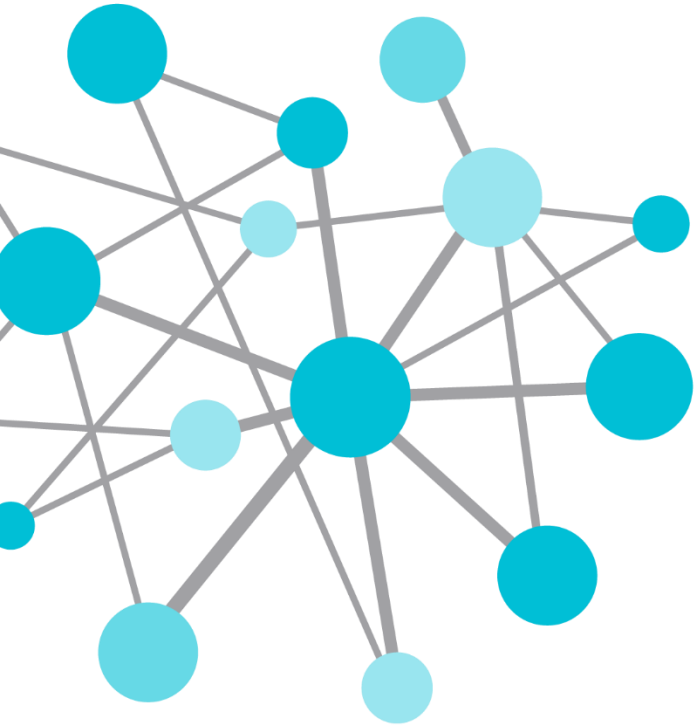

Advance Your Investment in the PI Infrastructure – PI Server 2014

Presented by **Stephen Kwan, Paul Kaiser, Rhys Kirk and Denis Vacher**

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OSIsoft.

USERS CONFERENCE 2014

The Power of Data

DECISION READY IN REAL-TIME

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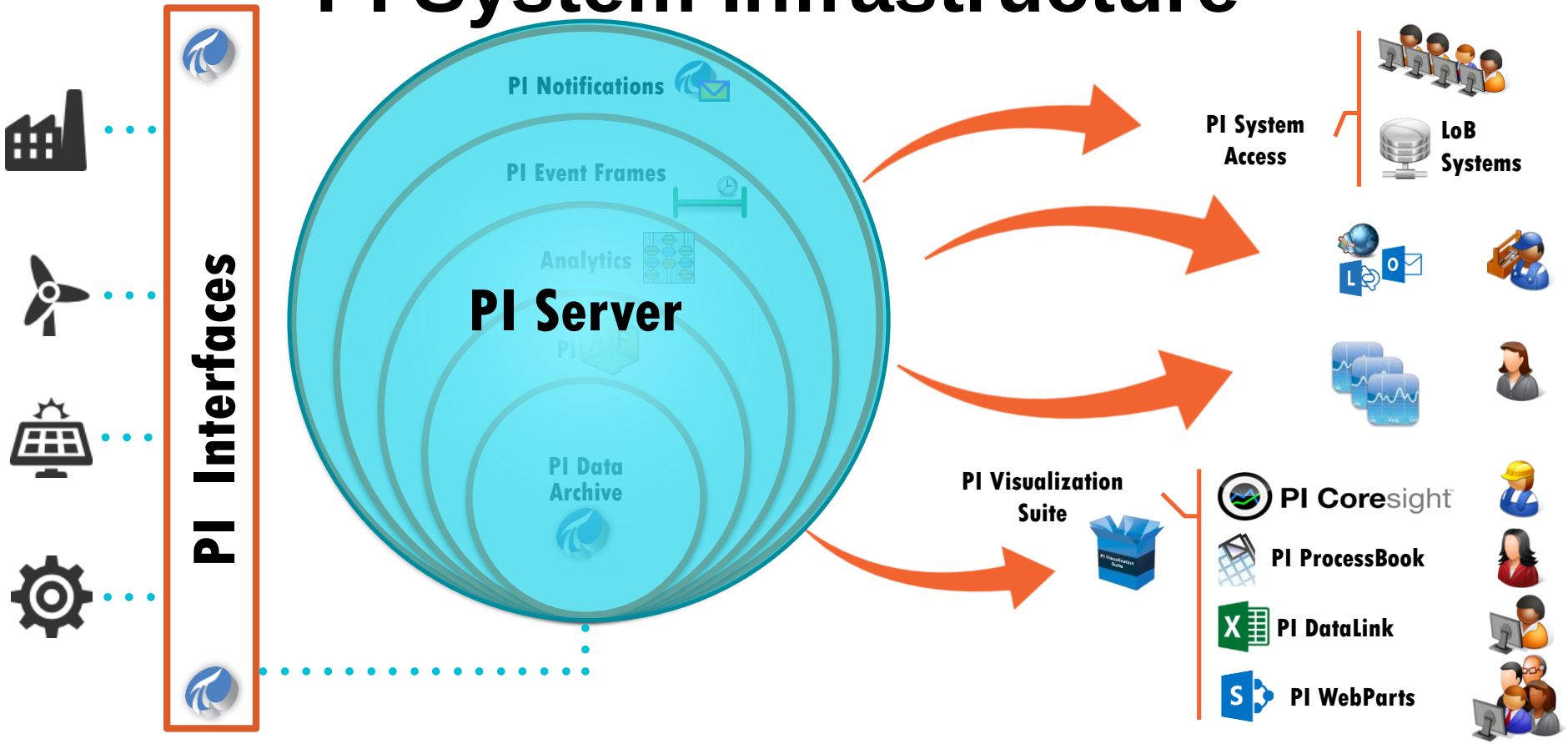
PI System Infrastructure



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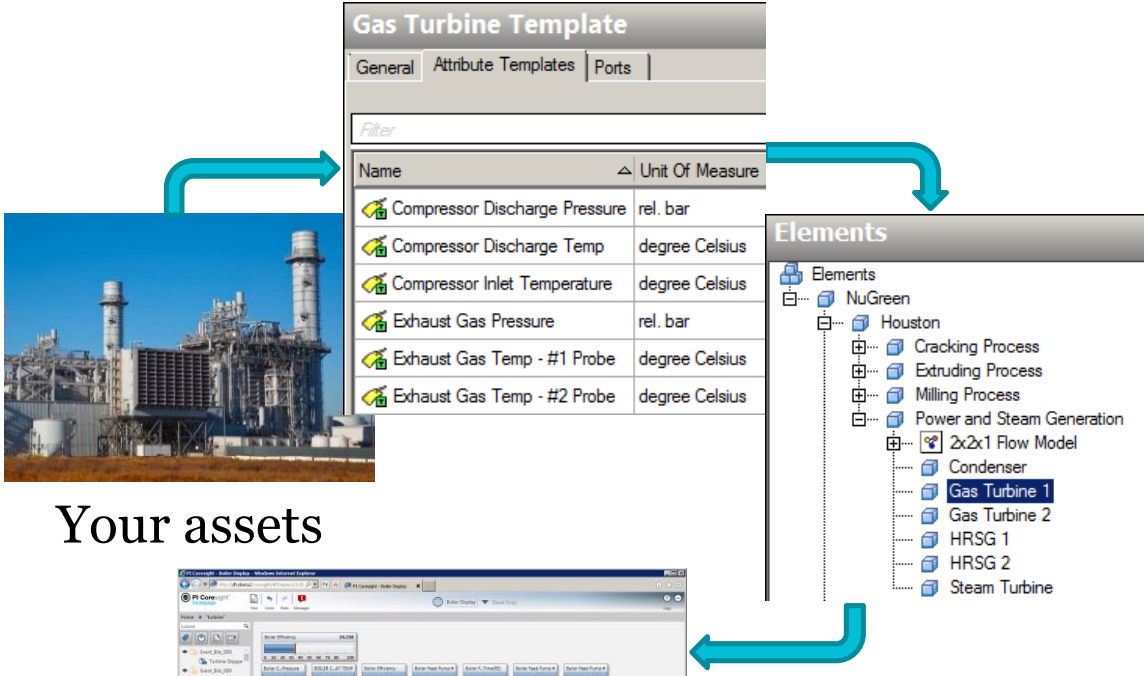
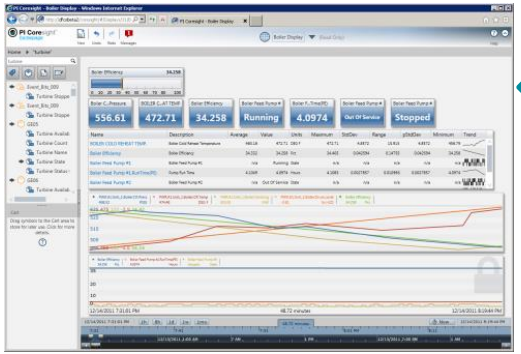
PI AF



Your assets



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PI Asset Framework (AF)

- **Infrastructure for the Infrastructure**
  - **PI Event Frames**
  - **PI Notifications**
  - **PI Integrator for Esri arcGIS**
  - **Asset-Based Analytics**

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Added Value

- **Organize by Asset**
- **Get More Value from Existing Data**

2 + 2 = 5

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Repeatability

- **Build Solution with Templates**
- **Apply Templates to Assets Over and Over**

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Performance

- **Use Bulk RPCs**
- **Make One Call instead of Spinning Like a Top**

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Performance - Bulk Calls

Server
Latency
Bandwidth
Client

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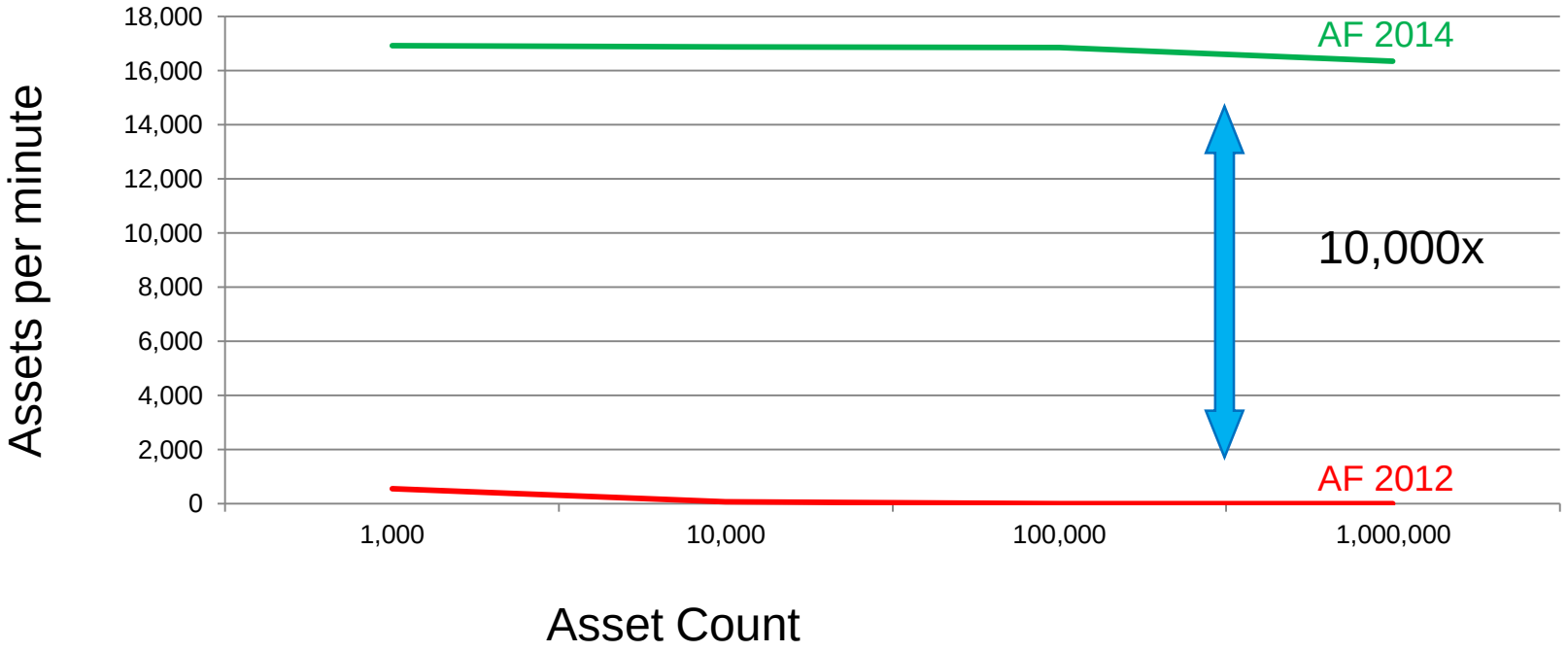
Performance - Fast Searches



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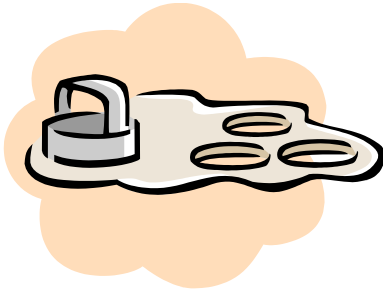
Extensibility

- **Separate Connection from Query and Reuse**
- **Filter Out Unwanted Data with Parameters**



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Pipe & Cache

- **Pipe Already Holds Interesting Data**
- **Cache Retains Data Client-Side**

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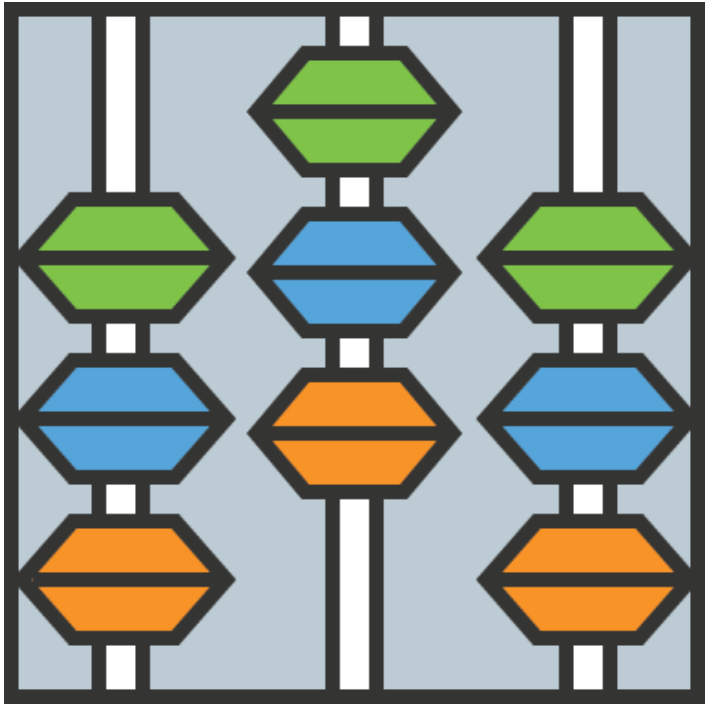
Asset-Based Analytics (Project Abacus)



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Asset Based Analytics

- Transform operational data into new data streams
- Create analyses based on AF
  - PE expressions
  - Rollups and aggregations
  - Generate event frames

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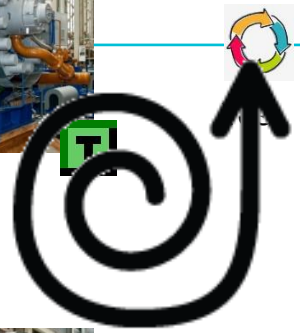
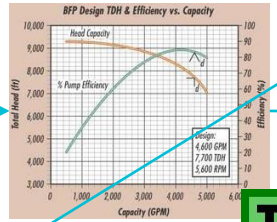
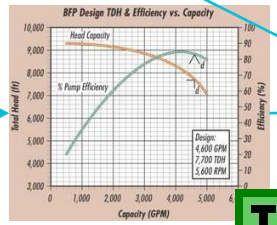
Use Case



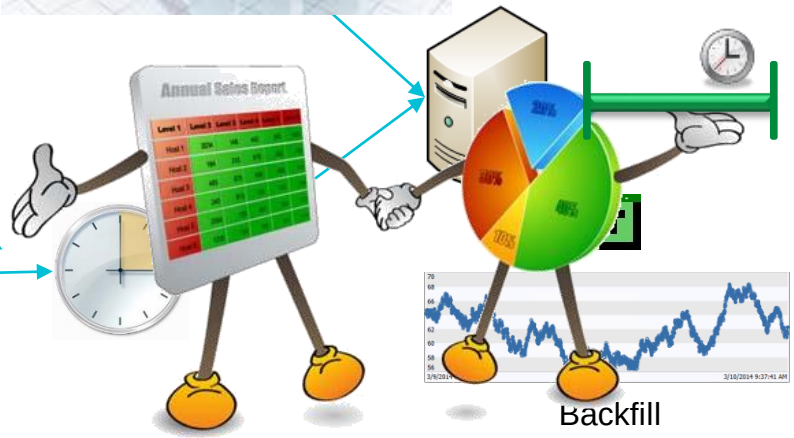


Calculations

Test



Calculations



Backfill

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DEMO

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Asset Based Analytics

- Easy – empower users to build their own calculations
- Reuse and standardize
  - Clarity and correctness
- Rollup and summarize
- Not just numbers, events too
- Performance and scalability

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Asset Based Analytics Timeline

- 300+ beta users

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consulting | technology | outsourcing
OSIsoft PI Server 2014 - Accenture
High performance. Delivered.

About Us

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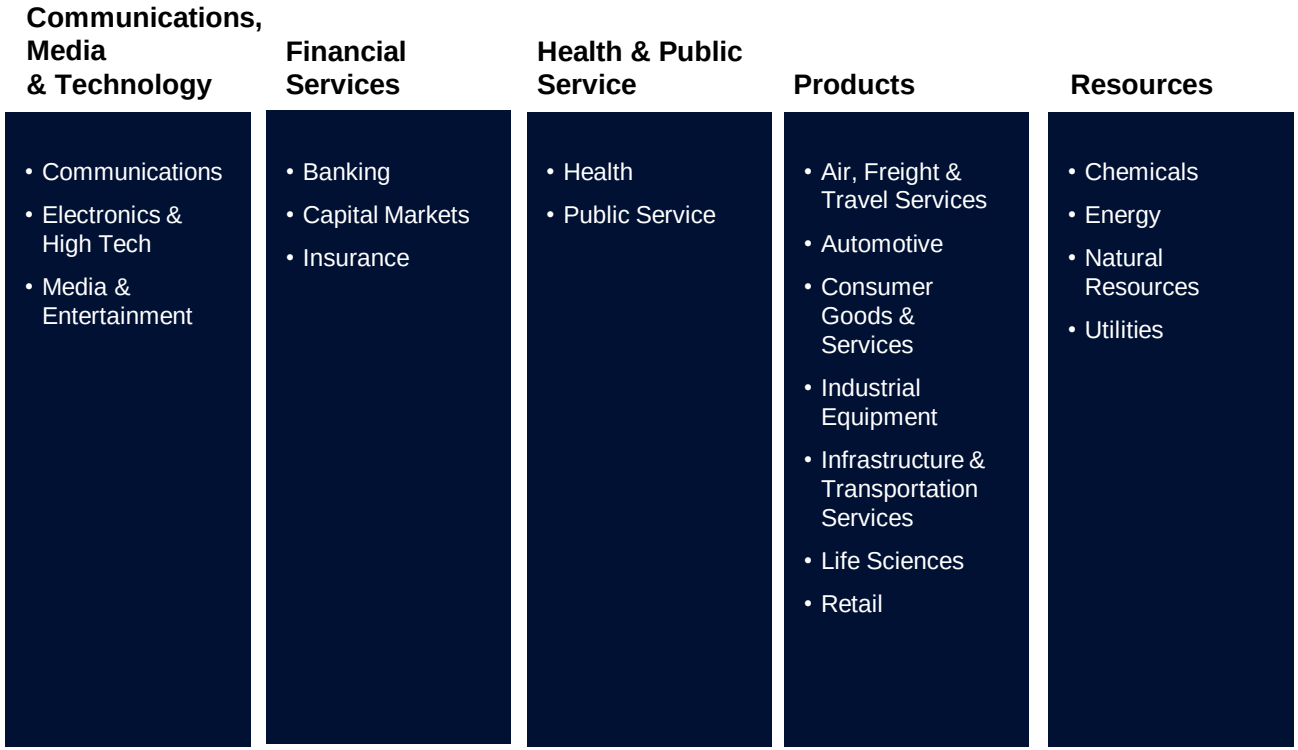
Accenture Global Organization



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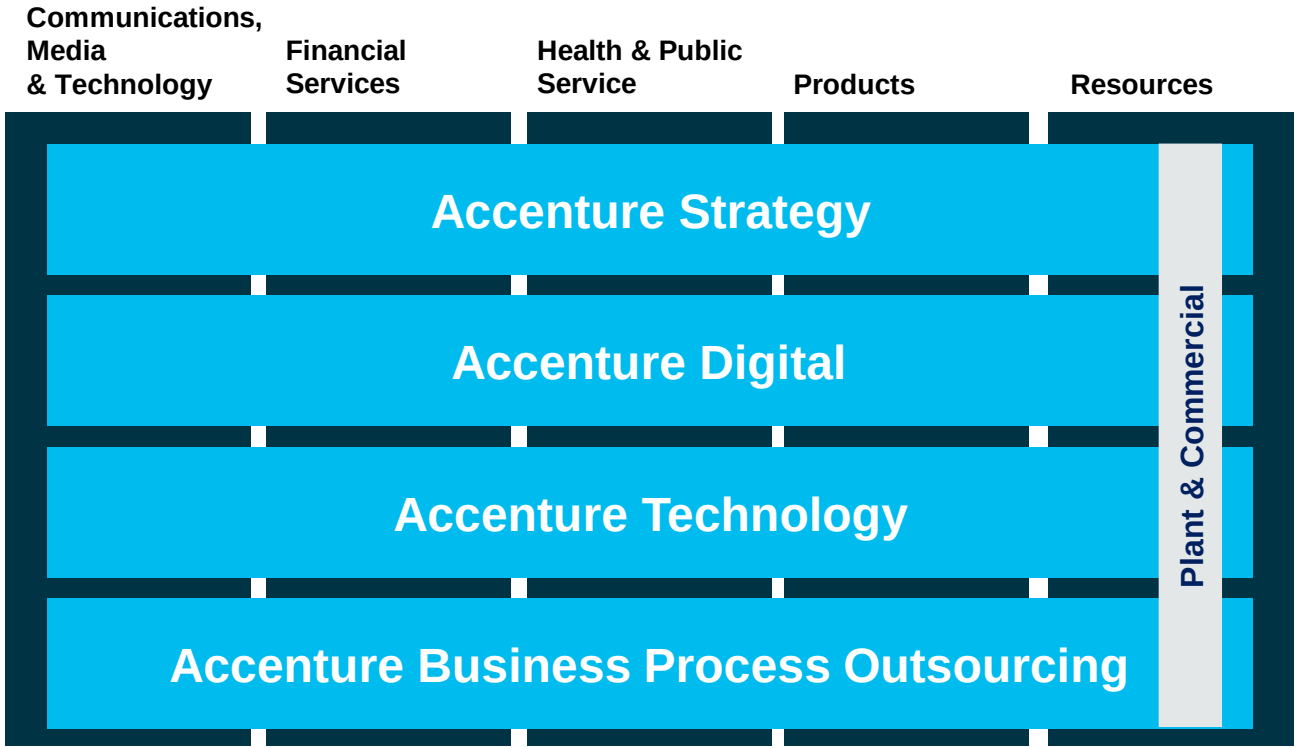
Accenture Business Services



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Accenture Plant and Commercial Services

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Why we asked to talk about PI System 2014.

- Asset Based Analytics is as exciting as the move from PI2 to PI3.
- Enabler for Asset Based Thinking.
- Asset Enrichment with Analyses.
- C.I.A. (Central Intelligent Assets).
- Looking under the hood.
- Extremely excited!

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Most anticipated release of software.

- Evolution of the PI Server from PI2 on VMS to multi-million PI Point servers with Windows Integrated Security.

Old problems: “I’m nearly at 1,000 PI Points, I better watch I don’t overload the PI Server.”

New problems: “I only have 750,000 PI Points (50,000 events/second), I’m under utilising the hardware, where can I get more data from?”

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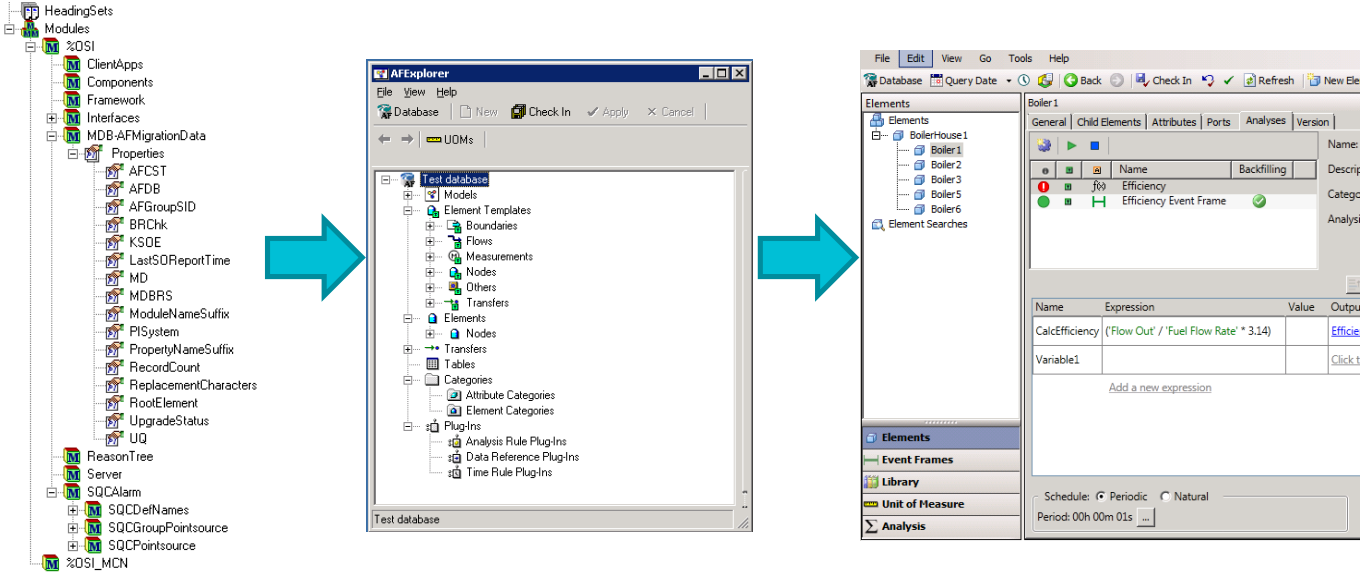
Most anticipated release of software.

- Evolution of the PI Module Database to AF Server 2014 – the initial struggle for client adoption.



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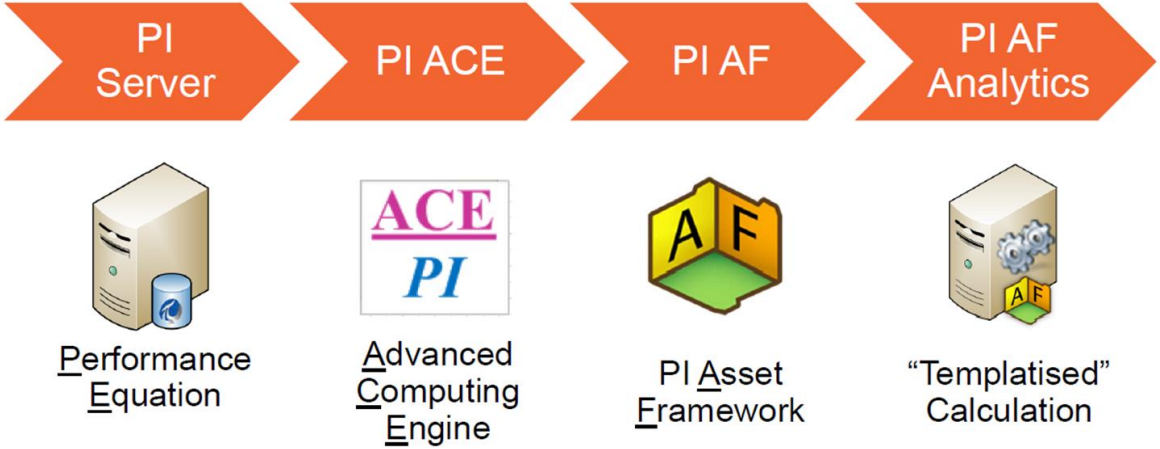
Most anticipated release of software.

- Evolution of the calculation platform from Performance Equations to Abacus via PI ACE & PI for StreamInsight.



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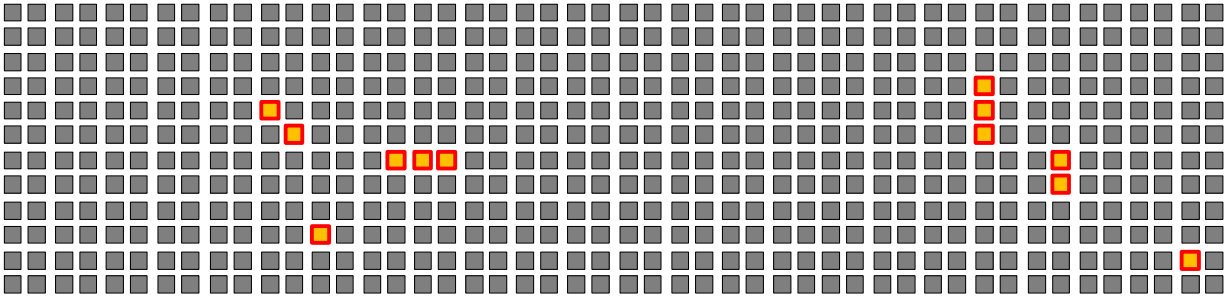
Think Assets instead of PI Points!

- PI Points are extremely good at what they do and for years have been the primary focus of users. Scale of PI Points is growing, consolidation of hardware is cost effective.
  - You have 10 million PI Points on your PI Server, how do you sift through quickly to find the PI Points for those 3 boilers that you're interested in right now?
  - How does an application naturally find those PI Points efficiently?



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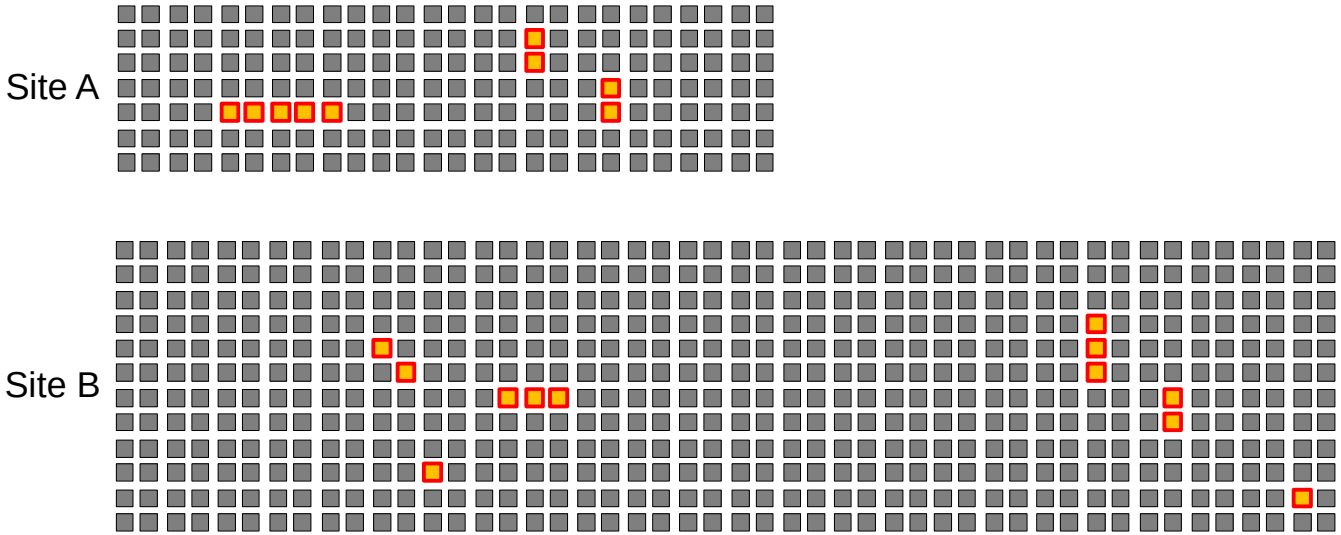
Think Assets instead of PI Points!

- Now let's say you've found those PI Points for the 3 boilers.
  - How can you quickly compare those 3 boilers with one of your other site's boilers? You suspect you're experiencing a similar issue that they've experienced.



accenture

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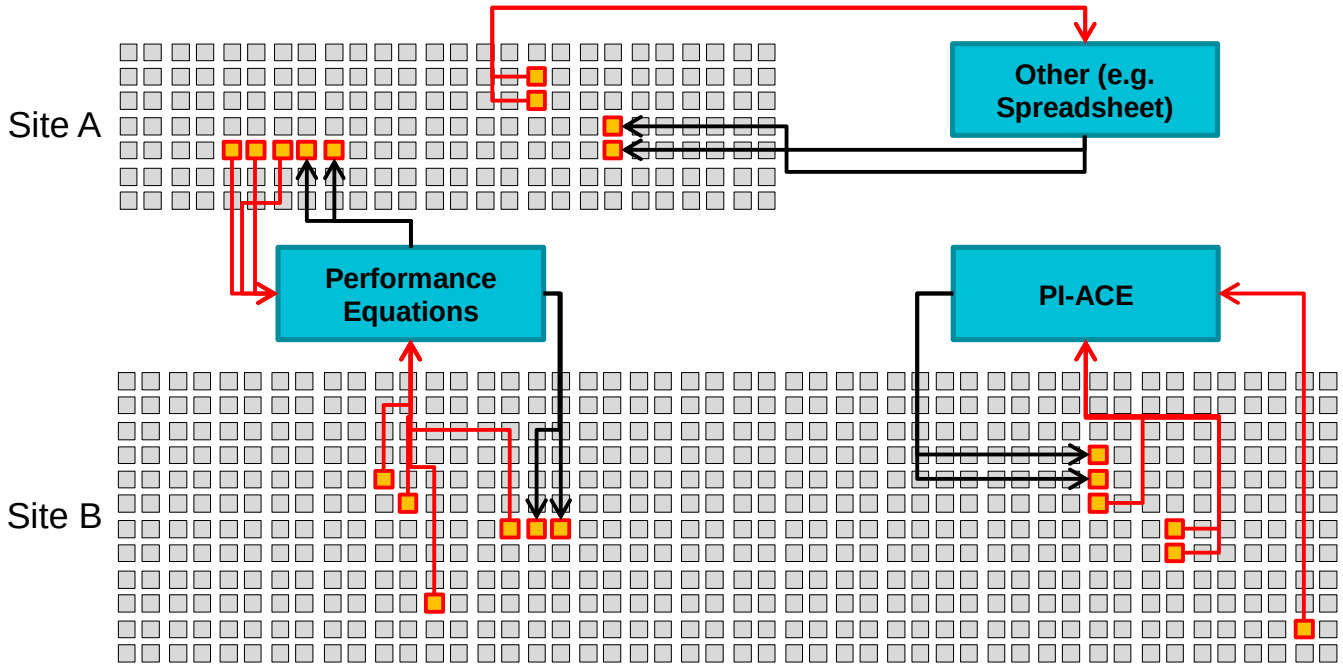
Think Assets instead of PI Points!

- How do you find out what calculations are running behind your Boiler Efficiency calculations? How do you ensure that they're all running the same calculations?



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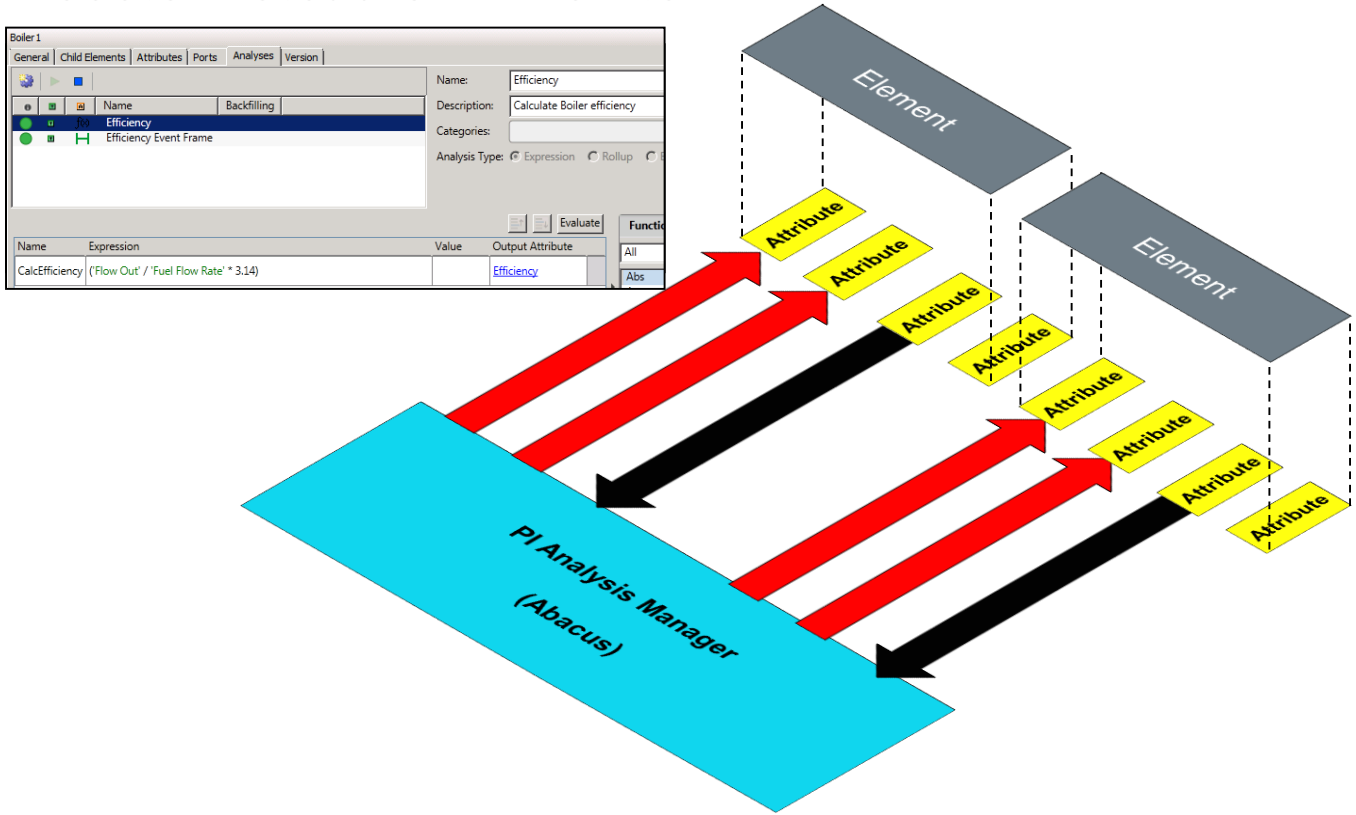
Think Assets instead of PI Points!



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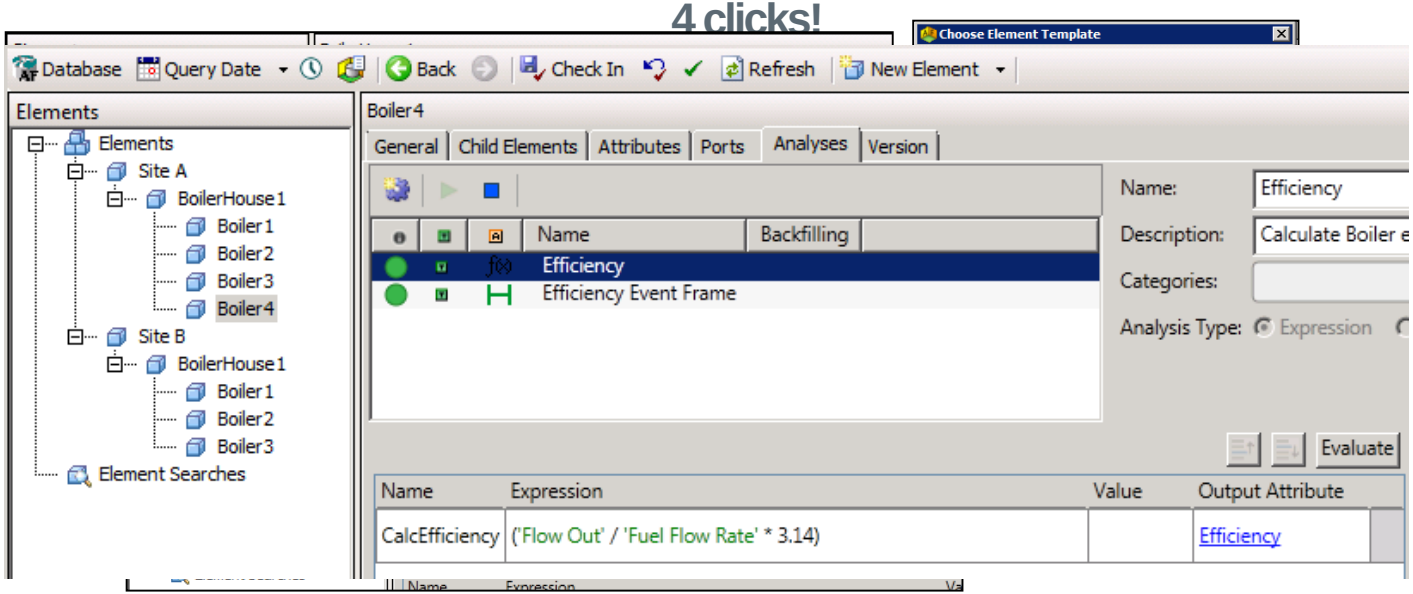
Centrally collect, manage and re-use collective intelligence

- Creating a new Element from a Template then that also creates the associated calculations **automatically** and **starts them calculating**! Extremely straightforward method to adhere to consistency and re-use of intelligence.



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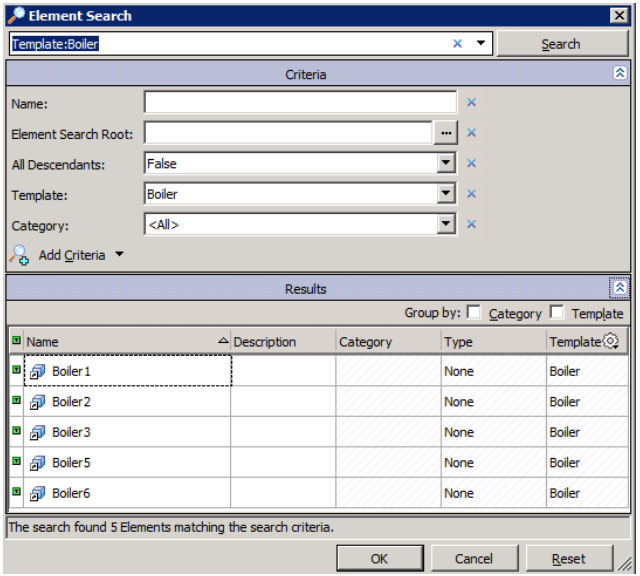
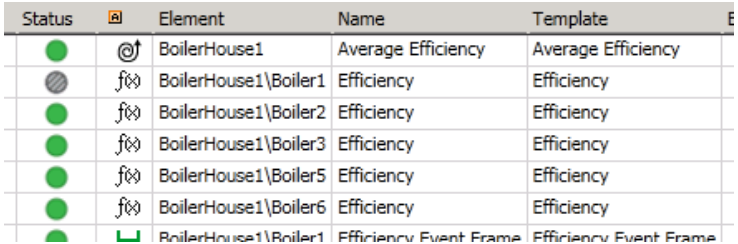
Think Assets instead of PI Points!





Set the root to the specific level of your organization's asset hierarchy that you want to search; entire organization, or a specific site within your organization.

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Natural integration, enriching your assets.

- Business users are now **empowered** in a single window with:
  - an asset hierarchy
  - a lookup directory for their process data
  - also **how some of their calculations are being performed**
- Business users are **empowered**, no longer do they need to:
  - have access to numerous calculation systems
  - request & wait for communication between various disciplines
- Business users can now:
  - **collaborate** freely on asset calculations
  - **compare and stimulate** thinking about assets across the enterprise

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Centrally collect, manage and re-use collective intelligence

- Intelligence is pooled centrally within the AF Server. All eyes are focused on this intelligence, it is **preserved and continuously improved upon.**

- No need to re-invent the wheel for calculations when using Template based approached; intelligence is **re-used and consistent** across your organisation.

algorithm

noun

Word used by programmers when they do not want to explain what they did.

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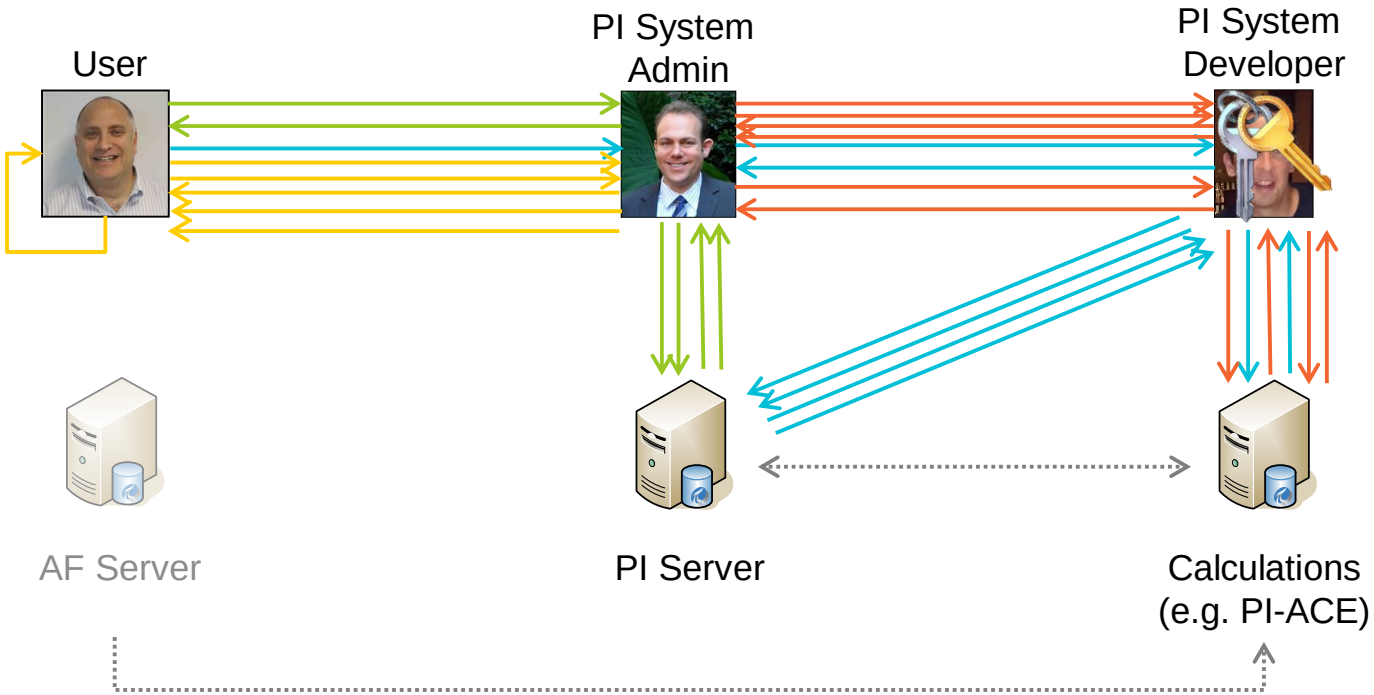
The overhead with IT involvement in calculations

- Meet Frank, Zev and Rhys. Frank needs a calculation algorithm.



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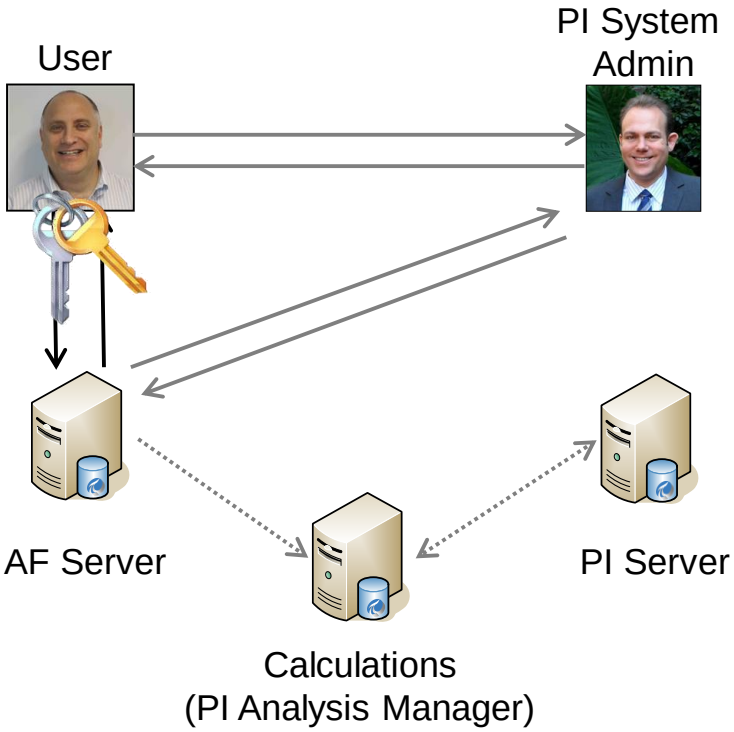
The overhead with IT involvement in calculations

- Frank and Zev now talk the same language. Rhys is somewhat obsolete.



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Relentless testing of Abacus

- An honest review.
- Boundaries - Accenture Digital Services Platform
- AF SDK – tools & scripts for migration
- Pre-releases – facilitated proof of concepts
- PI Server data archive – invisible!

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Relentless testing of Abacus – what we liked

- An honest review.

- PI System Explorer interface.
- Backfilling and Recalculation.
- Calculation scheduling – Periodic, natural (with multiple triggers).
- Analyses overview.
- Unit of Measure conversions.
- Natural AF integration.
- Prompt OSIsoft feedback.

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Relentless testing of Abacus –helping to improve

- An honest review.
- Inputs & Outputs within an Analysis.
- Time zones.
- Extensibility, custom functions.
- Output timestamps.

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Summary

- Think Assets, let underlying real-time infrastructure become invisible.
- Empower users of your PI Server with greater visibility of your process data's structure and analyses.
- Capture intelligence centrally and reuse throughout your organization.
- Be very excited about this and upcoming releases of the PI Server.
- Ask us anything! (Frank, Zev and I are all here for questions, or autographs.)
- Look forward to the future…speaking of which…

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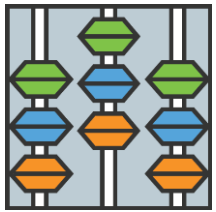
PI Server 2014 with Asset Based Analytics



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What else are we working on

- PI Data Archive 2012 SP1
- PI Buffer Subsystem
- Analytics – beyond configuration
- PI Notifications
- Future data

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…are we in the future yet?

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Name: **Stan** Prosowski
Role: **Sr. Plant Operator**

Name: **Kevin** Lee
Role: **PI System Administrator**

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senior plant operator,
o record and visualize forecast data with our PI System,
***now in real-time** how good is our actual production*
***nticipate** both **risks and opportunities**."*

system administrator,
uilt-in and flexible future data storage in our PI System,
*all data is **safe, secure, and highly available**,*
*ustom retention policies can be **easily implemented**."*

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DEMO

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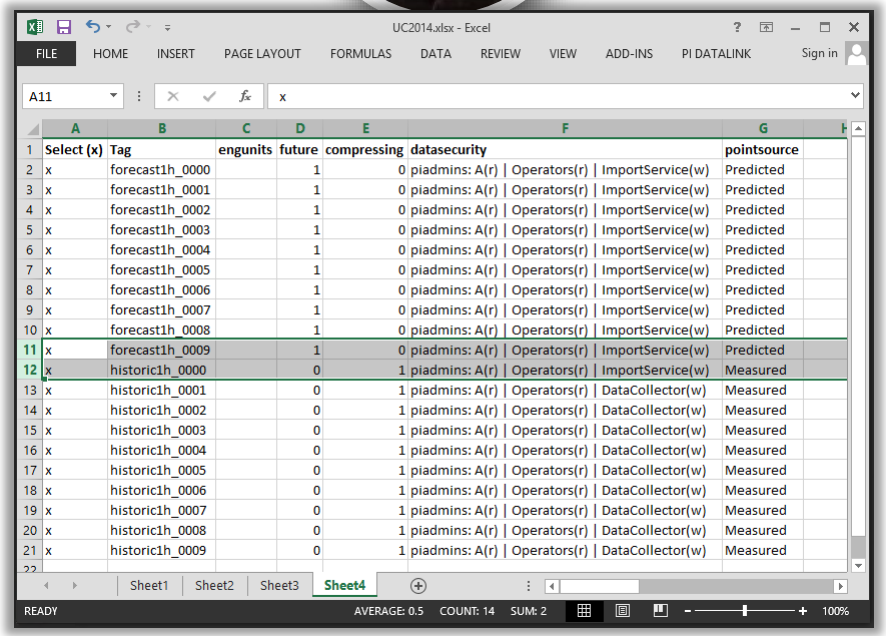

	A	B	C	D	E	F	G
1	Select (x)	Tag	engunits	future	compressing	datasecurity	pointsource
2	x	forecast1h_0000		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
3	x	forecast1h_0001		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
4	x	forecast1h_0002		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
5	x	forecast1h_0003		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
6	x	forecast1h_0004		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
7	x	forecast1h_0005		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
8	x	forecast1h_0006		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
9	x	forecast1h_0007		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
10	x	forecast1h_0008		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
11	x	forecast1h_0009		1	0	piadmins: A(r) | Operators(r) | ImportService(w)	Predicted
12	x	historic1h_0000		0	1	piadmins: A(r) | Operators(r) | ImportService(w)	Measured
13	x	historic1h_0001		0	1	piadmins: A(r) | Operators(r) | DataCollector(w)	Measured
14	x	historic1h_0002		0	1	piadmins: A(r) | Operators(r) | DataCollector(w)	Measured
15	x	historic1h_0003		0	1	piadmins: A(r) | Operators(r) | DataCollector(w)	Measured
16	x	historic1h_0004		0	1	piadmins: A(r) | Operators(r) | DataCollector(w)	Measured
17	x	historic1h_0005		0	1	piadmins: A(r) | Operators(r) | DataCollector(w)	Measured
18	x	historic1h_0006		0	1	piadmins: A(r) | Operators(r) | DataCollector(w)	Measured
19	x	historic1h_0007		0	1	piadmins: A(r) | Operators(r) | DataCollector(w)	Measured
20	x	historic1h_0008		0	1	piadmins: A(r) | Operators(r) | DataCollector(w)	Measured
21	x	historic1h_0009		0	1	piadmins: A(r) | Operators(r) | DataCollector(w)	Measured

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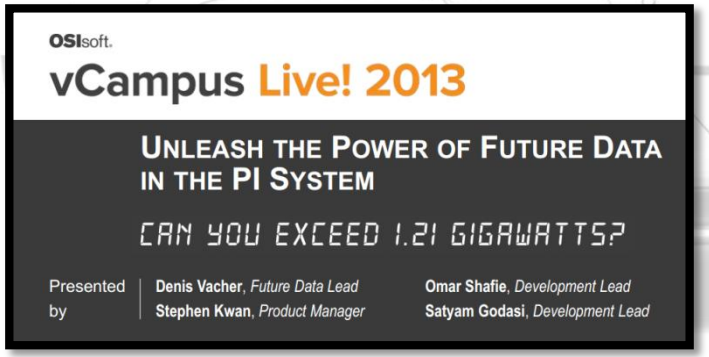
PI Data Archive 2014 R2 “DeLorean”

September 2013

⇨ Sneak peak, user validation



December 2013

⇨ Programming Hackathon

⇨ Demos & developer feedback

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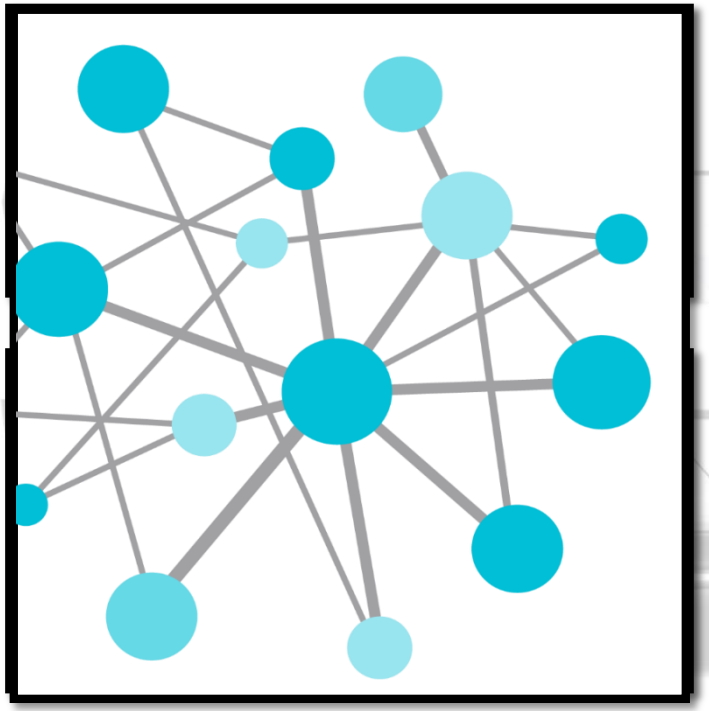
PI Data Archive 2014 R2 “DeLorean”



2014

- ⇨ Q2: vCampus CTP
  - storage preview
- ⇨ Q3: Beta Program
  - betapiserver@osisoft.com
- ⇨ Release

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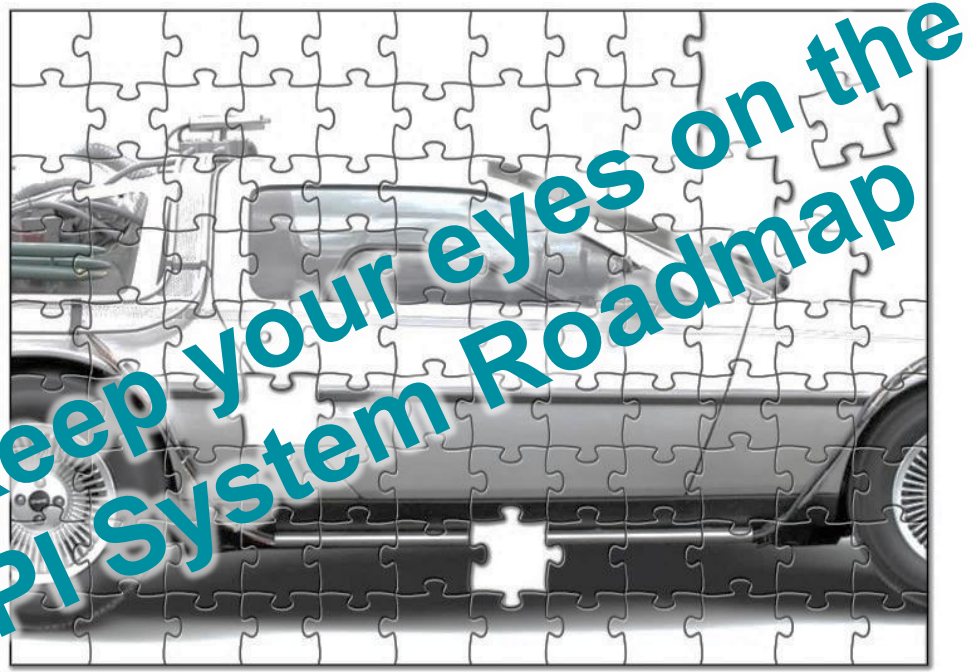
System-Wide Future Data

- PI Interfaces/Connectors
  - Data In
- PI Server
  - AF and Analytics
- Programmatic Access
  - PI AF SDK, Web API, …
- Clients
  - PI DataLink, PI Coresight, …



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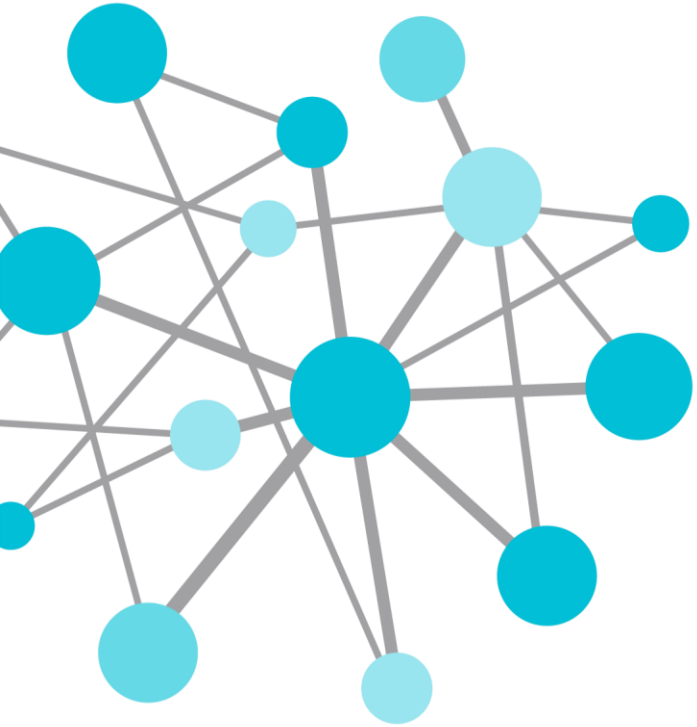

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