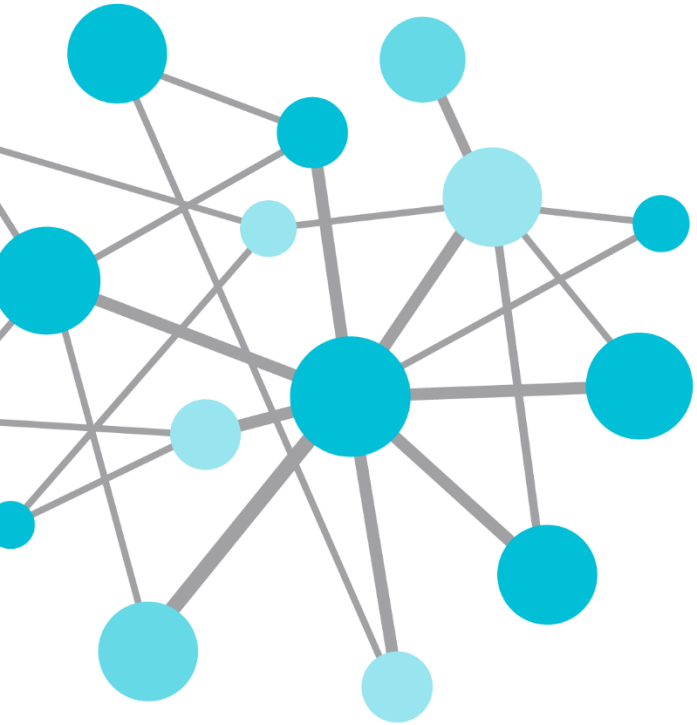

Advance Your Investment in the PI Infrastructure – PI Server 2014

Presented by **Yves Gauthier, Senior Systems Engineer**

Stephen Kwan, Product Manager

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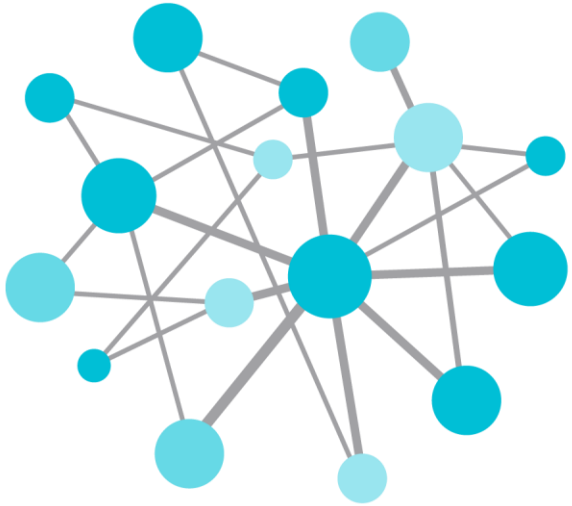

OSIsoft.

USERS CONFERENCE 2014

The Power of Data

E M E A

DECISION READY IN REAL-TIME

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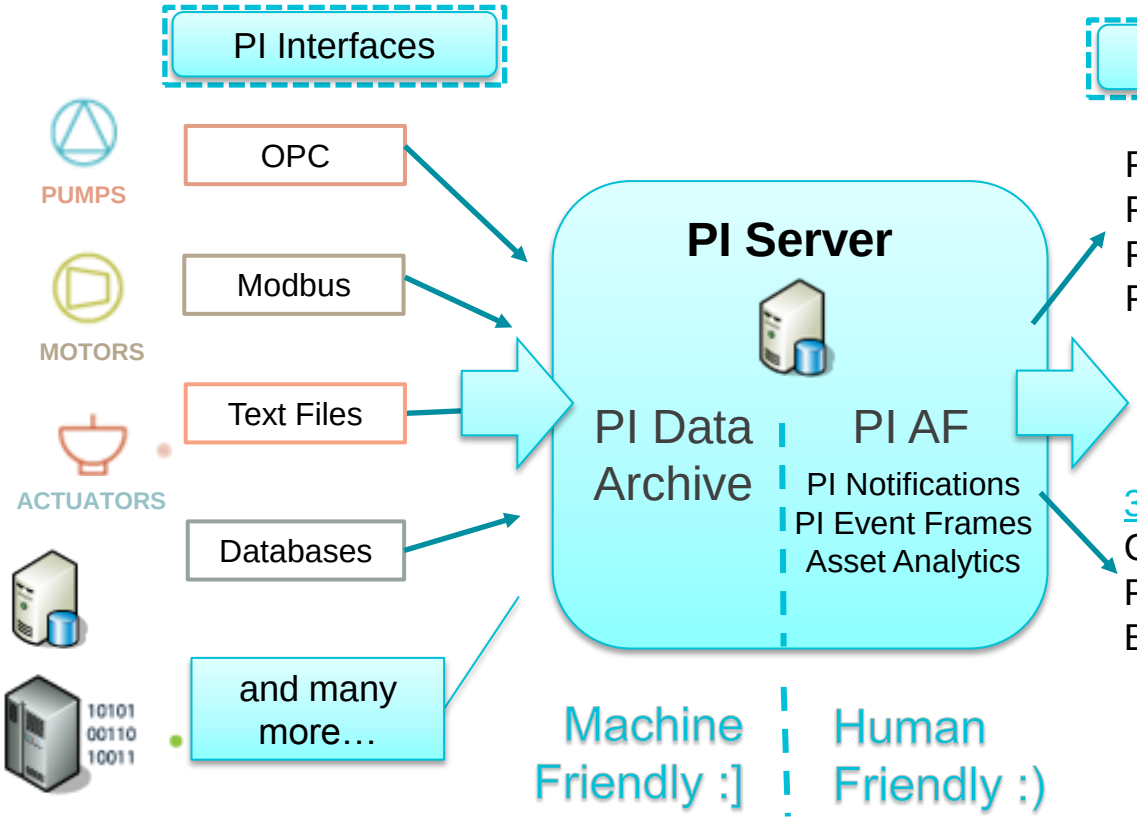
What is part of our Infrastructure…



'The pump is down - what's happening?'

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What's included in PI Server 2014

- **Time Series Data Storage**
  - PI Data Archive
- **Contextual, Organize and Find**
  - PI Asset Framework (PI AF)

- **Mark Important Events**
  - PI Event Frames
- **Notify Based on Conditions**
  - PI Notifications

- **Analytics and Event Generation**
  - Asset Based Analytics
  - PI Advanced Computing Engine (ACE)
  - PI Performance Equations
  - PI Totalizers

- **System Management**
  - PI System Management Tool
  - PI Interfaces for System Management

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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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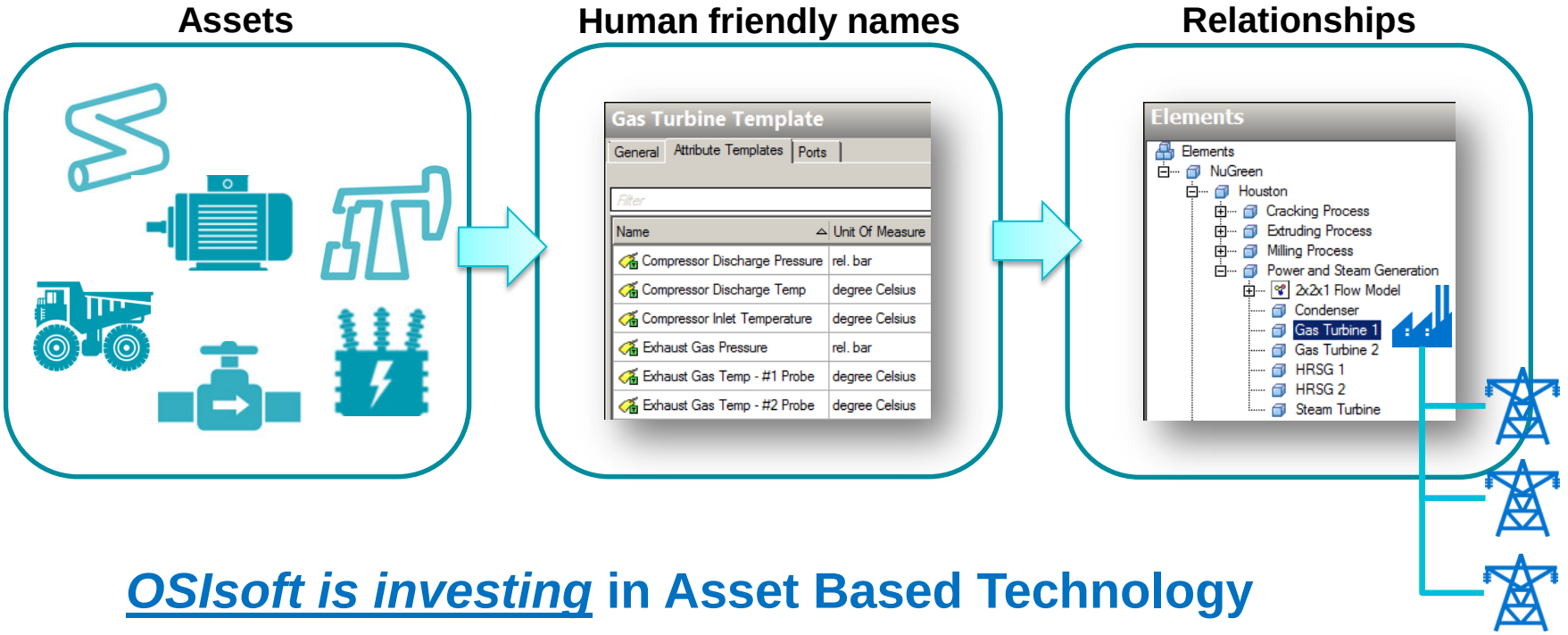
Benefits of an Asset Based Approach



OSIsoft is investing **in Asset Based Technology**

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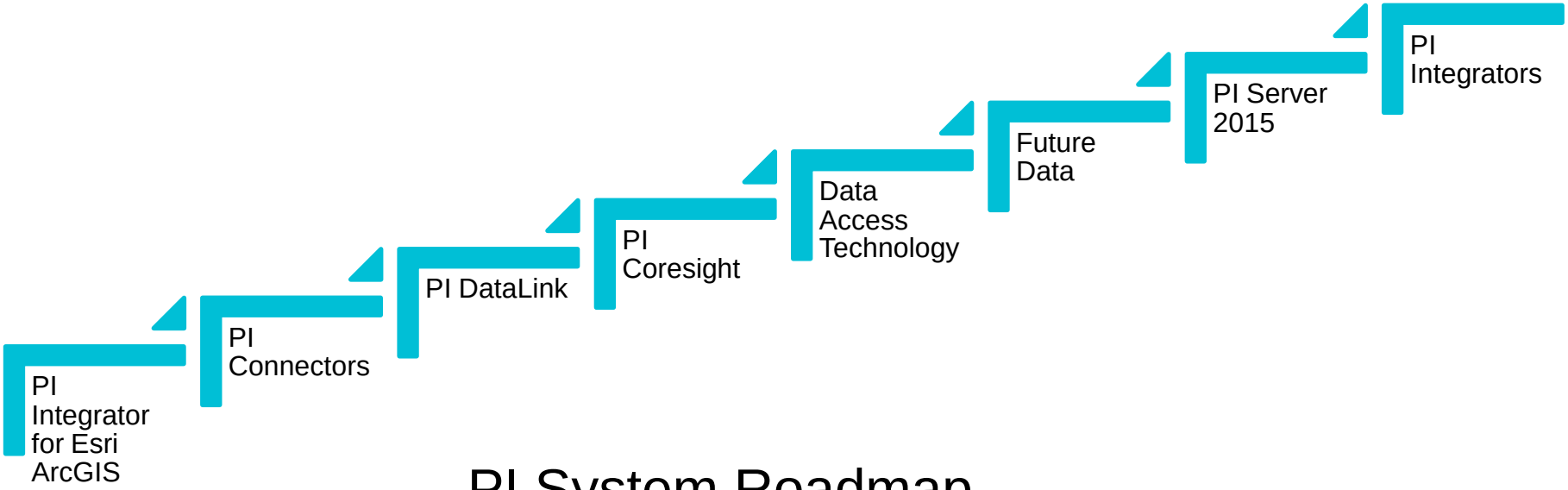
Future OSIsoft Technologies are Assets Based



PI System Roadmap

https://techsupport.osisoft.com/Products/Product-Roadmap

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New in PI Server 2014

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Performance

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

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Performance - Bulk Calls

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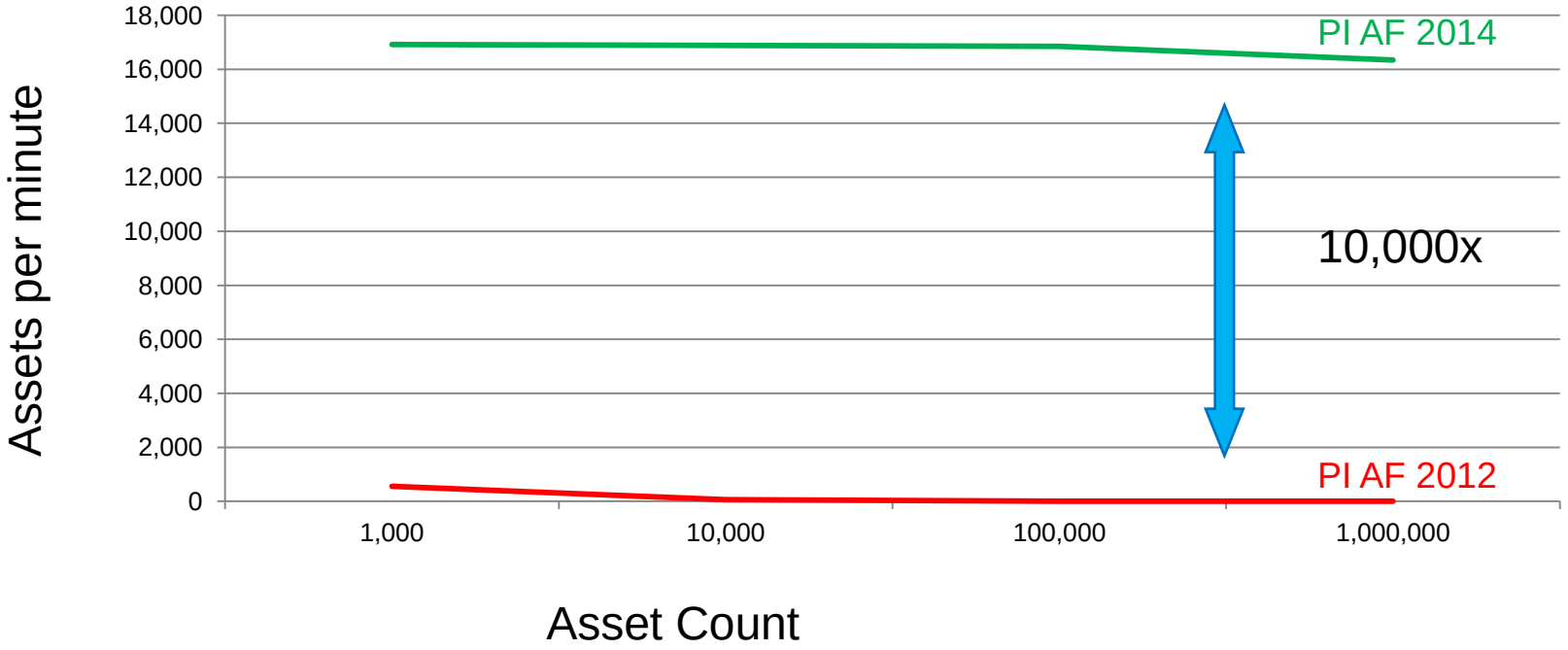
Performance - Fast Searches



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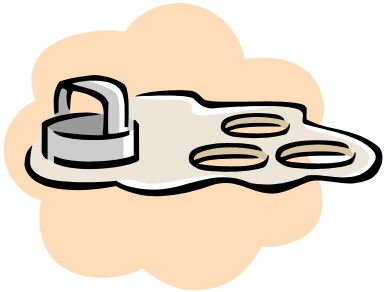
Extensibility

- **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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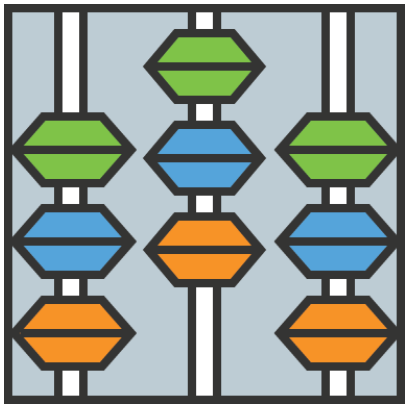
Asset Based Analytics



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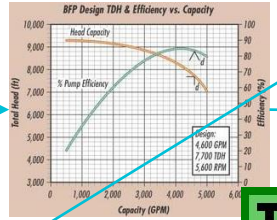
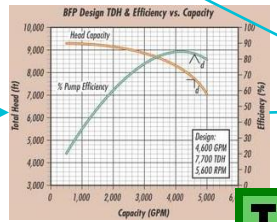
Usage Scenario

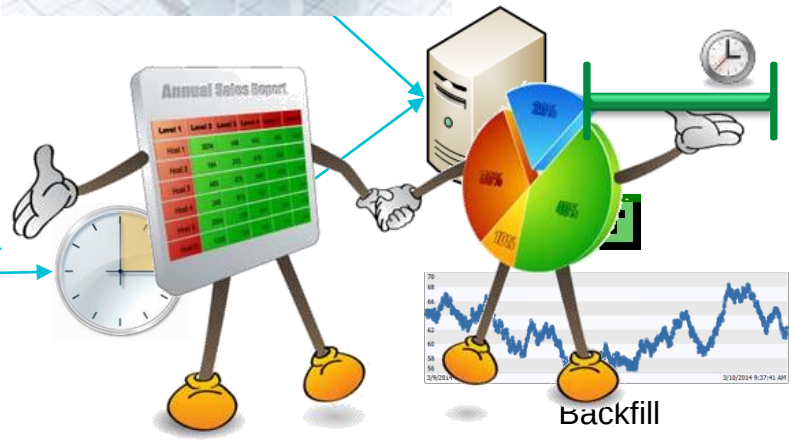


Calculations

Test



Calculations



Backfill

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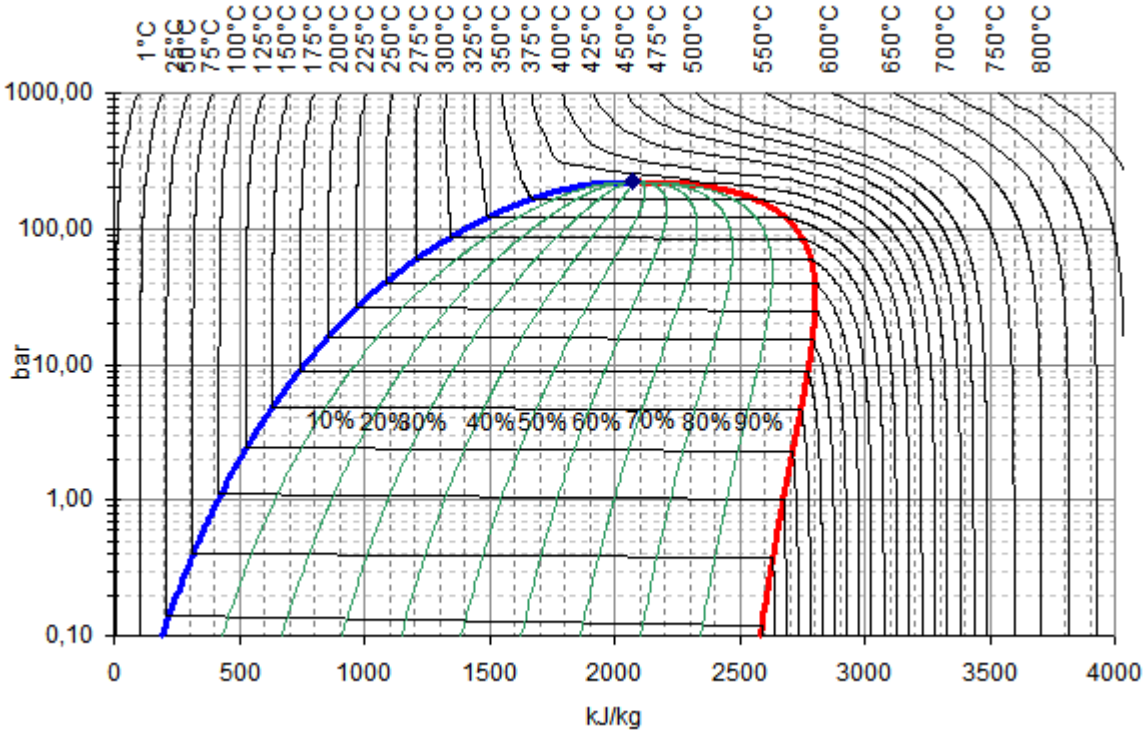
Steam Tables – IAPWS-IF97



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DEMO

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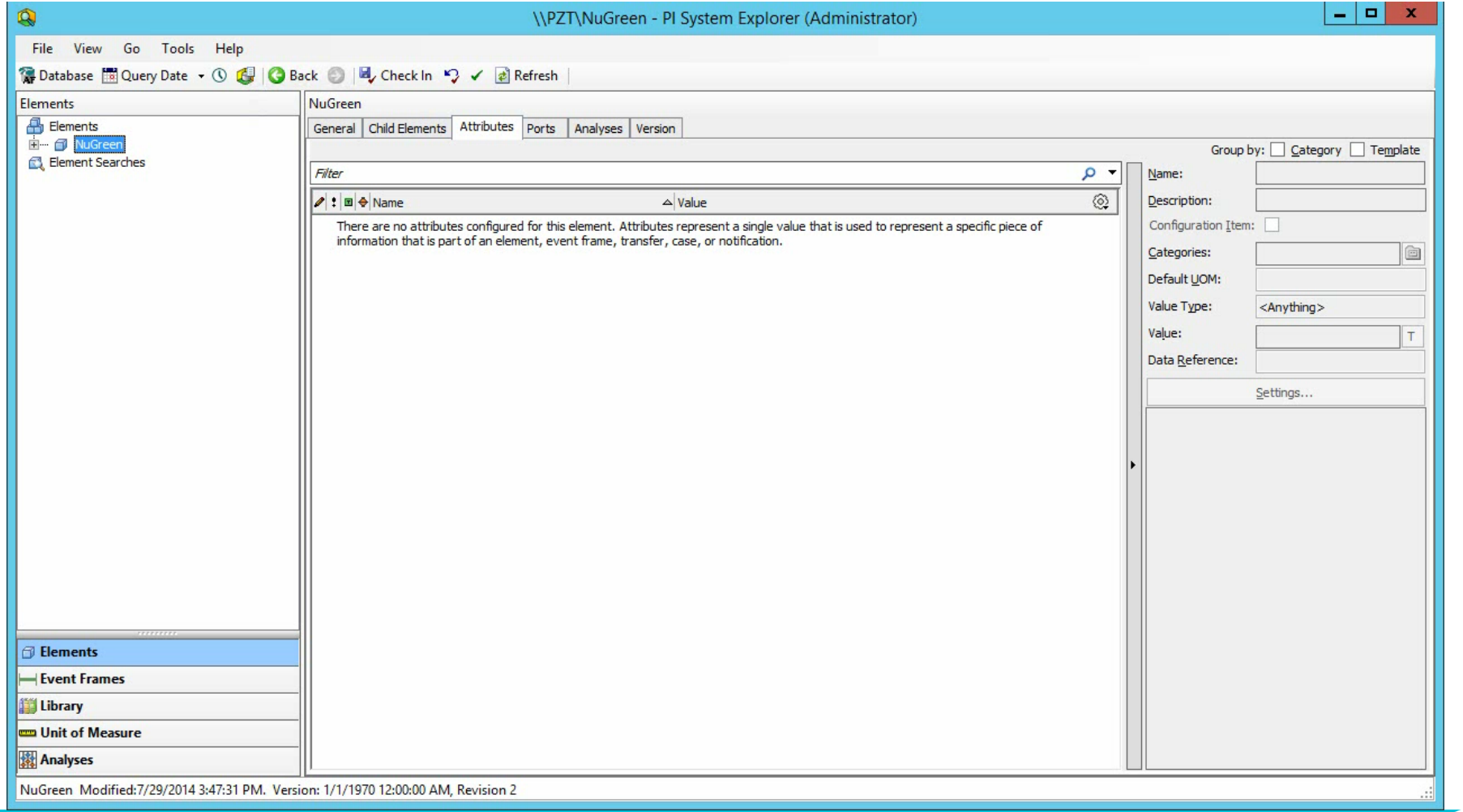

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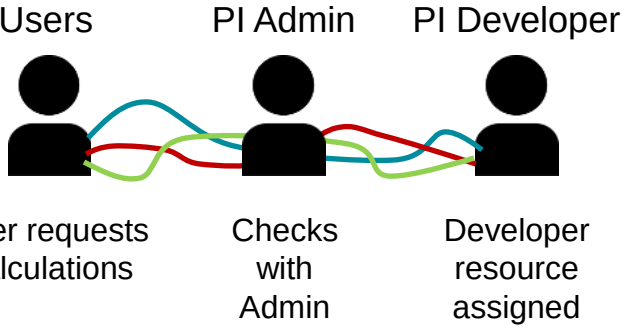
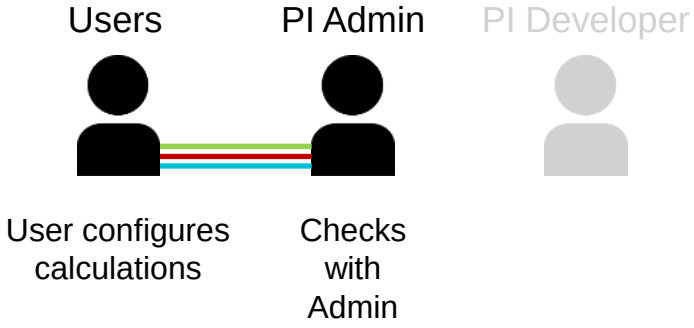
Asset Based Analytics: Self-Service Analytics

Before



- Slows down time to value
- Numerous interactions, creates complexities

After



- Configure, test and validate – immediate feedback
- Build new assets – templates ensure same calculations in all instances

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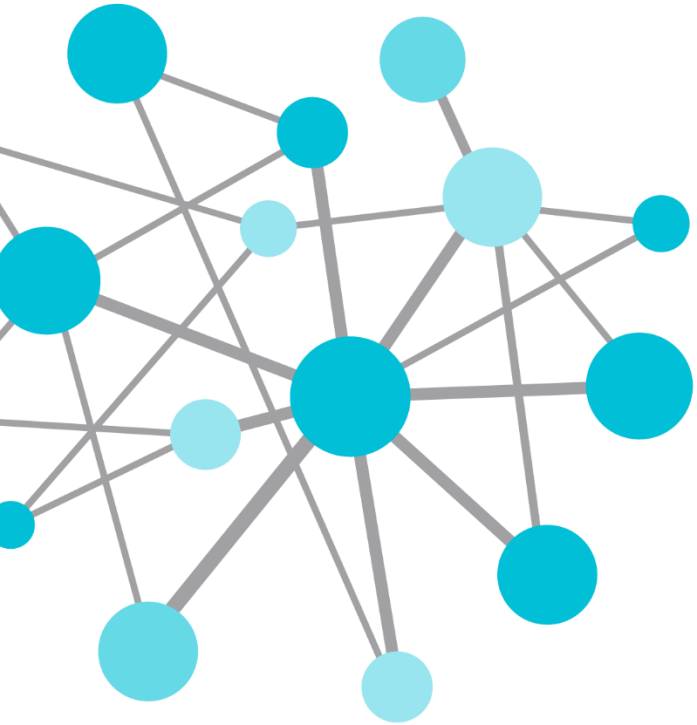

PI Server 2014
Calculations and Analytics

Asset Based Analytics at Veolia Water

- Quentin Martouzet
- Mahyar Sepehr

Ysance VEOLIA WATER

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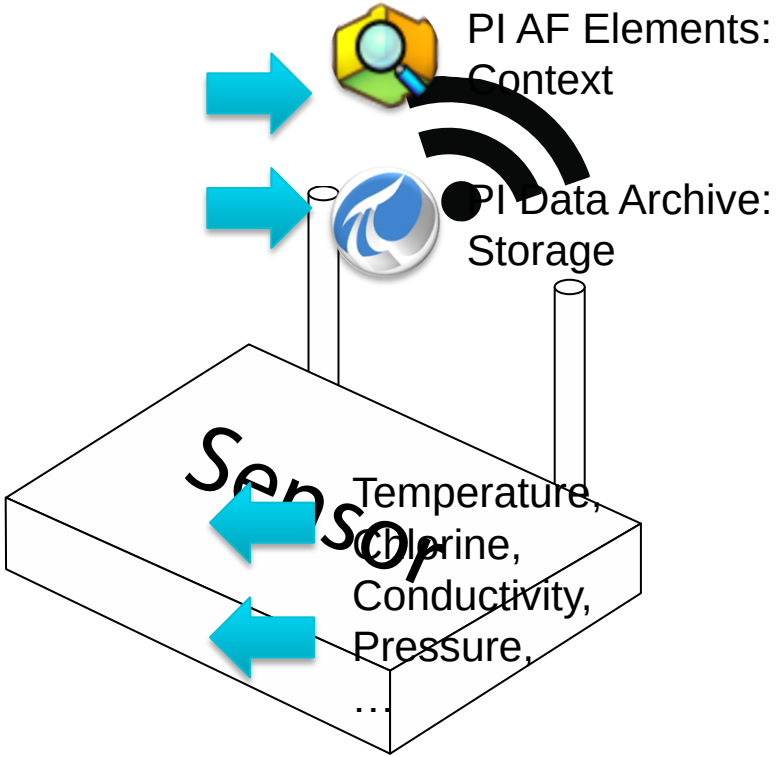
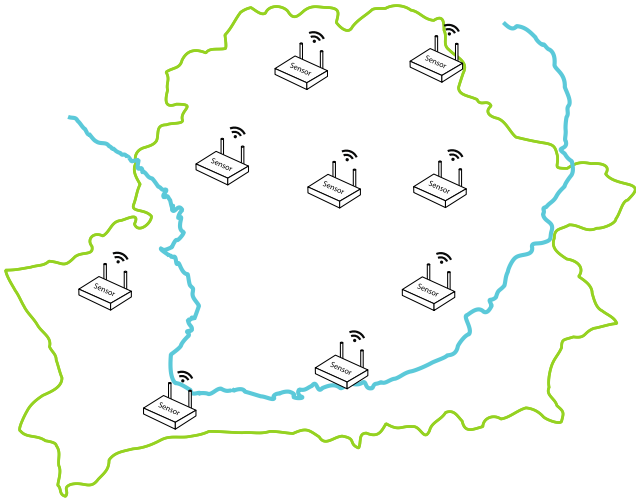
Introducing Sensors in a Zone



A Geographic Zone with a set of Sensors



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Use Case #1

Aggregations on a set of sensors

- Sensors in the water network send data to our PI System
- Each sensor belongs to a geographic zone
- We need to calculate aggregations on every zone

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Use Case #1

Aggregations on a set of sensors

What solutions are available…

… before ?

PI Totalizer, PI Performance Equations, PI ACE...

… Now !

PI Analytics Roll-Up

- Integrated with PI Asset Framework
- Templated
- Easy to back fill data through large durations

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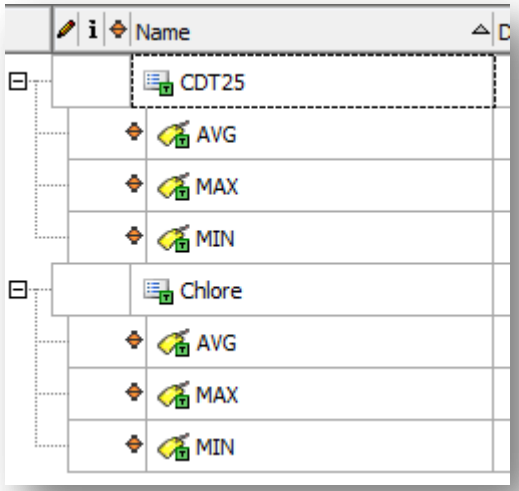
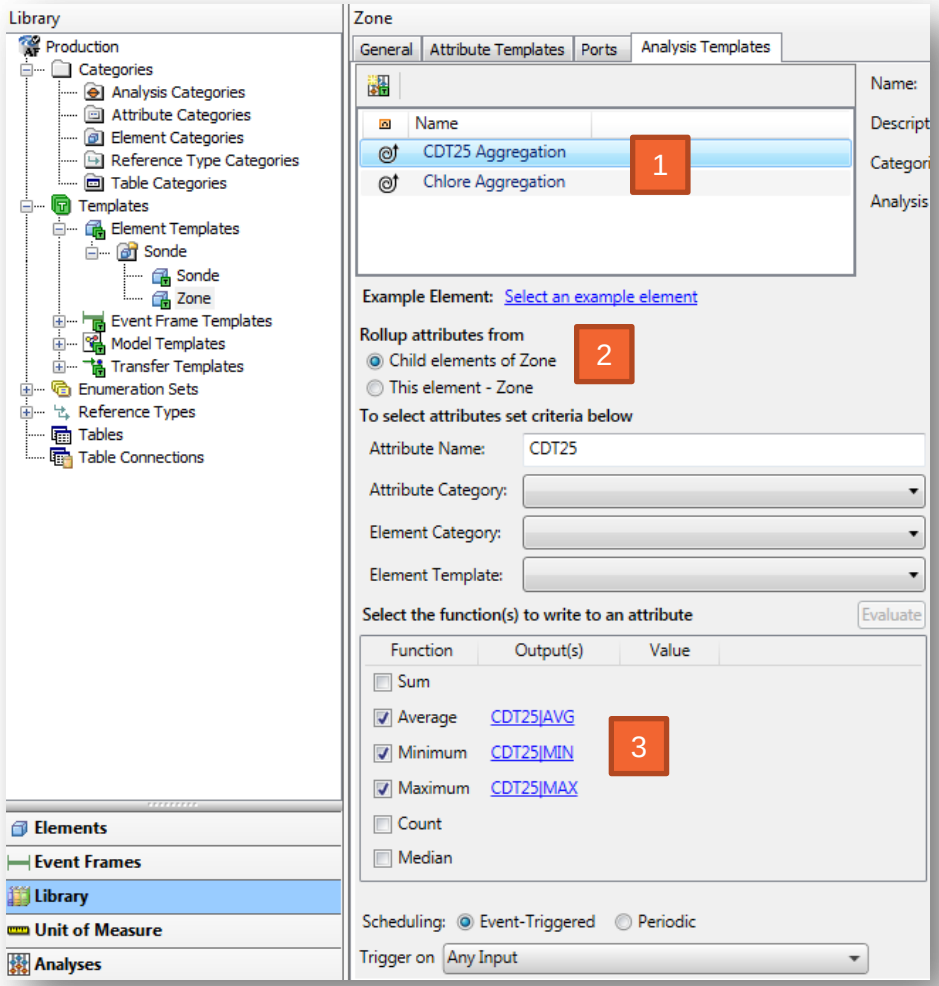
Use Case #1

Aggregations

PI AF Template for Zones : Aggregation rules



PI AF Template for Sensors : PI AF Attributes



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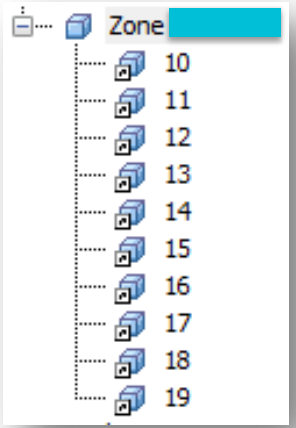
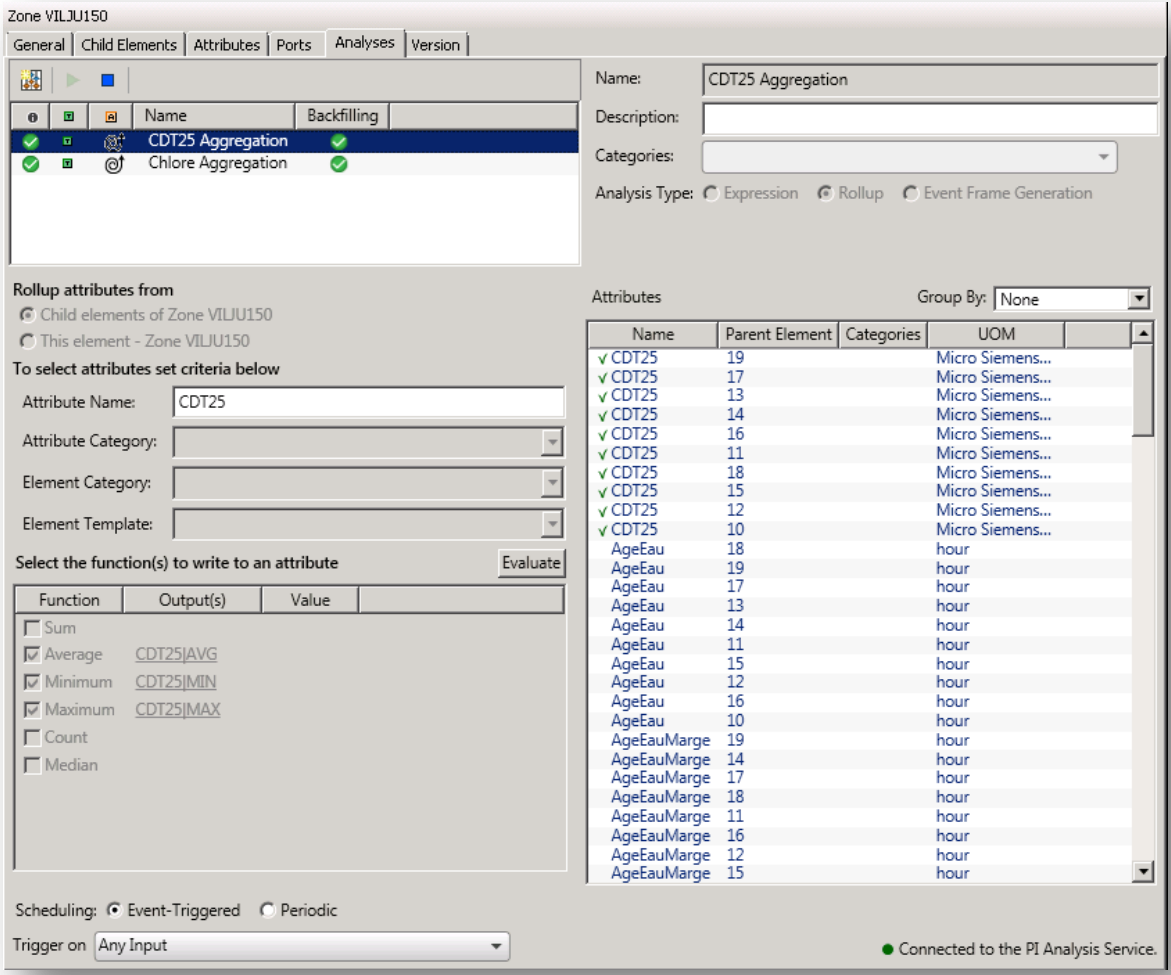
Use Case #1

Aggregations

Associating a sensor to a zone



PI AF Elements Hierarchy



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Use Case #2

Water Services Monitoring

Alert on threshold (for chlorine, conductivity…)

It has a start.

It has an end.

It represents and spots a significant phase in the business process.

This really looks like a job for …

PI Event Frames !

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Use Case #2

Water Services Monitoring

How can you build new PI Event Frames…

… before ?

PI Event Frames Generator, PI ACE, PI AF SDK…

… Now !

Asset Based Analytics

- No custom development
- Preview the result before actually back filling data.

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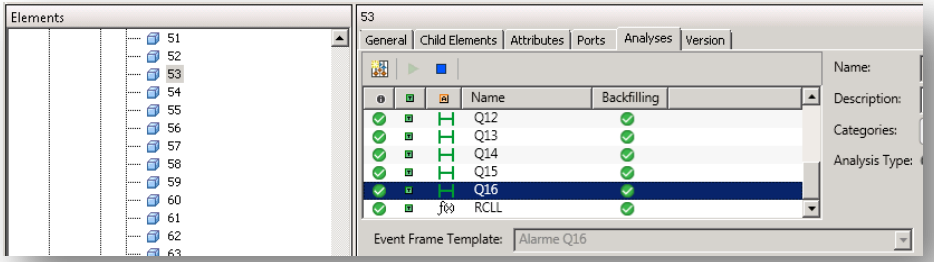
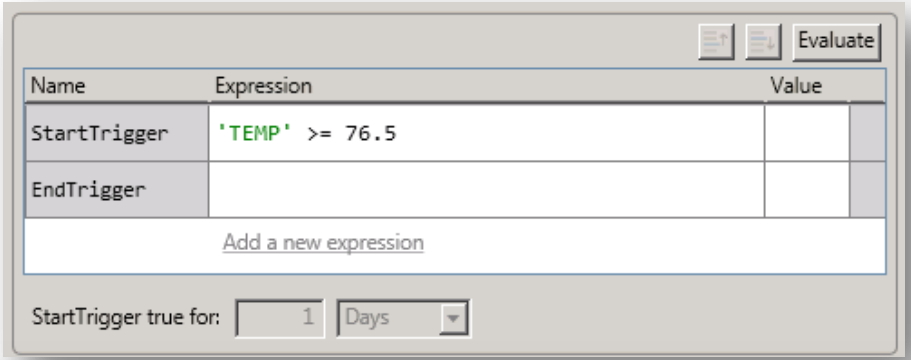
Use Case #2

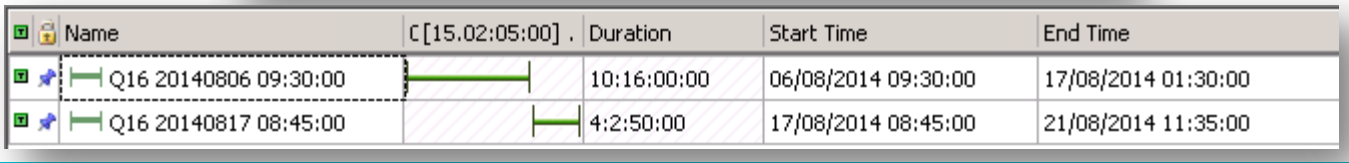
Water Services Monitoring

Simple alert :

- Simple threshold.
- Raise alert if exceeded for more than a day.







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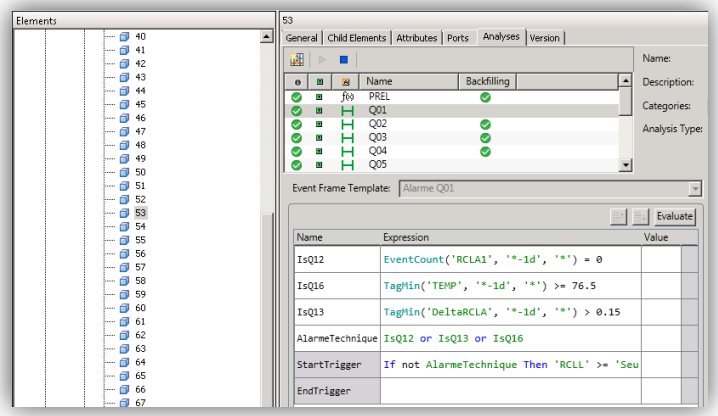
Use Case #2

Water Services Monitoring

Complex alert :

- Simple Threshold.
- Alert should not be sent if any sensor are out of order.



Name	Expression	Value
IsQ12	`EventCount('RCLA1', '*-1d', '*') = 0`	
IsQ16	`TagMin('TEMP', '*-1d', '*') >= 76.5`	
IsQ13	`TagMin('DeltaRCLA', '*-1d', '*') > 0.15`	
AlarmeTechnique	`IsQ12 or IsQ13 or IsQ16`	
StartTrigger	`If not AlarmeTechnique Then 'RCLL' >= 'Seuils|RCLL - Haut' Else False`	
EndTrigger		

Add a new expression

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Use Case #2

Water Services Monitoring

Raw Data
(PI Data Archive)

Calculation & Analytics
(PI AF Asset Based Analytics)

Logging
(PI Event Frames)

Monitoring
(Zabbix)

PROBLÈMES DE GROUPE DE CAPTEURS [12:00:30] **Groupe:** [redacted]

Capteur	Problème	Heure	Age	Info	Acquitté	Actions
119 [redacted]	Pression Relative - Seuil Bas	15 Juil 2014 01:35:00	10h		Non	
66 [redacted]	Perte de données	14 Juil 2014 18:05:00	17h		Non	
72 [redacted]	Chlore Libre - Seuil Bas	14 Juil 2014 04:50:00	7h		Non	
87 [redacted]	Perte de données	07 Juil 2014 17:45:00	18h		Non	
51 [redacted]	Perte de données	17 Juin 2014 12:55:00	23h		Non	

5 problèmes sur 5 sont affichés

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Next steps ?

- Refactoring all our previous analysis

- Generalize our PI Event Frames based monitoring to other calculations:
  - Power consumption
  - Pressure

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Any benefits ?

- ✓ Easy to maintain by administrator
- ✓ Helps to communicate with functional teams
- ✓ A pleasure to implement *(or to refactor existing rules…)*

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Asset Analytics in PI Server 2014

- Easy – empower users to transform process knowledge into new data streams
- Reuse and standardize
  - Clarity and correctness
- PI Performance Equations expressions
- Rollup and summarize
- Mark important events
- Pre-calculate for fast retrieval
- Performance and scalability

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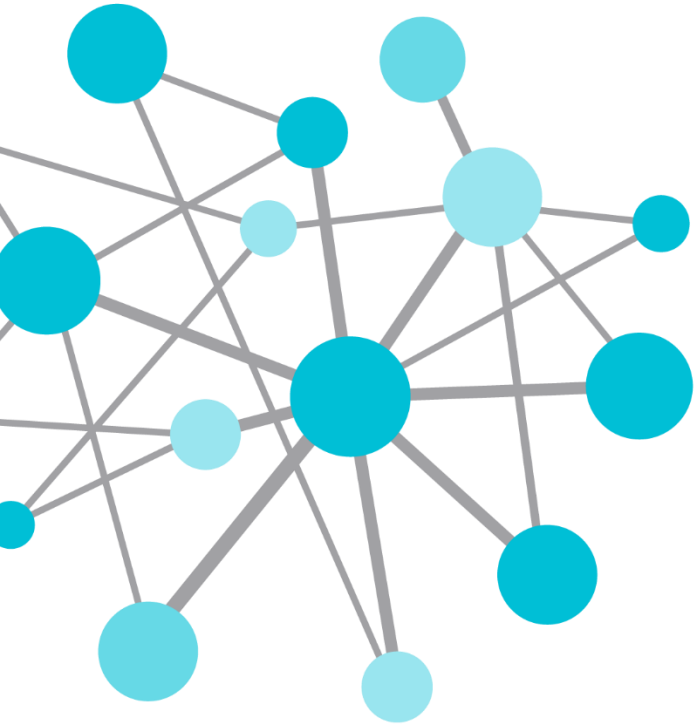

PI Server Roadmap

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What else are we working on

- PI Data Archive 2012 SP1
- PI Analytics – beyond configuration
- PI Notifications
- Future data
- Batch to event frame migration

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Why Future Data?

1. Expected
2. Strategic
3. Fundamental

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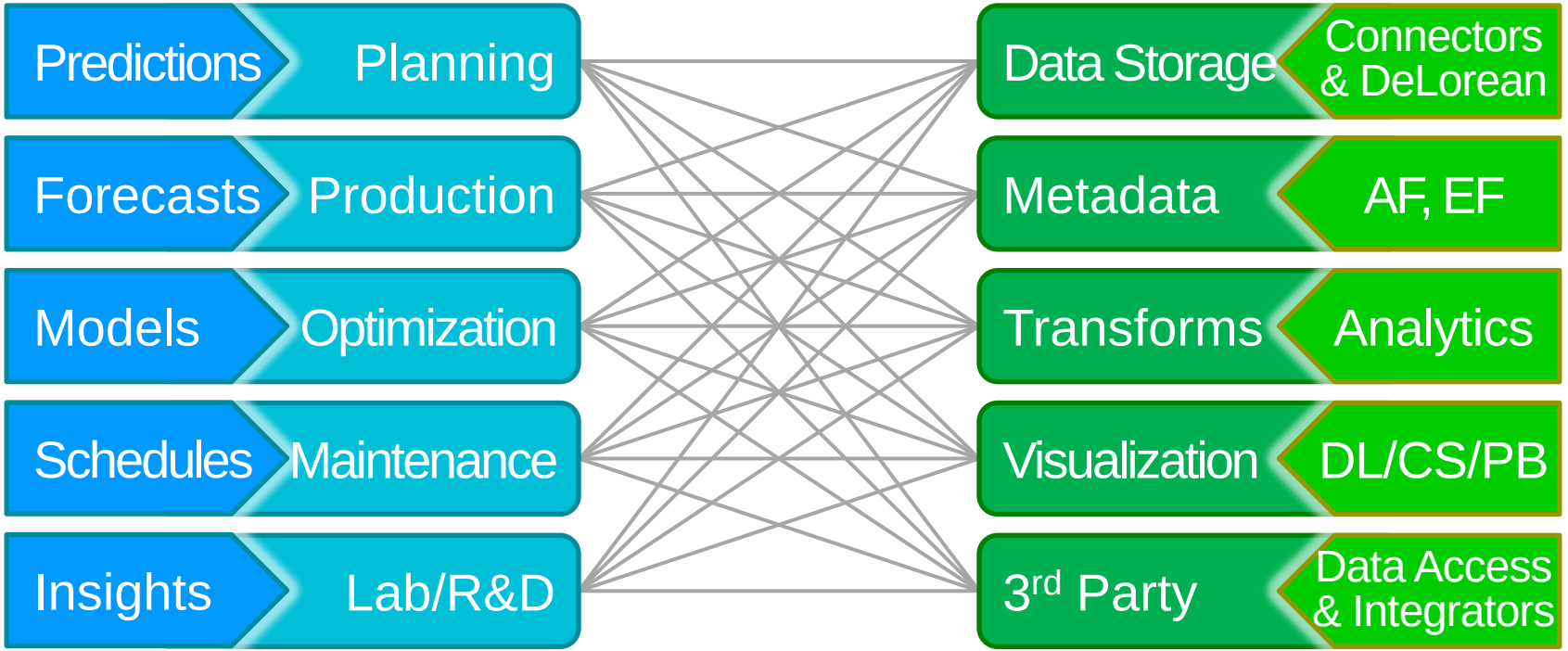
PI System with Future Data



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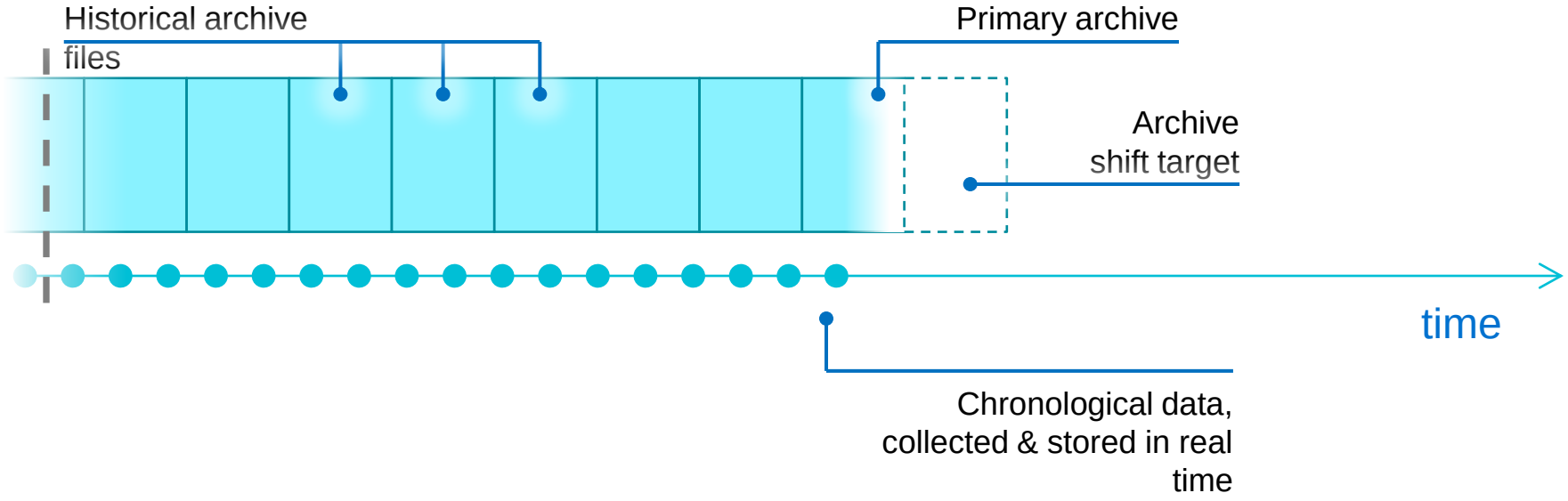
Storing “Historical” Data…



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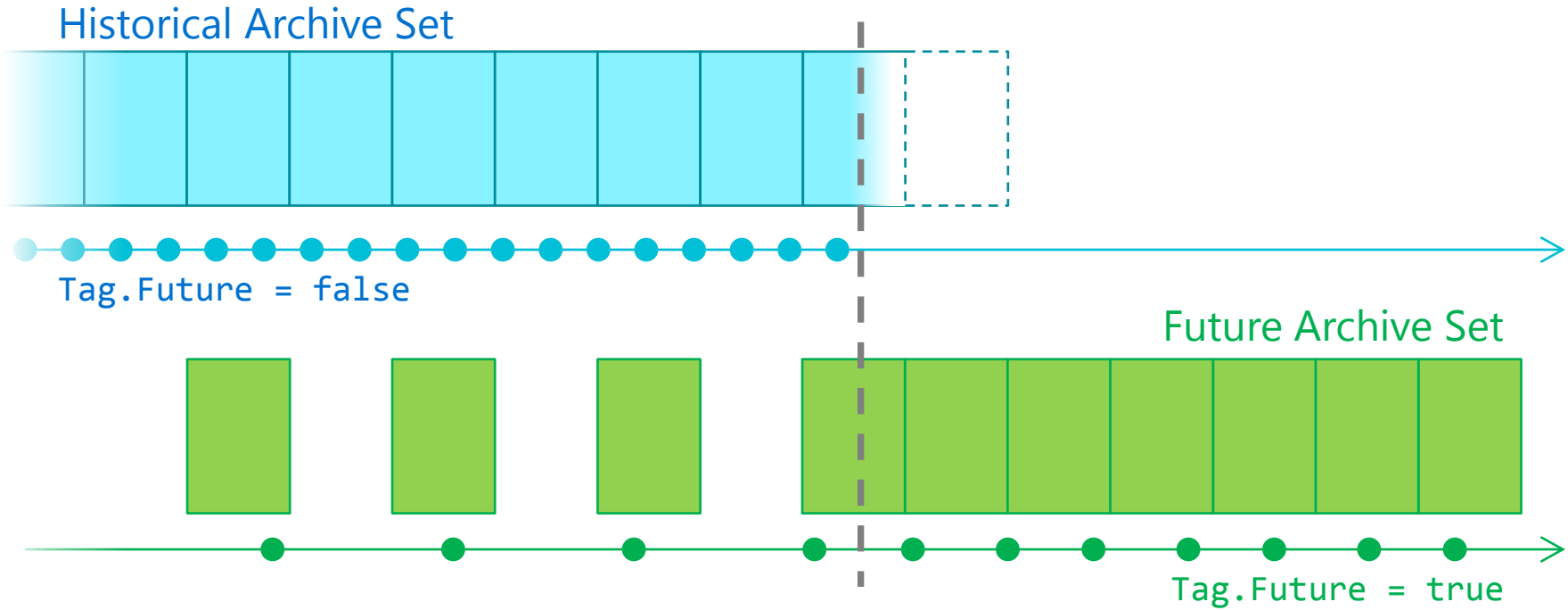
…And Storing “Future” Data



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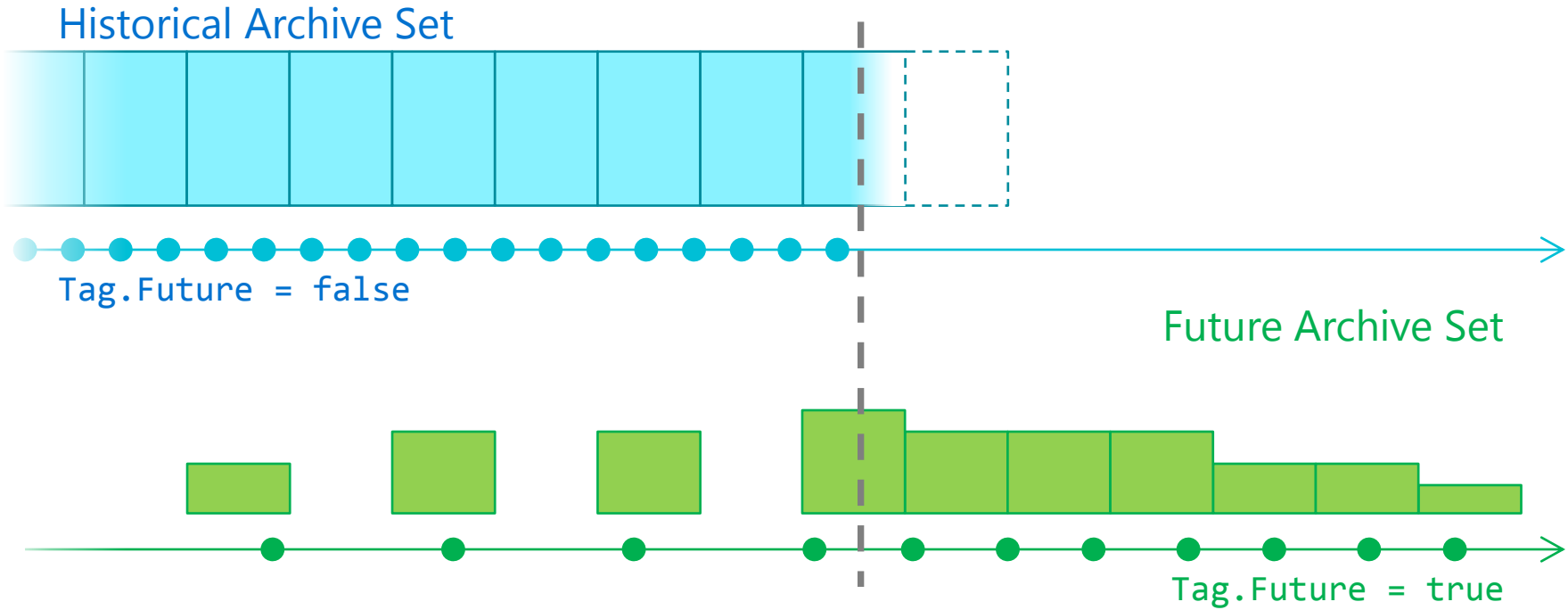
…And Storing “Future” Data



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PI Server 2015: Key Benefits

Flexible Data Mgmt,
Reliability & Scalability

Distinct Storage

Accurate, Timely,
Scalable Data Access

New Updates

Zero Configuration,
Easy Monitoring

File Management

Low Adoption Cost,
No Deployment Risks

Compatibility

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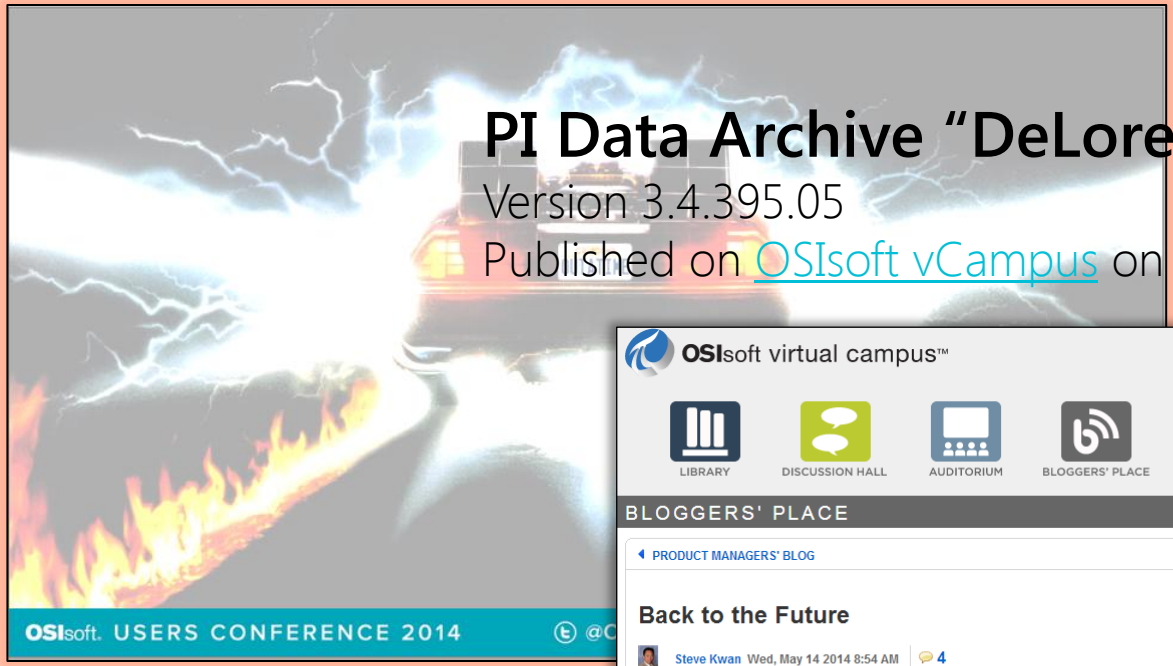
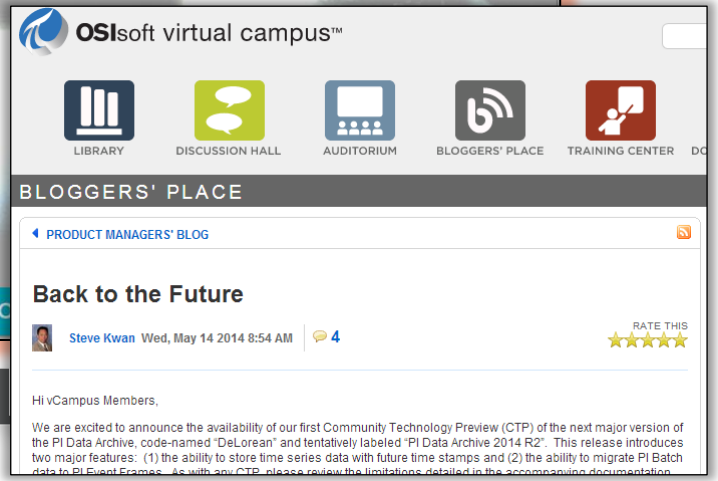
UC San Francisco, March 2014



PI Data Archive "DeLorean" CTP1

Version 3.4.395.05

Published on OSIsoft vCampus on 5/14/14



Live demo of "DeL

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Help Us Help You…

- PI Server 2015 Beta is available NOW!
  - Native future data support
  - Batch to Event Frames
  - Updated PI AF SDK

www.osisoft.com/corporate/piserver2015beta

BetaPIServer@osisoft.com

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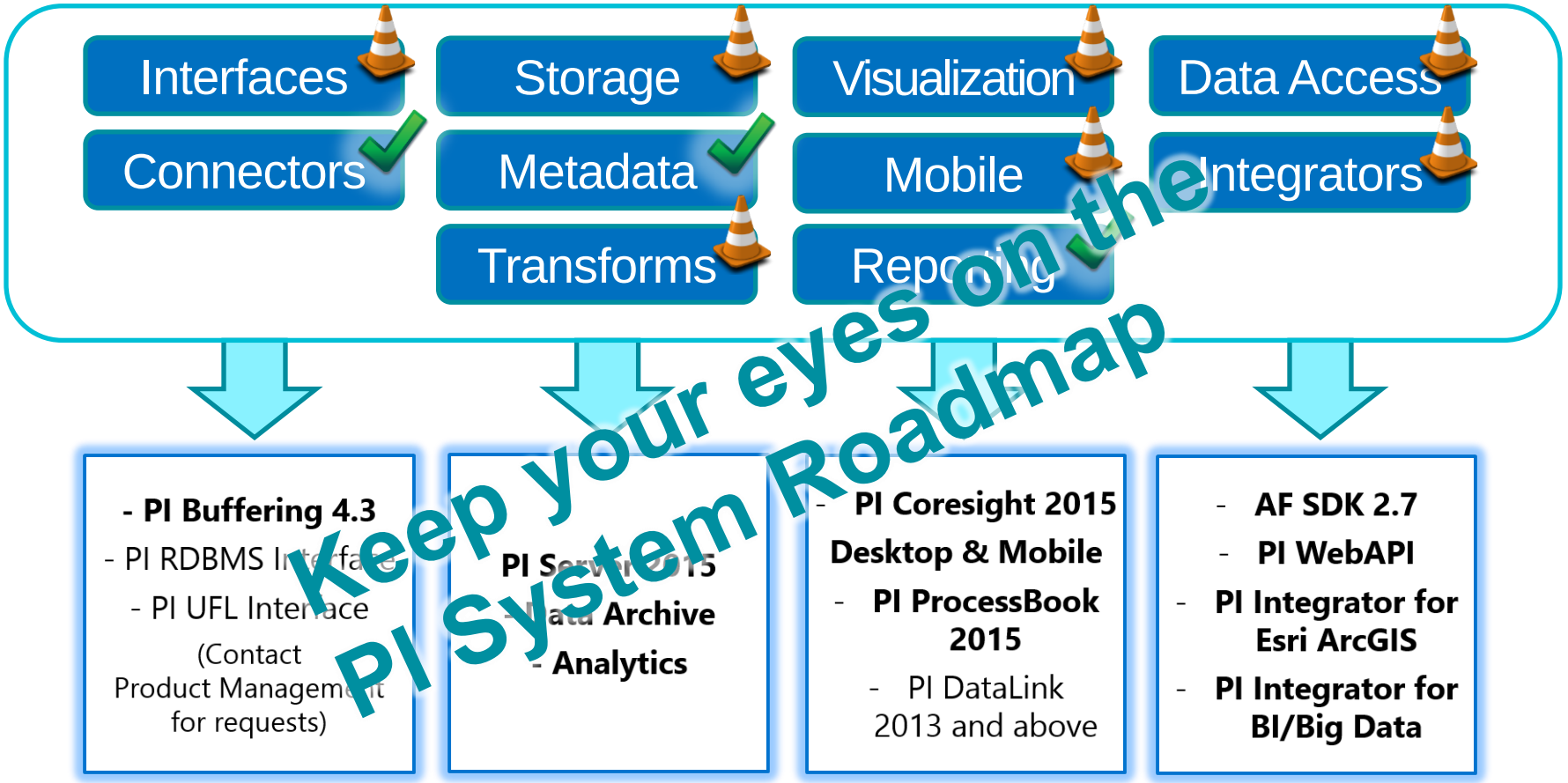

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Questions

Please wait for the **microphone** before asking your questions

State your **name & company**

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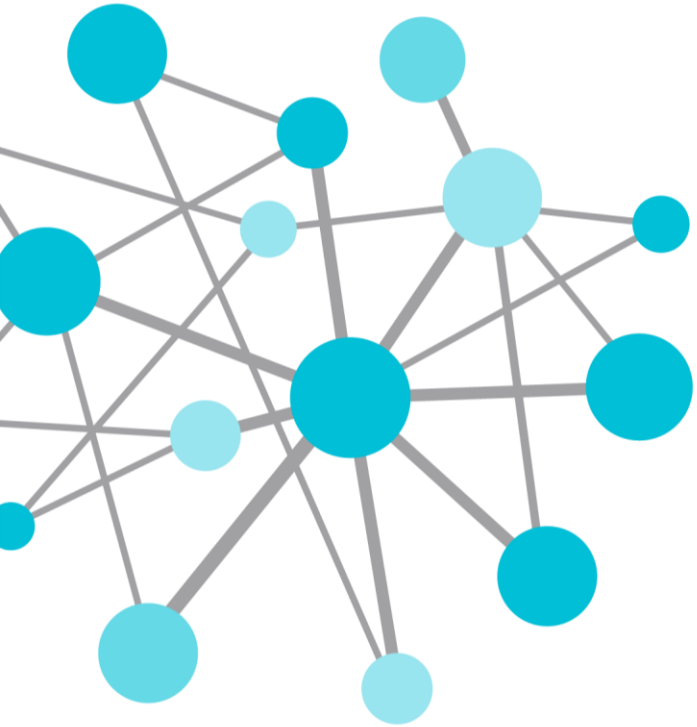

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