

Huntsman TrendMiner

Used Case Sharing Session

Disclaimer

The slides following hereafter contain information that is proprietary to Huntsman International LLC. Recipients of this presentation and the information contained herein shall not copy or replicate them by any means whatsoever and shall not share or show them to third parties without Huntsman Corporation's permission.

Huntsman's Global Business Scope



2025 Revenue

End Markets



Construction & Infrastructure



Industrial and other



Automotive



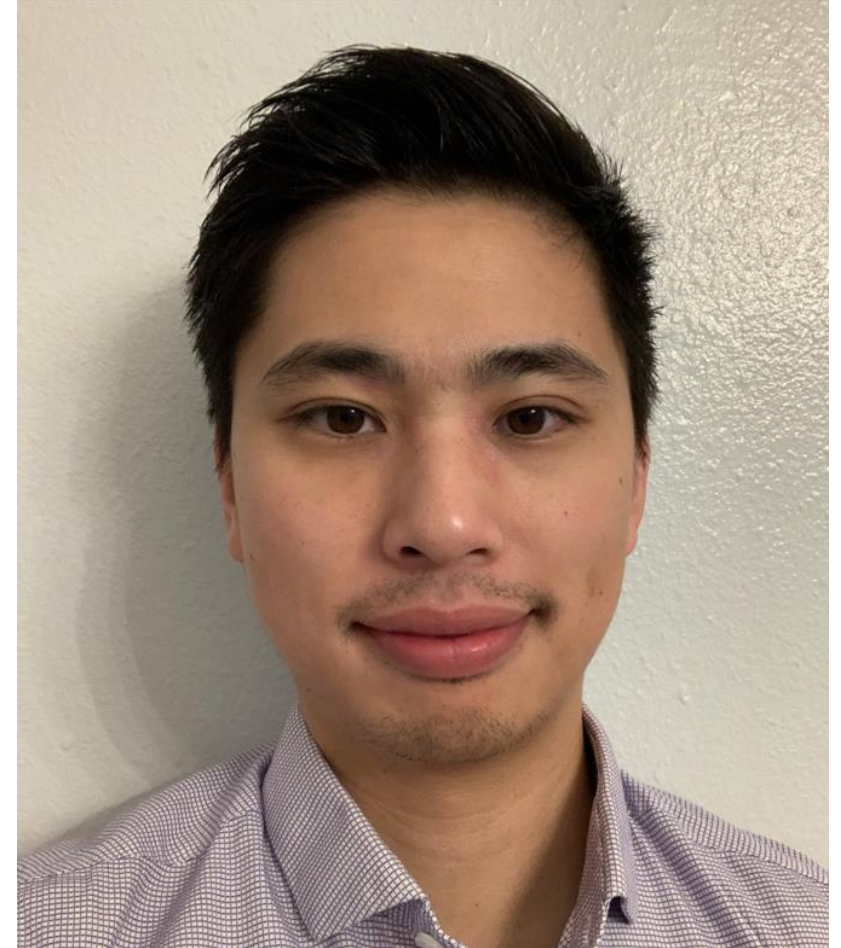
Consumer



Aerospace

About me

- Title: Analytics Engineer
- Based in: Geismar, Louisiana.
- I work on advanced analytics and digital manufacturing projects that transform process data into actionable insights that improve operational performance.
- I am passionate about leveraging technology to drive measurable business value and deploying best practices across different manufacturing sites.



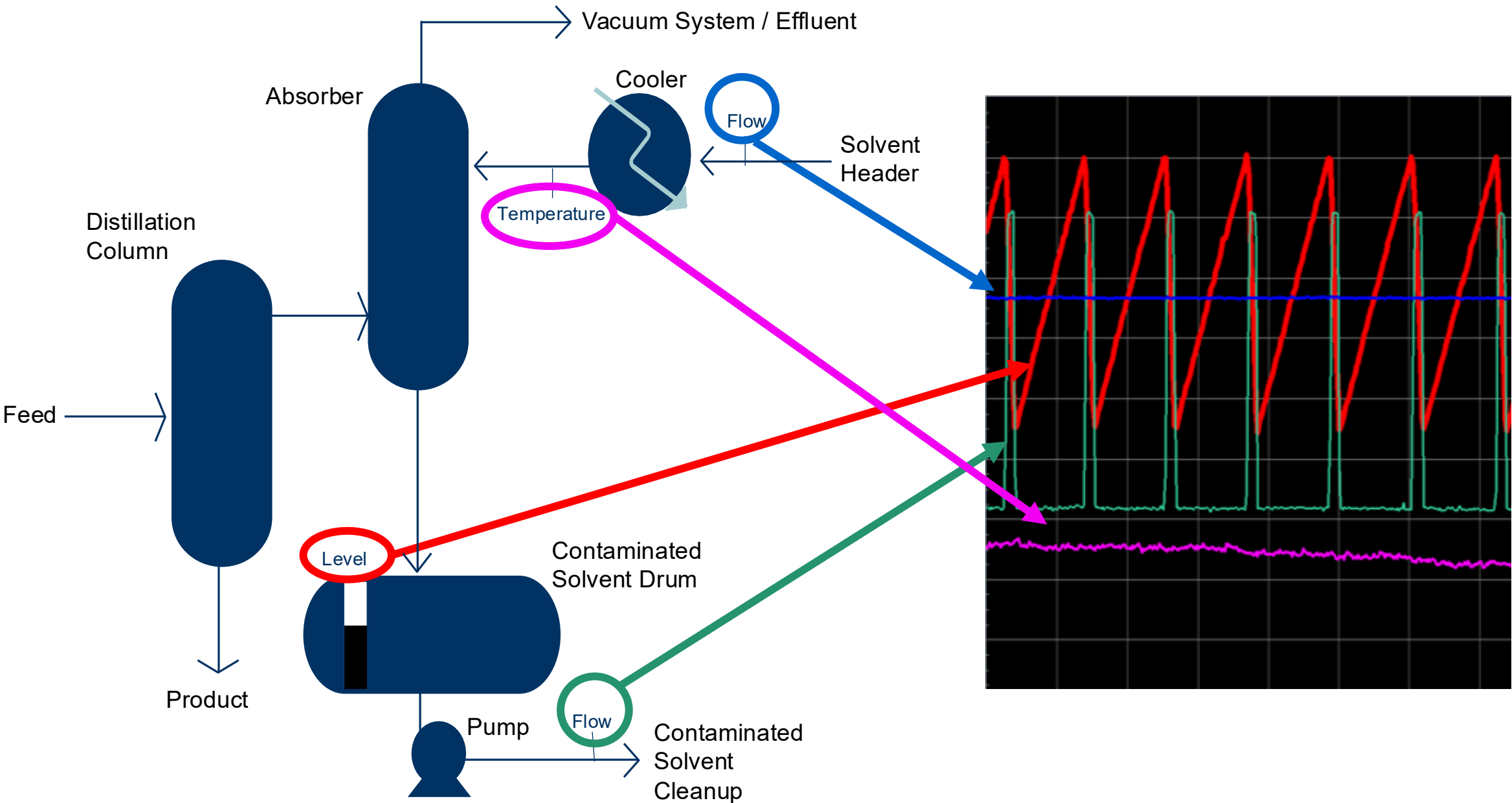
Agenda

01 **Loss of Solvent in the Overhead Absorber**

02 **Monitoring Batch Through Context Hub**



Problem Statement – Where does the solvent go?



Soft Sensor vs Hard Sensor

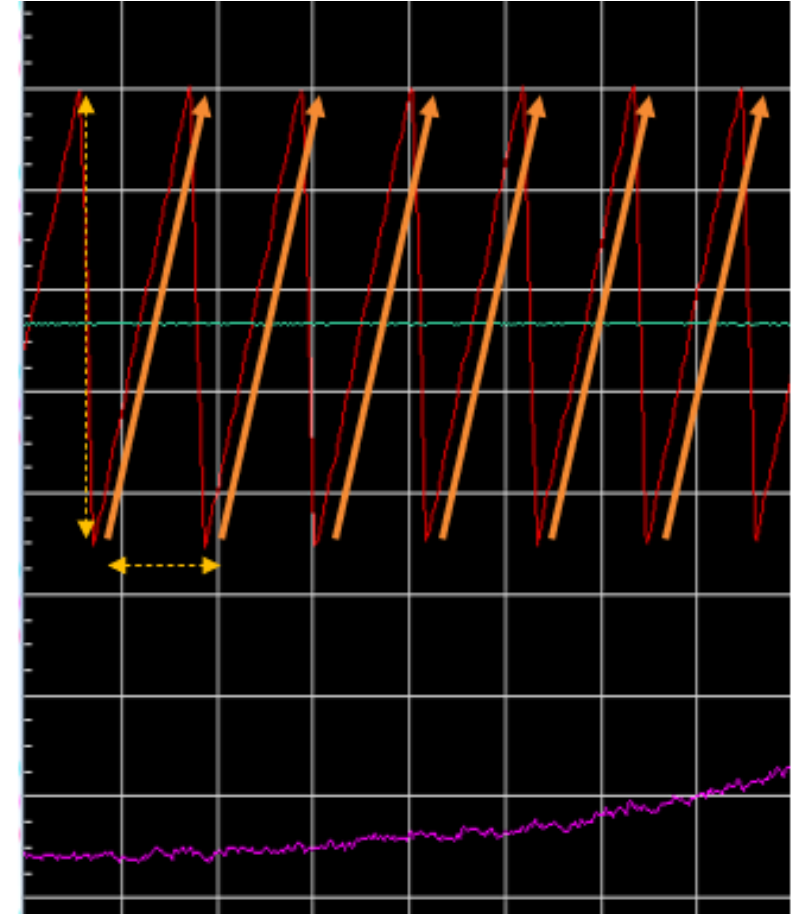
Soft Sensor

Hard Sensor



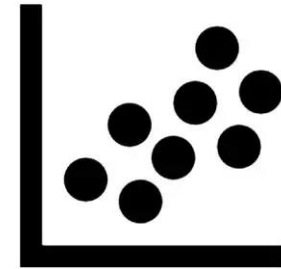
Creating soft sensors – Pseudo Flow Meters

- Utilize the Level Indicator
 - Having a reliable level indicator and a strapping chart, we build a soft sensor to create a pseudo flow meter based on the level changes.
- Create another soft flow sensor
 - Based on mass balance, we build another pseudo flow meter that measuring the flow leaving at the top of the absorber



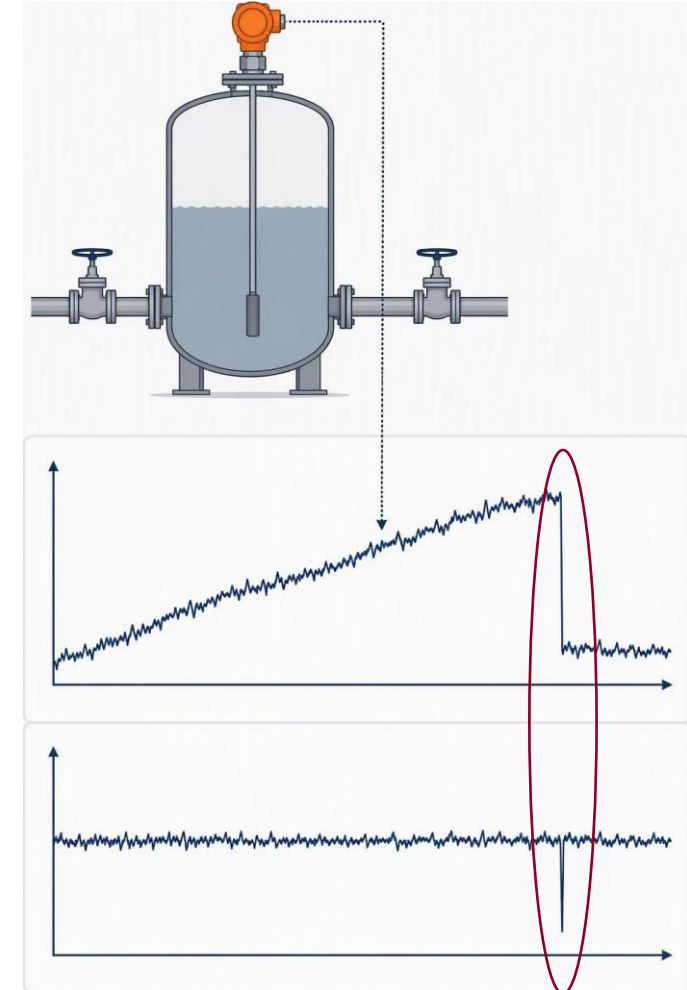
Expanding Soft Sensors into KPI Monitoring and RCA

- Create KPI/alerts from the soft sensors
 - Show short duration lost of solvents, hourly or 30-mins window
 - Show long duration lost of solvents, daily
- Perform Root Case Analysis
 - Correlate inlet temperature of the solvent and lost of solvent
 - Correlate feed flow to the Absorber and lost of solvent



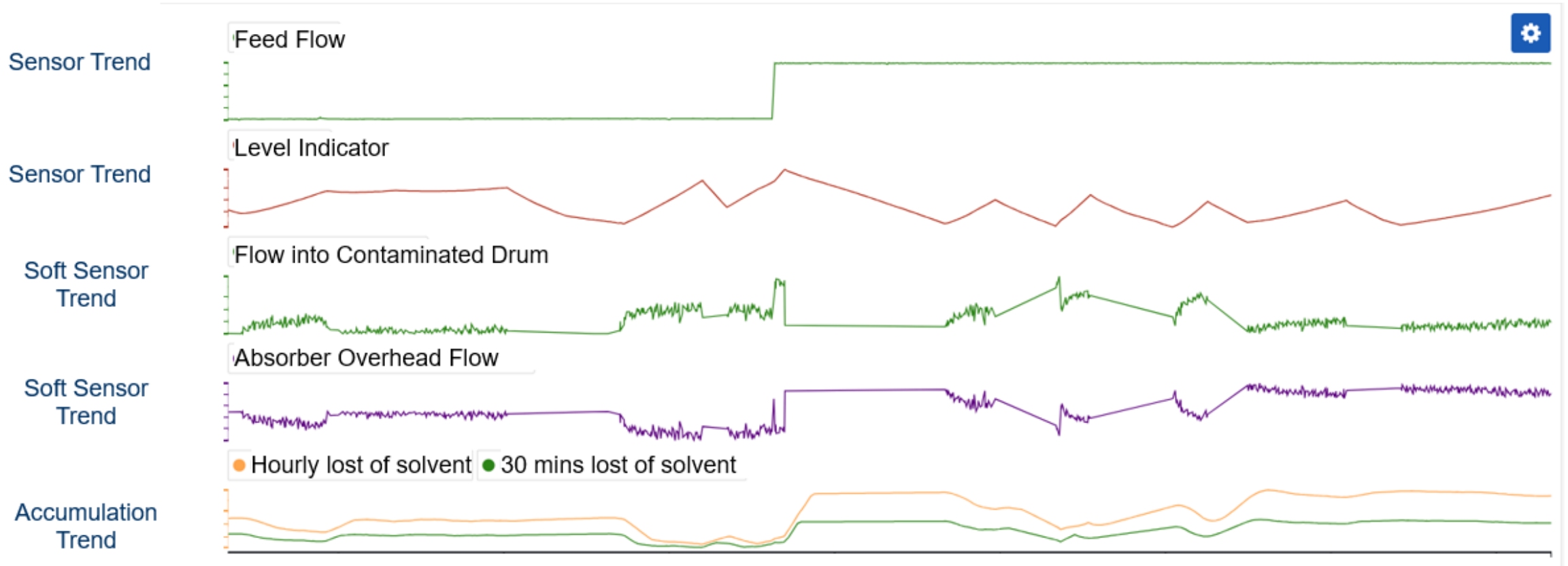
Things to consider when creating soft sensors, KPI's, and RCA

- **Edge cases (anomalies) that affect the soft sensor**
 - Operating Conditions
 - When contaminant drum are batching off solvent
 - When level indicator are outside the detection limit
 - Address methods
 - Adjust the time component of the calculation
 - Add on filters on the data
- **KPI design**
 - Handle gaps or bad periods
 - Evaluate normal variability – avoid alarm fatigue
- **Root Cause Analysis caution**
 - Correlation is not causation - verify across different time periods



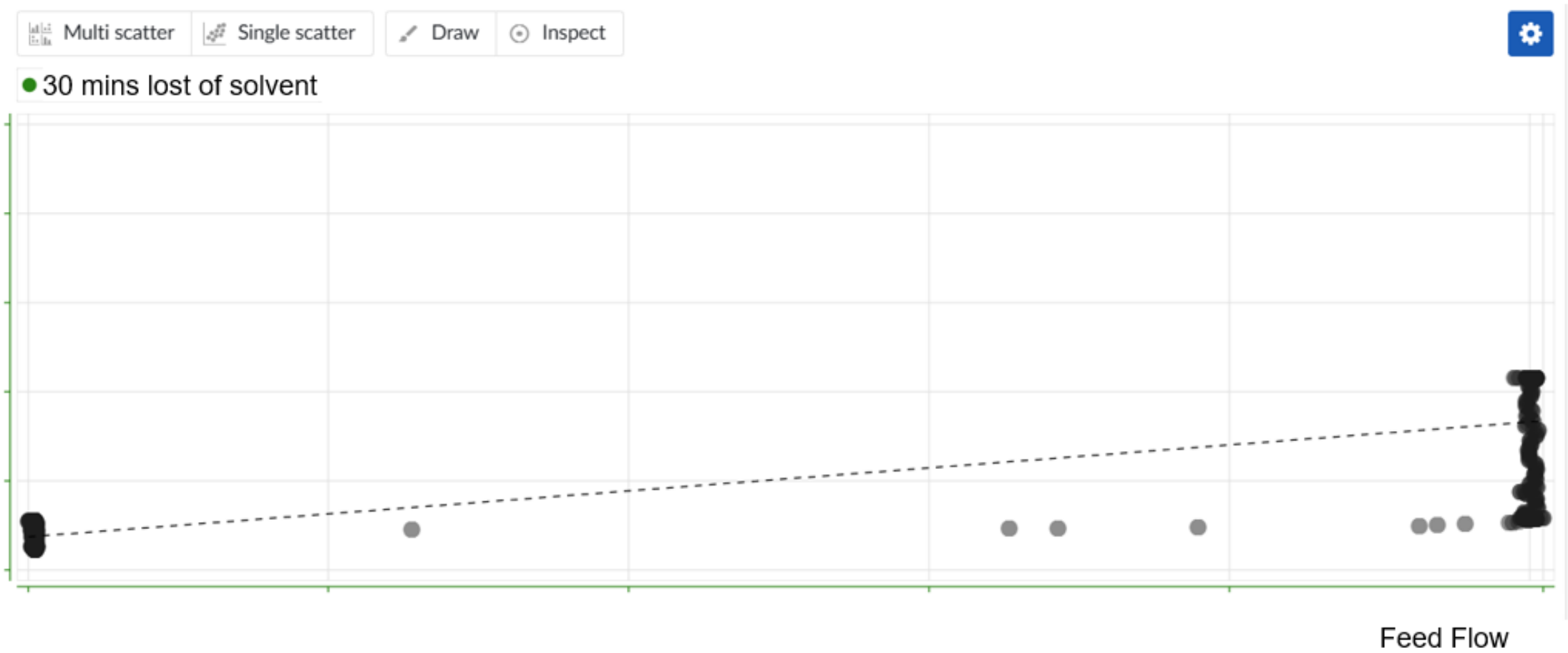
Problem Solution

Integrated TrendHub View



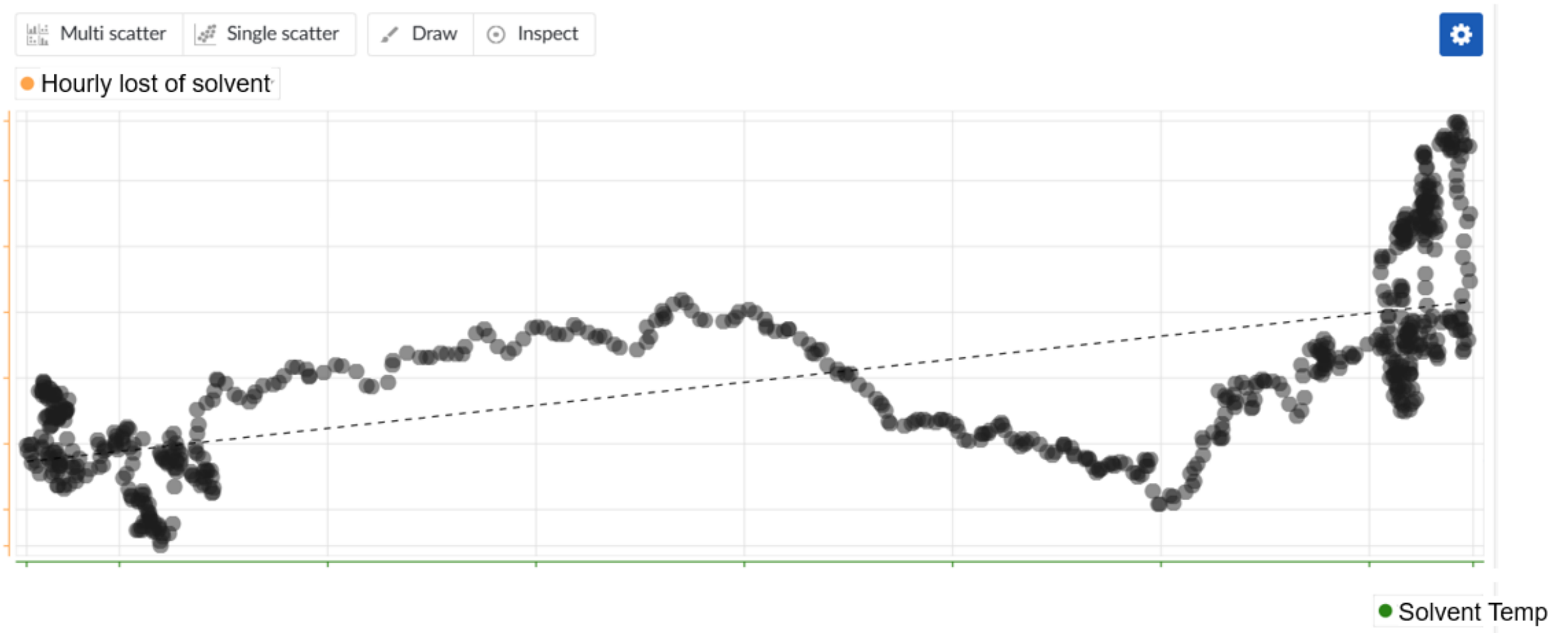
Root Cause Analysis

Feed Flow vs Loss of Solvent



Root Cause Analysis

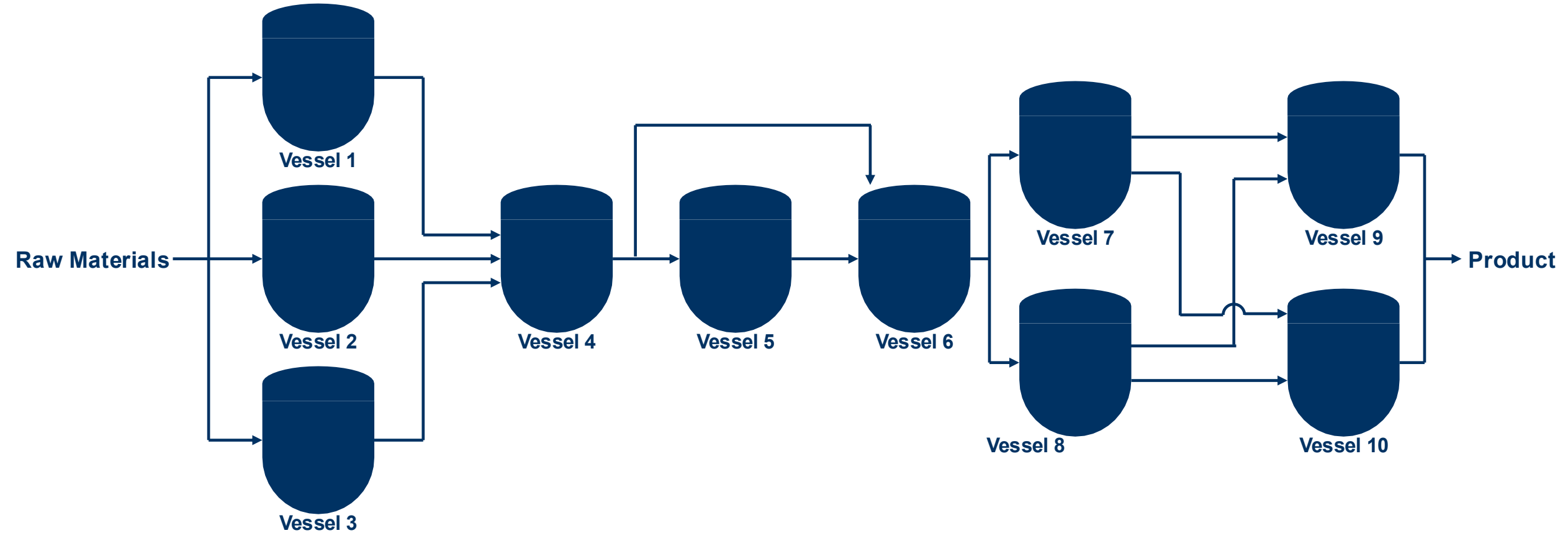
Temperature vs Loss of Solvent



Problem Statement

How long does a product take to make?

Is there a particular step in the process taking too long?

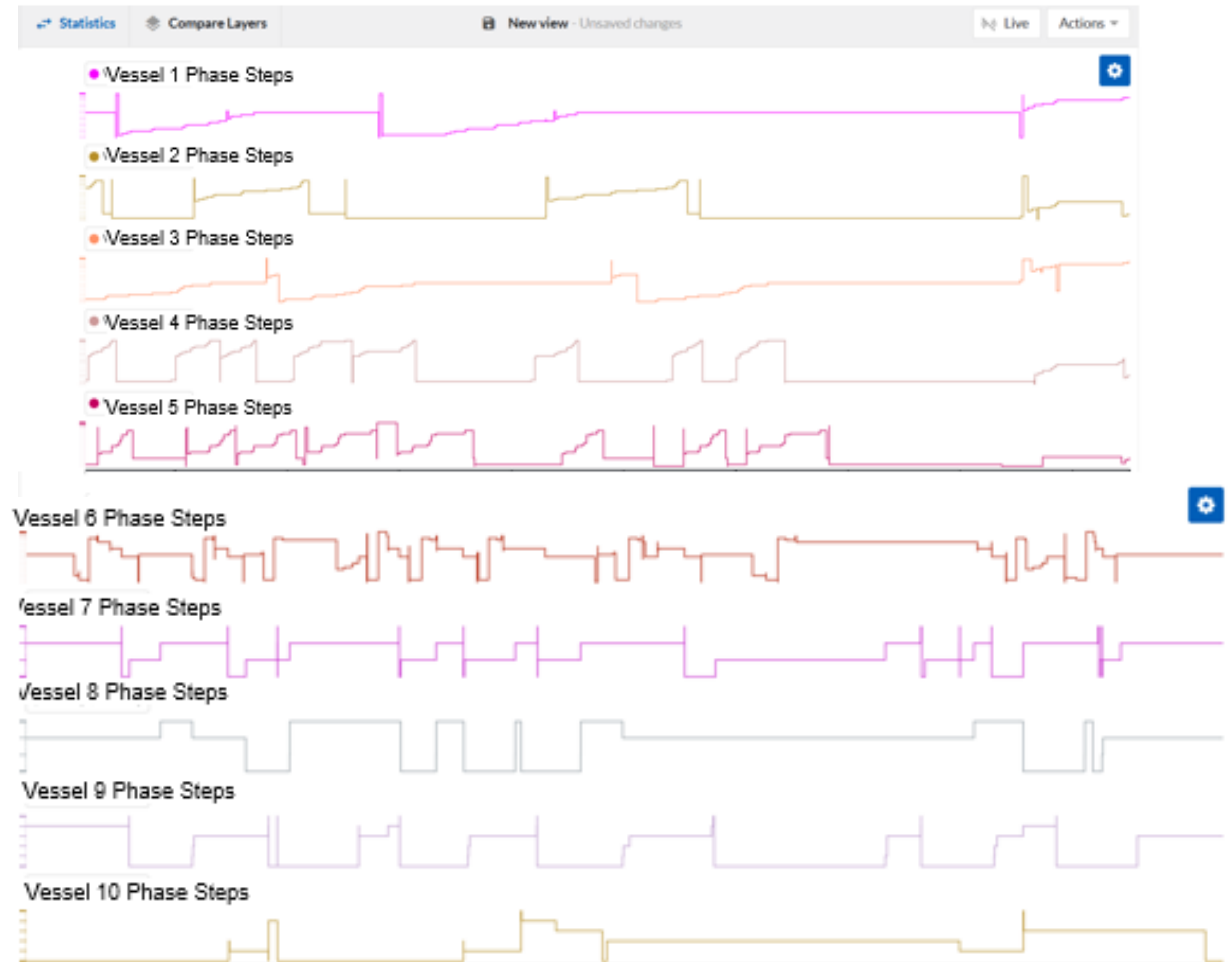


Problem Statement

How long does a product take to make?

Is there a particular step in the process taking too long?

- Exists phase step tracking in the historian
 - But difficult to use due to the format stored in time series



Problem Solution

Creating ContextHub Views

- Create context items for each of the product and phase steps from each vessel



Problem Solution

ContextHub on the Products

- Perform analytics calculation to evaluate a set a standard for product and phase step
- Incorporate the results into Context Hub
- Looking at a product across different vessel



Duration vs. standard

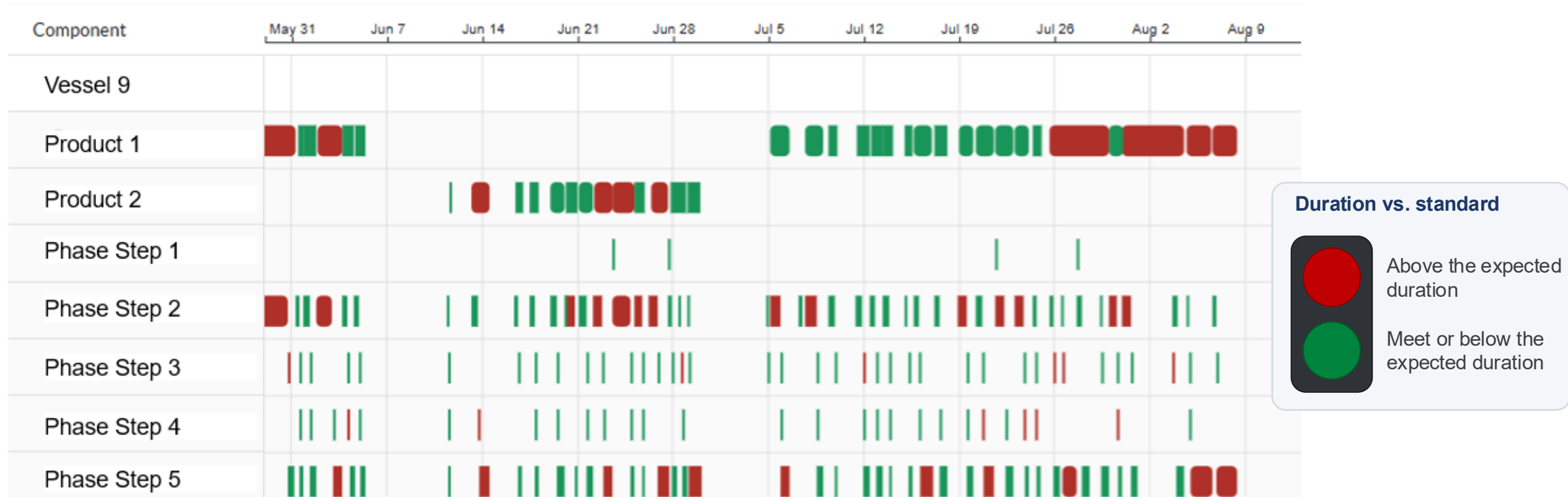


Above the expected duration

Meet or below the expected duration

ContextHub on the Vessel Phase Steps

- Looking at a granular level (individual Vessel) about each product and its step



Q&A

