Advanced Analytics with the OSIsoft PI System

Emily Anderson

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Agenda

- Introduction to Seeq
  - Predictive, diagnostic, descriptive, monitoring and prescriptive analytics
  - Integration with OSIsoft PI System data, Asset Framework, Event Frames, PI Notifications, and PI Vision
- Use Case Examples
  - Asset Availability – CIP Cycles
  - Yield – Order Fill Analysis
  - Product Quality – Reference Profile Monitoring

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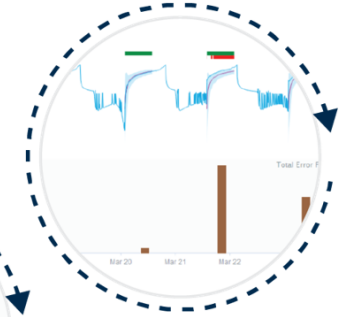
Analytics Types

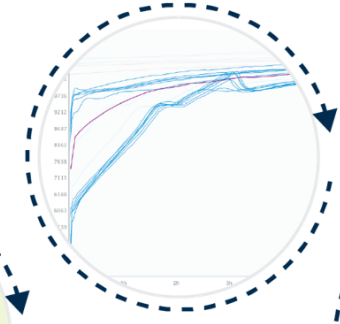
Descriptive
What happened?



Benefits

Create and share insights to inform decisions plant wide

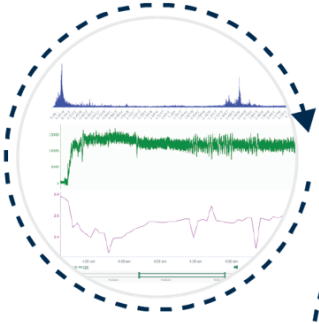
Monitoring
What is happening?



Benefits

Advisory real-time and prediction view of process and asset status

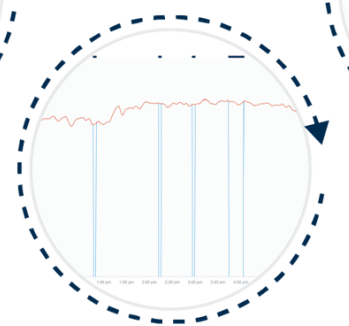
Diagnostic
Why did it happen?



Benefits

Root cause investigations on/of historical data sets

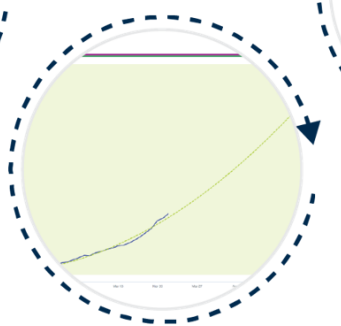
Prescriptive
What should happen?



Benefits

Evaluate options to make decisions that optimize outcomes

Predictive
What will happen?



Benefits

Increase asset availability and improve batch outcomes

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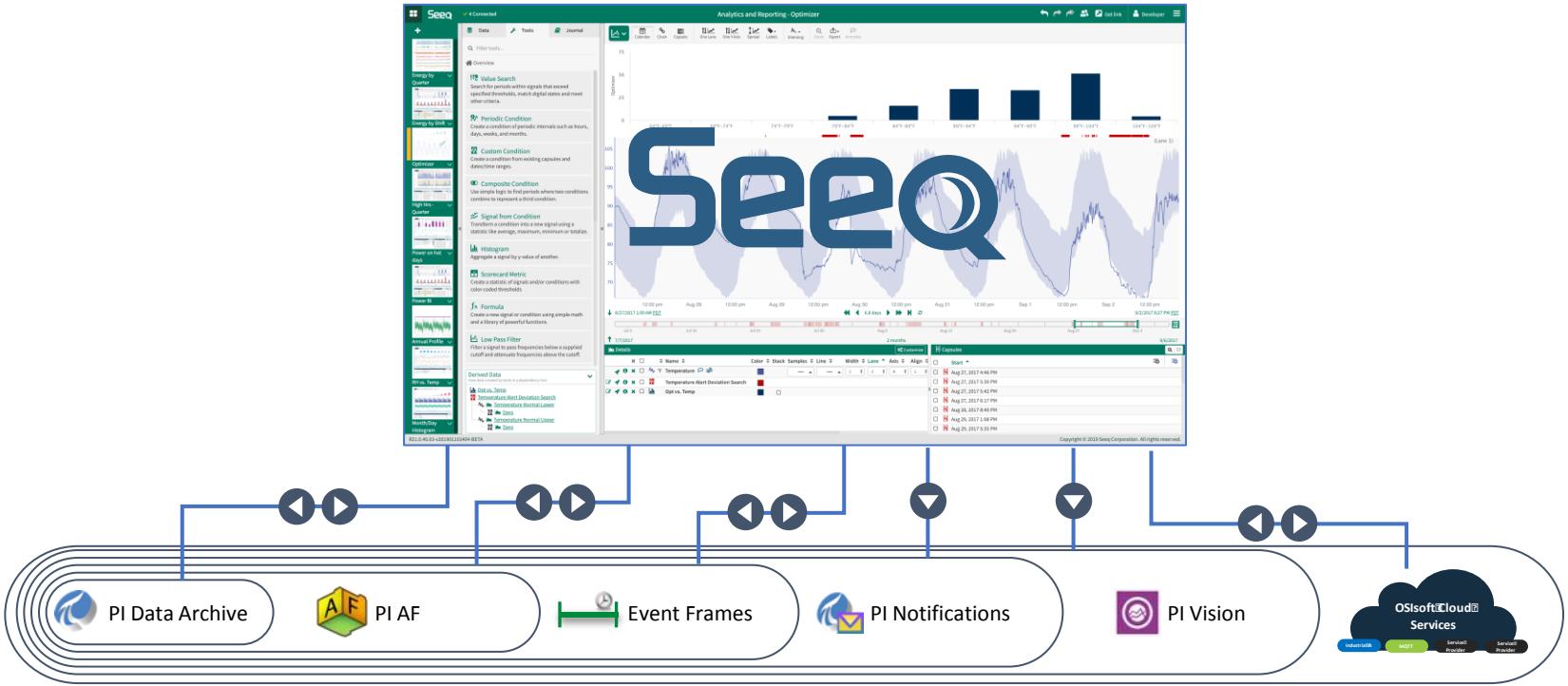

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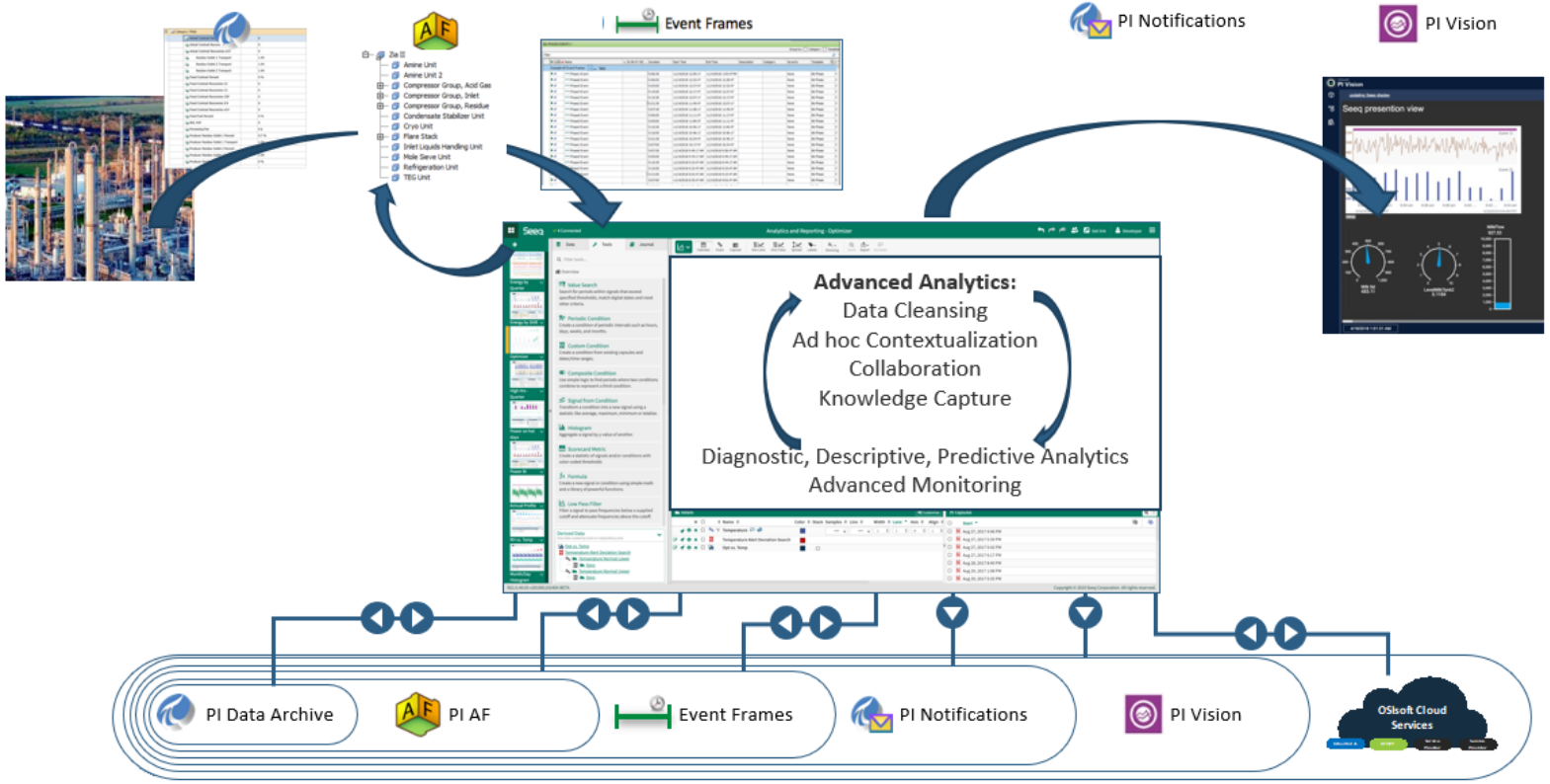
Advanced Analytics for OSIsoft PI System



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Asset Availability – CIP Cycles

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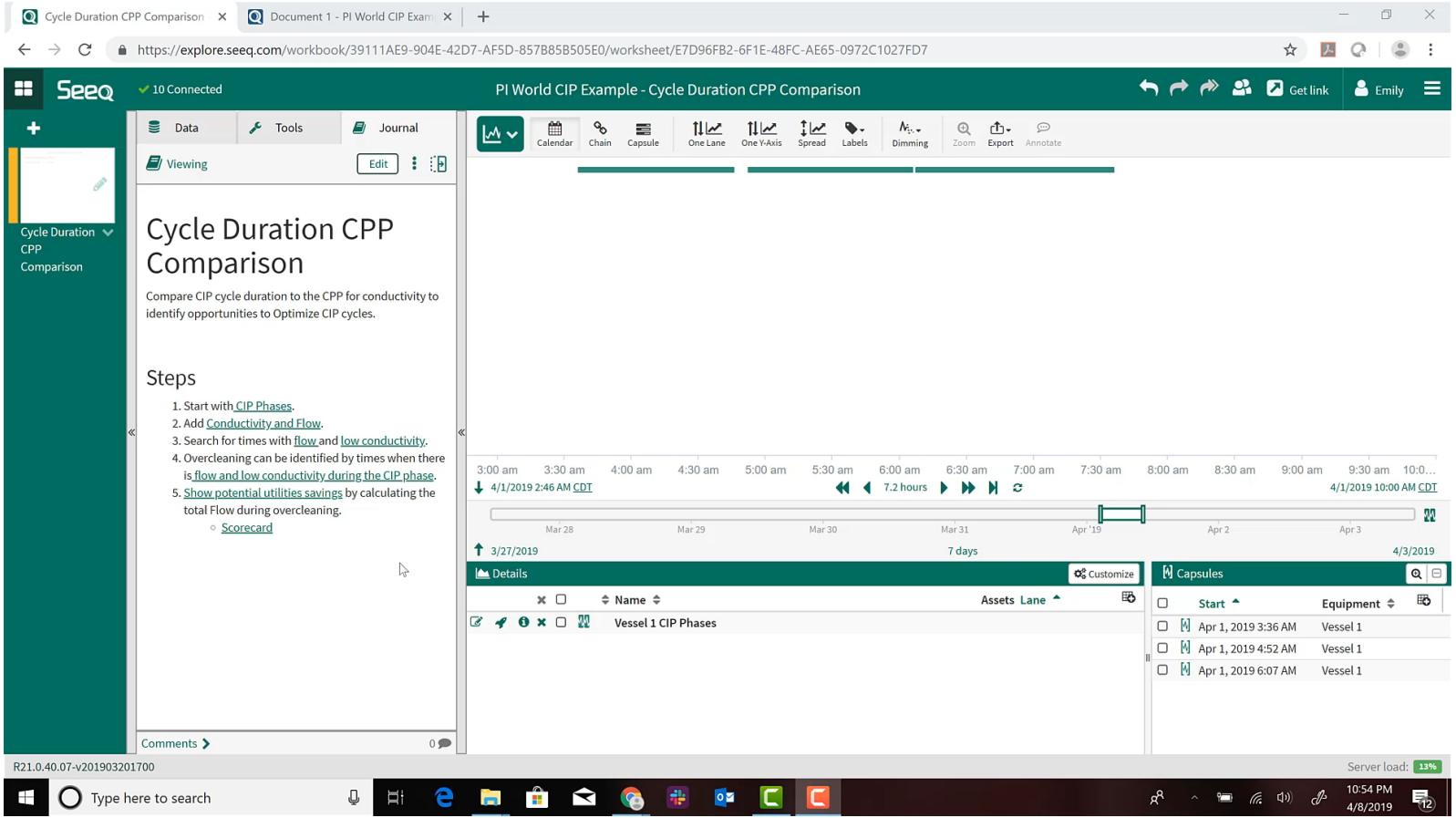

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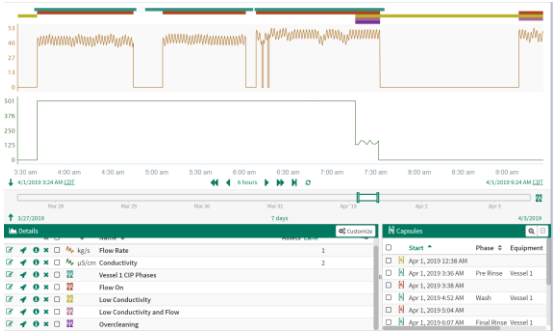
Asset Availability

CIP Cycles



CHALLENGE

Cleaning based on timers leaves room for overcleaning leading to unnecessary expenditure

- Identify current cleaning cycles
- Determine when desired conductivity is achieved to find periods of potential cycle time reduction

SOLUTION

Identify overcleaning events

- Determine when desired CPP is achieved
- Compare to current CIP cycle times to find periods of potential savings
- Create key metrics to evaluate improvement opportunities

RESULTS

Reduce time and resources used in cleaning processes

- Determine optimal cycle times based on CPPs
- Leverage metrics to quantify savings in time and utilities

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Yield –Order Fill Analysis

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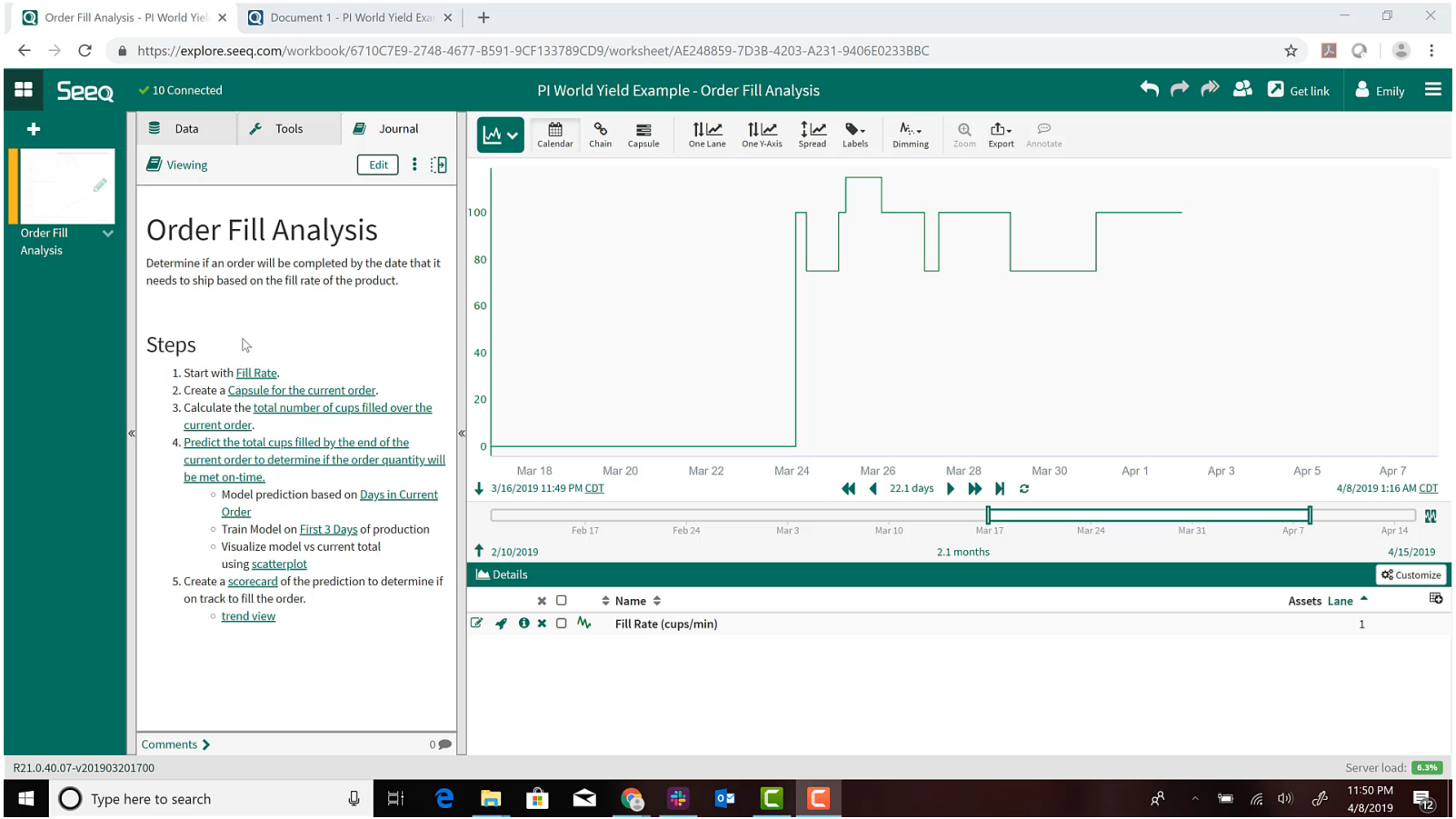

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Yield

Order Fill Analysis

Order Tracking

	3/24/2019 - 4/7/2019
Predicted Total Order	1.8e+6
Total Cups Filled To Date	1.2e+6
Current Deviation from Target	-1218

CHALLENGE

Determine if production is on schedule for shipping

- Missing target delivery dates is costly both for product lifespan and logistics expenses
- Over-producing product leads to additional storage requirements

SOLUTION

Predict total number of units filled by shipping date

- Use Fill Rate and Days in Order to calculate prediction
- Confirm that prediction meets order requirement and track progress according to forecasted production

RESULTS

Continuous monitoring of predicted total units minimizes risk of missed deadline

- Optimize outbound logistics
- Improved productivity through process adjustments to achieve target delivery date

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Product Quality – Reference Profile Monitoring

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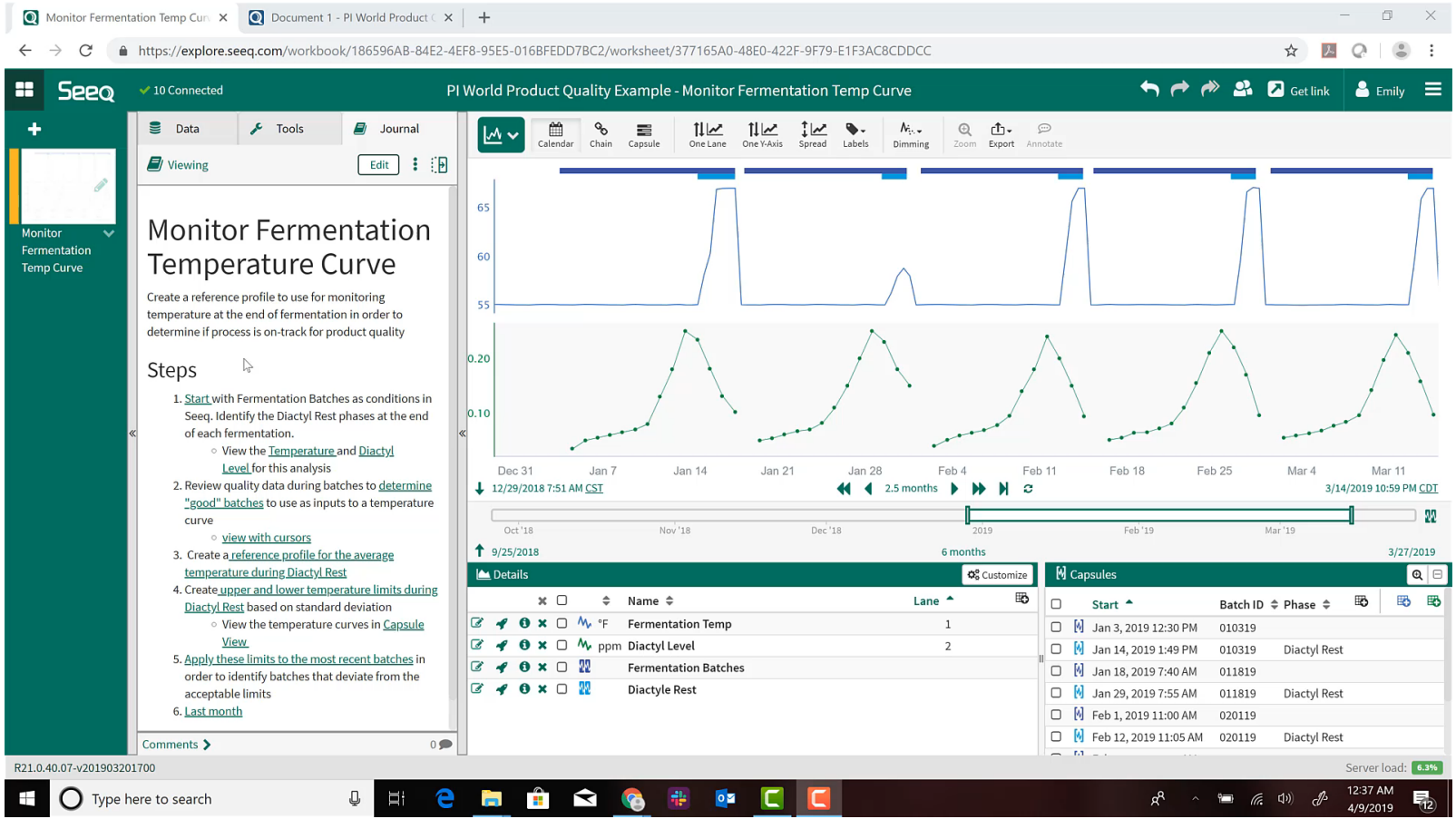

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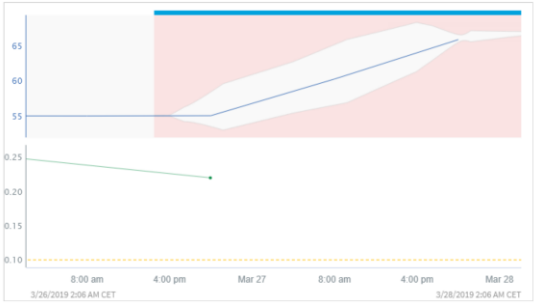
Product Quality

Reference Profile Monitoring



CHALLENGE

Temperature change at the end of fermentation is critical to achieving a quality beer

- Diactyl Rest for lagers requires an increase in temperature at the end of fermentation
- Process related quality data is measured offline, so it is critical to monitor on-line parameters to achieve desired results

SOLUTION

Monitor temperature based on historical curves

- Create a reference profile of temperature during diactyl rest based on high quality batches
- This profile can be applied to future batches to monitor product quality

RESULTS

Improve beer quality with diacytl levels maintained within specification

- Allow early detection of temperature deviations
- Optimize diactyl rest times to achieve consistent product quality

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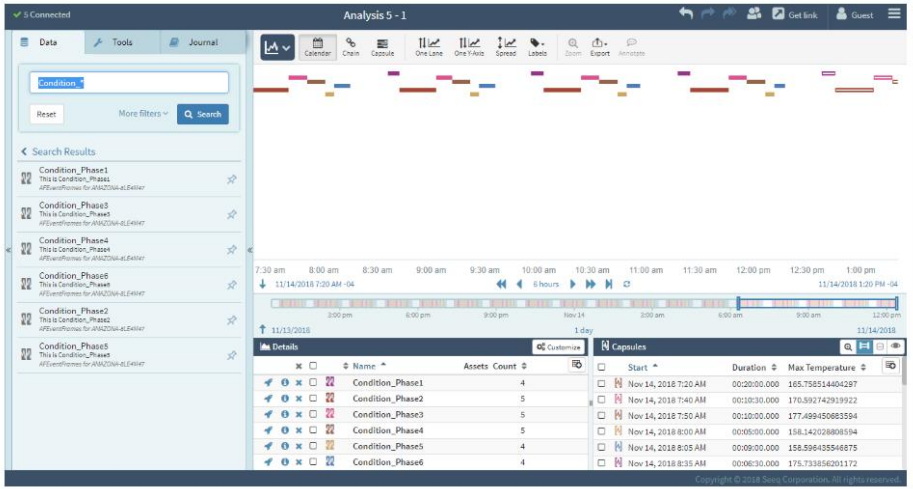
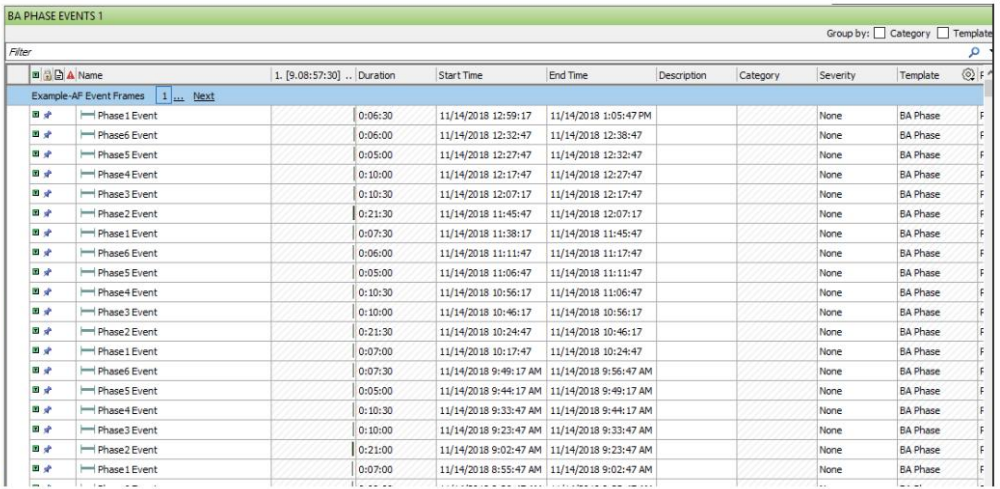
Contextualize Data from PI Event Frames





Impact

Leverage PI Event Frames to contextualize data in Seeq.

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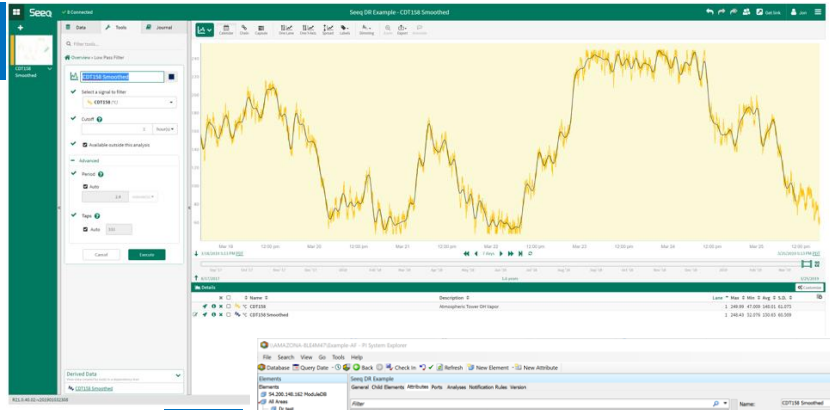
Writing Seeq Signals back to PI

1



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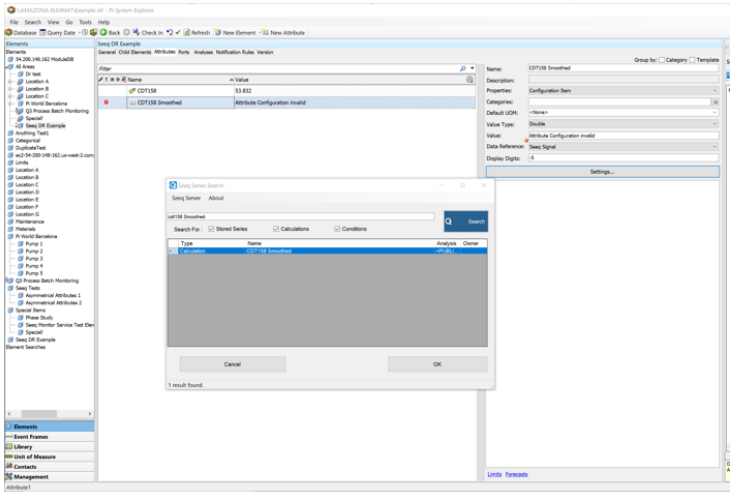

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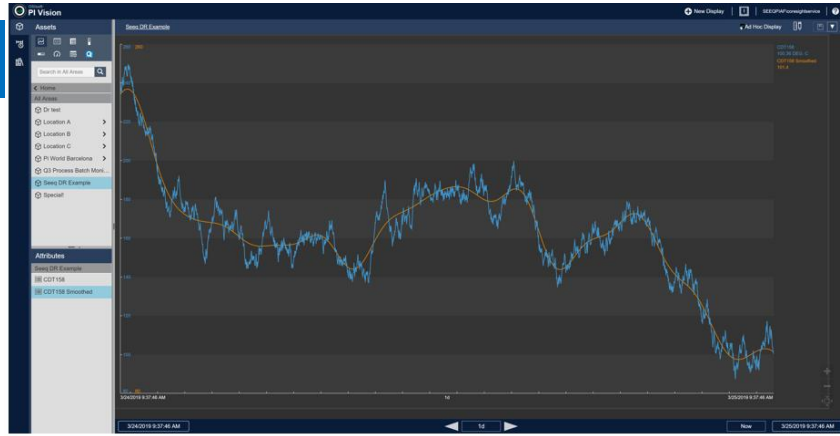

Impact

Make model results or cleansed signals available outside Seeq.

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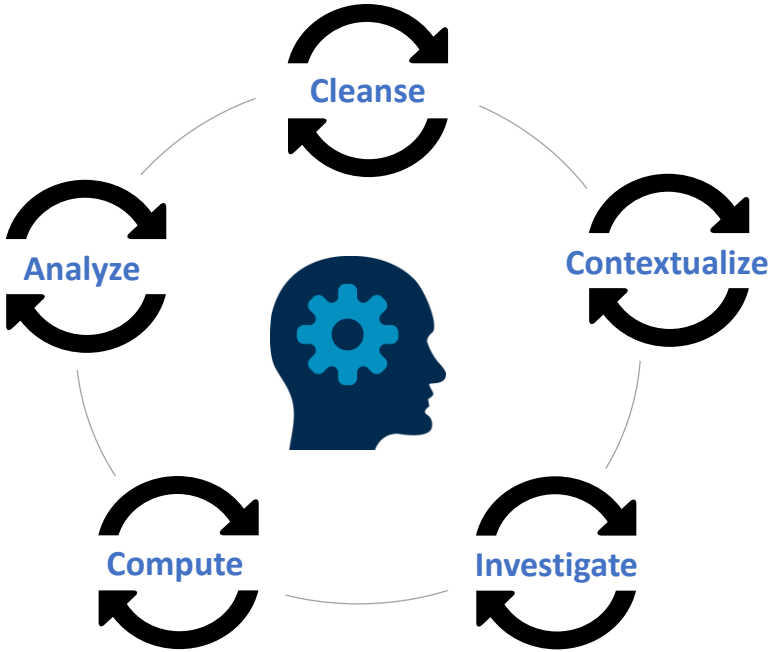
Empower Employees

Connect the Subject Matter Expert to Interactive, Intuitive Applications



Application Requirements

- Self-directed
- Visual
- Iterative
- Flexible
- Scalable
- Modern

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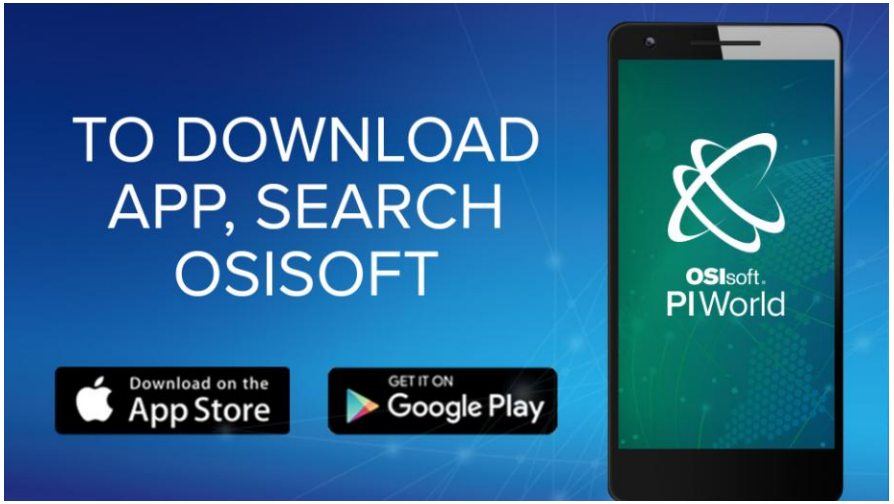
Questions?

Please wait for the **microphone**

State your **name & company**

Please remember



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