Regional Seminar Series

PI System Analytics

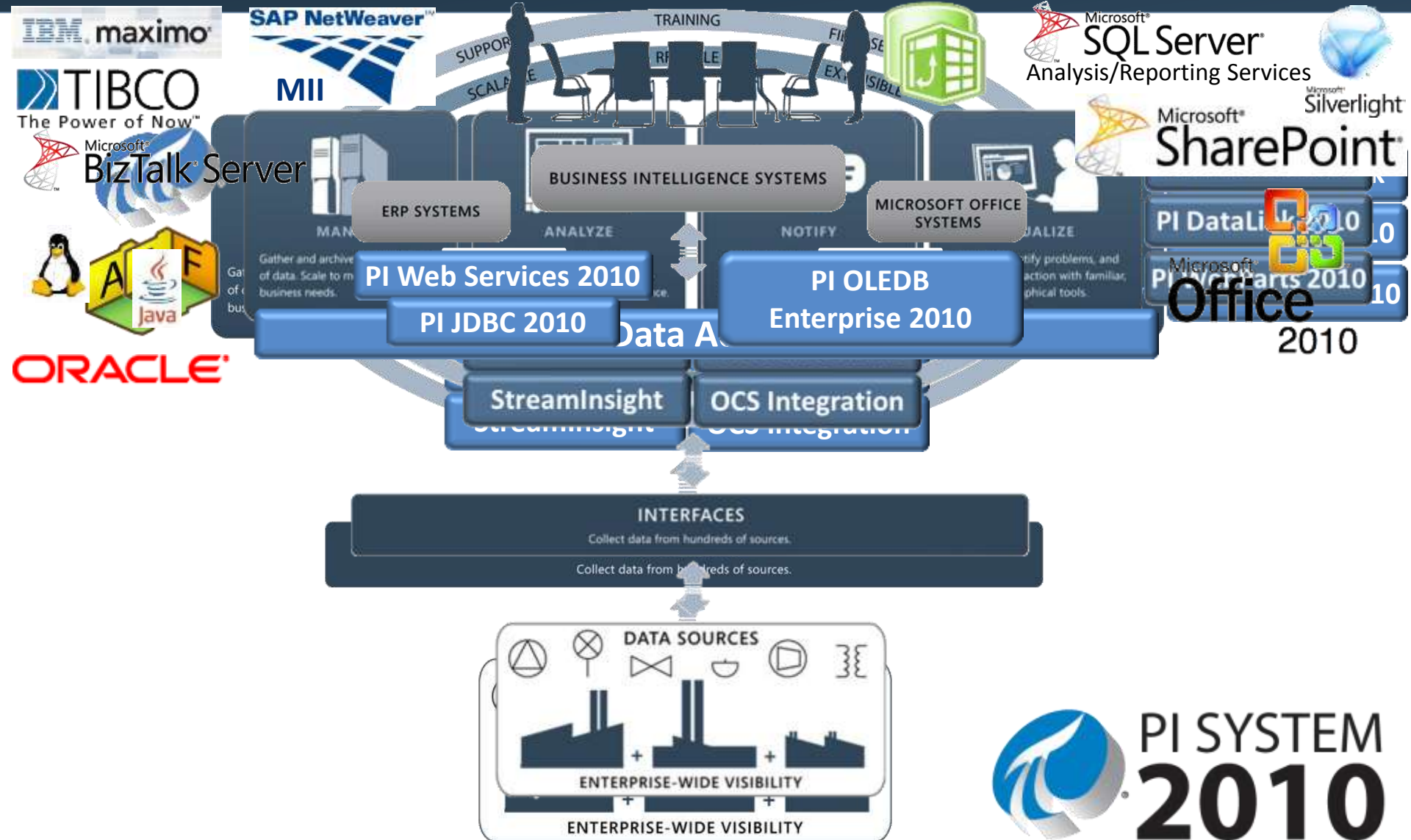Glenn Moffett, Product Management, OSIsoft

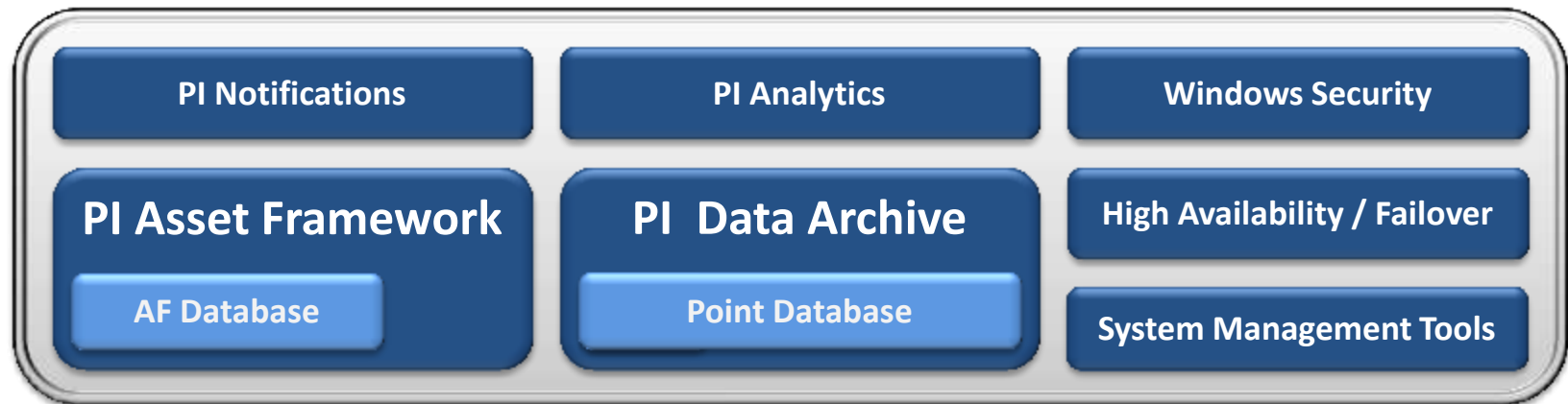16th September 2010

- PI Analytics

- PI Notifications

- Product Roadmap

Empowering Business in Real Time.

OSIsoft.

SAP NetWeaver™

MII

IBM maximo

TIBCO
The Power of Now™

Microsoft
BizTalk Server

ORACLE

Microsoft
SQL Server
Analysis/Reporting Services

Silverlight

Microsoft
SharePoint

PI DataLink 2010

Microsoft
Office 2010

TRAINING

SUPPORT

SCALABLE

RELIABLE

EXTENSIBLE

BUSINESS INTELLIGENCE SYSTEMS

ERP SYSTEMS

MANAGE
Gather and archive
of data. Scale to m
of d
bus

ANALYZE

MICROSOFT OFFICE SYSTEMS

NOTIFY

VISUALIZE
tify problems, and
action with familiar,
phical tools.

PI Web Services 2010

PI JDBC 2010

PI OLEDB
Enterprise 2010

Data A

StreamInsight

OCS Integration

INTERFACES
Collect data from hundreds of sources.
Collect data from hundreds of sources.

DATA SOURCES

+

+

ENTERPRISE-WIDE VISIBILITY

+

+

ENTERPRISE-WIDE VISIBILITY

PI SYSTEM
2010

Empowering Business in Real Time.

PI Notifications	PI Analytics	Windows Security
PI Asset Framework	**PI Data Archive**	**High Availability / Failover**
AF Database	Point Database	**System Management Tools**

Empowering Business in Real Time.

Regional Seminar Series

PI Analytics

September 2010

Empowering Business in Real Time.

PI Analytics – Components and Functionality

calculations event based PI data

- Performance Equations

- Totalizers

Sche User Configuration

- Alarms/Statistical Quality Control

- Advanced Computing Engine

Visual Studio

Programme Non-PI data

- PI for StreamInsight*

Visual Studio

- PI Asset Framework supported Analytics*

Visual Studio

* Future products

Empowering Business in Real Time.

- Engineer requires a calculation based on flow rate

  - If 'tag.flow' > 100 then
    tagmax('tag.flow','*-1h','*',95)
    else 'tag.flow"

- Determine utilization of the compressor for the past two days

  - Timeeq('Compressor:Run','*-2d','*',"Running")

Empowering Business in Real Time.

- Expression syntax
  - If ... then .. Else
  - 'tag' + 'tag' + 'tag' + Avg('tag1', 'tag2')
- Library of functions
  - Tag average for a period of time
- Scheduler to run calculations
  - Time or event based
- Results are written to PI Historian

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- System Management Tools

- Excel SMT add-in

- Asset Framework element template data reference

- Piconfig (command-line)

Empowering Business in Real Time.
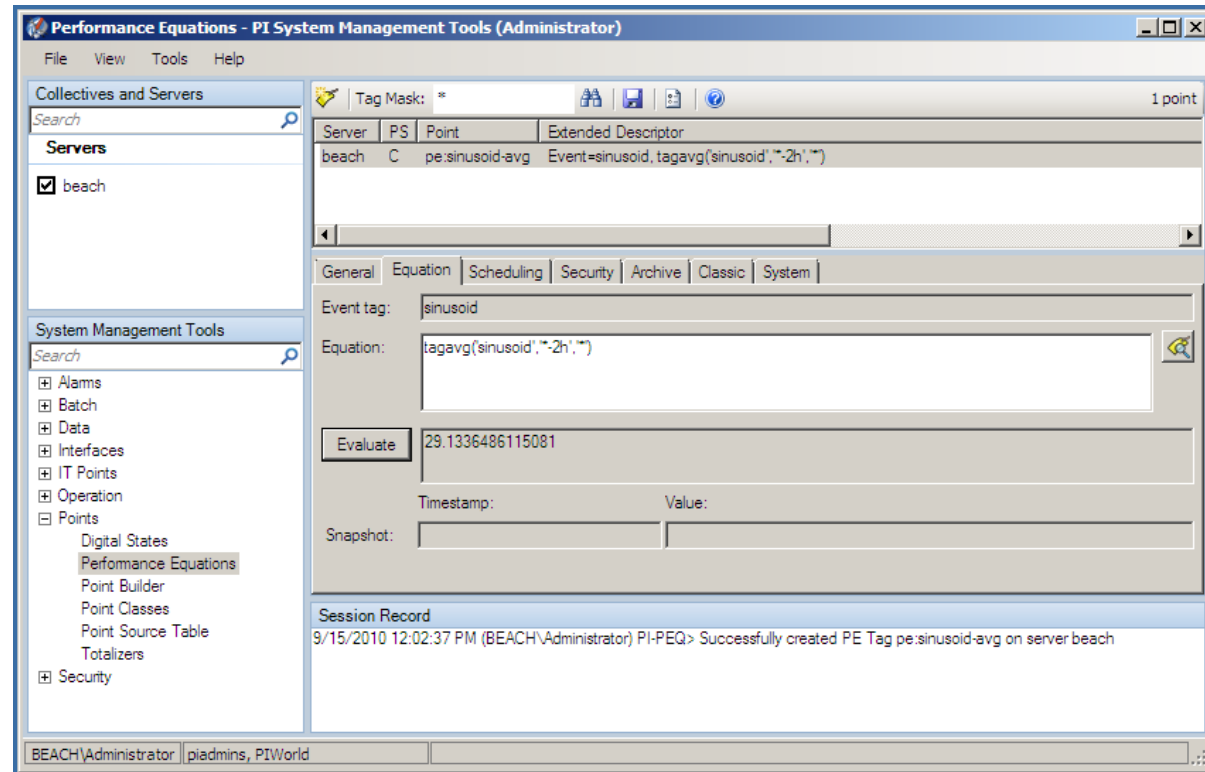
- Sum up end of day yields

- Total up flow volume during the day

- Totalize a value and then reset at the end of every shift

- Rolling 3 day average for scrubber output

Empowering Business in Real Time.

- Perform summary calculations
  - Functions
    - Total, average, min, max
  - Scan modes
    - Natural or time scheduled
  - Reporting
    - During period and/or at the end of the period

Empowering Business in Real Time.

- ## System Management Tools

- ## Excel SMT add-in

- ## Asset Framework element template data reference

- ## Piconfig (command-line)
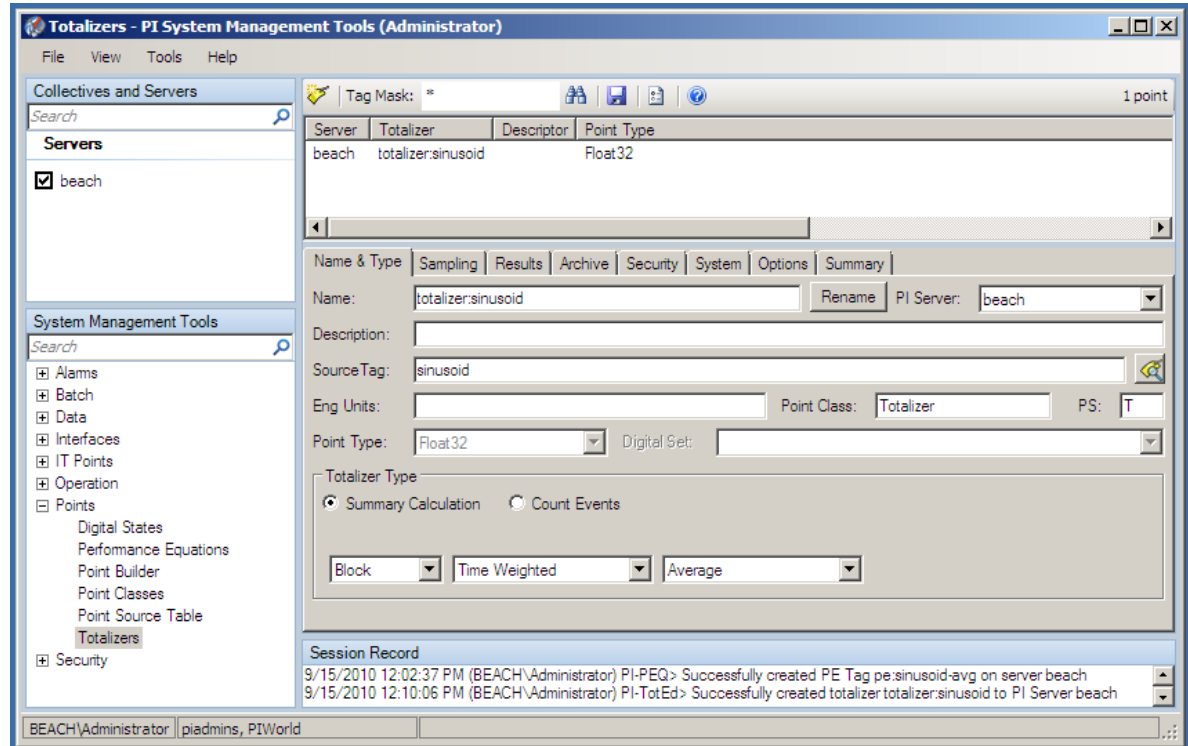
- Raw textiles

  - Set an alarm tag when 9 or more values are on the same side of a center line (defined value)

- Alliance pipeline use SQC as part of a low intervention initiative

  - Saved $70,000 per facility

  - 4 million could have been saved if applied to 60 ultrasonic metering sites at inception

PI Statistical Quality Control – Visualization

Empowering Business in Real Time.
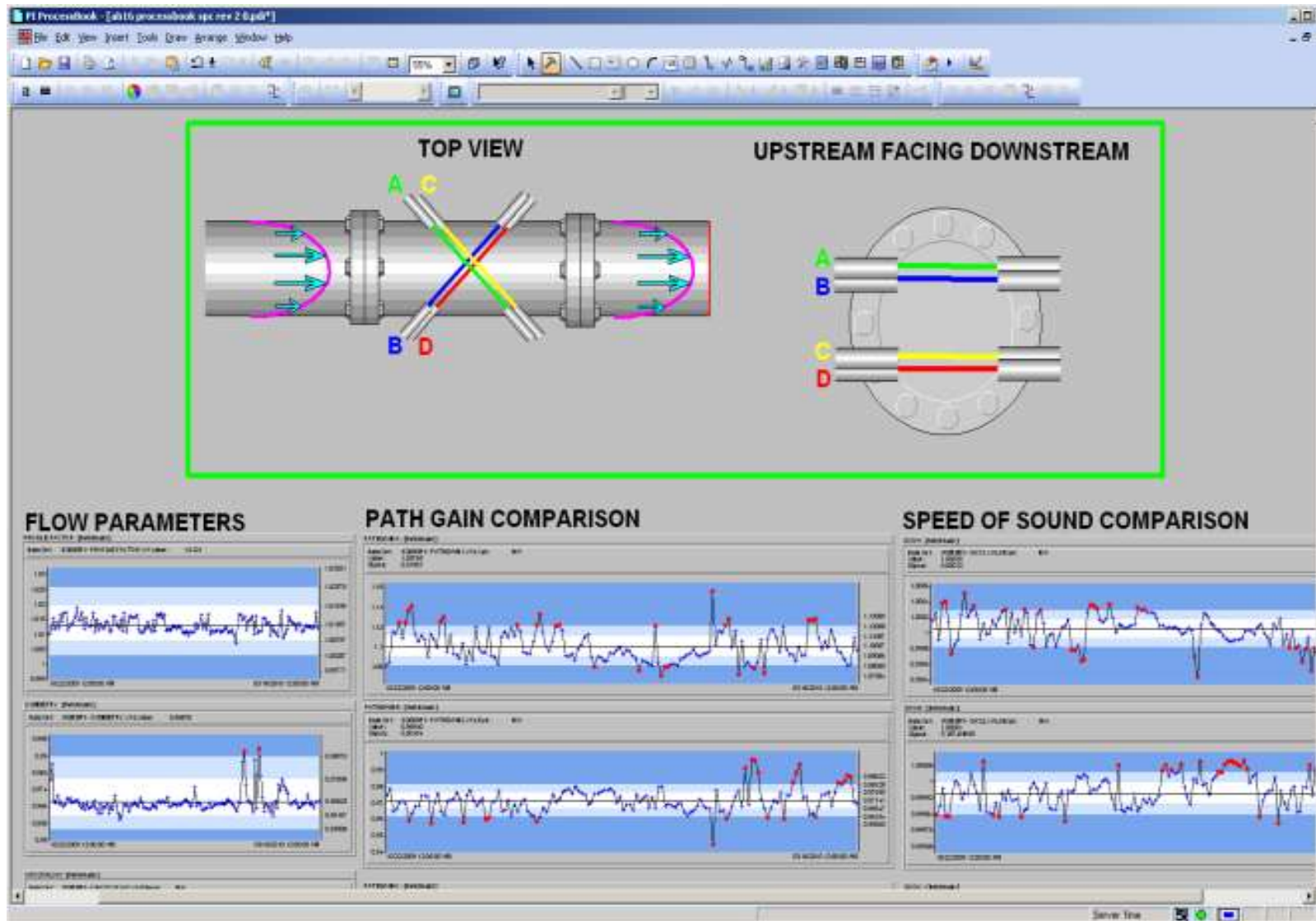
- Monitor the process for exceptions based on tests

- Western electric pattern tests

  - Outside one/two sigma

  - Outside control

  - One side of CL

  - **Stratification**

  - Mixture

  - Trend
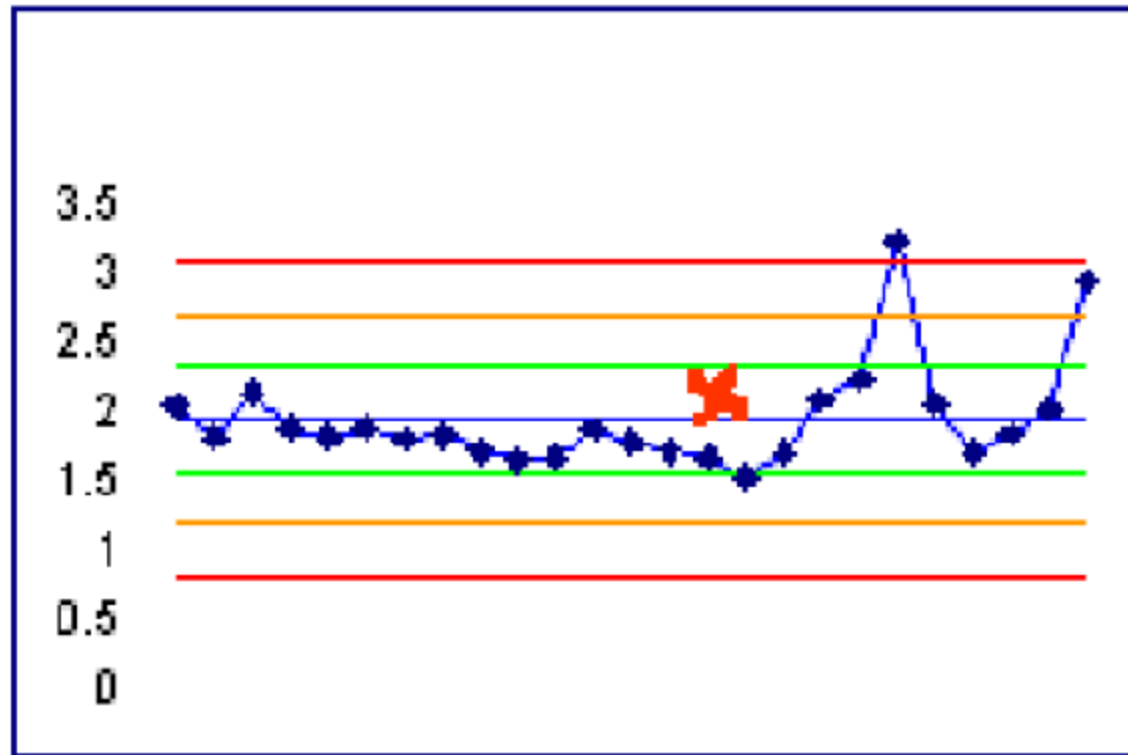
- Developer required to integrate information from remote system into the PI System

  - Access relational database

  - Create PI tag(s)

  - Perform calculation

  - Write data to the PI System

  - Scheduler to run at specified intervals

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- Developer required to write a power curve calculation for a wind turbine

  - Source data is in the PI System

  - Results to be written to the PI System

- PI ACE provided the solution

  - Includes a curve function

  - Ability to store required parameters for calculation

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- Create calculations using Visual Studio

- Wizard to configure access to PI data

- Full programming environment

- Create a calculation once and reuse

Allow user to focus on business rules

- Visual Studio add-in - develop

- Manager client

  - configure

- Scheduler

  - execute
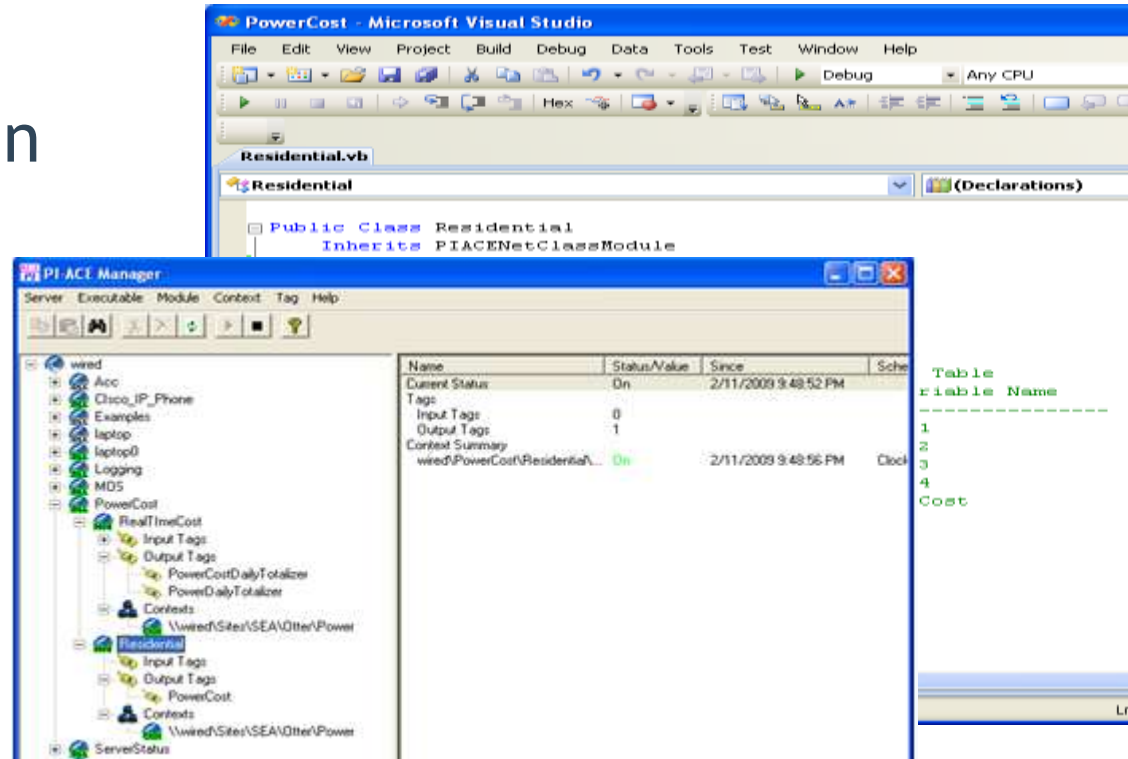
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PI Analytics

Upcoming releases

September 2010

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OSIsoft.

- ## Scheduled to be released later this year

- ## 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

Where PI geeks meet...
Empowering Business in Real Time.

Microsoft StreamInsight

StreamInsight Application
Development in C#, LINQ

StreamInsight Application at Runtime

Event sources

Web servers

Event stores & Databases

Stock ticker, news feeds

Input Adapters

StreamInsight Engine

Output Adapters

Standing Queries

Query Logic

Query Logic

Query Logic

Event targets

Pagers & Monitoring devices

KPI Dashboards, SharePoint UI

Trading stations

Event stores & Databases

Empowering Business in Real Time.
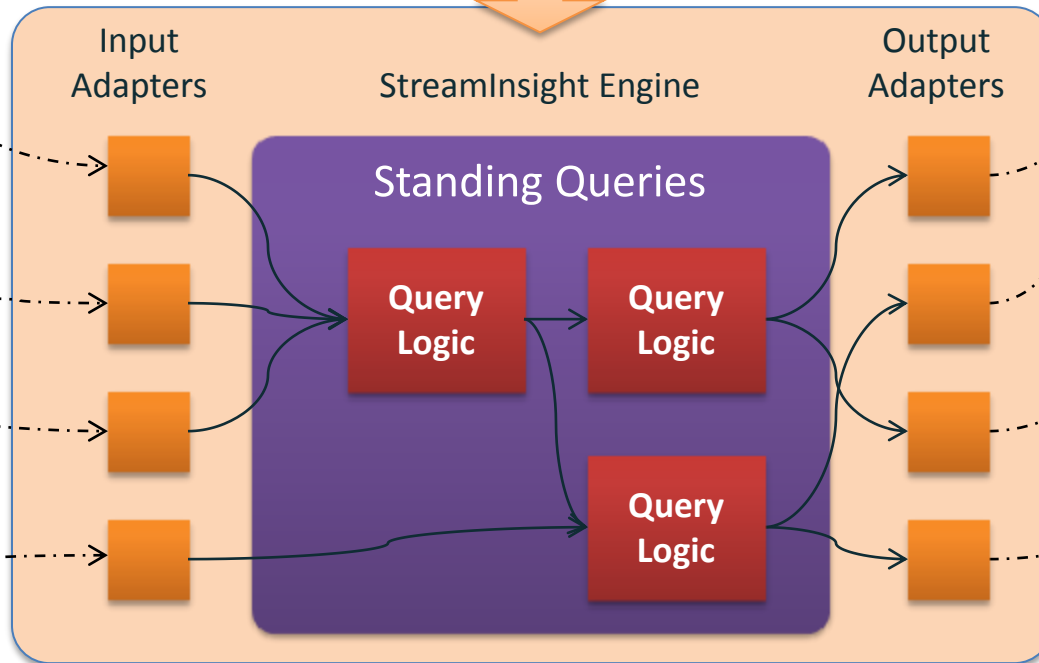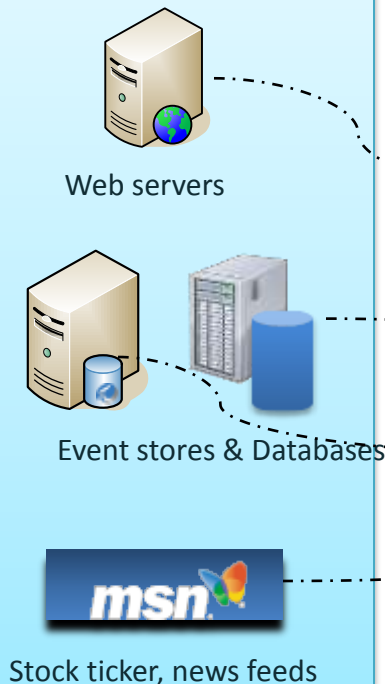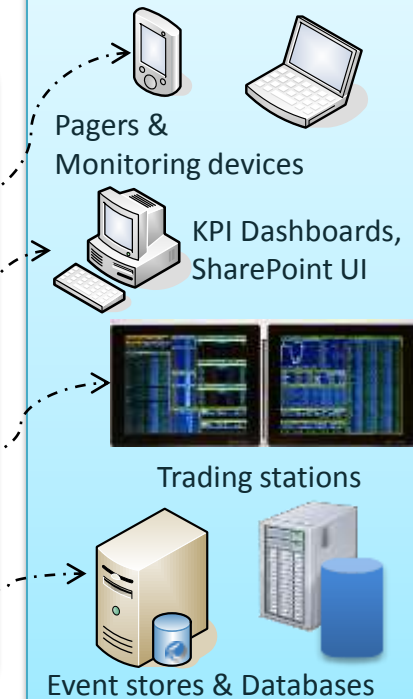
OSIsoft PI for StreamInsight

- Key functionality

  - Provide Adapters for data access to and from the PI System

- OSIsoft and StreamInsight Benefits

  - StreamInsight analytics access to PI data from hundreds of data sources

  - Data store to serve and store real-time, historical data and analysis

  - Enable rich and expressive querying of PI data using time window processing

- OSIsoft vCampus Community Technology Previews

  - February 2010

  - July 2010

- Release 2H 2010

Empowering Business in Real Time.
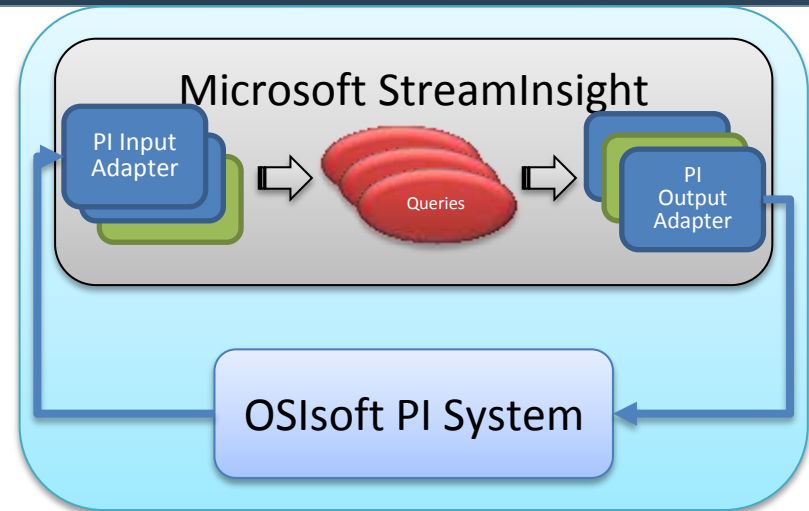
- Oil customer commissioned Proof of Concept for Microsoft StreamInsight

- Scenarios

  - Data cleansing routines on data

  - Calculations based on time windows

More Information

- Training Material

  - http://techsupport.osisoft.com/techsupport/nontemplates/Download%20Center/DownloadCenter.aspx?Download_content=Training+Materials

- OSIsoft vCampus

  - Forums

  - PI for StreamInsight CTP software

  - PI ACE Beta software

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PI Notifications

September 2010

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- Let one or more people or systems know an event has occurred

- Notifications combines

  - Trigger condition

  - Customizable content

  - Subscribers

  - Deliver the notification

  - Escalation

  - Acknowledgement
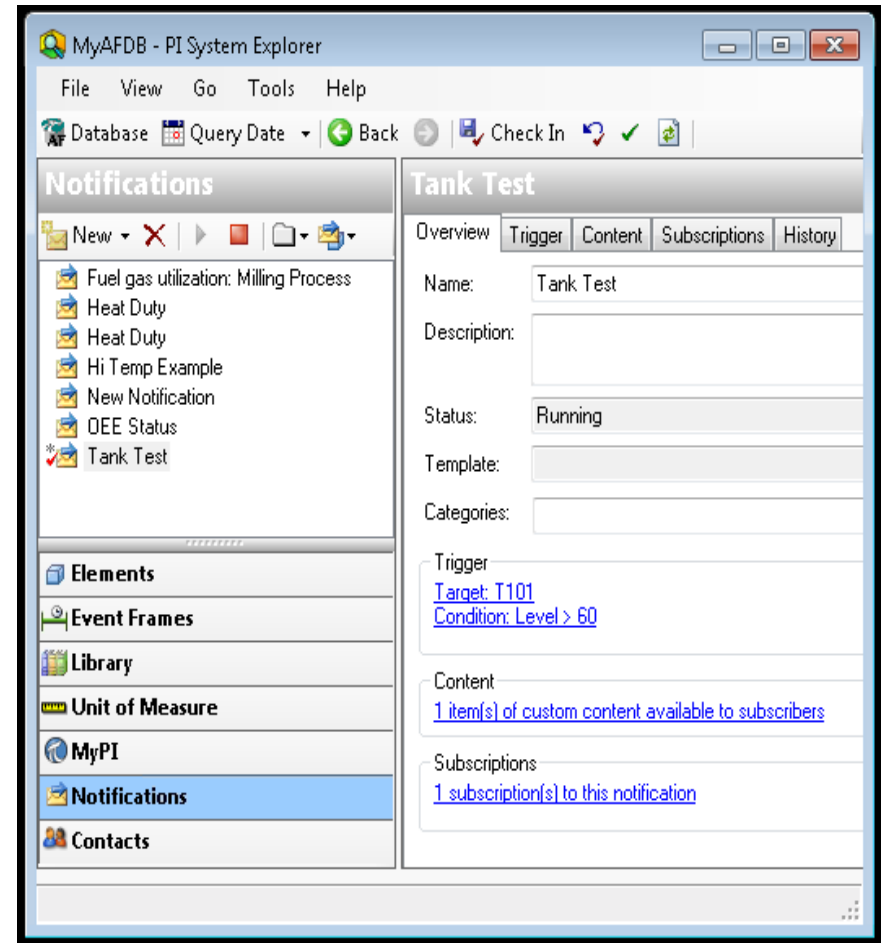
- PI ProcessBook add-in

- Microsoft Excel add-in

- Desktop Alert

- PI System Explorer

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Where PI geeks meet...

Create PI Notifications
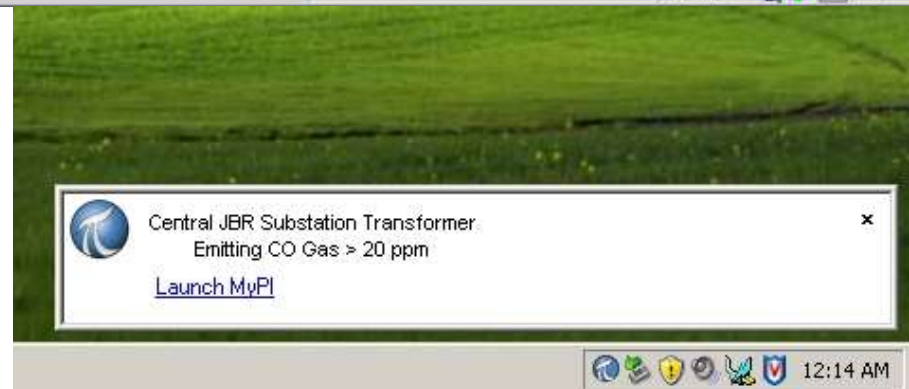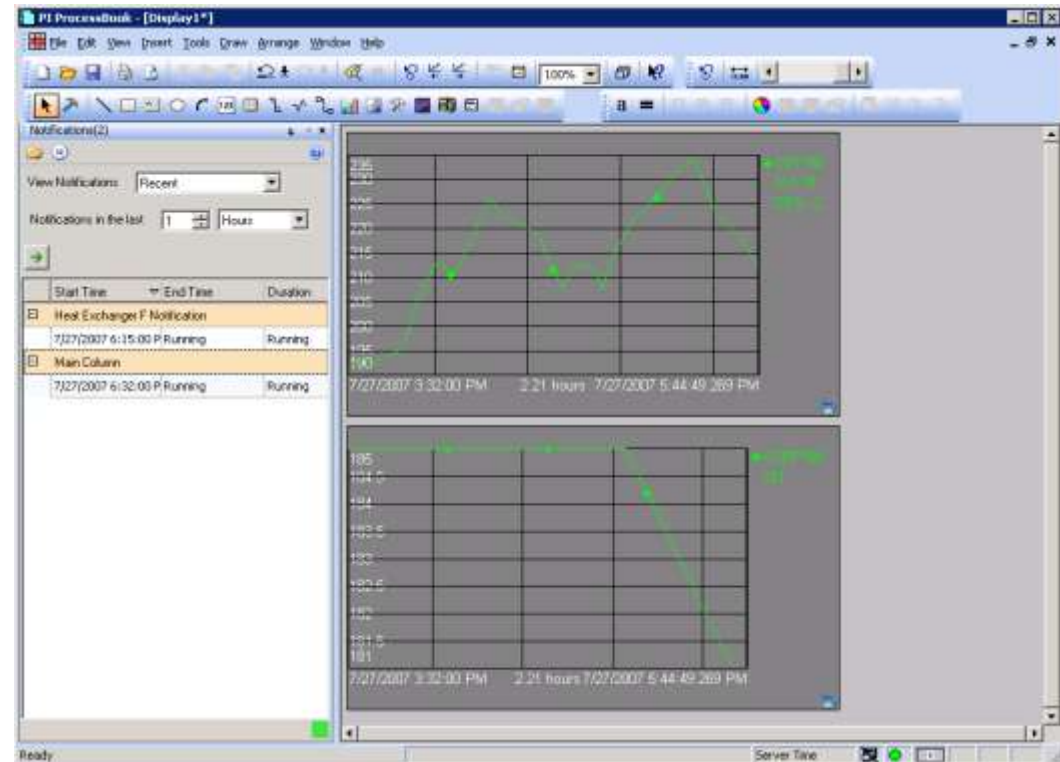
- ## PI System Explorer

- ## AN SDK/AF SDK

- ## Notification Templates

Empowering Business in Real Time.
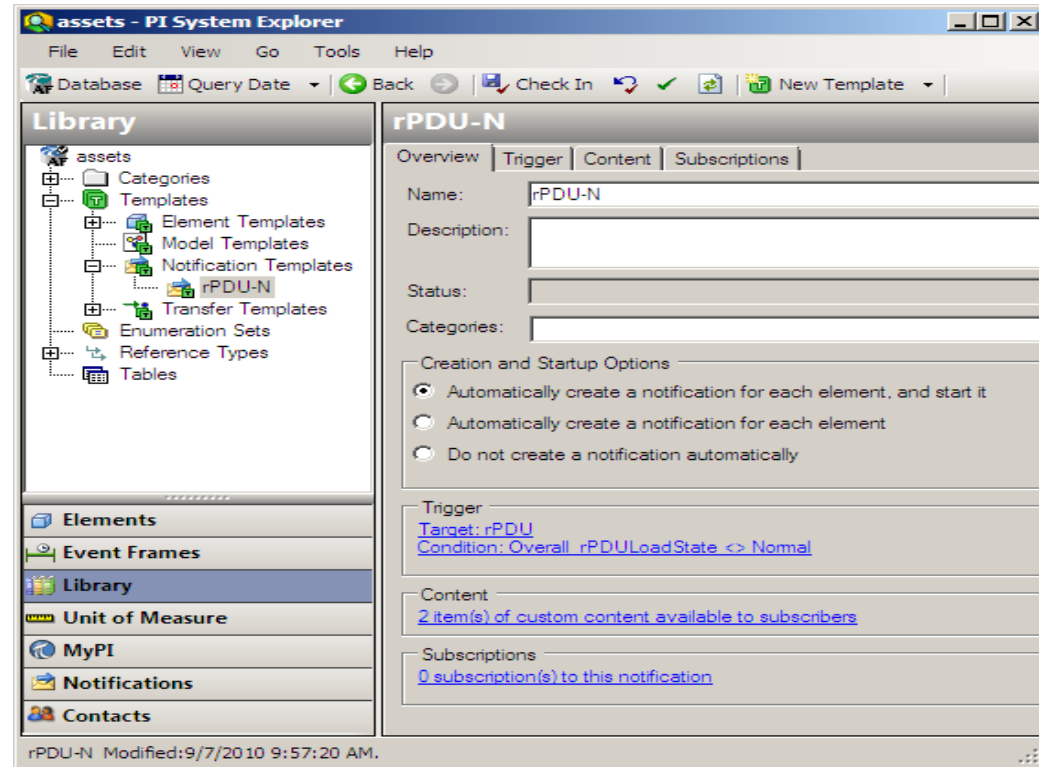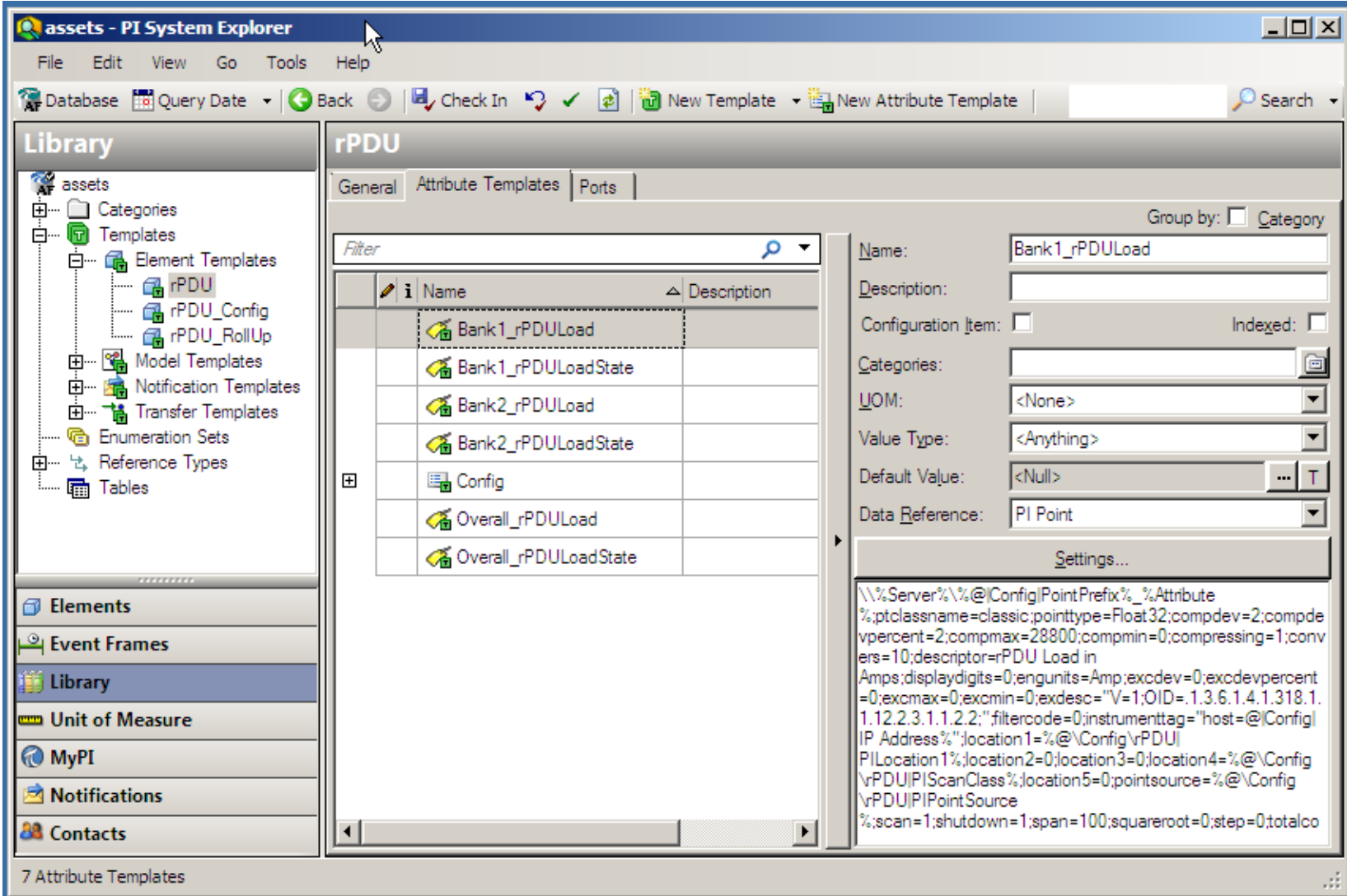
- Based on element templates

- Create template once

- Notification created when element created

- Options include

  - Create

  - Start

Empowering Business in Real Time.

Where PI geeks meet...

Empowering Business in Real Time.

Empowering Business in Real Time.

Where PI geeks meet…

Empowering Business in Real Time.

Notifications created!

Empowering Business in Real Time.

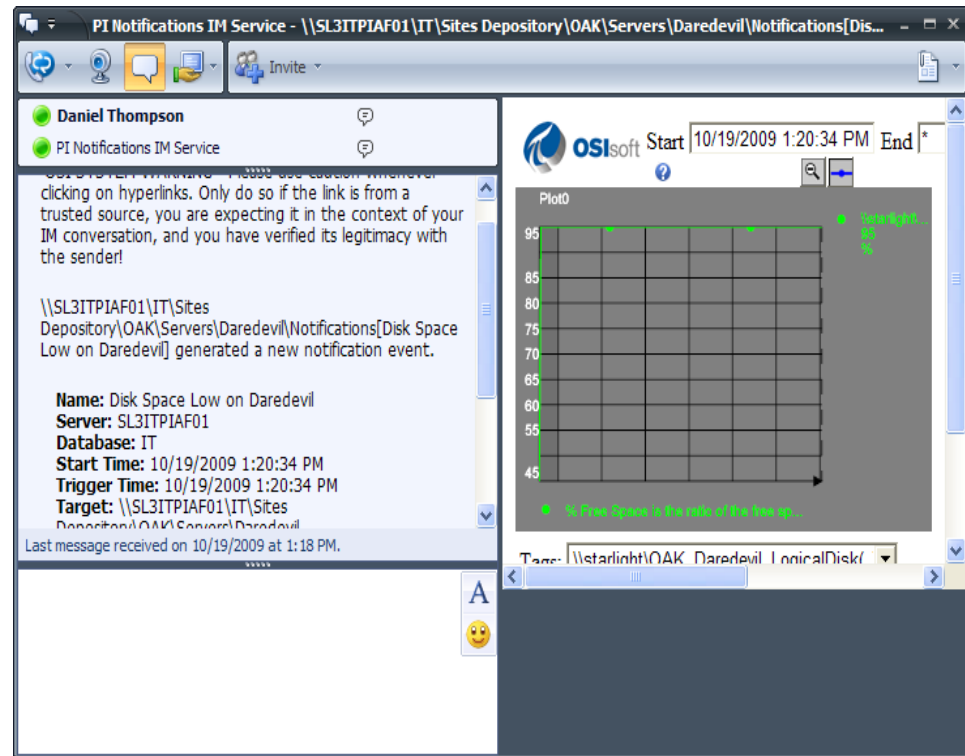Where PI geeks meet...

- How a message is delivered

- Supported Delivery Channels:

  - Email

  - Web service

  - Microsoft Office Communicator

- Extensible – write your own!

  - Helper classes available

- OSIsoft vCampus example

  - XML delivery channel

Where PI geeks meet...
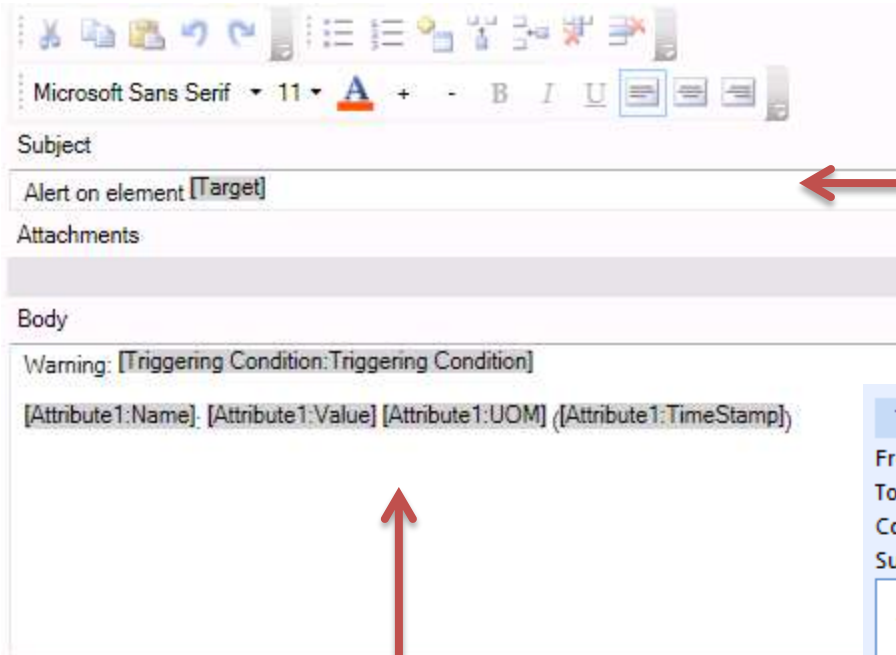Empowering Business in Real Time.

- Data center user required being notified for a circuit exception

  - Notifications based on Notification templates

- Requirement to send data from PI to NY ISO at regular intervals

  - Customer created custom delivery channel to work with Notifications

Empowering Business in Real Time.

- ## Message Formatting

  - More control over the appearance of the subject and body

- ## Performance

  - **History retrieval** is improved by an order of magnitude

  - Native 64-bit operating system support

- ## Internationalization
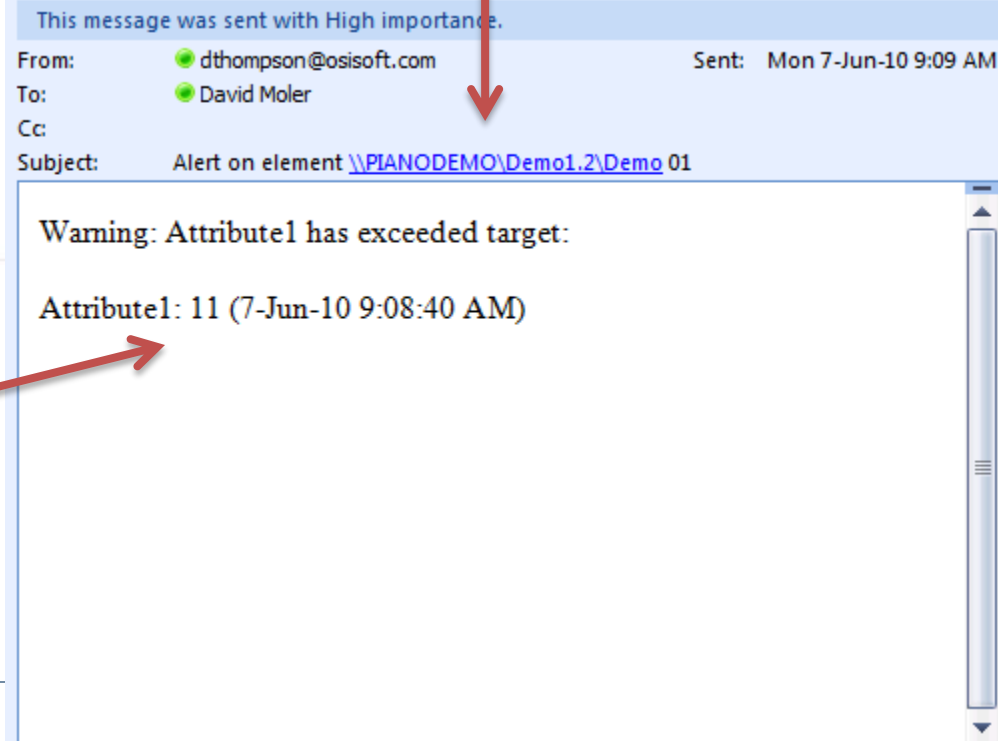
Empowering Business in Real Time.

Free-form composition of subject and body

Content is substituted when alert is triggered

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Product Roadmap

Glenn Moffett

September 2010

Empowering Business in Real Time.

2009 Themes

2009 Themes: What did OSIsoft accomplish in 2009 to help you?

Security

✓ PI 380
✓ Deployment

Asset Centric PI System

✓ PI ProcessBook
✓ PI WebParts
✓ PI Notifications
✓ PI AF HA

Localization

✓ 8 languages
✓ 5 products
✓ 3 planned

Scaling, 64-bit

✓ Servers
✓ Data Access
✓ Web Clients

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OSIsoft.

- Interfaces – 78 releases

- Servers

  - PI Server 3.4.380

  - PI SMT 3.3.1.3

  - PI AF 2.1

  - PI Notifications 1.1

  - PI Notifications OCS Delivery Channel

  - MCN Health Monitor 1.3.5.2

- Data Access

  - PI SDK – 64-bit 1.3.8.385

  - PI JDBC 1.0.0

  - PI Data Services 3.0.0

  - PI System OLEDB 1.0.0.11

- Clients

  - PI ProcessBook 3.2.0

  - PI Active View 3.2.0

  - PI Web Parts 3.0.0

  - PI DataLink 4.0.3

  - PI DataLink for Excel Service 4.0.3

  - PI Data Link for Excel Services 4.1.1.0

  - RtReports 3.3.0.0

  - PI Manual Logger 2.3.0.160

- Additionally

  - 31 Minor Releases

  - 7 Language Packs

Empowering Business in Real Time.

- ## Scalability/Manageability/Performance

  - PI Server

  - PI Notifications

  - PI AF

- ## User Experience

  - PI System Search

- ## Analytics

  - PI ACE Performance

  - AF Analytics

  - Edge Processing

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PI System Clients

Find

Search the system to find information

Analyze

Dig, diagnose and conclude

Build and Share

Simply build and share results

Thank you