

Exploring the Value of an Asset-Centric PI System in PI System 2010

Presented by

Dr. Stephen Kwan
Product Manager, OSIsoft

Frank Batke
Senior Customer Support Engineer, Director Tech Support and Engineering Russia, OSIsoft



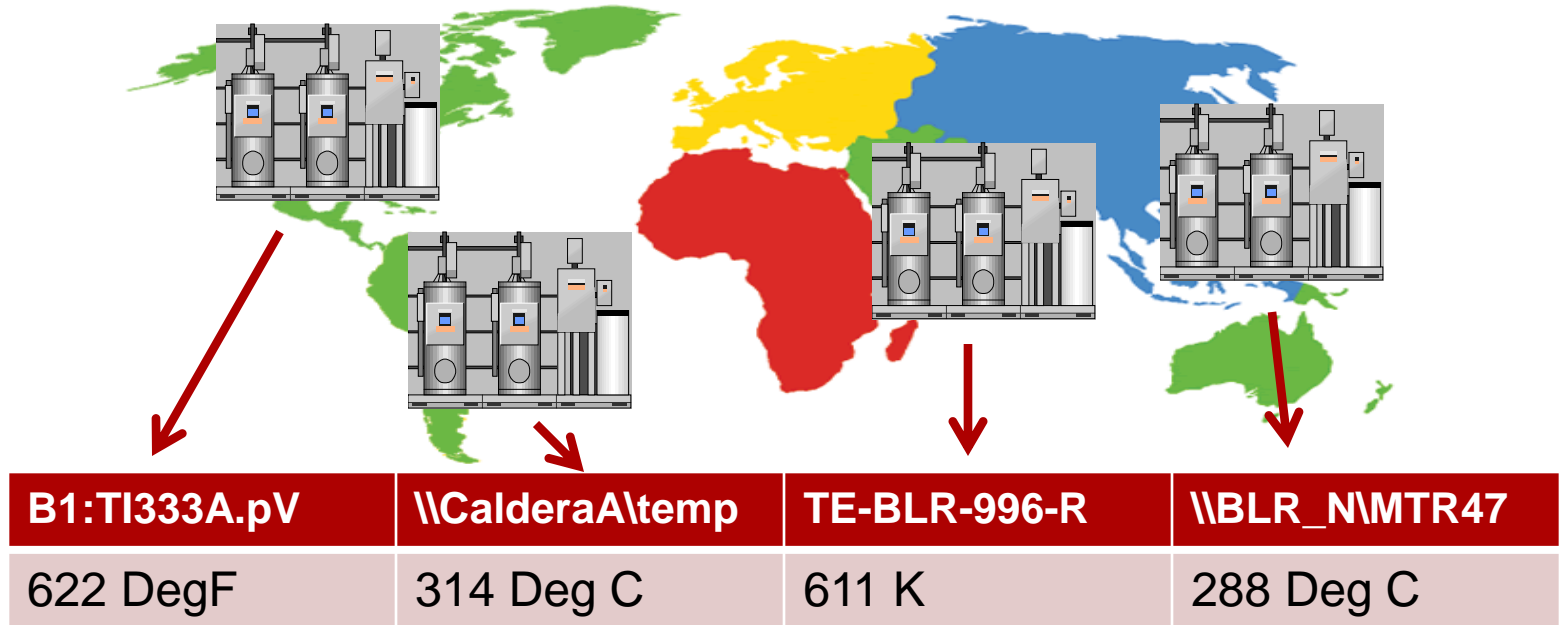
Business Challenges

- **Overwhelming amount of data from disparate sources**
 - Multiple disparate data systems
 - Diverse data types
 - Complicated, inconsistent naming, definition and structure
- **Make business decisions based on data**
 - Difficult to find the exception rather than the norm
- **Applying domain knowledge and expertise consistently**
- **Standardization across businesses**

People think in terms of assets



Enterprise companies work collaboratively



**The process is the same ...
the instrumentation is different**

Relate your assets to your data

Difficult to decipher tag names

P/ID TAG	ENG UNITS	DESCRIPTION	MIN	MAX
ESFI21A2	KPPH	STEAM TURBINE UNCONTROLLED (IND FLOW)	0	100
TMT132A	DEGF	ST-100 METAL TEMP (BEARING2)	0	400
TI99047	??	??		
G1:DWATT		Generator MW Output		
TMZ120A1	%	ST-100 AXIAL POSITION (PROBE #1)	-100	100
TMZ120A2	%	ST-100 AXIAL POSITION (PROBE #2)	-100	100
GT2PEAK.PV		GT2 Peakload Signal	0	1
FE_PUMP		Fire Extinguisher Pump Status		
ESFI33A	KPPH		0	425
ESTI34A	DEGF	LETDOWN TEMP TYPE E (HP STEAM)	0	1000
HPPI30B1	PSI	HP STEAM PRESSURE 1 (HP STM P)	-1	1550
ESFI21A1	KPPH	STEAM TURBINE UNCONTROLLED (EXTR FLO)	0	210

P& ID Data

Missing or incomplete data – difficult to find what you need



Meta-data

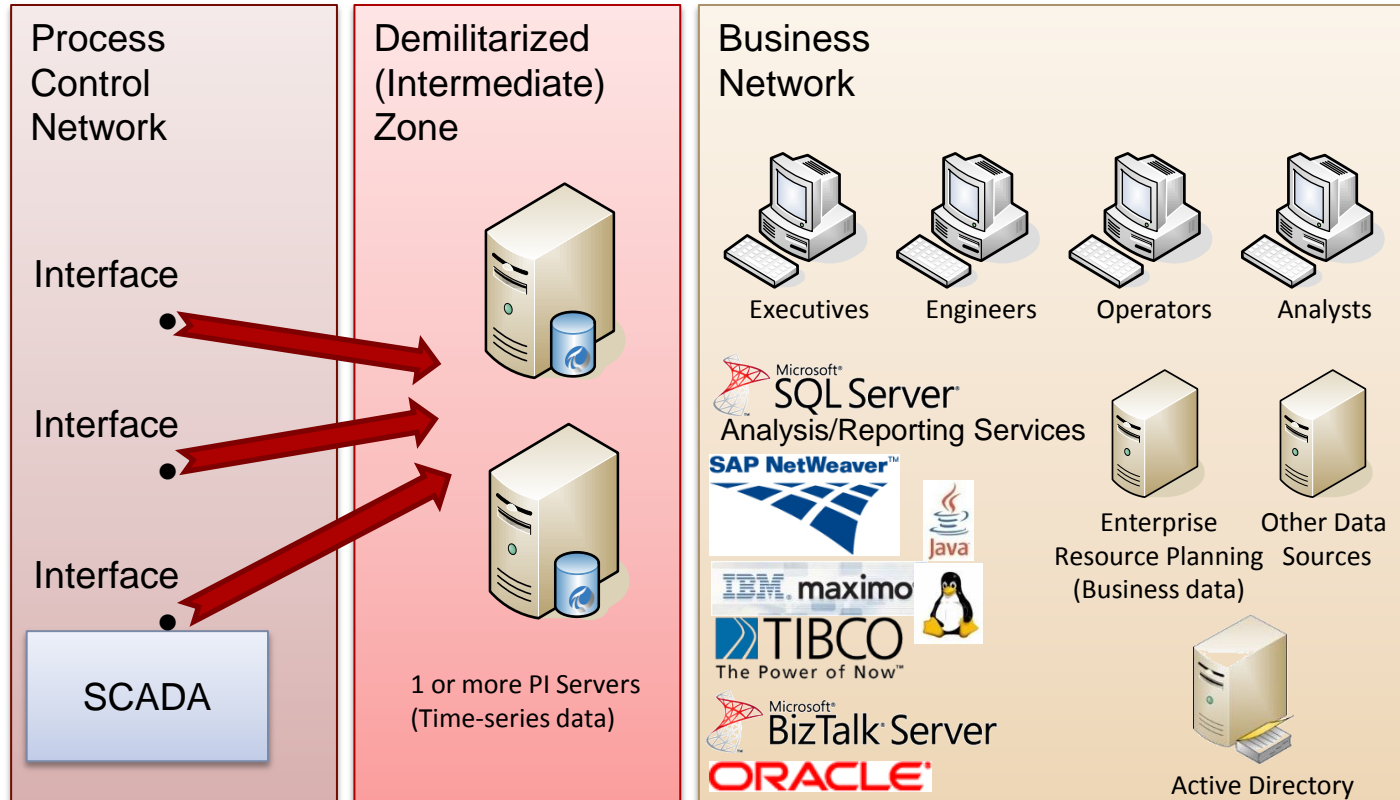
- **PI Server is extremely good at**
 - Collecting data from almost anywhere
 - Historization and playback of time-series data
 - Scaling to very large size
 - Reliable
- **PI Server is focused on a points database**
- **Meta-data: a *structure* for the data**



Why add structure?

- **Structure is *your* knowledge applied to *your* points**
- **Structure helps you to:**
 - Establish relationship between your assets and data
 - Capture domain expertise and share
 - Build applications
 - Answer new questions

Multiple data sources, multiple users





Asset-centric PI System in PI System 2010

- **PI AF provides an asset centric view of your plant**
- **Establish relationships**
 - Build hierarchies, categories and connectivity models
 - Relate asset properties to your disparate data
- **Standardize, common view**
 - Templates for similar assets
- **Apply domain knowledge via PI Notifications and analyzes**
- **Access your data via PI Data Access products**

Build a complete picture of your asset

PI System Tags

- Inlet pressure
- Inlet flow
- Ambient temperature



PI System Tags

- Exhaust temperature
- Exhaust flow
- Measured MW output

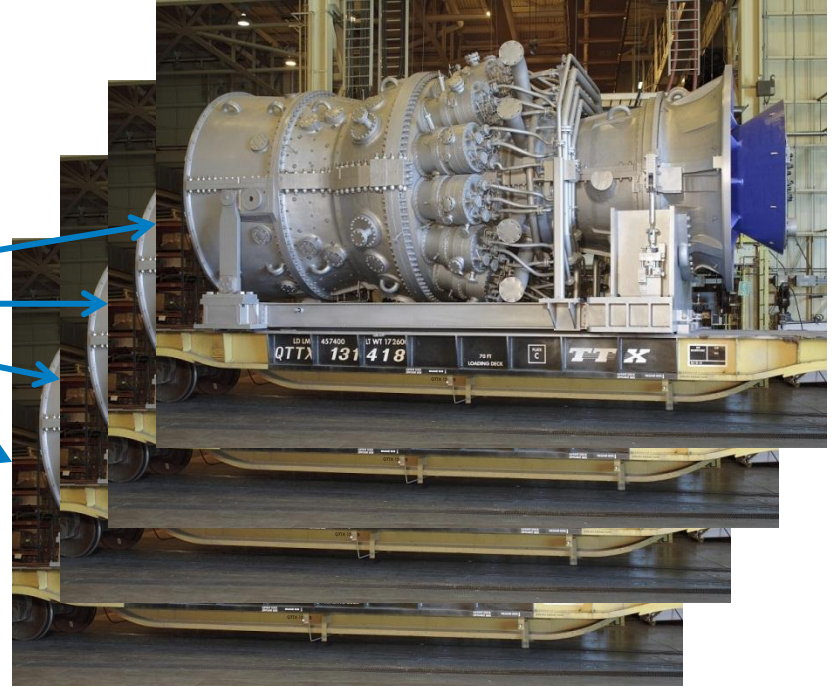
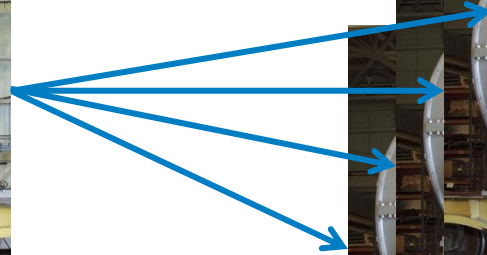
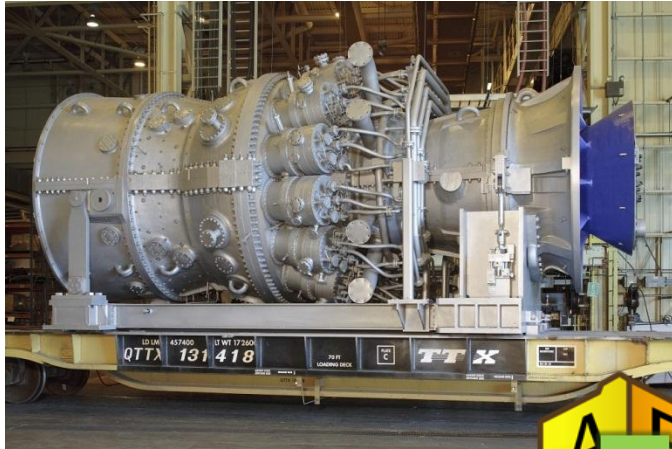
External Databases

- Performance curves
- Last service date
- Design documents
- Inspection best practice

Calculations

- Performance calculations
- KPI's

Common view for similar assets



Add value to your PI System

UC2011-SK - PI System Explorer

File Edit View Go Tools Help

Elements

Elements

- Big Creek Power Plant
 - Condenser
 - Gas Turbine 1
 - Gas Turbine 2
 - HRSG 1
 - HRSG 2
 - Steam Turbine
- System Configuration

Event Frames

Library

Unit of Measure

MyPI

Notifications

Contacts

28 Attributes

Prices

Prices

Compressor Discharge Pressure	16.2847557067871 bar(g)
Compressor Discharge Tempe...	433.991912841797 °C
Compressor Inlet Temperature	19.9780979156494 °C
Exhaust Gas Pressure	0.0206421613693237 bar(g)
Exhaust Gas Temperature - #...	594.774108886719 °C
Exhaust Gas Temperature - #...	597.018737792969 °C
Exhaust Gas Temperature - #...	595.317443847656 °C
Exhaust Gas Temperature - #...	598.902770996094 °C
Fuel Oil Flow	-0.0620765015482903 m3/h
Fuel Oil Pressure	15.818398475647 bar(g)
Fuel Oil Temperature	33.3455696105957 °C
Gas Fuel Flow	70317.8671875 m3/h
Gas Fuel Pressure	36.21142578125 bar(g)
Gas Fuel Temperature	68.7641372680664 °C
Gas Turbine Speed	3000.62158203125 rpm
Gross MW Output	261.549621582031 MW
In Service Date	2/25/2009 12:00:00 AM
Inlet Guide Vane Angle	95.78909 %
Inlet Pressure Loss	1.60181736946106 mbar(g)

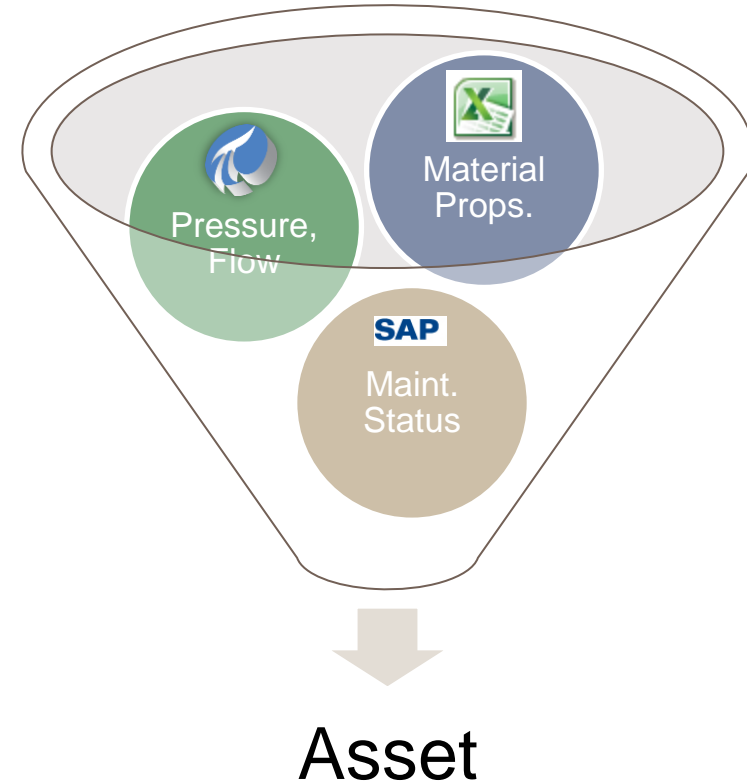
Big Creek Power Plant

- Condenser
- Gas Turbine 1
- Gas Turbine 2
- HRSG 1
- HRSG 2
- Steam Turbine

System Configuration

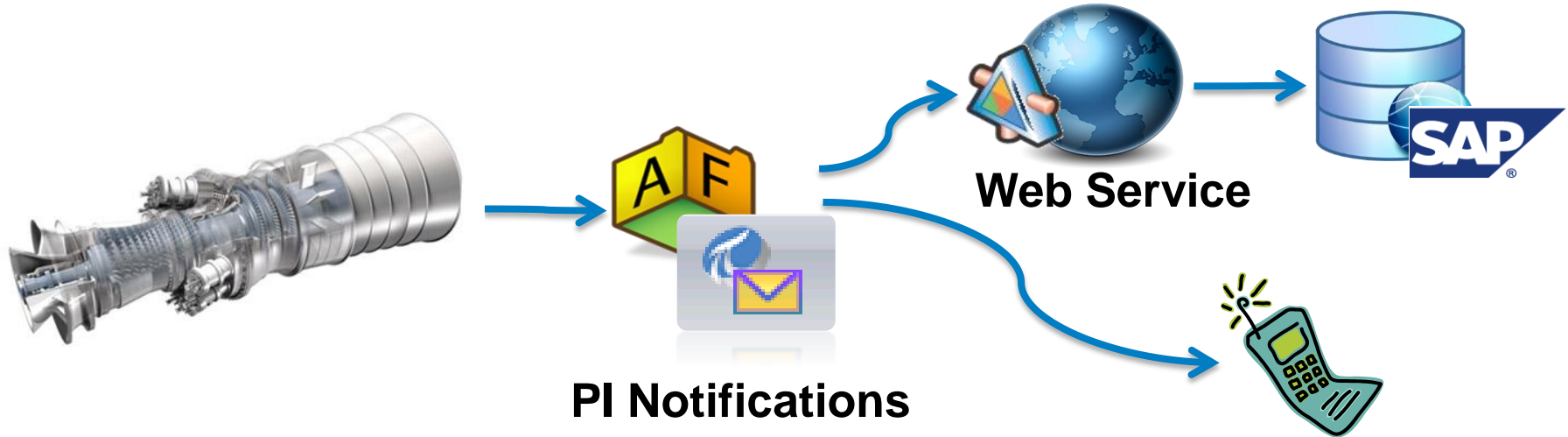
Add value to your PI System

- **Tie asset properties to your data**
 - Static values, PI System tags from multiple PI Servers, static or linked tables
 - Custom data references to other data sources



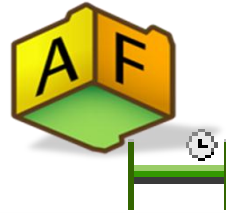
Add Value to your PI System

“One of GT exhaust thermocouples has been acting up... Let’s keep an eye on it and create a work order for maintenance if it fluctuates more than 5% in 5 seconds. Make sure Bob is notified of this also.”



Add value to your PI System

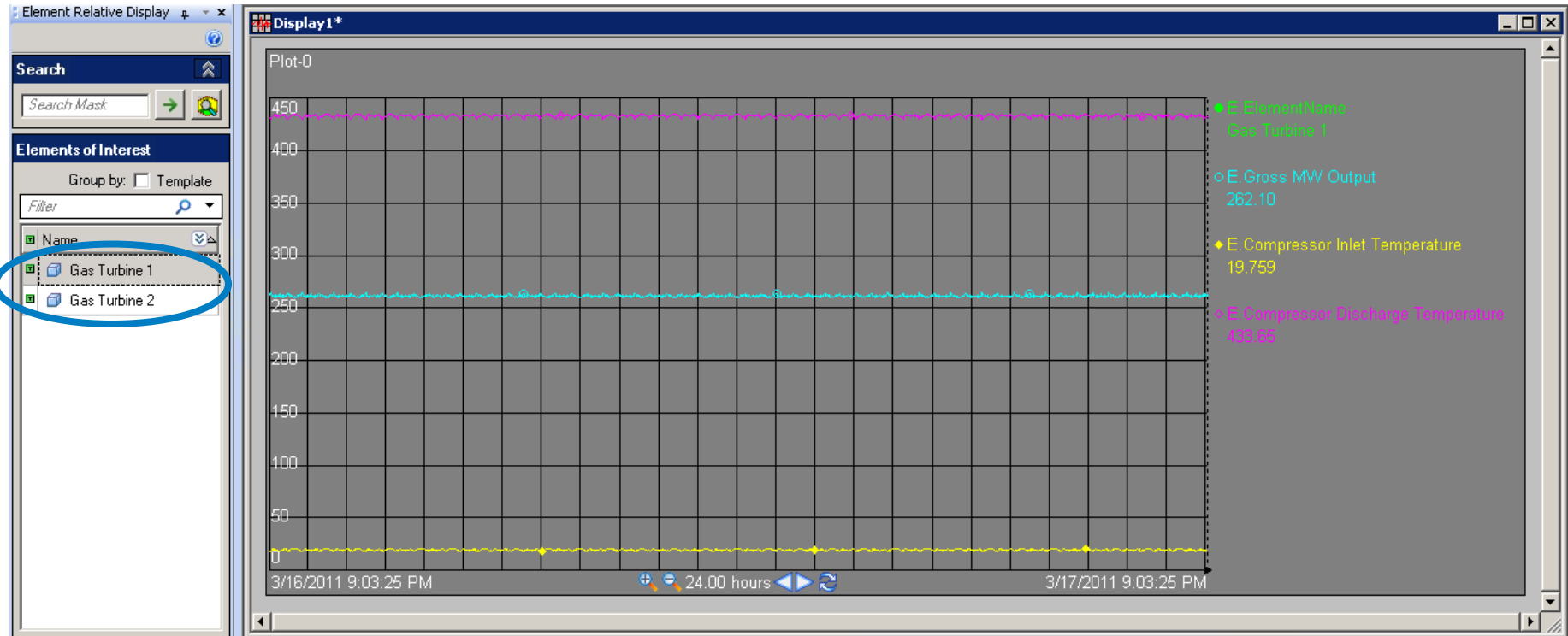
- GT #2 tripped again last night!!
- How many times has this happened in the last year?
- What were the operating conditions when it tripped?
- Let's find and gather all these events and analyze them.



Downtime Events

- Asset of interest
- Start/End Times
- Reason Codes
- Asset Conditions

Build once and reuse for similar asset





Benefits of an asset-centric PI System

- **Common asset models and relationships**
 - Standardization across your entire enterprise
 - Benefit all users forever
- **Work with your assets and not points/tags**
 - No need to memorize point/tag names
- **Quickly and efficiently find the data you need**
 - Reference asset properties to different data sources
 - Search and find information across all your data sources



Benefits of an asset-centric PI System

- **Combine disparate data in analyzes and reports**
 - Calculate KPI
 - Compare actual versus estimate
- **Build your solution once and reuse on all similar assets**
 - Element Relative Display in PI ProcessBook and PI WebParts
- **Empower other PI System components**
- **Expose your common asset structure and data via PI OLEDB Enterprise**



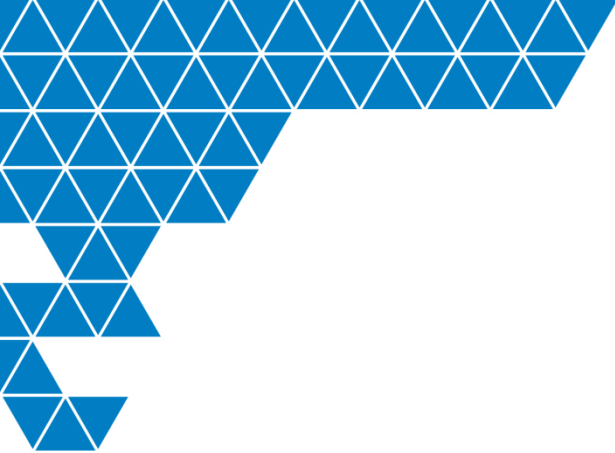
Next steps

- Upgrade to PI System 2010 to reap the benefits
- Build your PI System in an asset centric manner
- Migrate your existing PI System
- Use templates for your assets
- Get help and pointers from OSIsoft Tech Support and OSIsoft vCampus



What else to see

- Migrating to an Asset-Centric PI System
- PI Event Frames – Infrastructure to Find Data Relevant to Your Events
- PI Notifications – Customizing Content and Delivering Information
- Asset Based Visualization with PI WebParts
- Business Intelligence with the PI System & PowerPivot
- Introducing the Fastest, Easiest Way to Visualize your PI System Data
- Asset-Centric PI DataLink – PI DataLink meets PI AF



Thank you