

SeeQ®



# connect

2024

Manufacturing Digital Transformation Journey:  
Unleash the power of Data & AI/Analytics





# Manufacturing Digital Transformation Journey: *Unleash the power of Data & AI/Analytics*



Dr. Sami Bahroun



# Dr. Sami Bahroun

Head of Industrial Data Analytics &  
Advanced Automation

- Global Leader – Industrial Data Scientists & Advanced Process Control Experts
- Driving growth, innovation, and competitiveness at Syensqo manufacturing sites

# Agenda



1. About Syensqo
2. Digital Transformation Journey: Data & Analytics
3. Accelerating Data Driven Decision Culture
4. Seeq Use Cases
5. Conclusion

## Materials

- #1 High-performance polymers
- #2 Materials for civil aerospace
- #1 Materials for defense

## Consumer & Resources

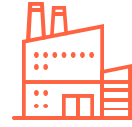
- #2 Specialty surfactants and polymers
- #1 Flavors & Fragrances; Natural Vanillin
- #1 Mining reagents
- #1 Biocides for recycled water



# Top-tier specialty player



~13,200  
Employees



62  
Industrial  
Sites



12  
Major R&I  
centers



€6.8<sub>bn</sub>  
Net Sales



€1.6<sub>bn</sub>  
Underlying  
EBITDA



23.7%  
Underlying  
EBITDA  
margin



# Leadership in growth markets

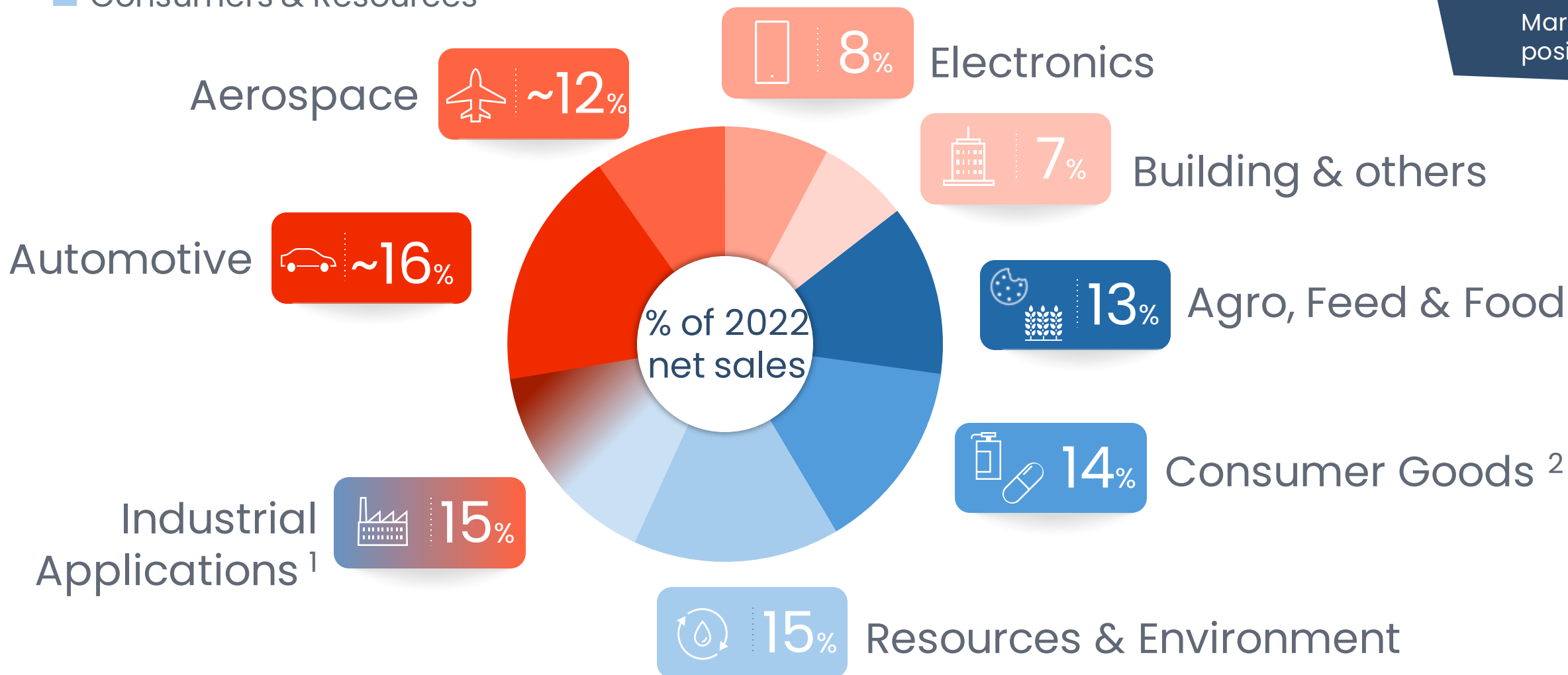
Materials

Consumers & Resources



TOP 3

Market position\*



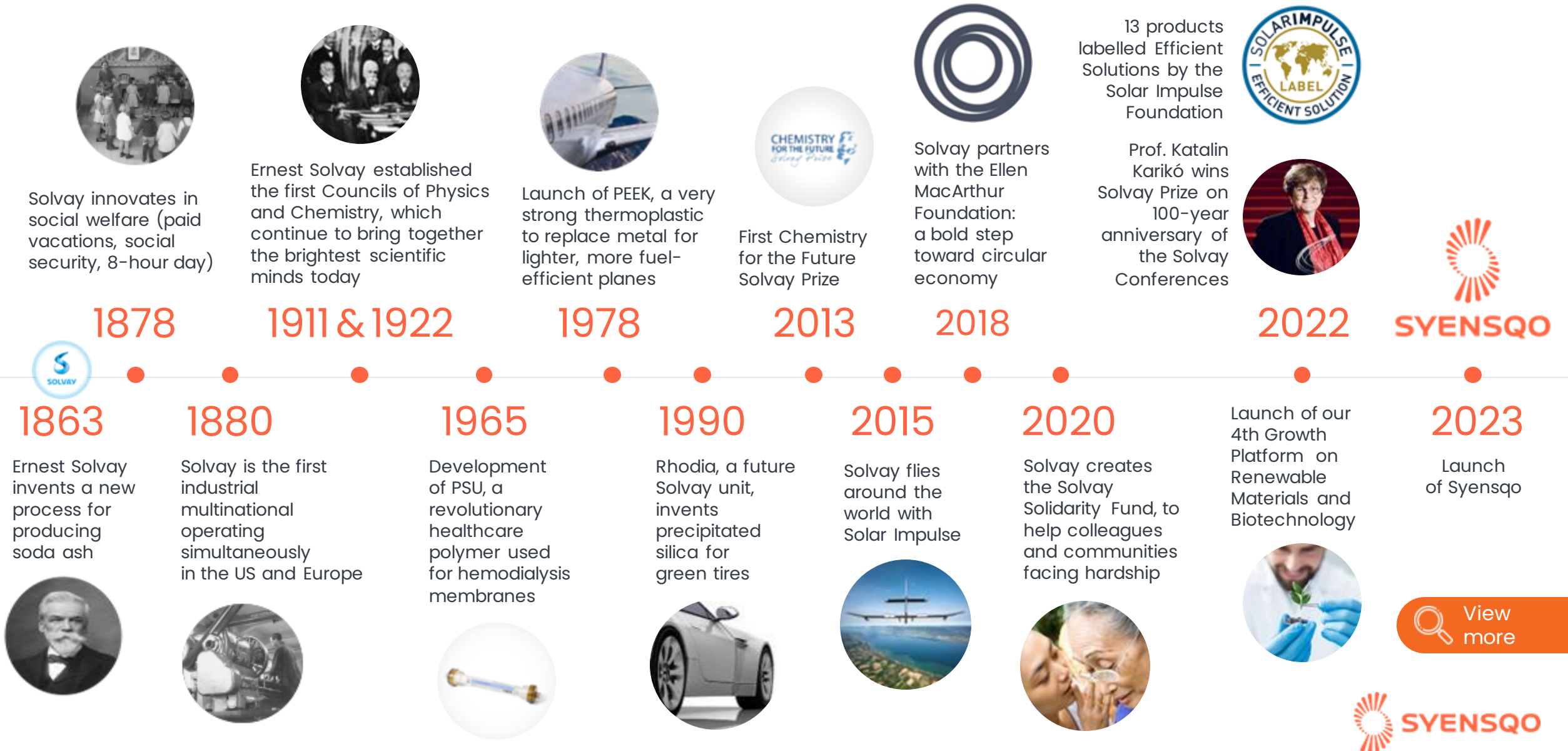
Source: Management reports

<sup>1</sup>Includes: Chemical Industry

<sup>2</sup>Includes: Home, Personal & Health Care

\*in ~90% of today's portfolio based on net sales

# A pioneering legacy and passion for science and bonding





We are  
explorers  
creating  
breakthroughs  
that advance  
humanity

1<sup>st</sup> Solvay  
Conference  
1911



# Agenda



1. About Syensqo

2. Digital Transformation Journey: Data & Analytics

3. Accelerating Data Driven Decision Culture

4. Seeq Use Cases

5. Conclusion

# Syensqo Approach

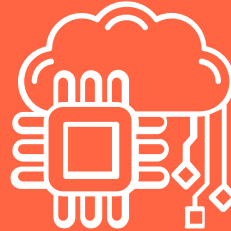
## *Achieving Impact at Scale with Data & Analytics*



Vision



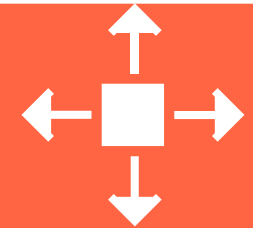
Technology



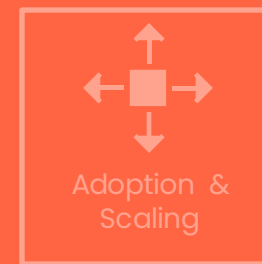
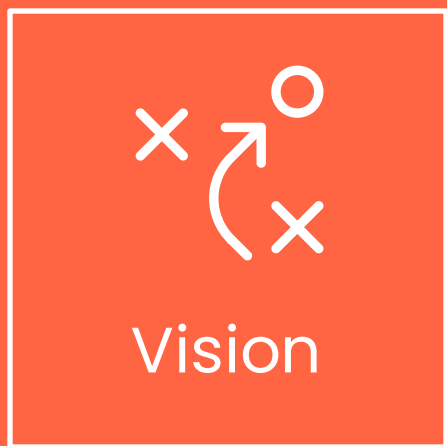
Data



Talent &  
Capabilities



Adoption &  
Scaling



No Shared Vision / Plan



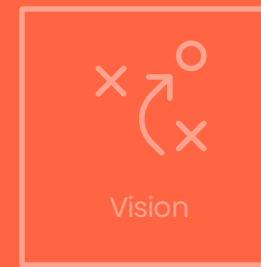
Star Factory Program

No Sponsorship

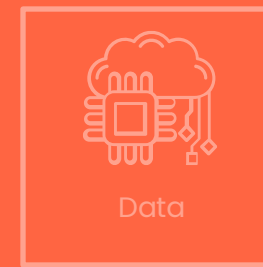


COO Executive Ownership





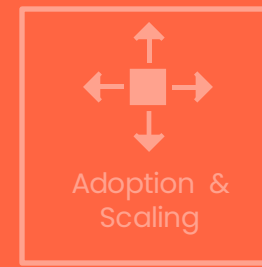
Vision



Data



Talent &  
Capabilities

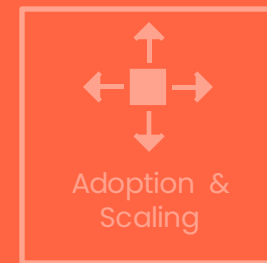
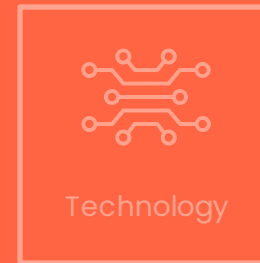
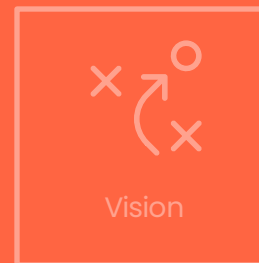


Adoption &  
Scaling

Disconnected Architecture  
& Approaches



Harmonized Architecture &  
Self-Service Analytics



Disparate Data Sources

Difficult To Access



Industrial Data Lake

Empowered Teams

Self-Service, Democratized Data



Not Enough People

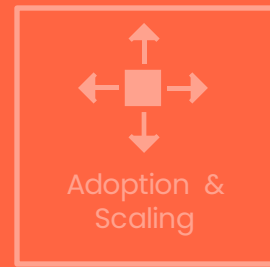
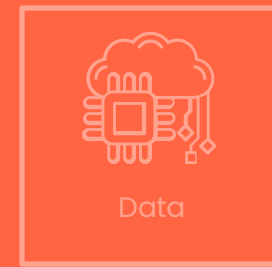
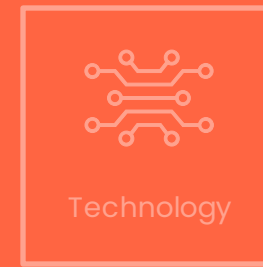
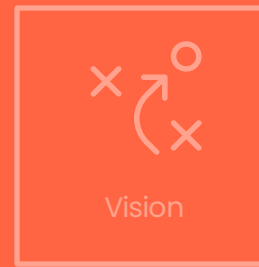
Not Enough Training

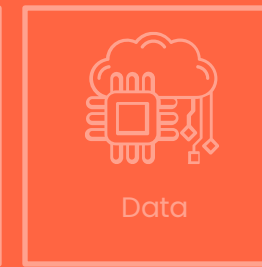
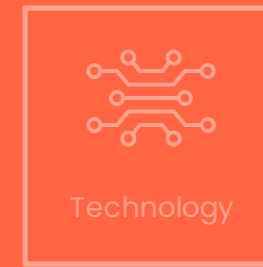
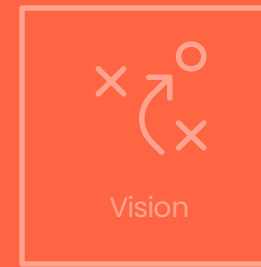
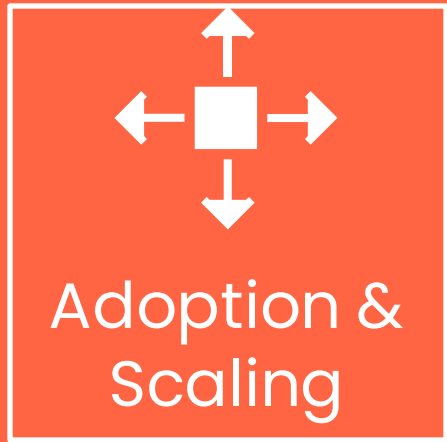
Not Enough Skill



Central Analytics Team

Capability Building Journey For  
Data Scientists & Field Engineers





Low / Inconsistent Adoption

No Central Support

Diagnostic Analytics



Delivery Squads Drive Site Adoption

End To End Analytics Support



# AI/Analytics Manufacturing Journey at Syensqo

→ the Syensqo factory of tomorrow...

Data & AI/Advanced Analytics is a key lever:

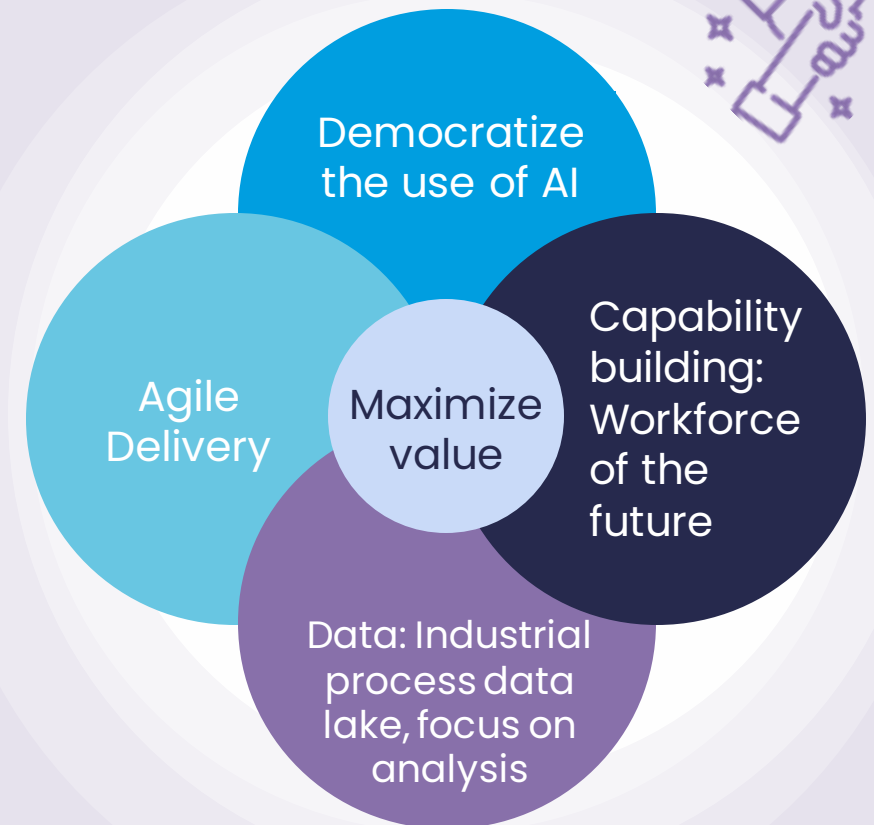
- To build the Star Factory
- Digital transformation of our plants

AI/ML & Real Time Optimization to:

- Enhance the optimal decision making
- Boost plant performance (gross margin, throughputs, quality...)

## VISION

Use of AI & RTO  
to unlock the full potential of plants



# Star Factory – Unleashing Performance & Sustainability across our industrial sites



100%  
STAR  
FACTORIES  
by 2030



Operational effectiveness



Best in class ESG



Unlocking value of digital



Go Beyond Compliance



Integration of ecosystem



Star Factory aims to create shared sustainable value for our



CUSTOMERS



GROUP



TEAMS



SITES



SOCIETY AT LARGE



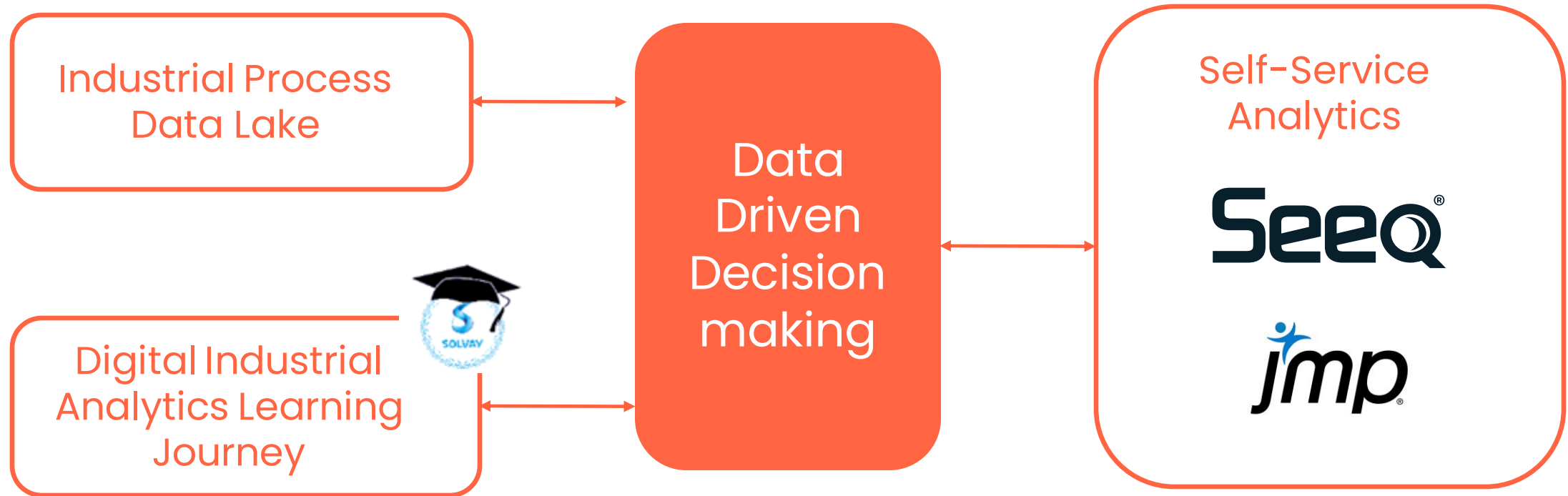
# Agenda



1. About Syensqo
2. Digital Transformation Journey: Data & Analytics
3. Accelerating Data Driven Decision Culture
4. Seeq Use Cases
5. Conclusion

# Ecosystem Approach

*Speed-up value creation*  
*Build a data driven decisions culture*



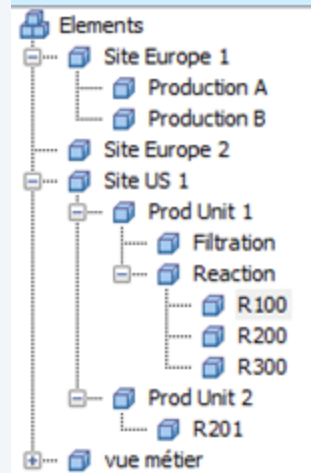


# Industrial Process Data Lake @Syensqo



# Data model to leverage power of Seeq

## Elements



# AVEVA

Integration, applications and streaming analytics infrastructure enabling the operationalization of SME-enabled Seeq insight at scale

System of Record for Operational Data

# + Seeq = VALUE

- Expressions: Formulas
- Event Frames: Capsules
- AF Hierarchy: Asset Tree
- Asset Context Switch: Asset Swap

On demand, self-serve advanced analytics application for manufacturing data

Manage Advanced Check Access

The following users and groups have access to this item

Inheritance is disabled

Permissions for this item are managed by the datasource a

Name
Agent API Key
ENT_admin
ENT_advanced
PAS_advanced
PAS_standard
PI_Analysis
PI_EFGen_Novocare
PI_Interface

Library

- TP1\_I2\_Crusher
- TP1\_I2\_Cutter
- TP1\_I2\_Cyclone separator
- TP1\_I2\_Degasser
- TP1\_I2\_Distillation column
- TP1\_I2\_Dryer
- TP1\_I2\_Drying chamber
- TP1\_I2\_Effluent collector
- TP1\_I2\_Electrolysis Cell
- TP1\_I2\_Elevator
- TP1\_I2\_Equipment package
- TP1\_I2\_Evaporation effect
- TP1\_I2\_Filter
- TP1\_I2\_Finishing Tank
- TP1\_I2\_Flash separator
- TP1\_I2\_Furnace
- TP1\_I2\_Generator
- TP1\_I2\_Grulator
- TP1\_I2\_Heat exchanger
- TP1\_I2\_HVAC
- TP1\_I2\_Mixer
- TP1\_I2\_Package Unit
- TP1\_I2\_Pneumatic transport
- TP1\_I2\_Press
- TP1\_I2\_Reactor
- TP1\_I2\_Reactor Batch-Continuous
- TP1\_I2\_Reactor Continuous

TP1\_I2\_Batch Reactor

General Attribute Templates Ports Analysis Templates Notification Rule Templates

Filter

Name	Description
Template: TPLB_PRODUCTION_EQUIPMENT	
Template: TPLG_I2_HEADER	
Template: TPL_I2_Batch Reactor	
Agitator Controlled Speed	Agitator Controlled Speed
Agitator Controlled Speed SP	Agitator Controlled Speed Set...
Batch ID	Batch ID
Batch Quantity	Batch Quantity
Batch Status	Batch Status
Jacket Inlet Temperature	Jacket Inlet Temperature
Jacket Outlet Temperature	Jacket Outlet Temperature
Lot Number	Lot Number
Operation Code	Operation Code
Phase Code	Phase Code
Pressure	Pressure

DEMO > Site US 1 > Prod Unit 1 > Reaction

3/11/2023 7 days 10

Select All

Swap in this asset for an asset that's in the Details pane

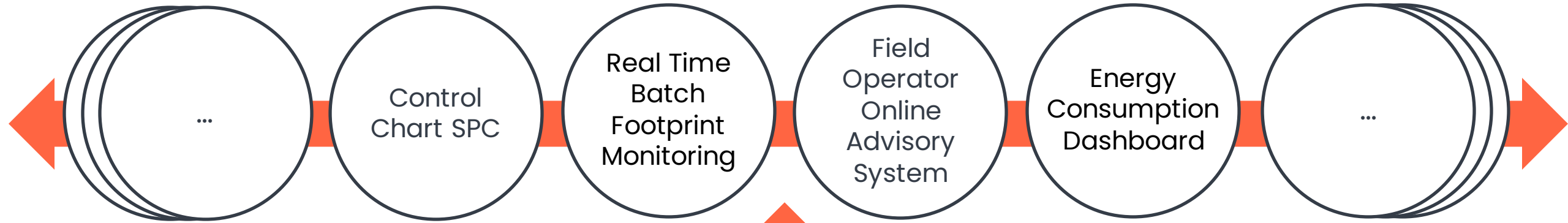
Name	Asset	Description
R100 Template: Generic Batch Reactor	Agitator Controlled Speed	Agitator Control...
R200 Template: Generic Batch Reactor	Agitator Controlled Speed SP	Agitator Control...
R300 Template: Generic Batch Reactor	Batch ID	Batch ID
	Temperature	Temperature
	Pressure	Pressure

# Agenda



1. About Syensqo
2. Digital Transformation Journey: Data & Analytics
3. Accelerating Data Driven Decision Culture
4. Seeq Use Cases
5. Conclusion

Seeq is used for multiple 'solutions' (use case)

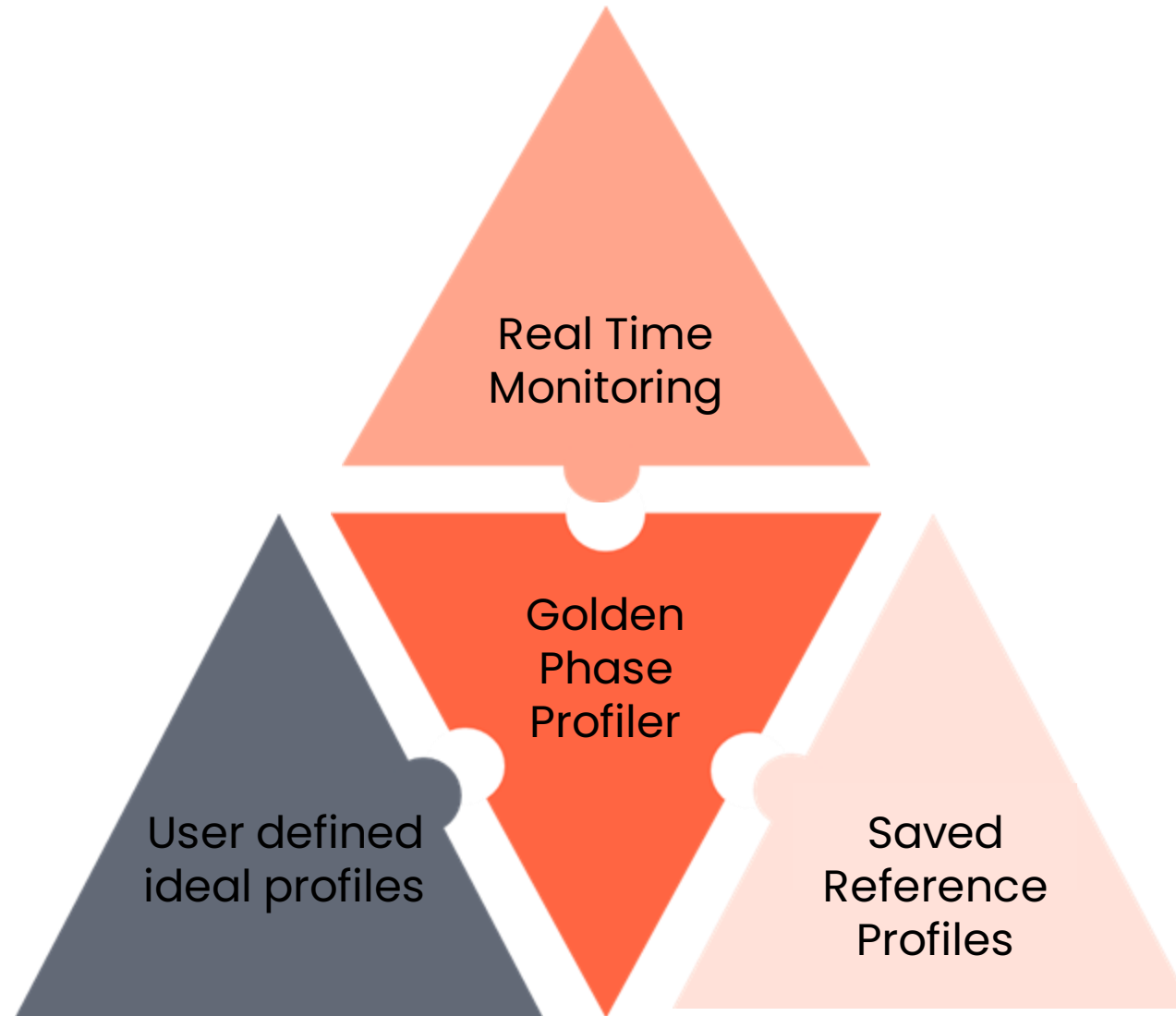


**Seeq®**





# Augmented Golden Batch: From dream to reality with Seeq



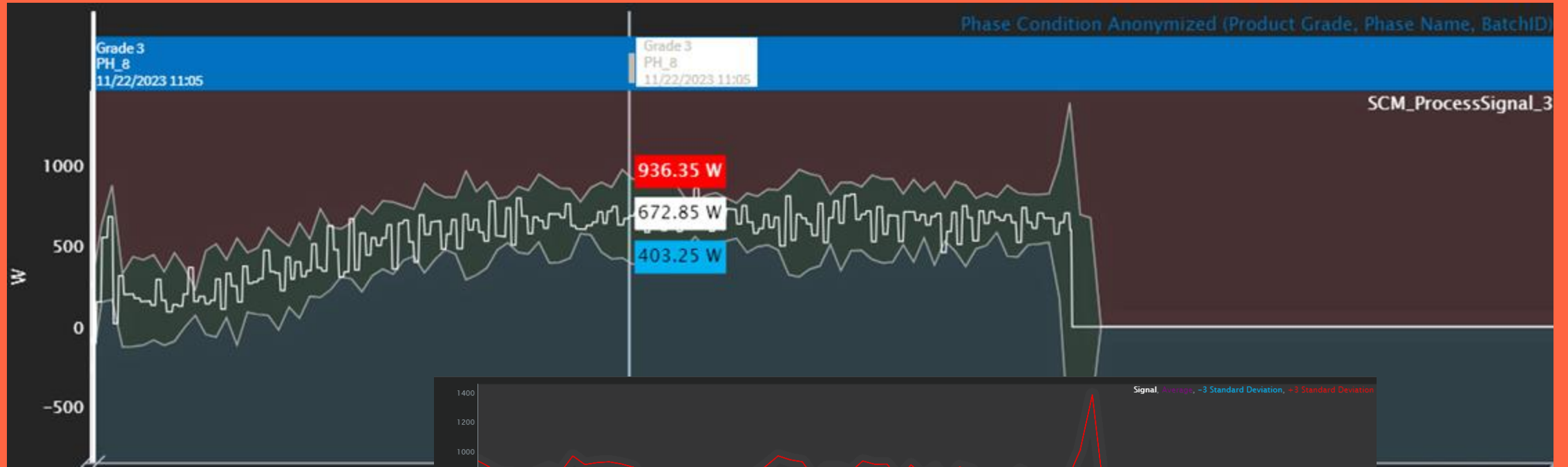
# Golden Phase Profiler

Follow key process variables in real time and identify deviations

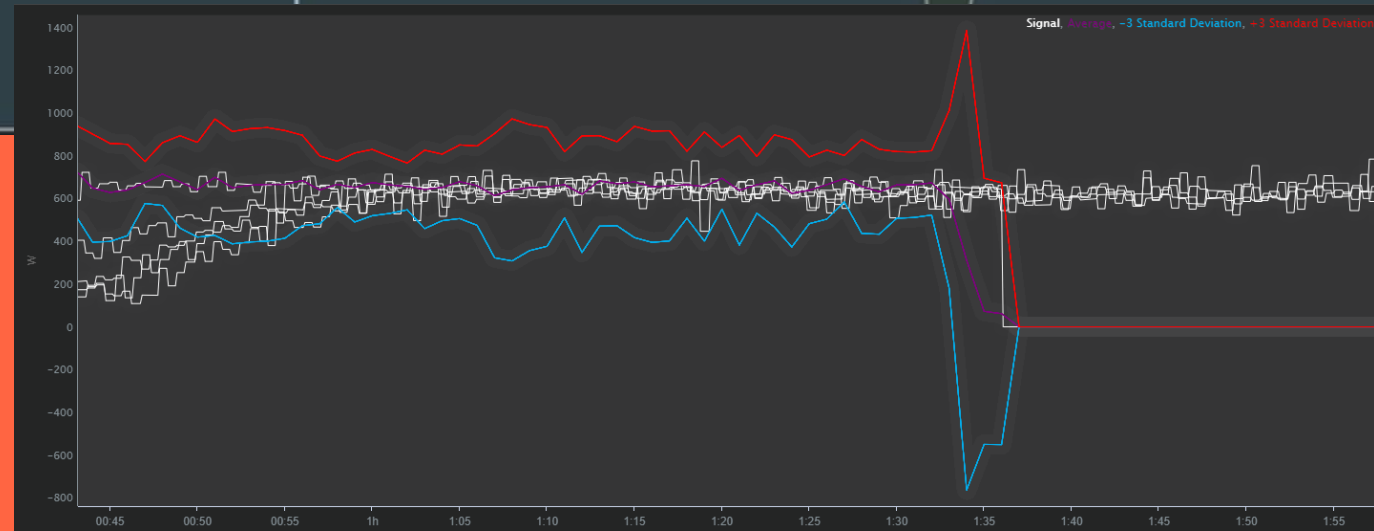


# Golden Phase Profiler

Define the ideal profile of a process variable throughout a batch as well as an acceptable/reference envelope based on statistics



Seeq Capsule View ➡



The number of segments shown in Compare View is being limited to 300 to maintain display performance.

There are 4 signals and 275 capsules selected (1100 segments). Take one or more of the following actions:

- Reduce the number of signals or conditions in the Details pane.

~50 batches displayed here

PHASE 7

PHASE 8

PHASE 9

PHASE 10

PHASE 14

Offers the possibility to display multiple phases

# Golden Phase Profiler

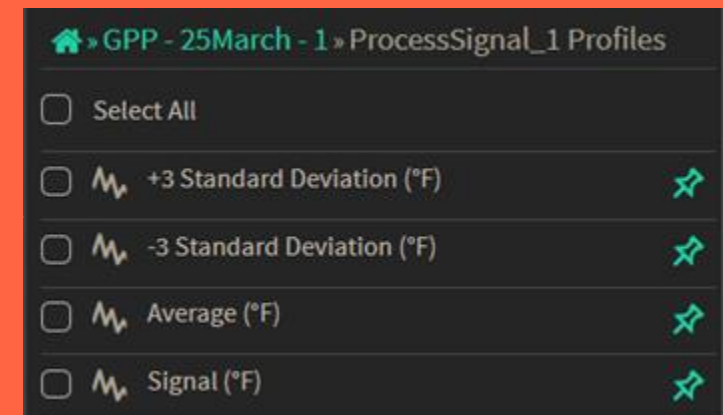
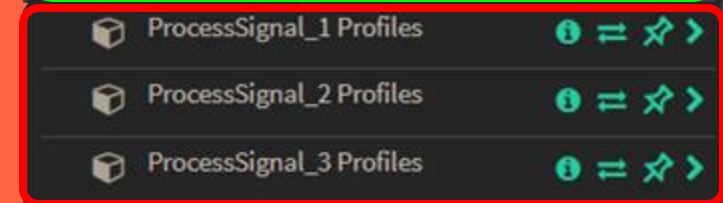
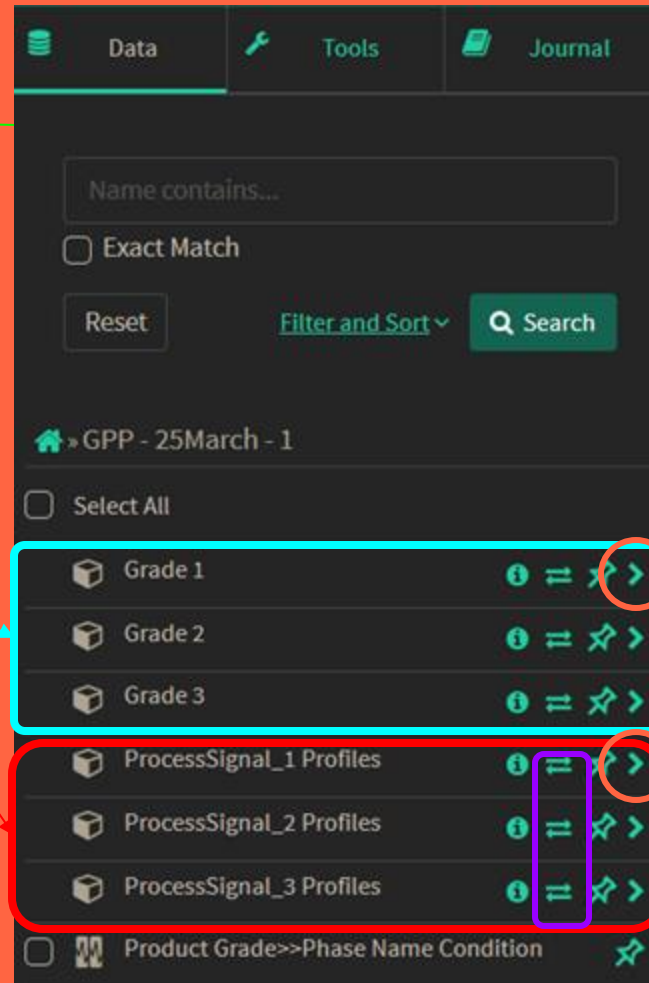
Store the profiles for later use

Structured  
by Phase

Structured  
by Grade

Structured by  
Process Signal  
(temperature, pressure, power, ...)

Replicate an analysis by  
using the swap feature.



# Agenda



1. About Syensqo
2. Digital Transformation Journey: Data & Analytics
3. Accelerating Data Driven Decision Culture
4. Seeq Use Cases
5. Conclusion

# Our Journey with Seeq

*Capabilities and Partnership in line with our AI / Analytics Vision*

Self-Service Analytics and Democratization of Data

---

Robust Capabilities – With Flexibility

---

Enablement / Training to Ensure Adoption

---

Strategic Support from Seeq Team



# *Thank You!*

Dr. Sami Bahroun

