

A decorative graphic on the left side of the slide, consisting of a large, irregular shape made of many small blue triangles. The triangles are arranged in a way that creates a sense of depth and movement, with some triangles pointing towards the center and others pointing away from it. The overall effect is a dynamic, geometric pattern.

PI Event Frames: Find Your Data by Events

Presented by

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Andreas Mueller, *TechSupport Escalation Engineer, OSIsoft*



Goals

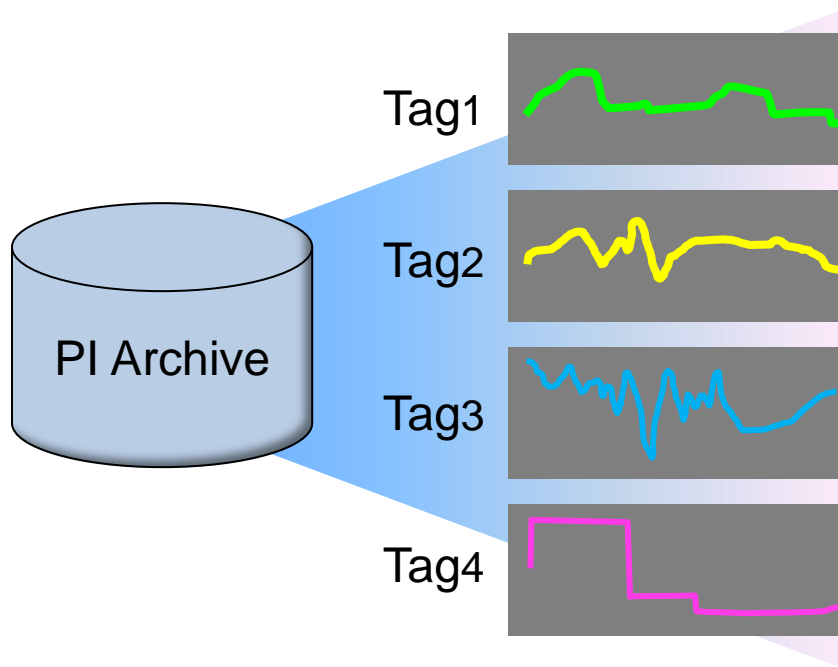
- New capability of the PI System
- Roadmap with multi-phase rollout across platform
- The way forward for PI Batch
- Demos and testimonials



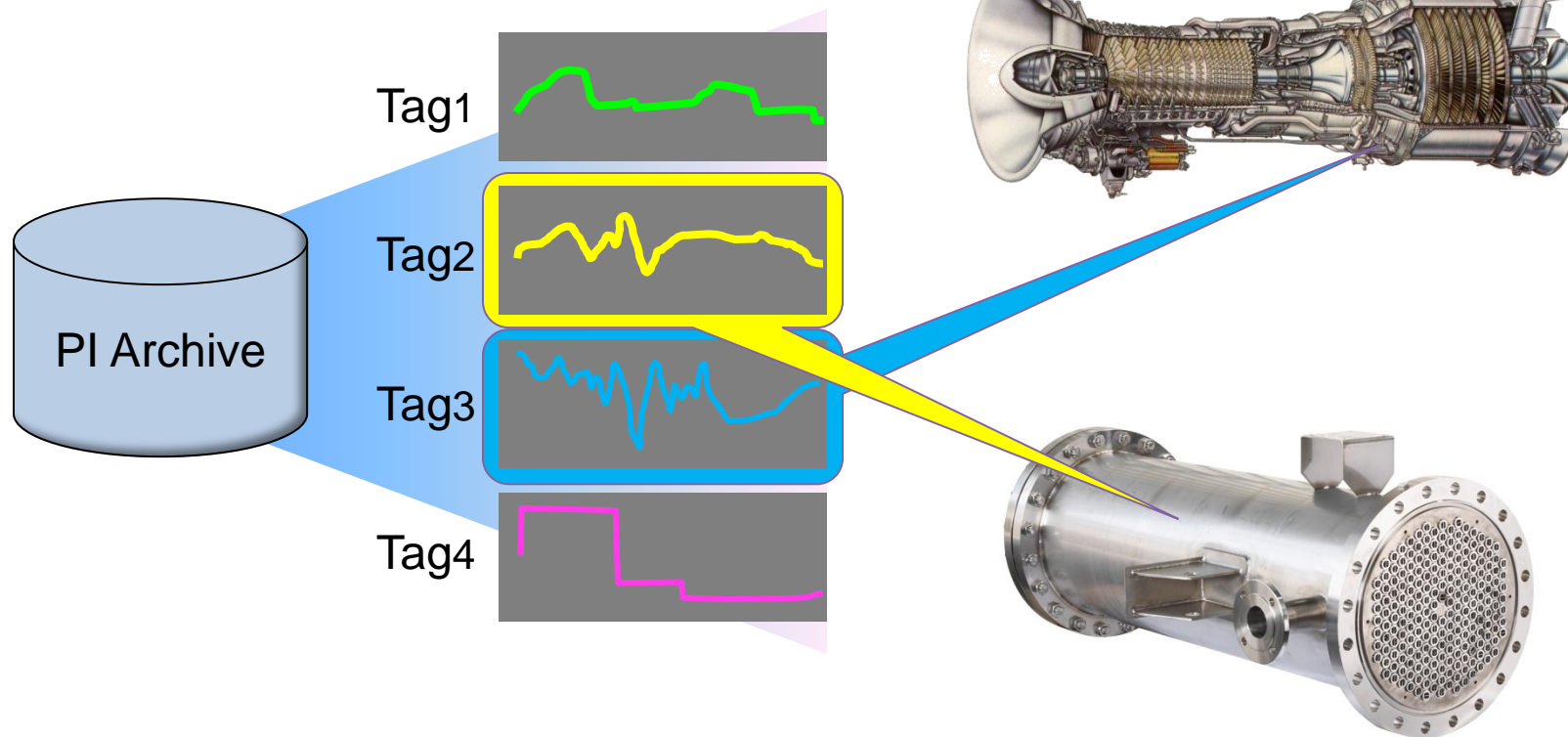
PI Event Frames Vision

Imagine all that data you have been collecting
24/7...

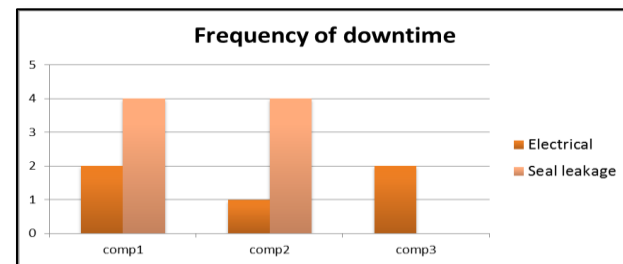
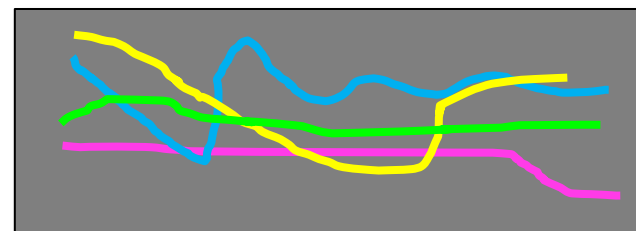
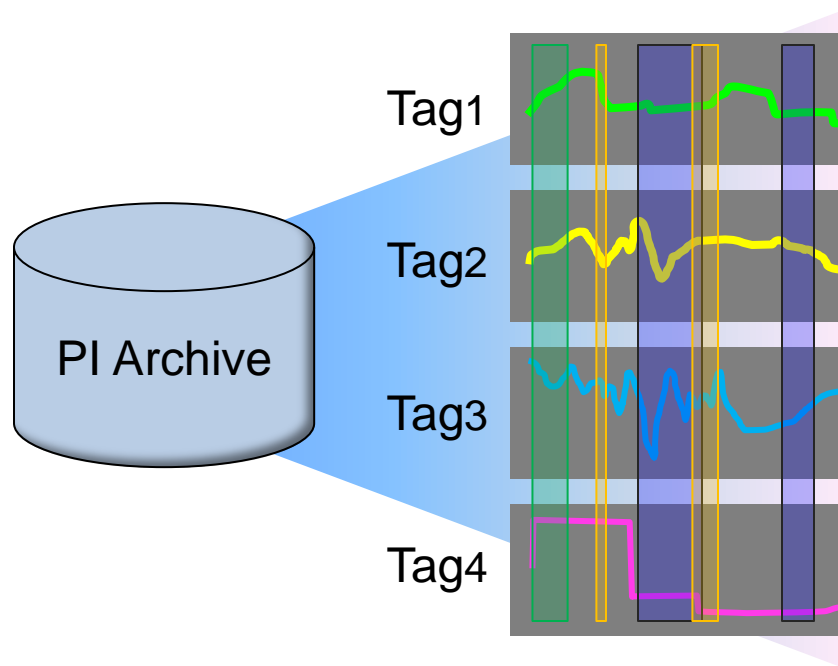
PI Server – Time series data and Tags



Assets help you find the right Tags



Event Frames help you find the right time periods





What can Event Frames help you understand?

- Downtime and Overall Equipment Effectiveness (OEE)
- Excursions
- Startups, shutdowns
- Products (batch, mining, paper, etc.)
- Shifts, days



Downtime

- Down equipment is not producing
- How often is it down?
- What are causes of downtime?
- Which causes should I address first?

Intro to PI Event Frames





PI Event Frames

- What are these Event Frames?
- Where are these Event Frames?
- They are also a lot like PI AF Elements
 - Templates and indexing and show performance
 - References to assets
 - Attributes
- Demo with the downtime scenario

Event Frames are time periods plus more

Event Frame



Name = DT23032011-2

Start time = 23-Mar-2011 09:32

End time = 23-Mar-2011 09:50

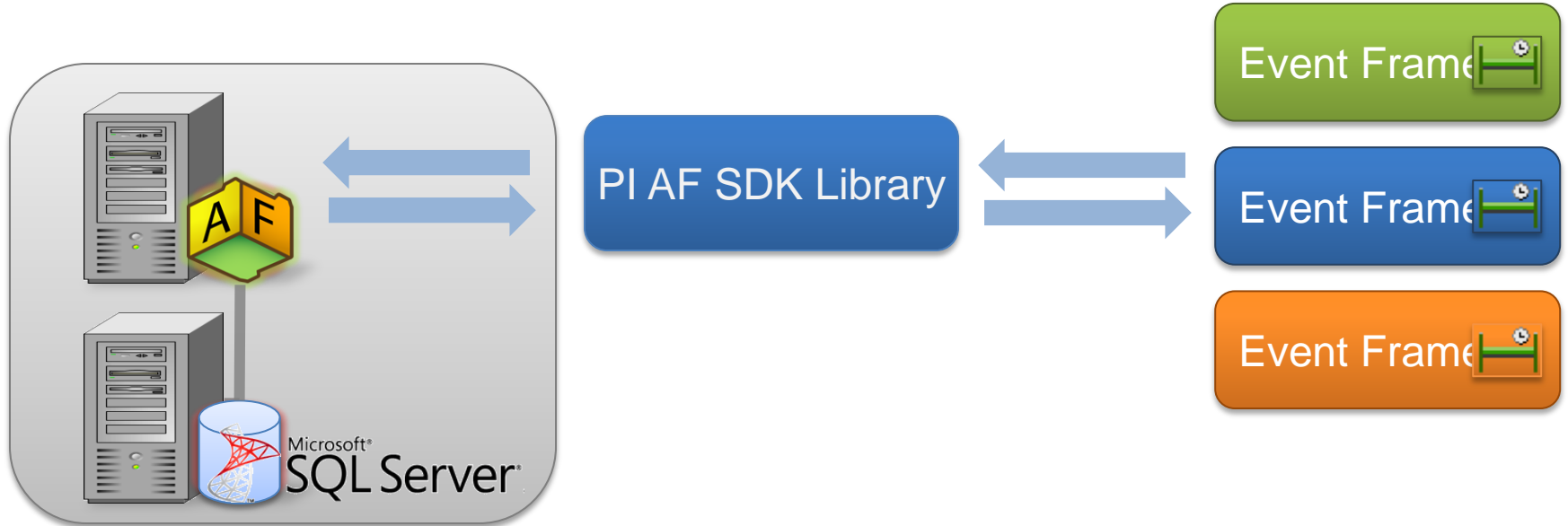
Asset = Boiler 3

Attribute = Mechanical

Attribute = Fuel line clogged

An Event Frame records important process or business events and helps you find the related real-time data.

Event Frames are part of PI Asset Framework



Different events have different attributes

Downtime



Startup



Batch



DT23032011-2

Name

ST23032011-2

BPS77-23032011-2

23-Mar-2011 09:32

Start Time

23-Mar-2011 09:32

23-Mar-2011 09:32

23-Mar-2011 09:50

End Time

23-Mar-2011 09:50

23-Mar-2011 09:50

Boiler 3

Turbine 2

Related Assets

Mixer 1

Mechanical

Standard procedure

BPS77

Fuel line clogged

Event-Specific Attributes

Prepolymer 16

Feed stock 78-YNW

Different events have different attributes

Downtime



DT23032011-2

23-Mar-2011 09:32

23-Mar-2011 09:50

Boiler 3

Mechanical

Fuel line closed



Reason code



Comment



Startup



ST23032011-2

23-Mar-2011 09:32

23-Mar-2011 09:50

Turbine 2

Standard procedure



Startup procedure



Batch



BPS77-23032011-2

23-Mar-2011 09:32

23-Mar-2011 09:50

Mixer 1

BPS77

Prep

Feed stock 78.4



Recipe



Product



Source





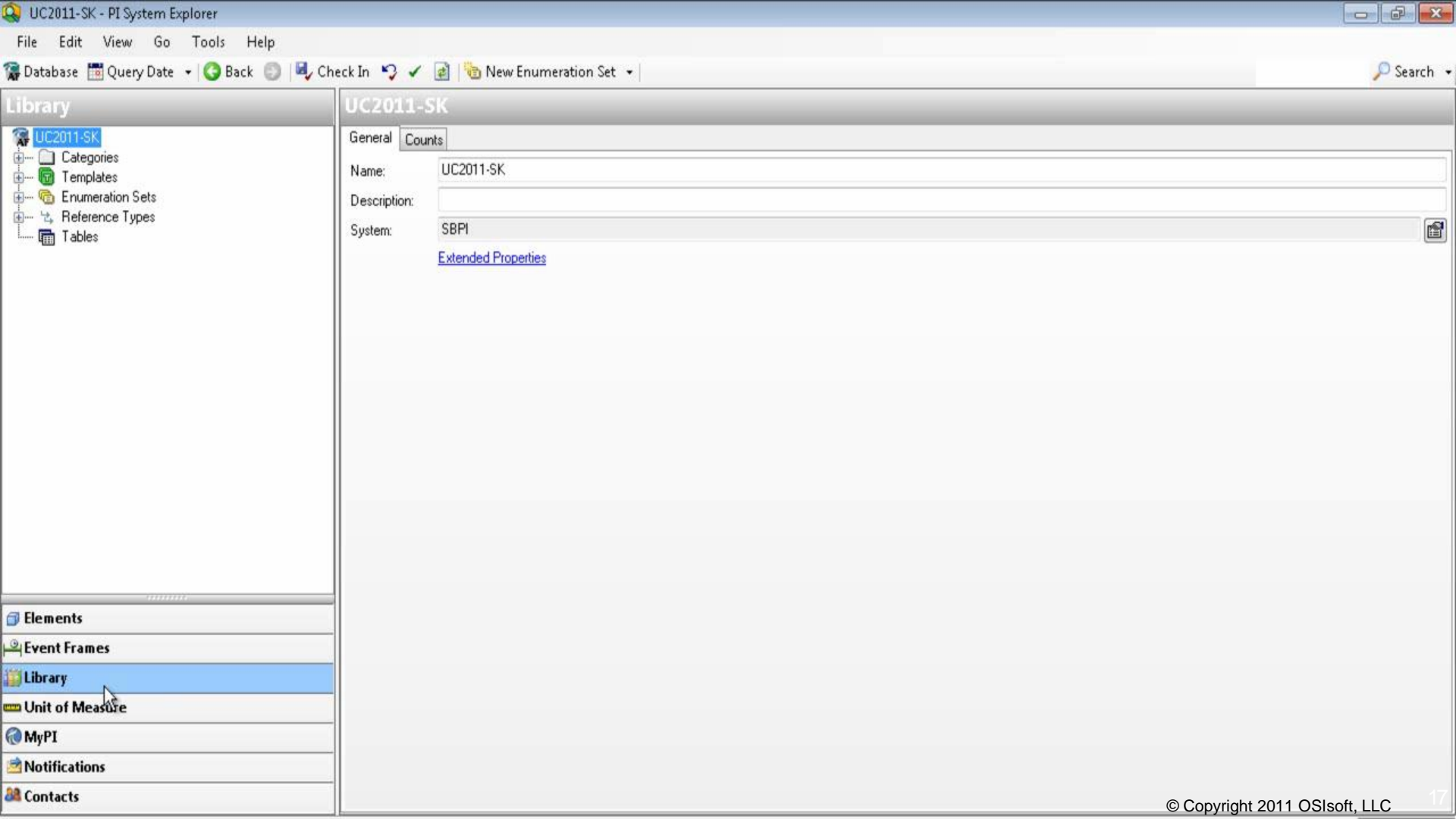
More Event Frames features

- Attributes with units of measure
 - Static numbers and strings
 - PI Point references (value at start or end, or summary value)
 - External data references
- References to other Event Frames

PI Event Frames Demonstration



PI Event Frames



Library

- UC2011-SK
 - Categories
 - Templates
 - Enumeration Sets
 - Reference Types
 - Tables

- Elements
- Event Frames
- Library
- Unit of Measure
- MyPI
- Notifications
- Contacts

UC2011-SK

General Counts

Name: UC2011-SK

Description:

System: SBPI

[Extended Properties](#)



Summary of Features

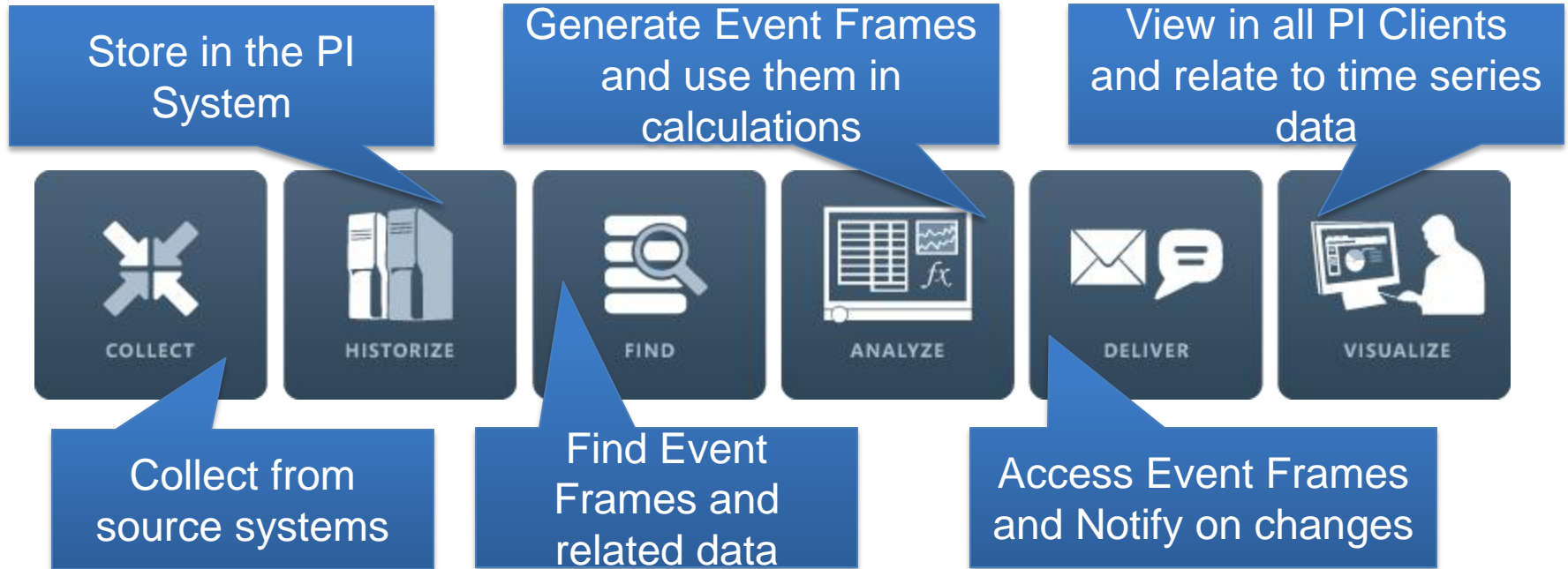
- Event Frames are a new time-period datatype
- Event Frames are stored in the PI AF database
- They are a lot like Elements
 - Templates and indexing
 - References to assets
 - Attributes
- References to other Event Frames

The Roadmap

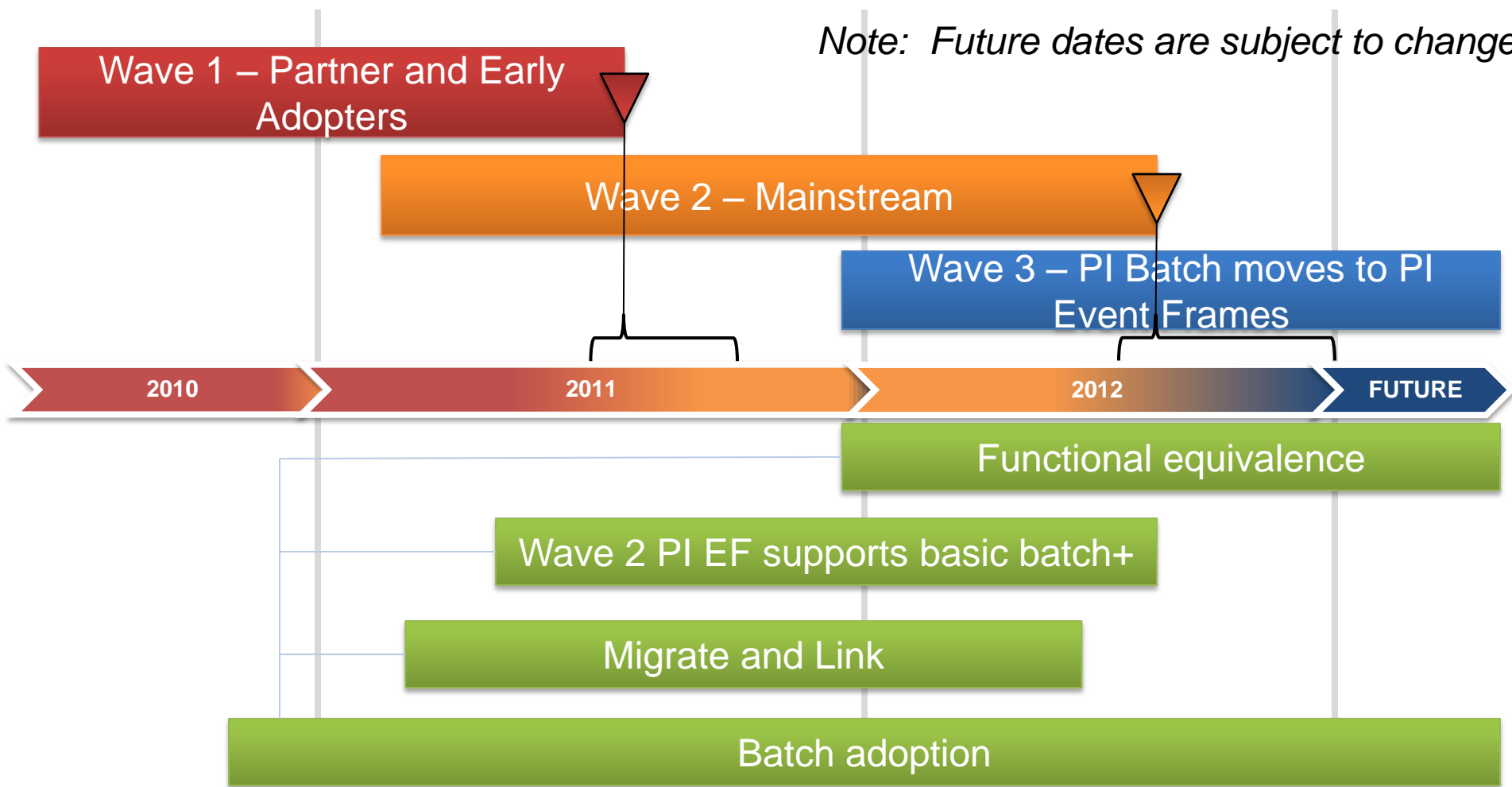


Future State

Event Frames will be supported throughout the PI System



Note: Future dates are subject to change



Wave 1 – Partner and Early Adopters

Goal

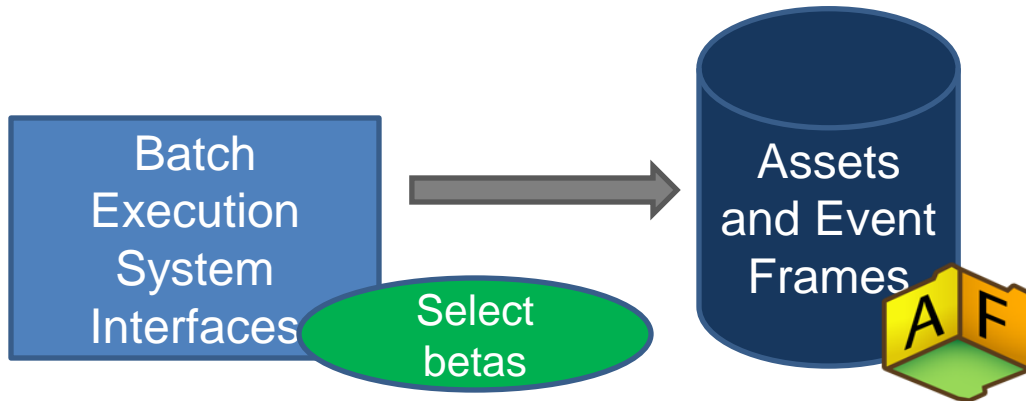
Infrastructure is able and ready. Partner and custom applications are needed for Event Frame generation and visualization.

Wave 1

Wave 2

Wave 3

Batch





Scalability

Templates,
Reference
Types

Microsoft
SQL
Technology



Usability

Search

Extensible
Attributes



Reliability

PI HA
Solutions

Windows
Security

PI Event Frames “abilities”

Partners leveraging PI Event Frames

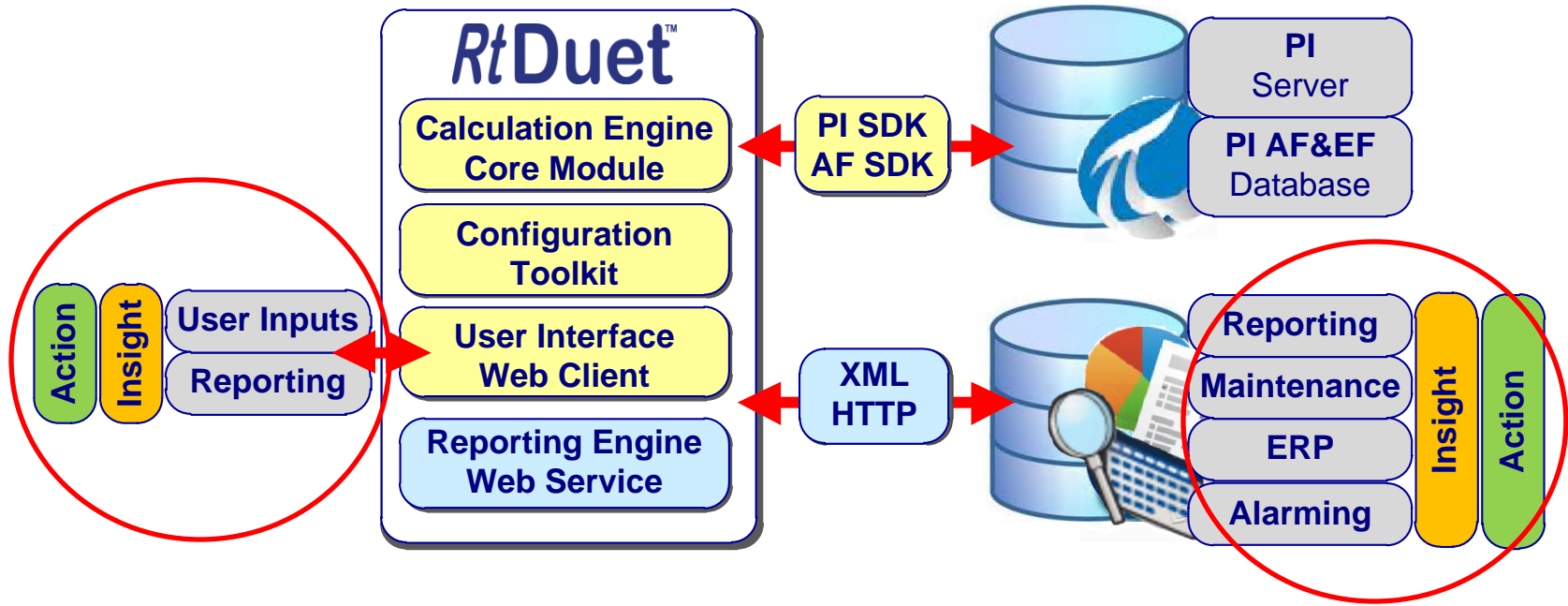
- Keith Flynn of ADM presents:



- Yannick Galipeau of iTi presents:



RtDuet Version 6.0



RtDuet Version 6.0

**Plant Data From
PI Server**

RtDuet generates Event Frames
Users add reason codes and comments

RtDuet provides insightful reports
Users can take corrective action

RtDuet - Event Monitor



	Timestamp	Minutes	Section	Sub-Section	Cause
Select	2011-03-23 02:42:07 PM	Primary 48.77	N/A	N/A	N/A
Select	2011-03-23 07:38:11 AM	Primary 49.63	N/A	N/A	N/A
Select	2011-03-23 04:05:26 AM	Primary 4.7	99-JOA Section 200	200 - Upper Feed	99-JOA Section 200
Select	2011-03-23 02:27:51 AM	Primary 3.12	99-JOA Section 775	775 - SMS Unwind	SMS Rope Up
Select	2011-03-23 02:15:22 AM	Primary 3.97	99-JOA Section 750	750 - Backsheet Web	

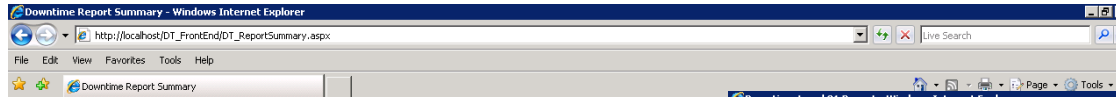
RtDuet - Root Cause Report



	Start Time	End Time	Root Cause	QTY	Duration	Duration/Weighted
Select	2011-03-23 12:00:00 AM	2011-03-23 12:00:00 AM	02. Unplanned Operational	21	162.65	162.65
Select	2011-03-23 12:00:00 AM	2011-03-23 12:00:00 AM	01. Planned Operational	3	44.5	44.5
Select	2011-03-23 12:00:00 AM	2011-03-23 12:00:00 AM	04. Unplanned Mechanical	2	34.15	34.15
Select	2011-03-23 12:00:00 AM	2011-03-23 12:00:00 AM	06. Unplanned Electrical	1	5.88	5.88

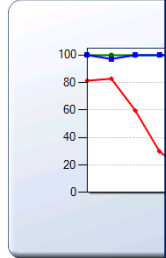
Optimize Performance - Reduce Downtime - Increase Profitability

RtDuet Version 6.0



RtDuet - Summary Report

Division - Site - Area - MC01



Start Time

~30d

Return

Section

Root Cause

Section

Root Cause

Downtime Level 01 Report - Windows Internet Explorer

http://localhost/DT_FrontEnd/DT_ReportLevel01.aspx

File Edit View Favorites Tools Help

RtDuet™ - OEE Report

Sawmill Company - Dartmouth Sawmill - [Debarkers] - Debarker 1 & 2

Start Time

8/13/2010 1:02:00 PM

End Time

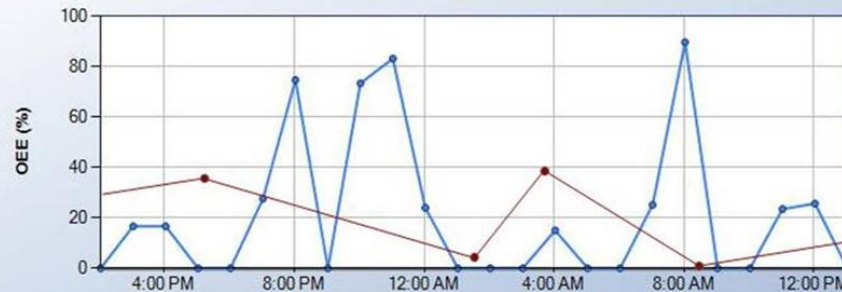
8/14/2010 1:02:00 PM

Interval

1h



OEE (Avg 20.66 %)



My Documents

My Computer

Recycle Bin

Adobe Reader 9

Internet Information...

PI System Explorer

RtDuet Web Pages

Services

ZoomIt.exe

RtDuet™

Real-time Downtime, Uptime & Event Tracking

Your Solution for Corporate Downtime Reporting.

Configuration | Events | Reason Tree | Miscellaneous

Name: MC02 ☒ Visible in Web Pages [Advanced ...](#)

Event Type: RtDuet Downtime Event

Calculation Server: RTDUETAF_KEITH

Reason Tree: ...

Status Tag: \\RtDuetAF_Keith\ADMSE_DATA_DARTMOUTH_MC02.DWPStatus

Primary Triggers

Name	Tag	Operator	Reference	Active
Trigger_1	WRtDuetAF_Keith\CDM158	=	Manual	<input checked="" type="checkbox"/>
Trigger_2	WRtDuetAF_Keith\CDM158	=	Program	<input checked="" type="checkbox"/>

Secondary Triggers

Name	Tag	Operator	Reference	Active
Trigger_3	WRtDuetAF_Keith\BA.CONC.1	<	20	<input checked="" type="checkbox"/>



What is Ekho?

Ekho is an event driven, EMI Software (*Enterprise Manufacturing Intelligence*)

- Packaged Cases
- Chemical Reactor Batch
- Steel Coil
- Raw Material Lot #
- Reel of Paper
- Equipment Downtime
- Order
- Complaint
- Wind Turbine Fault
- Environmental Spill
- Process Centerline Event
- Quality upset
- KPI (OEE)
- Injury
- Recipe
-

Market and Customers



alternativenergy



ArcelorMittal

LANXESS
Energizing Chemistry



Fresh thinking on paper.
Catalyst



FuelCell Energy

Rothmans Inc.



batHium



SMURFIT-STONE



 **NewPage**

Shift Performance Review



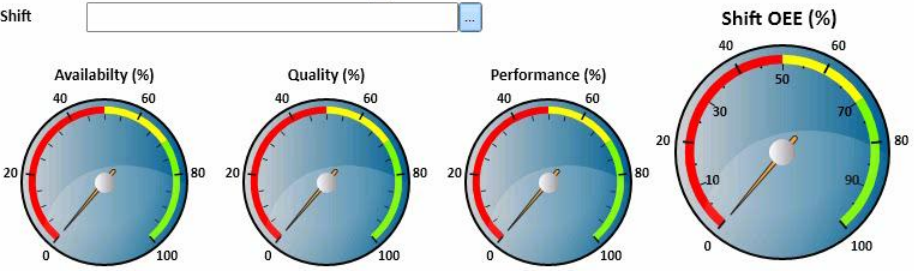
Machine

Section

Date

Shift

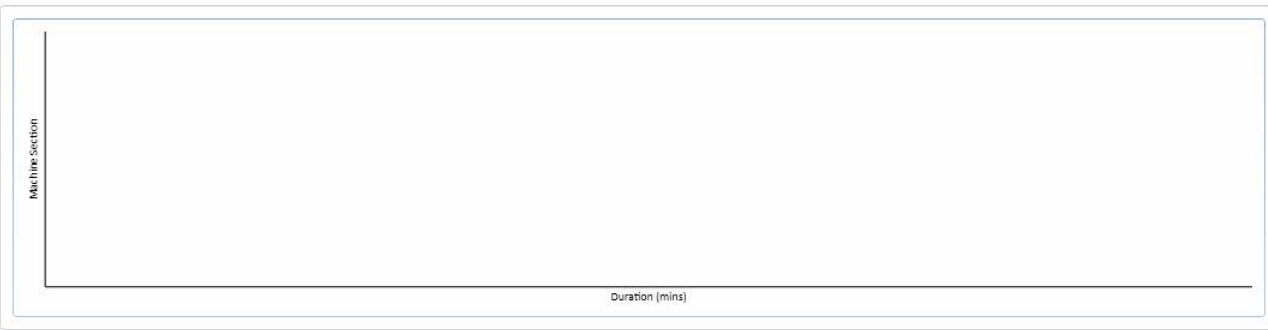
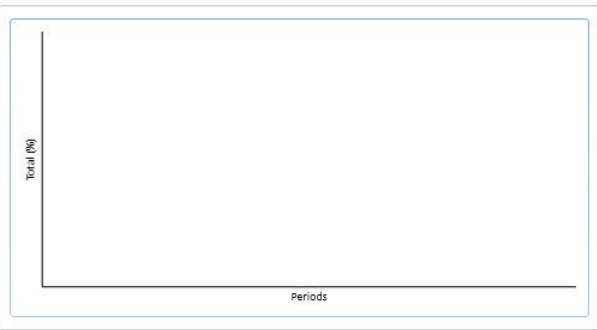
Status	Description	Current	Previous
--------	-------------	---------	----------



Reject Code (Total + Top 3)	Occurrences
-----------------------------	-------------

OEE Summary

OEE Detail



Wave 1 – Partner and Early Adopters

Goal

Infrastructure is able and ready. Partner and custom applications are needed for Event Frame generation and visualization.

Wave 1

Wave 2

Wave 3

Batch

- CTP
 - OSIssoft vCampus
- Release
 - 3rd Quarter 2011 as part of the next release of the PI Asset Framework

Wave 2 – Mainstream

Goal

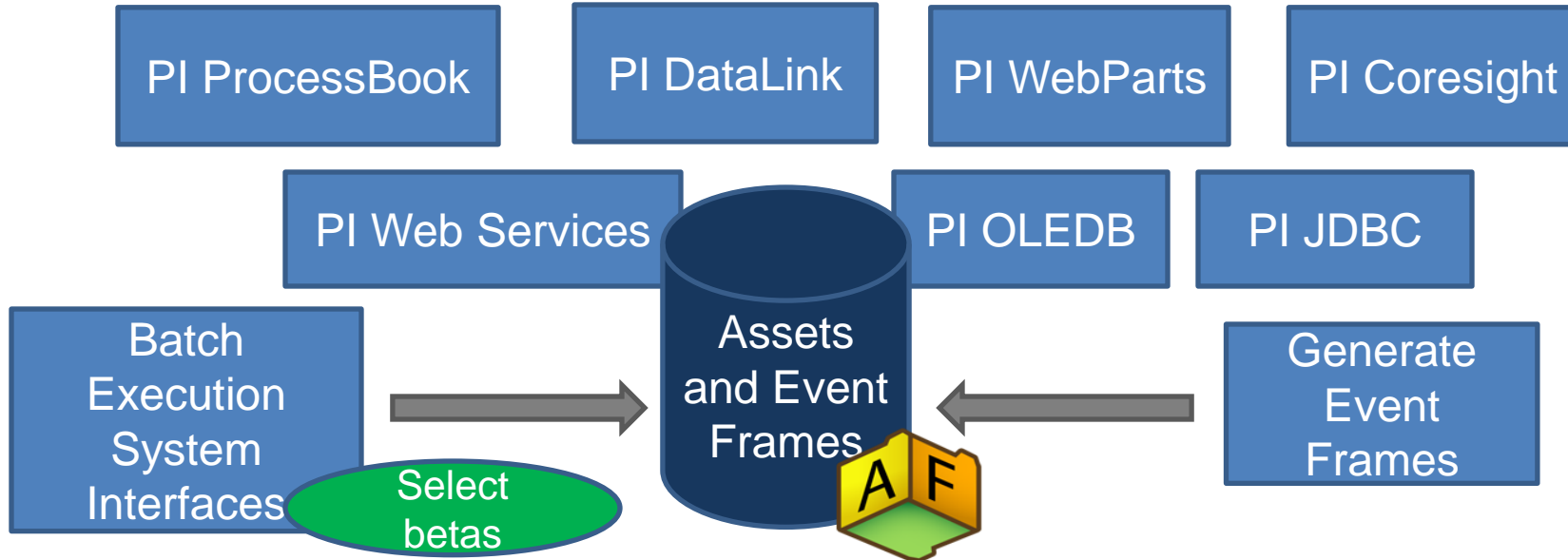
First end-to-end Event Frames experience. Ability to generate Event Frames automatically. Several visualization options.

Wave 1

Wave 2

Wave 3

Batch



Wave 2 – Mainstream

Goal

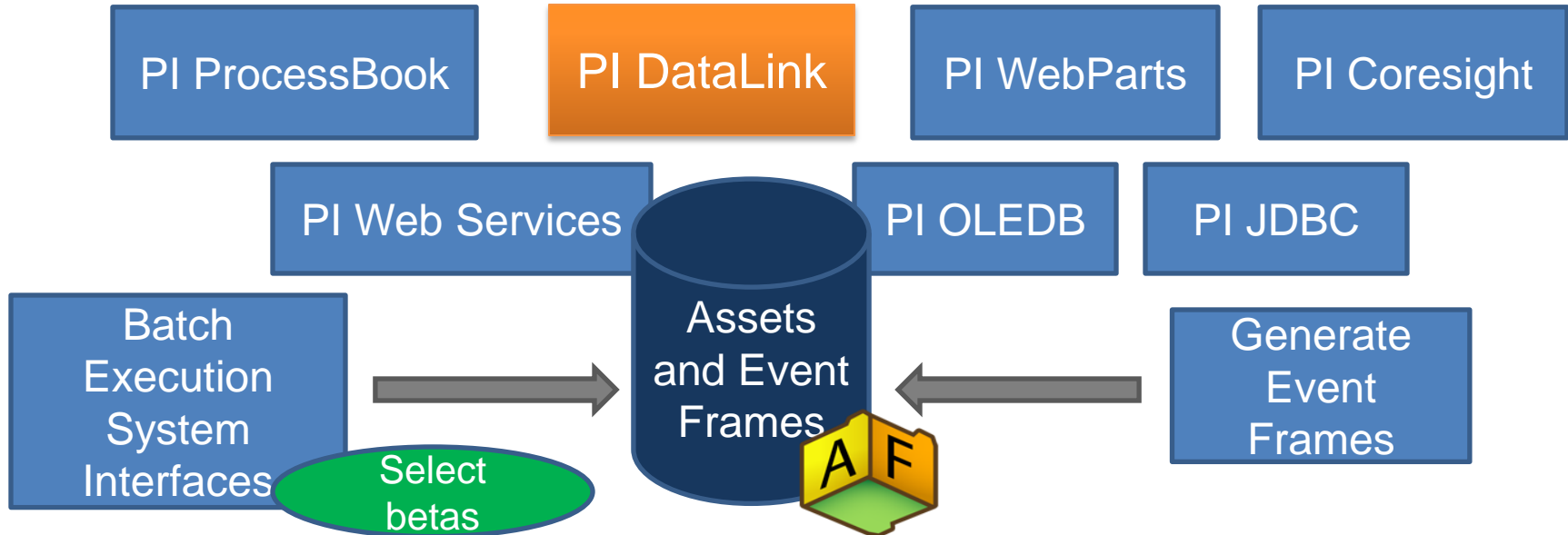
First end-to-end Event Frames experience. Ability to generate Event Frames automatically. Several visualization options.

Wave 1

Wave 2

Wave 3

Batch



Current Value
Single Value

Archive Value
Multiple Value

Compressed Data
Multiple Value

Sampled Data
Multiple Value

Timed Data
Multiple Value

Calculated Data
Calculation

Time Filtered
Calculation

Event

Update
Update

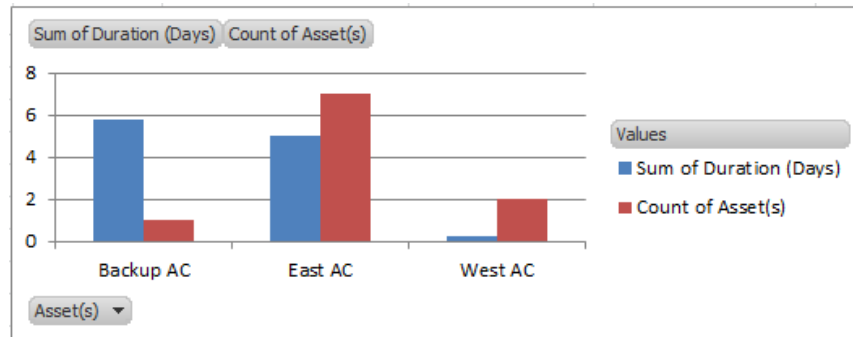
Settings
Resources

About
Resources

Help
Resources

Notification Search
Notifications

	A	B	C	D	E
1	Name	Start Time	End Time	Duration (Days)	Asset(s)
2	AC Failure 1	7/4/2010 15:15	7/5/2010 15:15	1.000	East AC
3	AC Failure 2	7/6/2010 13:17	7/6/2010 15:45	0.103	West AC
4	AC Failure 3	7/6/2010 19:15	7/7/2010 20:15	1.042	East AC
5	AC Failure 4	7/24/2010 15:15	7/25/2010 15:15	1.000	East AC
6	AC Failure 5	7/26/2010 12:05	7/26/2010 15:01	0.122	West AC
7	AC Failure 6	8/12/2010 16:38	8/12/2010 19:15	0.109	East AC
8	AC Failure 7	9/1/2010 11:05	9/1/2010 14:55	0.160	East AC
9	AC Failure 8	9/23/2010 15:15	9/24/2010 15:15	1.000	East AC
10	AC Failure 9	9/25/2010 15:15	10/1/2010 10:05	5.785	Backup AC
11	AC Failure 10	10/4/2010 18:18	10/5/2010 11:19	0.709	East AC



AC Failure
 Search ▾

Display

- ☒ Name
- ☒ Start Time
- ☒ End Time
- ☒ Duration
- ☒ Asset(s)
 - Value(s)
 - ☐ Min
 - ☐ Max
 - ☐ Start
 - ☐ End
 - ☐ Avg

PI DataLink Scenario 1: Pareto

Current Value
Single Value
 Archive Value
Single Value

Compressed Data
Multiple Value
 Sampled Data
Multiple Value
 Timed Data
Multiple Value

Calculated Data
Calculation
 Time Filtered
Calculation

EVENTS
Event Frames

Update
Update

Settings
About
Help
Resources

Notification Search
Notifications

Start Time	End Time	Asset(s)	Attribute	Min	Max	Start	End	Avg
7/4/2010 15:15	7/5/2010 15:15	East AC	Inlet Temp	65	102	92	85	88
			Outlet Temp	65	76	65	65	68
			Outside Temp	65	98	85	82	82
7/6/2010 13:17	7/6/2010 15:45	West AC	Inlet Temp	55	98	74	80	65
			Outlet Temp	65	77	75	65	72
			Outside Temp	55	93	84	81	76
7/6/2010 19:15	7/7/2010 20:15	East AC	Inlet Temp	57	97	72	96	68
			Outlet Temp	65	78	76	66	75
			Outside Temp	57	94	89	77	76
7/24/2010 15:15	7/25/2010 15:15	East AC	Inlet Temp	56	101	76	95	72
			Outlet Temp	65	79	78	72	75
			Outside Temp	55	98	85	92	77
7/26/2010 12:05	7/26/2010 15:01	West AC	Inlet Temp	51	97	75	93	69
			Outlet Temp	65	78	77	71	72
			Outside Temp	51	95	86	80	78
8/12/2010 16:38	8/12/2010 19:15	East AC	Inlet Temp	53	98	72	80	68
			Outlet Temp	65	79	77	72	73
			Outside Temp	52	96	89	72	81

AC Failure
 Search

Display
☐ Name
 ☒ Start Time
 ☒ End Time
 ☐ Duration
 ☒ Asset(s)
 -- Value(s)
 ☒ Min
 ☒ Max
 ☒ Start
 ☒ End
 ☒ Avg

PI DataLink Scenario 1: Pareto with Expanded Data

Current Value
Single Value

Archive Value
Multiple Value

Compressed Data
Multiple Value

Sampled Data
Multiple Value

Timed Data
Multiple Value

Calculated Data
Calculation

Time Filtered
Calculation

Update

Settings
About
Help
Resources

Notification Search
Notifications

Timestamp	Inlet Temp	Timestamp	Outlet Temp	Timestamp	Outside Temp
7/4/2010 15:15	68.4629943	7/4/2010 15:15	88.8094967	7/4/2010 15:15	101.0440563
7/5/2010 15:15	95.7129340	7/5/2010 15:15	76.4532675	7/5/2010 15:15	60.0921256
7/6/2010 15:15	81.7653082	7/6/2010 15:15	80.7667637	7/6/2010 15:15	80.8185982
7/7/2010 15:15	101.7854560	7/7/2010 15:15	83.0991022	7/7/2010 15:15	105.9912055
7/8/2010 15:15	89.8139092	7/8/2010 15:15	76.2973912	7/8/2010 15:15	89.1709799
7/9/2010 15:15	66.8039196	7/9/2010 15:15	61.7796604	7/9/2010 15:15	87.4121913
7/10/2010 15:15	98.6453038	7/10/2010 15:15	75.2556711	7/10/2010 15:15	70.2981627
7/11/2010 15:15	80.5863931	7/11/2010 15:15	78.8409024	7/11/2010 15:15	77.5341696
7/12/2010 15:15	81.8236347	7/12/2010 15:15	87.6253935	7/12/2010 15:15	103.6653854
7/13/2010 15:15	60.7527866	7/13/2010 15:15	88.9080972	7/13/2010 15:15	100.7087382
7/14/2010 15:15	85.3426792	7/14/2010 15:15	85.1032832	7/14/2010 15:15	79.1770753
7/15/2010 15:15	64.7296842	7/15/2010 15:15	64.5978220		
7/16/2010 15:15	99.8245661	7/16/2010 15:15	69.0787749		
7/17/2010 15:15	73.2730121	7/17/2010 15:15	85.0493247		
7/18/2010 15:15	75.3346738	7/18/2010 15:15	65.3270666		
		7/19/2010 15:15	99.8295976		
		7/20/2010 15:15	60.2310299		
		7/21/2010 15:15	100.5663664		
		7/22/2010 15:15	70.6494629		

Event Frames

Compressed Data

AC Failure 12 Search

Start Time

AC Failure 12

End Time

AC Failure 12

Associated Assets

☒ Inlet Temp
☒ Outlet Temp
☒ Outside Temp

Event Assets

S

PI DataLink Scenario 2: Event Frames in existing functions

Wave 2 – Mainstream

Goal

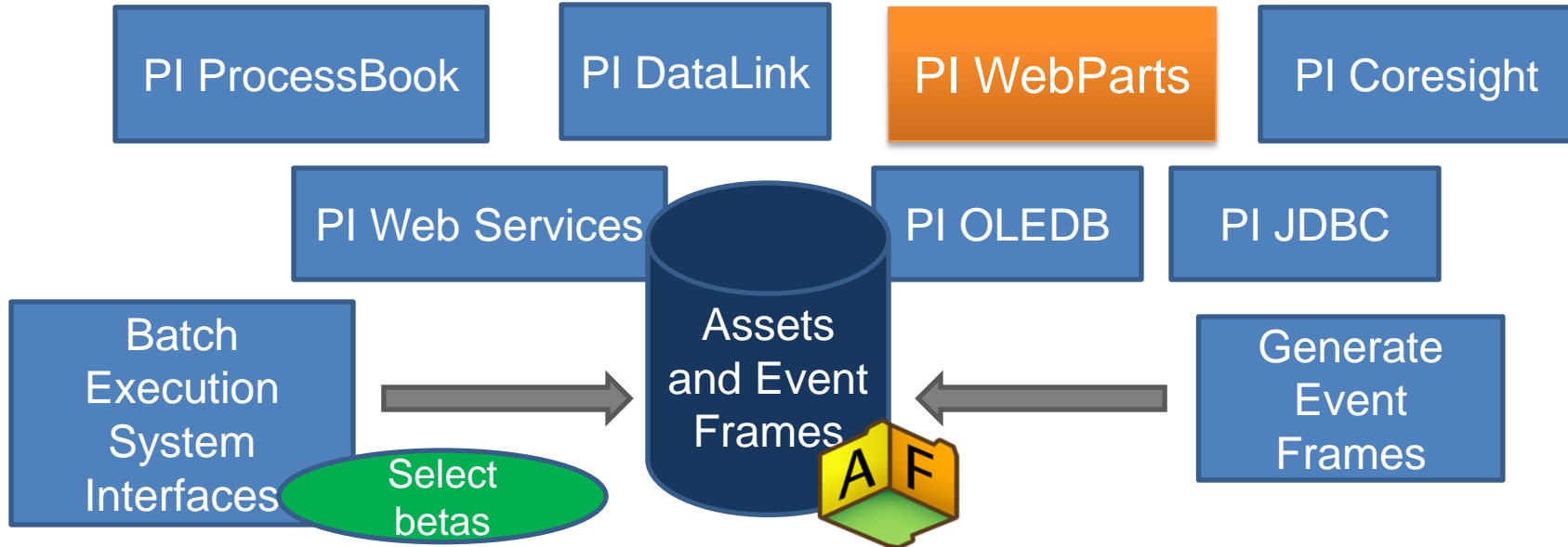
First end-to-end Event Frames experience. Ability to generate Event Frames automatically. Several visualization options.

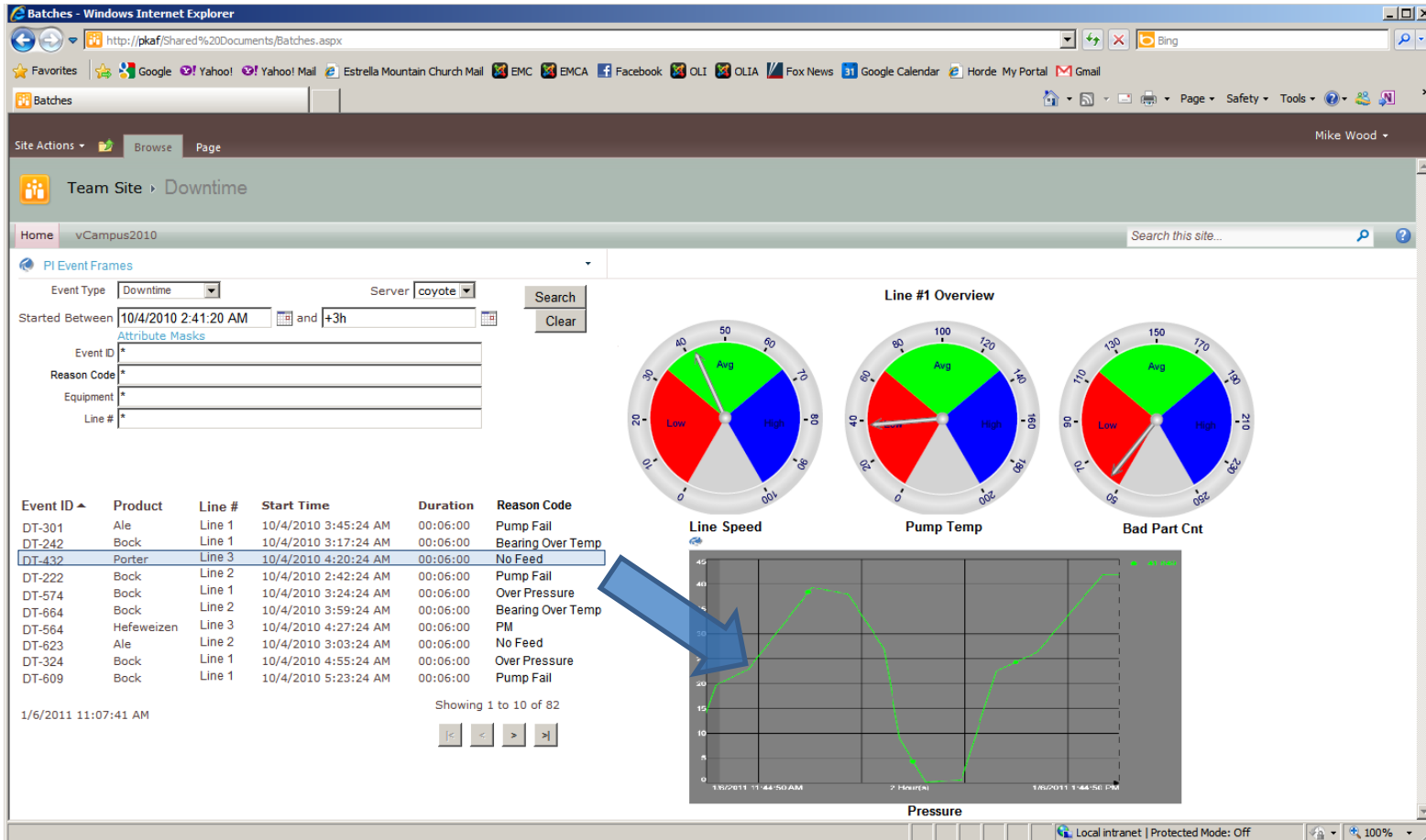
Wave 1

Wave 2

Wave 3

Batch





PI WebParts: Event Frames Table

Wave 2 – Mainstream

Goal

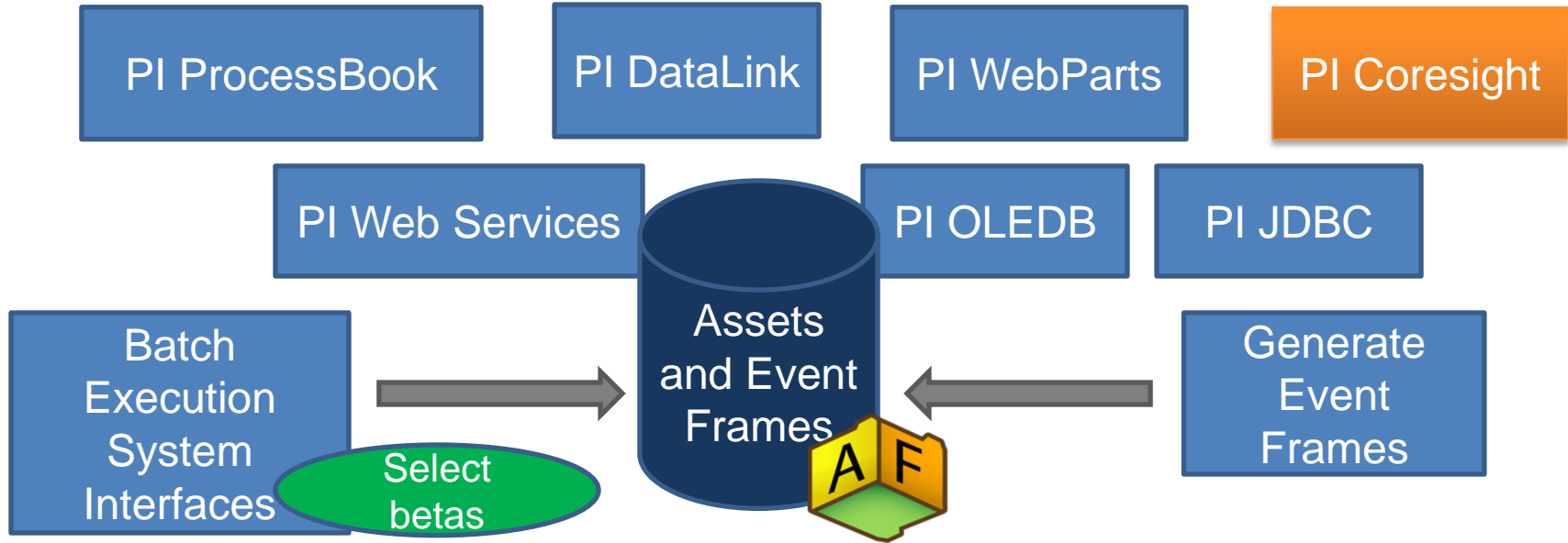
First end-to-end Event Frames experience. Ability to generate Event Frames automatically. Several visualization options.

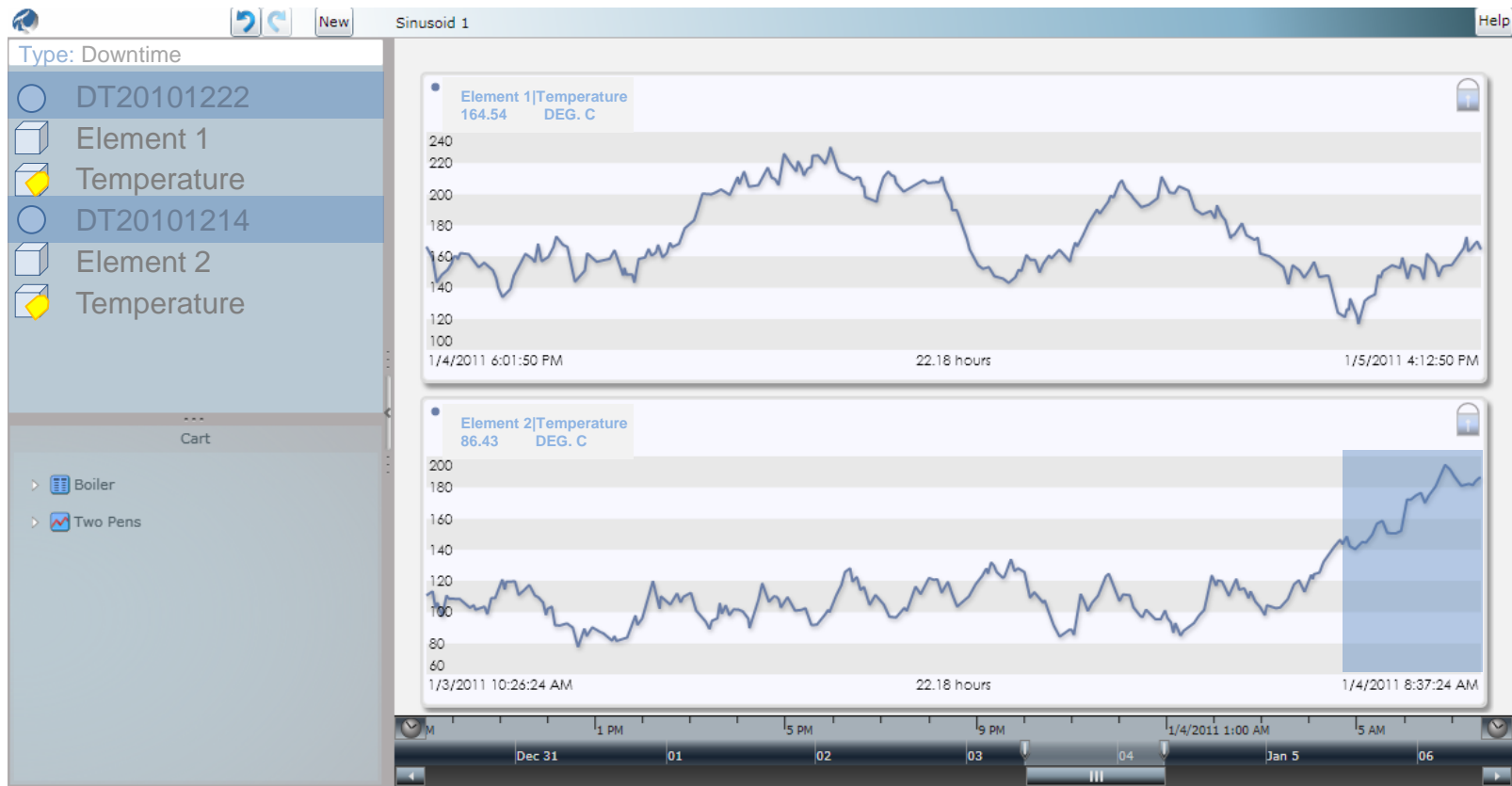
Wave 1

Wave 2

Wave 3

Batch





PI Coresight: Event Frames Search and Trends

Batch Adoption

Goal

Move PI Batch customers forward to PI Event Frames while preserving investment in displays, spreadsheets and reports.

Migrate and Link

Wave 2 PI EF supports basic batch+

Functional equivalence

Wave 1

Wave 2

Wave 3

Batch

Batch Adoption

Goal

Move PI Batch customers forward to PI Event Frames while preserving investment in displays, spreadsheets and reports.

Migrate and Link

Wave 2

Wave 2 PI EF supports basic batch+

Functional equivalence

Wave 3 – PI Batch Moves to PI Event Frames

Goal

Move PI Batch customers forward to PI Event Frames with features that can replace existing clients: displays, spreadsheets and reports.

Wave 1

Wave 2

Wave 3

Batch

BDB-based Products



PI WebParts
PI ProcessBook
PI DataLink
PI BatchView
RtReports



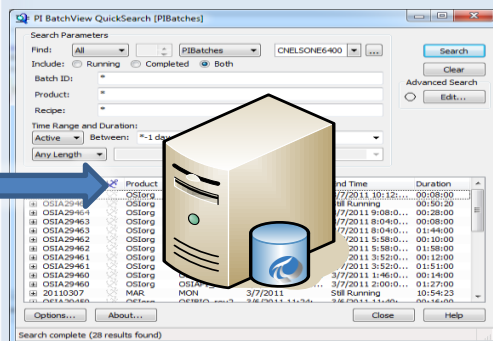
PI OLEDB
PI JDBC
PI SDK



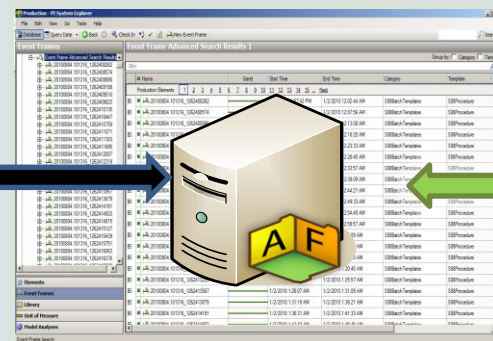
PI ACE

Batch to Event Frames Transition

STEP 1 – MIGRATE PI BATCH DATA



PI Batch Database



PI AF Database

PI AF-based Products



PI WebParts
PI ProcessBook
PI DataLink



PI OLEDB Enterprise
PI JDBC
PI Web Services
AF SDK

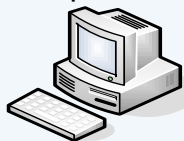


PI Notifications

BDB-based Products



PI WebParts
PI ProcessBook
PI DataLink
PI BatchView
RtReports



PI OLEDB
PI JDBC
PI SDK

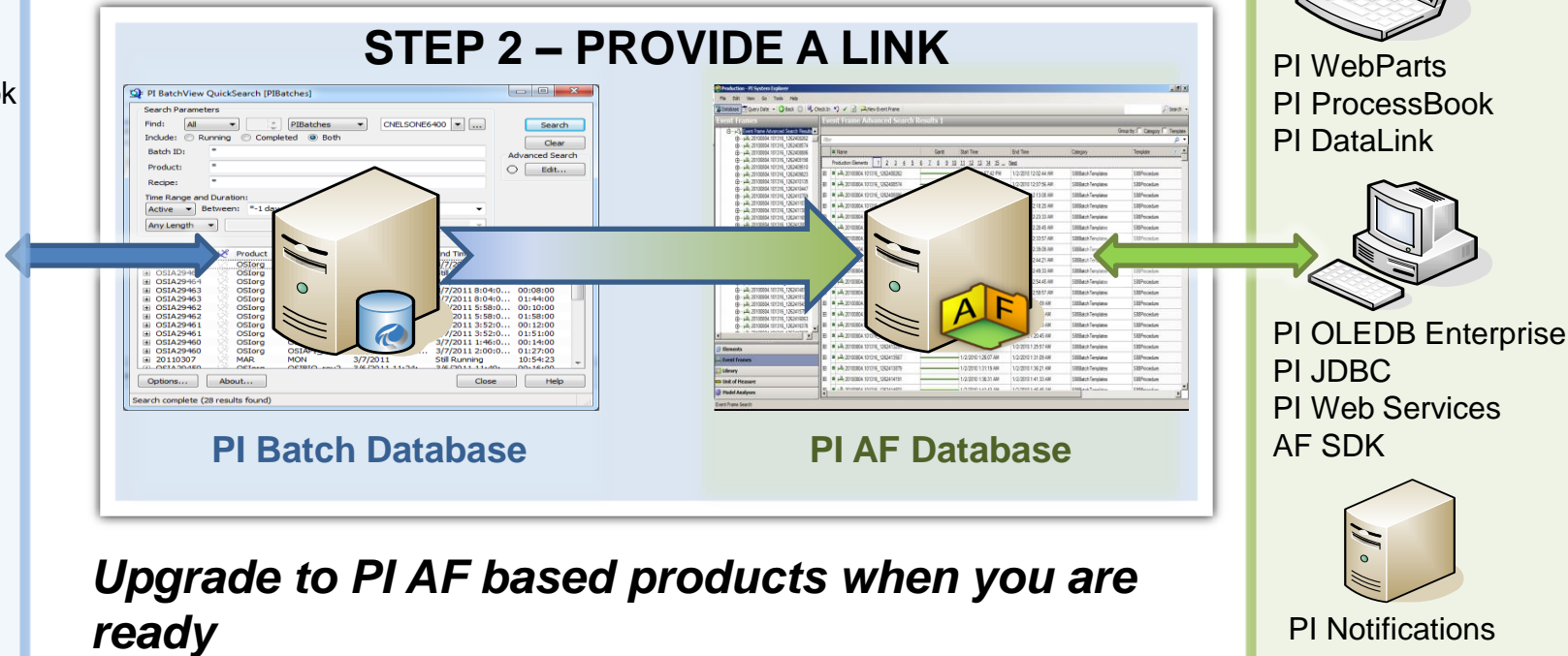


PI ACE

Batch to Event Frames Transition

Continue using your existing BDB-based products

STEP 2 – PROVIDE A LINK











Downtime Example with Multiple Elements

GeneralChild Event FramesReferenced ElementsAttributes

Group by: ☐ Category ☐ Template

Search

 Name	Description	I In Service Date	I Last Service Date	I Manufacturer	I Serial Number 
  Condenser	A generic condenser template	2/25/2009 12:00:00 AM	2/25/2011 12:00:00 AM	TubesEx	CDN5876
  Gas Turbine 1	A generic gas turbine template	2/25/2009 12:00:00 AM	2/25/2011 12:00:00 AM	Acme GT	AGT1185
  HRSG 1	A generic HRGS template	2/25/2009 12:00:00 AM	2/25/2011 12:00:00 AM	Acme Kettle	AK489

Batch Benefits

- Performance
- Event Data
- Referenced Data
- External Data
- Flexible Hierarchy
- S88 Rules

Event Frames Demonstration



PI Batch Interface

Elements

- Elements
 - OOE
 - OSIsoft Batch Interfaces
 - DeltaV:Factory 1
 - OSIsoft Big Creek Power Plant
 - OSIsoft Bio
 - OSIsoft Chemical

Elements

Event Frames

Library

Unit of Measure

Model Analyses

OSIsoft Batch Interfaces

General Child Elements Attributes Ports Version

Group by: ☐ Category ☐ Reference Type ☐ Template

Search

Name	Description	Category	Type	Template
DeltaV:Factory 1			None	



Summary

- PI Event Frames – new capability of the PI System
- Release infrastructure 3Q 2011
 - Targeted to Partner applications and Early Adopters
- Next release
 - PI Event Frames for the mainstream
- Batch adoption roadmap already in development



Thank you