OSIsoft

Regional Seminars Series

PI System Products Overview

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Empowering Business in Real Time.

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Turn Real-time Data Into Actionable Information

THE PI TECHNOLOGY GIVES THE POSSIBILITY TO PUT IN PLACE BUSINESS SOLUTIONS

PROBLEMS	TURN REAL-TIME DATA INTO ACTIONABLE INFORMATION	RESULTS
ENERGY RESOURCES AND UTILISATION	DATA → INFORMATION → ACTIONS	ENERGY AND RESOURCES MANAGEMENT
EQUIPMENT STATUS	PI INFRASTRUCTURE → BUSINESS DECISIONS	CONDITION-BASED MAINTENANCE
KNOWLEDGE PERENNIALITY		KNOWLEDGE TRANSFER AND RETENTION
PROCESS CONDITIONS AND QUALITY		PRODUCTION OPTIMIZATION
ENVIRONMENTAL REQUIREMENTS AND REGULATIONS		COMPLIANCE

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The PI System

Connect

Acquire data from any time series data source

The Interfaces

Integrate

Aggregate, normalize and archive a large amount of information that can be scaled to your growing business requirements

The Server

Analyze

Ad-hoc or automated advanced data post-processing. Notify users and systems of significant events.

The Analytics

Visualize

Display information, identify problems and perform corrective actions with the help of simple to use and intuitive graphical and analytical tools

The Visuals

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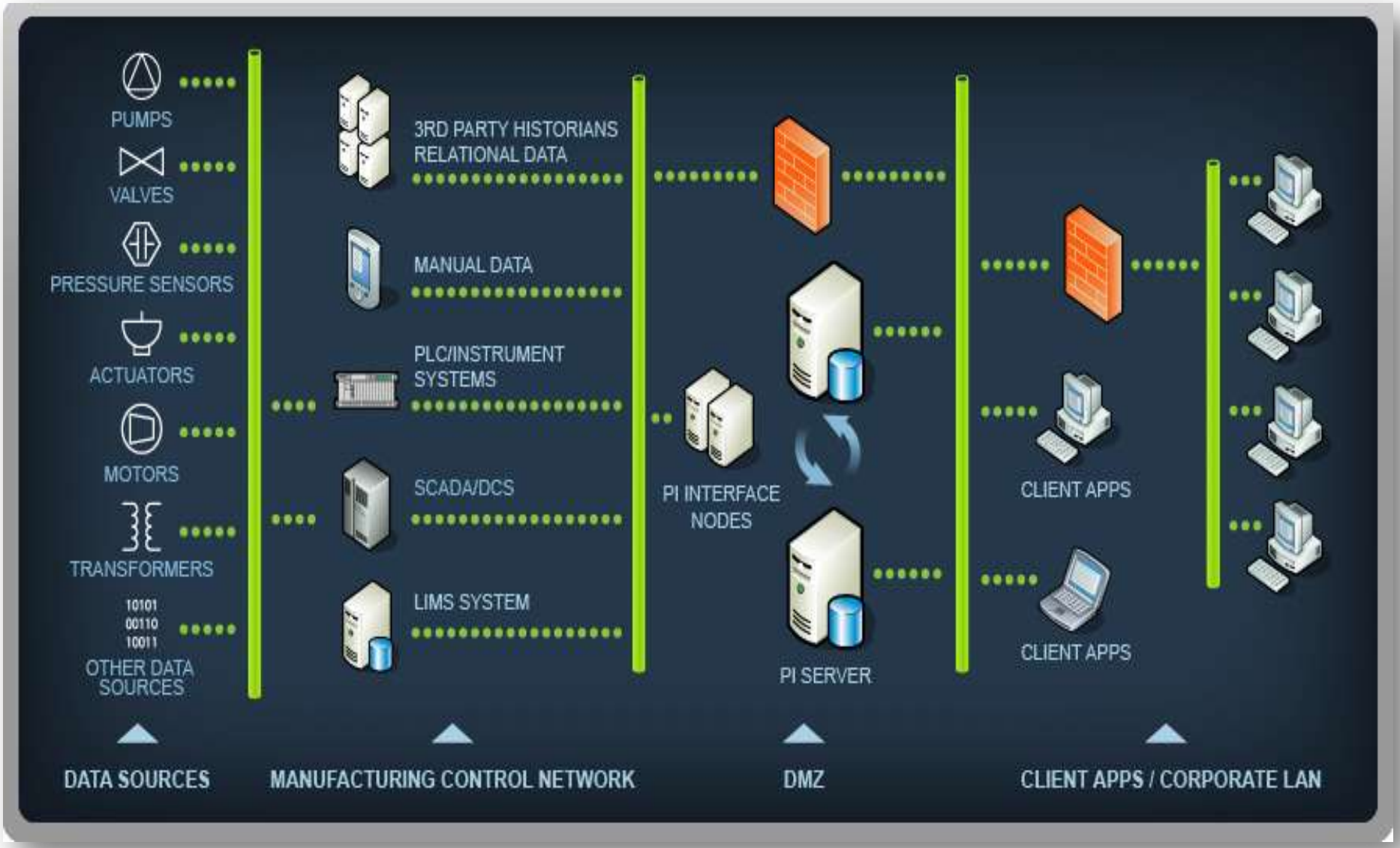
The PI System: Generic Architecture



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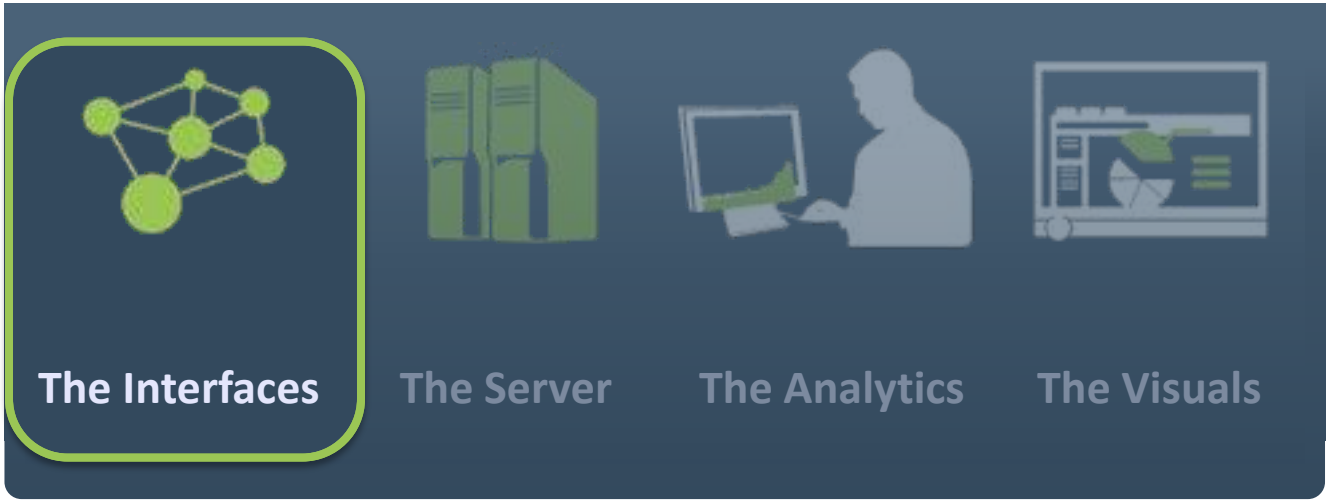
The PI System: Connect



The PI System connects with real-time data sources every second, minute or day and stores the values forever

- Measures and aggregates a broad range of data types
- Handle either or both time-series data and events
- Secures the access and transmission of the data
- Data collection redundancy and high availability

The PI System can connect to more than 400 different systems

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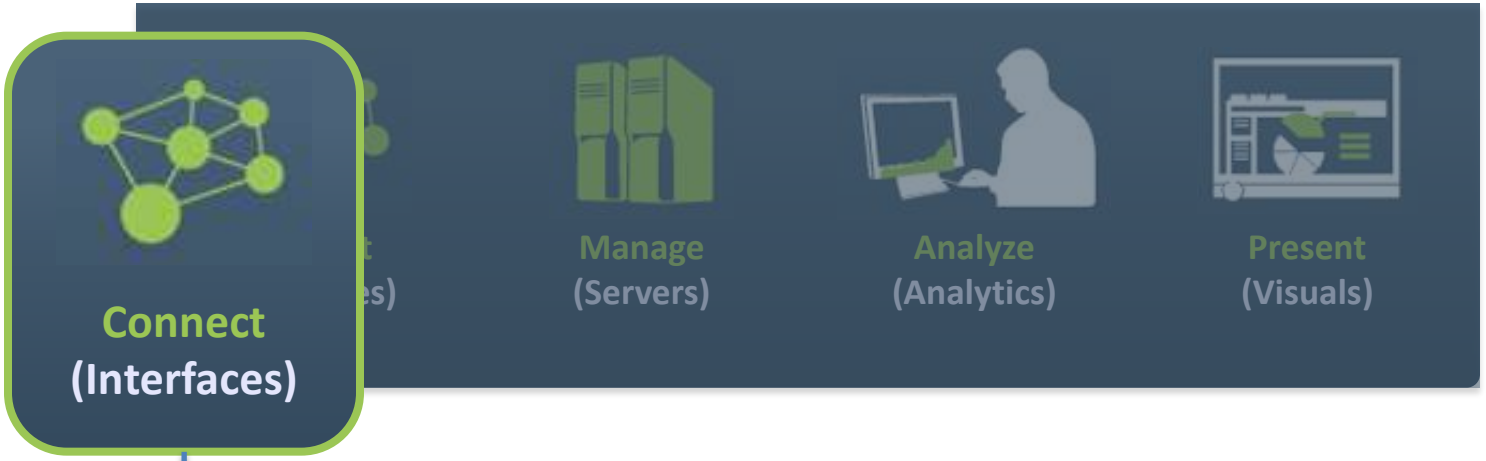
The PI System: Connect



Real-time
- DCS
- PLC
- SCADA
- OPC DA/HDA
- 3rd Party
- COM Connector

Custom
- SDK
- API

Relational
- OLEDB
- ODBC/JDBC
- ORACLE
- SQL

AMI
- Elect Meters
- Gas Meters
- Water Meters Interfaces

Web Services
- Enterprise Gateway
- SOA

ERP
- RLINK SERVERS

IT
- MCN Health Monitor

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The PI System: Manage

Within the PI System, the server components …

- Archive the data and keep it online for decades
- Contextualize and enrich the values from the plant floor
- Distribute the data to clients application
- Expose the data supporting standard communication protocols

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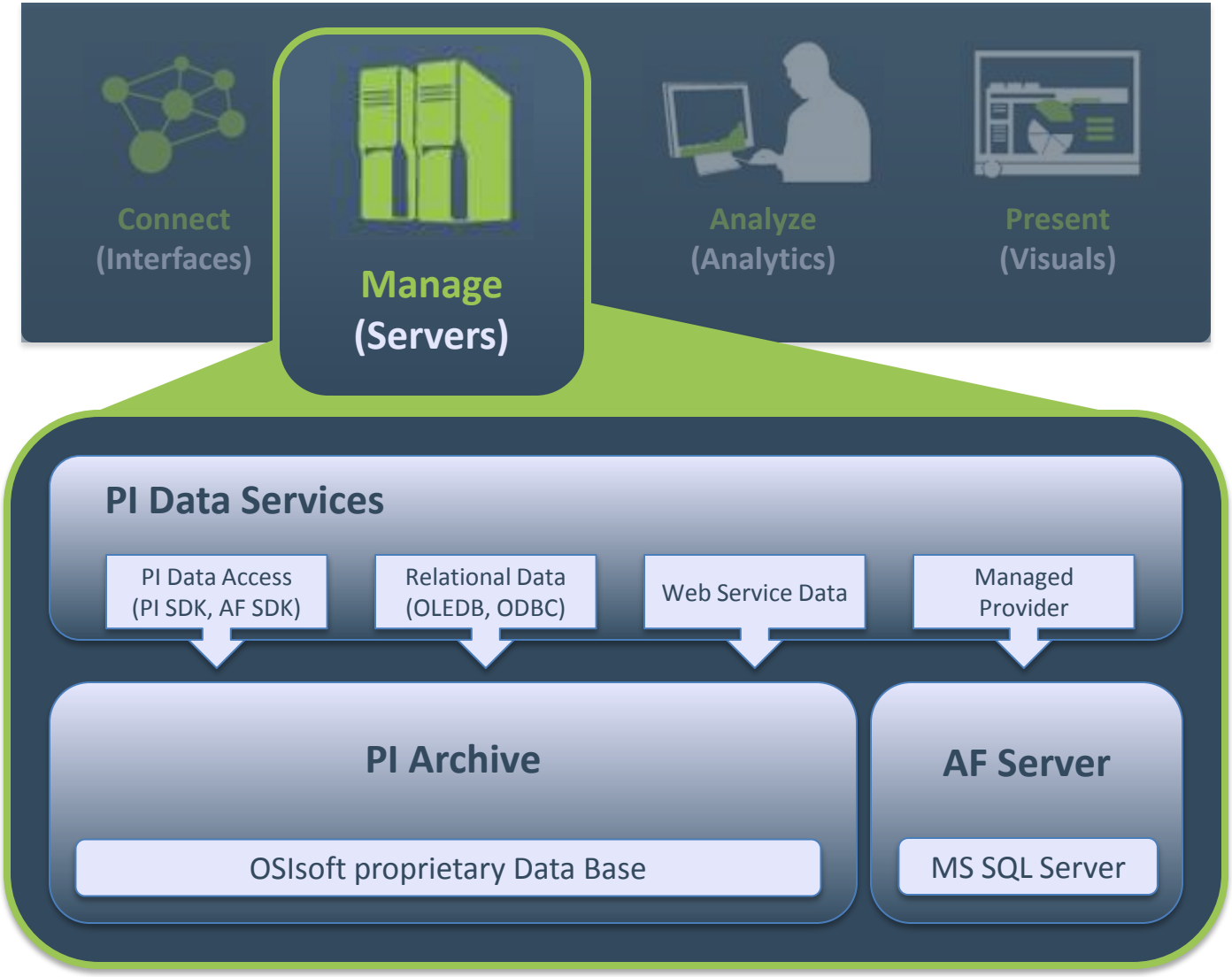
The PI System: Manage



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The PI Server

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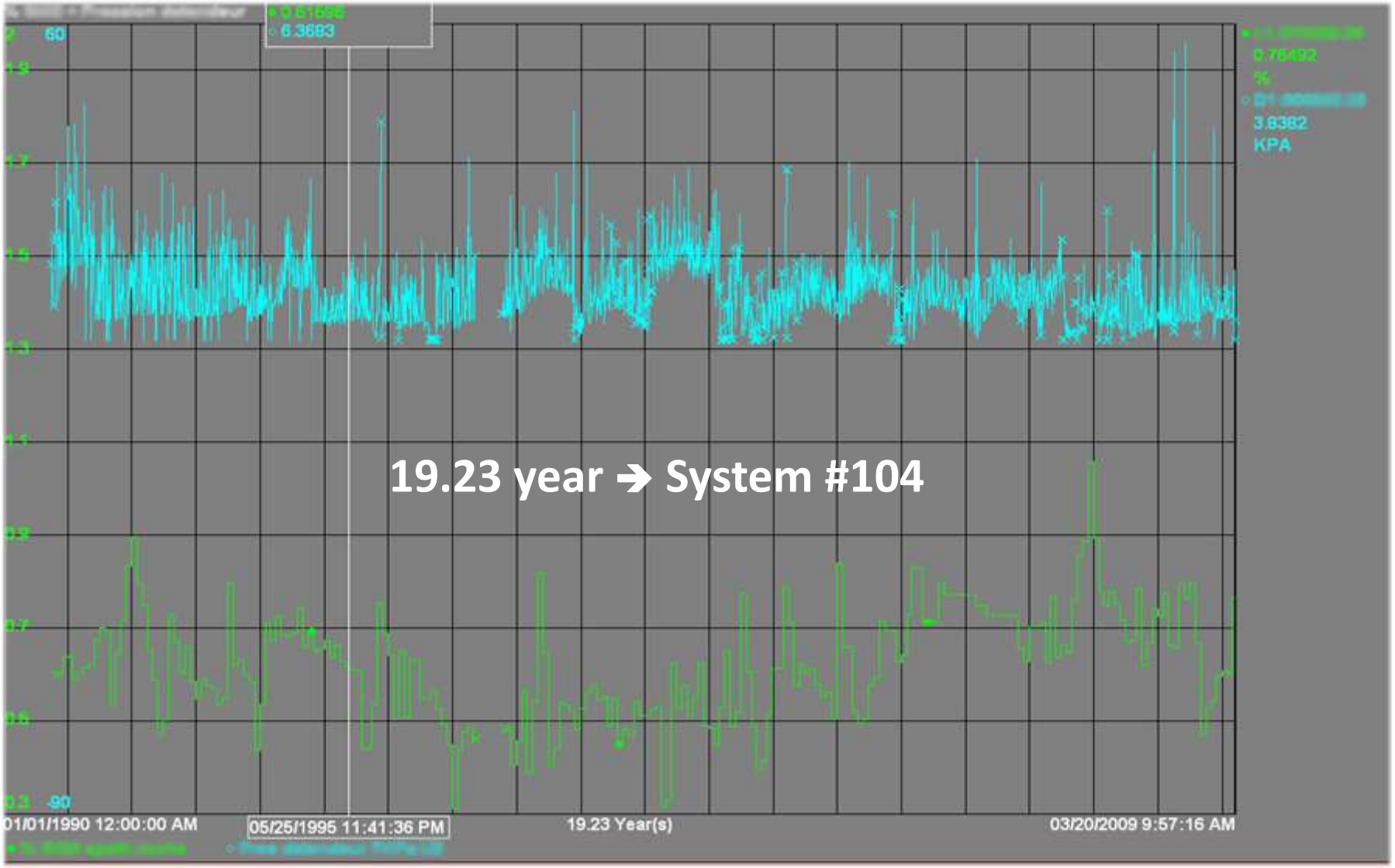
The PI Server: Historize!



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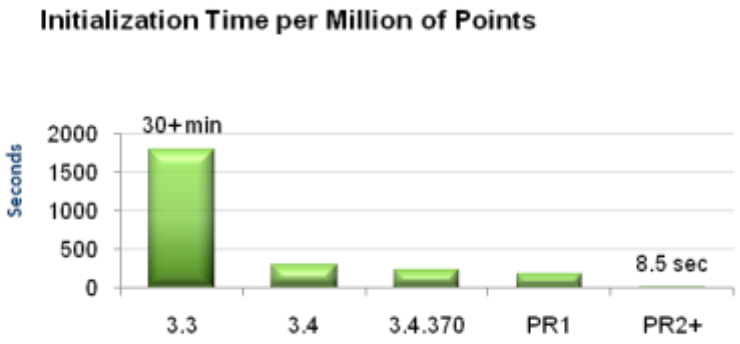
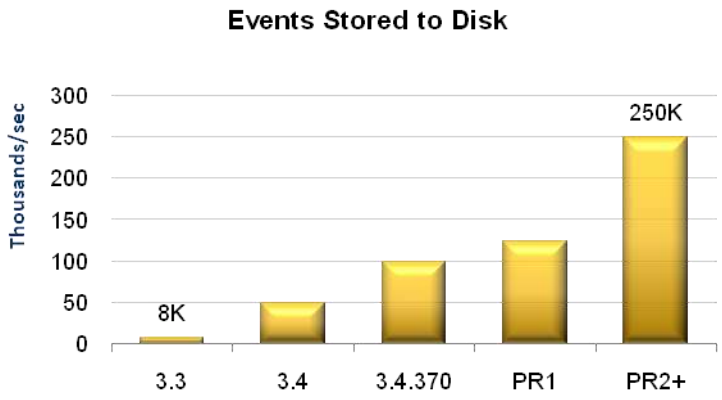
The PI Server Performance Over Time

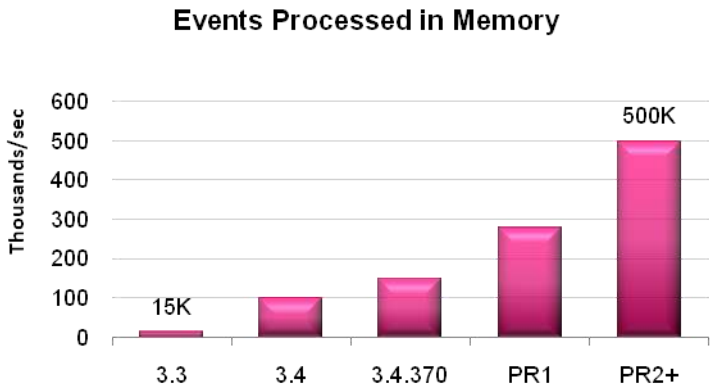
Startup Time



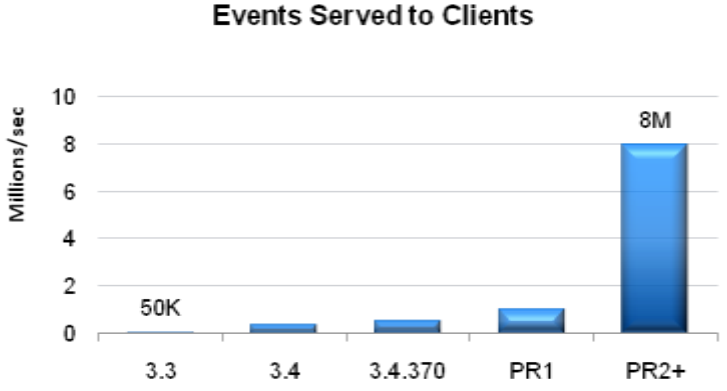
Archiving Rate



Snapshot Rate



Archive Query Rate



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The PI AF Server

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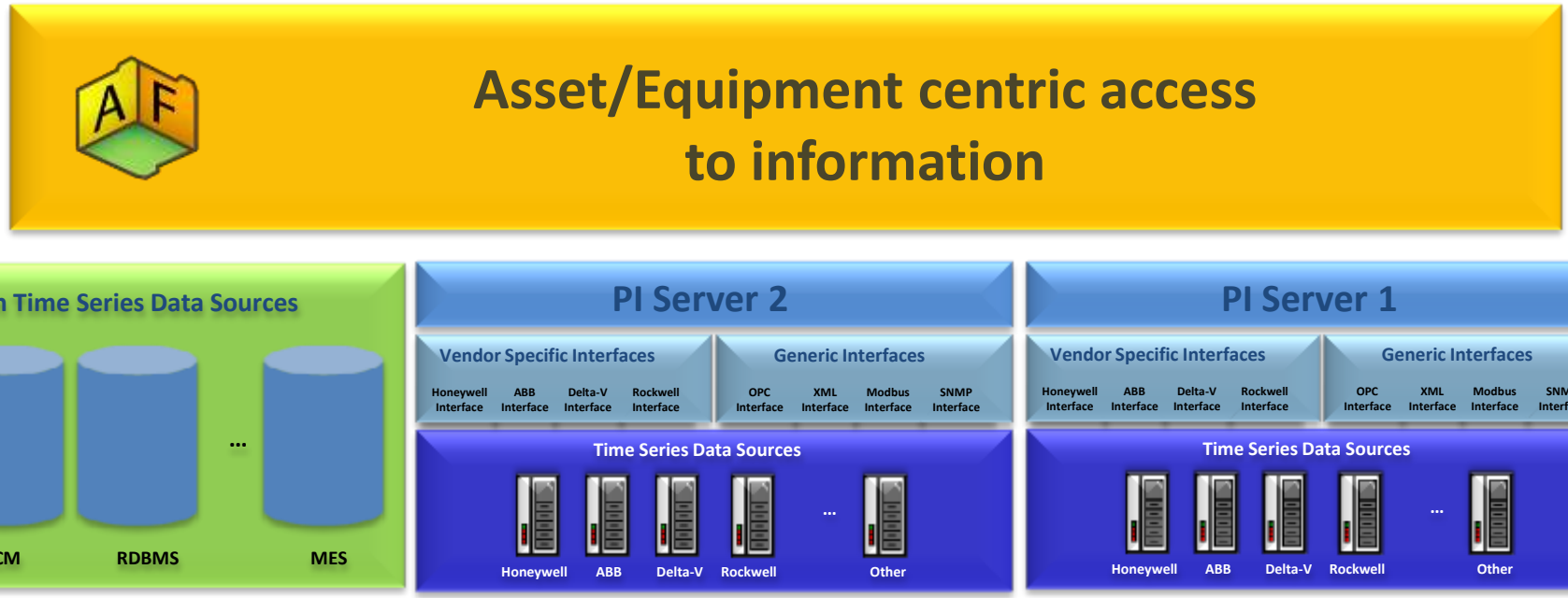
The PI AF Server in the PI System

- Structures and organizes the real time data by asset/equipment
- Store static information
- Reach to non time series data
- Spans multiple PI Servers



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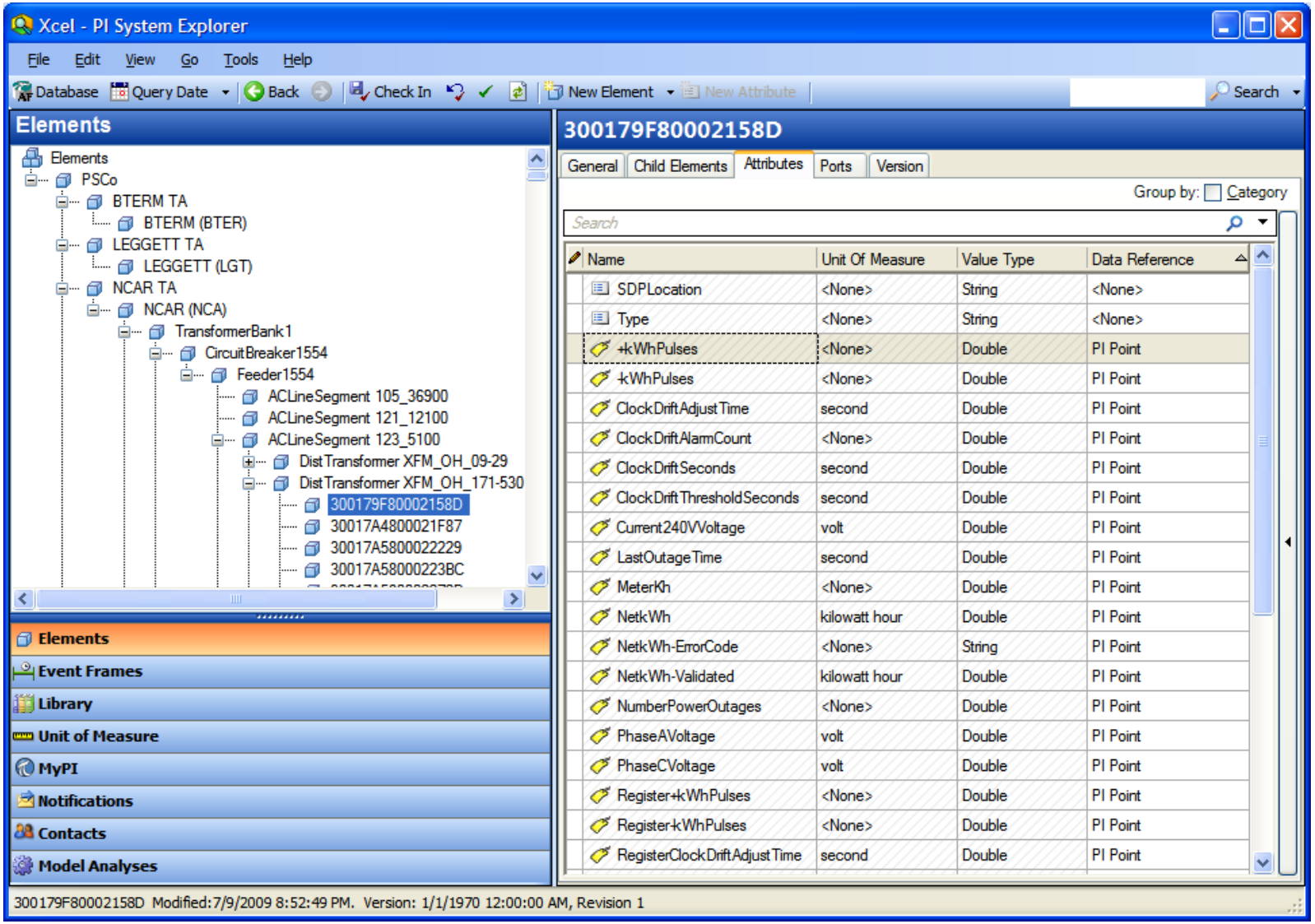
The PI AF Server



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The PI Data Access layer

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The PI Data Access Components

- PI ODBC Client
- PI OLEDB Provider
- PI JDBC Driver
- OPC
  - OPC DA/HDA Server
  - OPC UA Server
- Web Services
  - PI Web Services
- SDKs AF SDK

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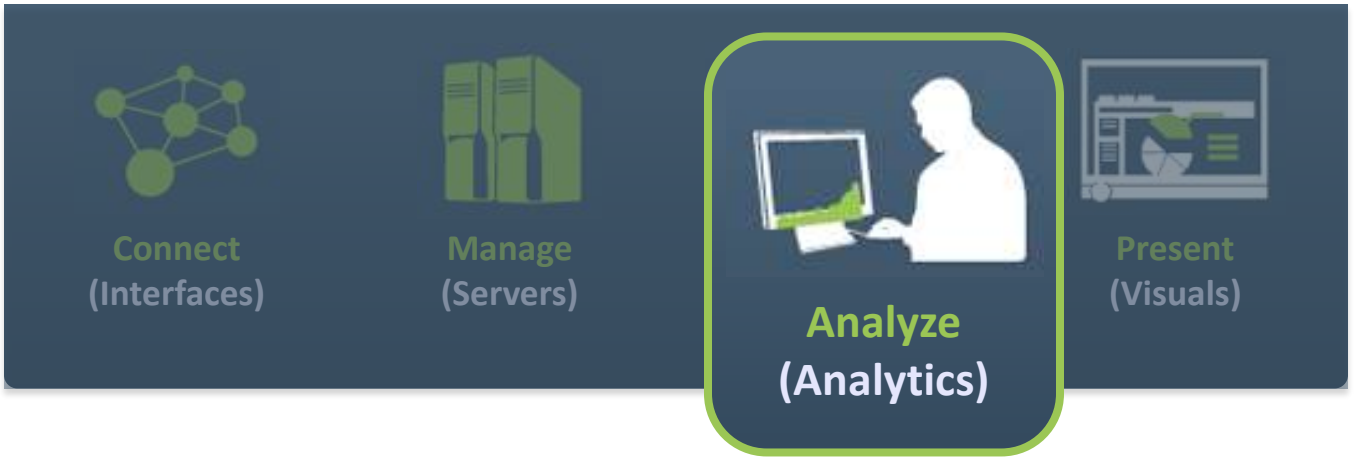
The PI System: Analyze



Convert real-time data into actionable information

- CEP (Continuous Event Processing) & Post processing
- Equations, calculations, aggregations, filters, business rules
- Reports, Notifications and Alerts

Monitor business & operational performance in real time

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The PI System: Analyze

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The PI Analytics: PI Performance Equations

- Pump daily uptime

```
TimeEQ('04:123PUMP_STAT.DC','t','*',"ON")/3600
```

- High/Low alarm on tank level with alarm reset every shift

```
If ( Hour('*') = 6 or Hour('*') = 18 ) and Minute('*') = 1 Then
        If (TagMIN('DC1-LI-005.PV','*','*-5m') >= 'UO-Niveau-Reservoir-Floculent-max'
        or TagMax('DC1-LI-005.PV','*','*-5m') <= 'UO-Niveau-Reservoir-Floculent-min') then
                1
        else 0
else Max(PrevVal('DC1-LI-005.PV.Alarme.RQ','*-5s'),
        If (TagMIN('DC1-LI-005.PV','*','*-5m') >= 'UO-Niveau-Reservoir-Floculent-max'
        or TagMax('DC1-LI-005.PV','*','*-5m') <= 'UO-Niveau-Reservoir-Floculent-min') then
                1
        else 0)
```


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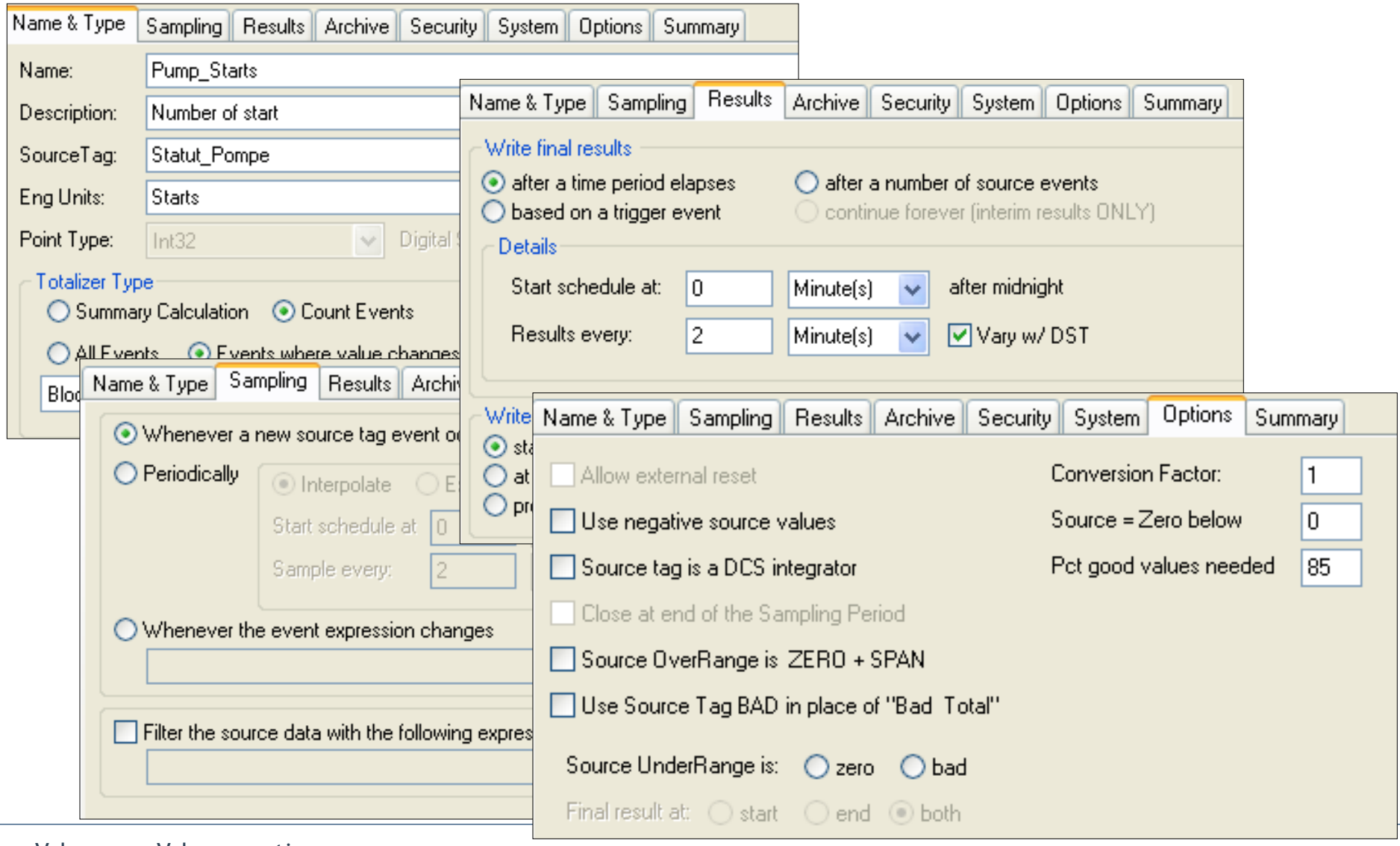
The PI Analytics :PI Totalizer



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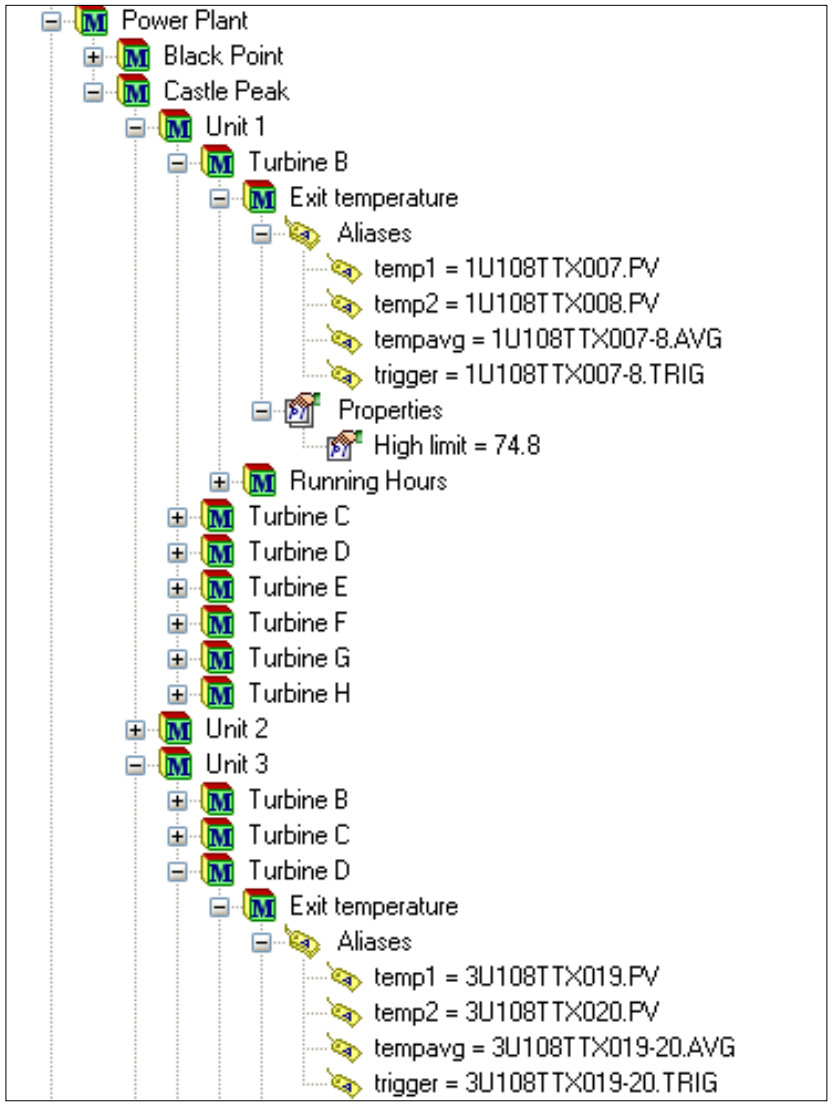
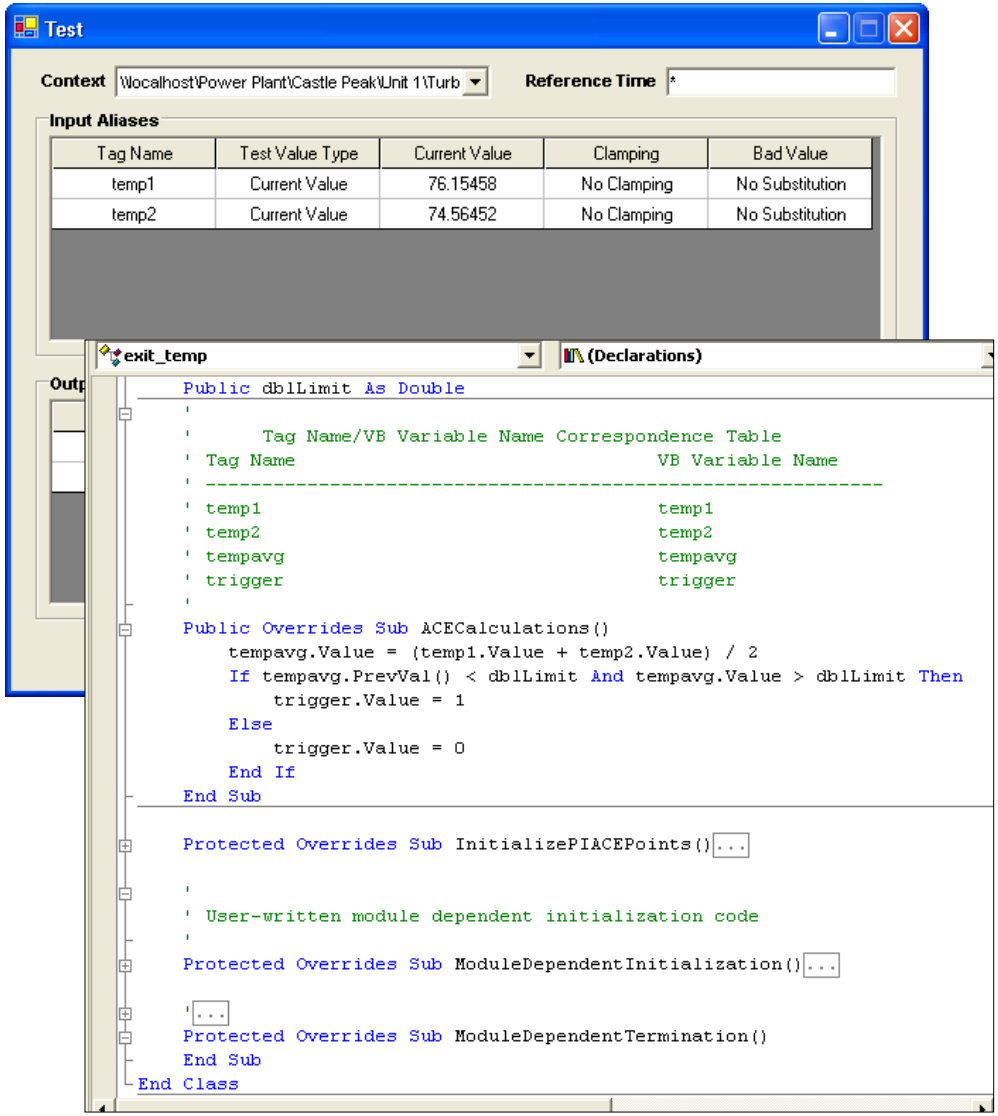
PI ACE (Advanced Computing Engine)





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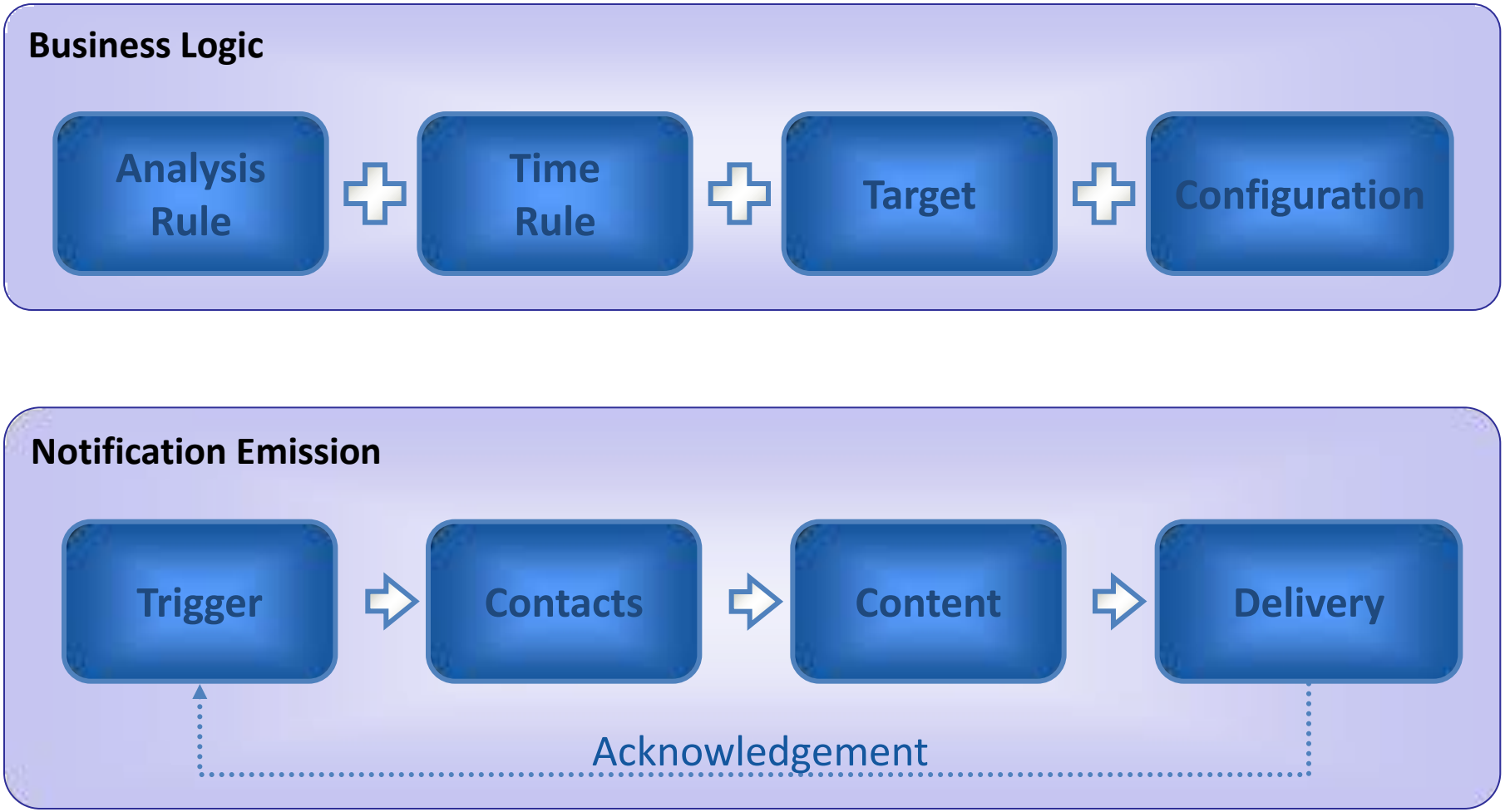
PI Notifications



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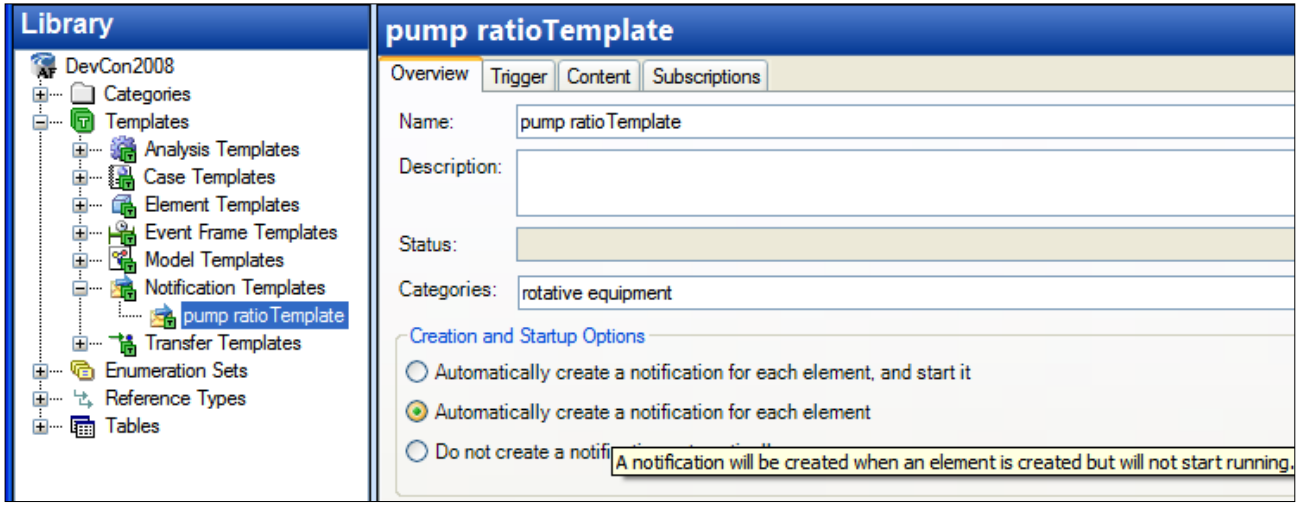
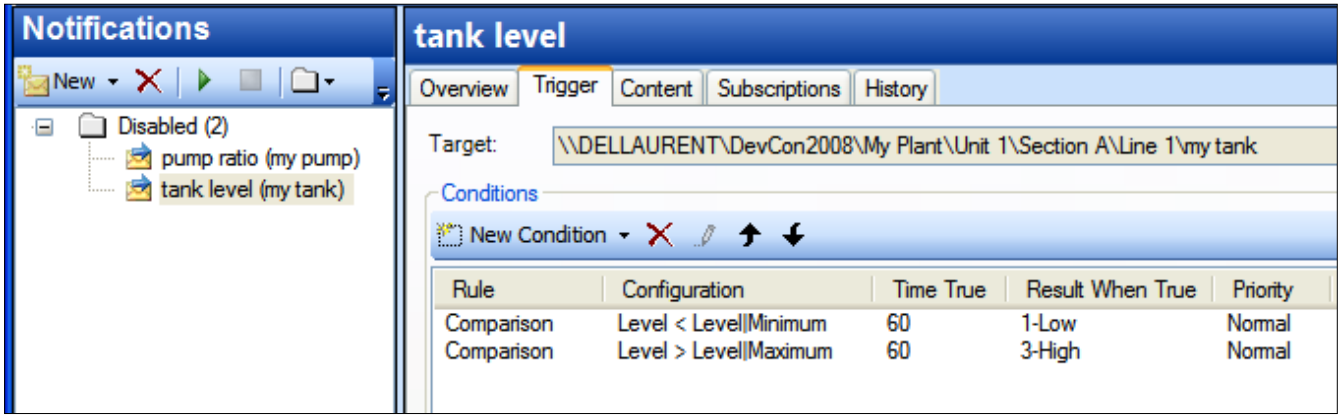
Within PI Notifications

- Notification Templates



- Notifications Rules



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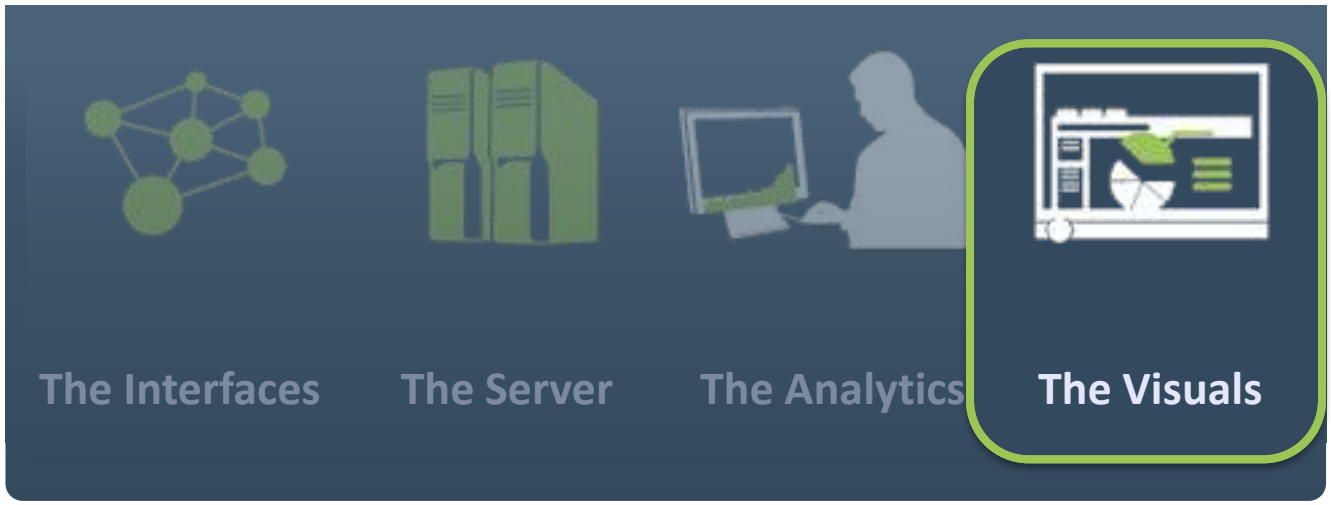
The PI System: Visualize



The decision makers can use the well-known tools like:

- OSIsoft PI ProcessBook
- Microsoft Office Excel or Microsoft Office SharePoint
- SAP Enterprise Portal

The Visuals stimulates the creativity and gives solutions to end-users for solving business problems.

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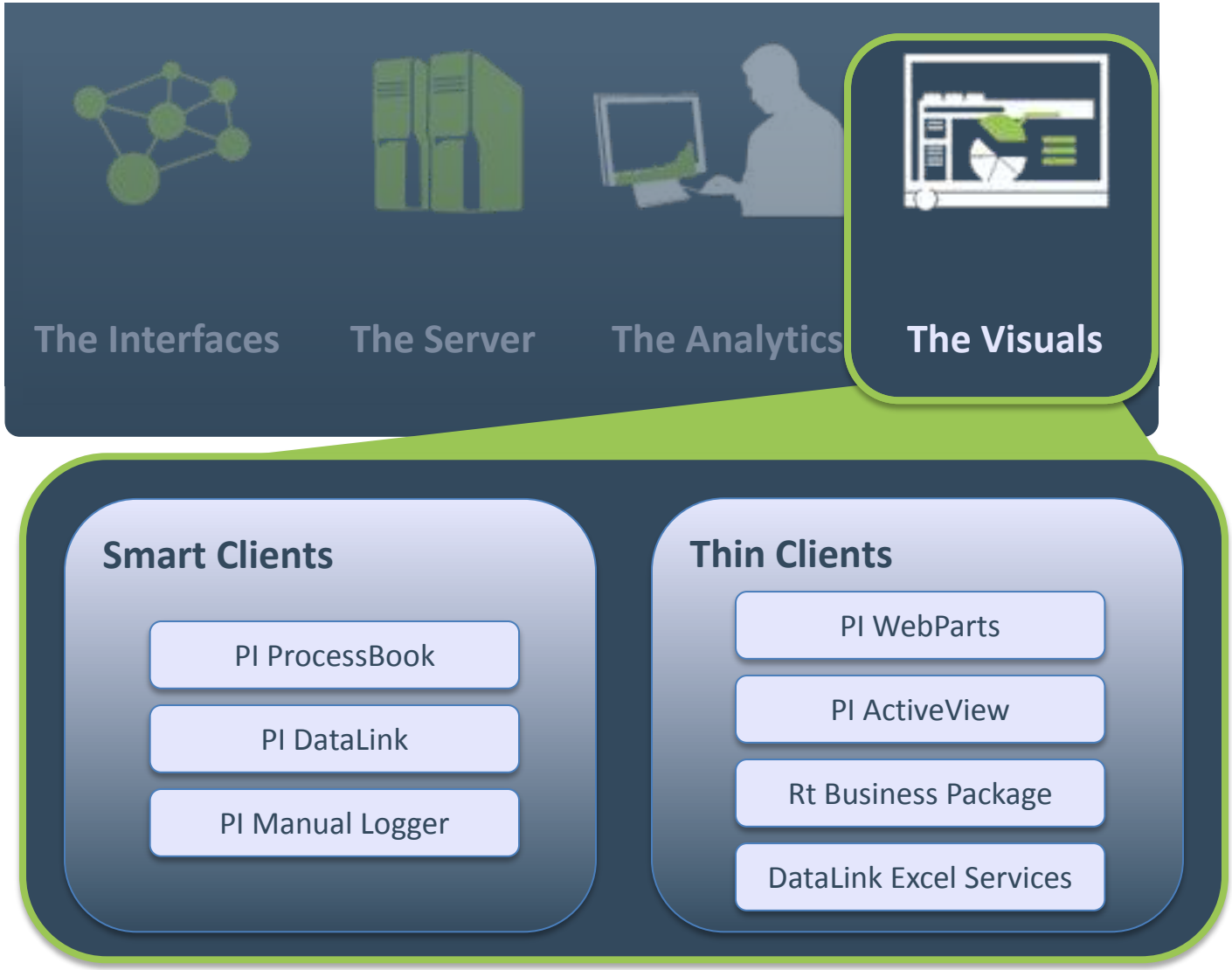
The PI System: Visualize



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The Smart Clients

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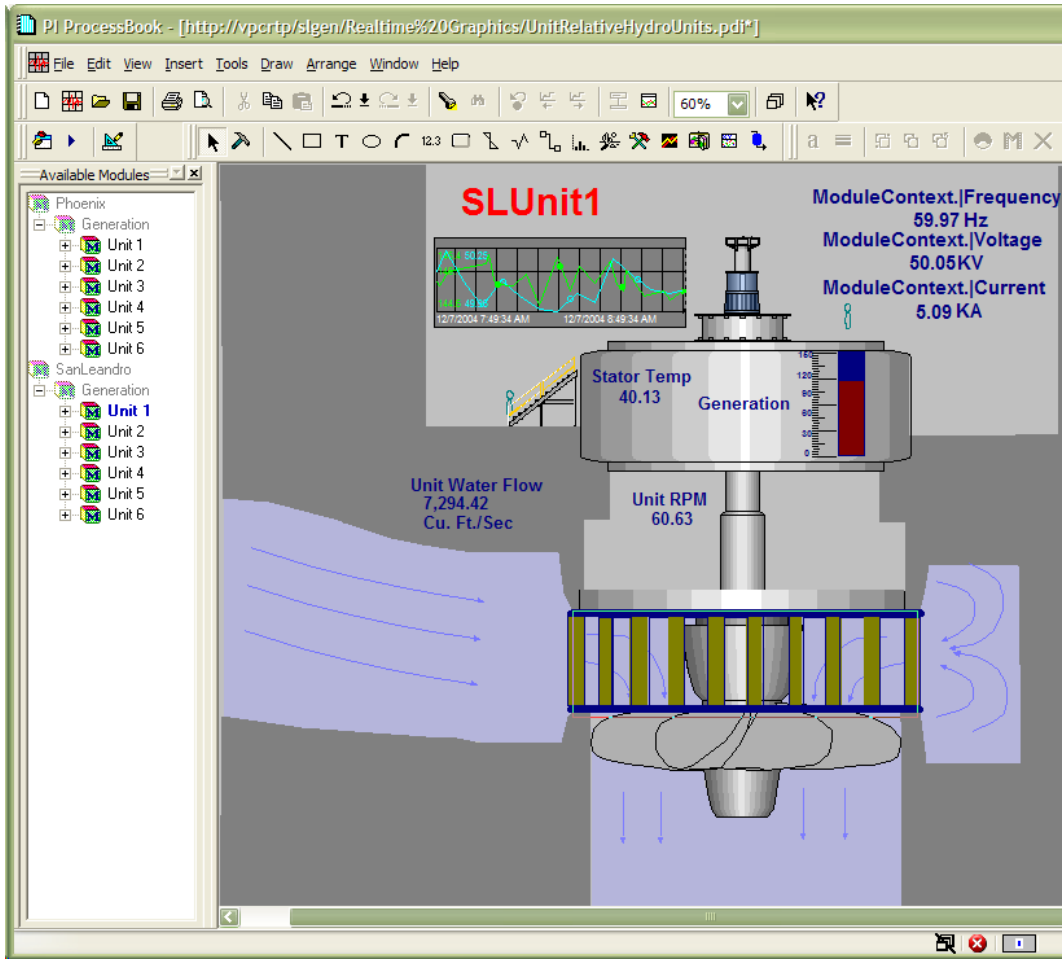
PI ProcessBook

- Draw intuitive graphical diagrams and include live data
- Make one diagram refer to many similar units or assets
- Easily trend data
- View annotations to data points
- Intuitive “status” indicator displays health of data on the display
- Large symbol library included to make drawings quickly



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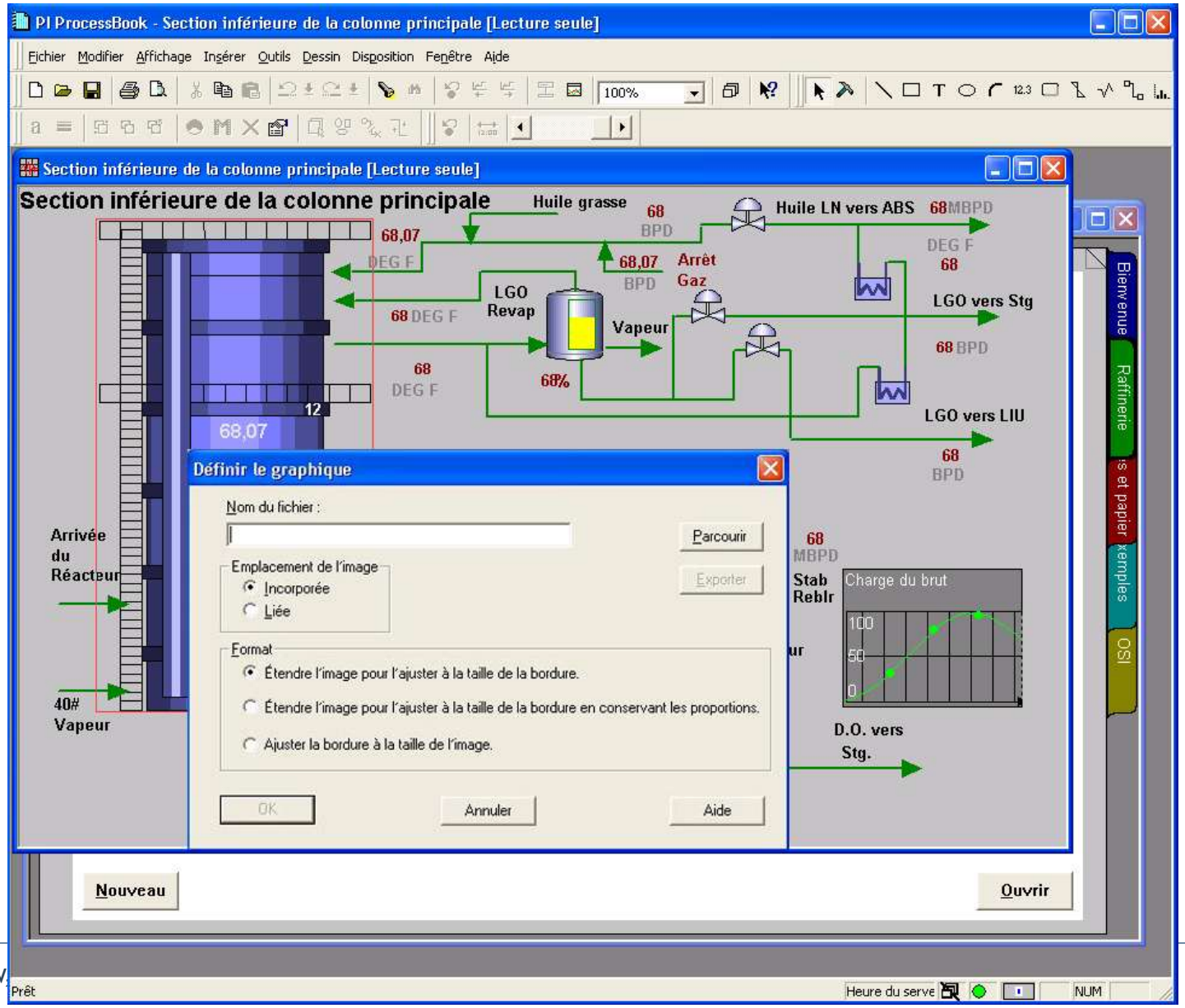
PI ProcessBook localized



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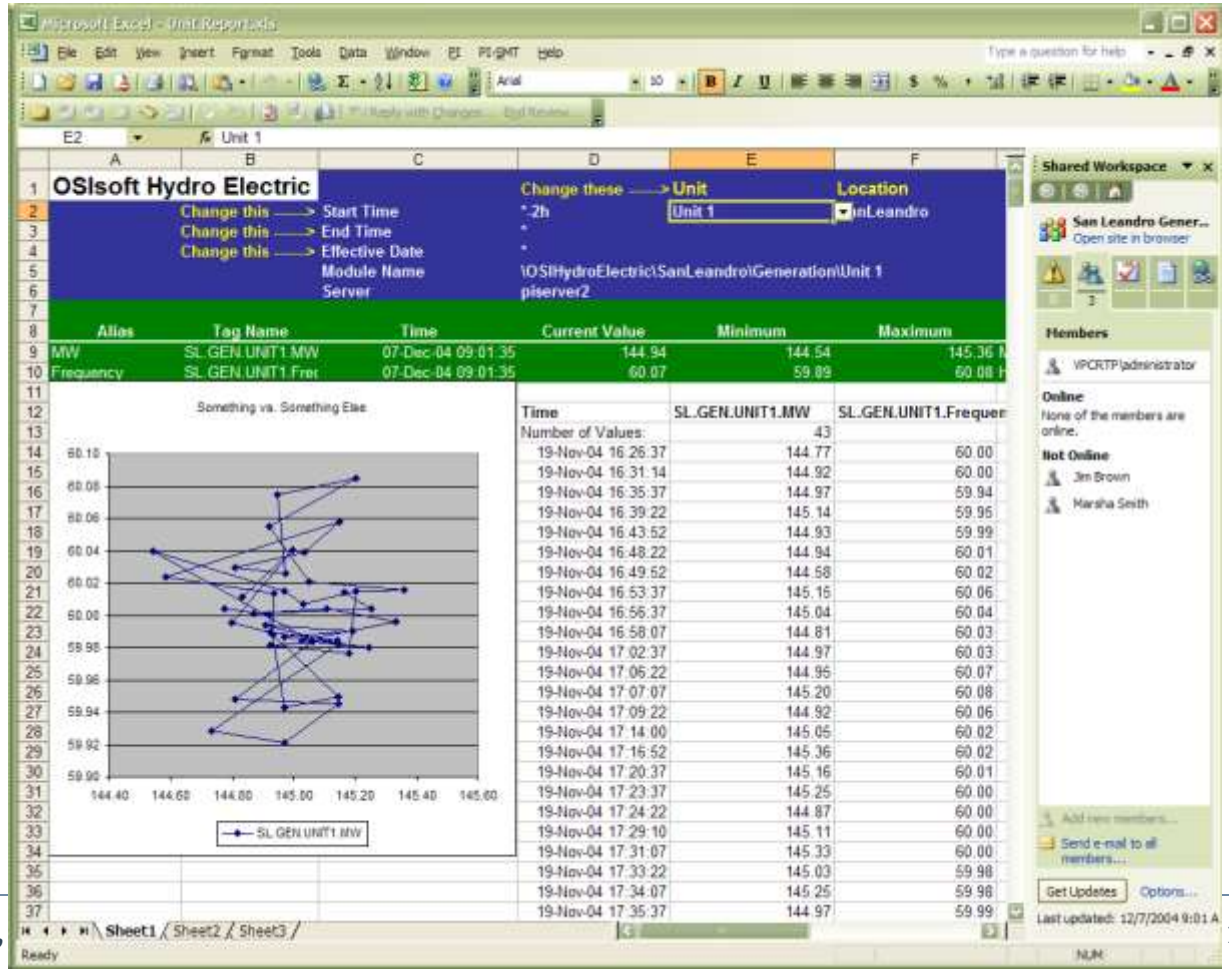
PI DataLink

- PI Add-In for Microsoft Excel and Lotus
- Create interactive reports and analyses in a spreasheet
- Worksheets update each time the user adjusts a time range
- Worksheets can also be integrated with contexts



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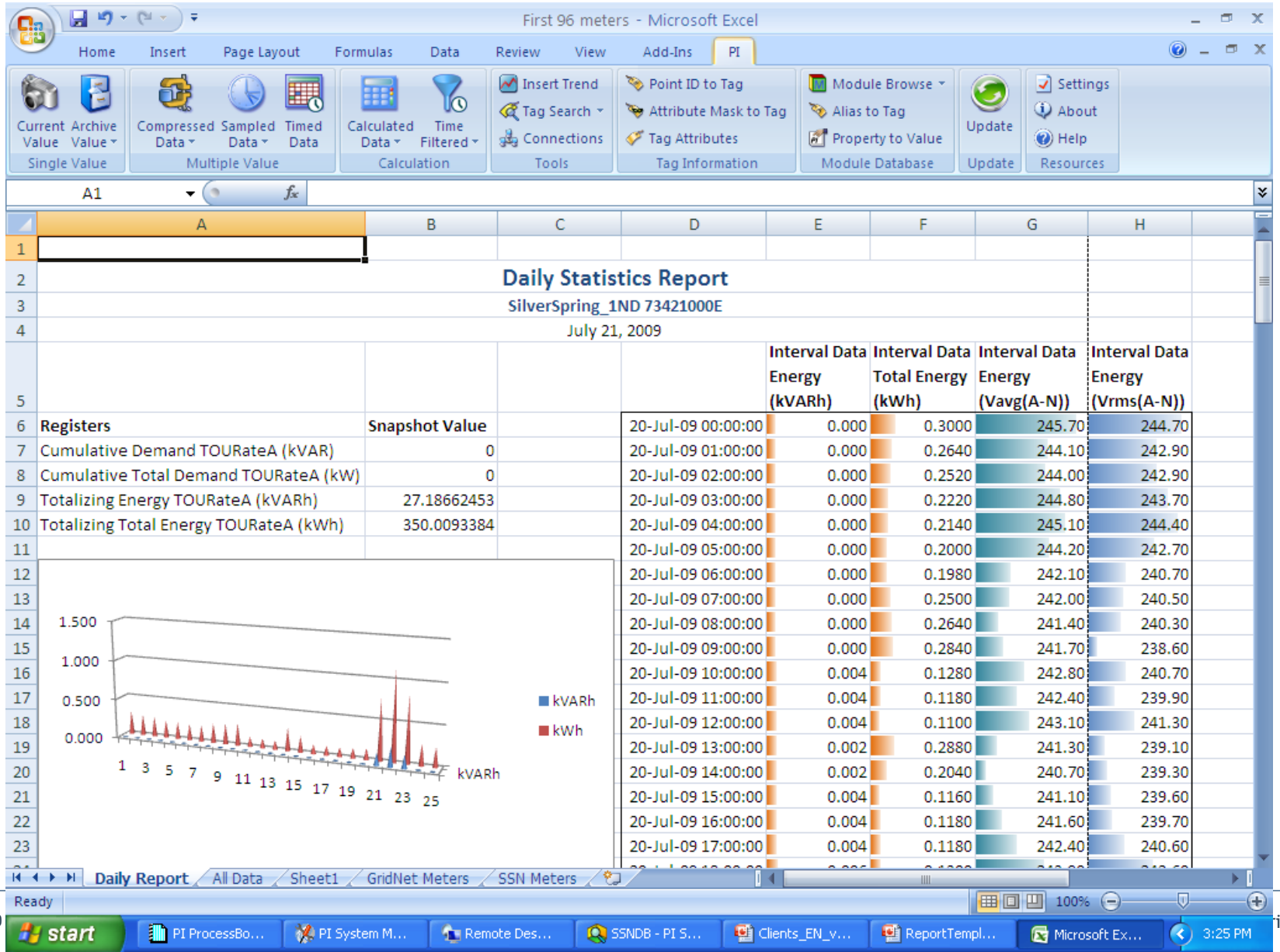
PI DataLink with Excel 2007



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The Thin Clients

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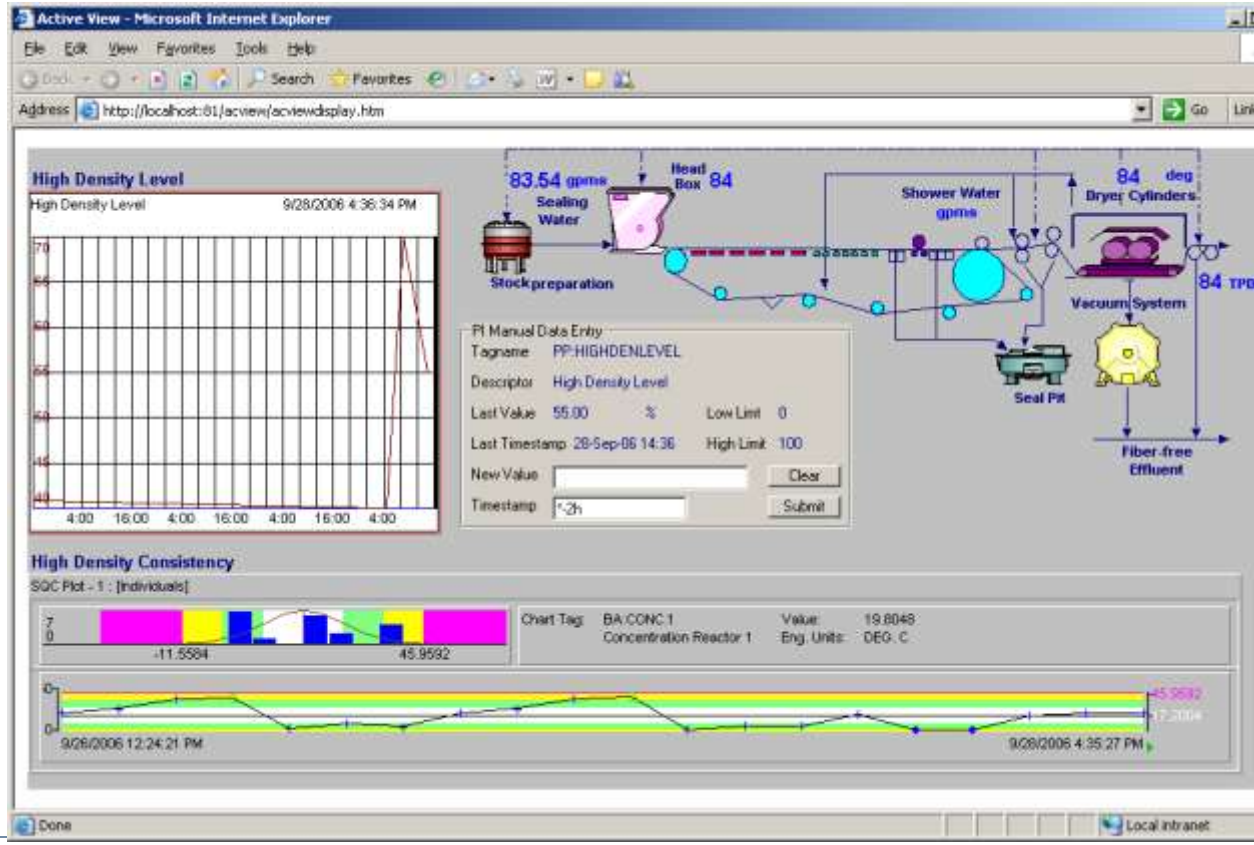
PI ActiveView

- PI ActiveView is a ‘run time’ version of PI ProcessBook
- Can be deploy easily and automatically
- ActiveView ActiveX can be added easily to web pages or any ActiveX container
- ActiveView displays preserve all functionalities from the source ProcessBook displays including VBA code



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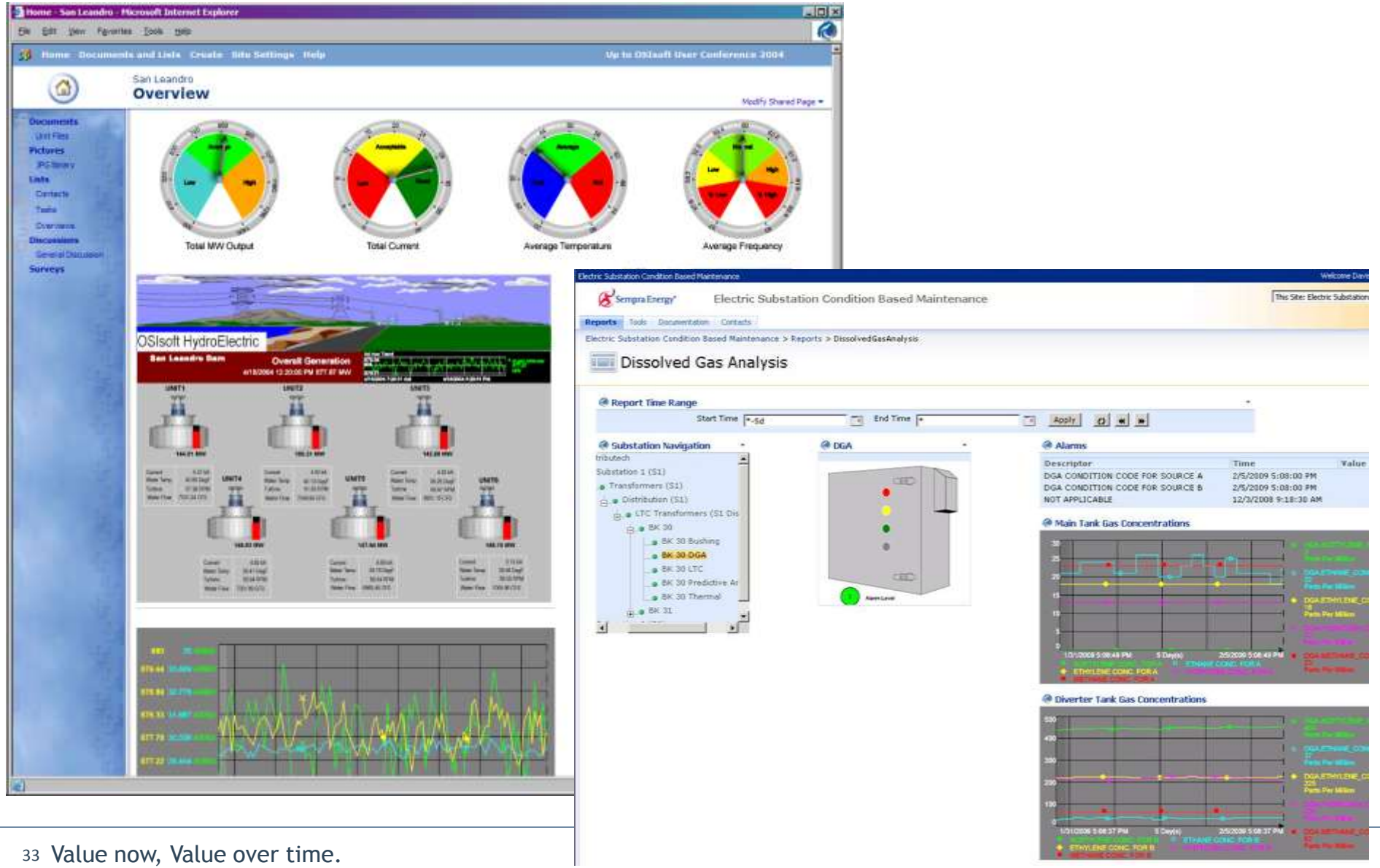
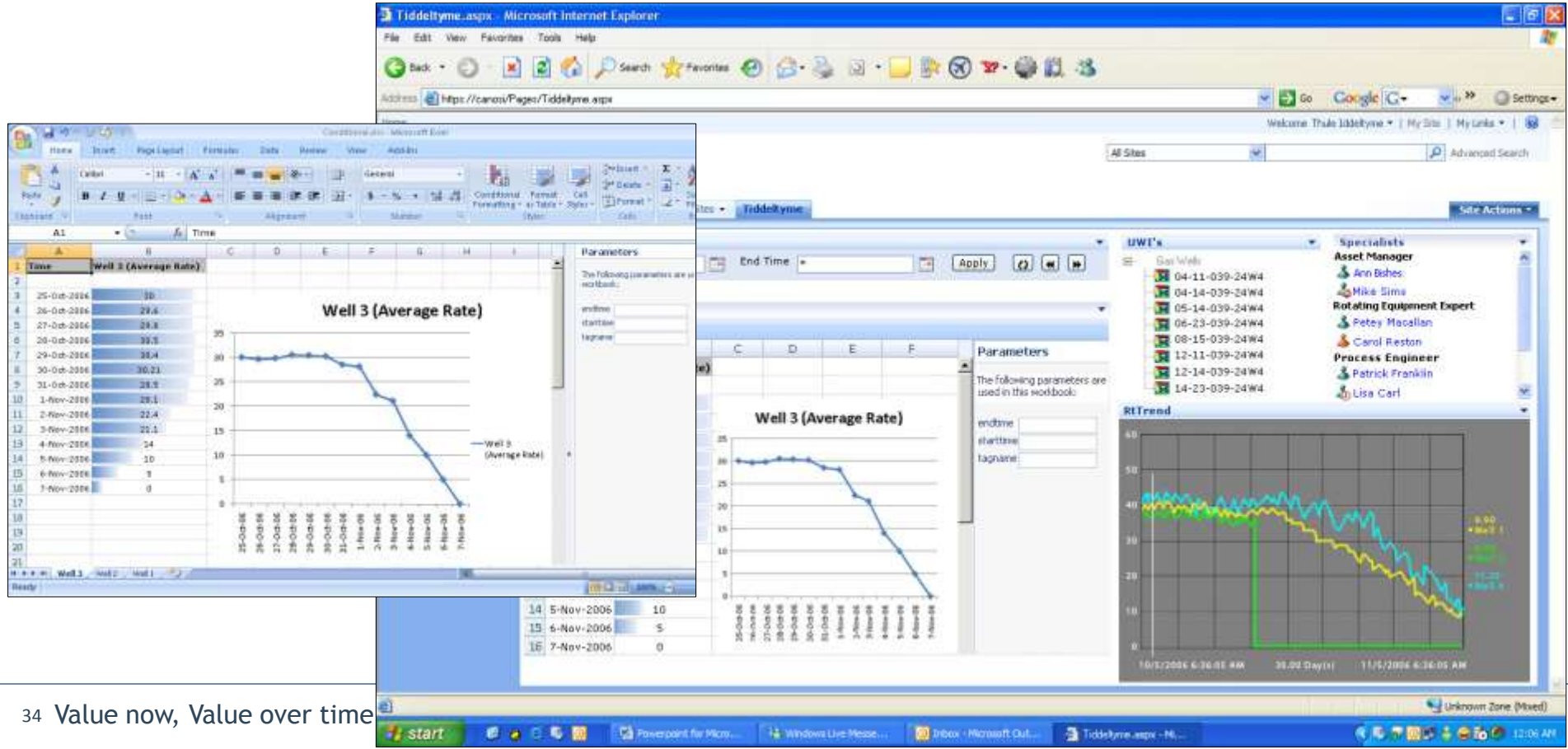
PI Webparts

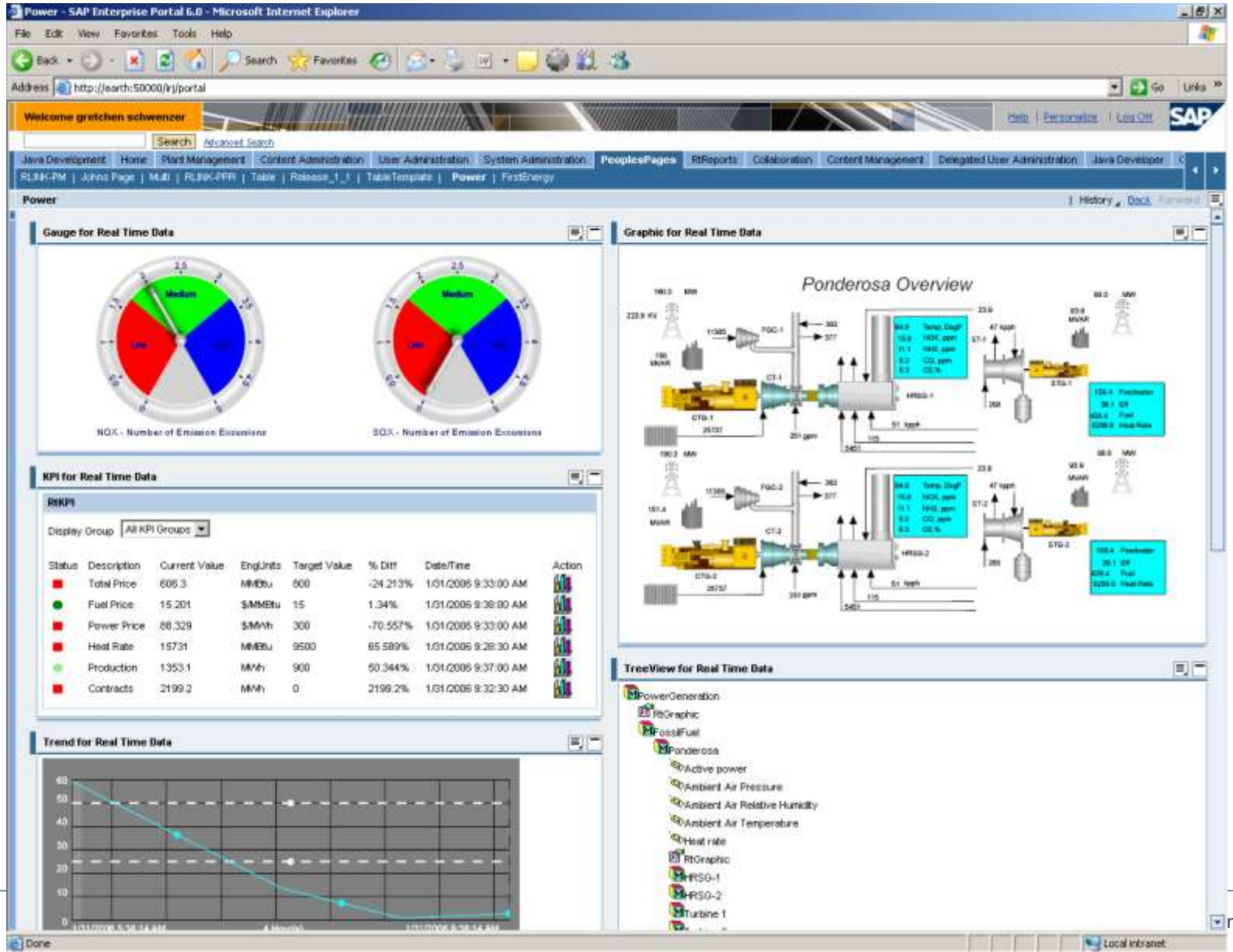

Home - San Leandro - Microsoft Internet Explorer
San Leandro
Overview
Total MW Output
Total Current
Average Temperature
Average Frequency
OSIsoft HydroElectric
Electric Substation Condition Based Maintenance
Sempra Energy
Electric Substation Condition Based Maintenance
Reports
Electric Substation Condition Based Maintenance > Reports > DissolvedGasAnalysis
Dissolved Gas Analysis
Report Time Range
Start Time
End Time
Apply
Substation Navigation
DGA
Alarms
Descriptor
Time
Value
DGA CONDITION CODE FOR SOURCE A
2/5/2009 5:08:00 PM
DGA CONDITION CODE FOR SOURCE B
2/5/2009 5:08:00 PM
NOT APPLICABLE
12/3/2008 9:18:30 AM
Main Tank Gas Concentrations
Diverter Tank Gas Concentrations

PI DataLink for Excel Services (DLES)

- Deploy DataLink functions across the enterprise
- No PI DataLink or Excel installation required on client
- Existing reports directly usable through the Portal
- Less PI data traffic on the WAN



RtBusiness Package



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Thank you

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