What's New in PI System 2010

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Experience

PI SYSTEM 2010

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New in PI System 2010

PI Clients

- PI WebParts 2010
- PI DataLink 2010
- PI for Office 2010

PI Data Access

- PI OLEDB Enterprise 2010
- PI Web Services 2010
- PI JDBC 2010

PI Server

- PI Server 2010
- Assets and Tags

Business User Experience

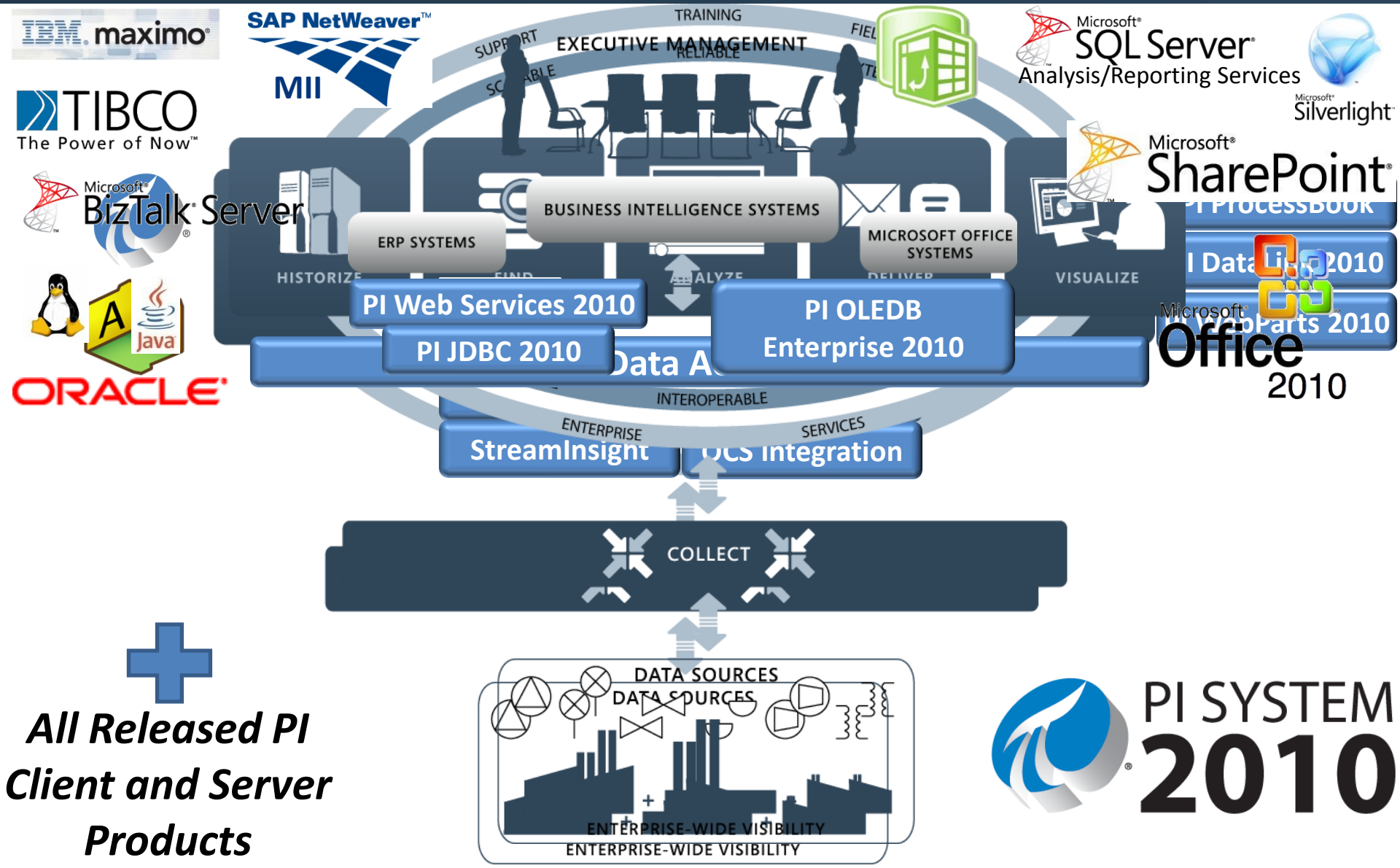
Microsoft® Office 2010

Business Collaboration Platform

Microsoft® SharePoint® 2010

Data Infrastructure and BI Platform

Microsoft® SQL Server® 2008 R2



All Released PI Client and Server Products

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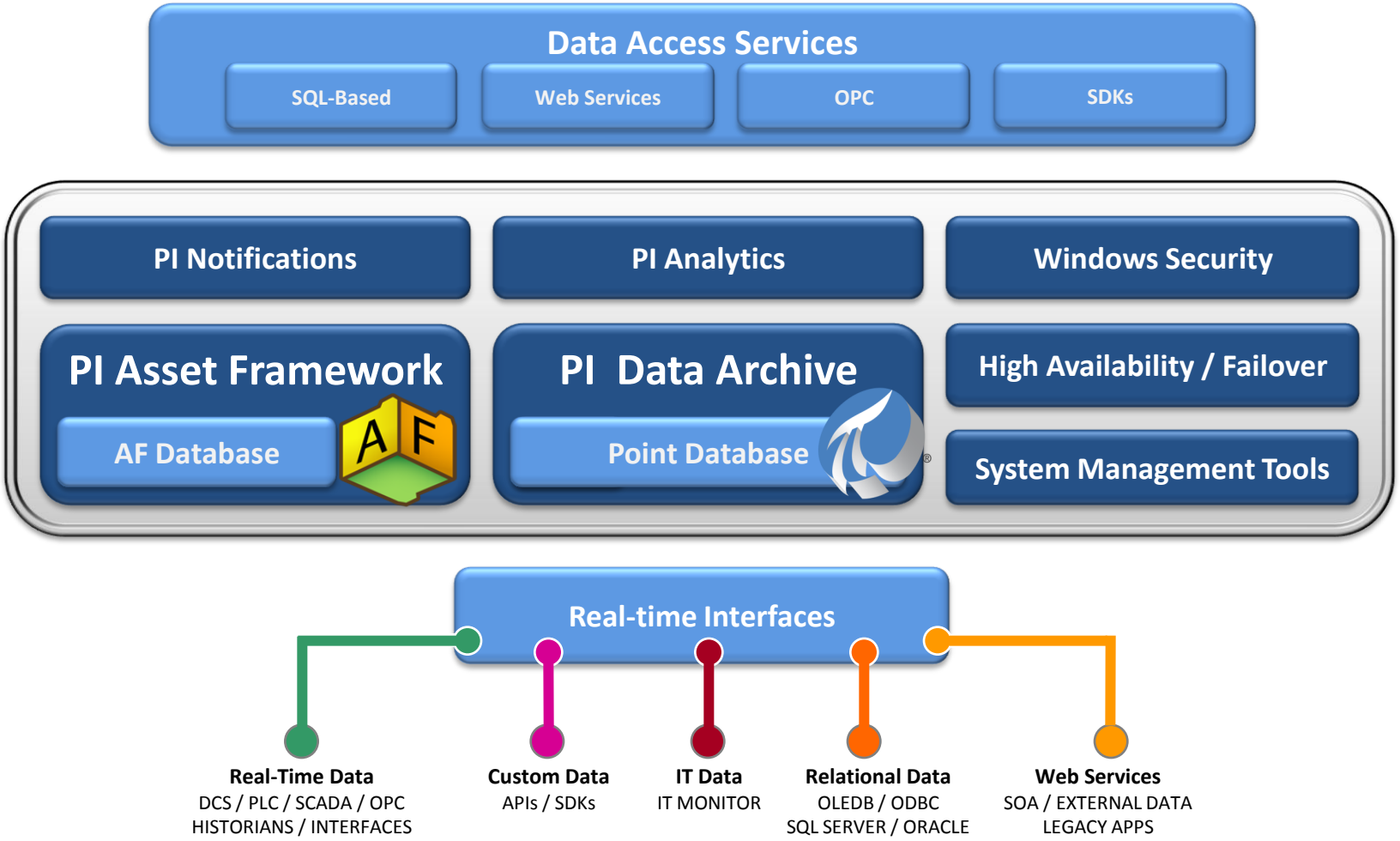
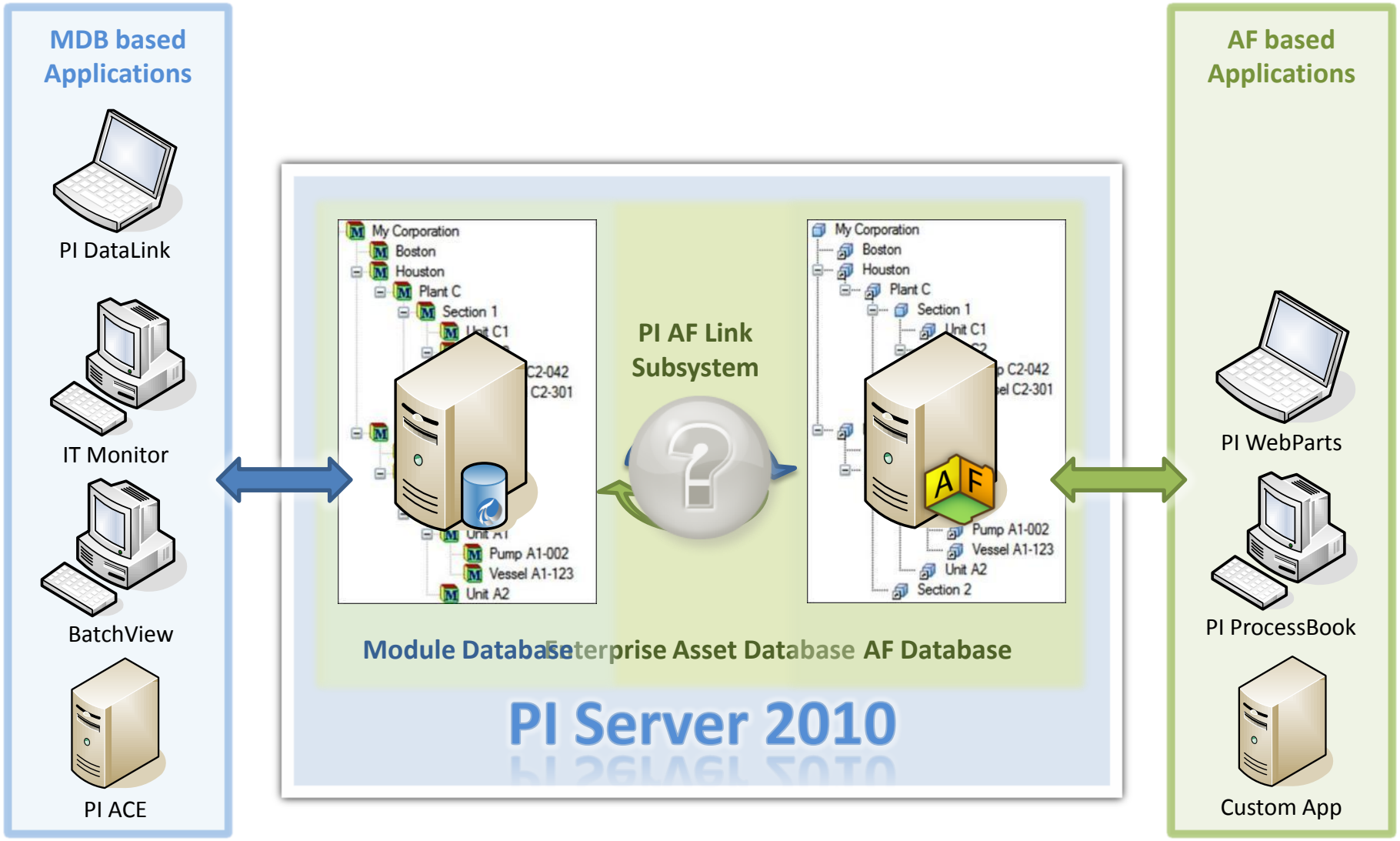
PI Server 2010



Mixed Applications



Upgrade Steps

1. Install or Access SQL Server
2. Install AF Server 2010
3. Prepare your Module Database
4. Upgrade to PI Server 2010
5. Enjoy AF! (MDB still available)

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PI Server 2010: tags + assets

Scalability

Templates, Models, etc.

Millions of assets

Usability

Unified Data Access

Search

Flexible security

Reliability

HA Solutions

Windows Security

Preserve Your Investment: Displays, Calcs, Apps

PI Analytics 2010 – Future Releases

- PI ACE 2010

- PI for StreamInsight

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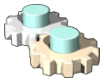
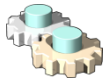
ACE 2010 Enhancements Overview

- Multiple Schedulers


ACE Scheduler 1


ACE Scheduler N

- Performance Improvements
  - Components re-written in .NET

- Visual Studio 2010 support

Microsoft Visual Studio

- Native 64-bit operating system support

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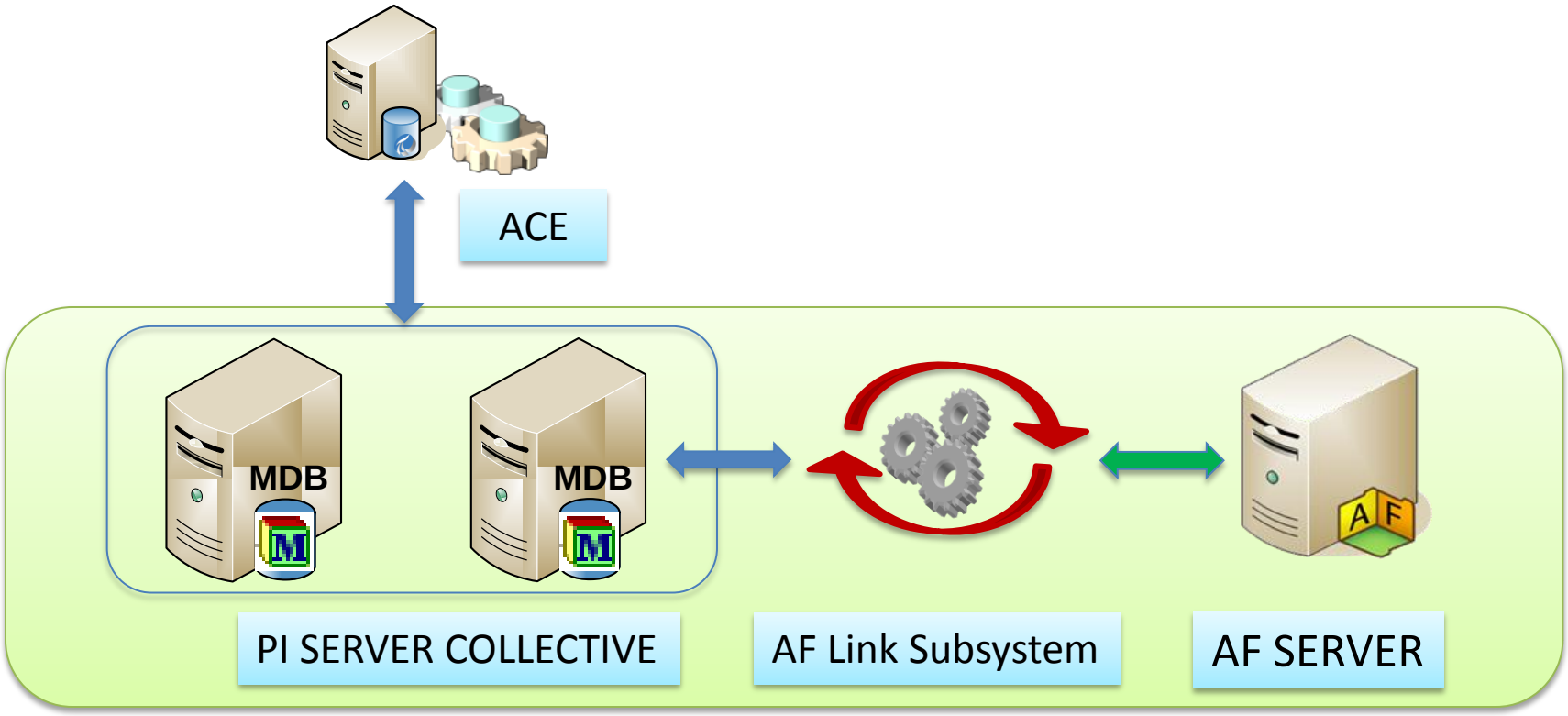
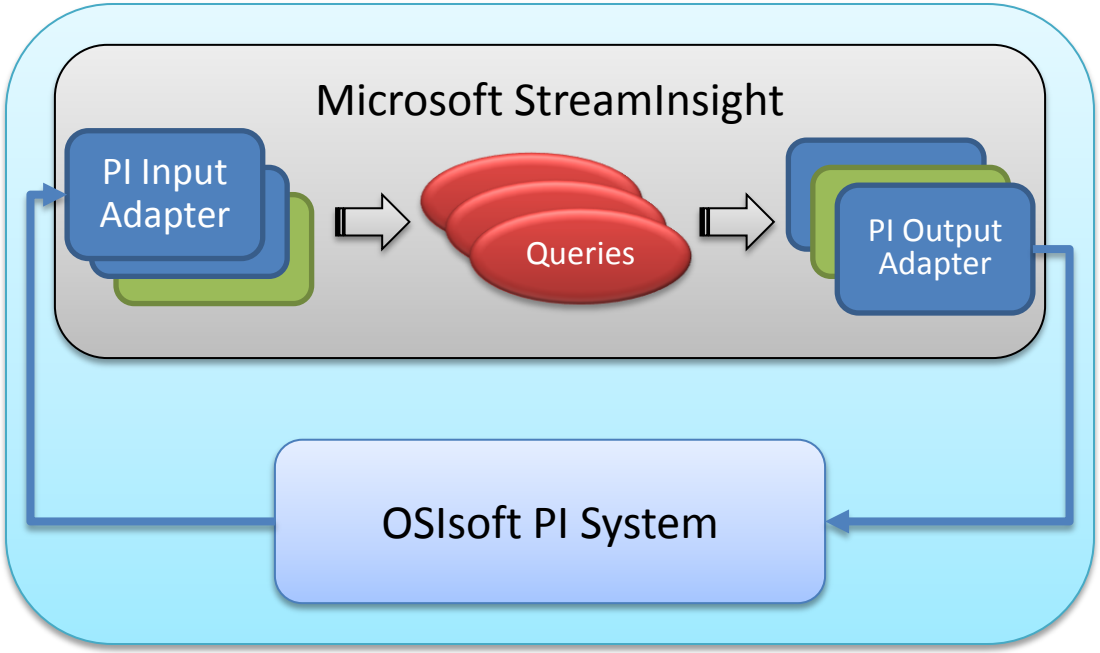
ACE and Asset Framework (AF)

- PI Server 2010 enables MDB to AF link and synchronization



PI for StreamInsight

- Data Access to the PI System for Microsoft StreamInsight
- Developers can create applications with StreamInsight using PI data
- Natural query language (LINQ)



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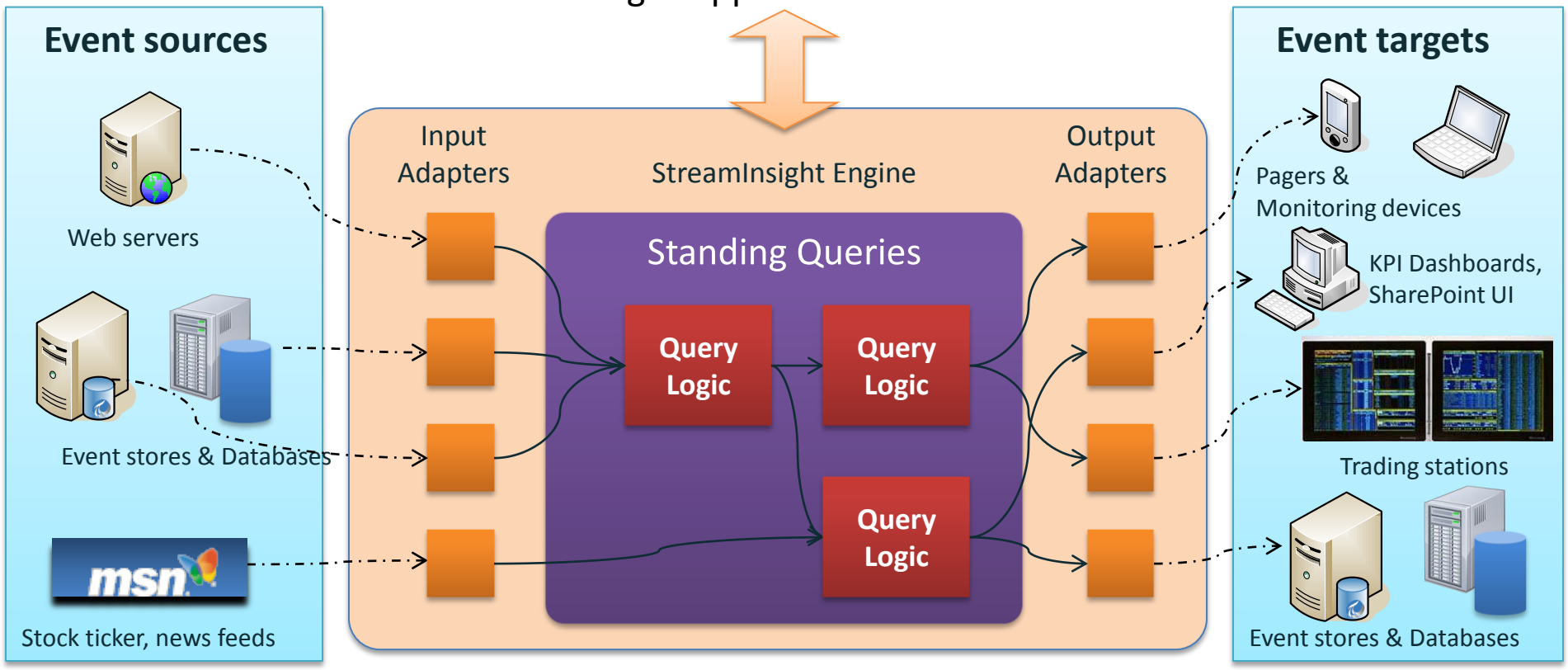
Microsoft StreamInsight Platform

StreamInsight Application Development in C#, LINQ

Microsoft Visual Studio

Microsoft .NET

StreamInsight Application at Runtime



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What is Microsoft StreamInsight™

- StreamInsight is the Microsoft implementation of Complex Event Processing (CEP)
- What is CEP?
  - CEP is all about the ability to compute interesting patterns for events over multiple data sources
- How does StreamInsight work?
  - Developer creates queries based on business requirements
  - Queries are loaded by StreamInsight
  - Queries are executed based on time windows
  - Queries are applied to the data stream received during that period

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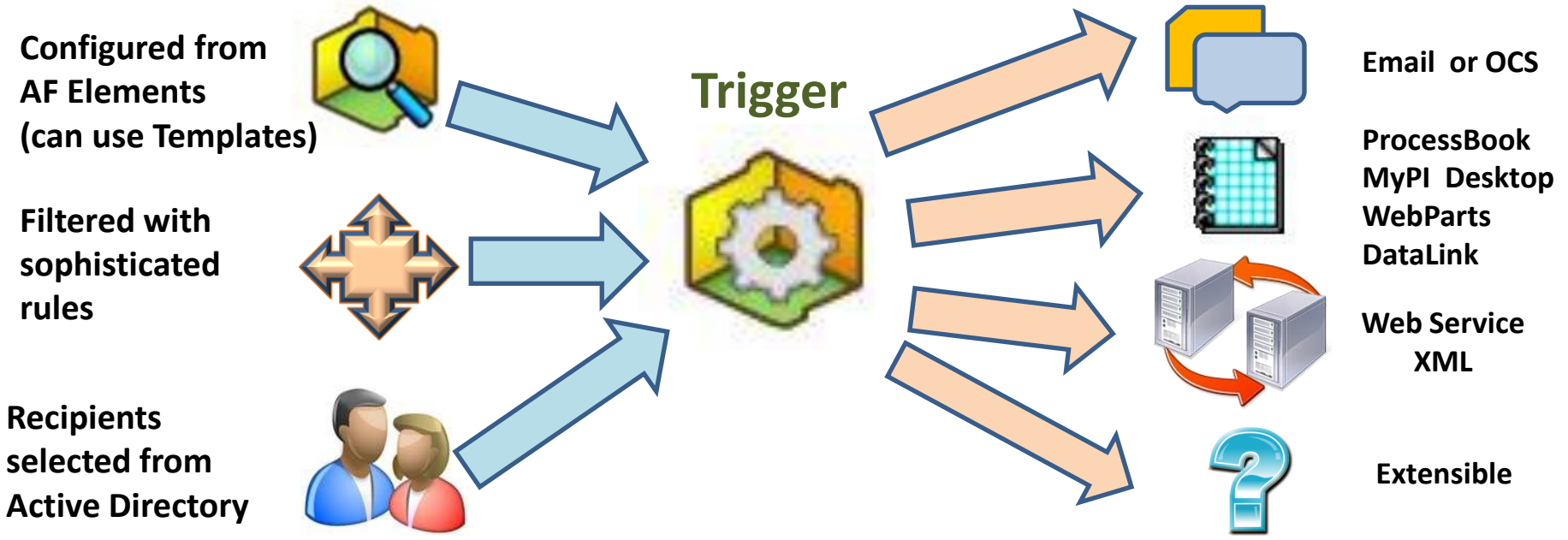
PI Notifications



Features

- Templates
- Custom Content
- Acknowledgement and Escalation

Delivery Channels

- User can create their own
- OSIsoft vCampus – XML & Skype

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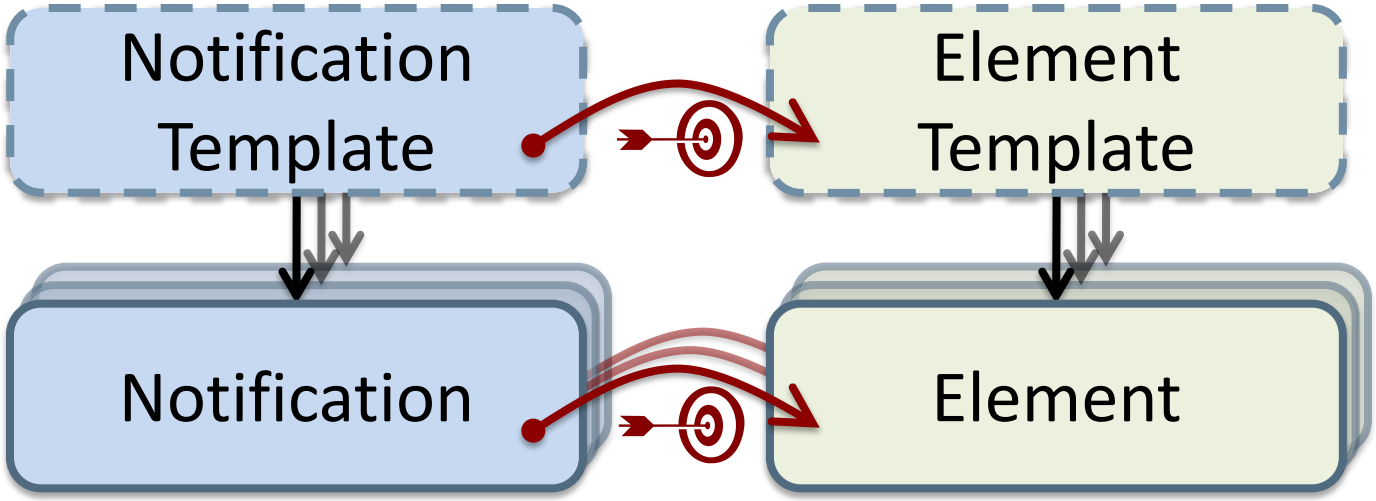
PI Notifications Templates

- Enable rapid and automatic creation of maintainable notifications



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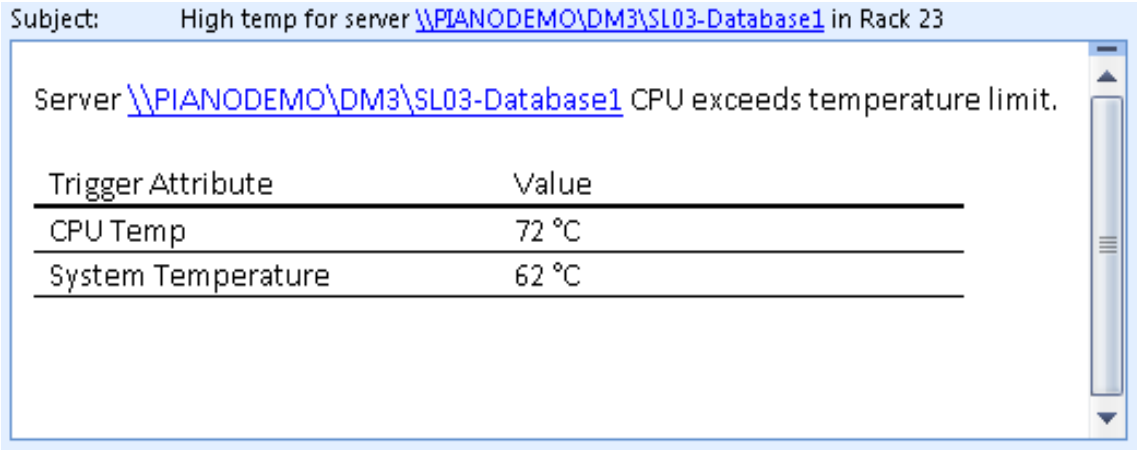
What's Coming in PI Notifications 2010?

- Message Formatting
  - Control appearance of subject and body
- Performance
  - **History retrieval** is improved by an order of magnitude
  - Native 64-bit operating system support
- Internationalization



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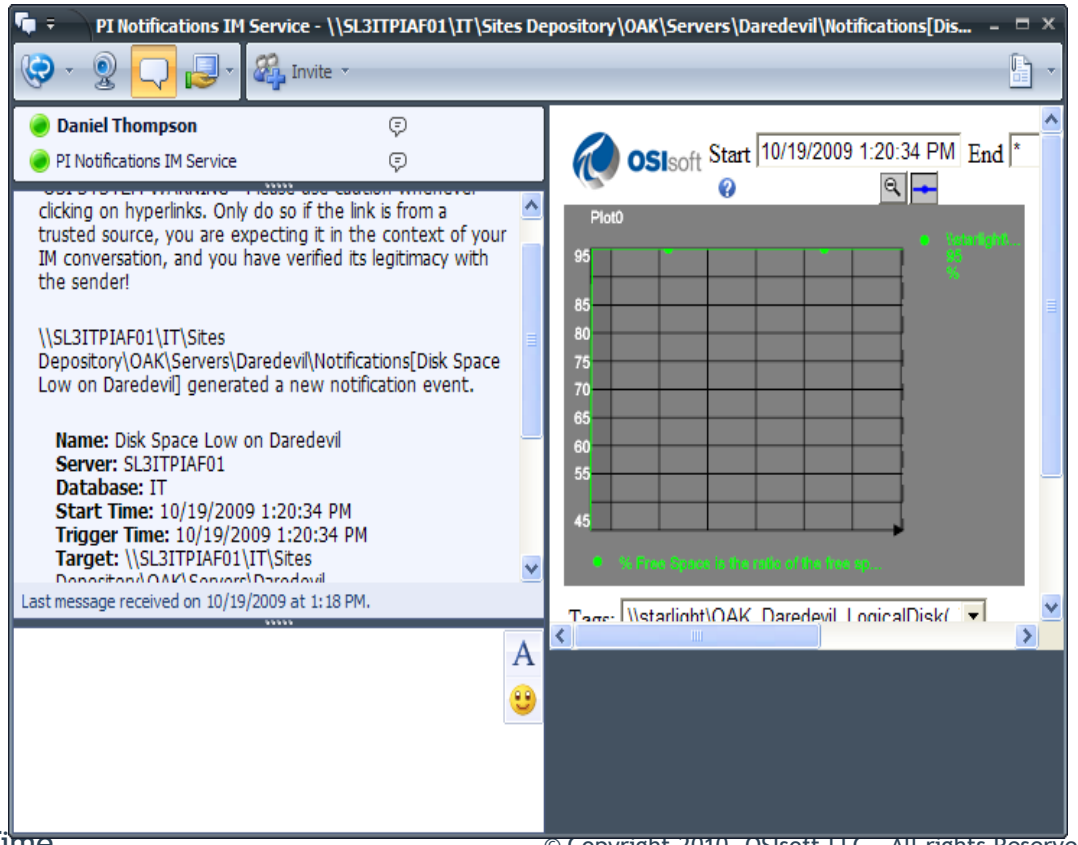
Office Communication Server 2007 R2

- Native Delivery Channel
- Supports presence and Instant Messaging (IM)
- Applications for phones
  - Windows Mobile
  - BlackBerry
  - iPhone



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PI Data Access: The Products

SQL Family

Web Services

OPC Servers

OSIsoft SDKs

Asset Information / Metadata

Notifications

Analytics

Relational / Non Time Series Data

PI Server

PI Server Collective

Time Series Data

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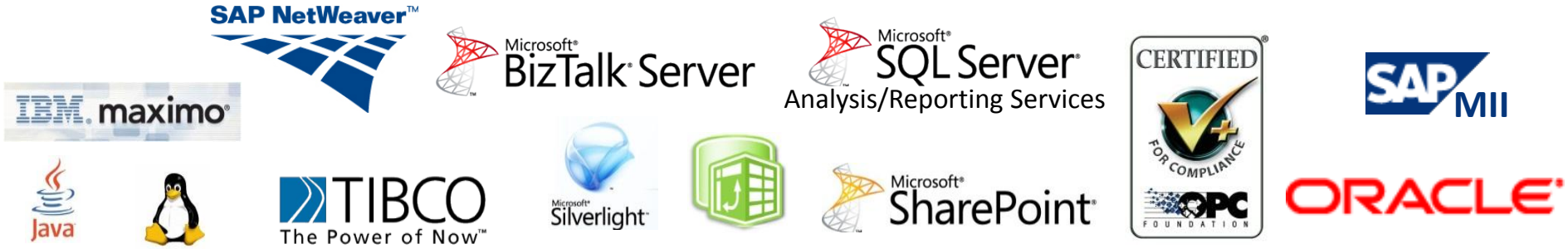
PI Data Access: The 2010 Wave



PI JDBC 2010 | PI Web Services 2010 | PI OLEDB Enterprise 2010 | PI OPC DA/HDA Server 2010 | OSIsoft SDKs

Asset Information / Metadata

Notifications

Analytics

Relational / Non Time Series Data

PI Server

PI Server Collective

Time Series Data

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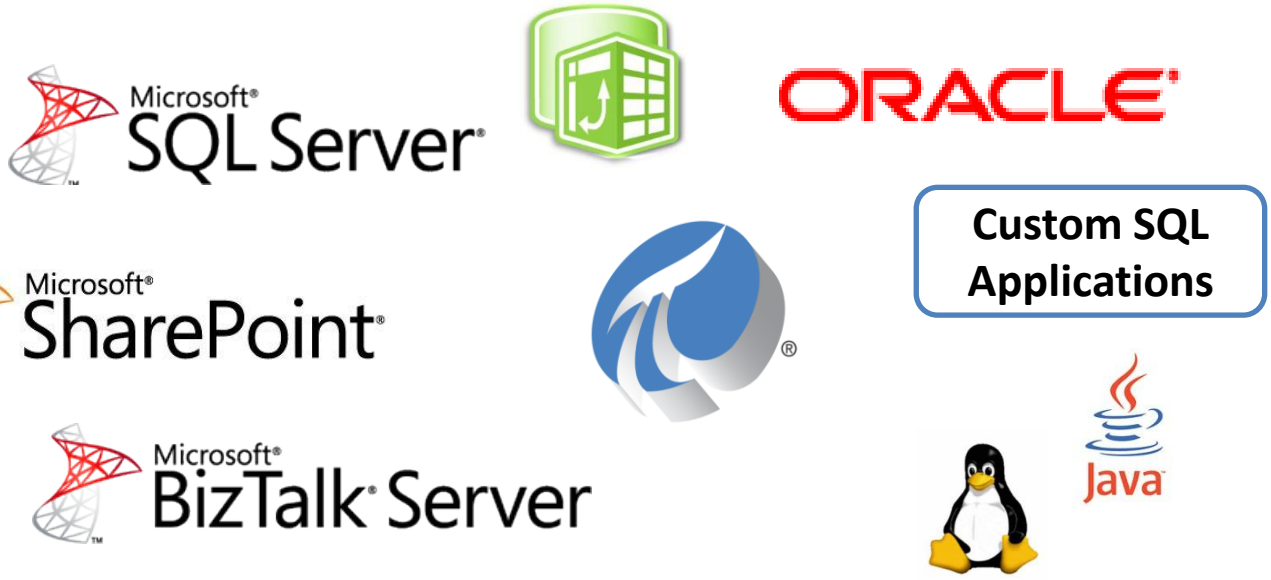
SQL Family - Value Proposition

- Expose PI as a relational database
- Integrate with SQL-friendly tools



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SQL Family - What's New

- PI OLEDB 64-bit
- PI JDBC 2010
  - Bring data to the Java world
- PI OLEDB Enterprise 2010
  - Brand new product
  - Access to AF via SQL
  - Supports custom applications and many integration scenarios
    - PI WebParts
    - PowerPivot in Excel
    - SQL Server (Reporting/Analysis Services)

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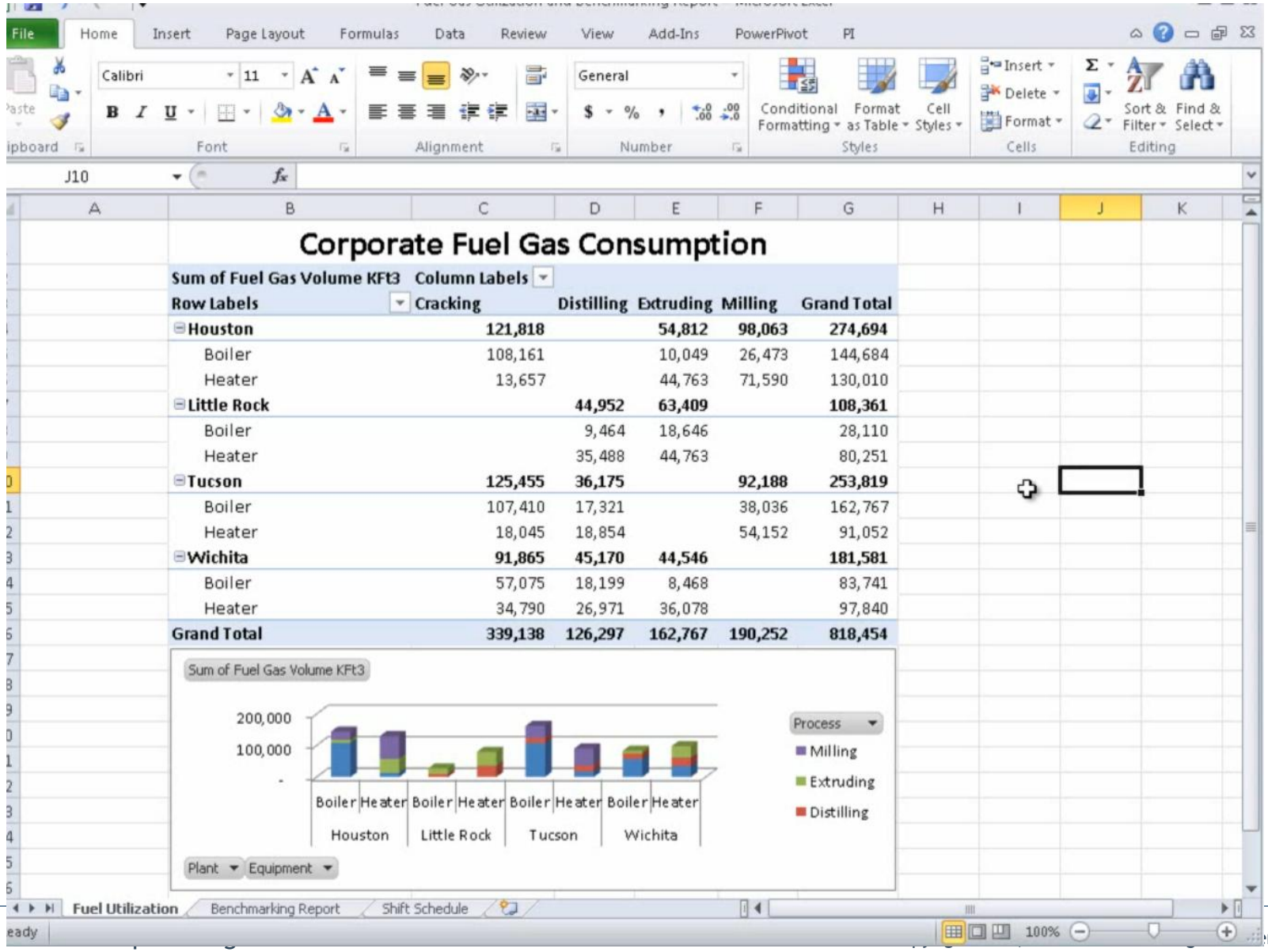
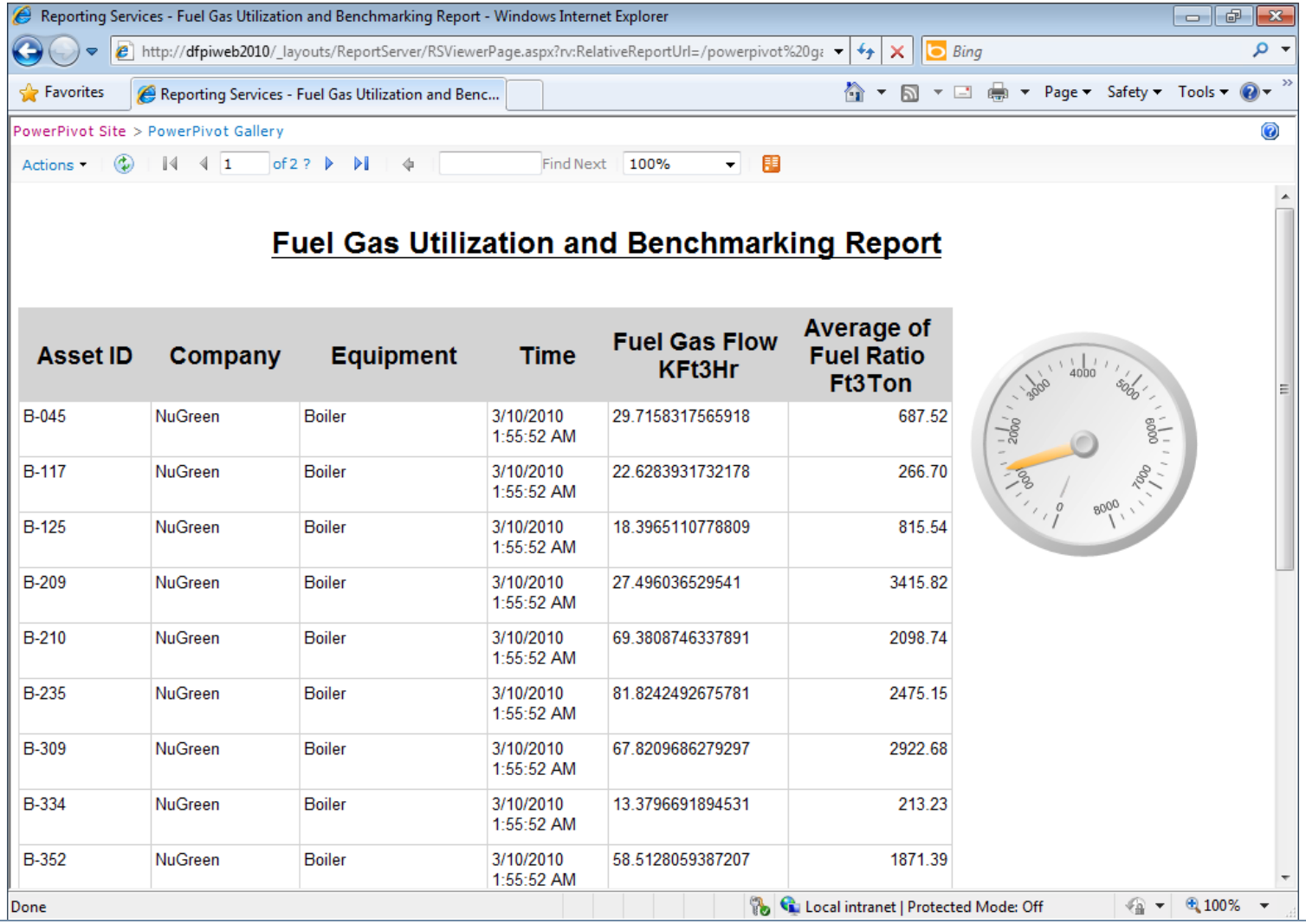
PI OLEDB Enterprise in Microsoft PowerPivot



Corporate Fuel Gas Consumption

Sum of Fuel Gas Volume KFt3	Column Labels				
Row Labels	Cracking	Distilling	Extruding	Milling	Grand Total
Houston	**121,818**		**54,812**	**98,063**	**274,694**
Boiler	108,161		10,049	26,473	144,684
Heater	13,657		44,763	71,590	130,010
Little Rock		**44,952**	**63,409**		**108,361**
Boiler		9,464	18,646		28,110
Heater		35,488	44,763		80,251
Tucson	**125,455**	**36,175**		**92,188**	**253,819**
Boiler	107,410	17,321		38,036	162,767
Heater	18,045	18,854		54,152	91,052
Wichita	**91,865**	**45,170**	**44,546**		**181,581**
Boiler	57,075	18,199	8,468		83,741
Heater	34,790	26,971	36,078		97,840
Grand Total	**339,138**	**126,297**	**162,767**	**190,252**	**818,454**

PI OLEDB Enterprise in SQL Server Reporting Services



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OPC Servers - Value Proposition

- Talk to PI via well-known, popular standards
- Integrate with 100's of existing OPC Clients
  - Process optimization engines
  - Process analysis, calculations
  - Visualization/reporting

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OPC Servers - What's New

- PI OPC DA/HDA Server 2010
  - Certified for Compliance
- Currently investigating
  - PI OPC UA Server (CTP on OSIsoft vCampus)
  - PI OPC Xi Server
- OPC Foundation Road Show

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PI Web Services 2010

- Brand new product

- Provides access to **PI and AF** data through standard **web service** technologies
  - Many code-free integration scenarios
  - Custom applications

- Facilitates data access over secure and distributed environments
  - Nothing required on the client machine
  - Service-oriented architecture (SOA)

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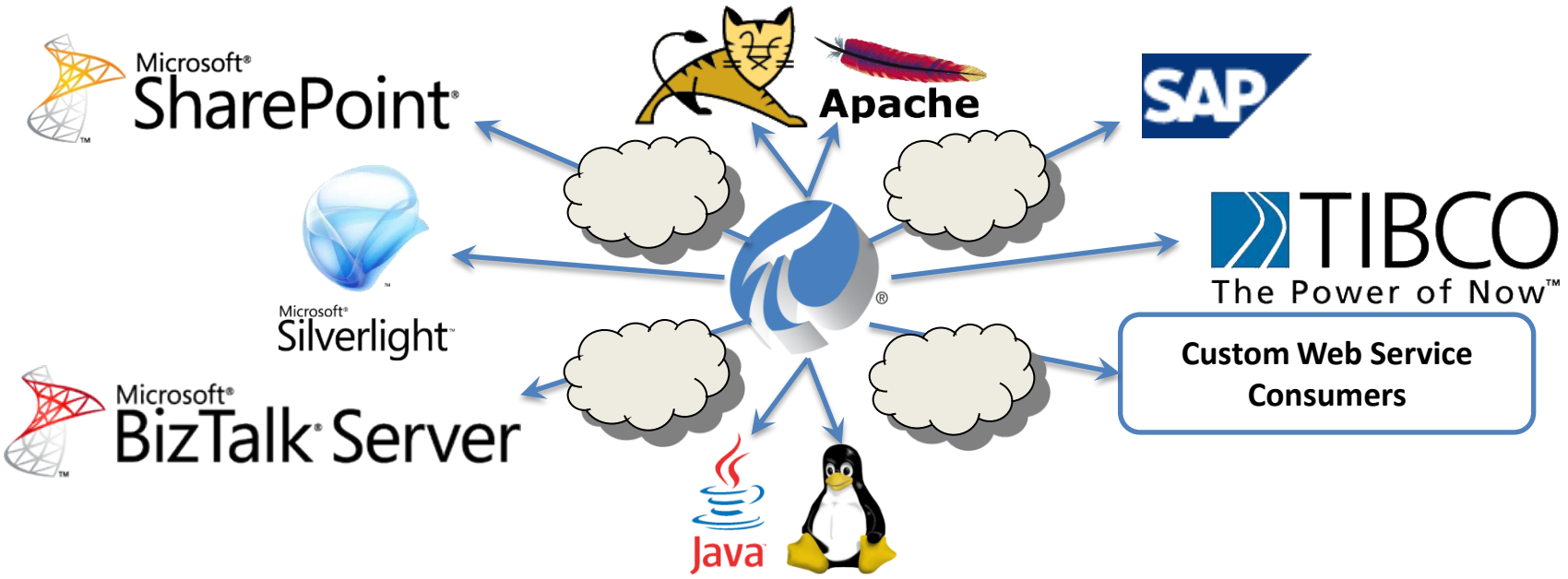
PI Web Services 2010 - Use Cases

- Web-based visualization
- Integration with business systems
- Non-Windows environments



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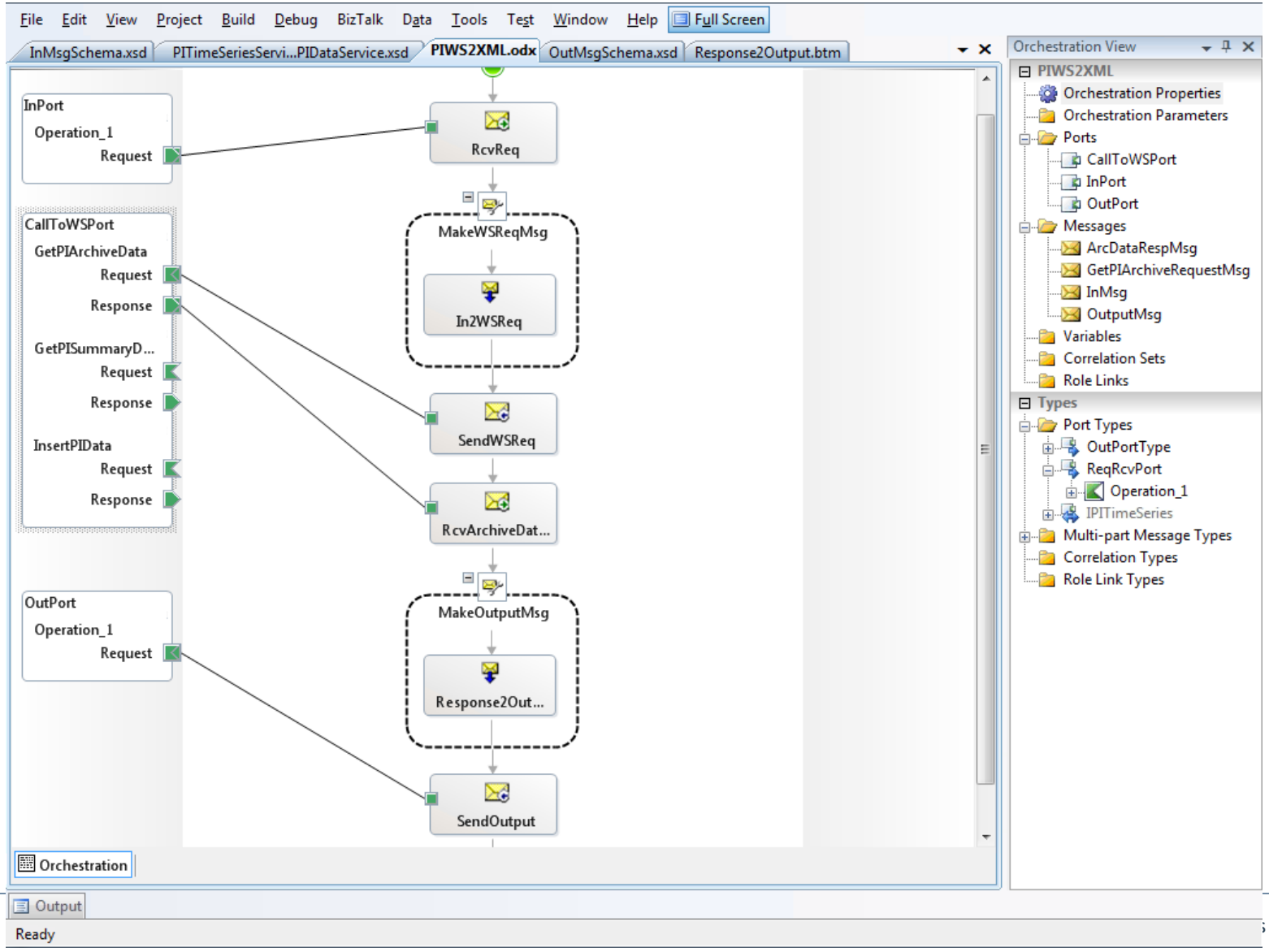
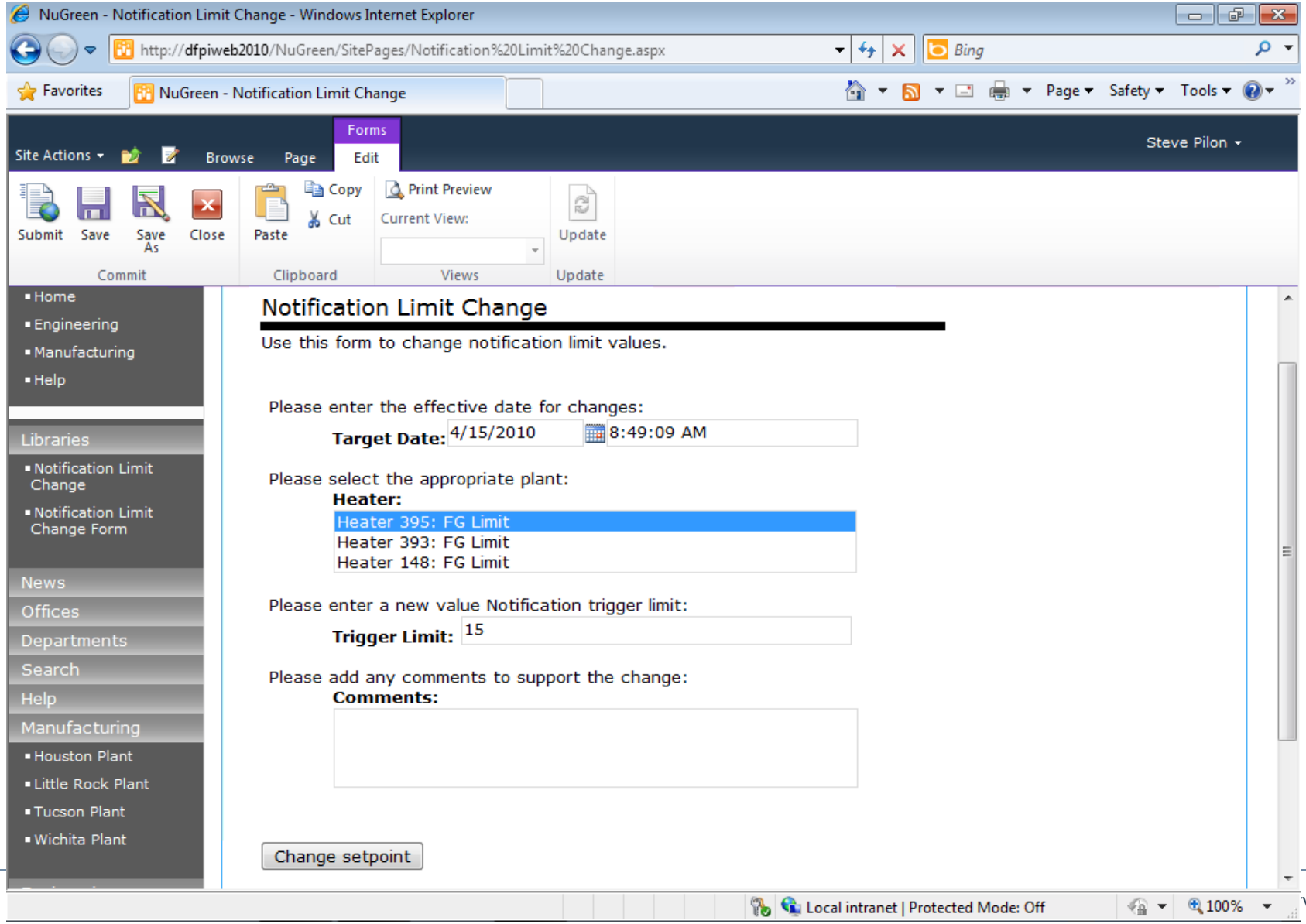
PI Web Services in BizTalk (orchestration)



Reserved.

PI Web Services in InfoPath



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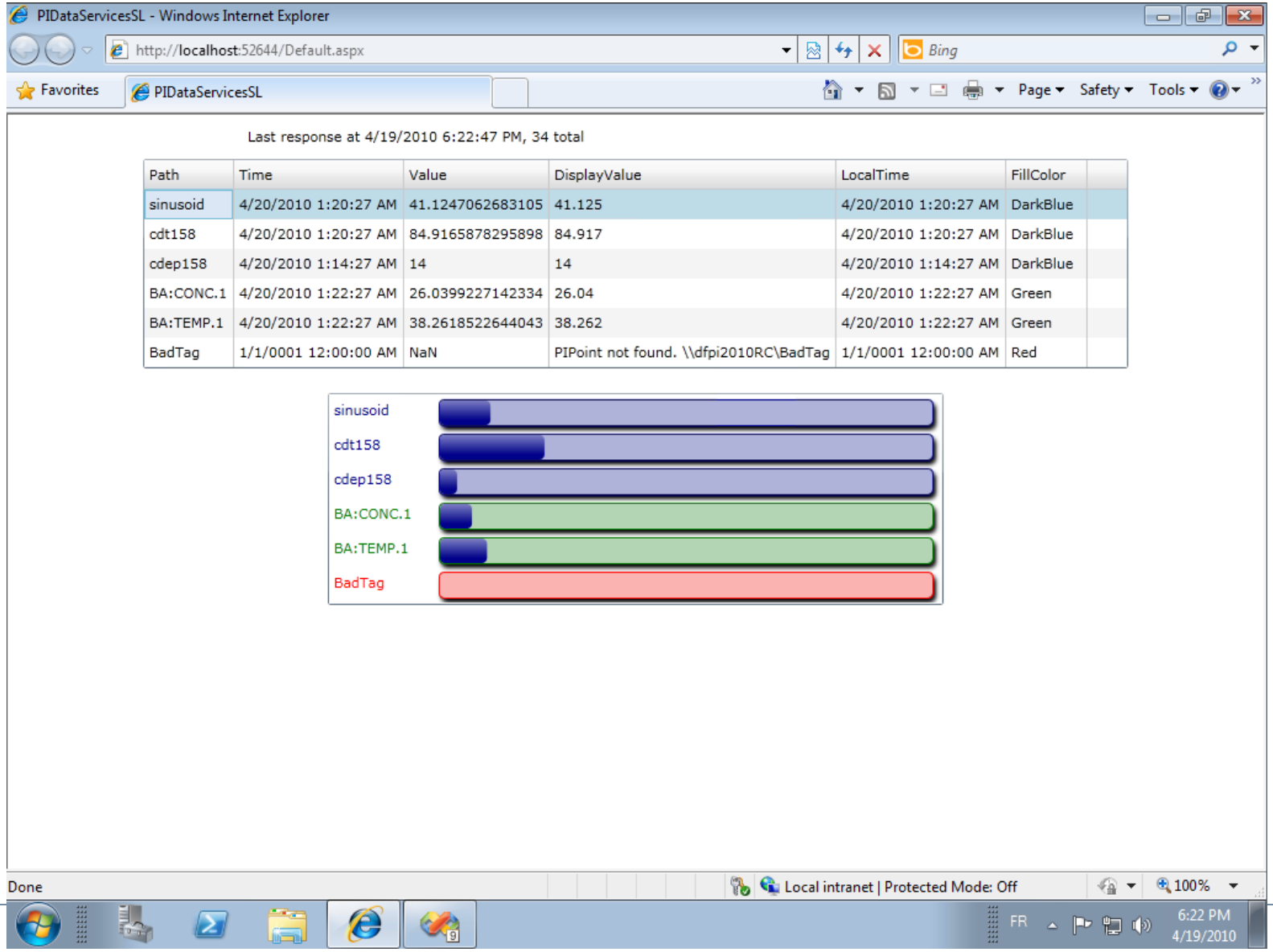
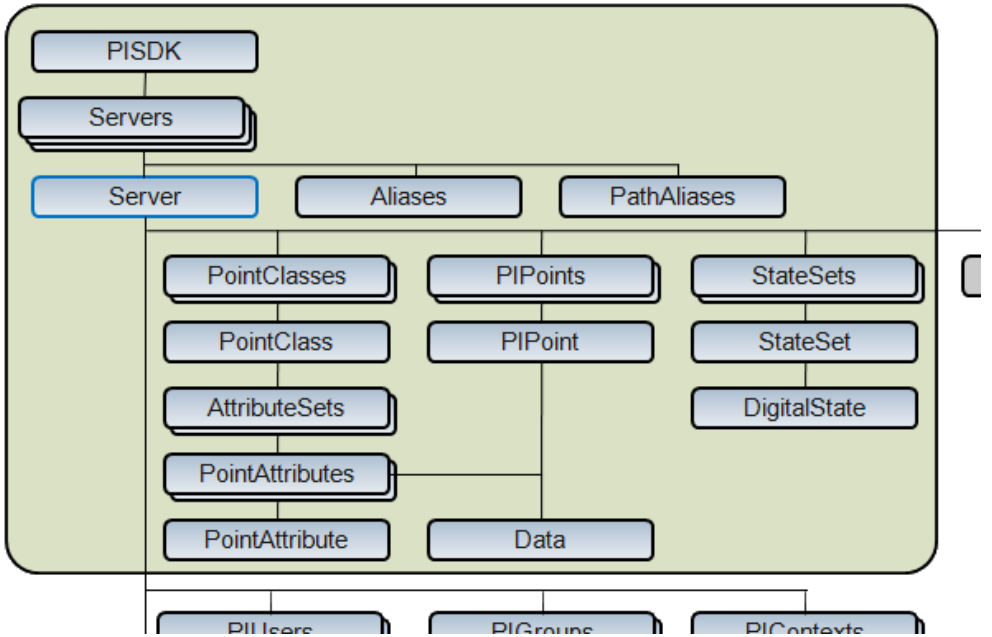
PI Web Services in Silverlight



Reserved.

OSIsoft SDKs - Value Proposition

- Object-oriented SDKs
  - PI, AF, Notifications
- Custom applications
  - Visualization
  - Configuration
  - Calculations
  - Analyses
  - Reports



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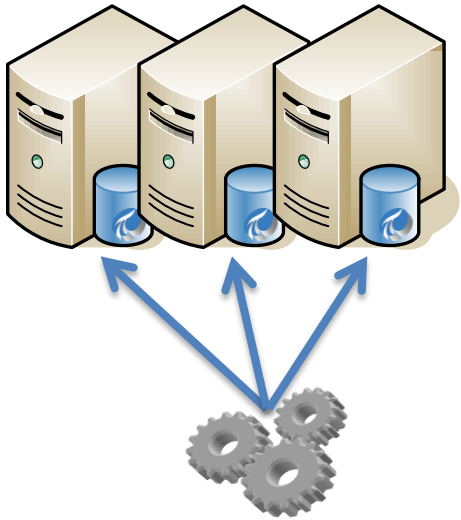
OSIsoft SDKs - What's New

- Windows Integrated Security
  - PI SDK 1.3.6
- 64-bit
  - PI SDK 1.3.8
  - AF SDK 2.1
- Client-Side Buffering
  - PI SDK 2010 (coming)



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Development → Runtime

```
AFTimeRange tr = new AFTimeRange(new AFTime(tex
AFValues vals = _afDB.Elements["Pump123"].Attri

lstValues.Items.Clear();
foreach(AFValue val in vals)
{

    lstValues.Items.Add(val.Value.ToString() +
}
```

PI System Access (PSA)

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PI System Access (PSA)

- New licensing model / new part on price list

- Provides **runtime license** for end-users to run data access products
  - Custom applications
  - Integration scenarios

- 1 PSA is valid for **1 named user**, for all PI and AF data within the organization

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Products Covered by PSA Today

- OSIsoft SDKs
  - PI SDK
  - AF SDK (includes AN/EF SDK)
- SQL Family
  - PI OLEDB + PI OLEDB Enterprise
  - PI JDBC
  - PI ODBC
- PI OPC DA/HDA Server
- PI Web Services
- PI API

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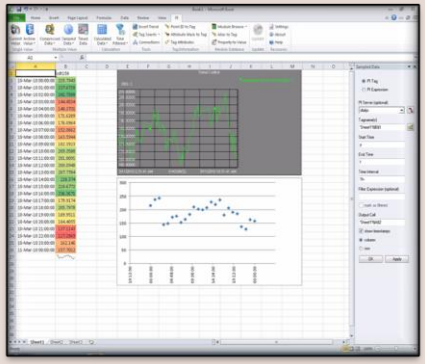
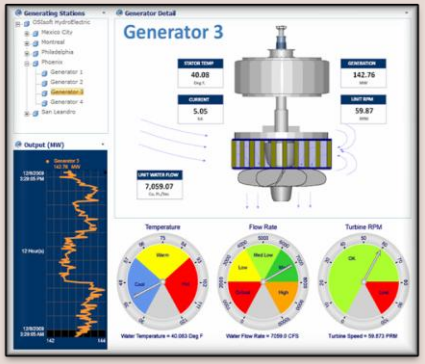
PI for Office 2010



PI DataLink for Excel 2010



PI WebParts for SharePoint 2010

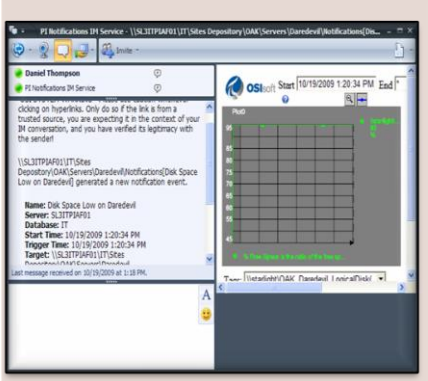
PI and PowerPivot for Excel 2010

PI and PowerPivot for SharePoint 2010

PI OLEDB Enterprise 2010

PI Web Services 2010

PI Data Access Technologies

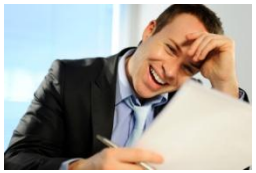


PI Notifications 1.1 OCS R2 Delivery Channel

PI WebParts 2010

Legacy maintenance software

- Functional
- Maintenace staff is trained on it
- Company has made a large investment in it and has created a web front end for it



Excel Reports

- Reports that engineers and managers rely on

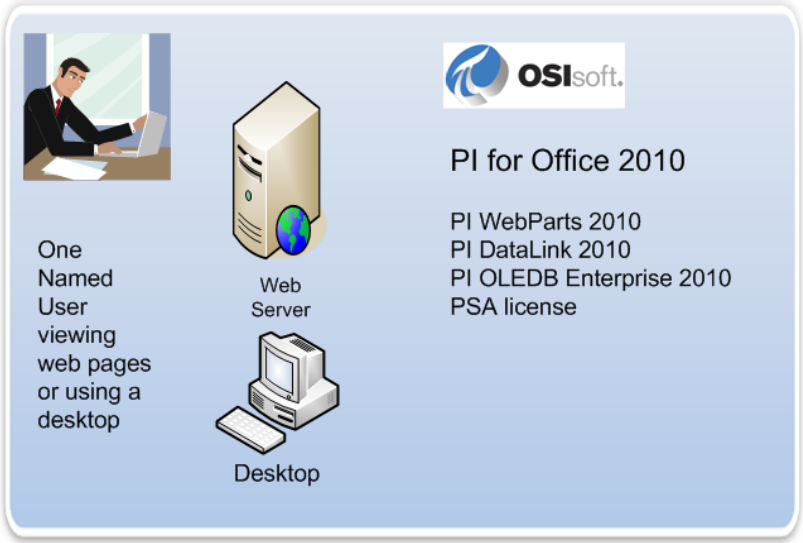
Manuals, Safety, Maps

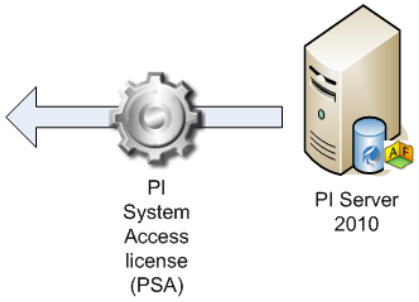
- Key data that is stored online
  - Safety
  - Equipment manuals
  - Weather
  - Maps

Integrate PI with existing investments

PI WebParts 2010

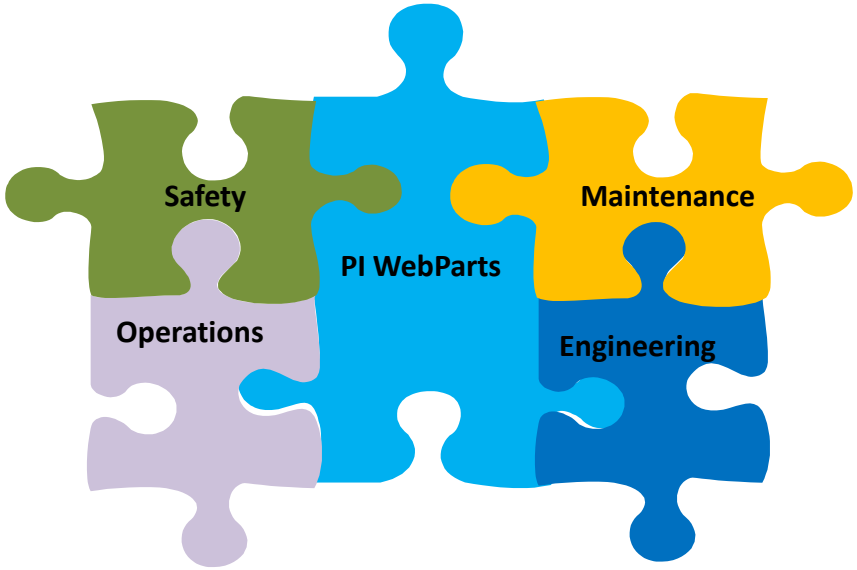
- Aligns with
  - PI for Office 2010
  - PI Server 2010
- Pairs with Microsoft Office 2010 components





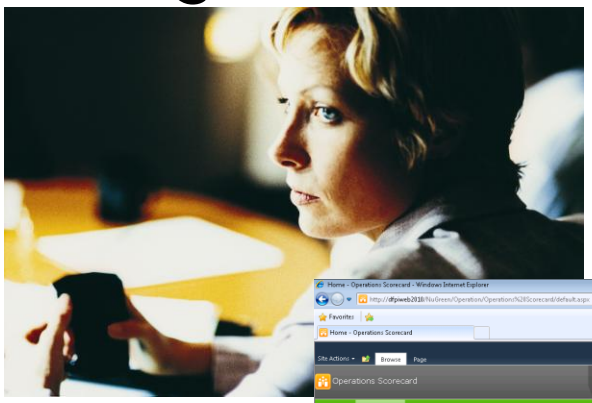
Value of PI WebParts 2010

- Easy configuration, no code programming
- Leverage existing applications
- Fewer pages to maintain

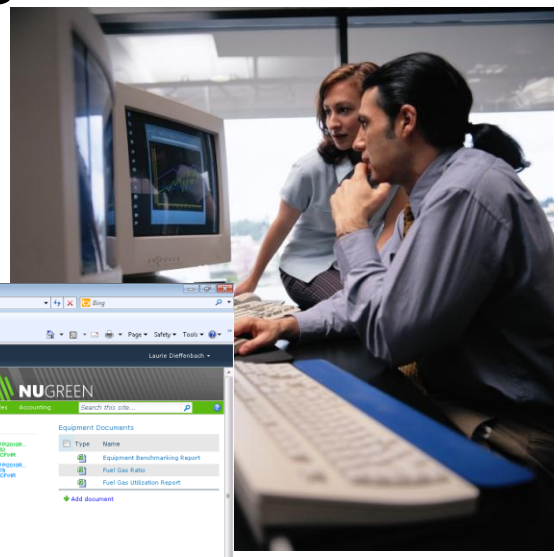


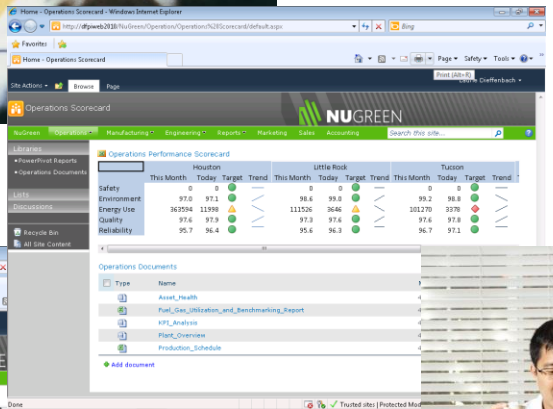
Role-based Dashboarding

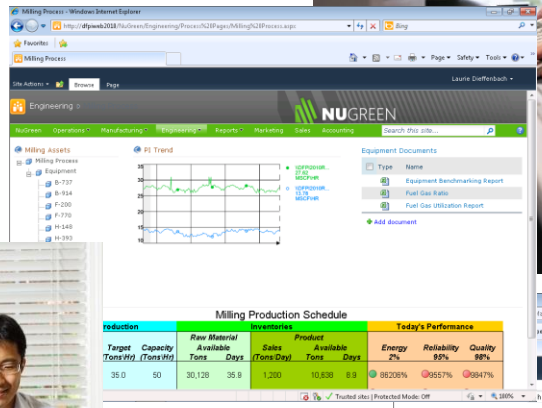
Management

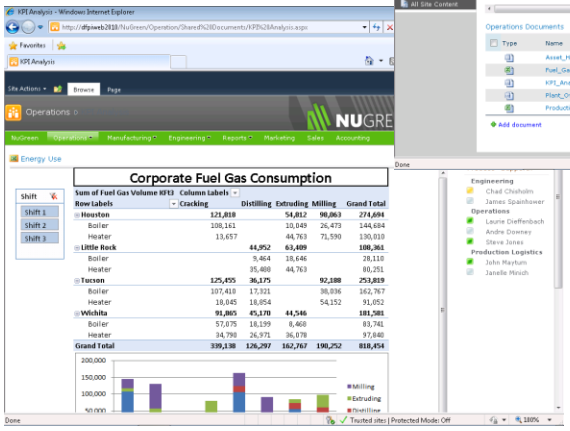


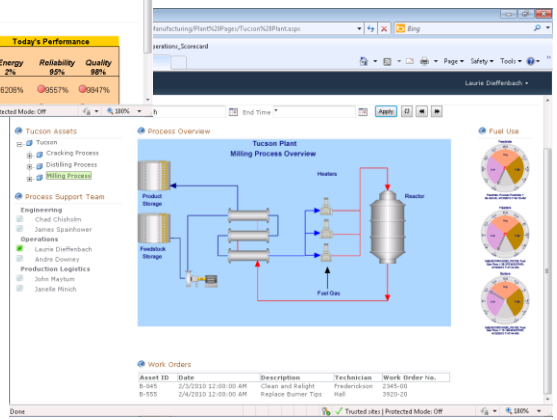
Knowledge Worker







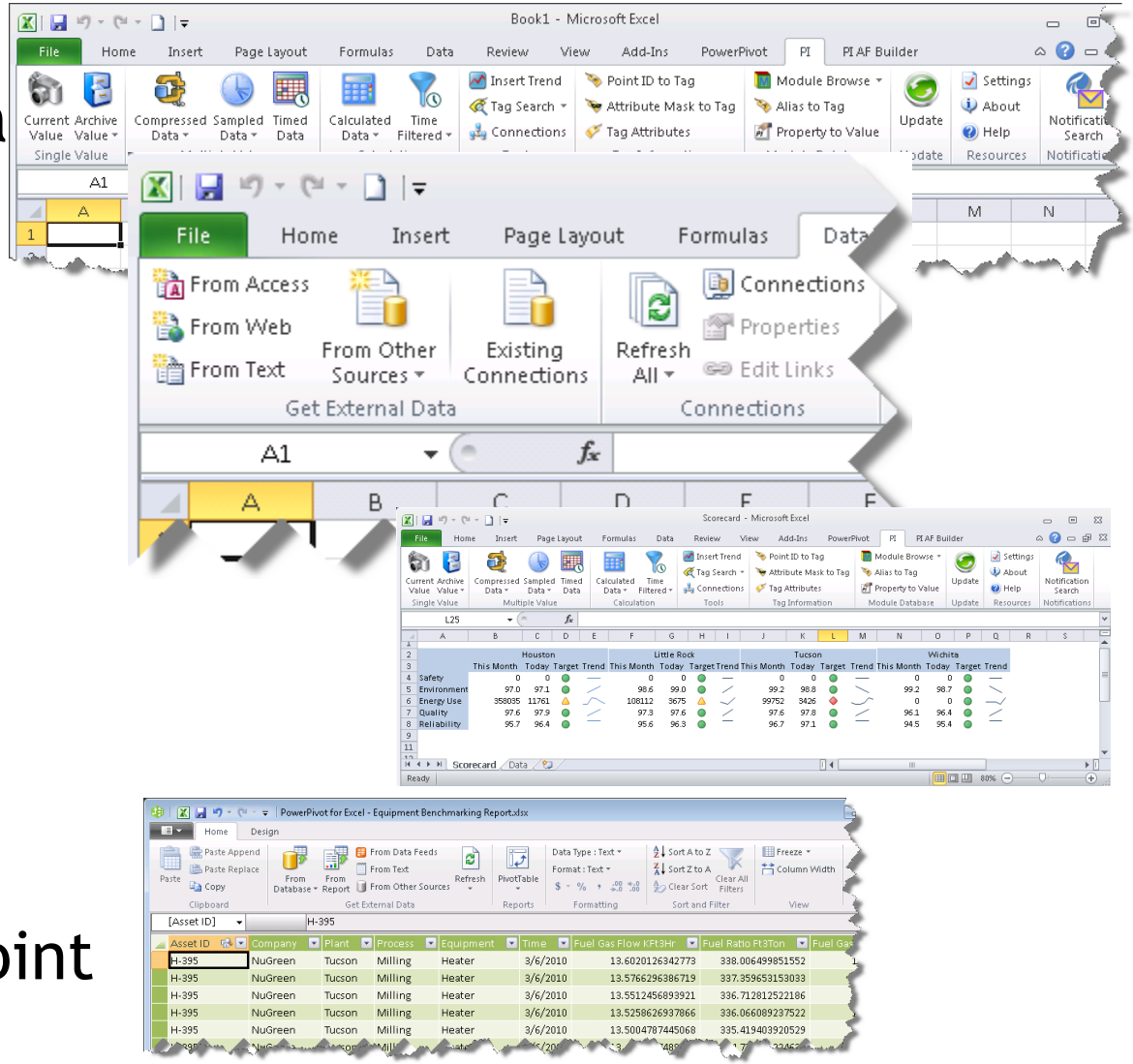




Content Creator

Content Creator Roles

- Use different data sources
- Create scorecards
- Create multidimensional reports
- Publish to SharePoint



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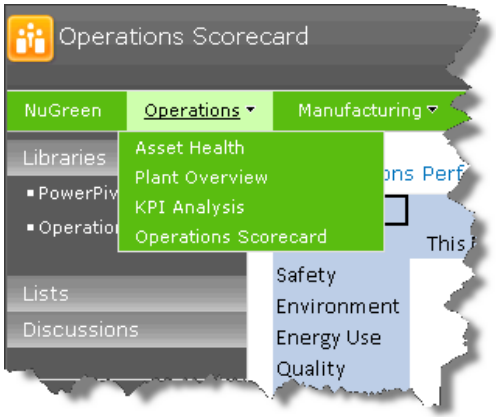
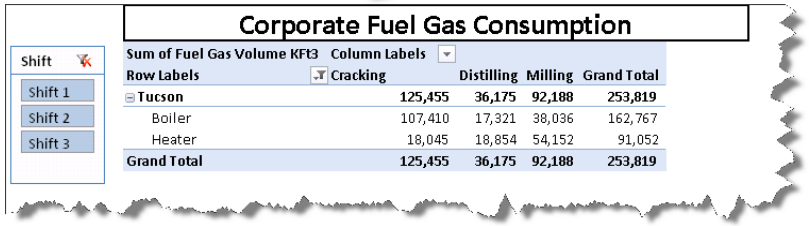
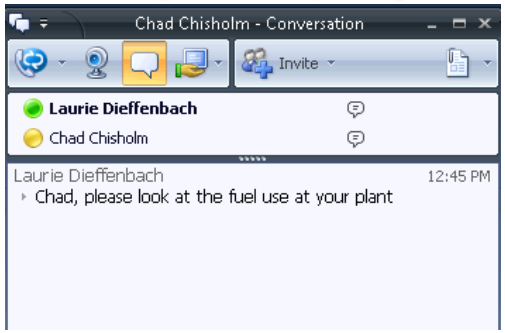
Management Roles

- Easy navigation to needed information
- Content is already built, but can interact with it to focus on an issue
- Easy access to assistance from experts







Empowering Business in Real Time.

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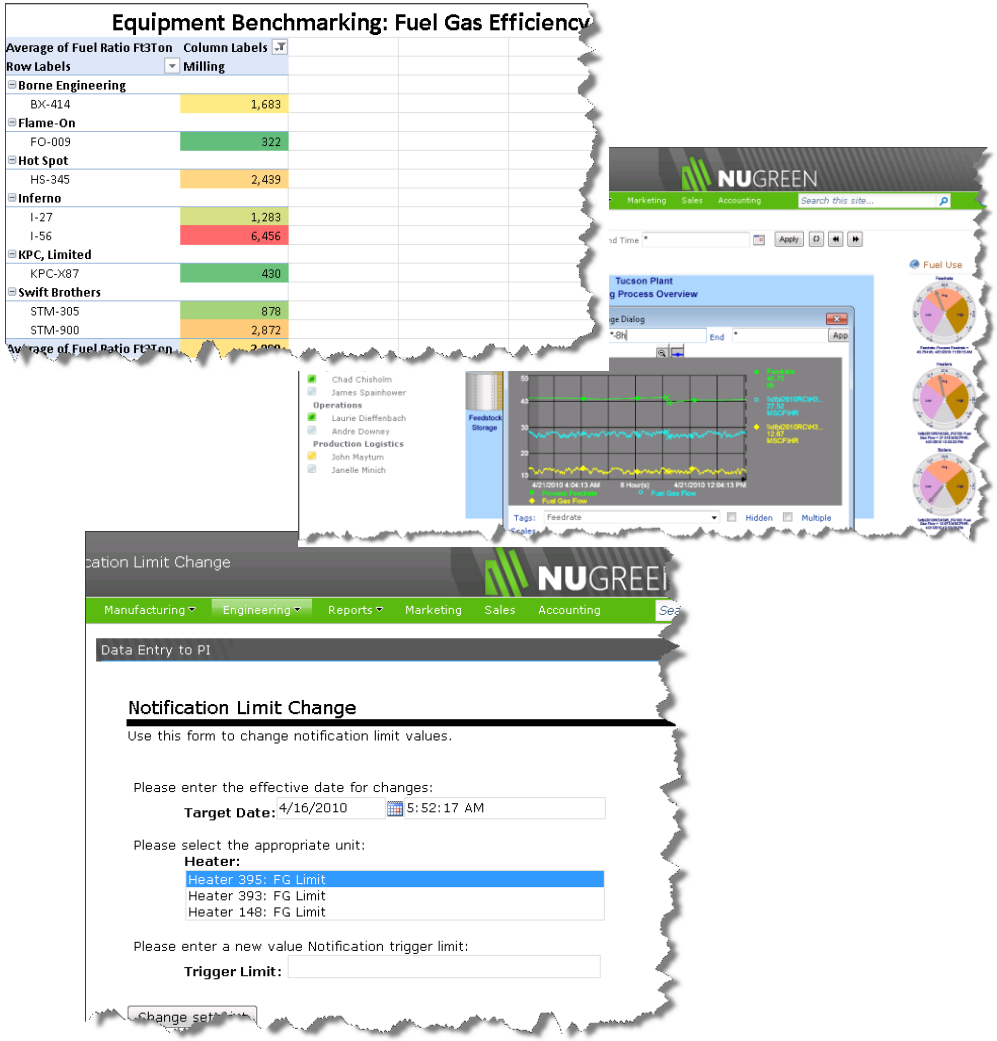
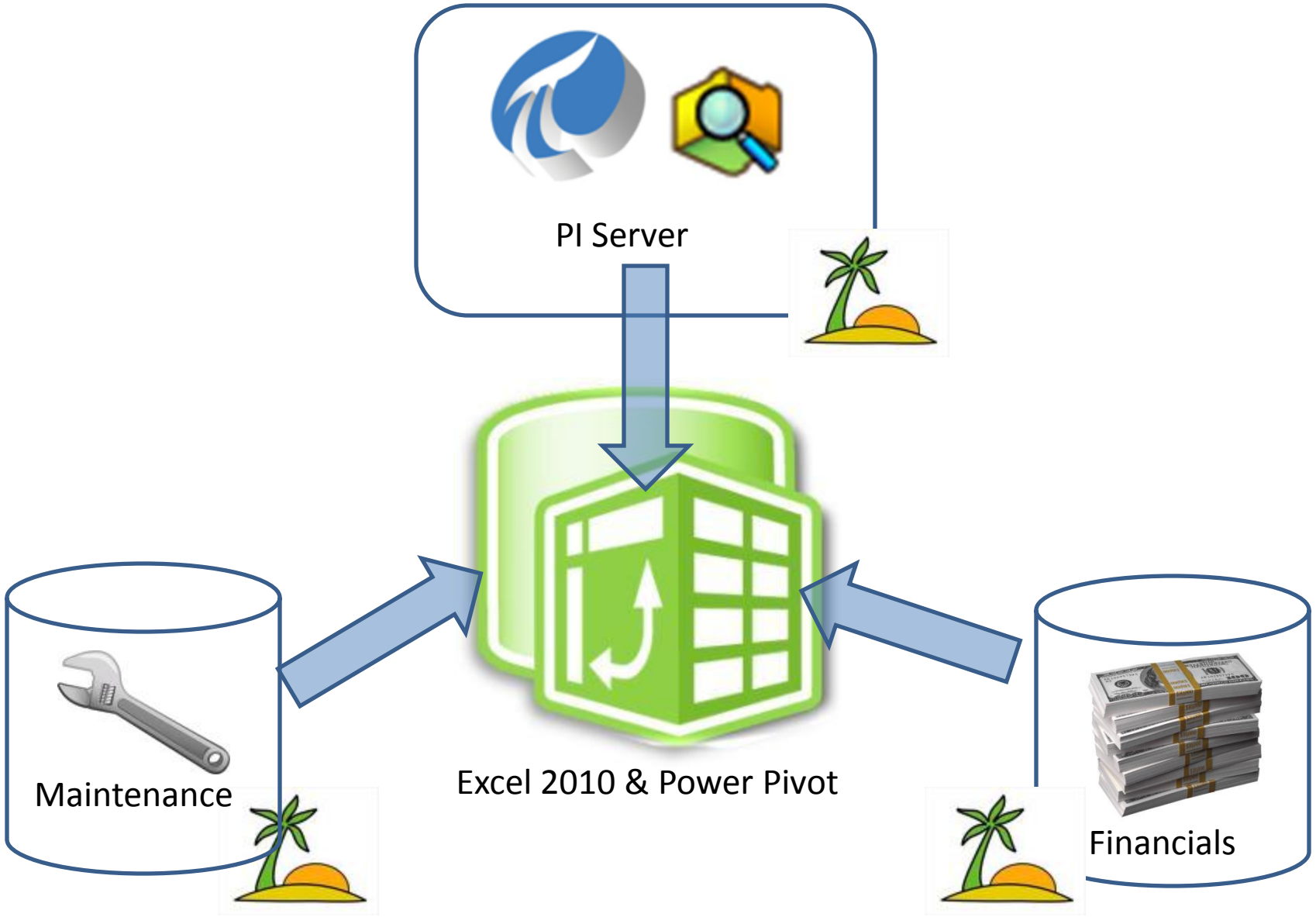
Knowledge Worker Roles

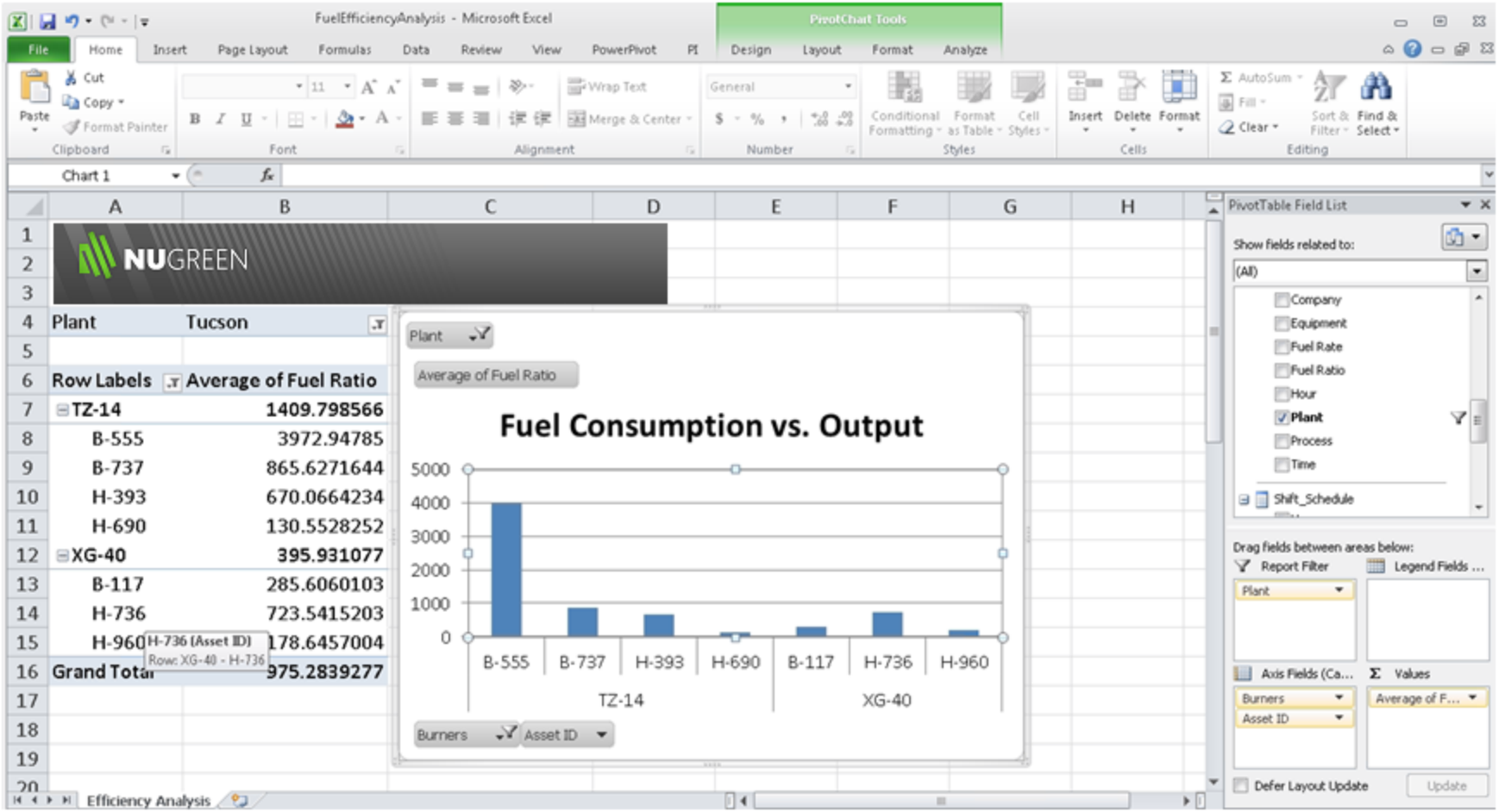
- Access to all needed tools
- Contribute material for use by others
- Act to resolve problems and prevent recurrence



User-driven Reporting



PI DataLink + Excel 2010 + PowerPivot



What's New in PI DataLink 2010

- Supports Microsoft Office 2010 (32-bit)

  (Office 2007 and Office 2003 as well)

- Internationalization and Localization

  English, French, German, Spanish, Portuguese, Russian, Simplified Chinese, Japanese, Korean

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What's New in PI DataLink Server 2010

- Supports SharePoint 2010 (64-bit)

  (Microsoft Office SharePoint Server 2007 as well)

- Internationalization and Localization

  English, French, German, Spanish, Portuguese, Russian, Simplified Chinese, Japanese, Korean

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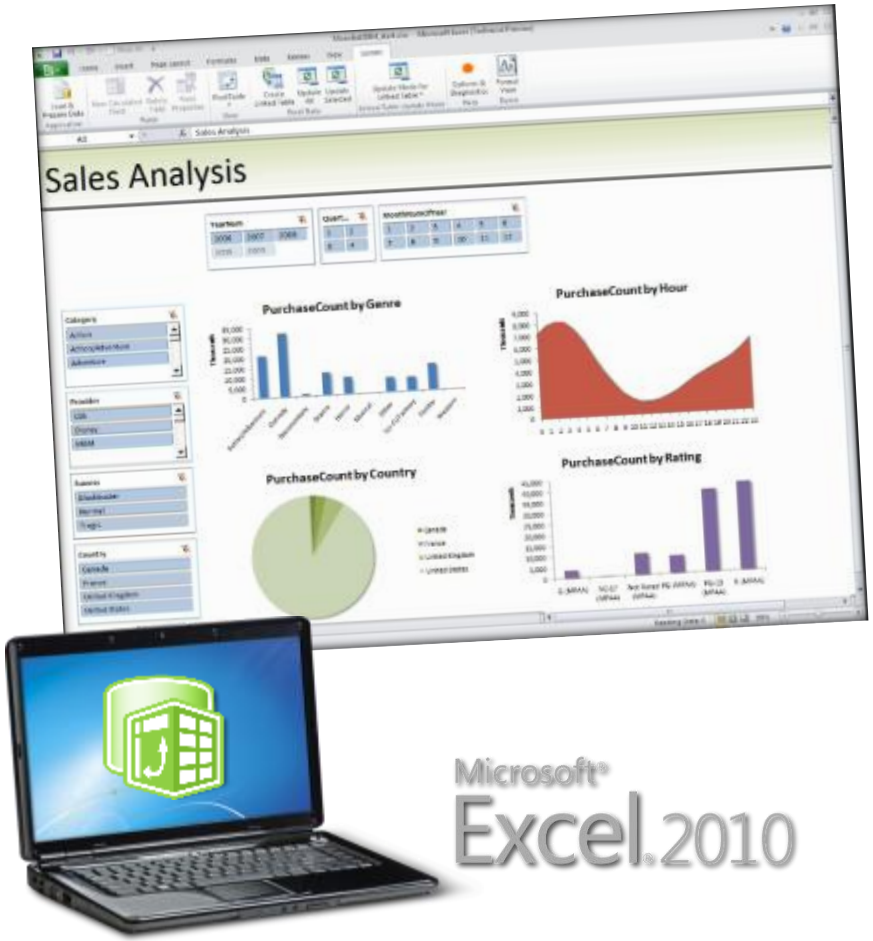
Managed Self Service BI

PowerPivot for Excel



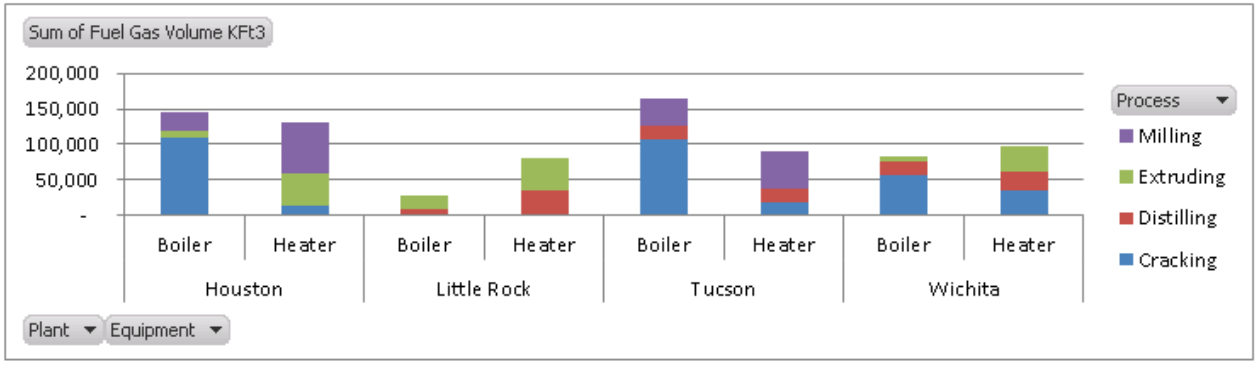
PowerPivot for SharePoint

BI for Manufacturing

30 Day Corporate Fuel Gas Consumption

Shift
- Shift 1
- Shift 2
- Shift 3

Sum of Fuel Gas Volume Column Lab					
Row Labels	Cracking	Distilling	Extruding	Milling	Grand Total
Houston	121,929		54,828	98,453	275,210
Boiler	108,315		10,023	26,842	145,180
Heater	13,614		44,804	71,611	130,029
Little Rock		45,024	63,146		108,169
Boiler		9,559	18,341		27,900
Heater		35,465	44,804		80,269
Tucson	126,003	36,492		92,282	254,777
Boiler	107,830	17,662		38,106	163,598
Heater	18,173	18,829		54,176	91,178
Wichita	91,736	45,233	44,704		181,673
Boiler	56,933	18,295	8,628		83,856
Heater	34,803	26,938	36,076		97,817
Grand Total	339,668	126,748	162,677	190,735	819,829



322
1,684
2,422
873
2,902
440
1,271
6,393
2,000

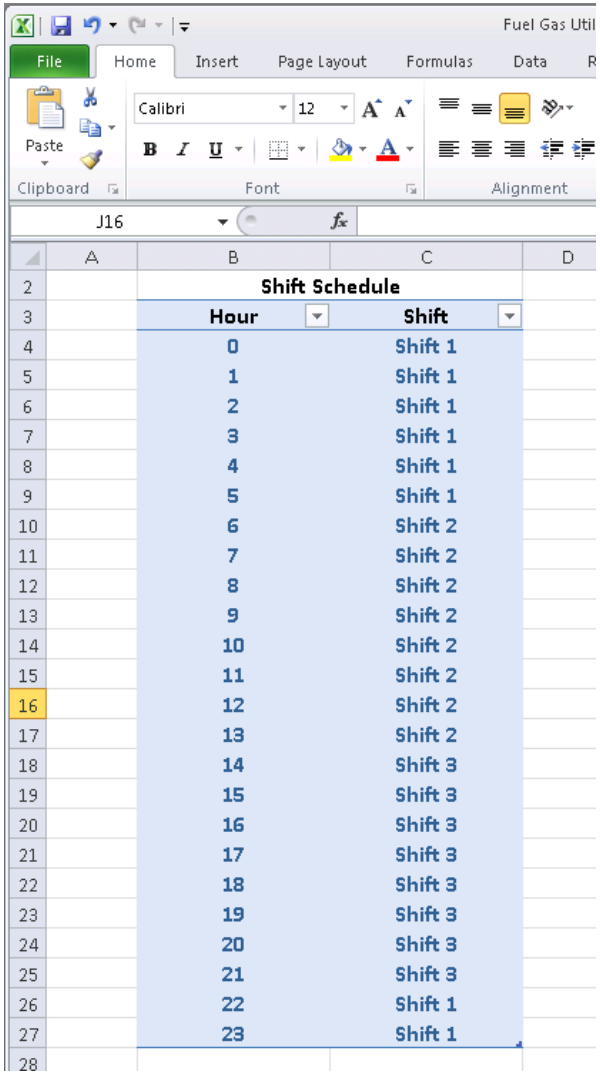
Slicing Data by Shifts

- Link in an Excel Table containing shift schedule
- Use DAX[1] to add an “Hour” column to the “Fuel Use” table;

  =HOUR([Time])

- Create a Relationship between the “Hour” columns in each table.

1. Data Analysis Expression Language



	A	B	C	D
2		Shift Schedule		
3		Hour	Shift	
4		0	Shift 1	
5		1	Shift 1	
6		2	Shift 1	
7		3	Shift 1	
8		4	Shift 1	
9		5	Shift 1	
10		6	Shift 2	
11		7	Shift 2	
12		8	Shift 2	
13		9	Shift 2	
14		10	Shift 2	
15		11	Shift 2	
16		12	Shift 2	
17		13	Shift 2	
18		14	Shift 3	
19		15	Shift 3	
20		16	Shift 3	
21		17	Shift 3	
22		18	Shift 3	
23		19	Shift 3	
24		20	Shift 3	
25		21	Shift 3	
26		22	Shift 1	
27		23	Shift 1	
28				

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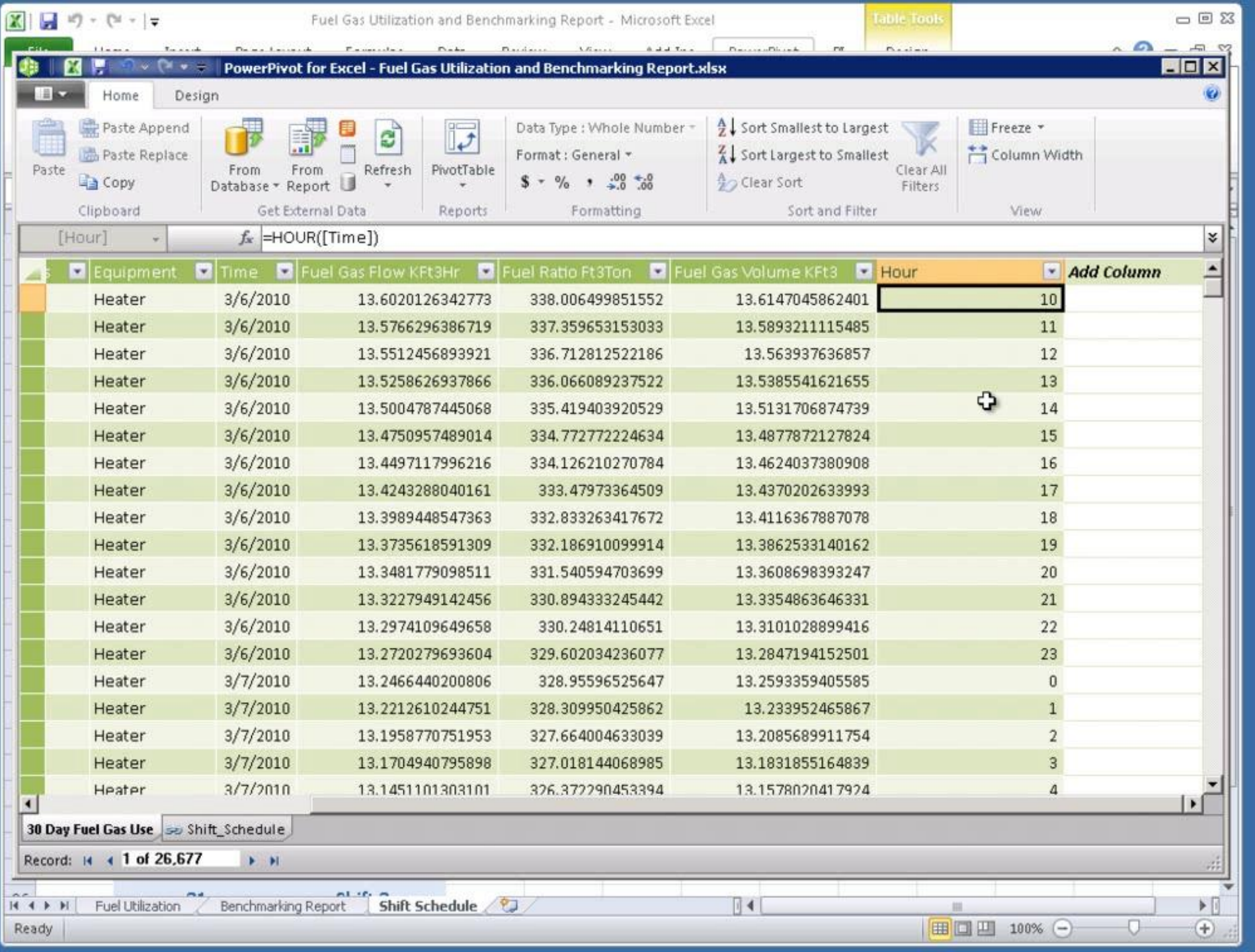

Fuel Gas Utilization and Benchmarking Report - Microsoft Excel
Table Tools
PowerPivot for Excel - Fuel Gas Utilization and Benchmarking Report.xlsx
Home
Design
Paste
Paste Append
Paste Replace
Copy
Clipboard
From Database
From Report
Refresh
Get External Data
PivotTable
Reports
Data Type : Whole Number
Format : General
Formatting
Sort Smallest to Largest
Sort Largest to Smallest
Clear Sort
Clear All Filters
Sort and Filter
Freeze
Column Width
View
[Hour]
=HOUR([Time])
Equipment
Time
Fuel Gas Flow KFt3Hr
Fuel Ratio Ft3Ton
Fuel Gas Volume KFt3
Hour
Add Column
Heater 3/6/2010 13.6020126342773 338.006499851552 13.6147045862401 10
Heater 3/6/2010 13.5766296386719 337.359653153033 13.5893211115485 11
Heater 3/6/2010 13.5512456893921 336.712812522186 13.563937636857 12
Heater 3/6/2010 13.5258626937866 336.066089237522 13.5385541621655 13
Heater 3/6/2010 13.5004787445068 335.419403920529 13.5131706874739 14
Heater 3/6/2010 13.4750957489014 334.772772224634 13.4877872127824 15
Heater 3/6/2010 13.4497117996216 334.126210270784 13.4624037380908 16
Heater 3/6/2010 13.4243288040161 333.47973364509 13.4370202633993 17
Heater 3/6/2010 13.3989448547363 332.833263417672 13.4116367887078 18
Heater 3/6/2010 13.3735618591309 332.186910099914 13.3862533140162 19
Heater 3/6/2010 13.3481779098511 331.540594703699 13.3608698393247 20
Heater 3/6/2010 13.3227949142456 330.894333245442 13.3354863646331 21
Heater 3/6/2010 13.2974109649658 330.24814110651 13.3101028899416 22
Heater 3/6/2010 13.2720279693604 329.602034236077 13.2847194152501 23
Heater 3/7/2010 13.2466440200806 328.95596525647 13.2593359405585 0
Heater 3/7/2010 13.2212610244751 328.309950425862 13.233952465867 1
Heater 3/7/2010 13.1958770751953 327.664004633039 13.2085689911754 2
Heater 3/7/2010 13.1704940795898 327.018144068985 13.1831855164839 3
Heater 3/7/2010 13.145110130310 326.372290453394 13.1578020417924 4
30 Day Fuel Gas Use
Shift_Schedule
Record: 1 of 26,677
Fuel Utilization
Benchmarking Report
Shift Schedule
Ready
100%

Fuel Gas Utilization and Benchmarking Report - Microsoft Excel

PivotTable Tools

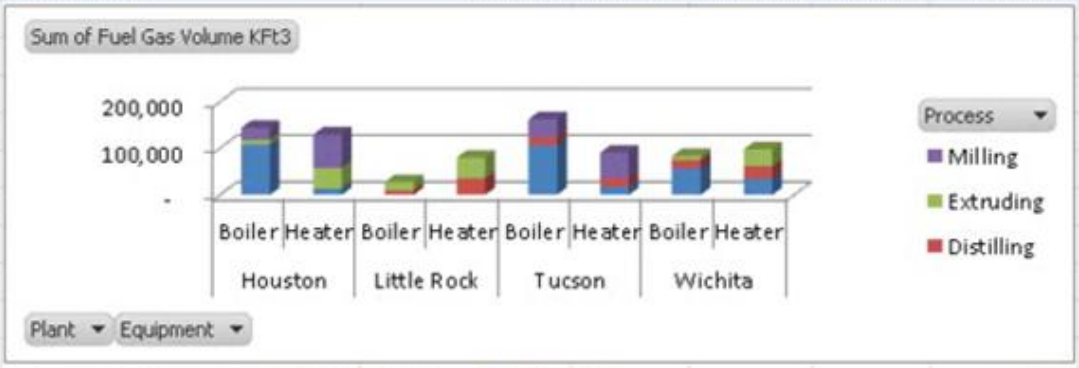
File | Home | Insert | Page Layout | Formulas | Data | Review | View | Add-Ins | PowerPivot | PI | Options | Design

PowerPivot Window (Launch) | New Measure | Delete Measure | Measure Settings (Measures) | PivotTable (Report) | Create Linked Table | Update All (Excel Data) | Settings (Options) | Field List (Show/Hide) | Detection (Relationship)

C5 | 108161.237925149

Corporate Fuel Gas Consumption

Sum of Fuel Gas Volume KFt3	Column Labels				
Row Labels	Cracking	Distilling	Extruding	Milling	Grand Total
Houston	**121,818**		**54,812**	**98,063**	**274,694**
Boiler	108,161		10,049	26,473	144,684
Heater	13,657		44,763	71,590	130,010
Little Rock		**44,952**	**63,409**		**108,361**
Boiler		9,464	18,646		28,110
Heater		35,488	44,763		80,251
Tucson	**125,455**	**36,175**		**92,188**	**253,819**
Boiler	107,410	17,321		38,036	162,767
Heater	18,045	18,854		54,152	91,052
Wichita	**91,865**	**45,170**	**44,546**		**181,581**
Boiler	57,075	18,199	8,468		83,741
Heater	34,790	26,971	36,078		97,840
Grand Total	**339,138**	**126,297**	**162,767**	**190,252**	**818,454**



PowerPivot Field List

PowerPivot data was modified | Refresh

Choose fields to add to report:

Search

- 30 Day Fuel Gas Use
  - [ ] Asset ID
  - [ ] Company
  - [x] Plant
  - [x] Process
  - [x] Equipment
  - [ ] Time
  - [ ] Fuel Gas Flow KFt3Hr
  - [ ] Fuel Ratio Ft3Ton
  - [x] Fuel Gas Volume KFt3

Slicers Vertical | Slicers Horizontal

Report Filter | Column Labels: Process

Row Labels: Plant, Equipment | Values: Sum of Fuel Gas...

Fuel Utilization | Benchmarking Report | Shift Schedule

Ready | 100%

Keeping Insights Up to Date

PowerPivot user specifies the data sources

Publish Solution

SharePoint automatically refreshes the data

Microsoft SQL Azure

Microsoft Access

Oracle

Teradata

OSIsoft PI System 2010

Excel Files

SQL Server

Microsoft Reporting Services

Microsoft Analysis Services

Sybase

Informix

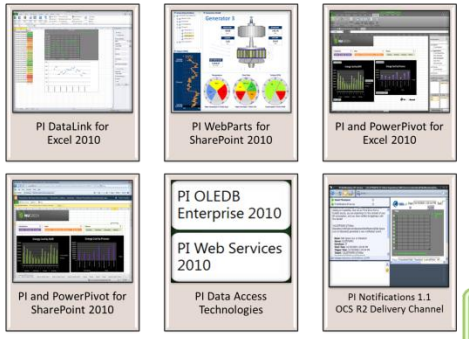
IBM DB2

Refreshing Data in SharePoint 2010

SharePoint can refresh the data from the specified data sources over the Web, in the cloud, from internal databases, PI System 2010, Excel files, and any other location with network connectivity.

Self-service BI Toolkit for PI

- Dimensions and Facts
  - PI Asset Framework (PI Server 2010)
- Datasets for BI Data Extraction
  - PI OLEDB Enterprise 2010 (PI for Office 2010)
- Desktop Analysis and Cube Configuration
  - Microsoft PowerPivot for Excel 2010
- Enterprise Accountability
  - Microsoft PowerPivot for SharePoint 2010
  - Microsoft SharePoint 2010
  - Microsoft SQL Server 2008 R2



Simple, Relevant, and Collaborative

Simple

- Simple naming and versioning
- Single PI Server package
- Aligned release schedule

Relevant

- Organize PI data around assets
- Migration of existing asset definitions
- Integration of PI with business systems
- New ways to analyze data

Collaborative

- Use the tools you already know
- Business Intelligence for the masses
- Easily share insights with others

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