Migrating to an Asset Centric PI System

Presented by

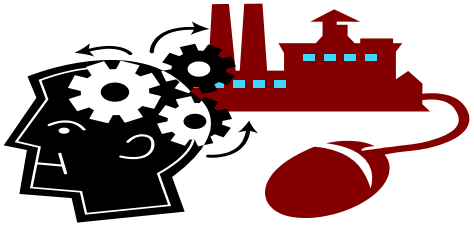
Dr. Stephen Kwan, Product Manager, OSIsoft
Frank Batke, Field Services, OSIsoft

So I've had my PI System for a few years and I'm thinking about upgrading to PI System 2010 – maybe I could find data faster and be ready to solve problems if my system were a little better organized

Getting Organized

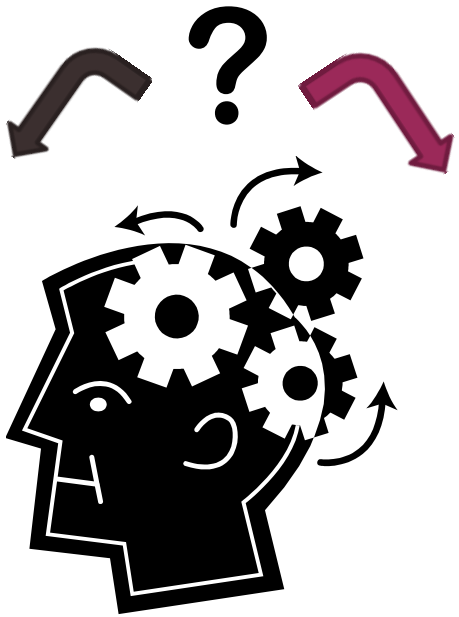
PI System 2010 with PI Asset Framework

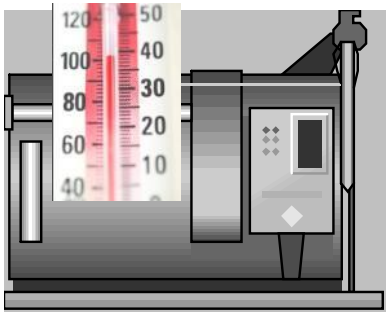
- A database of user configured “Process Object Models” called elements which represent the logical components – the assets – in your process.
- The elements form a data directory “middle layer” for PI System clients which **transforms PI System data into information.**



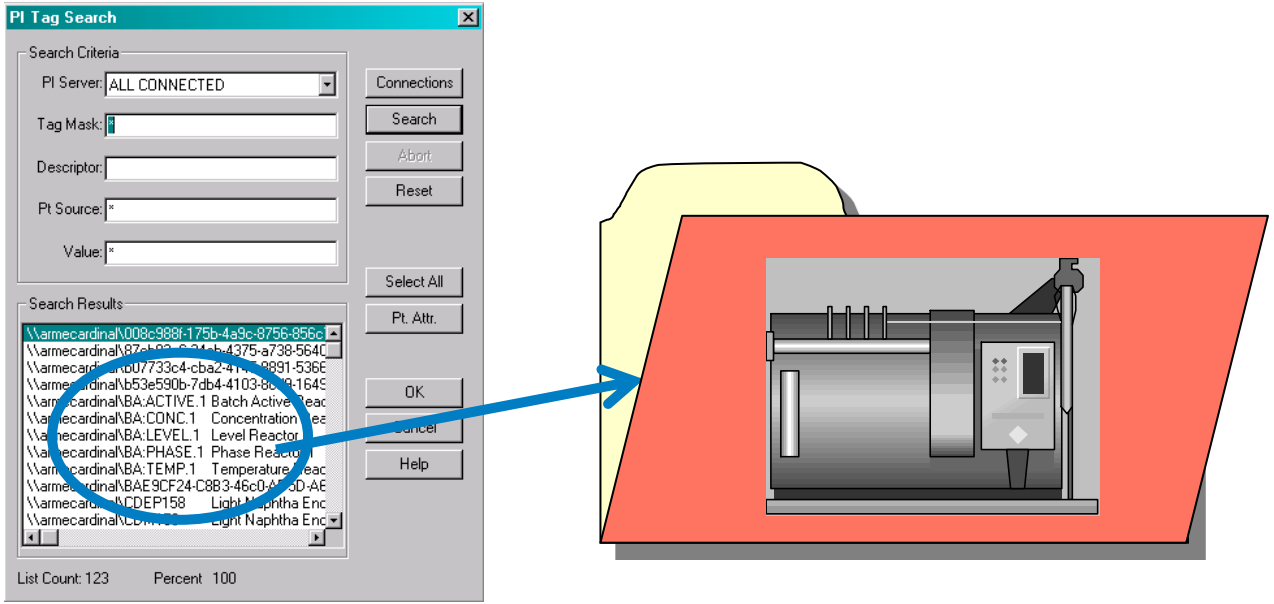
A PI System that Thinks More Like You Do…

TI507A.PV

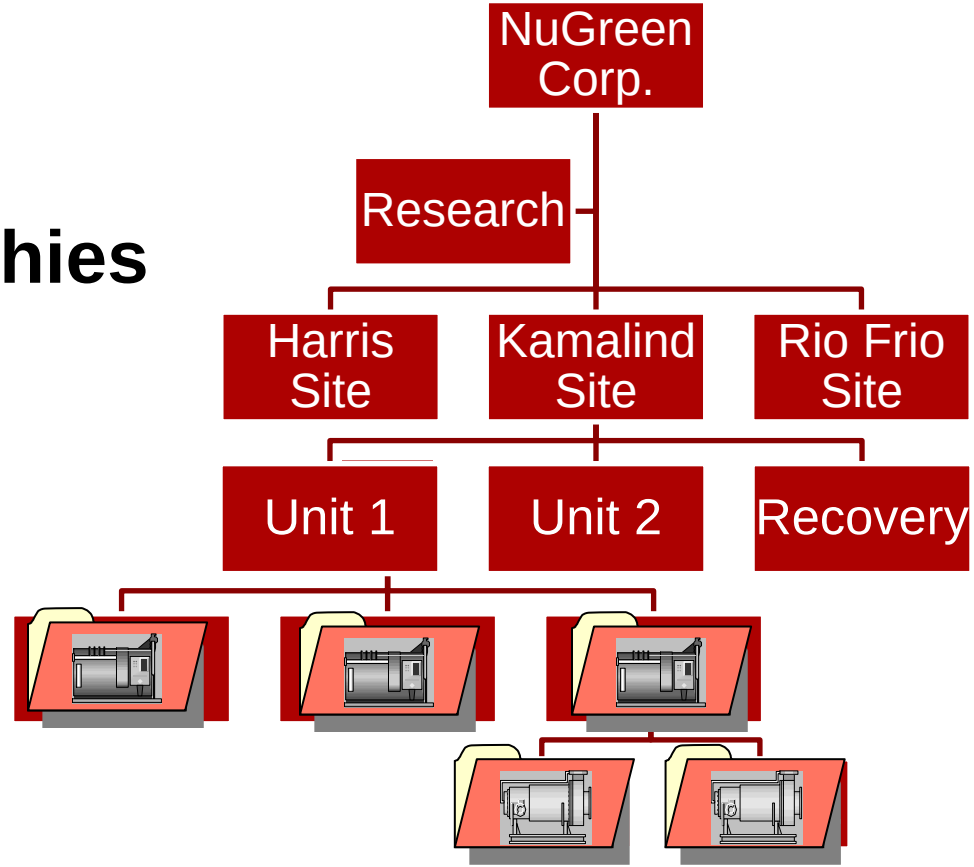




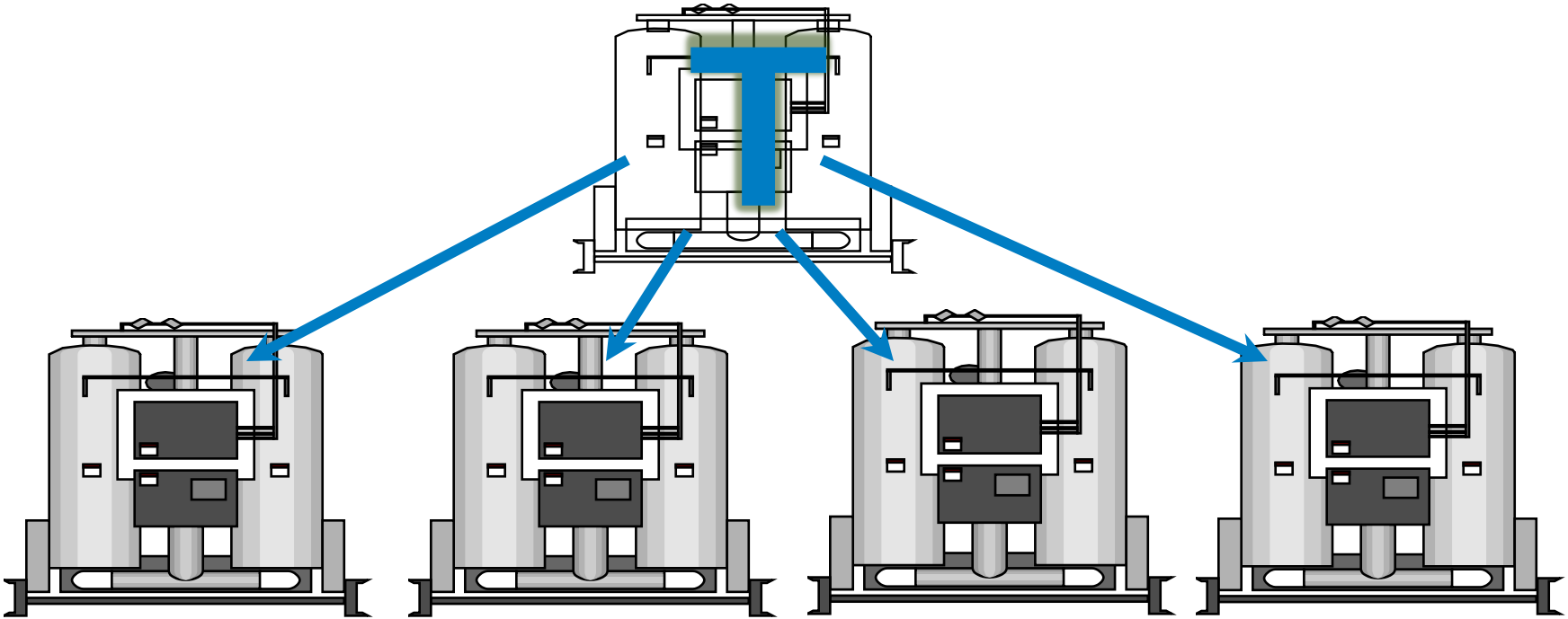
1. Sort Your Tags into Elements Which Represent Your Equipment



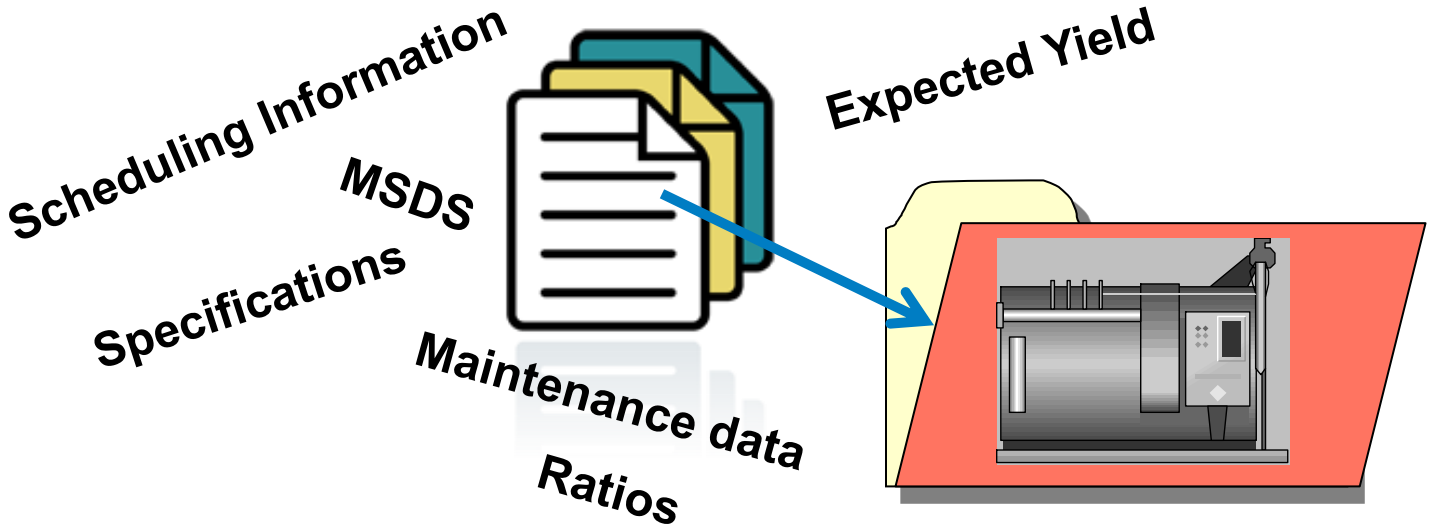
2. Organize the Assets (Elements) into Hierarchies



3. Manage and Extend Elements by Creating Powerful Templates



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



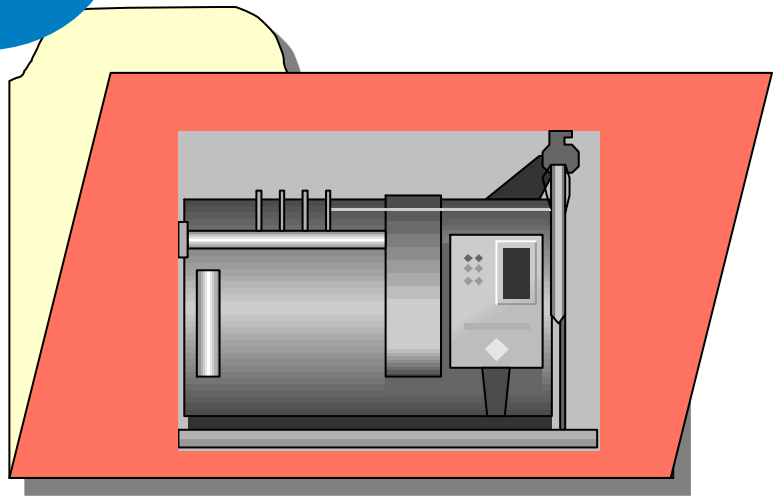
5. Add Key Words (Categories) to Make Them Easier to Search for

Compliance Value

Supported By Eng Tech

2012 Turnaround

Used in Daily report



It Might Take a Team

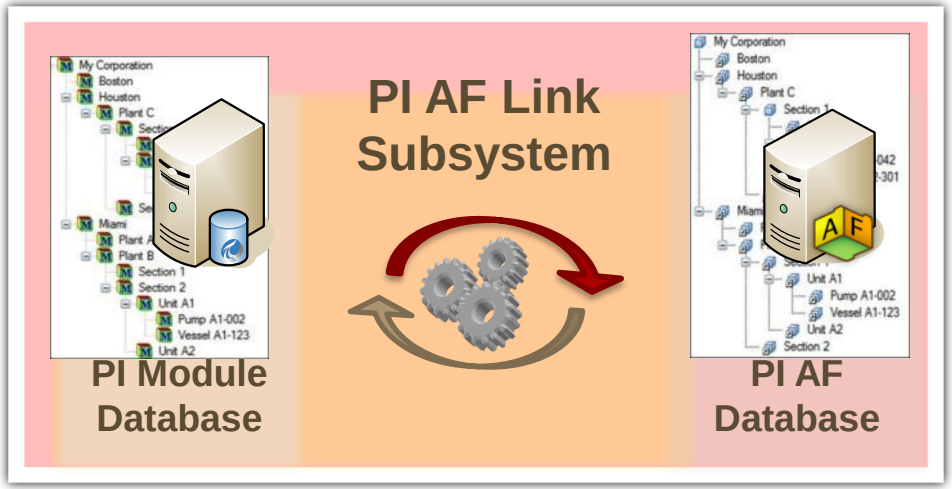
Process "nerds" – subject matter experts - who understand the data well enough to build the calculations and define the relationships

&

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

Where Do I find My Assets?

If you have a good PI Module Database, use our **PI Server 2010** with **PI AF Link**



Demo 1

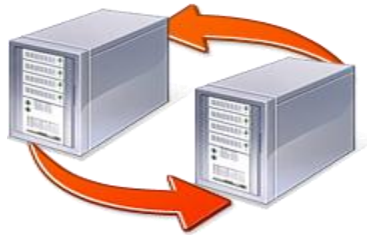
Your old PI Module Database is now your new PI AF element hierarchy with PI Server 2010 and PI AF Link.

OSIsoft.
USERS 2011
CONFERENCE

Where Do I Find My Assets?

If you have DeltaV, use the

DeltaV asset connector

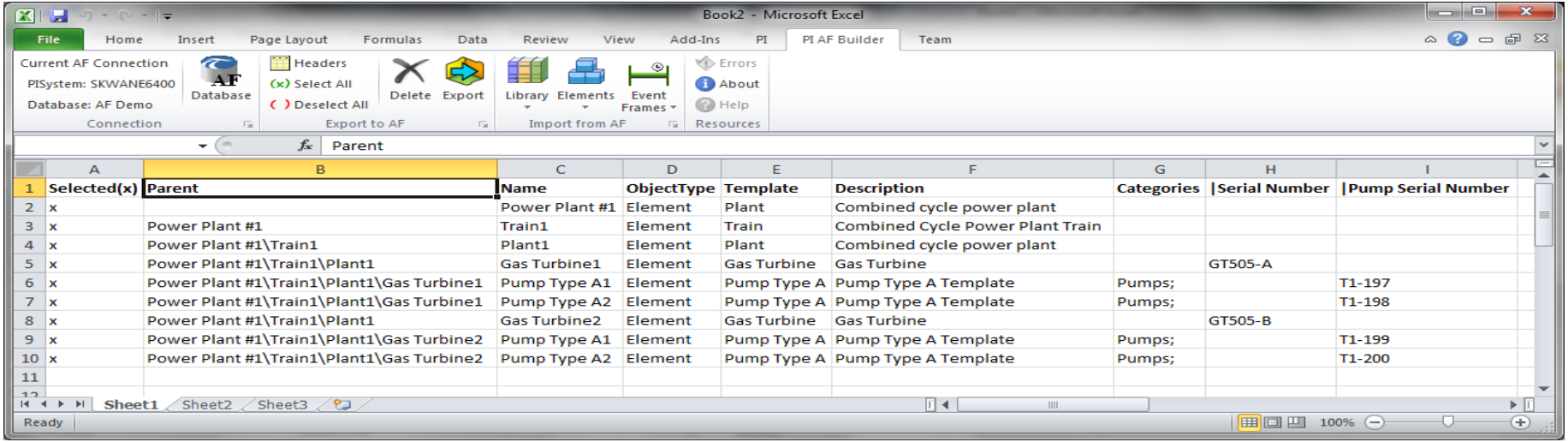


Where Do I Find My Assets?

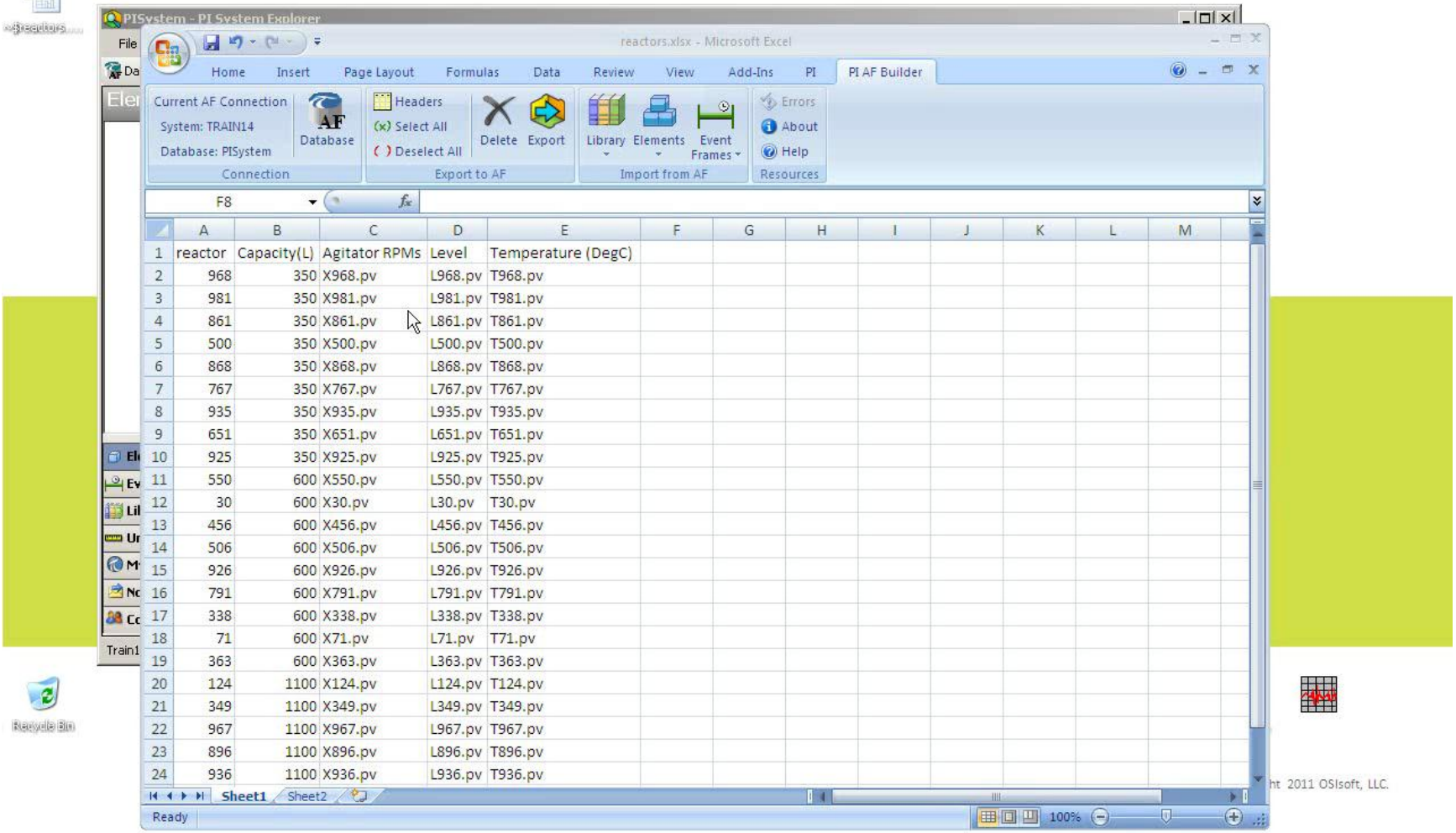
Otherwise find your assets in your maintenance, engineering/instrumentation, or accounting databases and **import them** into PI AF with the **PI AF Builder** for Microsoft Excel.

Demo 2

Organizing your PI Tag database in PI AF with the PI AF Builder for Microsoft Excel.



	A	B	C	D	E	F	G	H	I
1	Selected(x)	Parent	Name	ObjectType	Template	Description	Categories	|Serial Number	|Pump Serial Number
2	x		Power Plant #1	Element	Plant	Combined cycle power plant			
3	x	Power Plant #1	Train1	Element	Train	Combined Cycle Power Plant Train			
4	x	Power Plant #1\Train1	Plant1	Element	Plant	Combined cycle power plant			
5	x	Power Plant #1\Train1\Plant1	Gas Turbine1	Element	Gas Turbine	Gas Turbine		GT505-A	
6	x	Power Plant #1\Train1\Plant1\Gas Turbine1	Pump Type A1	Element	Pump Type A	Pump Type A Template	Pumps;		T1-197
7	x	Power Plant #1\Train1\Plant1\Gas Turbine1	Pump Type A2	Element	Pump Type A	Pump Type A Template	Pumps;		T1-198
8	x	Power Plant #1\Train1\Plant1	Gas Turbine2	Element	Gas Turbine	Gas Turbine		GT505-B	
9	x	Power Plant #1\Train1\Plant1\Gas Turbine2	Pump Type A1	Element	Pump Type A	Pump Type A Template	Pumps;		T1-199
10	x	Power Plant #1\Train1\Plant1\Gas Turbine2	Pump Type A2	Element	Pump Type A	Pump Type A Template	Pumps;		T1-200
11									



But I have tens of thousands of tags – how will PI AF save me time when it will require me to organize thousands or tens of thousands of assets – all configured with calculations and structure?

One Step at a Time

Don’t feel like you have to have a comprehensive database to get value!
Use PI AF like a spreadsheet and support the analysis of specific problems.
But don’t start fresh with each problem, expand your asset model with every use.

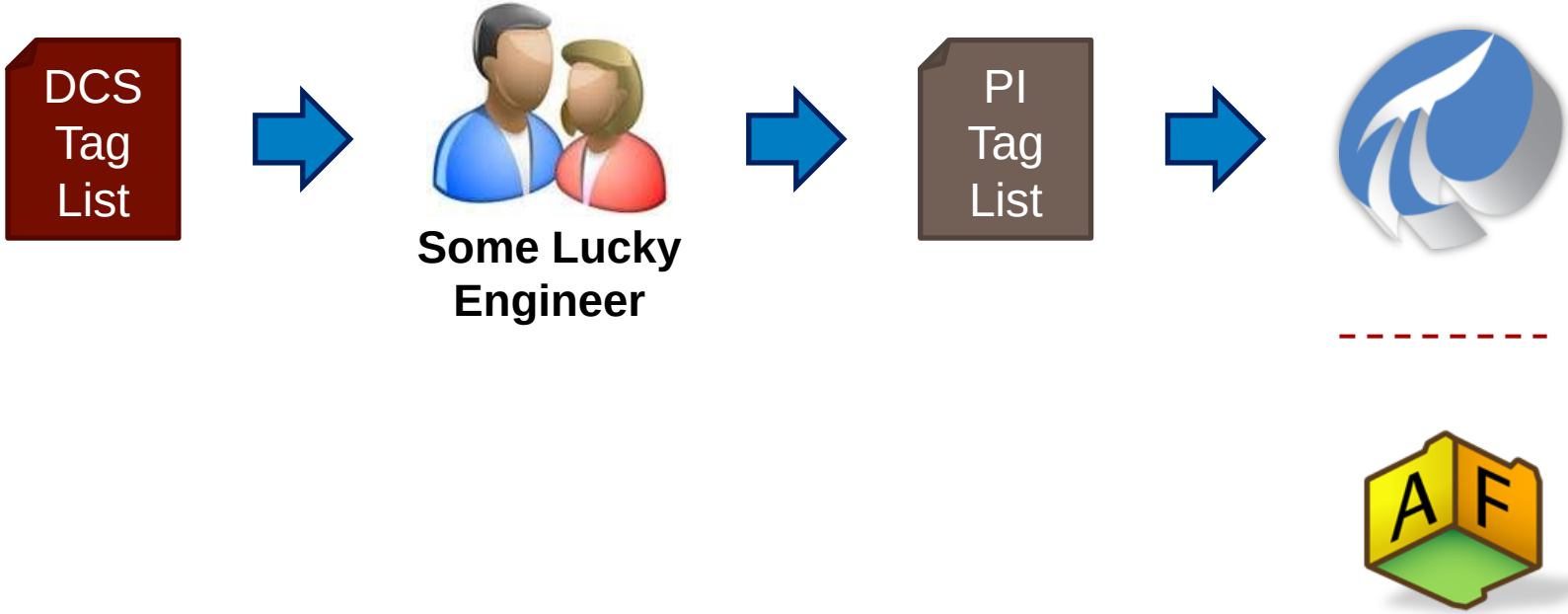
And get started!

What About New PI System Installations?

It Starts with Data Streams

ItemID	Description	UnitsString	Units	Measurement	Asset(s)	
40_PV1DNDRW.PV	PM1 VERTIFORMER DNDRAW	FPM	ft/min	Down Draw	Paper Mill 1	Vertiformer
40_PV1DRWSP.PV	PM1 VERTIFORMER DRAW SETPOINT	FPM	ft/min	Draw Setpoint	Paper Mill 1	Vertiformer
40_PV1KVALD.PV	PM1 VERTIFORMER KVAL DISPLAY	FPM	ft/min	Kval Display	Paper Mill 1	Vertiformer
40_PV1KVALS.PV	PM1 VERTIFORMER KVAL SETPOINT	STATE		Kval Setpoint	Paper Mill 1	Vertiformer
40_PV1LOADF.PV	PM1 VERTIFORMER LOAD FEEDBACK	PERCENT	%	Load Feedback	Paper Mill 1	Vertiformer
40_PV2DNDRW.PV	PM1 1ST PRESS DNDRAW	FPM	ft/min	Down Draw	Paper Mill 1	1st Press
40_PV2LOADF.PV	PM1 1ST PRESS LOAD FEEDBACK	PERCENT	%	Load Feedback	Paper Mill 1	1st Press

The Classic PI System Installation

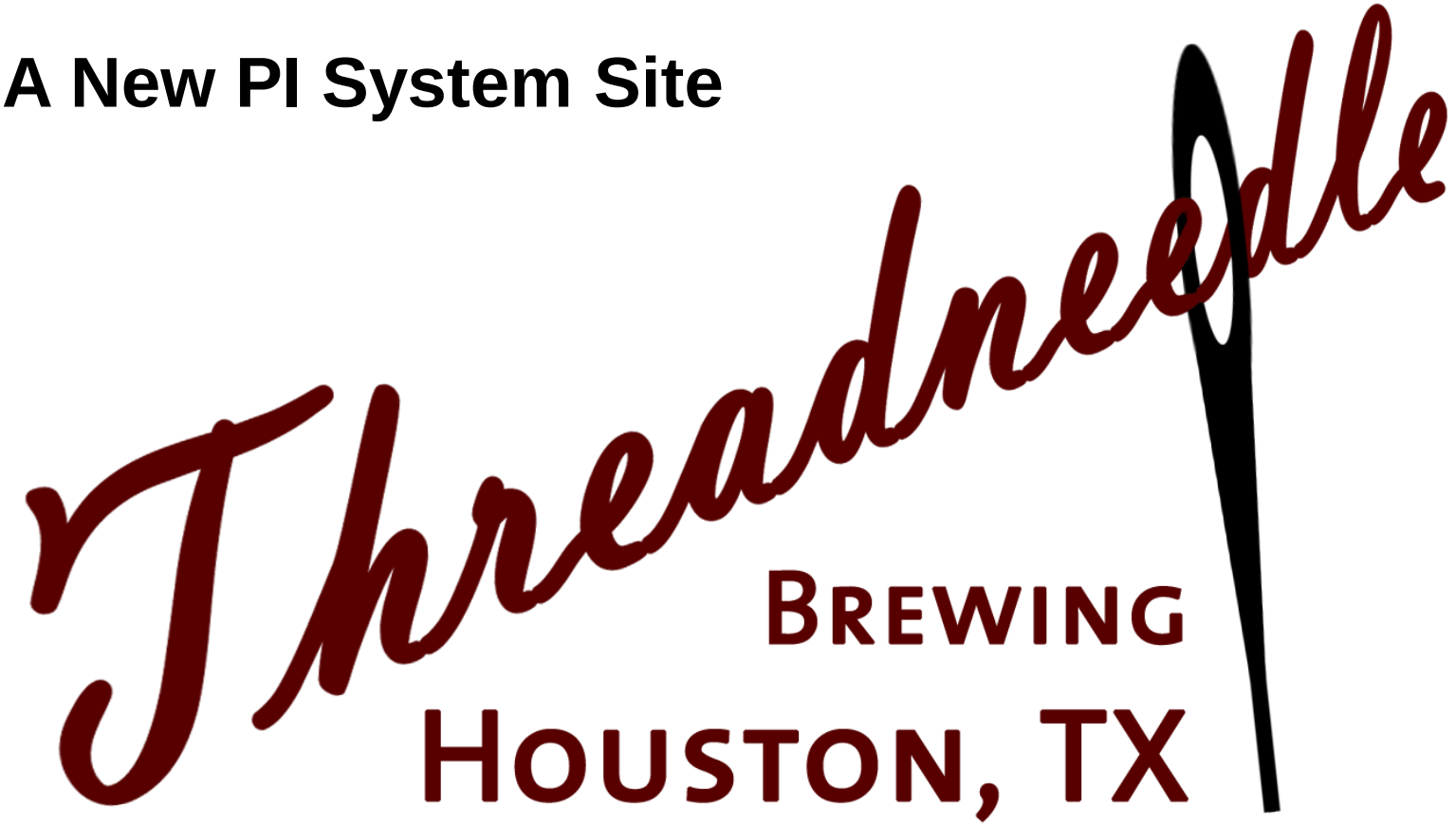


A New Opportunity

Scope

- The New PI System Site
- From Data Stream List to Assets
- From Assets to PI Tags
- Immediate Payout

A New PI System Site



Threadneedle Brewing

FT2	Fermentation Tank 2	Timer	FT2\Timer
FT2	Fermentation Tank 2	Level	FT2\LI502
FT2	Fermentation Tank 2	Temperature	FT2\TI502
FT2	Fermentation Tank 2	Active	FT2\RotAct
FT2	Fermentation Tank 2	Drain Valve	FT2\DrnVlv
FT3	Fe	Timer	
FT3	Fe	Level	
FT3	Fe	Temperature	
FT3	Fe	Active	
FT3	Fe	Drain Valve	
FT4	Fe	Timer	
FT4	Fe	Level	
FT4	Fe	Temperature	FT4\TI504
FT4	Fermentation Tank 4	Active	FT4\RotAct
FT4	Fermentation Tank 4	Drain Valve	FT4\DrnVlv
FT5	Fermentation Tank 5	Timer	FT5\Timer
FT5	Fermentation Tank 5	Level	FT5\LI505
FT5	Fermentation Tank 5	Temperature	FT5\TI505
FT5	Fermentation Tank 5	Active	FT5\RotAct
FT5	Fermentation Tank 5	Drain Valve	FT5\DrnVlv
FT6	Fermentation Tank 6	Timer	FT6\Timer

Malt Hopper

Mash Tun

Boiling Kettle

Fermenter

The PI AF Element

Element
Copper Kettle 2

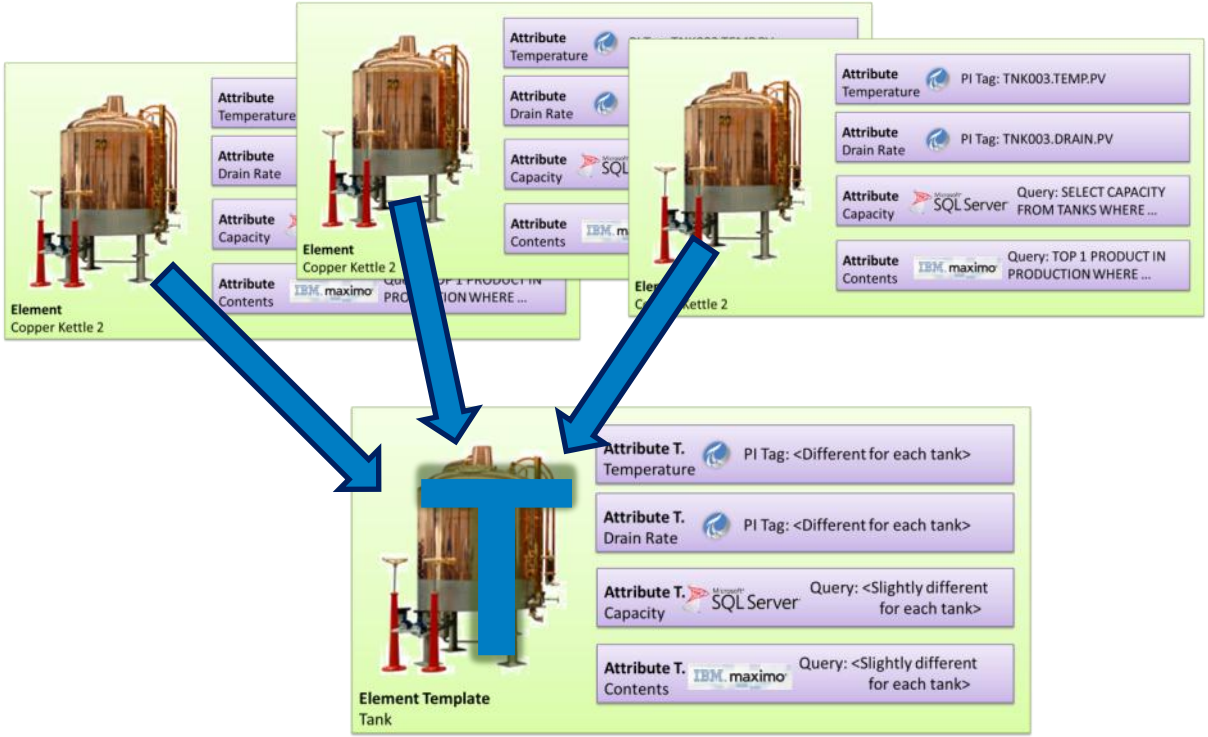
Attribute
Temperature
PI Tag: TNK003.TEMP.PV

Attribute
Drain Rate
PI Tag: TNK003.DRAIN.PV

Attribute
Capacity
Microsoft SQL Server
Query: SELECT CAPACITY FROM TANKS WHERE …

Attribute
Contents
IBM. maximo
Query: TOP 1 PRODUCT IN PRODUCTION WHERE …

Templatizing These New Elements



Assets at Threadneedle

Malt Hopper

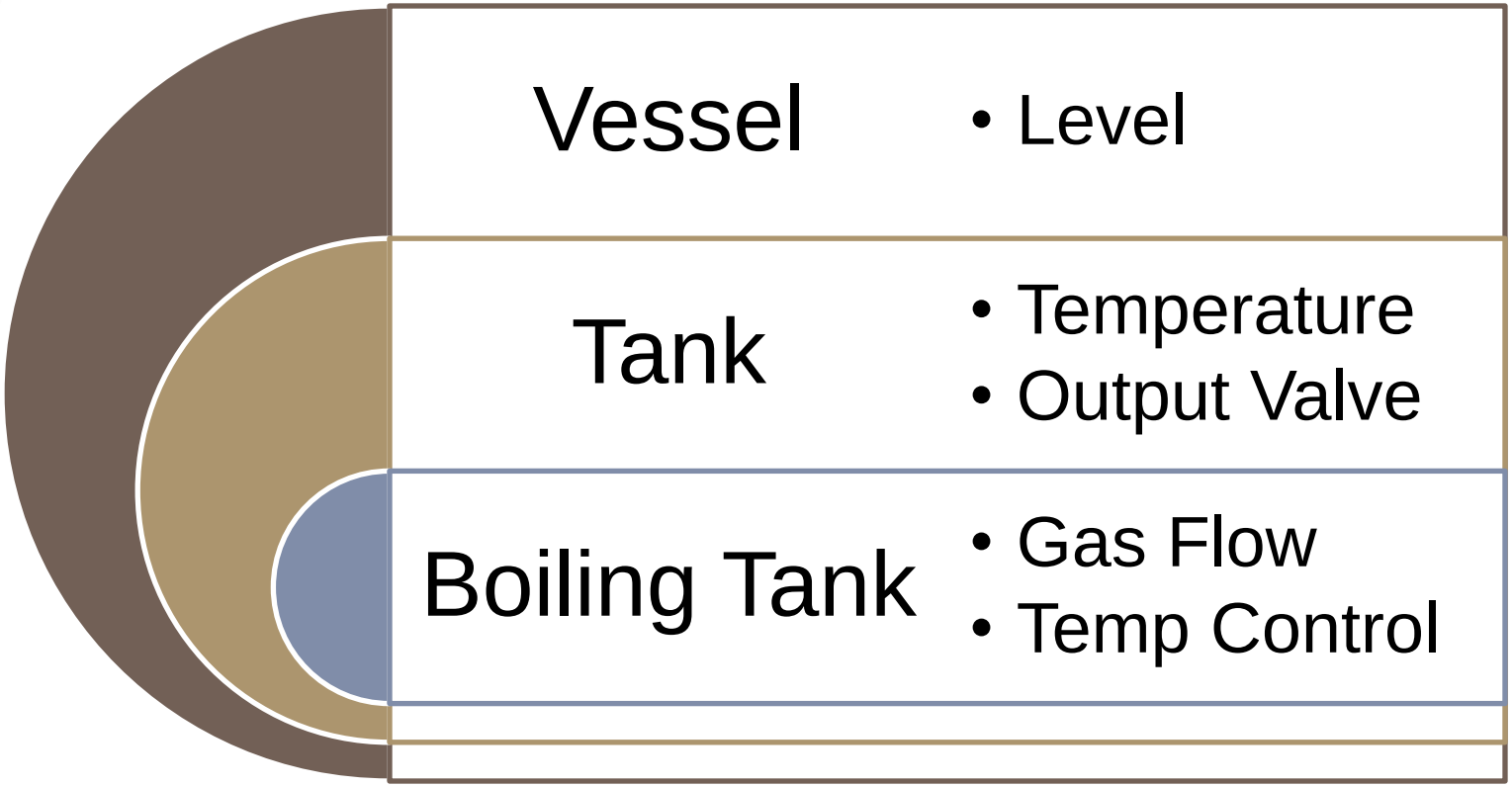
Mash Tun

Copper Kettle

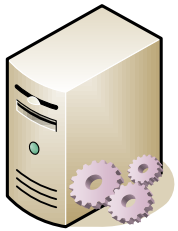
Fermenter

Level	Temperature	Out Flow	Gas Flow
VESSELS +	TANKS +		BOIL TANKS

Conjuring a Template Hierarchy



Template Hierarchy In Use



Tank Analyses

Vessels

Tanks

Boiling Tanks

Once We Have Templates, What About PI Tags?

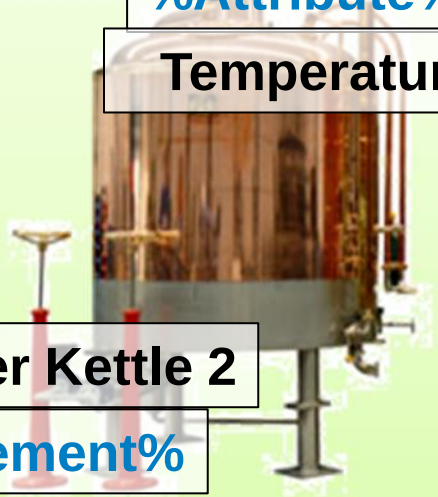
Steps to a PI Tag Built By a PI AF Template

- Define a PI AF Attribute Template
- Name the tag (with PI AF metadata)
- Feed the tag (with PI AF metadata)
  - Point it at data
  - Specify collection options
  - Tune the compression, etc.

The Well-Named PI Tag

%Attribute%

Temperature



Copper Kettle 2

%Element%

Element Template
Tank

Attribute T.
Temperature
PI Tag: <Different for each tank>

Attribute T.
Drain Rate
PI Tag: <Different for each tank>

Attribute T.
Capacity
Microsoft SQL Server
Query: <Slightly different for each tank>

Attribute T.
Contents
IBM. maximo
Query: <Slightly different for each tank>

CK-5P3002

%@Serial%

The Well-Named PI Tag

%@Serial%.%Attribute%

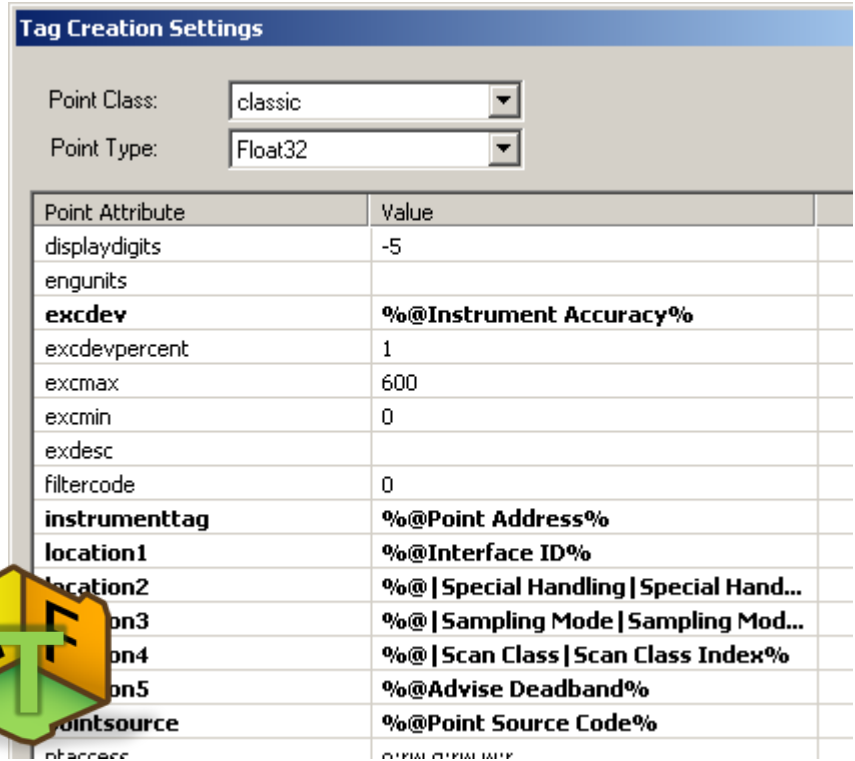
CK-5P3002.Temperature

Specifying Tag Parameters

Data Stream Address?
PI Compression?
Acquisition Mode?
Data Type?
(int. al.)

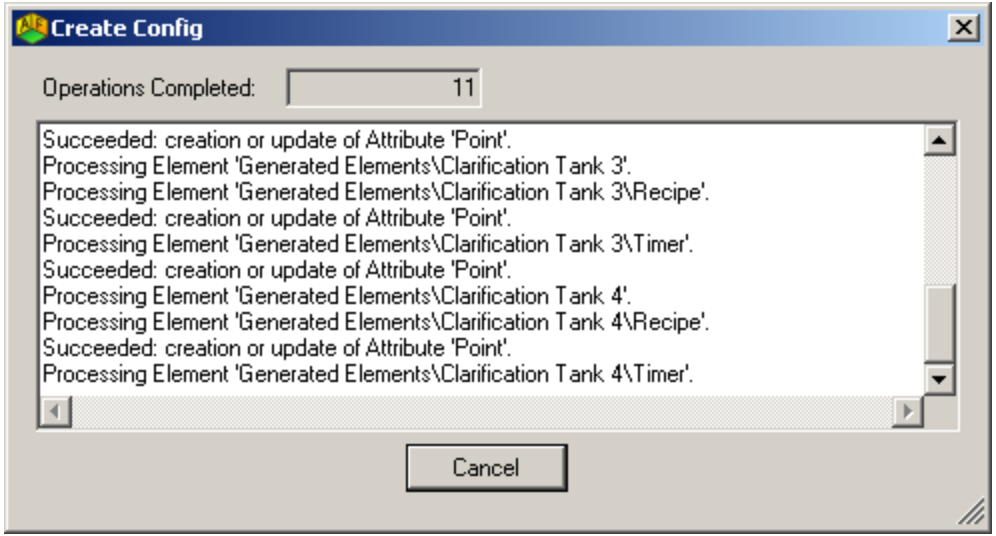
Interface Manual

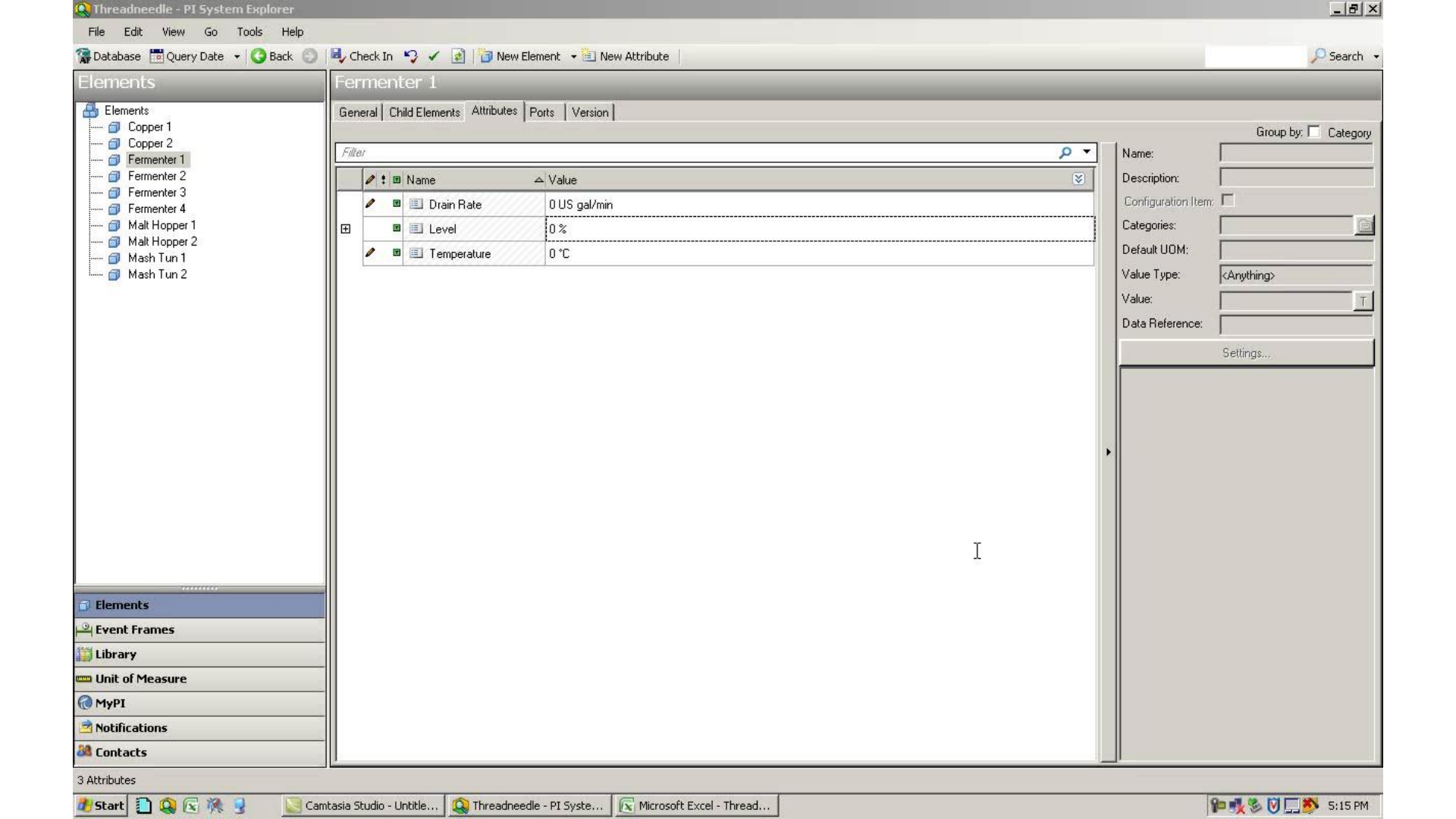
PI Tag Creation Parameters



Demo 3

Building Your PI Tags with PI AF

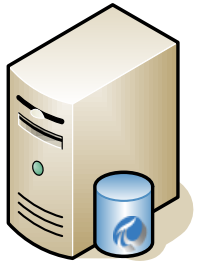



Threadneedle - PI System Explorer
File
Edit
View
Go
Tools
Help
Database
Query Date
Back
Check In
New Element
New Attribute
Search
Elements
Elements
Copper 1
Copper 2
Fermenter 1
Fermenter 2
Fermenter 3
Fermenter 4
Malt Hopper 1
Malt Hopper 2
Mash Tun 1
Mash Tun 2
Elements
Event Frames
Library
Unit of Measure
MyPI
Notifications
Contacts
Fermenter 1
General
Child Elements
Attributes
Ports
Version
Group by:
Category
Filter
Name
Value
Drain Rate
0 US gal/min
Level
0 %
Temperature
0 °C
Name:
Description:
Configuration Item:
Categories:
Default UOM:
Value Type:
<Anything>
Value:
Data Reference:
Settings...
3 Attributes
Start
Camtasia Studio - Untitle...
Threadneedle - PI Syste...
Microsoft Excel - Thread...
5:15 PM

Immediate Value

A Complete System

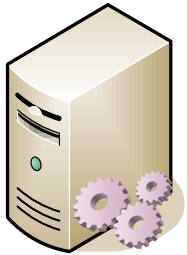
Data Sources



PI Data Archive

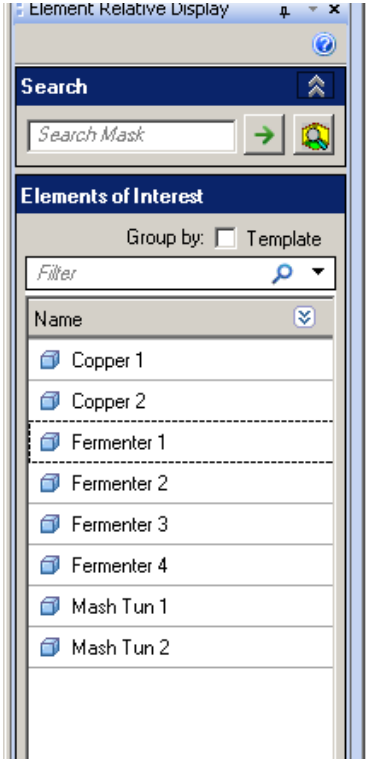
PI Asset Framework

Users

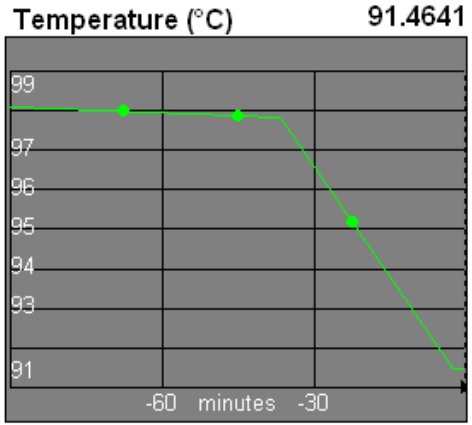


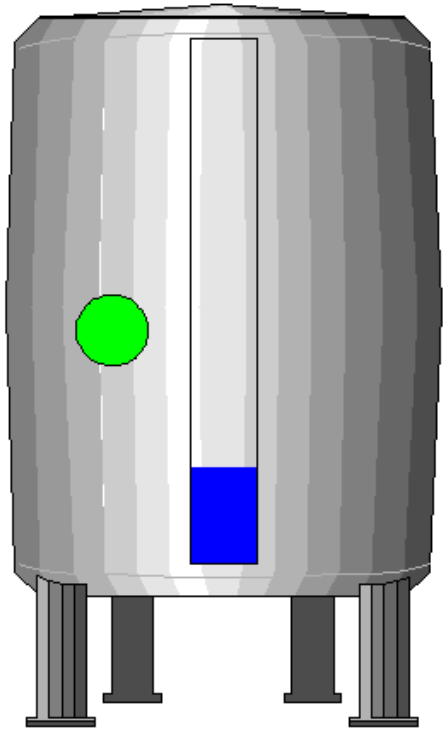
Analyses & Systems

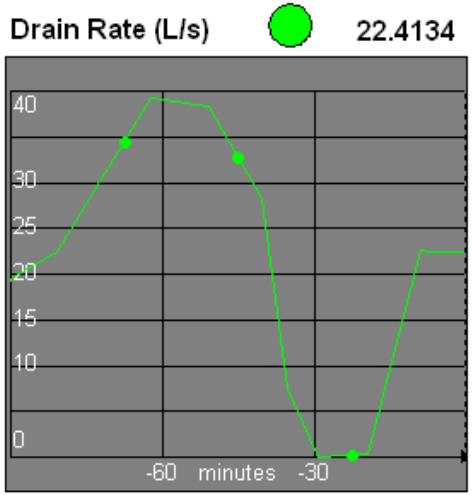
Element Relative Displays



Threadneedle Brewing Houston, TX







Fermenter 1

PI Notifications

“Kettle 3’s gas flow is not steady.
Go take a look at the burner jets!”

Email or IM

Technician

PI Notifications

“Kettle 3’s gas flow is not steady.
Log that in the maintenance system!”

Web Service

SAP

Share and Reuse your Asset Data

PI OLEDB Enterprise

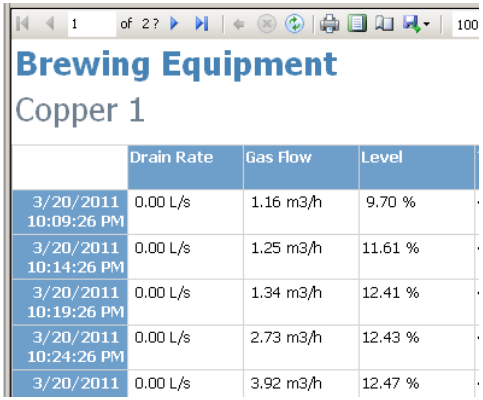
Microsoft® SQL Server® 2008 Reporting Services

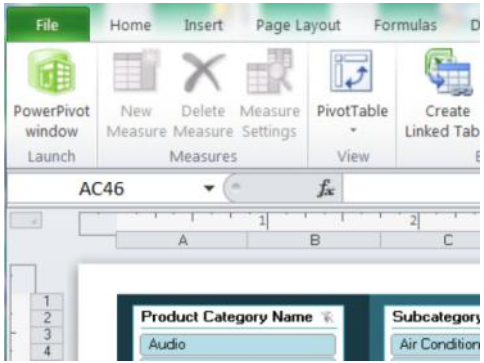
Microsoft® SharePoint® 2010

Microsoft® Office 2010

Reports

PowerPivot





Next Steps

- Upgrade to PI System 2010 to reap the benefits
- Migrate your existing PI System
- Build your PI System in an asset centric manner
- Use templates for your assets

Further Resources

Product Education Session

Training Course

Webinars

Tech Support

vCampus

Center of Excellence

What Else to See

PI Event Frames

PI Notifications

PI DataLink Meets PI AF

Asset Visualization with PI WebParts

Find & Visualize PI System Data

Business Intelligence with the PI System

Thank you