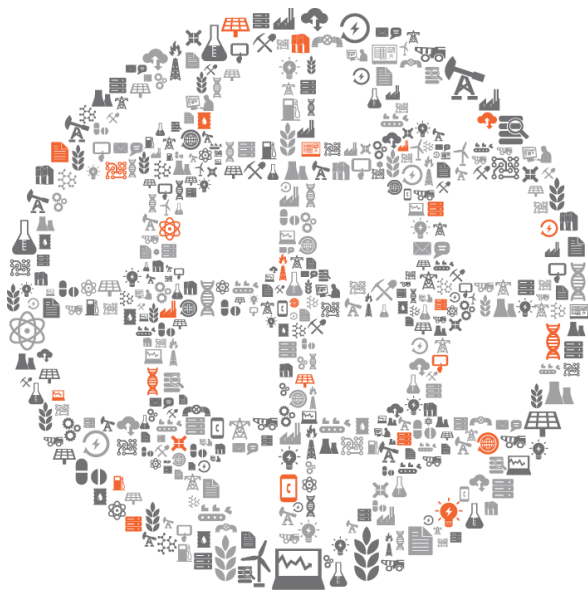




Batch Customers, come to this talk.

Presented by **Todd Brown and Chris Nelson**



OSIsoft®

USERS 2013 CONFERENCE

The Power of Data

THRIVING

IN A

WORLD OF

CHANGE

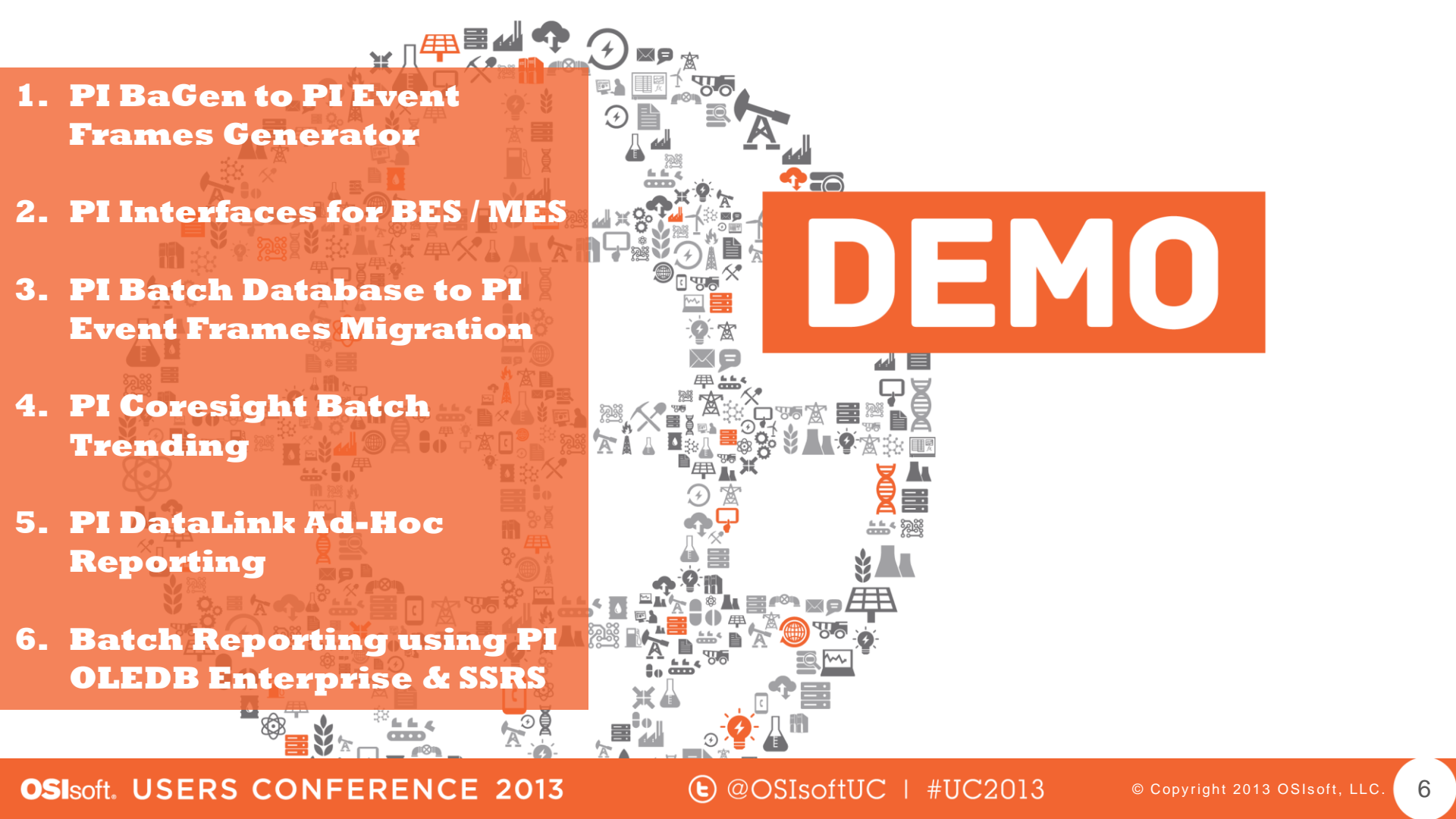


Batch Customers



Batch Customers



- 
- 1. PI BaGen to PI Event Frames Generator**
 - 2. PI Interfaces for BES / MES**
 - 3. PI Batch Database to PI Event Frames Migration**
 - 4. PI Coresight Batch Trending**
 - 5. PI DataLink Ad-Hoc Reporting**
 - 6. Batch Reporting using PI OLEDB Enterprise & SSRS**

DEMO

PI Batch Generator to PI Event Frames Generator Migration



Released



PI Event Frames Interface Manager



PI Event Frames Interface Manager

The Current Interface is : PIEFGEN1

Event Frames Structure

Configure the event frames structure to define when event frames are created, on which template the event frames are based, and which elements and attributes are associated with the event frame.

Settings

- Interface Selection
- File Selection
- Server Information
- Event Frames Structure**
- Templates
- Time Settings
- Operational Settings
- Save Settings

Options

- Test Configuration
- Service Configuration
- Converter

PIBAGen

- RE100 Excursions
- RE100 Downtime
- RE100 Batch Procedure
 - RE100 Unit Procedure
 - RE100 Operation
- RE200 Excursions
- RE200 Downtime
- RE300 Excursions
- RE300 Downtime
- RE400 Excursions
- RE400 Downtime
- RExxx Batch Procedure
 - RE200 Unit Procedure**
 - RE200 Operation
 - RE300 Unit Procedure
 - RE300 Operation
- RE400 Batch Procedure
- Factory 1 TIME.Day
- Factory 2 TIME.Day

RE200 Unit Procedure

Configuration Name: RE200 Unit Procedure

Event Frame Template: EFSimUnitProcedure [Template...]

Active Point:

Tagname: RE200.Active

Behavior: ☒ Pulse ☐ Step ☐ Include Zeroth State (Continuous)

Strings indicating zeroth state: Example: inactive, stop, off

Unit Procedure Data

Unit Procedure Event Frame Name

☐ Use Active Point value

☐ Use Static Name

☒ Use this PIPoint value: TIME.YEARMONTHDAYTIME

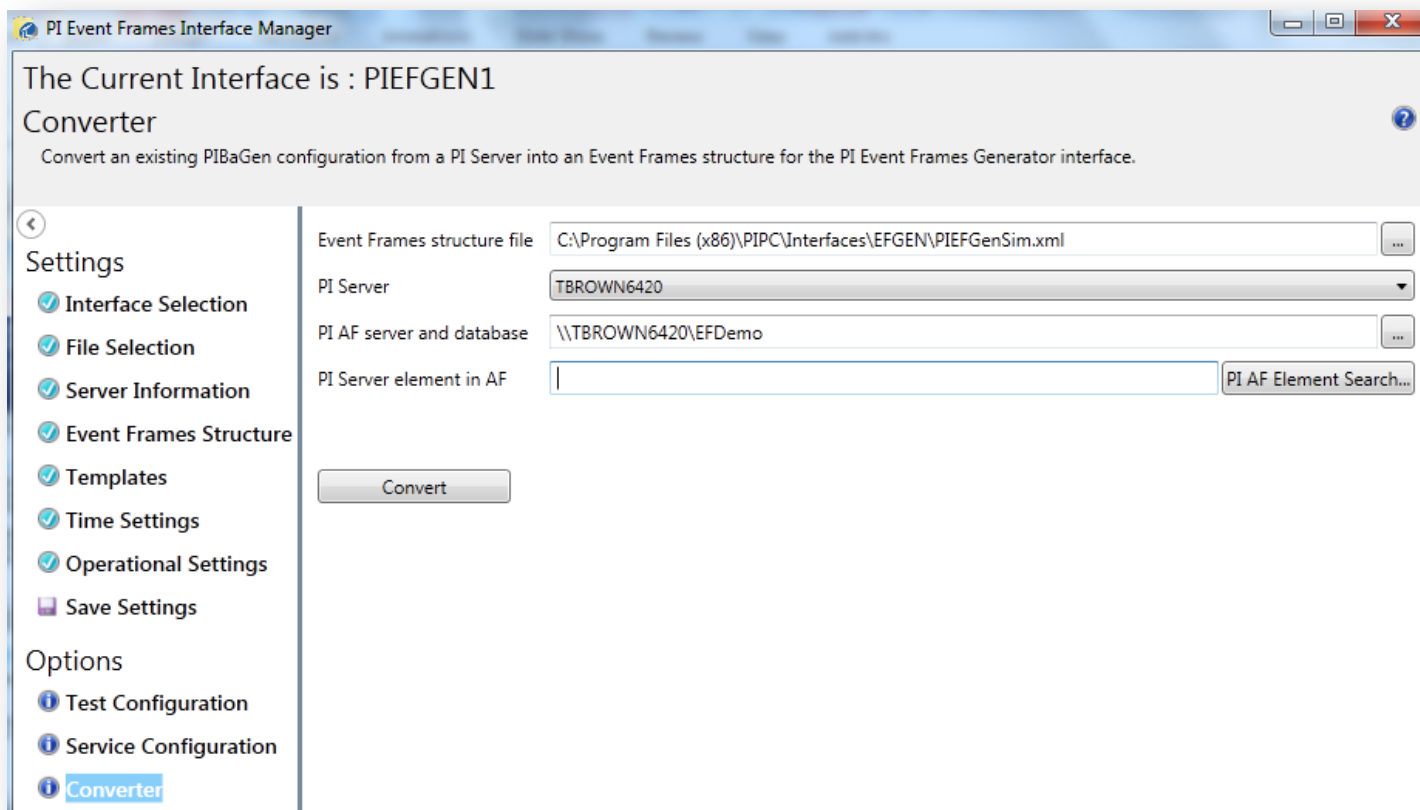
Attribute Name	Configuration	Value
BatchID	PIPoint	TIME.YEARMONTHDAYTIME
Procedure	PIPoint	RE200.Procedure
Product	PIPoint	RE200.Product
Operator	Not Included	
Comment	Not Included	

Go to Templates

• New Configuration Tool for:

- PI Event Frames Generator
- All Batch / MES Interfaces





PI Event Frames Generator – Trigger Config

PI Event Frames Interface Manager

The Current Interface is : PIEFGEN1

Event Frames Structure

Configure the event frames structure to define when event frames are created, on which template the event frames are based, and which elements and attributes are associated with the event frame.

Settings

- Interface Selection
- File Selection
- Server Information
- Event Frames Structure
- Templates
- Time Settings
- Operational Settings
- Save Settings

Options

- Test Configuration
- Service Configuration
- Converter

- PIBAGen
 - RE100 Excursions
 - RE100 Downtime
 - RE100 Batch Procedure
 - RE100 Unit Procedure
 - RE100 Operation
 - RE200 Excursions
 - RE200 Downtime
 - RE300 Excursions
 - RE300 Downtime
 - RE400 Excursions
 - RE400 Downtime
 - RExx Batch Procedure
 - RE400 Batch Procedure
 - Factory 1 TIME.Day
 - Factory 2 TIME.Day

RE100 Batch Procedure Other Settings

Configuration Name: RE100 Batch Procedure

Event Frame Template: EFSimProcedure Template...

☐ PIBaGen Compatibility Mode

Active Point:

Tagname: RE100.Active ...

Behavior: ☒ Pulse ☐ Step ☐ Include Zeroth State (Continuous)

Strings indicating zeroth state: *Example: inactive, stop, off*

Event Frame Name:

☐ Use Active Point value

☐ Use Static Name

☒ Use this PIPoint value: TIME.YEARMONTHDAYTIME ...

Attribute Name	Configuration	Value	PIPoint Search...
Product	PIPoint	RE100.Product	
Recipe	PIPoint	RE100.Recipe	



DEMO

PI Interfaces for Batch Execution Systems (Example: EMDVB)

Released





PI Interfaces for Batch Execution Sys / MES – Tag Templates



Tag Templates are the 'rules' to create tags on the fly and write values to the tags.

PI Event Frames Interface Manager

The Current Interface is : PIEMDVB1

Templates
Configure operating templates, such as tag, recipe and property/attribute.

Settings

- Interface Selection
- File Selection
- Server Information
- Source
- Templates**
- Filters
- Time Settings
- Batch Setup
- Operational Settings
- Save Settings

Options

- Test Configuration
- Service Configuration

Alarm Tag Attribute Recipe Tag

Tag Templates

- TAG[9000204]
- TAG[9000205]
- TAG[9000301]
- TAG[9000302]
- TAG[90005011]
- TAG[90005012]
- TAG[90005021]
- TAG[90005022]
- TAG[90005031]
- TAG[90005032]
- TAG[90005041]
- TAG[90005042]
- TAG[90005051]
- TAG[90005052]
- TAG[90005061]
- TAG[90005062]
- TAG[90005071]
- TAG[90005072]

TAG Configuration Triggers Comments

Add triggers for TAG[9000204] in the grid below.

There can be multiple triggers defined for a single template. Specifying multiple placeholders in a single triggering expression is treated as a AND logic and specifying multiple trigger expressions is treated as a OR logic.

Add PI Event... Add Placeholder... X

[EVENT,value="Active Step Change"]
[EVENT,value="Active Step Change Commencing"]
[EVENT,value="Comment"]
[EVENT,value="Mode Change"]
[EVENT,value="Mode Command"]
[EVENT,value="Operator Prompt"]
[EVENT,value="Prompt"]
[EVENT,value="Prompt Response"]
[EVENT,value="Recipe Data"]
[EVENT,value="Recipe Data Changed"]
[EVENT,value="Recipe Value Change"]
[EVENT,value="State Change"]
[EVENT,value="State Command"]
[EVENT,value="Step Activity"]
[EVENT,value="System Message"]

Go to Filters

TAG Configuration Triggers Comments

Index 9000204 Add Placeholder...

Name Paint.Durham:[UNIT].Event:[EVENT]

Value [BATCHID][UNIQUEID][PROCEDURE][UNITPROCEDURE][OPERATION][PHASE][DESCRIPT][E]

Data type String

☐ Translate Translations...

Advanced Features

Descriptor [UNIT] [EVENT]

Engineering Units BATCHID_UNIQUEID_PROCEDURE_UNITPROCEDURE_OPERATION_PHASE_DESCRIPTOR_EVENT_PV

Unit Alias Custom Unit Alias Name

Format: sub unit module path | unit tag alias name structure. Examples: Tag[#].UnitAlias = ABC\def | [phasemodule] State alias; Tag[#].UnitAlias = \$ \Area | [phasemodule] State alias

Event:[EVENT]

Phase Alias Default

Default: alias name as .Name and alias module path as [PhaseModule]

Annotation

☐ Use a NamedValues collection for annotation ☐ Remove annotation from tag value

PI Interfaces for BES / MES – Attribute Templates

Attribute Templates are the 'rules' to write values to Event Frame Attributes.

PI Event Frames Interface Manager

The Current Interface is : PIEMDVB1

Templates

Configure operating templates, such as tag, recipe and property/attribute.

Settings

- Interface Selection
- File Selection
- Server Information
- Source
- Templates
- Filters
- Time Settings
- Batch Setup
- Operational Settings
- Save Settings

Options

- Test Configuration
- Service Configuration

Alarm Tag Attribute Recipe Tag

Attribute Templates

- ATTRIBUTE[7]
- ATTRIBUTE[9]
- ATTRIBUTE[10]
- ATTRIBUTE[20]
- ATTRIBUTE[24]
- ATTRIBUTE[25]
- ATTRIBUTE[26]
- ATTRIBUTE[28]
- ATTRIBUTE[101]
- ATTRIBUTE[102]
- ATTRIBUTE[22]

ATTRIBUTE Configuration Triggers Comments

Index [20] Add Placeholder...

Name [DESCRIPT]

Value [PVAL] (Time: [TIME]) (User: [USERID])

Data type String

☐ Translate Translations...

☒ UOM Unit of Measure...

Advanced Features

Descriptor [EVENT]: [DESCRIPT]

Engineering Units [EU]

Category

Level -1

Go to Filters

ATTRIBUTE Configuration Triggers Comments

Add triggers for ATTRIBUTE[20] in the grid below.

There can be multiple triggers defined for a single template. Specifying multiple placeholders in a single triggering expression is treated as a AND logic and specifying multiple trigger expressions is treated as a OR logic.

Add Placeholder...

[EVENT, value="Prompt Response"]

PI Interfaces for BES / MES – Auto create PI AF

Elements

- Elements
 - NELSLAPSVR12 ModuleDB
 - OSIsoft Chemicals
 - OSIsoft Paint
 - North Carolina
 - Durham
 - EXTERIOR_PAINT
 - PAINT_BLEND
 - BLEND_400**
 - AGITATE
 - CHG_BASE
 - CHG_COLOR
 - DRAIN
 - BLEND_500
 - COLOR_100
 - DUMP
 - FILL
 - COLOR_200
 - OSIsoft Plant
 - R-2401
 - R-2402
 - SYS.DAY

BLEND_400

General Child Elements Attributes Ports Version

Filter

| | Name | Value |
|-----------------------------|-----------------------------|---------------------|
| Category: Batch Information | | |
| | Event.Operator Prompt | PAINT_20130329_2225 |
| | Event.Prompt Response | PAINT_20130329_2225 |
| | Event.State Change | PAINT_20130329_2225 |
| | Event.Step Activity | PAINT_20130329_2225 |
| | Event.System Message | PAINT_20130329_2225 |
| | PIEvent.Operation.Active | OPERATION ET: PRC_ |
| | PIEvent.Phase.Active | PHASE ET: PRC_PAIN |
| | PIEvent.UnitBatch.Active | 0 |
| | PIEvent.UnitBatch.BatchID | Inactive |
| | PIEvent.UnitBatch.Procedure | Inactive |
| | PIEvent.UnitBatch.Product | Inactive |

Auto-created PI
AF Element
Structure

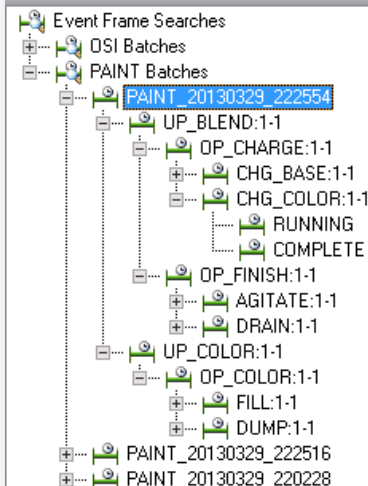
Auto-
created
tags & AF
Element
Attributes

PI Interfaces for BES / MES – Create Event Frames

| PAINT Batches | | | | | | | |
|---|-----------------------|---------------------------|---------------|-----------------|--------------|-----------|--|
| Filter | | | | | | | |
| Group by: <input type="checkbox"/> Category <input type="checkbox"/> Template | | | | | | | |
| Name | Start Time | End Time | Template | Primary Element | I Product | I Recipe | |
| PAINT_20130329_222554 | 3/30/2013 12:40:11 AM | 3/30/2013 1:40:40 AM | Procedure | | YELLOW PAINT | PRC_PAINT | |
| PAINT_20130329_222516 | 3/30/2013 12:40:06 AM | 3/30/2013 1:30:21 AM | Procedure | | ORANGE PAINT | PRC_PAINT | |
| UP_BLEND:1-1 | 3/30/2013 12:40:06 AM | 3/30/2013 1:25:21 AM | UnitProcedure | BLEND_400 | ORANGE PAINT | | |
| OP_CHARGE:1-1 | 3/30/2013 12:41:05 AM | 3/30/2013 1:05:52 AM | Operation | BLEND_400 | | | |
| CHG_BASE:1-1 | 3/30/2013 12:45:05 AM | 3/30/2013 12:51:43.001 AM | Phase | BLEND_400 | | | |
| RUNNING | 3/30/2013 12:45:05 AM | 3/30/2013 12:51:43 AM | PhaseState | BLEND_400 | | | |
| COMPLETE | 3/30/2013 12:51:43 AM | 3/30/2013 12:51:43.001 AM | PhaseState | BLEND_400 | | | |
| CHG_COLOR:1-1 | 3/30/2013 12:54:14 AM | 3/30/2013 1:04:09.001 AM | Phase | BLEND_400 | | | |
| OP_FINISH:1-1 | 3/30/2013 1:08:34 AM | 3/30/2013 1:22:50 AM | Operation | BLEND_400 | | | |
| UP_COLOR:1-1 | 3/30/2013 12:40:06 AM | 3/30/2013 1:15:04 AM | UnitProcedure | COLOR_100 | ORANGE PAINT | | |
| PAINT_20130329_220228 | 3/29/2013 11:24:50 PM | 3/30/2013 12:05:46 AM | Procedure | | BLUE PAINT | PRC_PAINT | |
| PAINT_20130329_220148 | 3/29/2013 11:02:52 PM | 3/29/2013 11:38:03 PM | Procedure | | ORANGE PAINT | PRC_PAINT | |
| PAINT_20130329_211800 | 3/29/2013 10:18:14 PM | 3/29/2013 11:06:04 PM | Procedure | | BLUE PAINT | PRC_PAINT | |
| PAINT_20130329_211725 | 3/29/2013 10:17:37 PM | 3/29/2013 10:59:57 PM | Procedure | | ORANGE PAINT | PRC_PAINT | |
| PAINT_20130328_212241 | 3/28/2013 10:22:55 PM | 3/28/2013 10:30:03 PM | Procedure | | BLUE PAINT | PRC_PAINT | |
| PAINT_20130328_211140 | 3/28/2013 10:11:49 PM | 3/28/2013 10:22:07 PM | Procedure | | 123 | PRC_PAINT | |
| PAINT_20130328_211050 | 3/28/2013 10:10:59 PM | 3/28/2013 10:22:43 PM | Procedure | | ORANGE PAINT | PRC_PAINT | |
| PAINT_20130328_204555 | 3/28/2013 9:46:08 PM | 3/28/2013 10:00:50 PM | Procedure | | BLUE PAINT | PRC_PAINT | |
| PAINT_20130328_204509 | 3/28/2013 9:45:19 PM | 3/28/2013 9:59:53 PM | Procedure | | ORANGE PAINT | PRC_PAINT | |
| PAINT_20130328_202555 | 3/28/2013 9:26:05 PM | 3/28/2013 9:40:44 PM | Procedure | | BLUE PAINT | PRC_PAINT | |

PI Interfaces for BES / MES – Create Event Frames Attributes

Event Frames



Procedure Attributes

PAINT_20130329_222554

General Child Event Frames Referenced Elements Attributes

Filter

| Name | Value |
|----------------------|----------------------|
| Author | T. Brown |
| Class or Instance | Class |
| Description | YELLOW PAINT v1 |
| Event File Name | C:\Delta\DVDData\bat |
| File Name | C:\Delta\DVDData\DO |
| Formula Descripti... | Great Paint |
| Formula Name | GPAINT |
| Formula Version | 10 |
| PRC_BASE_AMT | 156 |
| PRC_COLOR_A... | 29 |
| Product Code | YELLOW PAINT |
| Recipe Type | Batch Interface Demo |
| Scale | 100 % |
| Version | 1 |
| Version Date | 8/4/2012 8:40 |

| | |
|-----------------------|--------------|
| Category: Information | |
| Product | YELLOW PAINT |
| Recipe | PRC_PAINT |

Unit Procedure Attributes

UP_BLEND:1-1

General Child Event Frames Referenced Elements Attributes

Filter

| Name | Value |
|-----------------------|-----------------------|
| Category: Information | |
| BatchID | PAINT_20130329_222554 |
| Procedure | UP_BLEND:1-1 |
| Product | YELLOW PAINT |

DRAIN:1-1

General Child Event Frames Referenced Elements Attributes

Filter

| Name | Value |
|---|--|
| Category: <None> | |
| How many gallons would you like to release_ | 1012 (Time: 2013/03/30 00:34:26) (User: Nodename:WIN-LAGVDL0QQHN Operator: CCraven OperatorNa... |
| Send this batch to Product (YES) or Waste (NO)_ | YES (Time: 2013/03/30 00:33:40) (User: Nodename:WIN-LAGVDL0QQHN Operator: CCraven OperatorNam... |
| Category: Recipe Value | |
| DRAIN_LEVEL | 21 |
| Category: Report | |
| ACTUAL_LEVEL | 30 |

Operation / Phase Attributes



DEMO

PI Batch Database to PI Event Frames Migration



UNDER CONSTRUCTION





- **EF Wave 2 Goal [“MIGRATE”]:**

- Migrate PI Batch Data:

- Customers with limited rollout of PI Batch Clients
 - Customers comfortable with using EF Clients
 - New Batch Customers
 - Leverage Partner Products Built on PI Event Frames

Move subset
(30-60%?) of PI
Batch customers
to EF before
Wave 3

- **EF Wave 3 Goal [“LINK”]:**

- Migrate PI Batch Apps (+Data):

- Heavy usage of PI Batch Clients
 - Custom Batch Apps
 - Partner Products Built on PI Batch

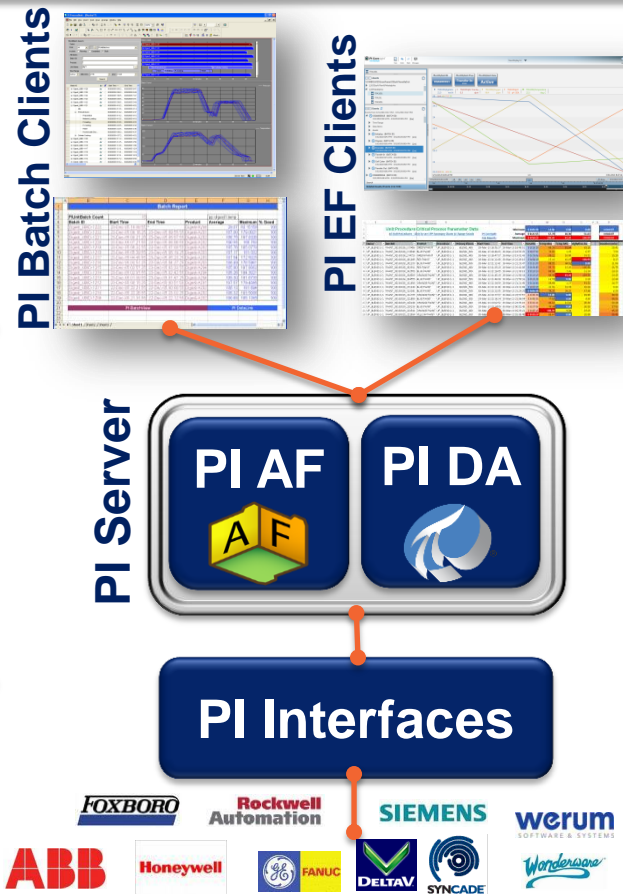
Move ALL
(95+%) of PI
Batch customers
to EF



PI BDB to PI EF Migration: Expected Customer Experience



- **PI Event Frames Clients**
 - Work against migrated batch data
 - Work against newly populated [from batch interfaces] batch EF data
 - **PI Batch Clients**
 - Continue to work against existing old BDB (read-only) batch data
-
- **Migration done online (BDB becomes read-only)**
 - Customer can kick-off/start migration at any time (not forced)
 - No impact on time series data operations
 - **Upgrade experience**
 - MDB-AF configuration is valid for BDB-EF
 - **Offline archives**
 - Can be migrated if they are brought online
-
- **PI Interfaces for Batch Execution Systems / MES**
 - Requires upgrade to version (3.x) that writes to Event Frames
 - Automatic switch from BDB to EF





PI BDB to PI EF Migration: Expected Customer Experience



- Once migration of batches to EFs will start, batch database will become read-only.
- All batch interfaces will need an upgrade to write to EF directly.
- All clients need to be upgraded or new clients be used to read Event Frames.
- Existing batch clients will continue to work on the read-only database but they will not work against the data in PI Event Frames.

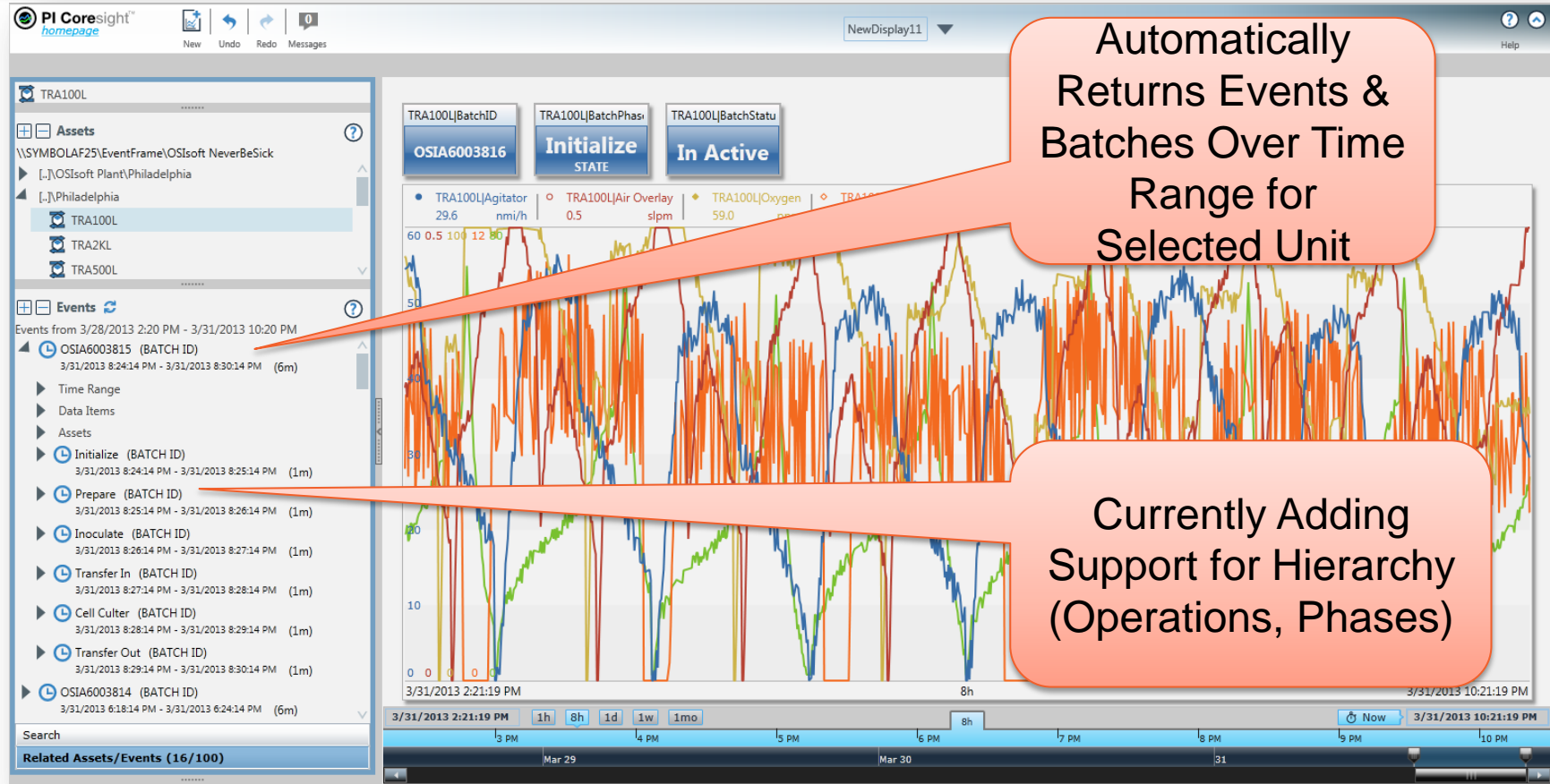


DEMO

PI Coresight Batch Trends

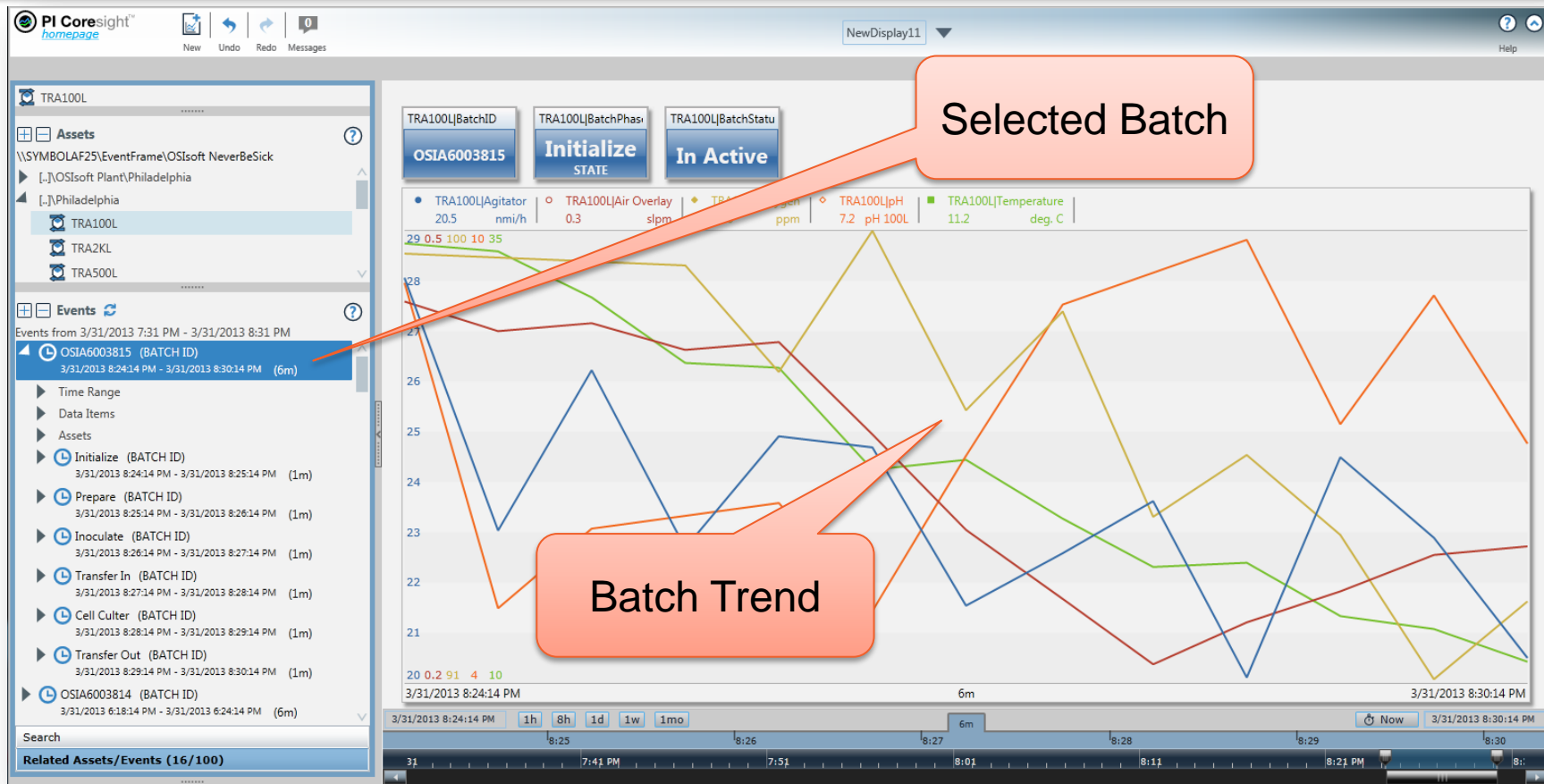


PI Coresight – Related Hierarchical Events

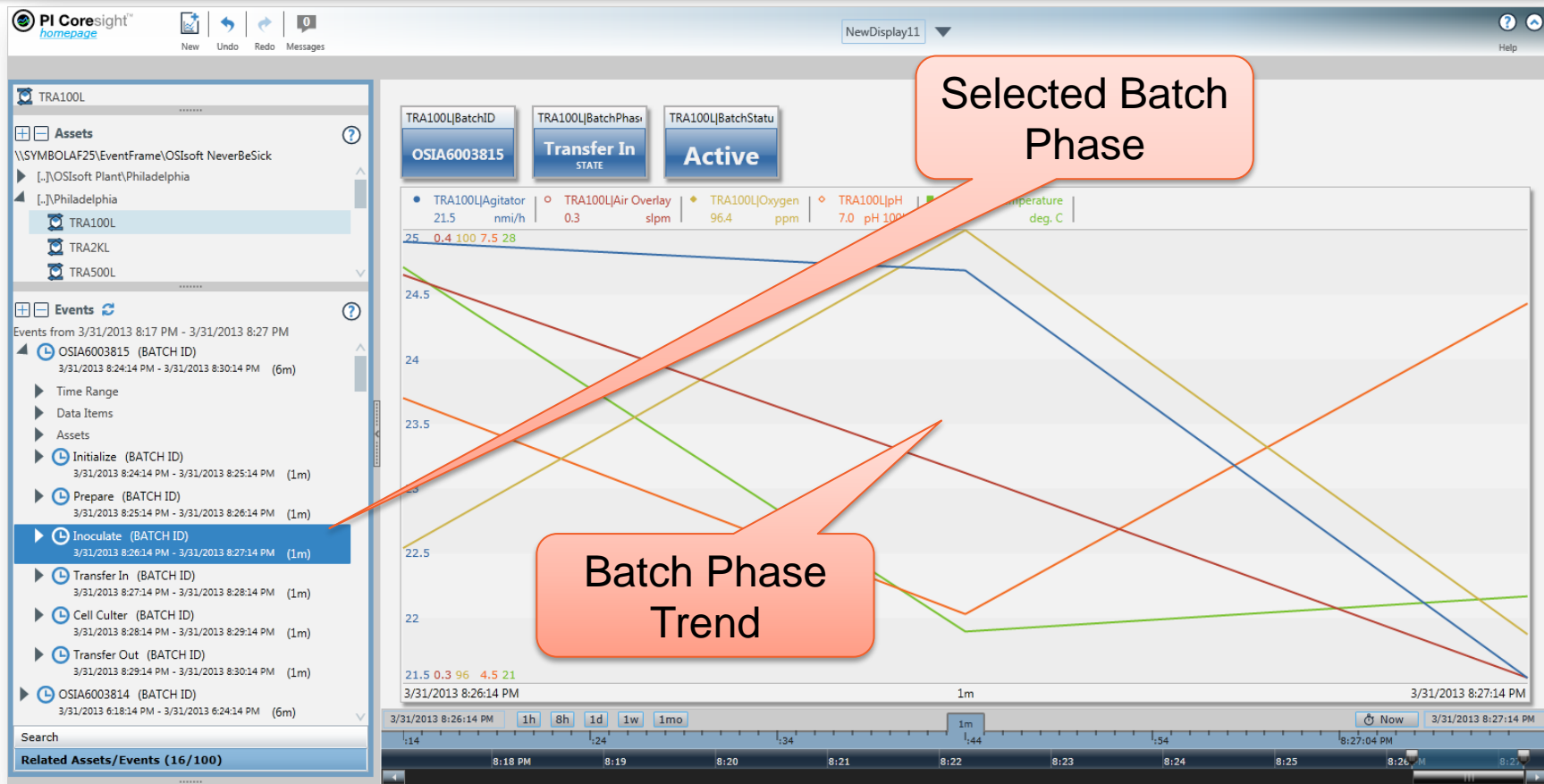




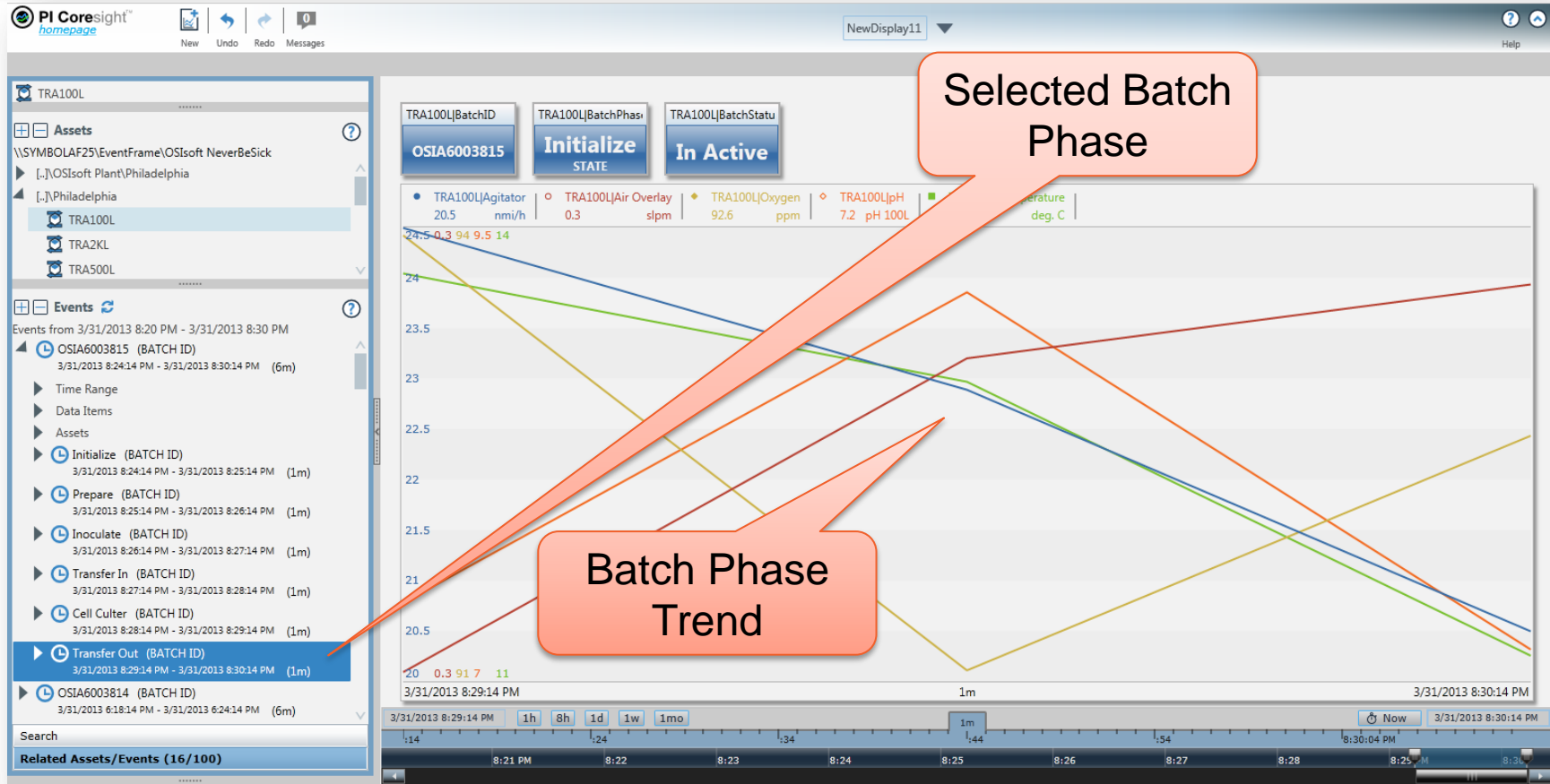
PI Coresight – Batch Trend



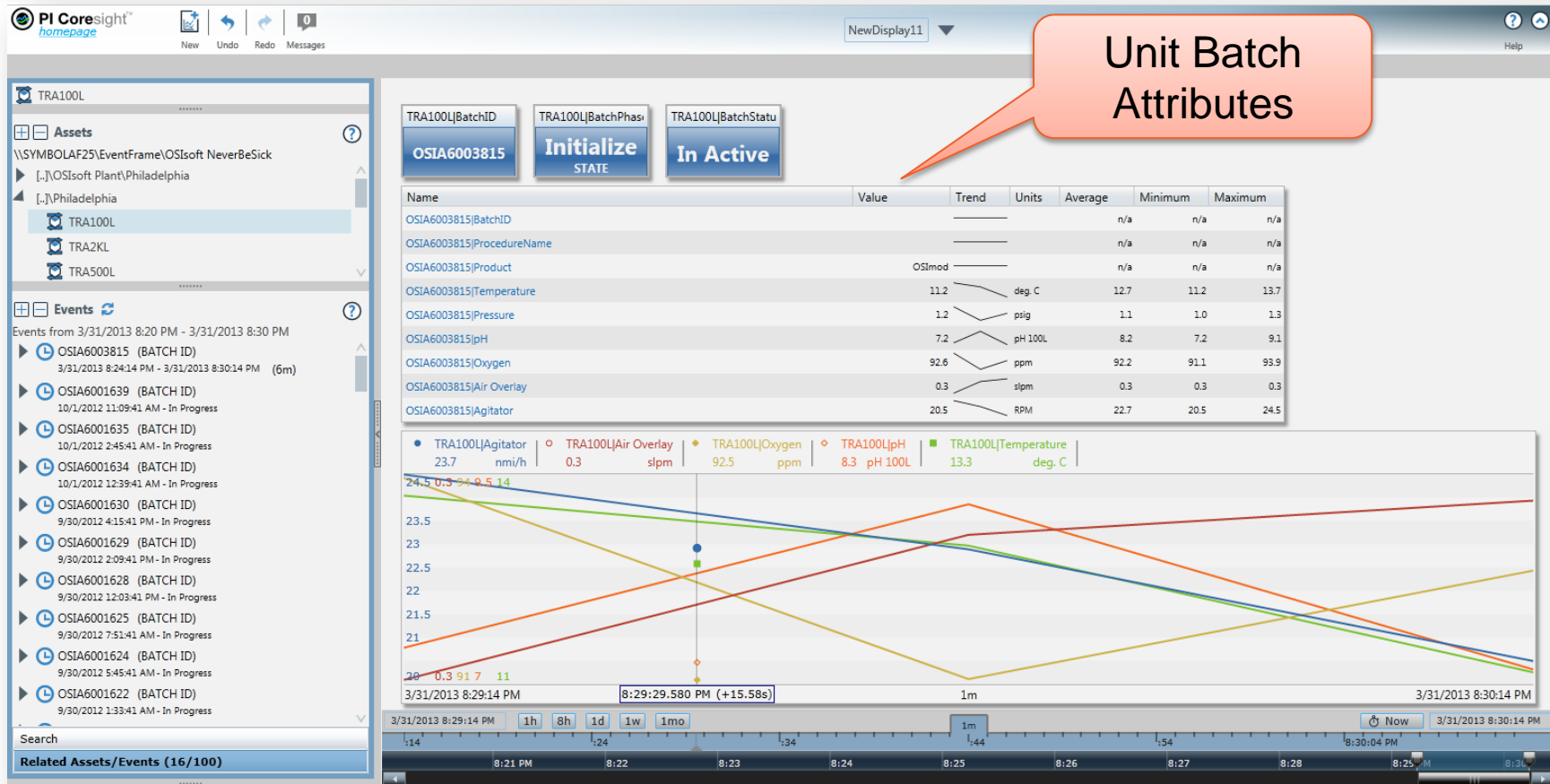
PI Coresight – Batch Phase Trend



PI Coresight – Batch Phase Trend



PI Coresight – Unit Batch Attributes



PI DataLink Visualization of Batch Data





PI DataLink – Event Frames



OSI_DataLink_PaintBatches - Excel

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW Load Test PI DATALINK Team

Current Value Single Value Compressed Data Multiple Value Sampled Data Timed Data Calculated Data Time Filtered Calculation Event Frame Data Event Frames Search Search Properties Properties Update Update Settings About Help Resources

C6

| | A | B | C | D | E | F | G | H | I | J |
|----|---|---|---------------------------|---|---|---|---|---|---|---|
| 1 | | Search Filter | Value | | | | | | | |
| 2 | | AF DB | \\NELSLAPSVR12\Production | | | | | | | |
| 3 | | EF Name | * | | | | | | | |
| 4 | | Search Start | *-30d | | | | | | | |
| 5 | | Search End | * | | | | | | | |
| 6 | | Element Name | * | | | | | | | |
| 7 | | EF Template | Procedure | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | Instructions for a smooth live batch demo | | | | | | | | |
| 10 | | Check Search Sub-Event Frames | | | | | | | | |
| 11 | | Output Options: Display All | | | | | | | | |
| 12 | | 3 Sublevels | | | | | | | | |
| 13 | | Unit Procedure Level EF Name = * to start | | | | | | | | |
| 14 | | Make Chris stand on his BALD head | | | | | | | | |
| 15 | | & count backwards from 100 in Spanish | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |

Event Frame Data

(Output Options)

☒ (Display All)

☒ Template

☒ Categories

☒ Product

☒ Recipe

Sort mode

start time ascending

(Number of Sublevels)

3

☒ (Default Format)

☐ (Transposed Format)

Output cell

LIVE!\$E\$1

☒ (Dynamic Table)

☐ (Static Table)

LIVE EFs by Template UP CPP Report UP CPP Report Data AdHoc Batch GLOBAL

READY

100%

Search Parameters

New EF Search

Select EF Attributes to display



PI DataLink – Event Frames



OSI_DataLink_PaintBatches - Excel

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW Load Test PI DATALINK Team

Current Value Archive Value Compressed Data Sampled Data Timed Data Calculated Data Time Filtered Calculation Event Frame Data Search Properties Update Settings About Help

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|----|---|---|---------------------------|---|-----------|------------|--------------|------------|--------------------|--------------------|------------|-----------------|---------|
| | | Search Filter | Value | | Name | EF Child 1 | EF Child 2 | EF Child 3 | Start Time | End Time | Duration | Primary Element | Element |
| 1 | | AF DB | \\WELSLAPSVR12\Production | | OSIA35240 | | | | 25-Mar-13 15:45:49 | 28-Mar-13 03:08:25 | 2 11:22:36 | | |
| 3 | | EF Name | * | | OSIA35240 | OSIA35240 | | | 25-Mar-13 15:45:49 | 25-Mar-13 15:51:49 | 0 0:06:00 | TRA100L | BioRea |
| 4 | | Search Start | *-30d | | OSIA35240 | OSIA35240 | Initialize | | 25-Mar-13 15:45:49 | 25-Mar-13 15:46:49 | 0 0:01:00 | | |
| 5 | | Search End | * | | OSIA35240 | OSIA35240 | Prepare | | 25-Mar-13 15:46:49 | 25-Mar-13 15:48:19 | 0 0:01:30 | | |
| 6 | | Element Name | * | | OSIA35240 | OSIA35240 | Inoculate | | 25-Mar-13 15:48:19 | 25-Mar-13 15:48:49 | 0 0:00:30 | | |
| 7 | | EF Template | Procedure | | OSIA35240 | OSIA35240 | Transfer In | | 25-Mar-13 15:48:49 | 25-Mar-13 15:49:49 | 0 0:01:00 | | |
| 8 | | | | | OSIA35240 | OSIA35240 | Cell Culter | | 25-Mar-13 15:49:49 | 25-Mar-13 15:50:49 | 0 0:01:00 | | |
| 9 | | Instructions for a smooth live batch demo | | | OSIA35240 | OSIA35240 | Transfer Out | | 25-Mar-13 15:50:49 | 25-Mar-13 15:51:49 | 0 0:01:00 | | |
| 10 | | Check Search Sub-Event Frames | | | OSIA35240 | OSIA35240 | | | 26-Mar-13 09:09:47 | 26-Mar-13 09:15:47 | 0 0:06:00 | TRA100L | BioRea |
| 11 | | Output Options: Display All | | | OSIA35240 | OSIA35240 | Initialize | | 26-Mar-13 09:09:47 | 26-Mar-13 09:10:47 | 0 0:01:00 | | |
| 12 | | 3 Sublevels | | | OSIA35240 | OSIA35240 | Prepare | | 26-Mar-13 09:10:47 | 26-Mar-13 09:11:48 | 0 0:01:01 | | |
| 13 | | Unit Procedure Level EF Name = * to start | | | OSIA35240 | OSIA35240 | Inoculate | | 26-Mar-13 09:11:48 | 26-Mar-13 09:12:47 | 0 0:00:59 | | |
| 14 | | Make Chris stand on his BALD head | | | OSIA35240 | OSIA35240 | Transfer In | | 26-Mar-13 09:12:47 | 26-Mar-13 09:13:47 | 0 0:01:00 | | |
| 15 | | & count backwards from 100 in Spanish | | | OSIA35240 | OSIA35240 | Cell Culter | | 26-Mar-13 09:13:47 | 26-Mar-13 09:14:47 | 0 0:01:00 | | |
| 16 | | | | | OSIA35240 | OSIA35240 | Transfer Out | | 26-Mar-13 09:14:47 | 26-Mar-13 09:15:47 | 0 0:01:00 | | |
| 17 | | | | | OSIA35240 | OSIA35240 | | | 26-Mar-13 19:47:17 | 26-Mar-13 19:55:17 | 0 0:08:00 | TRA2KL | BioRea |
| 18 | | | | | OSIA35240 | OSIA35240 | Initialize | | 26-Mar-13 19:47:17 | 26-Mar-13 19:48:17 | 0 0:01:00 | | |
| 19 | | | | | OSIA35240 | OSIA35240 | Prepare | | 26-Mar-13 19:48:17 | 26-Mar-13 19:49:47 | 0 0:01:30 | | |
| 20 | | | | | OSIA35240 | OSIA35240 | Inoculate | | 26-Mar-13 19:49:47 | 26-Mar-13 19:50:47 | 0 0:01:00 | | |
| 21 | | | | | OSIA35240 | OSIA35240 | Transfer In | | 26-Mar-13 19:50:47 | 26-Mar-13 19:51:47 | 0 0:01:00 | | |
| 22 | | | | | OSIA35240 | OSIA35240 | Cell Culter | | 26-Mar-13 19:51:47 | 26-Mar-13 19:52:47 | 0 0:01:00 | | |
| 23 | | | | | OSIA35240 | OSIA35240 | Transfer Out | | 26-Mar-13 19:52:47 | 26-Mar-13 19:55:17 | 0 0:02:30 | | |

LIVE EFs by Template UP CPP Report UP CPP Report Data AdHoc Batch GLOBAL

READY

Hierarchy Support

Results!

PI DataLink – Event Frames by Template

PI Event Frames can search for Child Events by Template or Name

OSI_DataLink_PaintBatches - Excel

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW Load Test PI DATALINK Team

Current Value Single Value Compressed Data Multiple Value Sampled Data Timed Data Calculated Data Calculation Time Filtered Event Frame Data Search Properties Update Settings About Help Resources

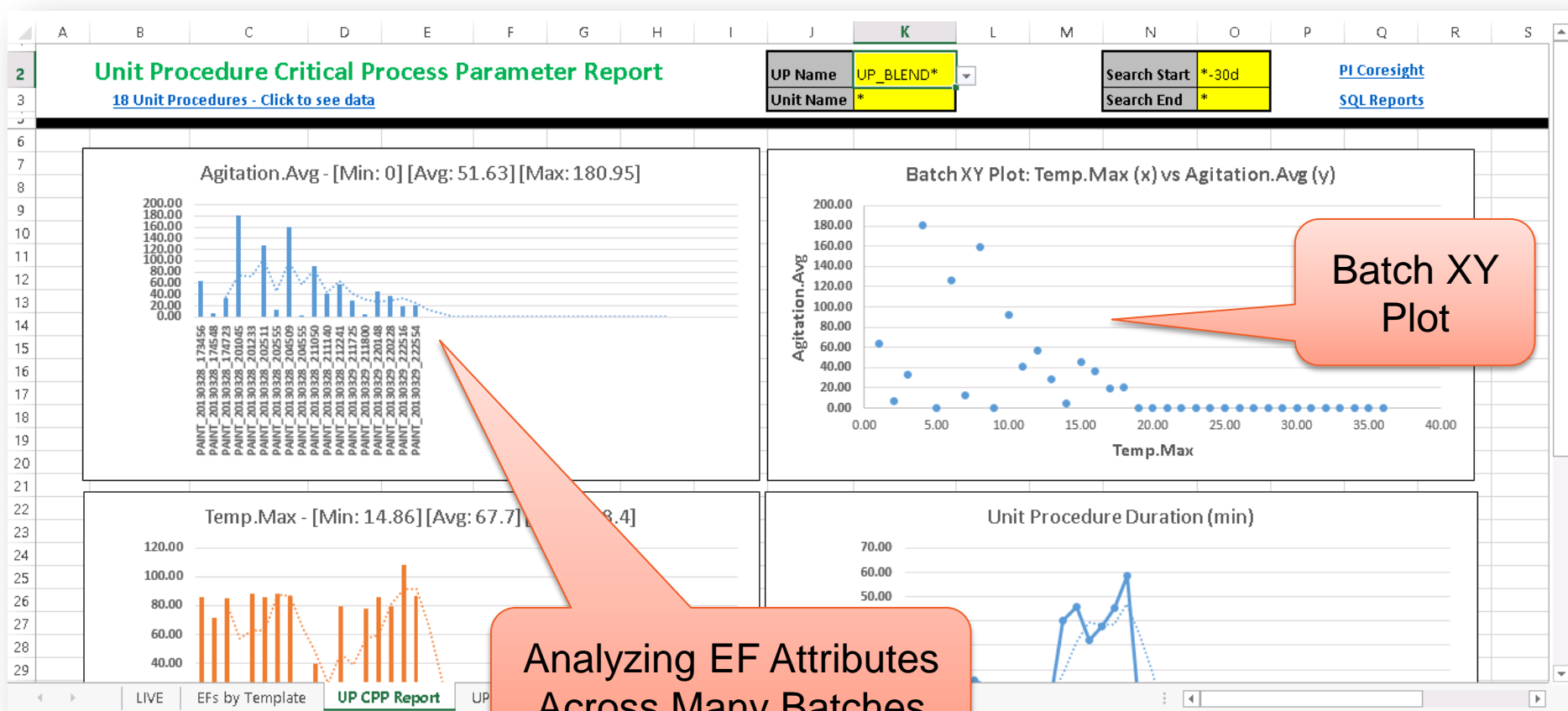
| | B | C | D | E | F | G | H | I | J | K | L | M | N |
|----|---------------|-----------|---|---------------|--------------|------------|------------|---------|--------|----------------|------------|--------------------|--------------------|
| | Search Filter | Value | | Name | EF Child 1 | EF Child 2 | EF Child 3 | Product | Recipe | Primary Bement | Template | Start Time | End Time |
| 2 | EF Name | * | | OP_FINISH:1-1 | | | | | | BLEND_500 | Operation | 30-Mar-13 01:17:02 | 30-Mar-13 01:22:45 |
| 3 | Search Start | *-30d | | OP_FINISH:1-1 | | | | | | BLEND_500 | Phase | 30-Mar-13 01:22:45 | 30-Mar-13 01:22:45 |
| 4 | Search End | * | | OP_FINISH:1-1 | AGITATE:1-1 | | RUNNING | | | BLEND_500 | PhaseState | 30-Mar-13 01:22:45 | 30-Mar-13 01:22:45 |
| 5 | Unit Name | * | | OP_FINISH:1-1 | AGITATE:1-1 | | COMPLETE | | | BLEND_500 | PhaseState | 30-Mar-13 01:28:48 | 30-Mar-13 01:28:48 |
| 6 | EF Template | Operation | | OP_FINISH:1-1 | DRAIN:1-1 | | | | | BLEND_500 | Phase | 30-Mar-13 01:32:42 | 30-Mar-13 01:32:42 |
| 7 | | | | OP_FINISH:1-1 | DRAIN:1-1 | | RUNNING | | | BLEND_500 | PhaseState | 30-Mar-13 01:32:42 | 30-Mar-13 01:32:42 |
| 8 | | | | OP_FINISH:1-1 | DRAIN:1-1 | | COMPLETE | | | BLEND_500 | PhaseState | 30-Mar-13 01:35:28 | 30-Mar-13 01:35:28 |
| 9 | | | | OP_FINISH:1-1 | | | | | | BLEND_400 | Operation | 30-Mar-13 01:08:34 | 30-Mar-13 01:08:34 |
| 10 | | | | OP_FINISH:1-1 | AGITATE:1-1 | | | | | BLEND_400 | Phase | 30-Mar-13 01:12:06 | 30-Mar-13 01:12:06 |
| 11 | | | | OP_FINISH:1-1 | AGITATE:1-1 | | RUNNING | | | BLEND_400 | PhaseState | 30-Mar-13 01:12:06 | 30-Mar-13 01:12:06 |
| 12 | | | | OP_FINISH:1-1 | AGITATE:1-1 | | COMPLETE | | | BLEND_400 | PhaseState | 30-Mar-13 01:17:21 | 30-Mar-13 01:17:21 |
| 13 | | | | OP_FINISH:1-1 | DRAIN:1-1 | | | | | BLEND_400 | Phase | 30-Mar-13 01:20:01 | 30-Mar-13 01:20:01 |
| 14 | | | | OP_FINISH:1-1 | DRAIN:1-1 | | RUNNING | | | BLEND_400 | PhaseState | 30-Mar-13 01:20:01 | 30-Mar-13 01:20:01 |
| 15 | | | | OP_FINISH:1-1 | DRAIN:1-1 | | COMPLETE | | | BLEND_400 | PhaseState | 30-Mar-13 01:21:36 | 30-Mar-13 01:21:36 |
| 16 | | | | OP_COLOR:1-1 | | | | | | COLOR_200 | Operation | 30-Mar-13 00:42:29 | 30-Mar-13 00:42:29 |
| 17 | | | | OP_COLOR:1-1 | FILL:1-1 | | | | | COLOR_200 | Phase | 30-Mar-13 00:48:30 | 30-Mar-13 00:48:30 |
| 18 | | | | OP_COLOR:1-1 | FILL:1-1 | | RUNNING | | | COLOR_200 | PhaseState | 30-Mar-13 00:48:30 | 30-Mar-13 00:48:30 |
| 19 | | | | OP_COLOR:1-1 | FILL:1-1 | | COMPLETE | | | COLOR_200 | PhaseState | 30-Mar-13 00:51:01 | 30-Mar-13 00:51:01 |
| 20 | | | | OP_COLOR:1-1 | DUMP:1-1 | | | | | COLOR_200 | Phase | 30-Mar-13 00:54:22 | 30-Mar-13 00:54:22 |
| 21 | | | | OP_COLOR:1-1 | DUMP:1-1 | | RUNNING | | | COLOR_200 | PhaseState | 30-Mar-13 00:54:22 | 30-Mar-13 00:54:22 |
| 22 | | | | OP_COLOR:1-1 | DUMP:1-1 | | COMPLETE | | | COLOR_200 | PhaseState | 30-Mar-13 01:19:04 | 30-Mar-13 01:19:04 |
| 23 | | | | OP_CHARGE:1-1 | | | | | | BLEND_500 | Operation | 30-Mar-13 00:42:15 | 30-Mar-13 00:42:15 |
| 24 | | | | OP_CHARGE:1-1 | CHG_BASE:1-1 | | | | | BLEND_500 | Phase | 30-Mar-13 00:47:30 | 30-Mar-13 00:47:30 |
| 25 | | | | OP_CHARGE:1-1 | CHG_BASE:1-1 | | RUNNING | | | BLEND_500 | PhaseState | 30-Mar-13 00:47:30 | 30-Mar-13 00:47:30 |
| 26 | | | | OP_CHARGE:1-1 | CHG_BASE:1-1 | | COMPLETE | | | BLEND_500 | PhaseState | 30-Mar-13 00:55:49 | 30-Mar-13 00:55:49 |

LIVE EFs by Template UP CPP Report UP CPP Report Data AdHoc Batch GLOBAL

READY



PI DataLink – Event Frame Reports



PI DataLink – Filter EF Query on Unit Name

Unit Procedure Critical Process Parameter Report

9 Unit Procedures - Click to see data

UP Name UP_BLEND*

Unit Name BLEND_500

Search Start *-30d

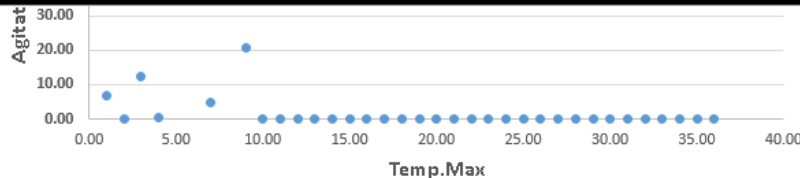
[PI Coresight](#)

Search End *

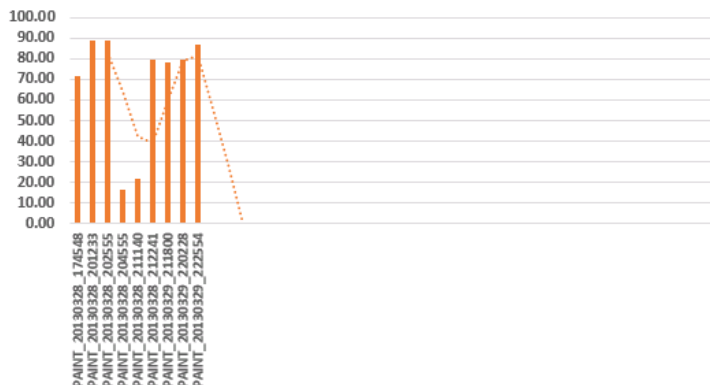
[SQL Reports](#)

Filter EF
Query on
Unit Name

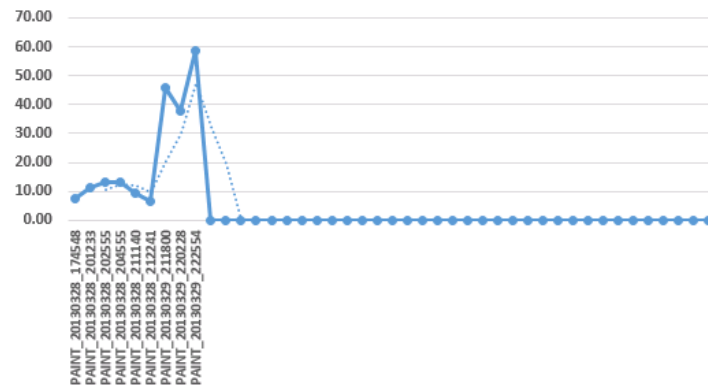
PAINT_20130328_174548
PAINT_20130328_201233
PAINT_20130328_202555
PAINT_20130328_204555
PAINT_20130328_211140
PAINT_20130328_212241
PAINT_20130329_211800
PAINT_20130329_220228
PAINT_20130329_222554



Temp.Max - [Min: 16.59] [Avg: 67.8] [Max: 88.54]



Unit Procedure Duration (min)



LIVE

EFs by Template

UP CPP Report

UP CPP Report Data

AdHoc Batch

GLOBAL



PI DataLink – EF Query Results Driving Charts

Unit Procedure Critical Process Parameter Data

[18 Unit Procedures - Click to see CPP Summary Charts & Change Search](#)

[PI Coresight](#)

[SQL Reports](#)

| | | | | | |
|---------|-----------|--------|-------|--------|---------|
| Minimum | 0 0:06:30 | 14.86 | 0.00 | 0.00 | #VALUE! |
| Average | 0 0:21:55 | 67.70 | 18.30 | 51.63 | #VALUE! |
| Maximum | 0 0:58:29 | 108.40 | 83.20 | 180.95 | #VALUE! |

| | Name | BatchID | Product | Procedure | Primary Eleme | Start Time | End Time | Duration | Temp.Max | Temp.Min | Agitation.Av | Duration (min) |
|----|--------------|-----------------------|--------------|--------------|---------------|--------------------|--------------------|-----------|----------|----------|--------------|----------------|
| 8 | UP_BLEND:1-1 | PAINT_20130328_173456 | GREEN PAINT | UP_BLEND:1-1 | BLEND_400 | 28-Mar-13 18:35:27 | 28-Mar-13 18:45:52 | 0 0:10:25 | 86.20 | 81.64 | 63.20 | 10.42 |
| 9 | UP_BLEND:1-1 | PAINT_20130328_174548 | BLUE PAINT | UP_BLEND:1-1 | BLEND_500 | 28-Mar-13 18:46:03 | 28-Mar-13 18:53:35 | 0 0:07:32 | 71.82 | 1.35 | 6.57 | 7.53 |
| 10 | UP_BLEND:1-1 | PAINT_20130328_174723 | GREEN PAINT | UP_BLEND:1-1 | BLEND_400 | 28-Mar-13 18:47:37 | 28-Mar-13 19:02:43 | 0 0:15:06 | 85.11 | 18.00 | 33.51 | 15.10 |
| 11 | UP_BLEND:1-1 | PAINT_20130328_201045 | RED PAINT | UP_BLEND:1-1 | BLEND_400 | 28-Mar-13 21:18:08 | 28-Mar-13 21:20:18 | 0 0:08:10 | 15.18 | 10.19 | 180.95 | 8.17 |
| 12 | UP_BLEND:1-1 | PAINT_20130328_201233 | BLUE PAINT | UP_BLEND:1-1 | BLEND_500 | 28-Mar-13 21:12:42 | 28-Mar-13 21:23:47 | 0 0:11:05 | 88.51 | 44.51 | 0.00 | 11.08 |
| 13 | UP_BLEND:1-1 | PAINT_20130328_202511 | RED PAINT | UP_BLEND:1-1 | BLEND_400 | 28-Mar-13 21:25:23 | 28-Mar-13 21:41:08 | 0 0:15:45 | 85.71 | 12.20 | 126.55 | 15.75 |
| 14 | UP_BLEND:1-1 | PAINT_20130328_202555 | BLUE PAINT | UP_BLEND:1-1 | BLEND_500 | 28-Mar-13 21:26:05 | 28-Mar-13 21:39:18 | 0 0:13:13 | 88.54 | 7.36 | 12.14 | 13.22 |
| 15 | UP_BLEND:1-1 | PAINT_20130328_204509 | ORANGE PAINT | UP_BLEND:1-1 | BLEND_400 | 28-Mar-13 21:45:19 | 28-Mar-13 21:58:34 | 0 0:13:15 | 86.96 | 83.20 | 159.53 | 13.25 |
| 16 | UP_BLEND:1-1 | PAINT_20130328_204555 | BLUE PAINT | UP_BLEND:1-1 | BLEND_500 | 28-Mar-13 21:46:08 | 28-Mar-13 21:59:26 | 0 0:13:18 | 16.59 | 0.00 | 0.28 | 13.30 |
| 17 | UP_BLEND:1-1 | PAINT_20130328_211050 | ORANGE PAINT | UP_BLEND:1-1 | BLEND_400 | 28-Mar-13 22:10:59 | 28-Mar-13 22:21:45 | 0 0:10:46 | 39.84 | 2.27 | 91.51 | 10.77 |
| 18 | UP_BLEND:1-1 | PAINT_20130328_211140 | BLUE PAINT | UP_BLEND:1-1 | BLEND_500 | 28-Mar-13 22:11:49 | 28-Mar-13 22:21:08 | 0 0:09:19 | 21.56 | 13.74 | 41.42 | 9.32 |
| 19 | UP_BLEND:1-1 | PAINT_20130328_212241 | BLUE PAINT | UP_BLEND:1-1 | BLEND_500 | 28-Mar-13 22:22:55 | 28-Mar-13 22:29:25 | 0 0:06:30 | 79.23 | 34.25 | 57.40 | 6.50 |
| 20 | UP_BLEND:1-1 | PAINT_20130329_211725 | ORANGE PAINT | UP_BLEND:1-1 | BLEND_400 | 29-Mar-13 22:17:37 | 29-Mar-13 22:57:57 | 0 0:40:20 | 14.86 | 0.00 | 28.85 | 40.33 |
| 21 | UP_BLEND:1-1 | PAINT_20130329_211800 | BLUE PAINT | UP_BLEND:1-1 | BLEND_500 | 29-Mar-13 22:18:14 | 29-Mar-13 23:04:04 | 0 0:45:50 | 77.89 | 0.00 | 4.89 | 45.83 |
| 22 | UP_BLEND:1-1 | PAINT_20130329_220148 | ORANGE PAINT | UP_BLEND:1-1 | BLEND_400 | 29-Mar-13 23:02:52 | 29-Mar-13 23:35:03 | 0 0:32:11 | 86.11 | 11.63 | 45.83 | 32.18 |
| 23 | UP_BLEND:1-1 | PAINT_20130329_220228 | BLUE PAINT | UP_BLEND:1-1 | BLEND_500 | 29-Mar-13 23:24:50 | 30-Mar-13 00:02:46 | 0 0:37:56 | 79.38 | 0.00 | 36.55 | 37.93 |
| 24 | UP_BLEND:1-1 | PAINT_20130329_222516 | ORANGE PAINT | UP_BLEND:1-1 | BLEND_400 | 30-Mar-13 00:40:06 | 30-Mar-13 01:25:21 | 0 0:45:15 | 108.40 | 9.0 | 19.25 | 45.25 |
| 25 | UP_BLEND:1-1 | PAINT_20130329_222555 | BLUE PAINT | UP_BLEND:1-1 | BLEND_500 | 30-Mar-13 00:40:11 | 30-Mar-13 01:38:40 | 0 0:58:29 | 86.67 | 0.0 | 20.88 | 58.48 |

Excel – Min, Avg,
Max Across All
Batches

Excel Conditional
Formatting

PI AF EF Attribute
Calculations



PI DataLink – URL Link to PI Coresight



| Name | BatchID | URL |
|--------------|-----------------------|--|
| UP_BLEND:1-1 | PAINT_20130328_173456 | http://nslslapsvr12/Coresight/#/Displays/AdHoc?DataItems=... |
| UP_COLOR:1-1 | PAINT_20130328_173456 | http://nslslapsvr12/Coresight/#/Displays/AdHoc?DataItems=... |
| UP_COLOR:1-1 | PAINT_20130328_174548 | http://nslslapsvr12/Coresight/#/Displays/AdHoc?DataItems=... |
| UP_BLEND:1-1 | PAINT_20130328_174548 | http://nslslapsvr12/Coresight/#/Displays/AdHoc?DataItems=... |
| UP_BLEND:1-1 | PAINT_20130328_174723 | http://nslslapsvr12/Coresight/#/Displays/AdHoc?DataItems=... |
| UP_COLOR:1-1 | PAINT_20130328_174723 | http://nslslapsvr12/Coresight/#/Displays/AdHoc?DataItems=... |
| UP_COLOR:1-1 | PAINT_20130328_201045 | http://nslslapsvr12/Coresight/#/Displays/AdHoc?DataItems=... |

PI Coresight Ad-Hoc Display
Using URL Parameters [Batch
Data] Calculated in Excel

PI DataLink /
Excel URL String



Batch Reporting Using PI OLEDB Enterprise & SQL Server Reporting Services

PI OLEDB Enterprise 2012 + SSRS – Batch Reporting

Home > NeverBeSick Production Reports > NeverBeSickProductionReport

Production Batch Select Batch ID View Report

1 of 1 100% Find | Next

NeverBeSick Production Report

| | | | |
|-------------|-----------------------------|-----------------------|-----------------------|
| Report Name | NeverBeSickProductionReport | Report Execution Time | 3/31/2013 11:40:13 PM |
| Batch | OSIA35243 | Batch StartTime | 3/28/2013 2:51:32 PM |
| | | Batch EndTime | 3/28/2013 2:57:32 PM |

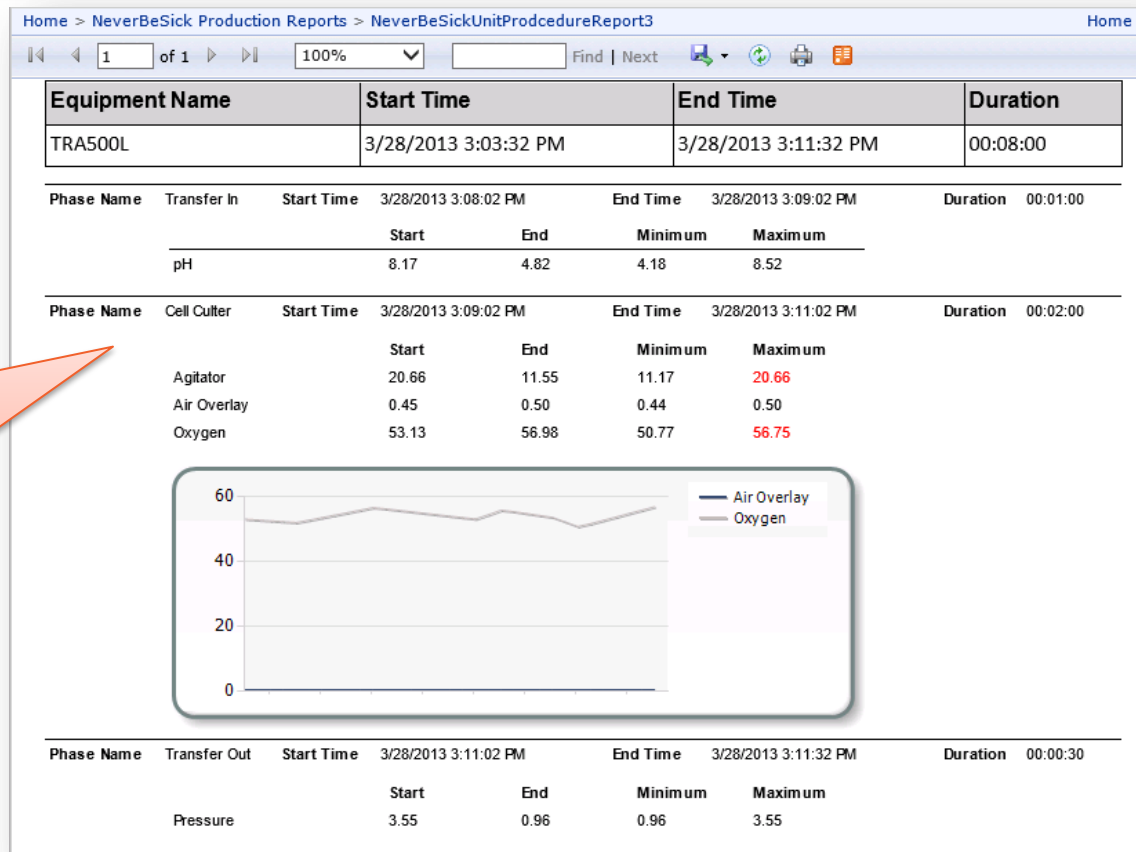
Production Equipment

| Asset Name | Start Time | End Time | Duration |
|--------------------------|----------------------|----------------------|----------|
| TRADRYER | 3/28/2013 3:53:32 PM | 3/28/2013 3:59:32 PM | 00:06:00 |
| TRAMIXER | 3/28/2013 3:16:32 PM | 3/28/2013 3:23:32 PM | 00:07:00 |
| TRA2KL | 3/28/2013 3:11:32 PM | 3/28/2013 3:19:32 PM | 00:08:00 |
| TRA500L | 3/28/2013 3:03:32 PM | 3/28/2013 3:11:32 PM | 00:08:00 |
| TRA100L | 3/28/2013 2:51:32 PM | 3/28/2013 2:57:32 PM | 00:06:00 |

Link to Unit Procedures

PI OLEDB Enterprise 2012 + SSRS – Batch Reporting

TRA500L
Unit
Procedure
Report



What about RtReports?

RtReports Print Approve Verifications Showing Page 1 of 1 Prev Page Next

Batch ID : OSIA21648 NeverBeSick Bio Production Summary Report Version : 1.0

Report Not Printed

Report Summary

| | | | |
|----------------|---|------------------------|-----------------------|
| Report Name: | NeverBeSick Bio Production Summary Report | Report Generation Date | 21-Jan-08 12:09:33 PM |
| Report Version | 1.0 | Release Date | |
| Report Author | midway RtReportsAdmin | Creation Date | 01-Jul-05 11:11:20 AM |

| Unit Name | Start Time | End Time | Duration |
|-----------|-----------------------|-----------------------|-----------|
| TRASOOL | 21-Jan-08 08:21:37 AM | 21-Jan-08 08:29:37 AM | 8 minutes |

Temperature Limit Check High Limit 55 Low Limit 19

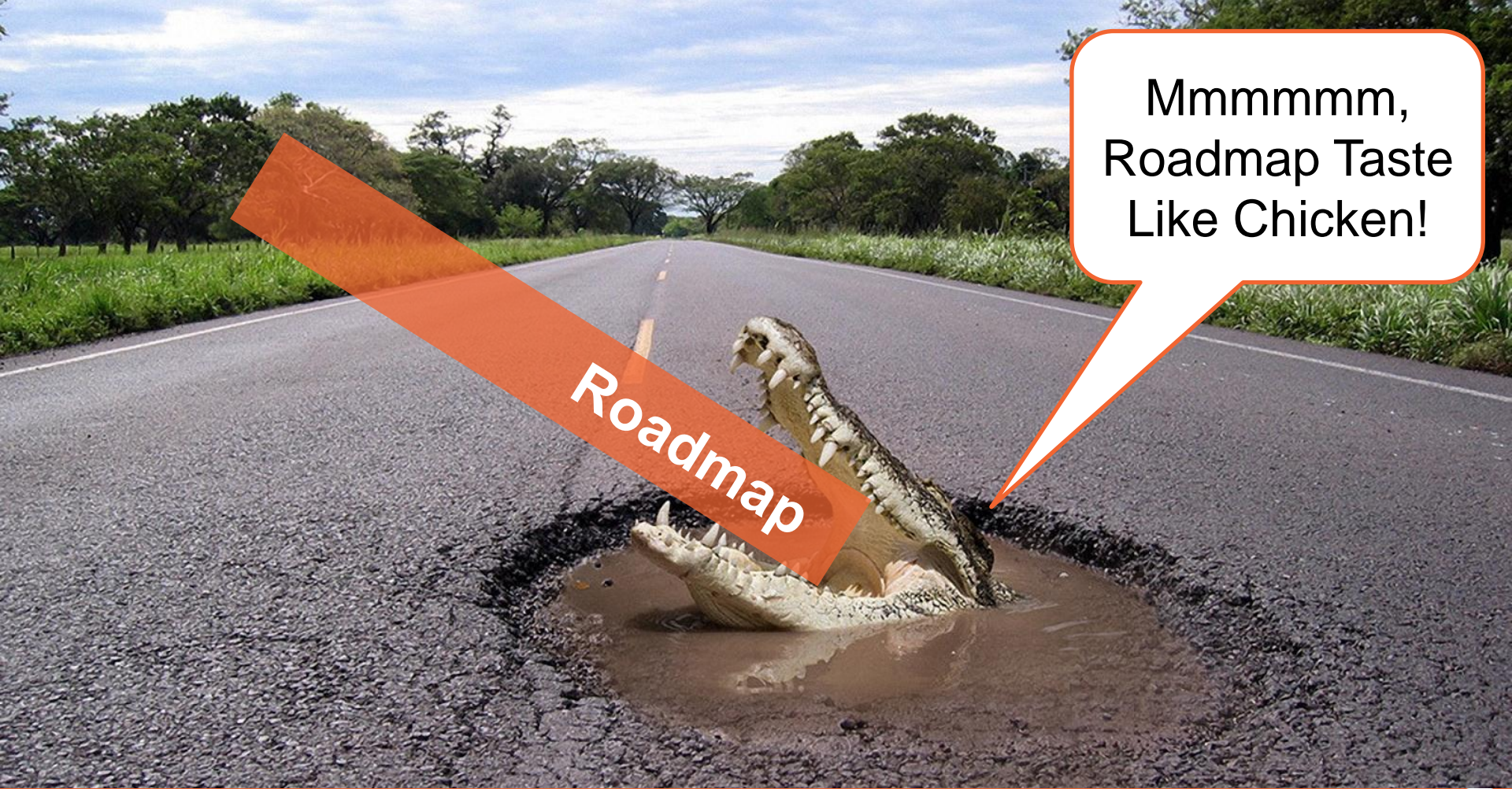
| Violation Message | Violation Value | Violation Time | Return Value | Return Time | Min/Max |
|-----------------------|-----------------|-----------------------|--------------|-----------------------|---------|
| Value below low limit | 18.97 | 21-Jan-08 08:29:37 AM | 6.17 | 21-Jan-08 08:29:37 AM | 1 |



Next version will focus on
fixing printing issues around
Microsoft Word + Bug Fixes
[Timing TBD, 2013]

Following version will add
support for PI Event Frames
[Timing TBD, 2014]





Roadmap

Mmmmmm,
Roadmap Taste
Like Chicken!

Wave 2 – PI Event Frames for the Mainstream

Wave 3 – PI Batch to PI Event Frames [+]

 **PI Event Frames Generator**
Trigger Hierarchical Events (Tags)
Trigger Batches, PI BaGen Migration

PI Interfaces for BES / MES
Batch Events



PI System Access
Event Integration



 **PI Coresight**
Related Events



PI DataLink (TBD)
Events in Excel

 **PI Coresight (TBD)**
Hierarchical Events

PI ProcessBook (TBD)
Recent Events

PI AF Asset Based Analytics (TBD)
Event Detection

PI Data Archive (TBD)
Batch to EF Migration

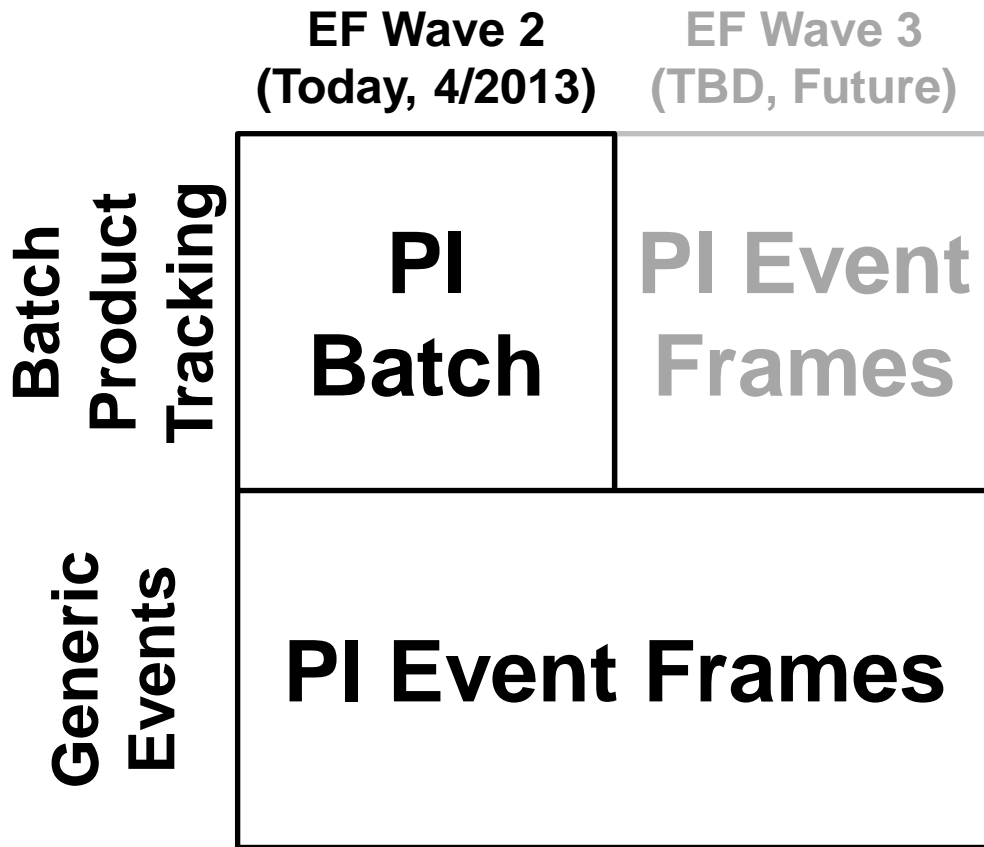


| Product | Theme |
|---------------------|---------------------------------------|
| PI AF | Audit Trail Viewer |
| PI Coresight | Event Overlay Trending |
| PI Coresight Mobile | Events in Your Pocket |
| RtReports | EF Integrated into Compliance Reports |
| PI Manual Logger | Log Events / Event Attributes |
| PI Notifications | Event Subscription & Notification |
| PI Data Archive | Batch Link / Redirection [TBD] |

** Items in green indicate that development has started, but release projections are not yet available.*

NOTE: Future dates are subject to change. Last Updated: 04-17-2013

What should I use today and in the future for events or batches?



Exceptions: Why might a Batch customer start with EF today?

- Not a batch use case
- Not using PI Batch today & comfortable with current EF functionality & EF roadmap
- Leverage EF advantages
 - Overlapping unit procedures, scalability, etc.
- Leverage EF + Partner / Custom Data Access

What OSIsoft Partners have products that support EF & Batch?



RtDuet™
Real-time Downtime, Uptime & Event Tracking

- Downtime
- Operational Equipment Effectiveness (OEE)
- Event Tracking

RELEASED

<http://rttechsoftware.com>



livepoint

- Golden Batch Analysis
- Batch Analysis
- Batch Genealogy
- Embedded SPC / SQC, X/Y Analysis on PI-Batch / EF Basis

RELEASED

<http://mirabosystems.com>



FactoryStudio

- HMI – Process Monitoring / Visualization
- Mobile displays on iPad, iPhone

RELEASED

<http://www.tatsoft.com>



PI Process Templates

- Batch repeatability & consistency
- Profiling of critical event attributes
- Real-time alarming of Event Trend Profiles

IN PROGRESS

<http://www.exele.com>



SBOL
BY UMETRICS

- Multivariate Batch Analysis
- Batch Statistical Process Control (SPC)

PLANNED FOR FUTURE

<http://www.umatrics.com>

Please share your feedback with us! Now!

Where:

Product Expo (Golden Gate Rooms) –
PI Batch to PI Event Frames Booth

When:

Right now, following talk (or until 6:45 pm)



PI Event Frames – Contact Us!

Todd Brown

tbrown@osisoft.com

Product Manager

OSIsoft, LLC

Chris Nelson

cnelson@osisoft.com

Development Lead

OSIsoft, LLC



THANK YOU

Brought to you by



Get hands on knowledge of how to use and get value from the PI System



DECEMBER 3 - 6, GRAND HYATT SAN FRANCISCO

vCampus Live! 2013

WHERE PI GEEKS MEET



SAVE THE DATE

