



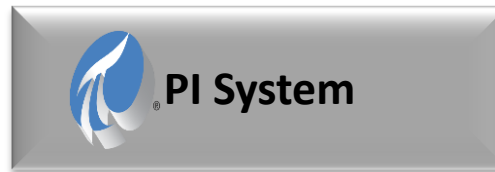
OSIsoft®
REGIONAL
SEMINAR
E M E A
The **Power** of **Data**



Integrating PI with Enterprise Systems

Presented by

Production Maintenance Inventory Quality



Business Integration – Why?

Enable business agility (time enough to act)

- Available-to-promise (ATP), better inventory, visibility into capacity
- Condition-based maintenance (CBM) for better asset reliability, reduce maintenance cost
- Quality – compare production runs, close out orders faster
- Visual – visibility into PI System data throughout the enterprise



Business Integration - What?



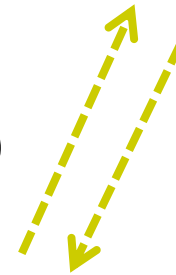
- Data/Event integration (transactions)
 - 1000s/day
 - small amounts of data (per transaction)



- Visual integration



- Business Intelligence + Reporting
(not covered in this talk)



Business Integration - How?

- PI Data Access family of products
- PI Notifications
- Assets Synchronization



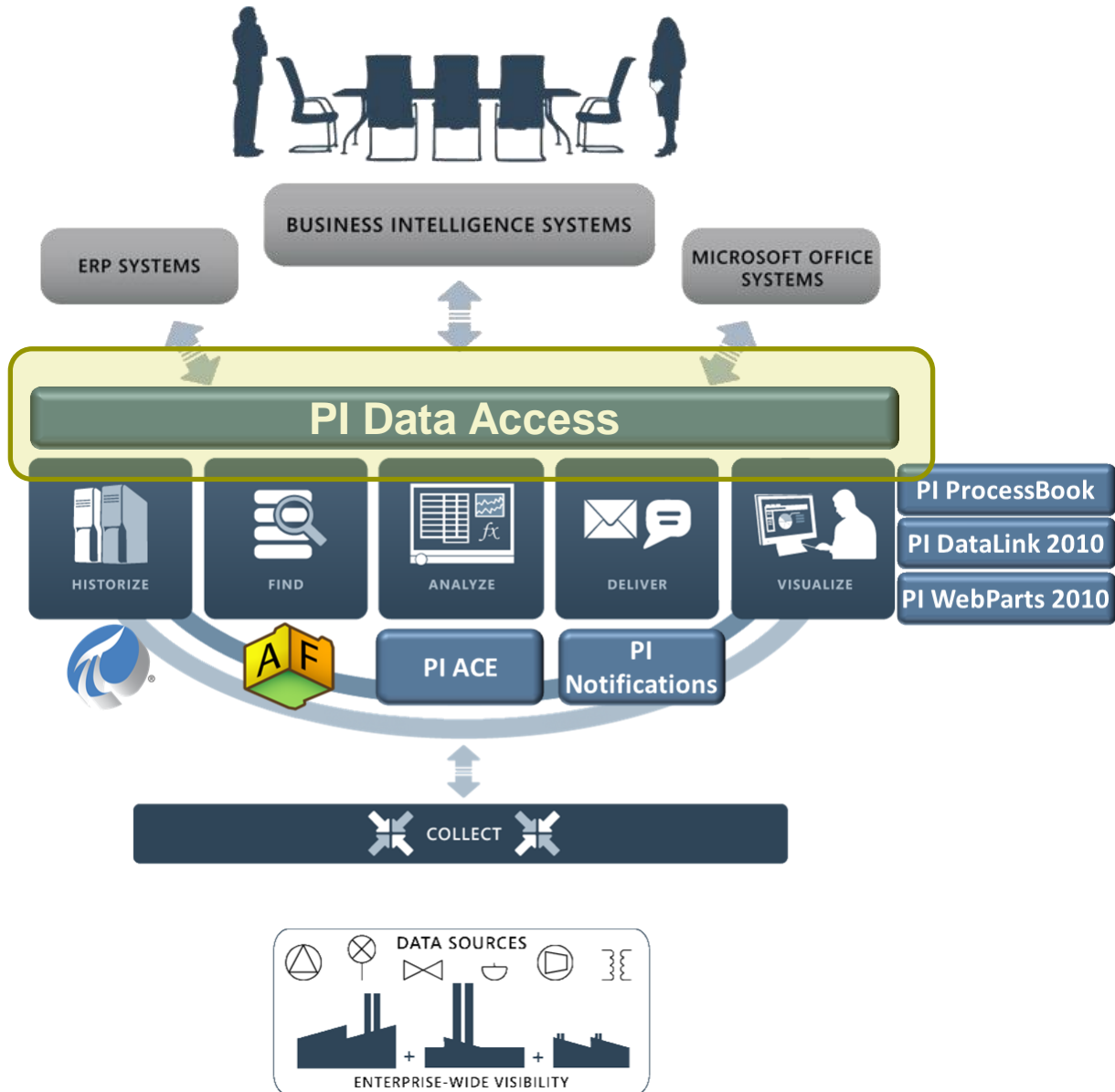
ORACLE

INFOR

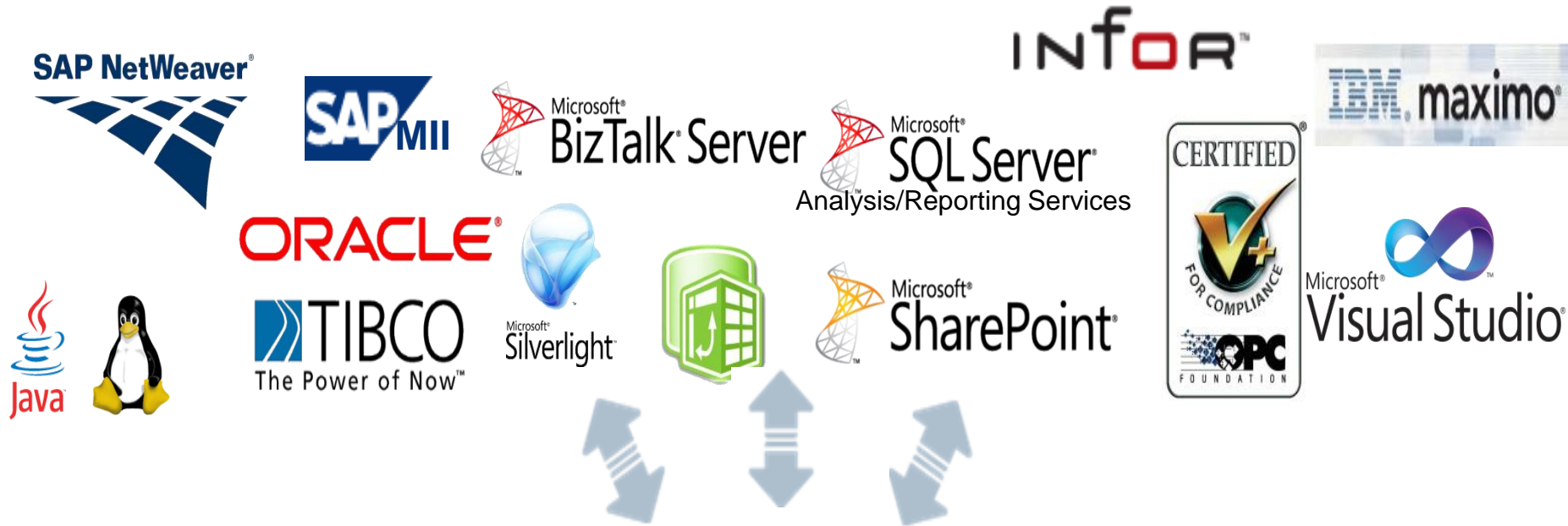


MINCOM

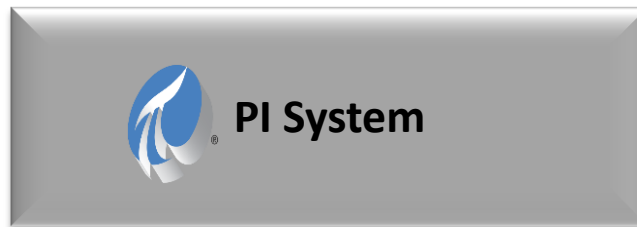
The PI System



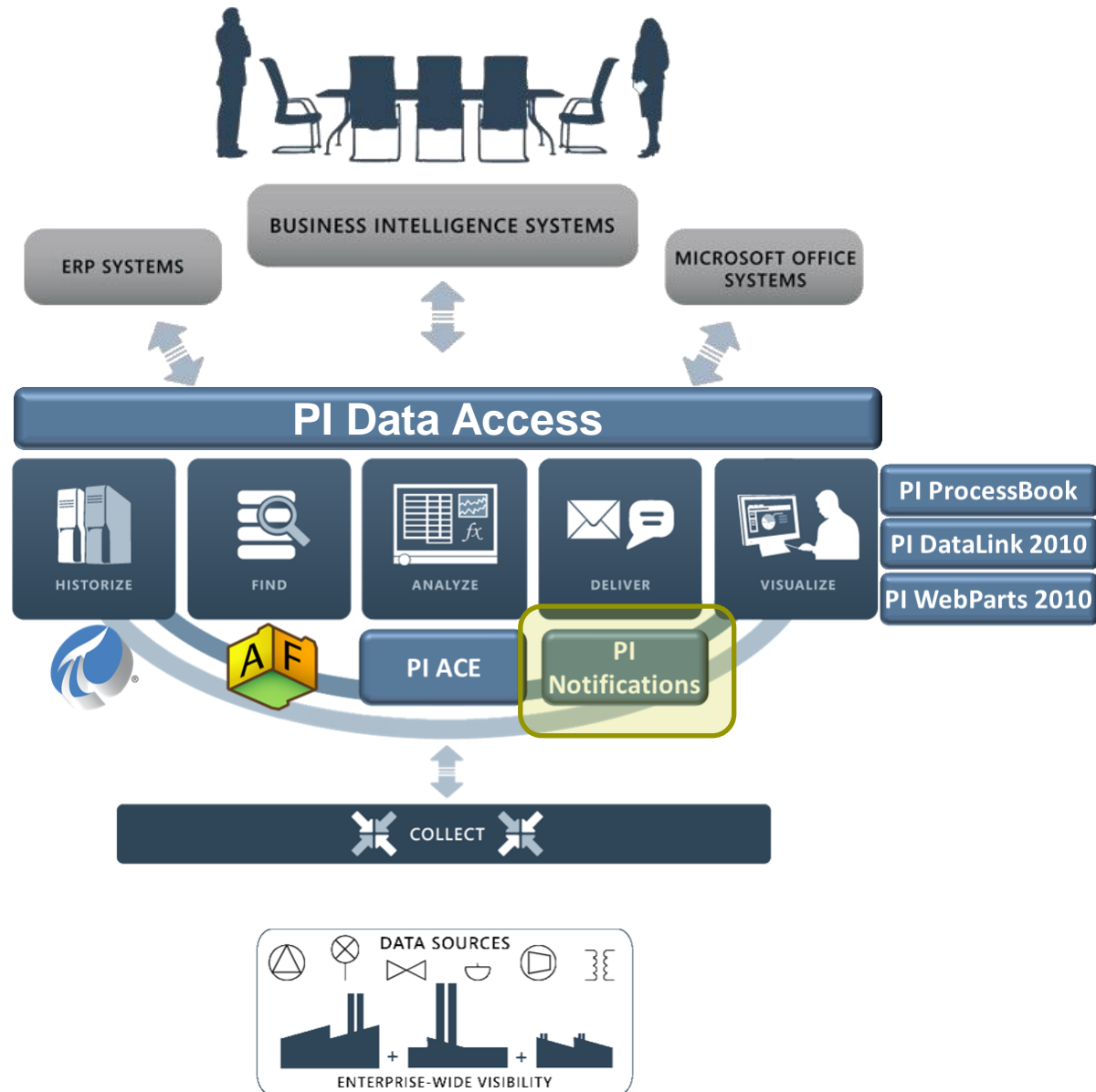
PI Data Access



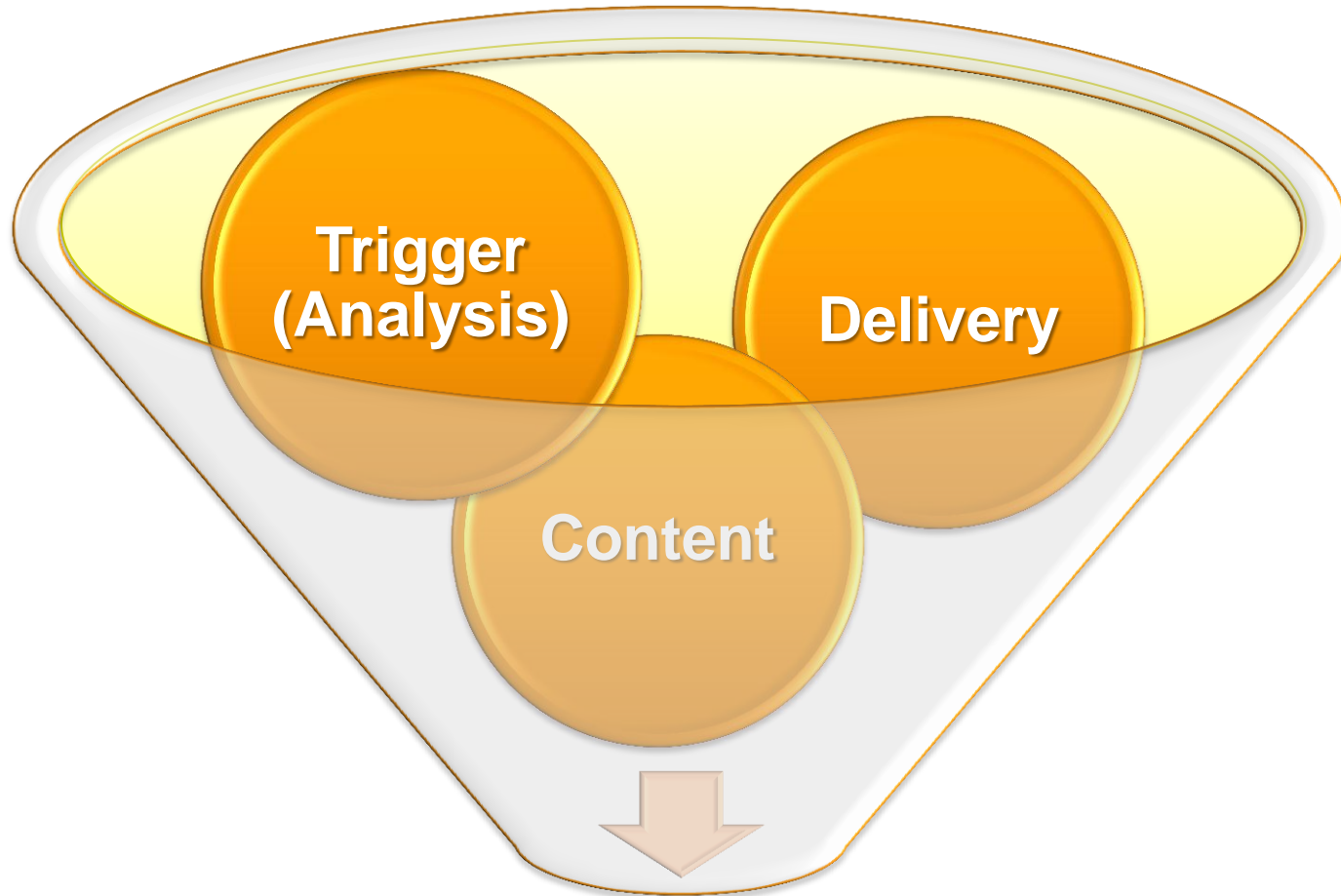
PI Data Access family of products



The PI System

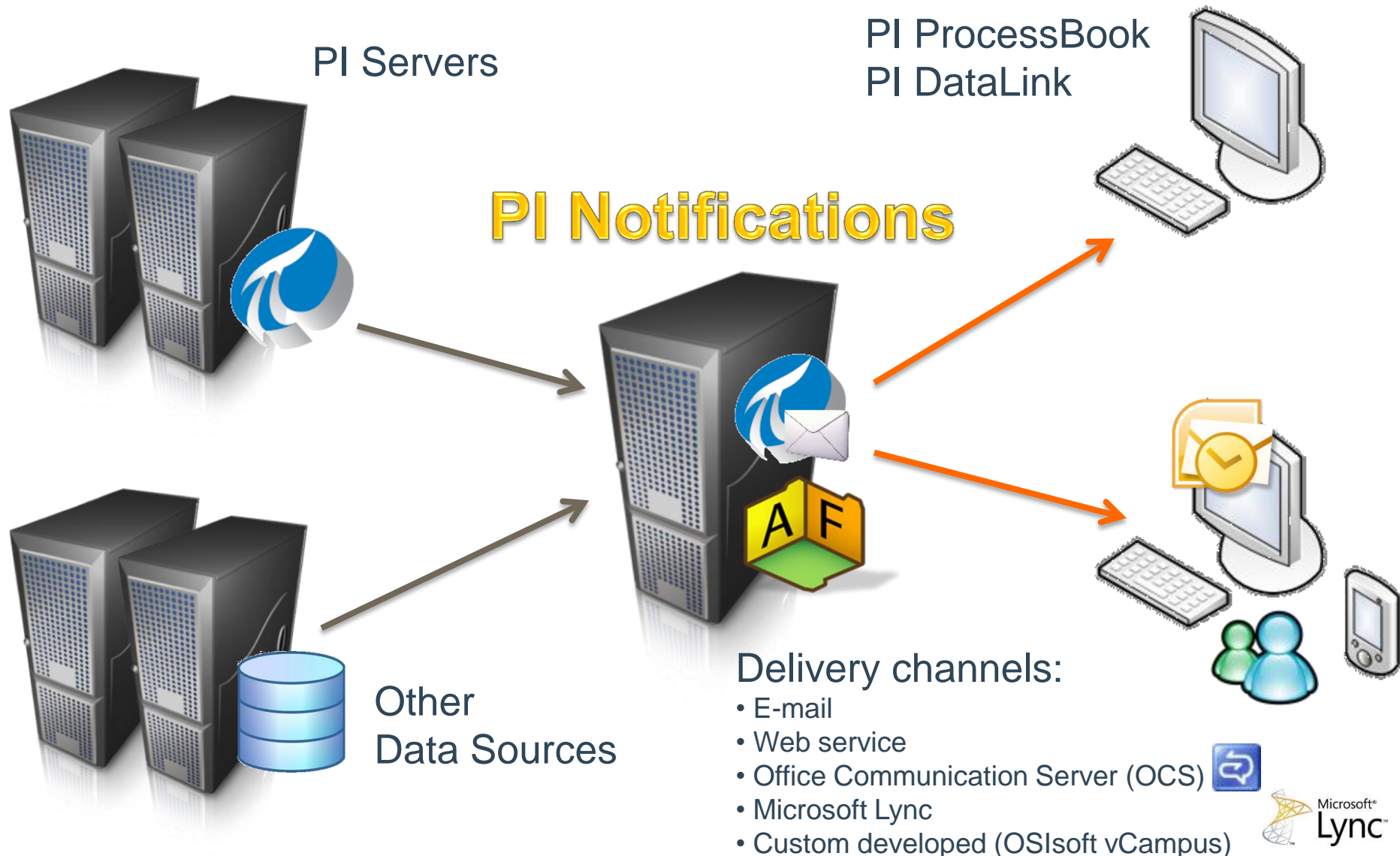


Base Concept of a PI Notifications

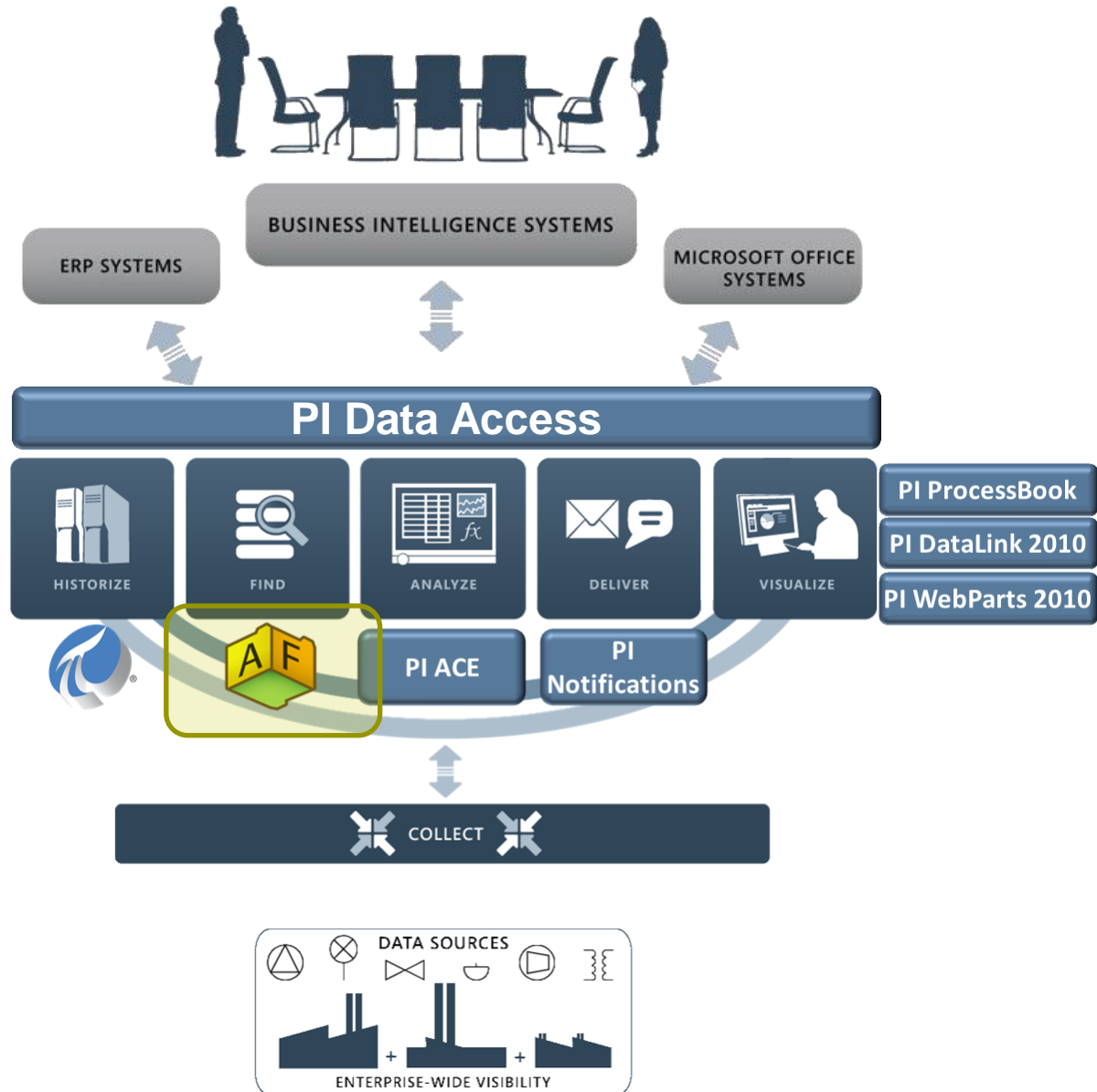


Notification

PI Notifications Architecture



The PI System



Business Integration – asset naming convention

The screenshot displays the AF - PI System Explorer application. On the left, a table lists assets with their IDs and descriptions. The main window shows a tree view of elements, with '11210 : Circulation Fan- Centrifugal/ 20/000 CFM' selected. The right pane shows the details for this selected element, including its name, description, template, and categories.

Assets Table:

Asset	Description
11200	HVAC System- 50 T Heat Cap
11210	Circulation Fan- C
11211	Motor Starter- Size 2
11220	Electrical Control Pa
11230	Emergency Generat
11240	Circulation Fan- Cen
11250	Circulation Fan- Cen
11300	Reciprocating Comp CFM
11340	Motor Starter- Size 4
11400	Boiler- 50,000 Lb/Hr Tube
11430	Centrifugal Pump 10
11450	Centrifugal Pump 10

Elements List:

- Maximo_Eqpt_List
 - 11200 : HVAC System- 50 Ton Cool Cap/ 45
 - 11210 : Circulation Fan- Centrifugal/ 20/000 CFM
 - 11211 : Motor Starter- Size 2/440v/3ph/60cy
 - 11220 : Electrical Control Panel- HVAC System
 - 11230 : Emergency Generator
 - 11240 : Circulation Fan- Centrifugal/ 20/000 CFM
 - 11250 : Circulation Fan- Centrifugal/ 20/000 CFM
 - 11300 : Reciprocating Compressor- Air Cooler
 - 11340 : Motor Starter- Size 4/NEMA 12/440v
 - 11400 : Boiler- 50,000 Lb/Hr/ Gas Fired/ Wa
 - 11430 : Centrifugal Pump 100GPM/60FT HD
 - 11450 : Centrifugal Pump 100GPM/60FT HD
 - 11470 : Centrifugal Pump 100 GPM, 60 FT-H

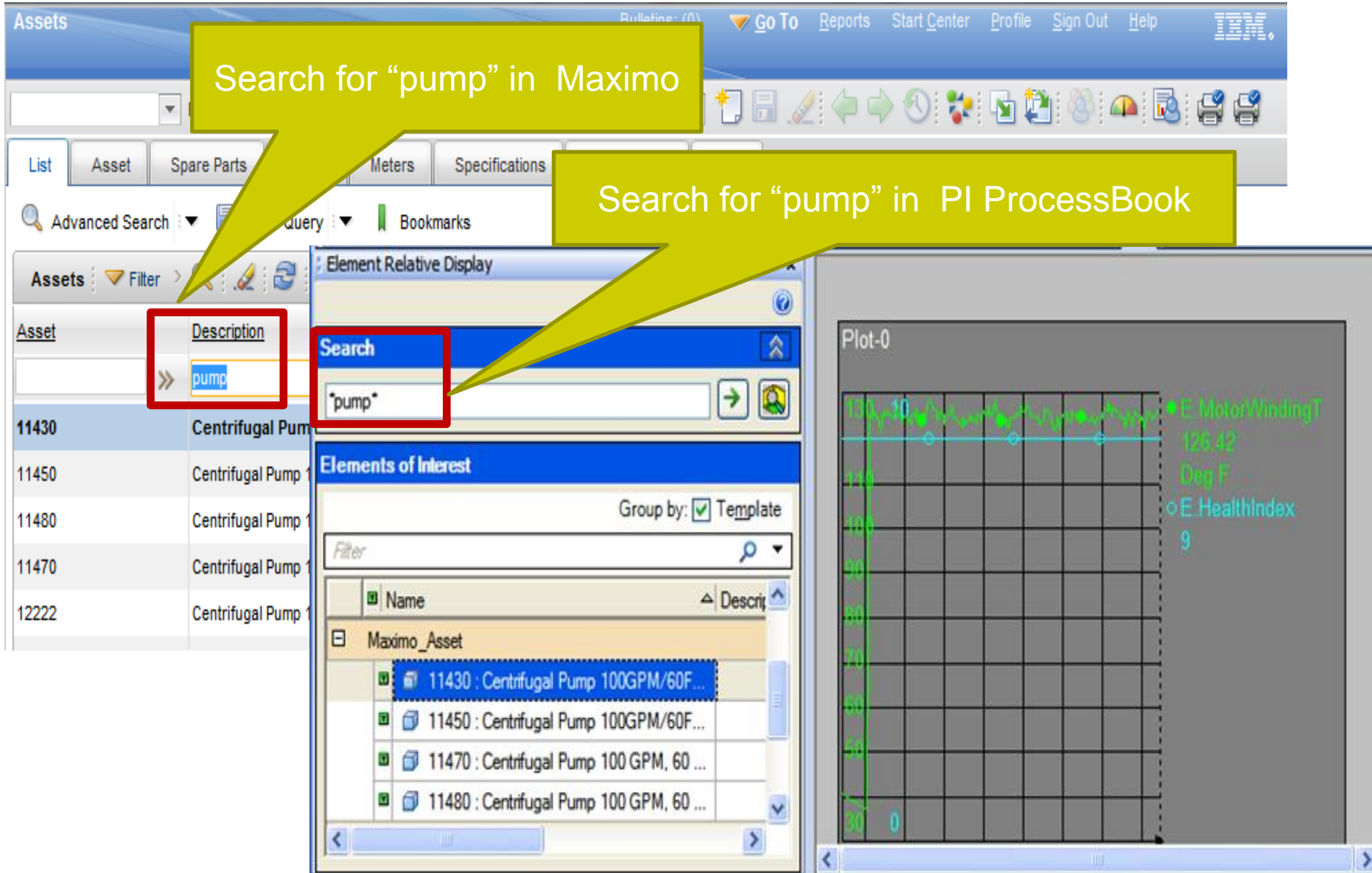
11210 : Circulation Fan- Centrifugal/ 20/000 CFM Details:

- General | Child Elements | Attributes | Ports | Version
- Name: 11210 : Circulation Fan- Centrifugal/ 20/000 CFM
- Description:
- Template: Maximo_Asset | Type: None
- Categories:
- Default Attribute: assetnum
- Extended Properties
- Find: [Parents](#) [Models](#) [Layers](#) [Connections](#) [Analyses](#) [Notifications](#)

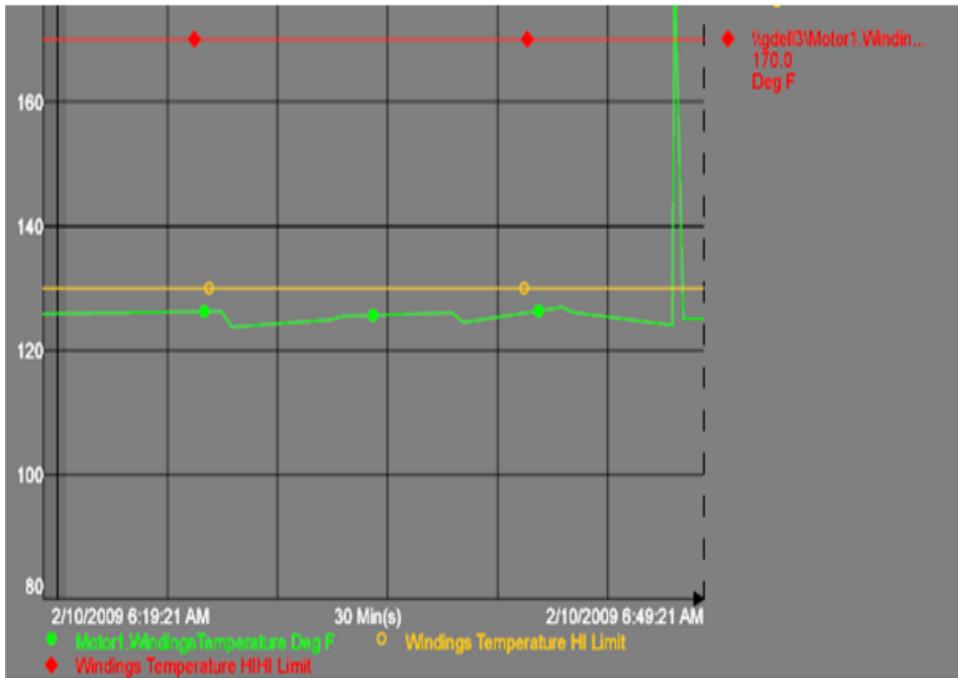
Business Integration – shared asset names

Search for “pump” in Maximo

Search for “pump” in PI ProcessBook



Business Integration – shared asset names



Maximo Work Orders

Equipment	WoNum	PM	Description	Status	StatusDate	Location	ReportedBy	Re
11430	1668		HiTempAlert	COMP	12/8/2008 10:22:18 AM	BR430	WILSON	12/10/2008 10:22:18 AM
11430	1666		HiTempAlert	COMP	11/21/2008 10:21:53 AM	BR430	WILSON	11/21/2008 10:21:53 AM
11430	T1573		Check pump operation.	WSCH	5/2/2008 1:33:34 PM	BR430	MAXADMIN	5/2/2008 1:33:22 PM
11430	T1574		Check pump float switch.	WSCH	5/2/2008 1:33:34 PM	BR430	MAXADMIN	5/2/2008 1:33:23 PM
11430	T1575		Check seal and housing for leaks.	WSCH	5/2/2008 1:33:33 PM	BR430	MAXADMIN	5/2/2008 1:33:23 PM

Maximo Work Orders for
“pump” 11430 in PI Web Parts

Enterprise Integration Use Cases

- Maintenance
 - Usage-based maintenance (as opposed to calendar-based maintenance)
 - Condition-based maintenance
- Production
 - Real-time Inventory
 - Real-time Costing
- Implementation
 - Machine runhours (PI Totalizer Tag) is posted to CMMS
 - PI Alert posted to CMMS as a Work Request
 - Raw material consumption (PI Tag value) posted to SAP

PI Totalizer reading to Maximo

- PI Notifications (with XML Delivery Channel)
- Push data from PI
- Transaction Objects in AF for mapping
- No middleware required

MAXIMO_METER

General

Attribute Templates

Ports

Group by: ☒ Category

Search



	Name	Description	Default Value
[-]	MAX_METER_METERINFO_ToMaximo		
	Assetnum	Required (optional if Location is specified)	
	Location	Required (optional if Assetnum is specified)	
	Metename	Required	
	SiteID	Required, Maximo site, example BEDFORD	
[-]	MAX_METER_READINGINFO_ToMaximo		
	Inspector	Optional - Person who took the reading, take from PIPoint Annotation i...	
	Reading	Required - PI Point with Reading Value and Timestamp to send to Ma...	



AF - PI System Explorer

File Edit View Go Tools Help

Database Query Date Back Check In New Element New Attribute Search

Elements

- MAXIMO_METER
 - 11430_O-PRESSUR
 - 11430_RUNHOURS
 - 11450_O-PRESSUR
 - 11450_RUNHOURS
 - 11470_O-PRESSUR
 - 11470_RUNHOURS
 - 11480_RUNHOURS
 - 12500_FUEL-G
 - 12500_RUNHOURS
 - A6001_ODOM-M

11430_RUNHOURS

General Child Elements Attributes Ports Version

Group by: ☒ Category

Search

Name	Value	Description	Settings
MAX_METER_METERINFO_ToMaximo			
Assetnum	11430	Required (optional if Location is specified)	
Location	BR430	Required (optional if Assetnum is specified)	
Metename	RUNHOURS	Required	
SiteID	BEDFORD	Maximo site, example BEDFORD	
MAX_METER_READINGINFO_ToMaximo			
Inspector		Optional - Person who took the reading, take from PIPoin...	
Reading	12.55867	Required - PI Point with Reading Value and Timestamp t...	\\gdell6...

Reading

AF - PI System Explorer

File Edit View Go Tools Help

Database Query Date Back Check In New Template Search

Library

- AF
 - Categories
 - Templates
 - Element Templates
 - Event Frame Templates
 - Model Templates
 - Notification Templates
 - HiMotorWindingT
 - HiVibration
 - Runhours
 - Transfer Templates
 - Enumeration Sets
 - Reference Types
 - Tables

Runhours

Overview Trigger **Content** Subscriptions

Add

Standard Content

- Name
- Description
- Target
- Start Time
- End Time
- Trigger Time
- State
- Escalation Level
- Priority

Attribute Value

- \\GDELL610\AF\Element Templates[MAXIMO_METER]\Assetnum
- \\GDELL610\AF\Element Templates[MAXIMO_METER]\Inspector
- \\GDELL610\AF\Element Templates[MAXIMO_METER]\Location
- \\GDELL610\AF\Element Templates[MAXIMO_METER]\Metename
- \\GDELL610\AF\Element Templates[MAXIMO_METER]\Reading
- \\GDELL610\AF\Element Templates[MAXIMO_METER]\SiteID

Link

- Instant RtWebParts Trend

Runhours Modified: 1/29/2010 10:09:17 AM.

MaximoMeter.XML - Notepad

```
File Edit Format View Help
<Notification>|
<NotificationName>Runhours1</NotificationName>
<NotificationDescription />
<NotificationState>Runhours</NotificationState>
<StartTime>1/29/2010 7:08:00 PM</StartTime>
<EndTime>1/1/1970 12:00:00AM</EndTime>
<\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|Assetnum>11430</\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|Assetnum>
<\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|Inspector />
<\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|Location>BR430</\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|Location>
<\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|Metername>RUNHOURS</\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|Metername>
<\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|Reading>88.325872</\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|Reading>
<\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|SiteID>BEDFORD</\\GDELL610\AF\MAXIMO_METER\11430_RUNHOURS|SiteID>
</Notification>
```

MaximoMeterInterface.xml - Notepad

```
File Edit Format View Help
<?xml version="1.0" encoding="utf-8"?>
<METERInterface xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://www.mro.com/mx/integration">
  <Header operation="Notify">
    <SenderID>EXTSYS1</SenderID>
  </Header>
  <Content>
    <METERDATA>
      <METERDATA>
        <ORGID>EAGLENA</ORGID>
        <SITEID>BEDFORD</SITEID>
        <ASSETNUM>11430</ASSETNUM>
        <METERNAME>RUNHOURS</METERNAME>
        <NEWREADING>11</NEWREADING>
        <NEWREADINGDATE>2010-01-22T19:11:00-05:00</NEWREADINGDATE>
      </METERDATA>
    </METERDATA>
  </Content>
</METERInterface>
```

Database Query Date Back Check In New Template Search

Library

- AF
 - Categories
 - Templates
 - Element Templates
 - Event Frame Templates
 - Model Templates
 - Notification Templates
 - HiMotorWindingT
 - HiVibration
 - Runhours
 - Transfer Templates

Elements
Event Frames
Library
Unit of Measure
MyPI
Notifications
Contacts

Runhours

Overview Trigger Content Subscriptions

Target: MAXIMO_METER Select A Target...

Conditions

New Condition ✕ ✎ ⬆ ⬇

Rule	Configuration	Time T...	Result ...	Priority
PerformanceEquation	True	0	Runhours	Normal

Time Rule: Periodic ⬇ ...

Runhours Modified:

Periodic Time Rule Configuration

Interval

☐ Periodic
 ☒ Daily
 ☐ Monthly

Begin at: 23:00:00 on

<input checked="" type="checkbox"/> Monday	<input checked="" type="checkbox"/> Friday
<input checked="" type="checkbox"/> Tuesday	<input checked="" type="checkbox"/> Saturday
<input checked="" type="checkbox"/> Wednesday	<input checked="" type="checkbox"/> Sunday
<input checked="" type="checkbox"/> Thursday	

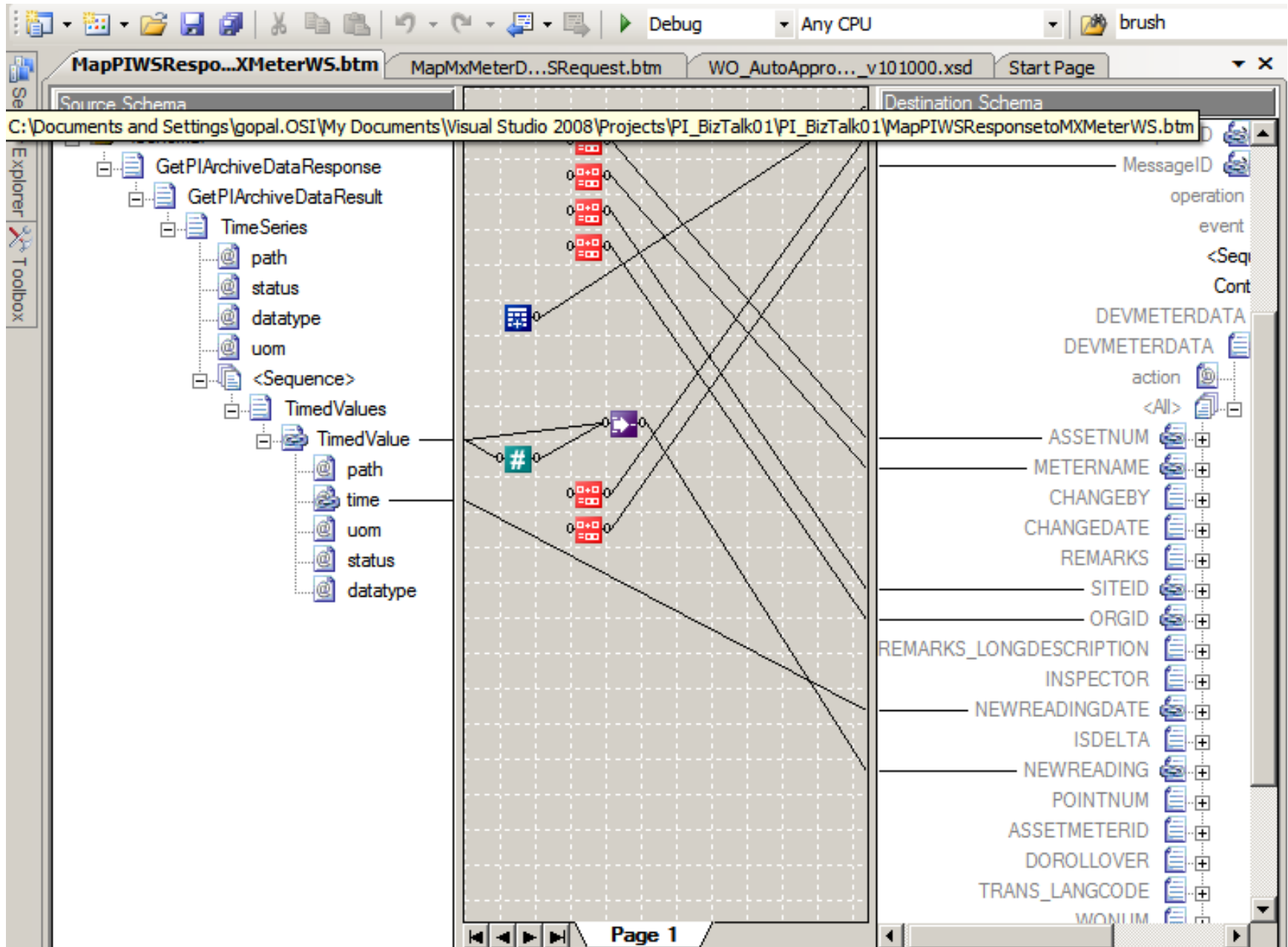
OK Cancel

Enterprise Integration Use Cases

- **Maintenance**
 - Usage-based maintenance (as opposed to calendar-based maintenance)
 - **Condition-based maintenance**
- **Production**
 - Real-time Inventory
 - Real-time Costing
- **Implementation**
 - Machine runhours (PI Totalizer Tag) is posted to CMMS
 - **PI Alert posted to CMMS as a Work Request**
 - Raw material consumption (PI Tag value) posted to SAP

Bearing temperature high alert to Maximo Work Request

- Condition assessment using PI
- PI Web Services
- Middleware: Microsoft BizTalk



Enterprise Integration Use Cases

- Maintenance
 - Usage-based maintenance (as opposed to calendar-based maintenance)
 - Condition-based maintenance
- Production
 - Real-time Inventory
 - Real-time Costing
- Implementation
 - Machine runhours (PI Totalizer Tag) is posted to CMMS
 - PI Alert posted to CMMS as a Work Request
 - Raw material consumption (PI Tag value) posted to SAP



THANK YOU

Brought to you by  **OSIsoft.**