PI Event Frames: How to Provide Context to Critical Events

Presented by Todd Brown & Lingli Zheng

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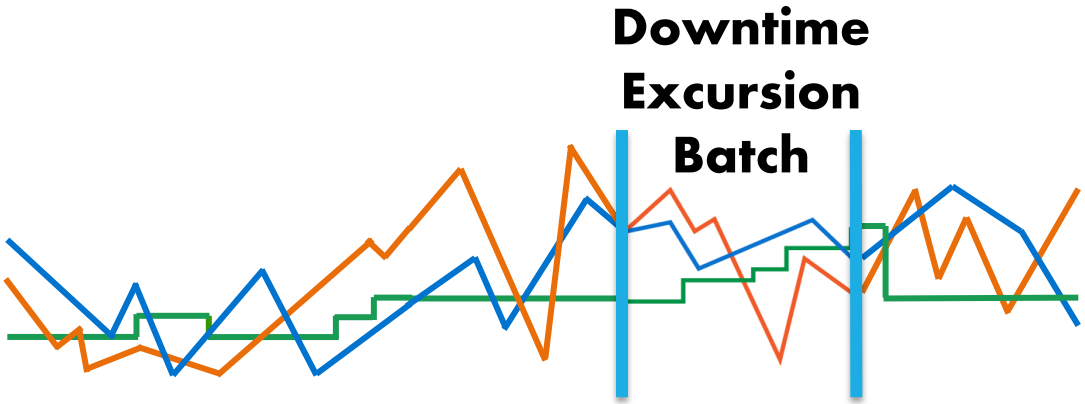
Event Frames

Event Frames automatically bookmarks PI time-series data so that it's more meaningful to engineers and business users, AND easier to for them to find, analyze, and report on.



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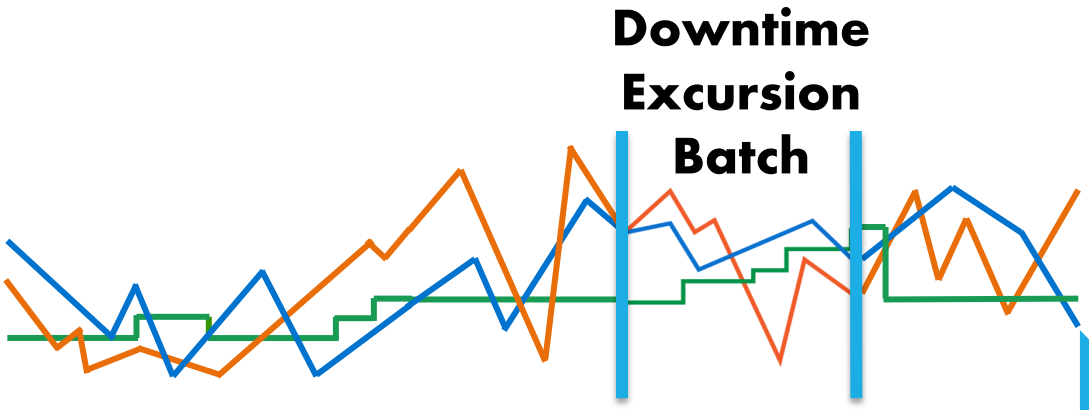
Event Frames

Event Frames automatically bookmarks PI time-series data so that it's more meaningful to engineers and business users, AND easier to for them to find, analyze, and report on.



Related Data!

Event Attribute	Value
Name	Ex 20121215-0002
Start	15-Dec-2012 10:35:02
End	15-Dec-2012 10:47:26
Duration	12 min, 24 sec
Asset	Boiler-352
Excursion Type	High Violation
Fuel Gas Flow.Avg	37.12 k sft3/h
Fuel.Start	823.48 k sft3/ton
myPIKPI.Max	47.19 bbl/d

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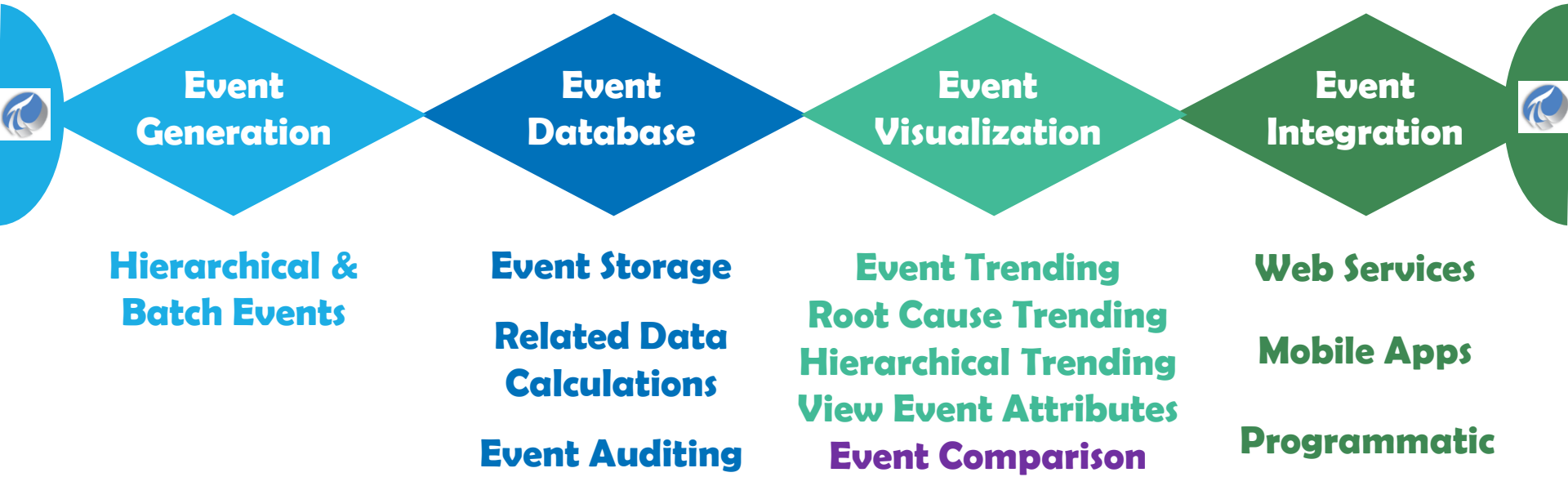
PI System in 2015: Event Infrastructure Capabilities



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What value do you see PI Event Frames bringing to your company ?

"Clearer picture of my process."

"Easier Batch Analysis."

"Easily Analyze Events."

"Saves a lot of time to automatically link data to events."

"More configuration, less programming."

"View our time series data in a meaningful way."

"Easier reporting."

"Early event detection before they become a problem."

"An integrated system is a force multiplier."

"Easily surface abnormal events."

"Easily find event related data."

"Drive events from real time data, not manual data entry."

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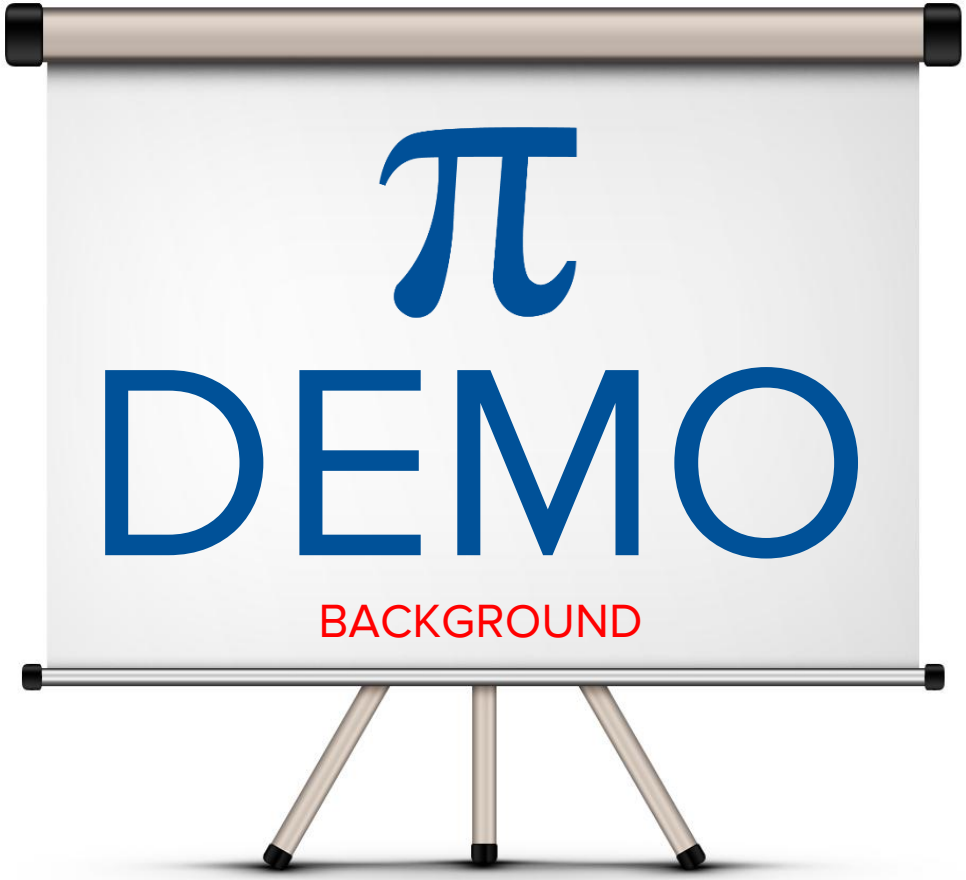

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*-2 years @ UC2013 …

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*-1 years @ UC2014 …

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...

Oil & Gas

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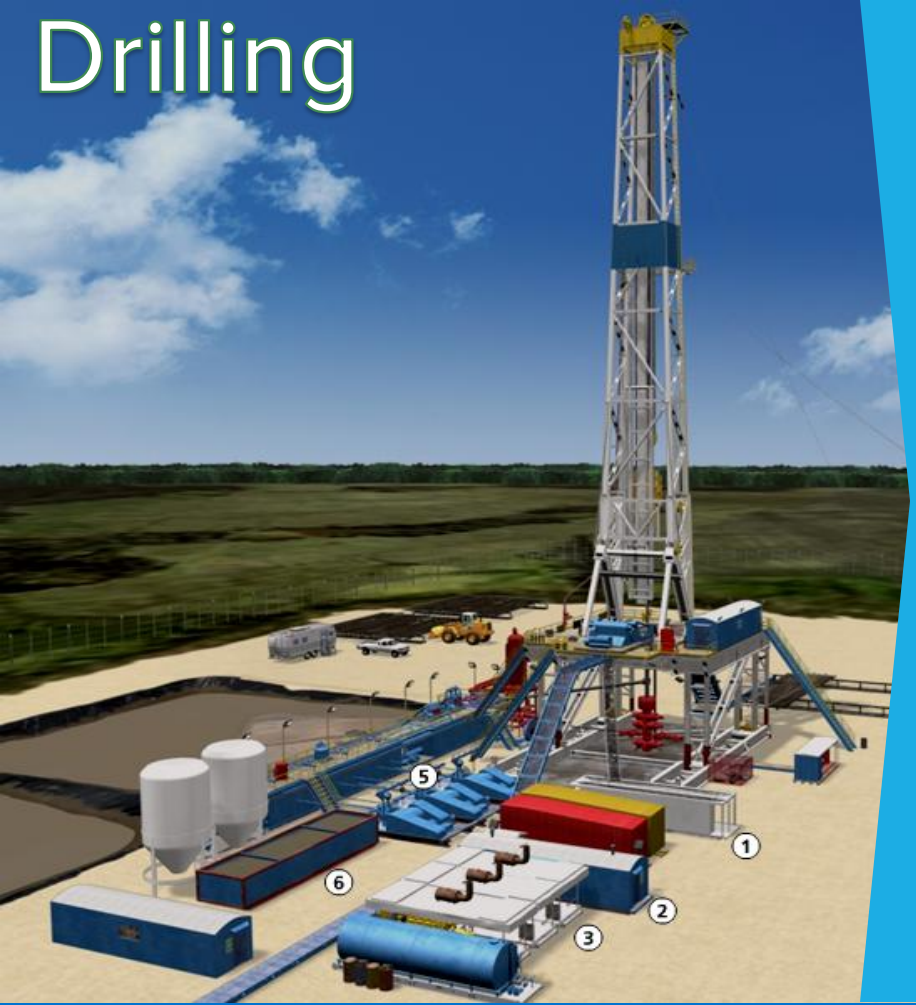
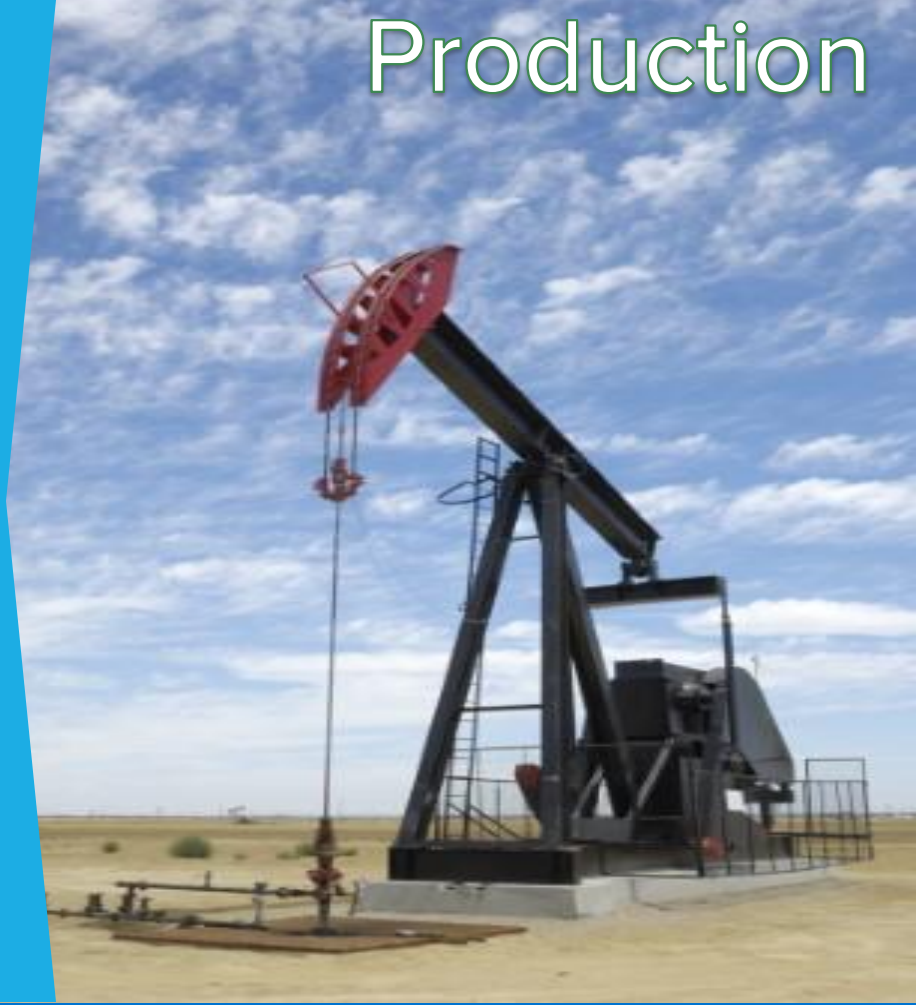
Drilling



Production



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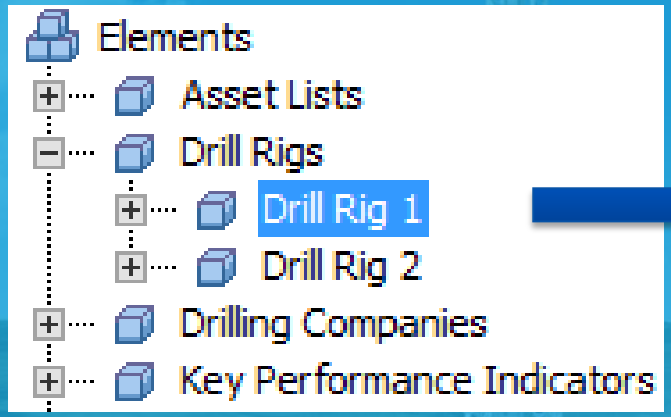
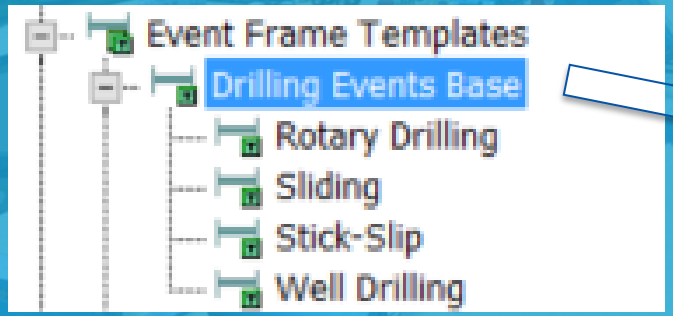
AF has Drilling Info





Category: Operational Data	
Bit Position	17049.80078125 ft
Bit Weight	-0.028619397431612 klb
Block Height	3.05160784721375 ft
Diff Press	78.9392318725586 psi
Flow In Rate	49.99176025390625
Hole Depth	17050.828125 ft
Hook Load	43.5204582214355 klb
Mud Weight In	1037.96557617188 lb/US gal
Pump Pressure	79.0315628051758 psi
ROP	-0.043539393693208694
Top Drive RPM	-0.0241858921945095 RPM
Top Drive Torque	-0.017585041001439095
Category: Well Information	
Midas Number	42-501-20130-07-00
Well Name	Done
Well Name State	Done

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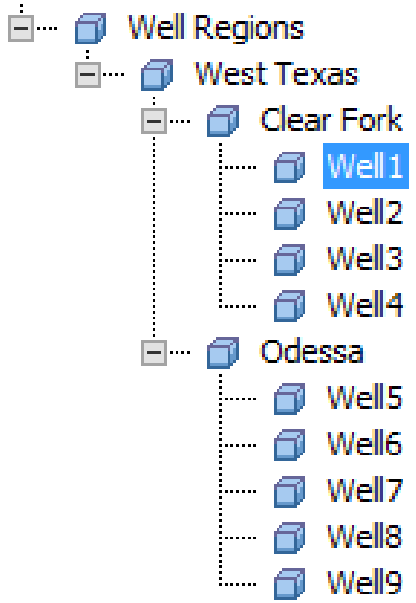
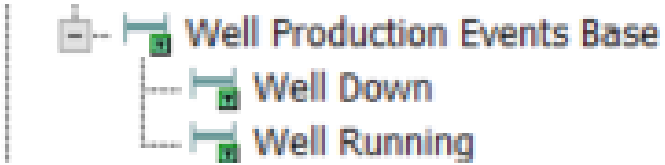
+ Production Info





Category: Real-time data		
Bottom hole pressure	10813.2443147773 psia	
Casing pressure	1780.68244866127 psia	
Casing temperature	53.1148139541572 °F	
Gas Gravity	0.98066356383760622	
Line Pressure	1430.96652484078 psia	
Load Ratio	1.7038491327991 %	
Power Consumption	81.1968394700423 kW	
Production Rate	810.854775417063 mscfd	
Tubing pressure	1184.81927513369 psia	
Tubing temperature	91.8639555628709 °F	
Well life	340.541666666667 d	
Category: Temperature		
Casing temperature	53.1148139541572 °F	
Tubing temperature	91.8639555628709 °F	
Category: Time tracking		
Category: Well Information		
Asset Name	Well1	
Bore Head	2.5 in	
Date of installation	4/13/2014 3:03:20 AM	
Date of production start	4/19/2014 5:37:00 AM	

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Event Frames Demo – What you're going to see

AF Asset Analytics

- Detect Events with configurable business logic
- Create root cause events
- Backfill events using history in PI

PI DataLink

- Search for Events in Excel
- Build interactive event reports

PI Coresight

- Trend events and root cause events
- View event attributes
- Compare events to one another via Overlay Trends (BETA)

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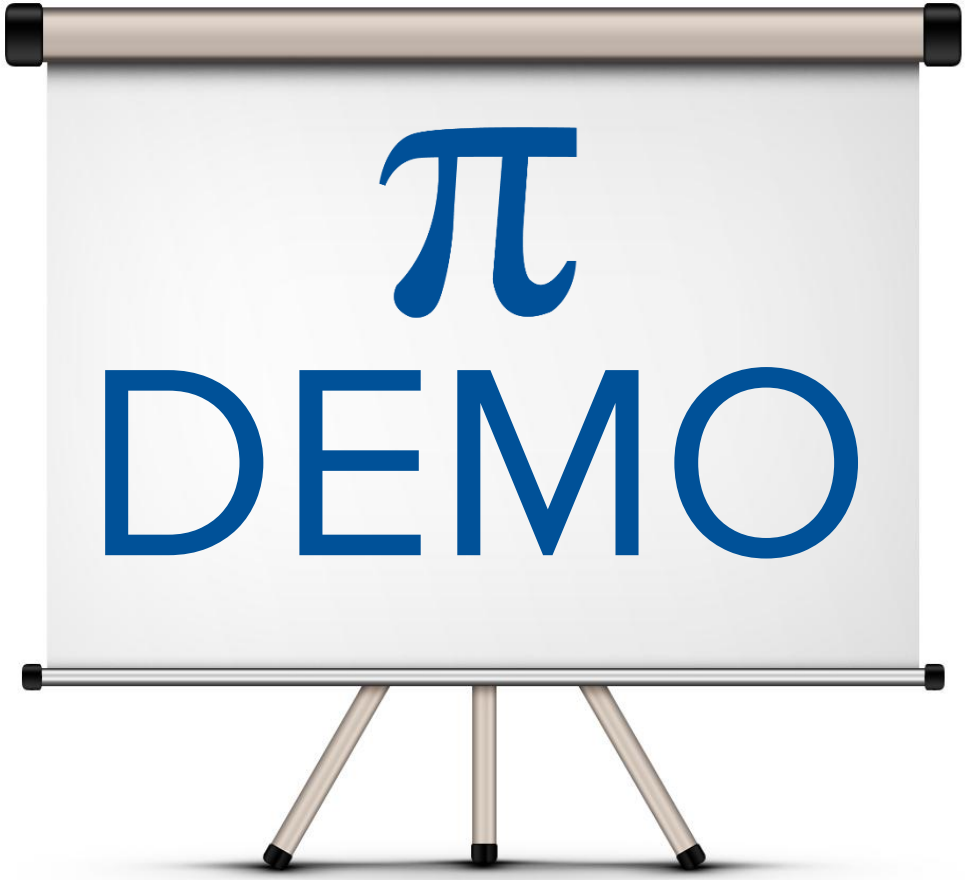

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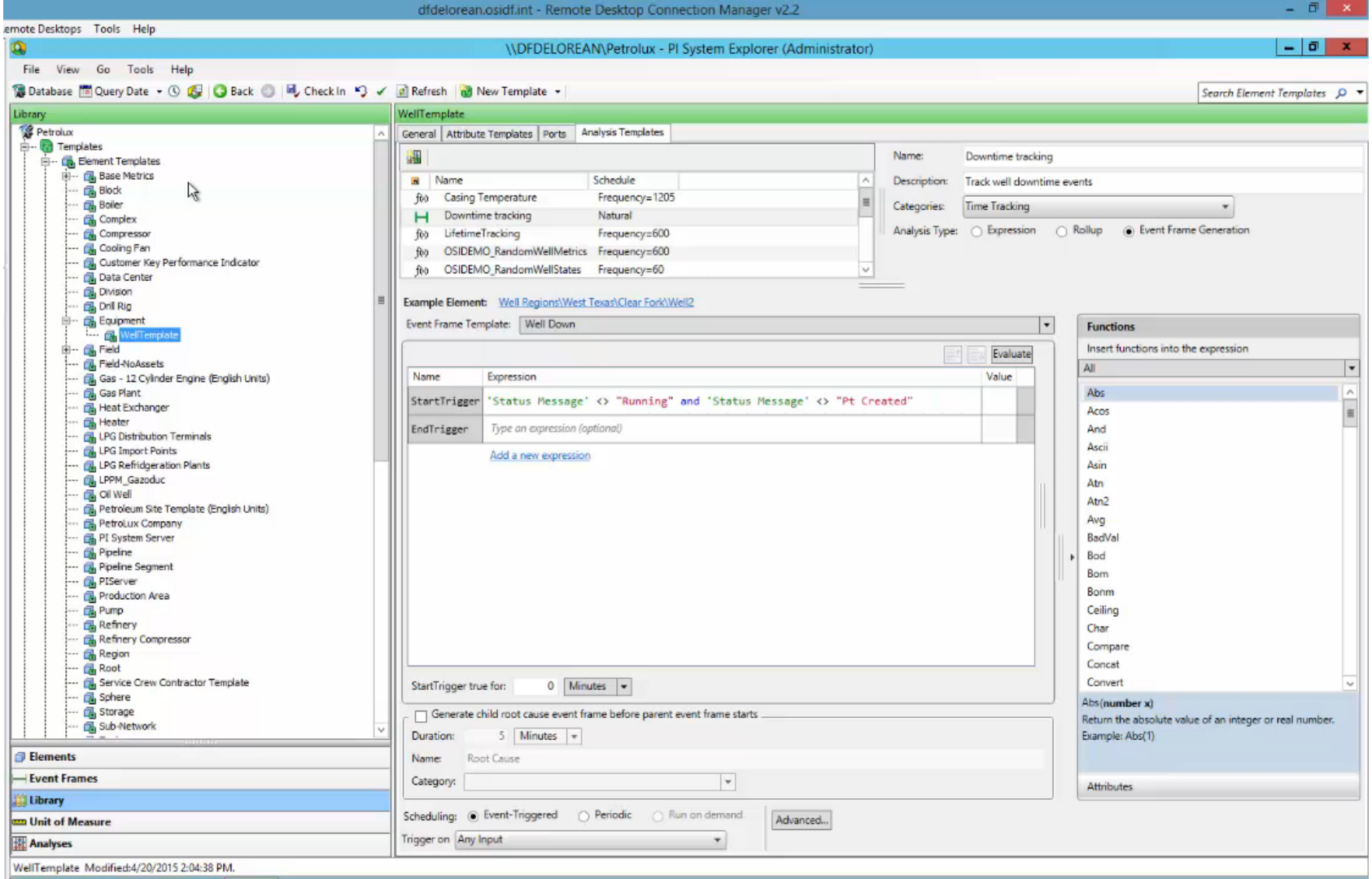
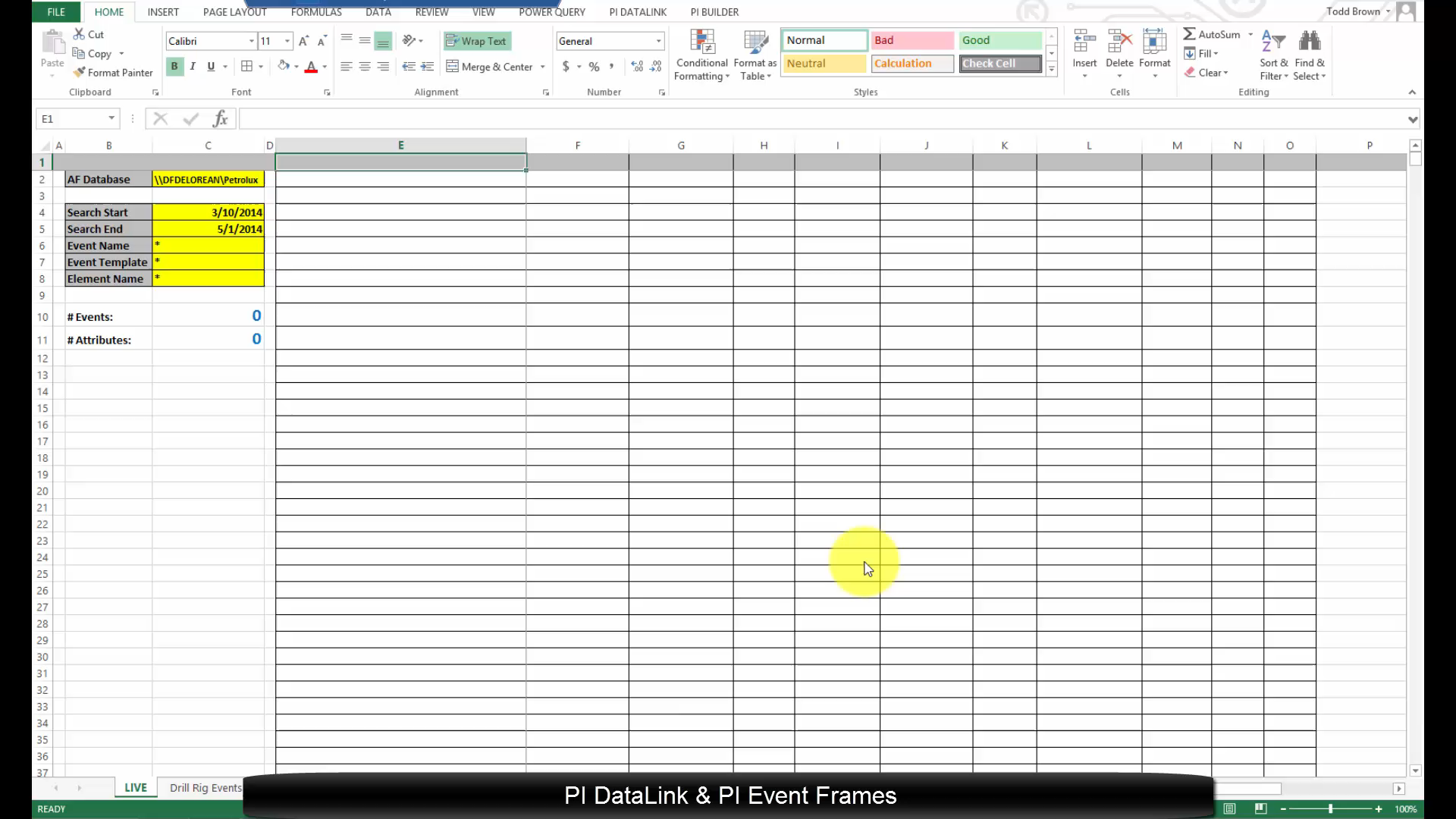

dfdelorean.osidf.int - Remote Desktop Connection Manager v2.2
emote Desktops Tools Help
\\DFDELOREAN\Petrolux - PI System Explorer (Administrator)
File View Go Tools Help
Database Query Date Back Check In Refresh New Template
Search Element Templates
Library
Petrolux
Templates
Element Templates
Base Metrics
Block
Boiler
Complex
Compressor
Cooling Fan
Customer Key Performance Indicator
Data Center
Division
Drill Rig
Equipment
WellTemplate
Field
Field-NoAssets
Gas - 12 Cylinder Engine (English Units)
Gas Plant
Heat Exchanger
Heater
LPG Distribution Terminals
LPG Import Points
LPG Refridgeration Plants
LPPM_Gazoduc
Oil Well
Petroleum Site Template (English Units)
PetroLux Company
PI System Server
Pipeline
Pipeline Segment
PIServer
Production Area
Pump
Refinery
Refinery Compressor
Region
Root
Service Crew Contractor Template
Sphere
Storage
Sub-Network
Elements
Event Frames
Library
Unit of Measure
Analyses
WellTemplate
General Attribute Templates Ports Analysis Templates
Name Schedule
Casing Temperature Frequency=1205
Downtime tracking Natural
LifetimeTracking Frequency=600
OSIDEMO_RandomWellMetrics Frequency=600
OSIDEMO_RandomWellStates Frequency=60
Name: Downtime tracking
Description: Track well downtime events
Categories: Time Tracking
Analysis Type: Expression Rollup Event Frame Generation
Example Element: Well Regions\West Texas\Clear Fork\Well2
Event Frame Template: Well Down
Evaluate
Name Expression Value
StartTrigger 'Status Message' <> "Running" and 'Status Message' <> "Pt Created"
EndTrigger Type an expression (optional)
Add a new expression
StartTrigger true for: 0 Minutes
Generate child root cause event frame before parent event frame starts
Duration: 5 Minutes
Name: Root Cause
Category:
Scheduling: Event-Triggered Periodic Run on demand
Advanced...
Trigger on Any Input
Functions
Insert functions into the expression
All
Abs
Acos
And
Ascii
Asin
Atn
Atn2
Avg
BadVal
Bod
Bom
Bonm
Ceiling
Char
Compare
Concat
Convert
Abs(number x)
Return the absolute value of an integer or real number.
Example: Abs(1)
Attributes
WellTemplate Modified:4/20/2015 2:04:38 PM.


FILE
HOME
INSERT
PAGE LAYOUT
FORMULAS
DATA
REVIEW
VIEW
POWER QUERY
PI DATALINK
PI BUILDER
Todd Brown
Cut
Copy
Format Painter
Paste
Clipboard
Calibri
11
Font
Wrap Text
Merge & Center
Alignment
General
Number
Conditional Formatting
Format as Table
Normal
Bad
Good
Neutral
Calculation
Check Cell
Styles
Insert
Delete
Format
Cells
AutoSum
Fill
Clear
Sort & Filter
Find & Select
Editing
E1
AF Database
\\DFDELOREAN\Petrolux
Search Start
3/10/2014
Search End
5/1/2014
Event Name
*
Event Template
*
Element Name
*
Events:
0
Attributes:
0
LIVE
Drill Rig Events
READY
100%
PI DataLink & PI Event Frames

PI Coresight | Event Comparison

PI Coresight

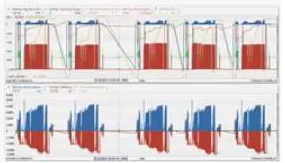
New Display

Search All Displays

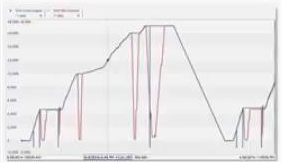
Filter by Labels

- ALL DISPLAYS
- FAVORITES
- MY DISPLAYS
- RECENT
- FOLDER HOME
- Process Displays

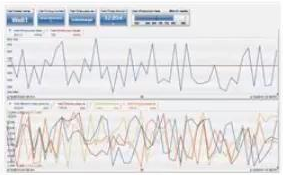
All Displays (22)



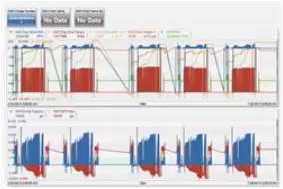
O&G: Drill Rig Drilling
OSI\tbrown



Drill Main
OSI\eresnick

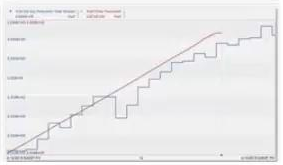


O&G: Well Production New
OSI\acarson



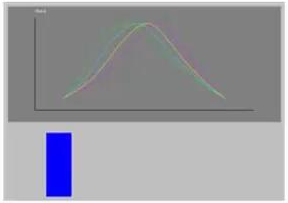
O&G: Drilling New
OSI\acarson

O&G: Production Well Details
OSI\tbrown

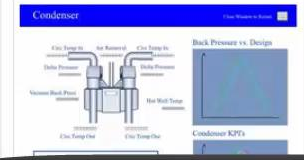


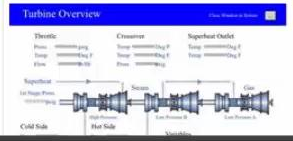
WellMain
OSI\eresnick

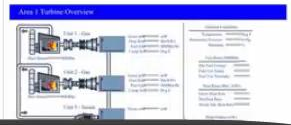
MineTruck3
OSI\dnardone



FuelDisplay
OSI\dnardone







PI Coresight 2015

Event Frames Demo Recap

AF Asset Analytics

- Configurable Event Detection
- Create Rules Once, Apply to Many
- History Regeneration
- Root Cause Events

PI DataLink

- Explore Events and Compare events
- Easy Event Analysis and Reporting
- Build Flexible Ad hoc Reports Out of the Box

PI Coresight

- Automatically Discover Related Events
- Event Trending
- Root Cause Trending
- View Event Attribute Values
- Event Comparison (Overlay Trending)

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Roadmap Update

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Event Frames Roadmap

2012

- PI AF: PI Event Frames Database
- PI AF SDK: Programmatic Access

2013

- PI Coresight: Related Events
- PI Coresight: Hierarchical Events
- PI Event Frames Generator
- PI System Access: PI OLEDB Enterprise, PI Web Services, PI JDBC

2014

- PI AF Analytics: Event Detection
- PI DataLink 2014: Events in Excel
- PI AF 2015: EF Value Capture, Locked EFs
- PI AF 2014: Audit Trail Viewer
- PI Web API: Initial EF Support

2015

- PI Server 2015: Batch to EF Migration
- PI Integrator for Business Analytics: Filter Data from EFs

2016

- [1st Half]
  - PI Coresight: Simple Event Comparison, Process Monitoring
  - PI Notifications
  - PI Integrator for Business Analytics: Event Views
- [2nd Half]
  - PI Coresight: Batch Event Comparison

2017

- RtReports

In Development (not released)

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Event Frames

Bookmarks for your Real-Time Data

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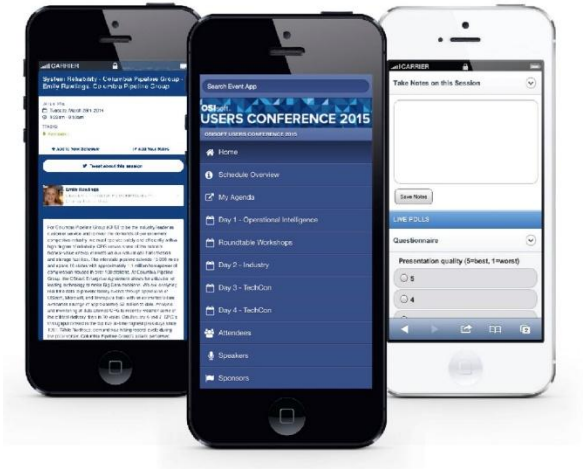
Questions

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

State your
name & company

Please don't forget to…

Complete the Online Survey for this session



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감사합니다

谢谢

Danke

Gracias

Merci

Thank You

ありがとう

Спасибо

Obrigado

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