OSIsoft®

REGIONAL SEMINARS 2012

The Power of Data

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PI Asset Framework

Presented by **Michael van der Veeken**

OSIsoft vCampus Team member

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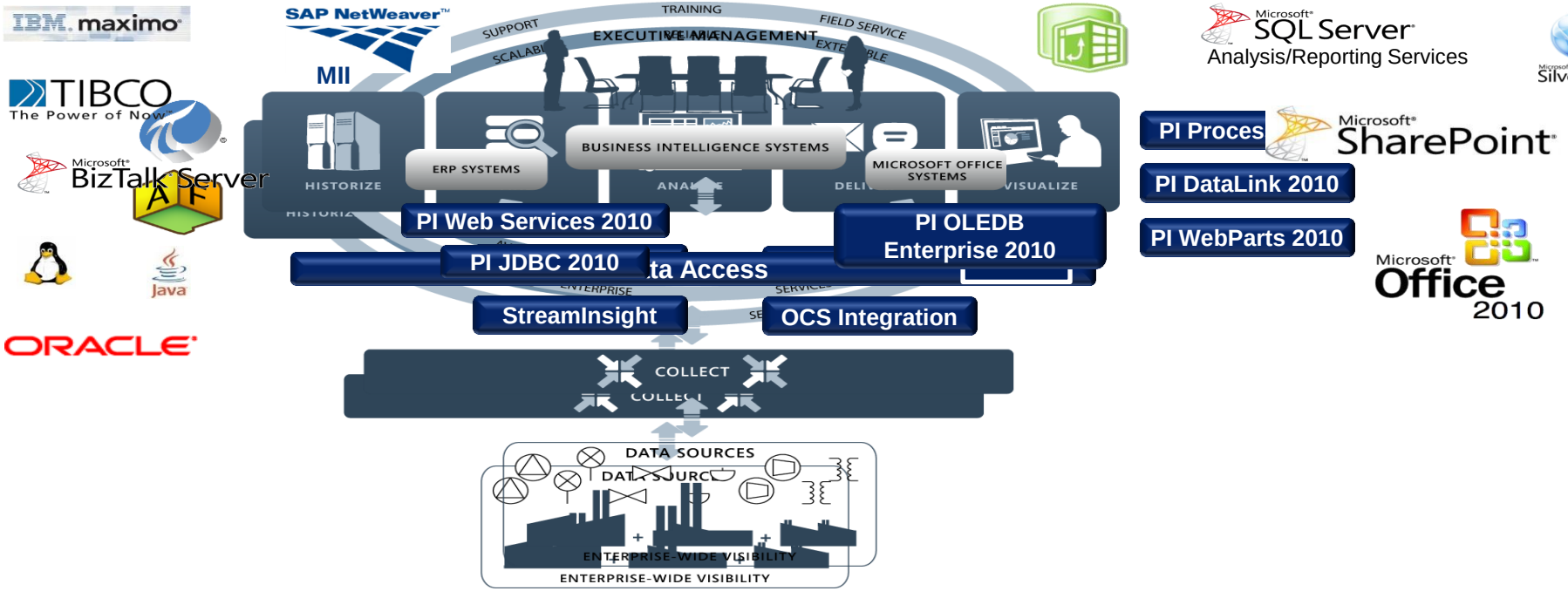
The PI System



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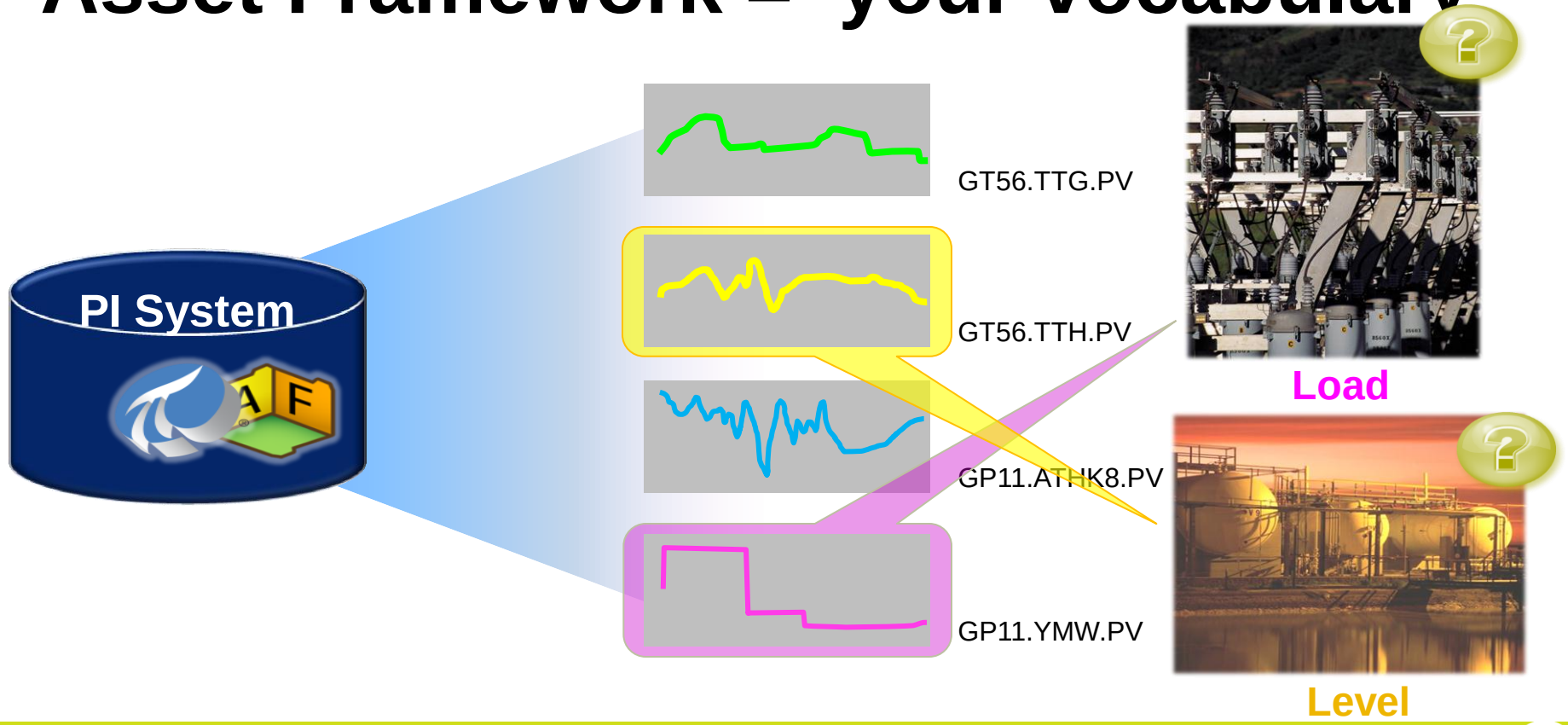
Asset Framework = your vocabulary



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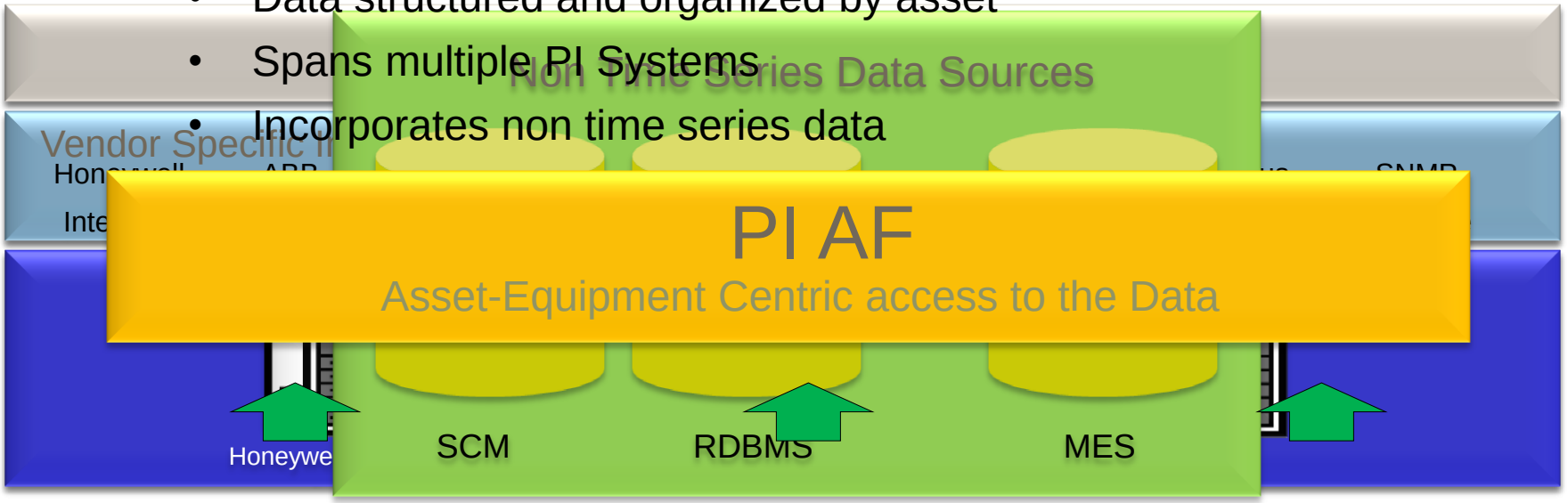
spans all your data

- Data structured and organized by asset
- Spans multiple PI Systems
- Incorporates non time series data



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Asset Centric PI System

- **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**

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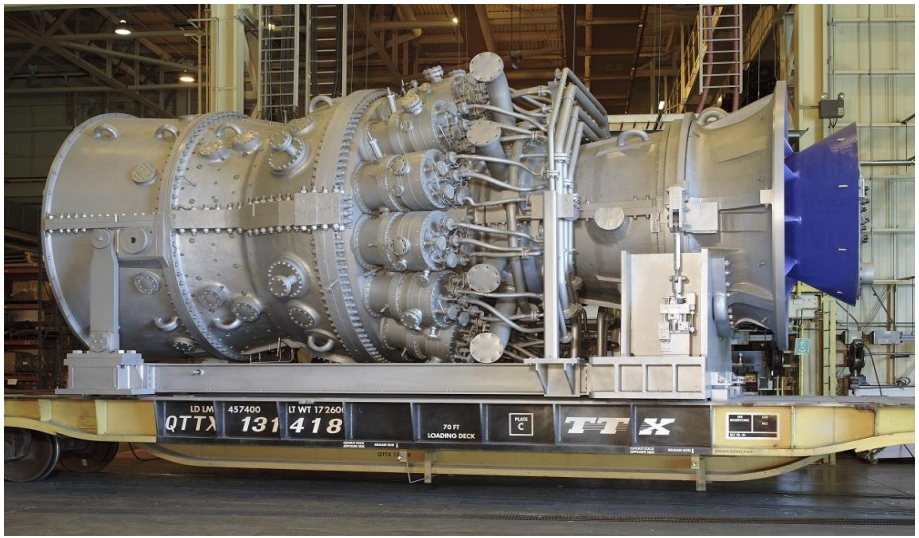
Build a Complete Picture of Your Asset

PI Tags
- Inlet pressure
- Inlet flow
- Ambient temperature



PI 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

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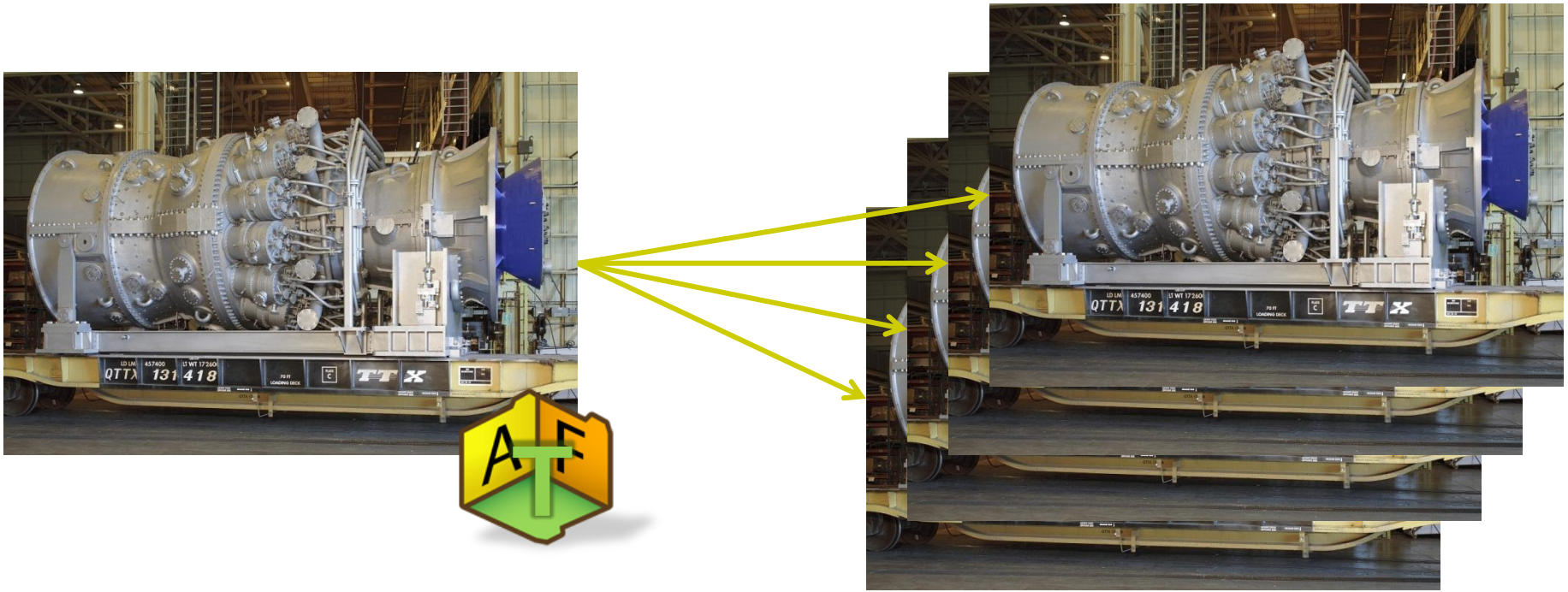
Common View for Similar Assets



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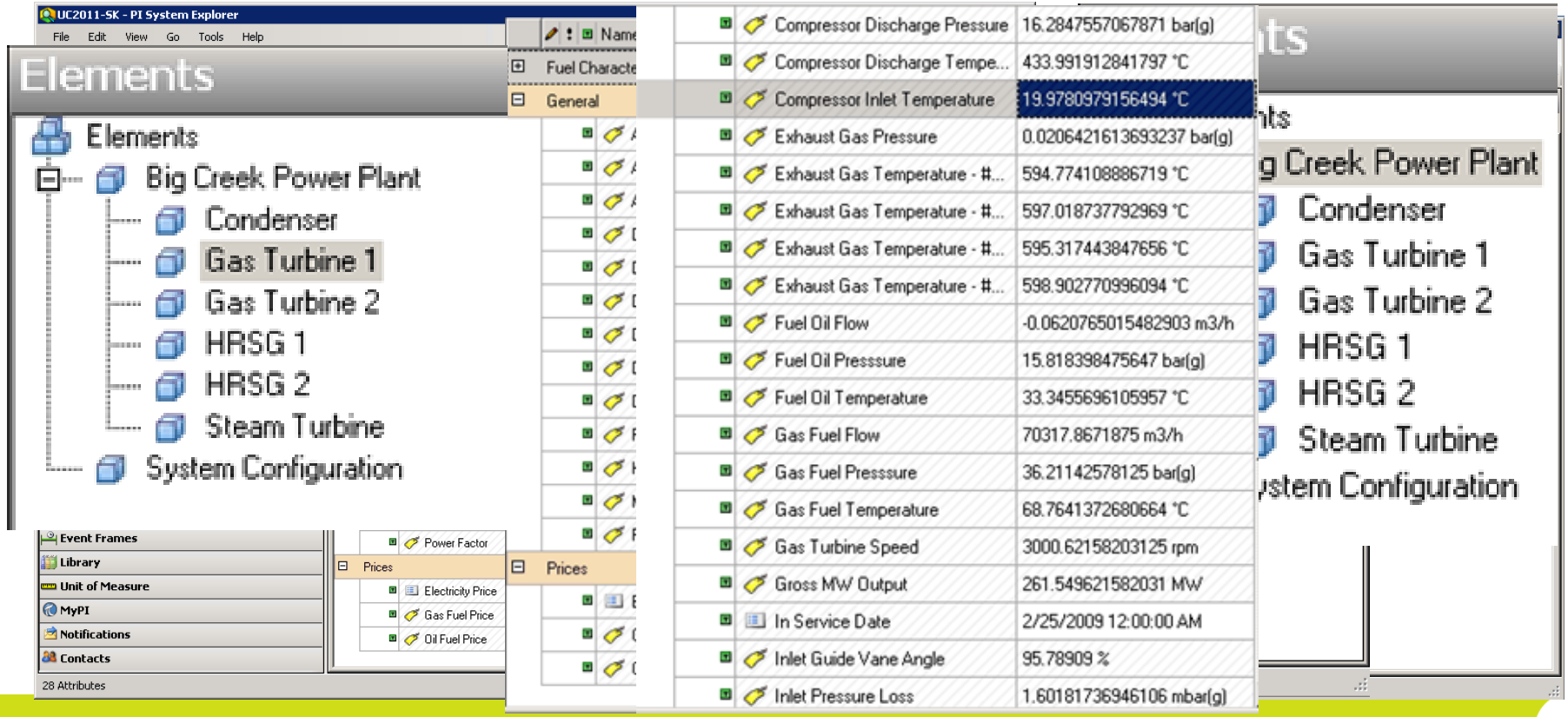
Add Value to your PI System



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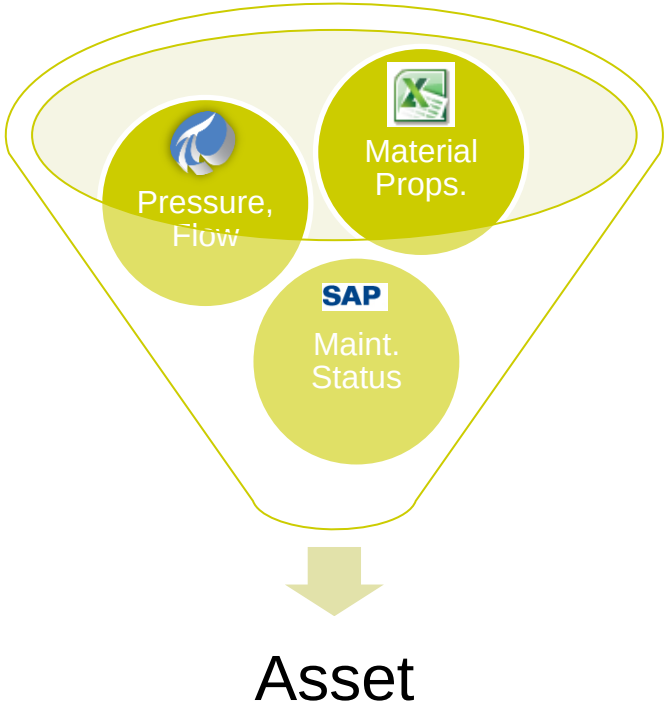
Add Value to your PI System

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



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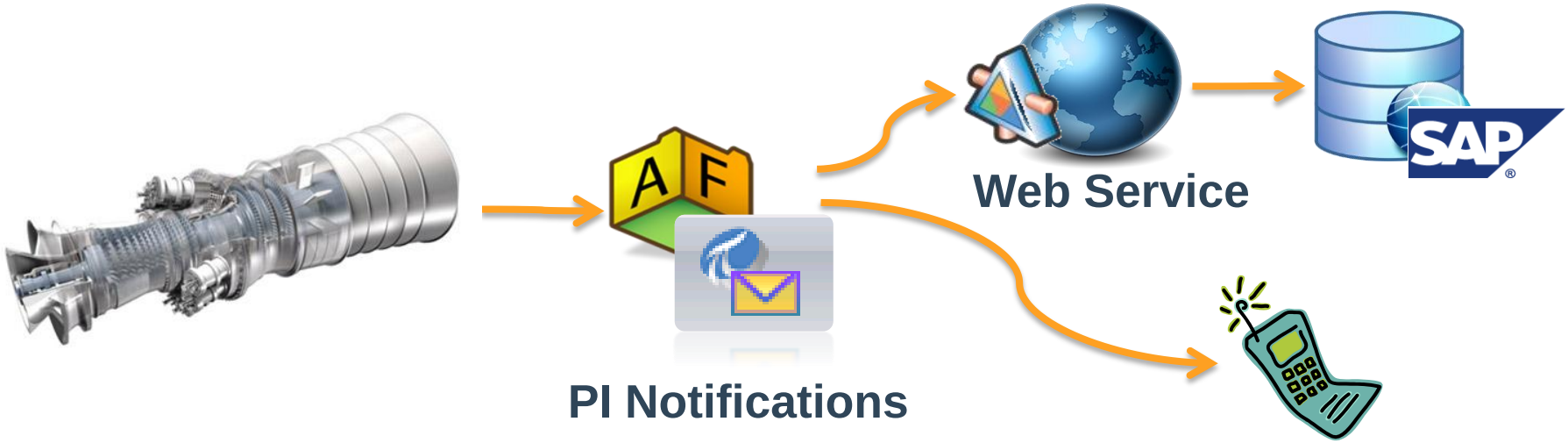
Add Value to your PI System

"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."



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Add Value to your PI System
Event Frames Are Part of Asset Framework

- 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

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How to begin

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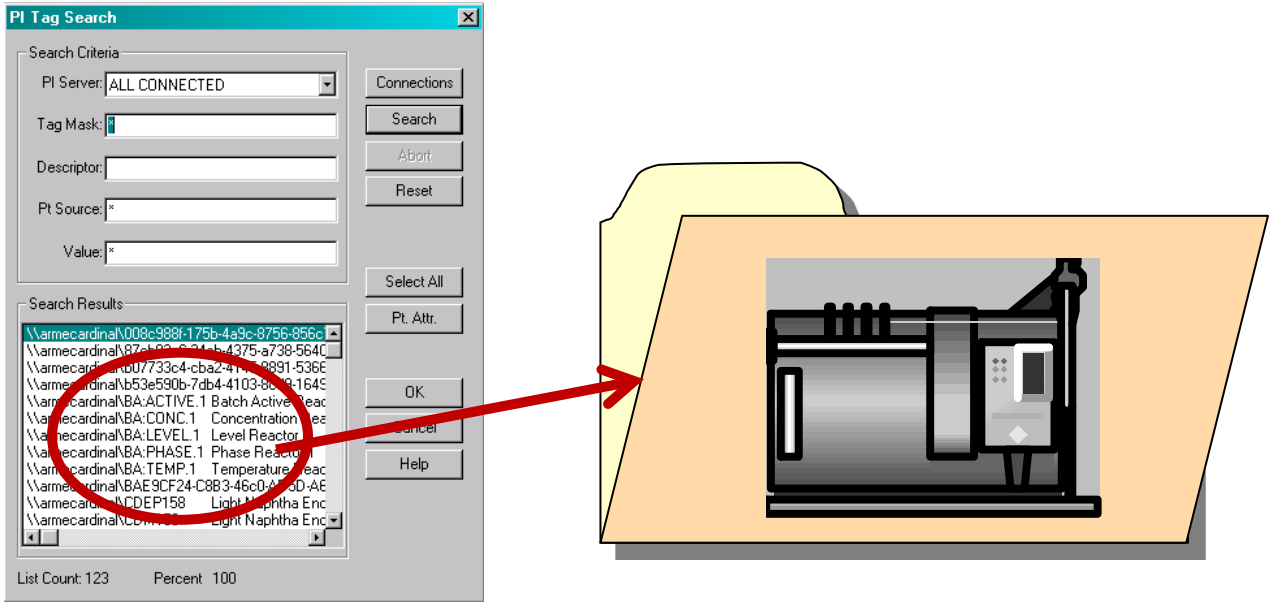
Sort Your Tags into Elements Which Represent Your Equipment



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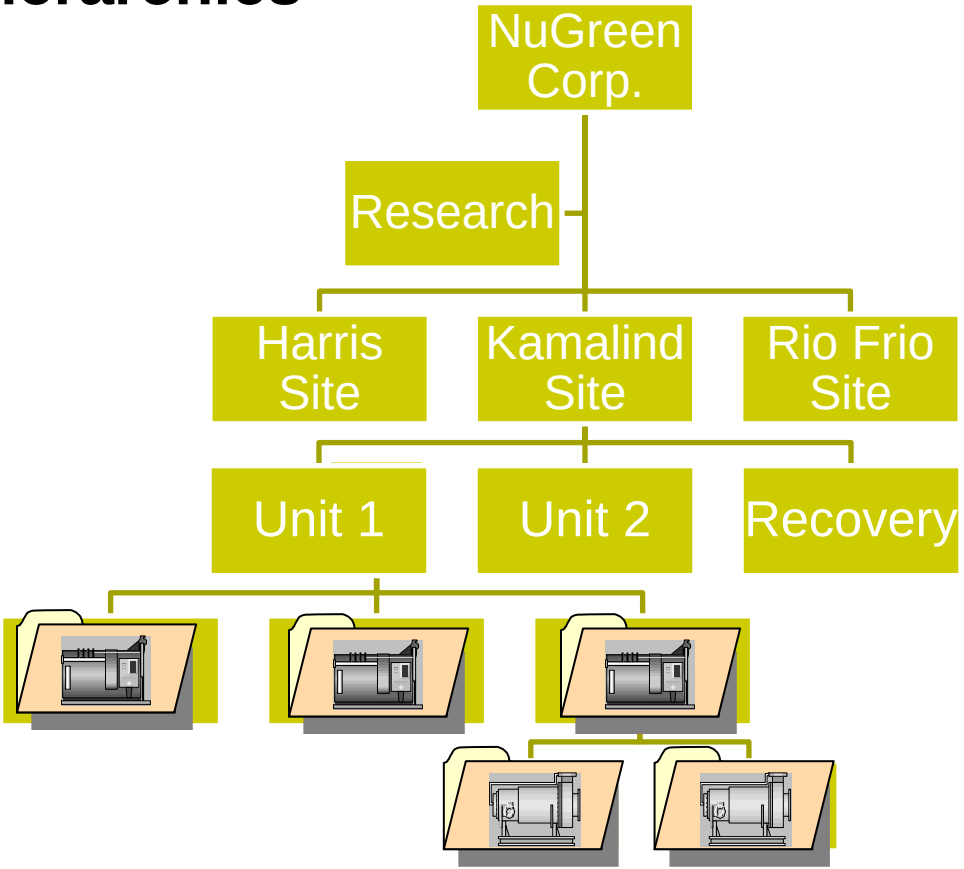
Organize the Assets into Hierarchies



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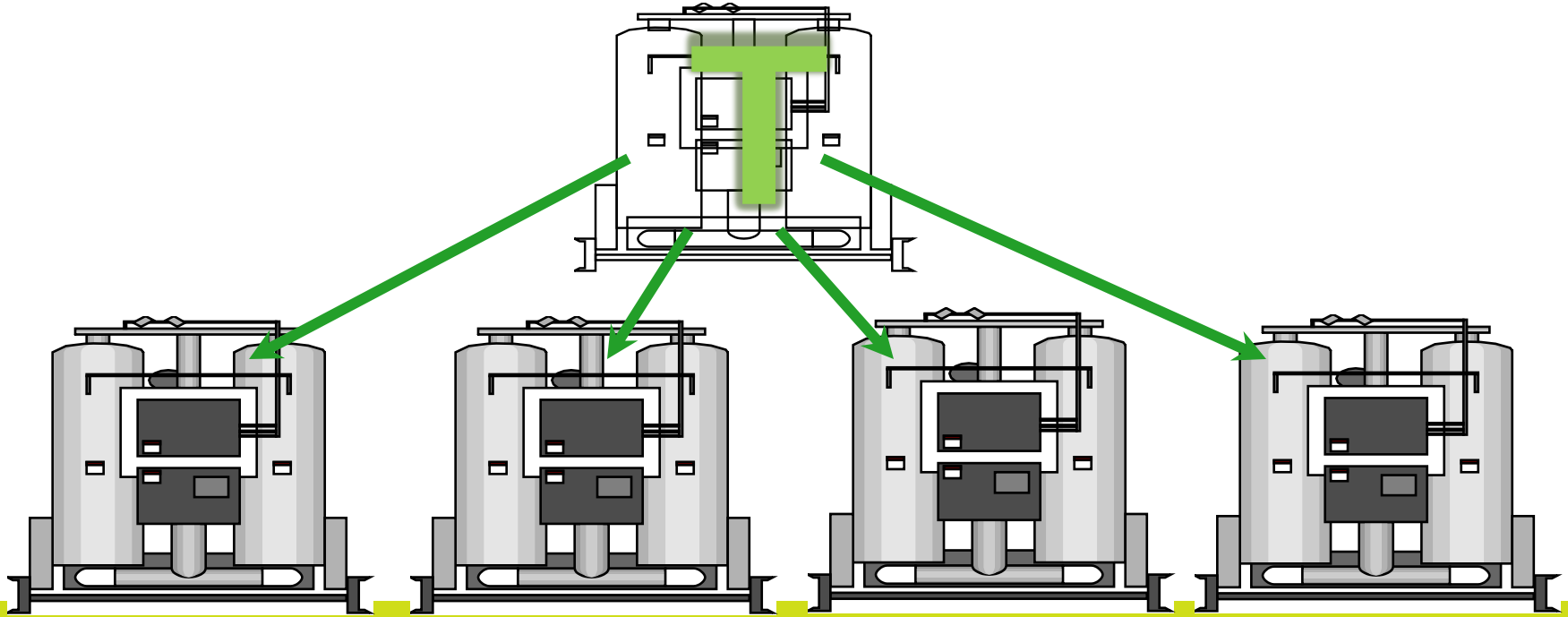
Manage and Extend Elements by creating Powerful Templates



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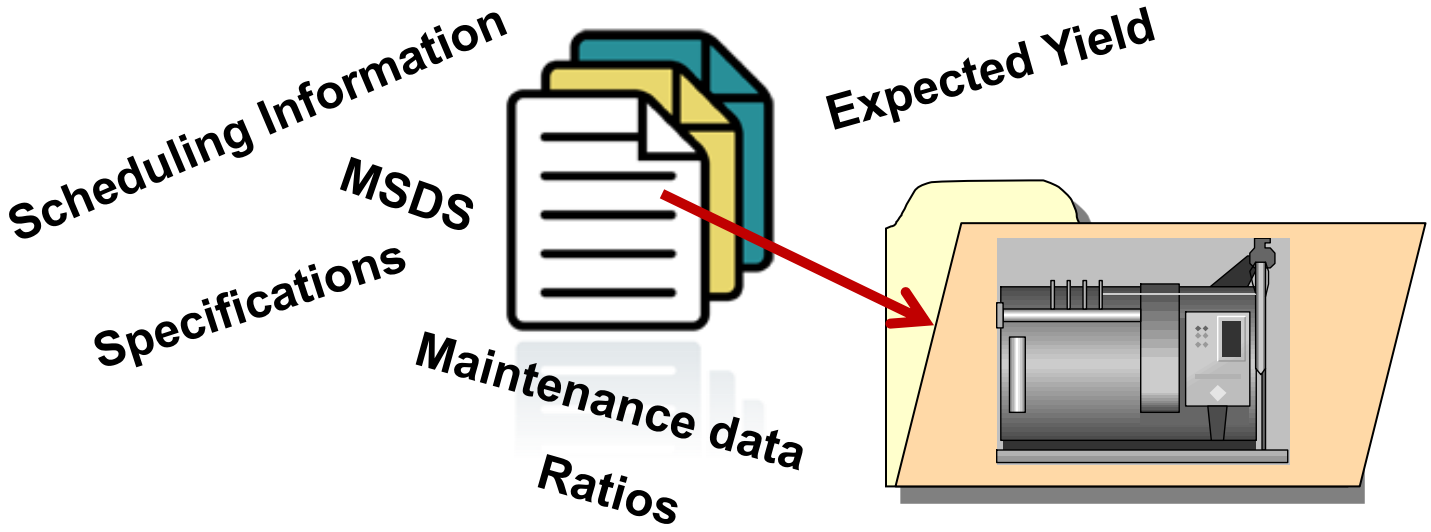
Add Efficiency Calculations, KPIs, Reference Data from Relational Databases and Other Information to Add More Value



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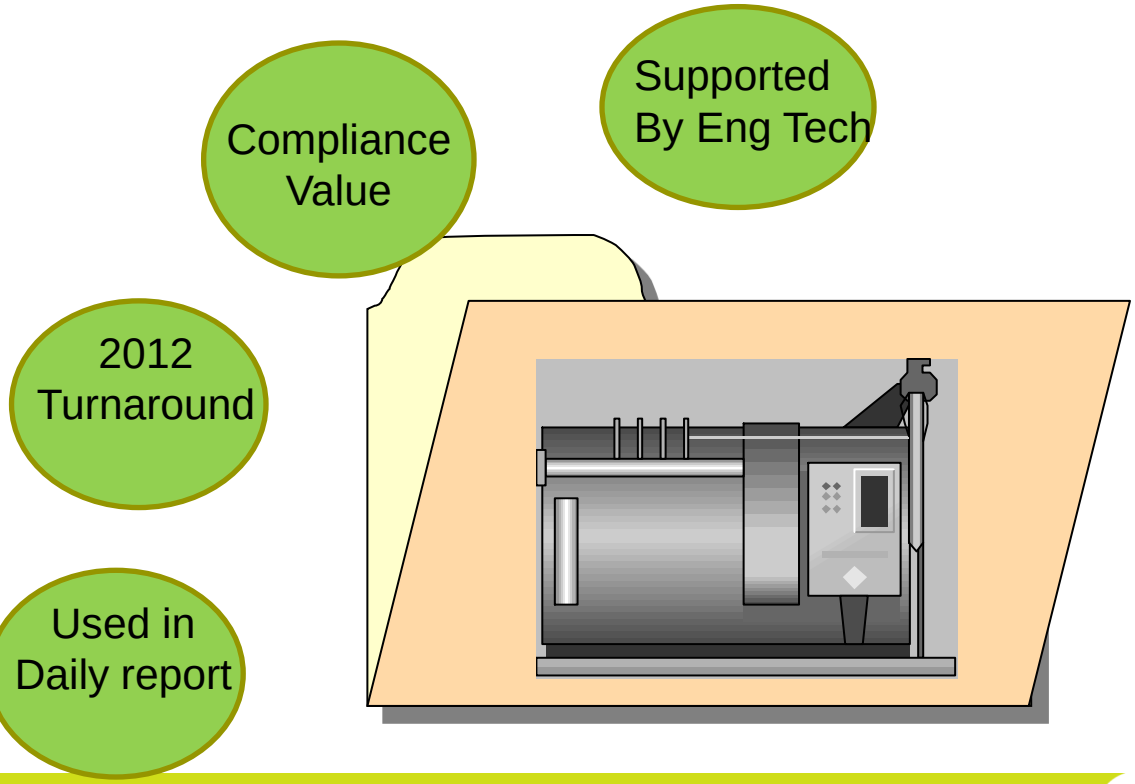
Add Key Words (Categories) to Make Them Easier to Search for



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It Might Take a Team

Process "nerds" – subject matter experts - who understand the data well enough to build the calculations and define the relationships

&

IT "geeks" who can wrangle the XML and SQL, to build large databases

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AF – Putting AF into Best Practice

Shaping your data by:

1. Defining types of assets
   Schema how to attribute Elements
   » Templates

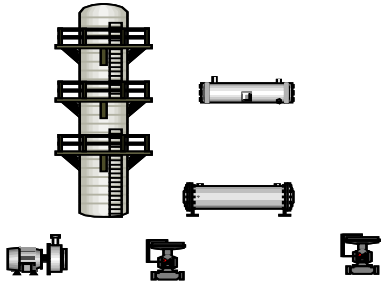
2. Association to a “real” asset
   Created from Template
   » Elements

3. Describing the “real” asset
   having Units Of Measurements (UOM)
   can come via data references from everywhere
   » Attributes

4. Physical/logical asset structure
   » Hierarchy

5. Assets connectivity
   Model : Collections of connected elements
   » Model

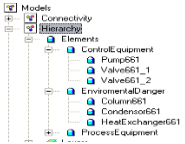
Condensor
Heatexchanger
Column
Valve
Pipe
Pump

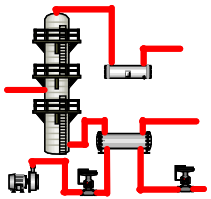


Column661
Condensor661
P661_1
P661_2
HeatExchanger661
Valve661_1
Valve661_2

OpeningGrade
InspectionResult
LastInspection
SerialNumber
XZY

PI Point: \\MOBILEVBC\Valve661_1.OpeningGrade
Table Lookup: SELECT InspectionResult FROM …
Table Lookup: SELECT LastInspection FROM …
Table Lookup: SELECT SerialNumber FROM …
Formula: A=OpeningGrade;[A*0.98]





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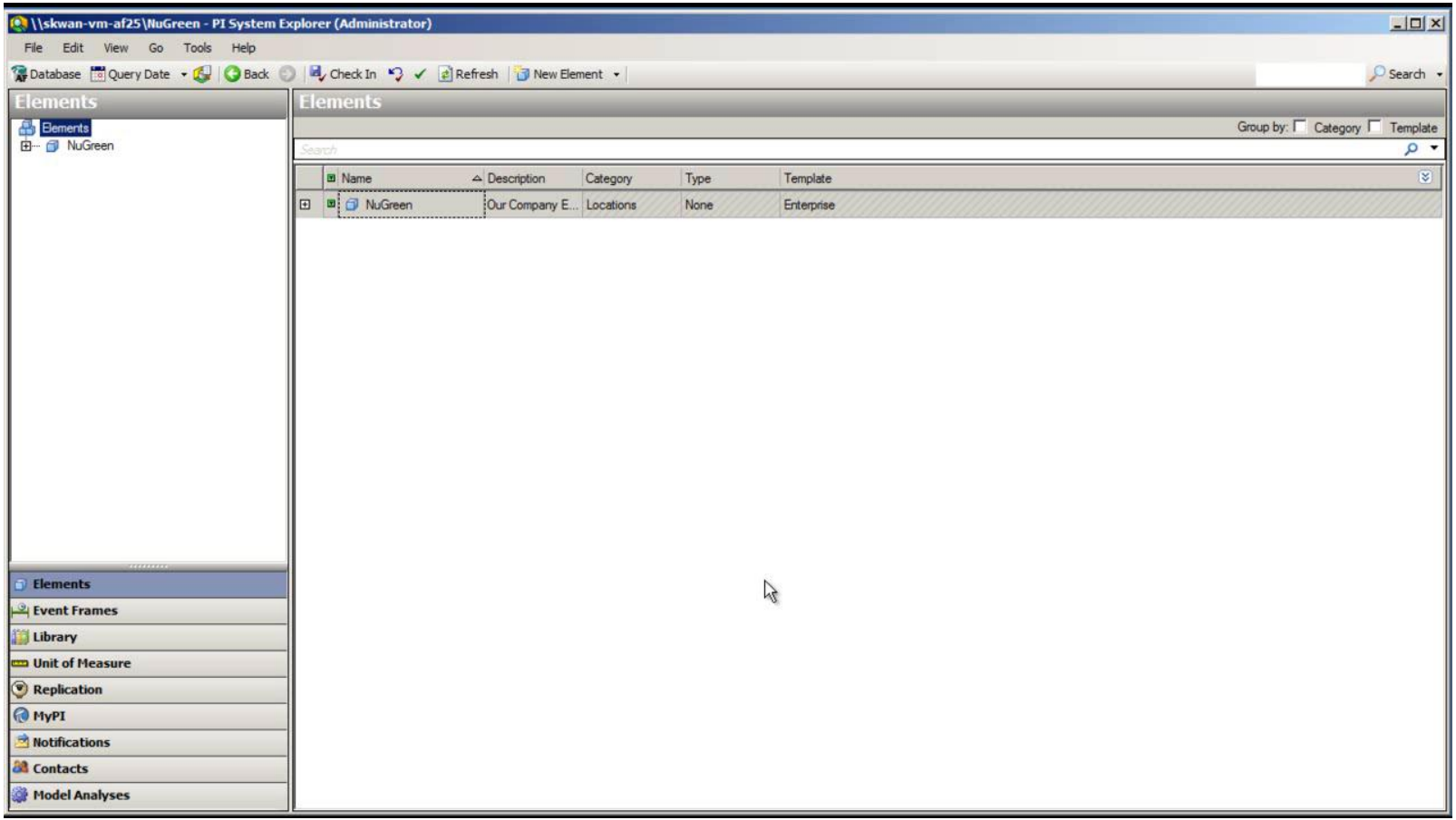

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Insight PI Asset Framework

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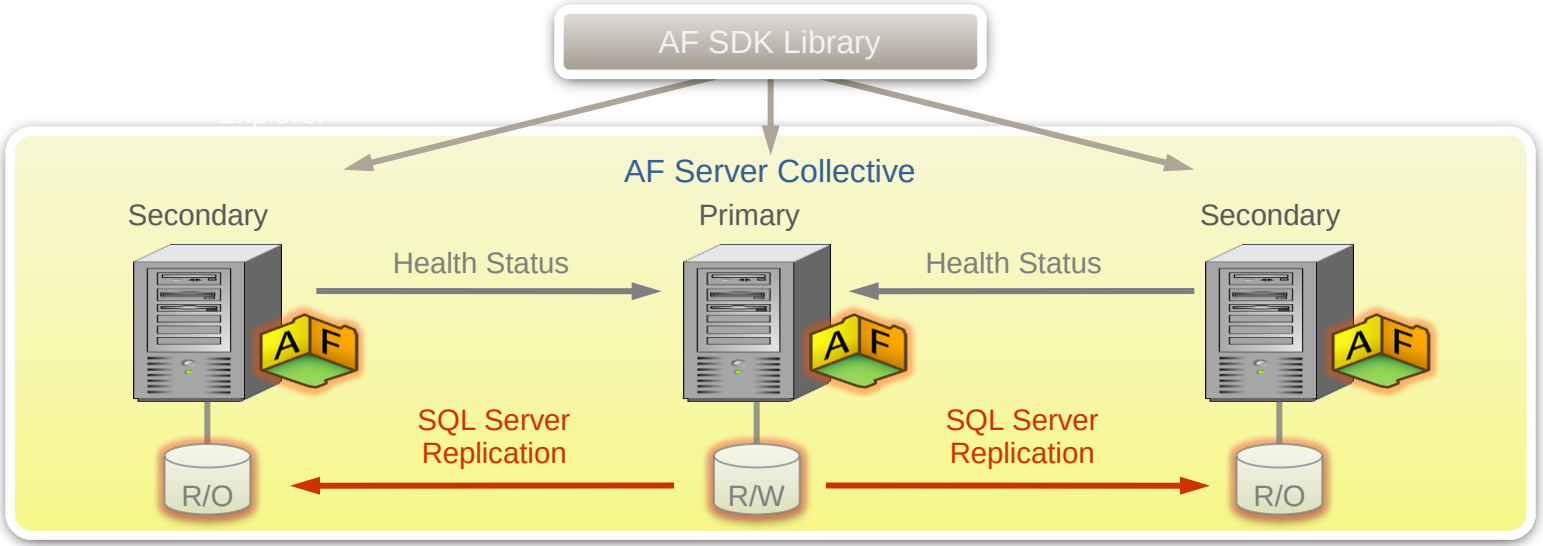
AF HA Collective

PI Notifications, AF-based PI Clients
(PI WebParts, ProcessBook, DataLink, etc.)



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Extending PI AF

- Enhance functionality of PI AF by your own Plugins
  - Access new data sources (Data References)
  - Notifications to users or systems (Delivery Channels)
- Easy deployment – no ‘roll-outs’ – just register

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- Create **domain/industry specific** applications
- Focus on **doing it right**
- Personal development **PI System**
- **Community experience**
- Tech Conference: **OSIsoft vCampus Live!**

```
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() +
}
```


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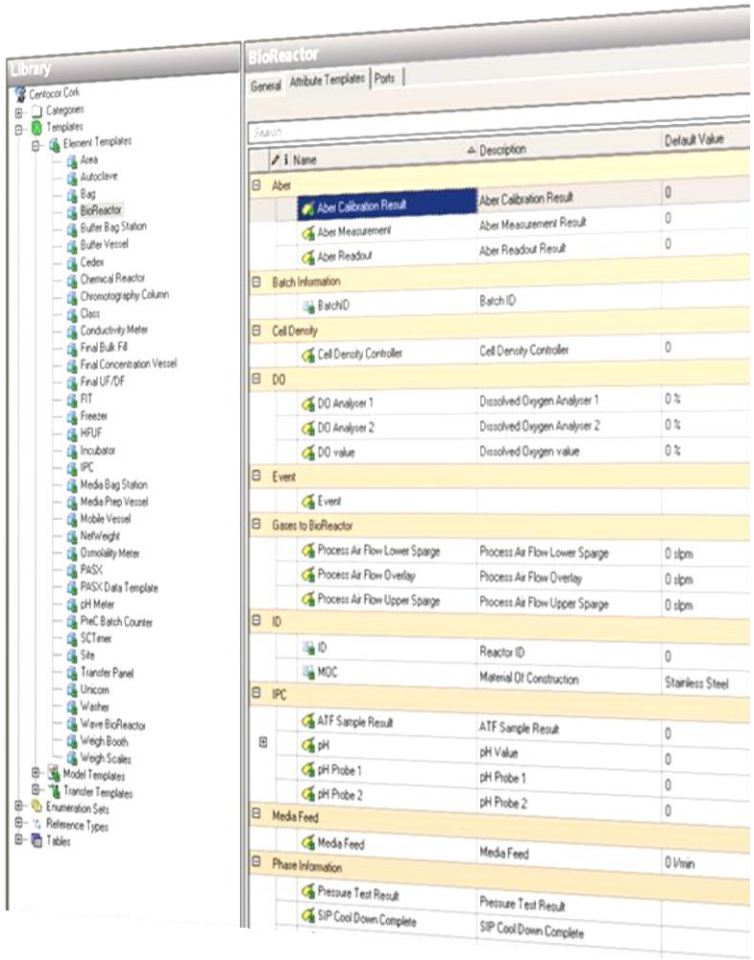
Mapping assets – User example UC 2012
PI Asset Framework – PI AF in Janssen

Super Class concept.

- Class based templates – built in conjunction with process and subject matter experts.
- Only process critical information grouped together in a logical model.
- Ensures that the entire organisation have a common taxonomy.

PAS|X \ PI AF

- Using Unit based templates allows us to build unit based MBR elements that can be applied on other sites.



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