributes for faster searches
- AF Tables automatic refresh
- Enhanced Table Lookup DR
  - Interpolation/Extrapolation
  - Summaries
- XML Import/Export command line tool
  - Support editing and deleting

## From PI MDB to PI AF

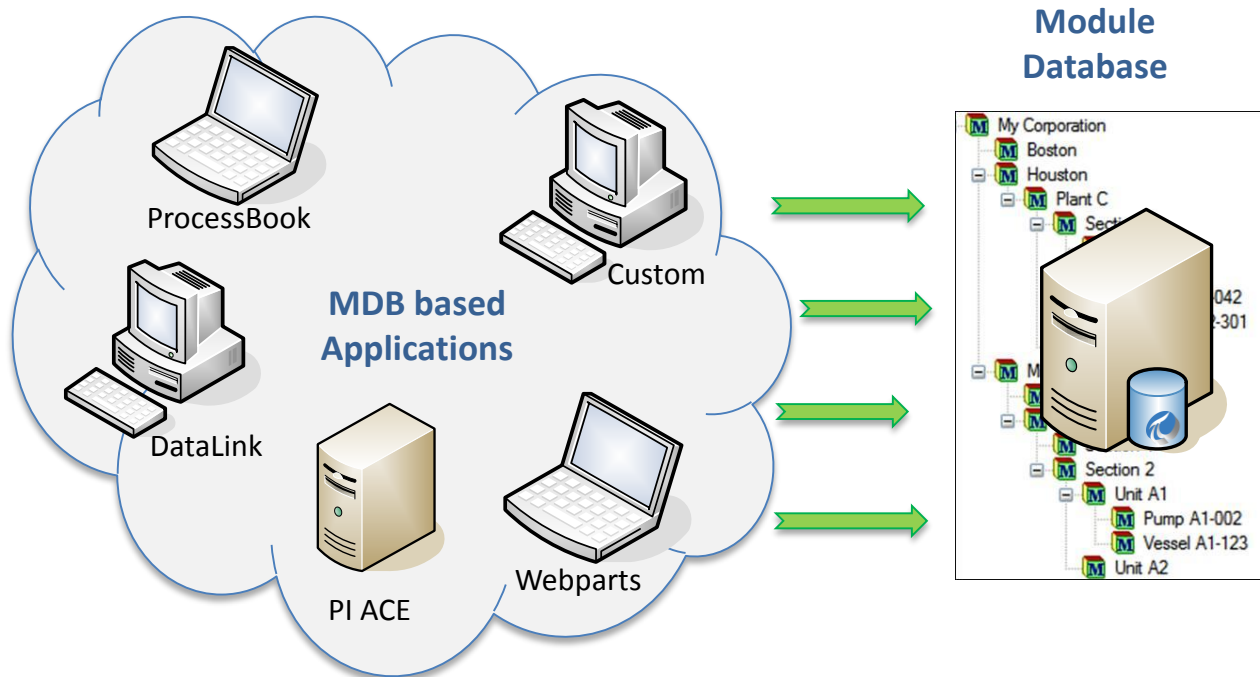


## **Move you forward**

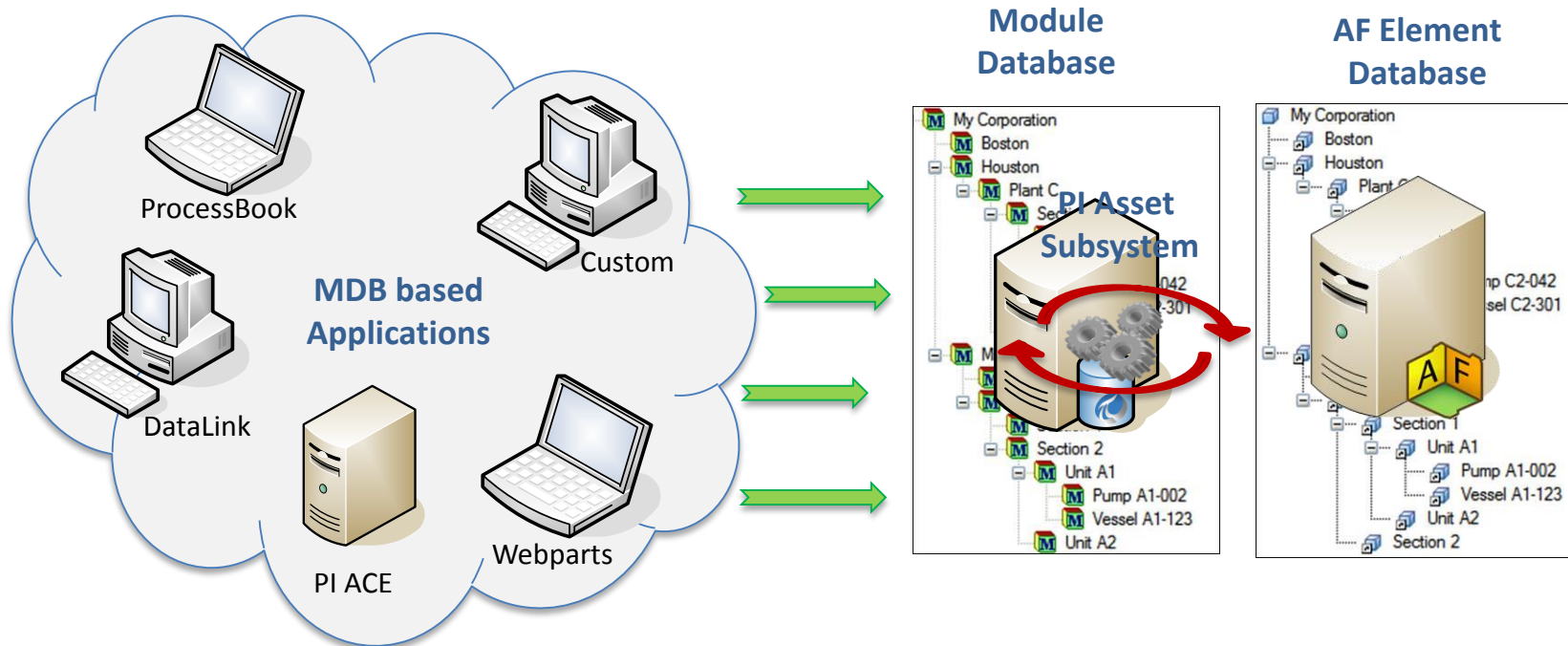
- AF 2 is the future for PI applications
- AF 2 is richer, more scalable and more flexible

## **Protect your investments**

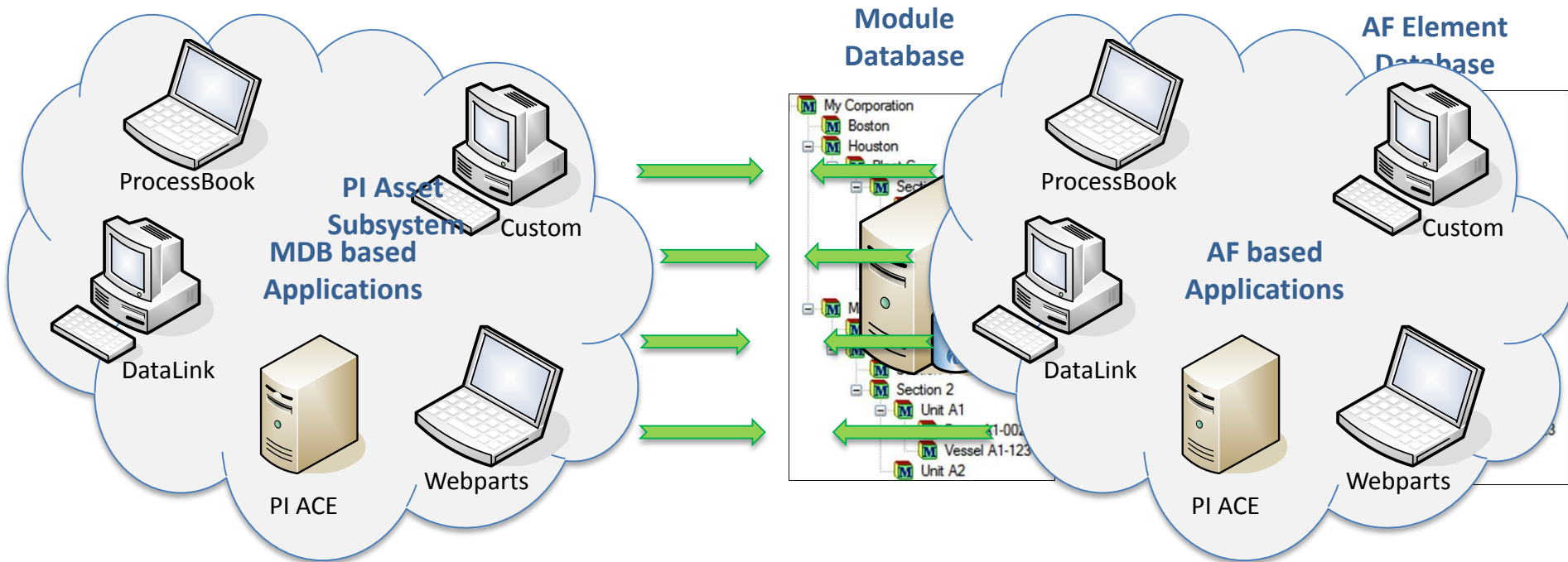
- No customer left behind policy
  - MDB based solutions keep working
- Gradual upgrade process from MDB to AF
  - The back-end first, and then the applications



# Migration and Synchronization

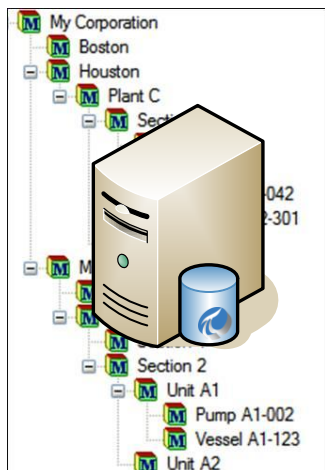


# New releases are AF-based



# Asset Centric PI: AF Element DB

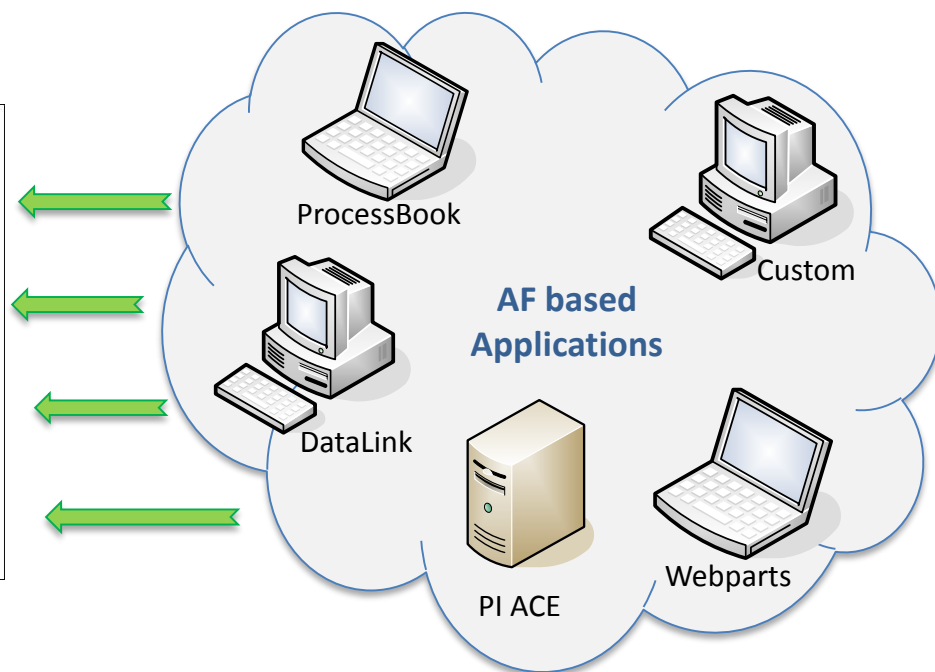
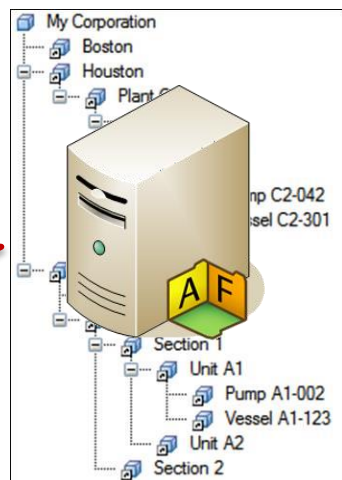
## Module Database



## PI Asset Subsystem



## AF Element Database



- PI Server version 3.5 delivers the MDB to AF subsystem
  - Migration
  - Synchronization

## Requirements:

- AF Server 2.1 must be installed
- PI Server Upgrade only from 3.4.380
  - MDB uses PI security
  - AF uses Windows security
  - 3.4.380 supports Windows security

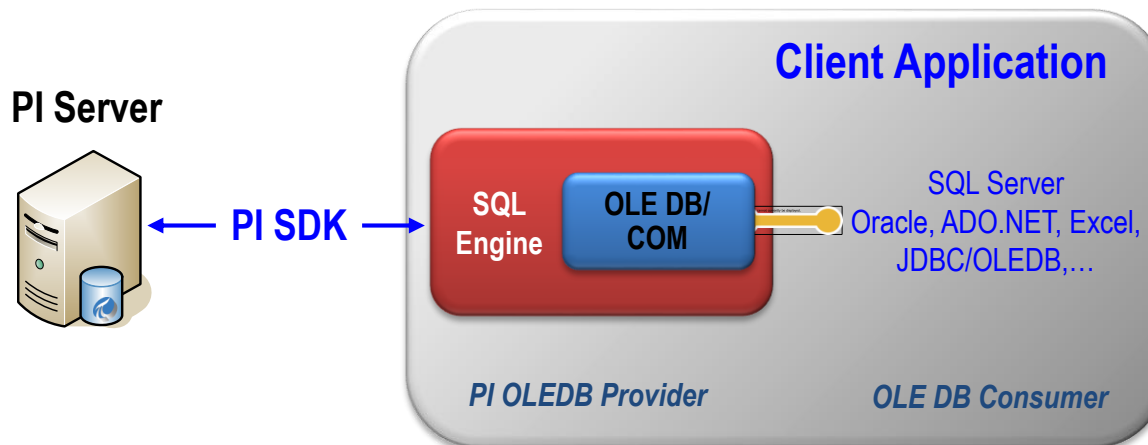
# Data Access



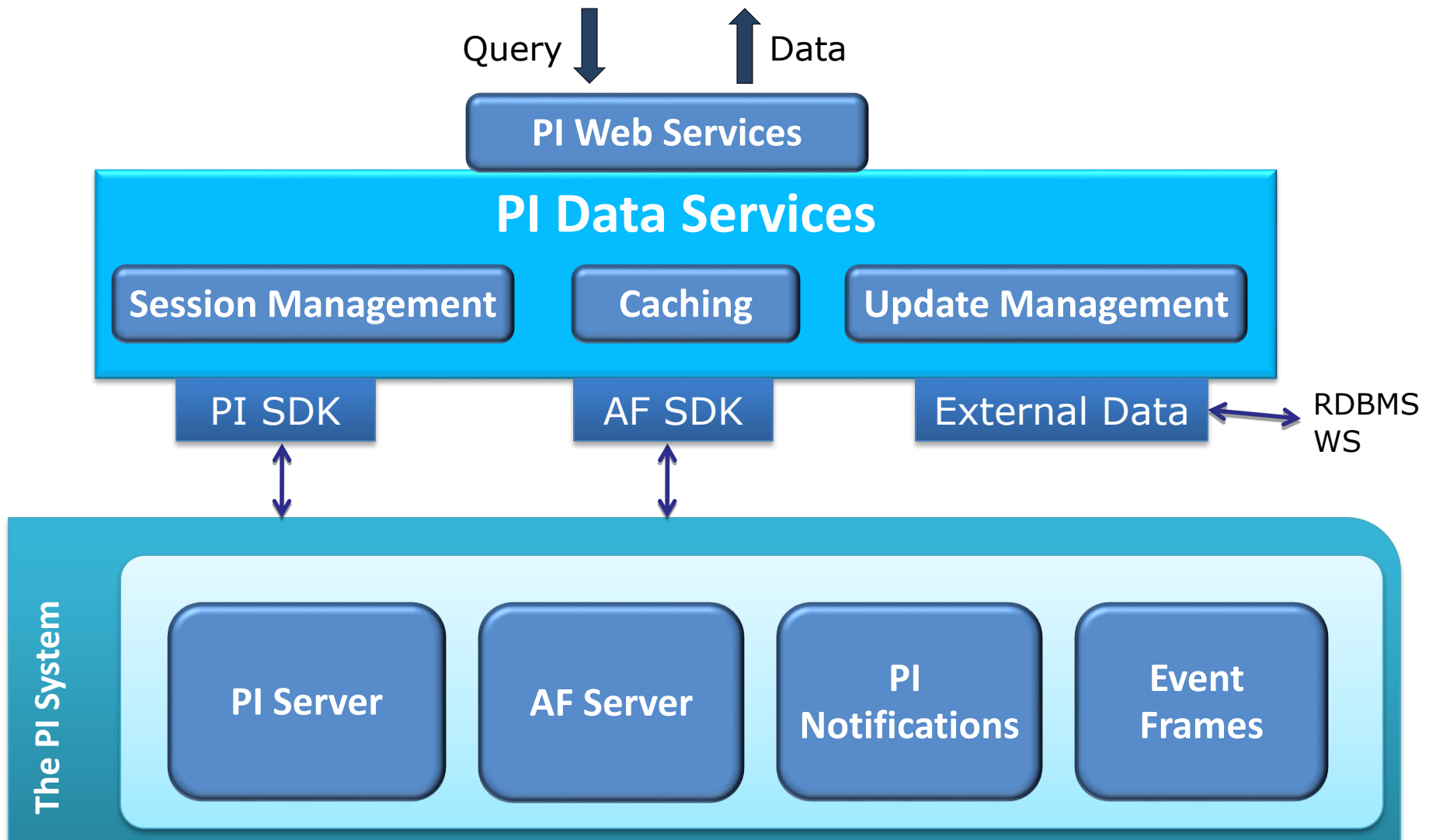
- Collection of all products that offer programmatic data access to all or part of the PI System
  - SQL tools
    - PI OLEDB Provider
    - PI JDBC Driver
    - PI ODBC Client
  - Web Services
    - PI Web Services
  - OPC
    - OPC DA/HDA Server
    - OPC UA Server
  - SDKs (for partners/developers)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

- Integrate with 3<sup>rd</sup> party products (SQL, Office, SAP)
- Create reports (SQL, Crystal, 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 OLEDB Provider and PI JDBC Driver allow applications to access PI data through SQL queries
- Many popular products (e.g. SQL Server or Oracle) provide “built in” support for OLEDB or JDBC standards



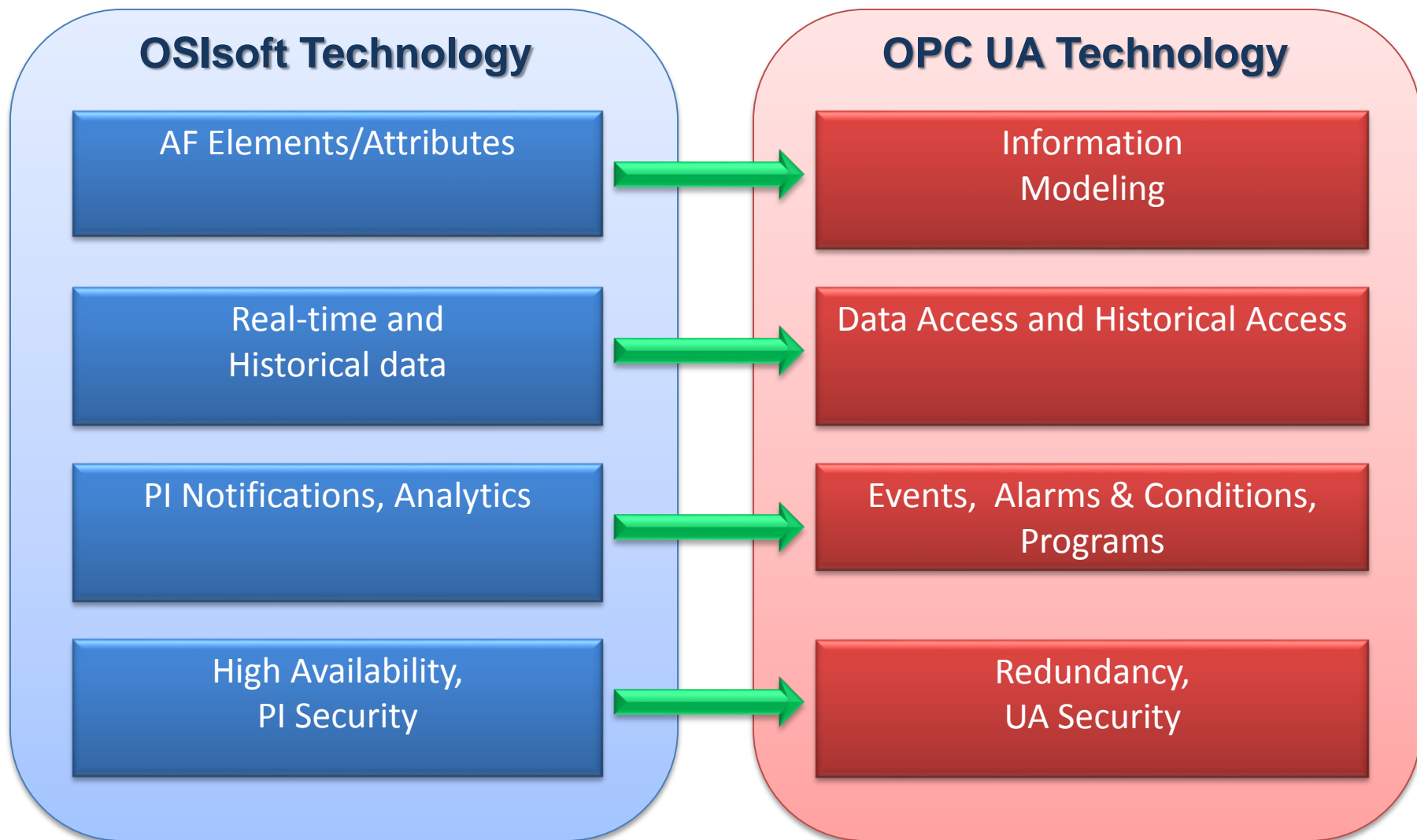
- PI OLEDB 3.3 (Current)
  - Support both 32-bit and 64-bit providers
- PI JDBC 1.0 (Q3 2009)
  - JDBC-OLEDB Bridge for Windows and Linux
- PI System OLEDB 1.0 (Q4 2009)
  - AF data access



- PI Web Services Technical Preview (July)
  - Available in online, hosted environment
- Watch the vCampus webinar on Wed, July 29

- Corporate Member of OPC Foundation since 1996
- Helped develop OPC HDA Specification
- Active participant of major OPC Foundation events (Interop workshops, Developer Conferences, etc)
- Intimately involved in developing OPC UA specifications and code deliverables
  - UA Working Group
  - Early Adopter Program
  - Technical Advisory Council

# Mapping the PI System to OPC UA



- OPC DA/HDA Server 1.2.6 (Current)
  - Achieved Self-Certification Logo from OPC Foundation
- PI OPC UA Server Technical Preview (August)
  - Available in online, hosted environment
- Watch the vCampus webinar in August

- PI SDK 1.3.8 (Current)
  - 64-bit support
- AF SDK 2.1 (August)
  - 64-bit support
- PI SDK 1.4.0 (Q4 2009)
  - Client-side buffering for manually entered data, ACE calculations writing to PI, and custom SDK-based interfaces

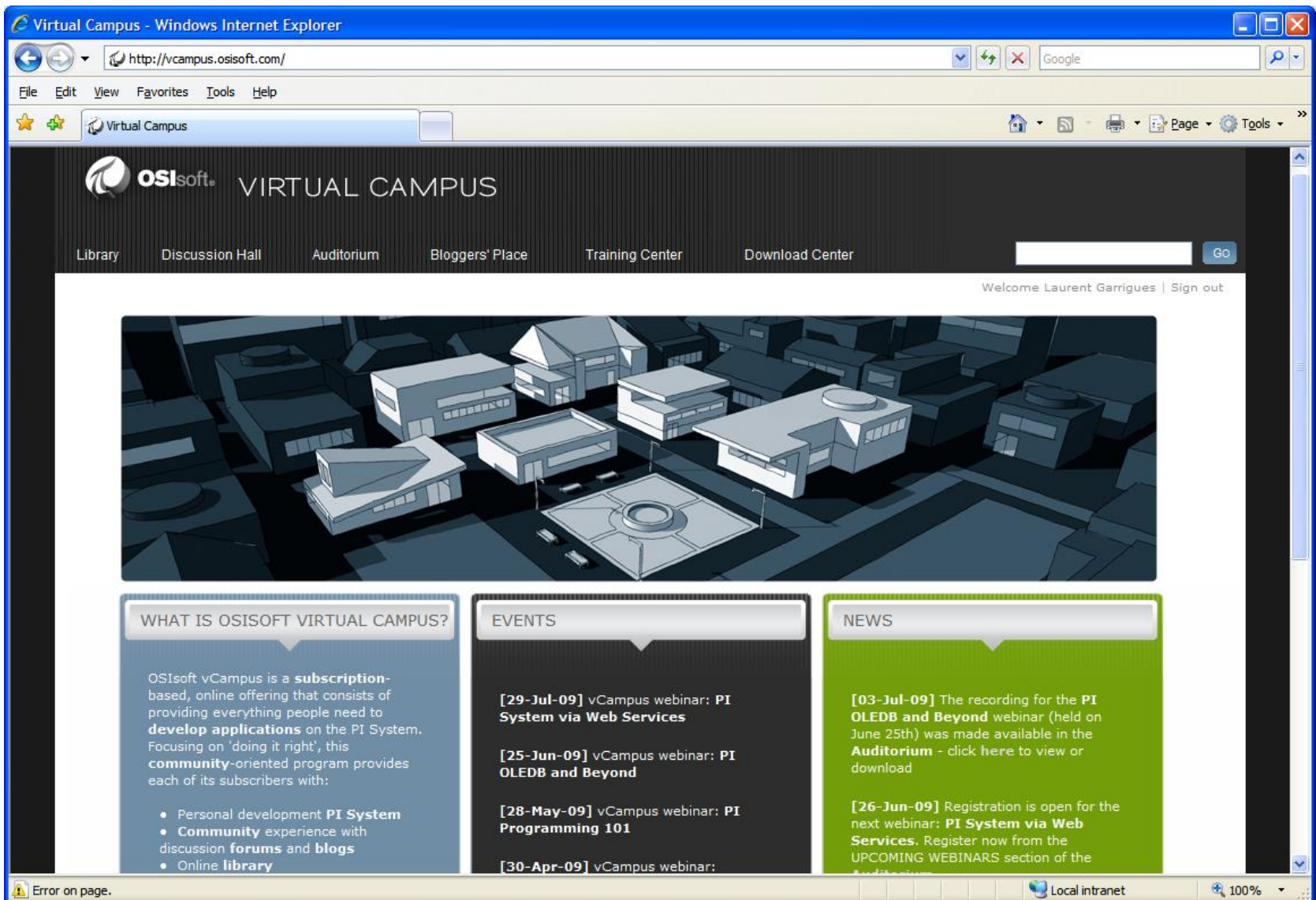
- Strong support for standards
- Support multiple programming languages
- Support multiple hardware and operating system platforms
- Support updates and asynchronous calls for better performance and scalability
- Simplify buffering for data writes to ensure no data loss
- Low-level access to all PI system data (including metadata)

# OSIsoft vCampus



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

# OSIsoft vCampus website



- Major Release
- Minor Release

# OSIsoft Product Roadmap

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

## Server

PI Server (3.4.380)

AF (2.1)

Notifications (1.1)

ACE (2.1.32, 1.2.32)

System Management Tools (3.2.4.2)

## Data Access

PI SDK

PI OLEDB

PI System OLEDB

PI Data Services

PI JDBC

OPC UA Server

Web Services

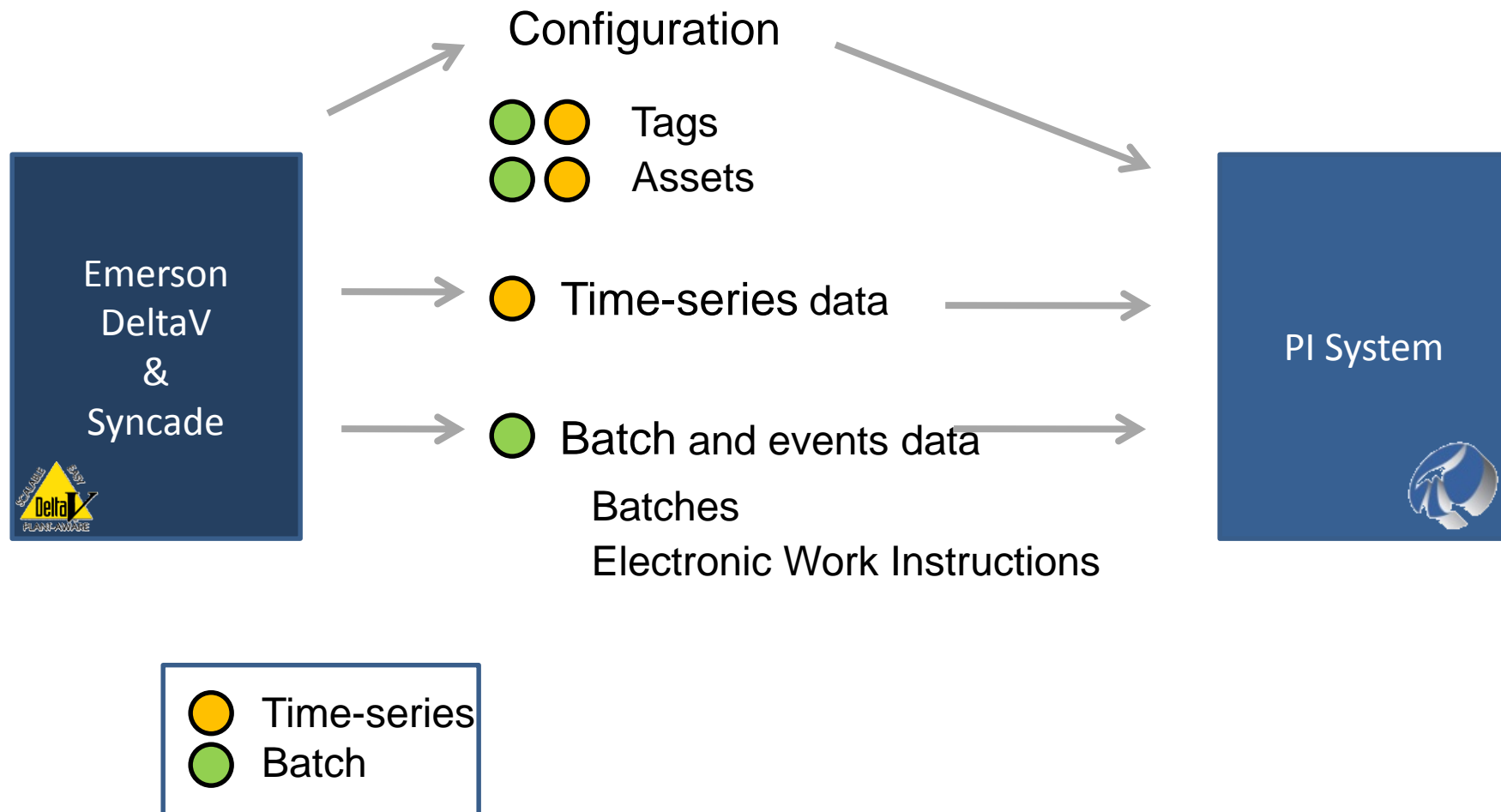
PI ICU

CTP

CTP

## PI Interfaces





# OSIsoft Product Roadmap – Interfaces

- Major Release
- Minor Release

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

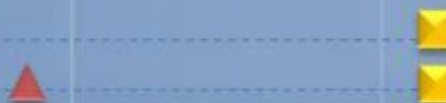
## General Interfaces

AutoPointSync  
PI UFL  
RDBMS  
WITSML  
IT Monitor  
Power Meter



## OPC Interfaces

PI OPC UA Interface  
PI OPC Interface



## Batch Interfaces

ABB 800xA  
Siemens Simatic PCS7  
Emerson DeltaV Comp Suite  
Emerson DeltaV Syncade  
Wonderware InBatch



# OSIsoft Product Roadmap – Vendor Specific Interfaces

 Major Release  
 Minor Release

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

## Vendor Specific Interfaces

BACNet



ACS Prism



DNP3



Bailey Infi90



Yokogawa FAST/Tools



Foxboro



Foxboro SCADA



GE Cimplicity



Modbus



Modbus Ethernet



XML



IPMI



ABB Advant



Areva (ESCA) HabConnect SOE



Cal ISO Dispatch



Hartman & Braun ConlinkX



Siemens Power TG



NRC Emergency Response



PI to NRCERDS



SAFER Weather Station



Thermotron 8800 Controlier



- PI AF 2.1 - August 2009
- PI Notifications 1.1. - August 2009
- PI ProcessBook 3.2 - September 2009
- PI Server 3.4.380 - September 2009
- PI Server 3.5 - 4Q 2009
- PI Web Parts 3.0 - 4Q 2009



# Thank you

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