

PI WORLD 2022

PI AF: our cornerstone to leverage Smart Innovative Operations

AIR LIQUIDE / ALIZENT

Adrien GENTIL / Victor GUIOTOKU / Guillaume FAURE

AVEVA

AIR LIQUIDE

A world leader in gases, technologies and services for industries and healths



2021 Key Figures



~**66,400**
EMPLOYEES



PRESENT IN
75 COUNTRIES



MORE THAN
3.8 MILLION
CUSTOMERS &
PATIENTS



REVENUE
€23.3bn



NET PROFIT
(GROUP SHARE)
€2.6bn



INVESTMENT
DECISIONS
€3.6bn

Our strategy



Delivering
strong financial performance



Decarbonizing
the planet



Unlocking progress
via technology



Acting for all

AVEVA

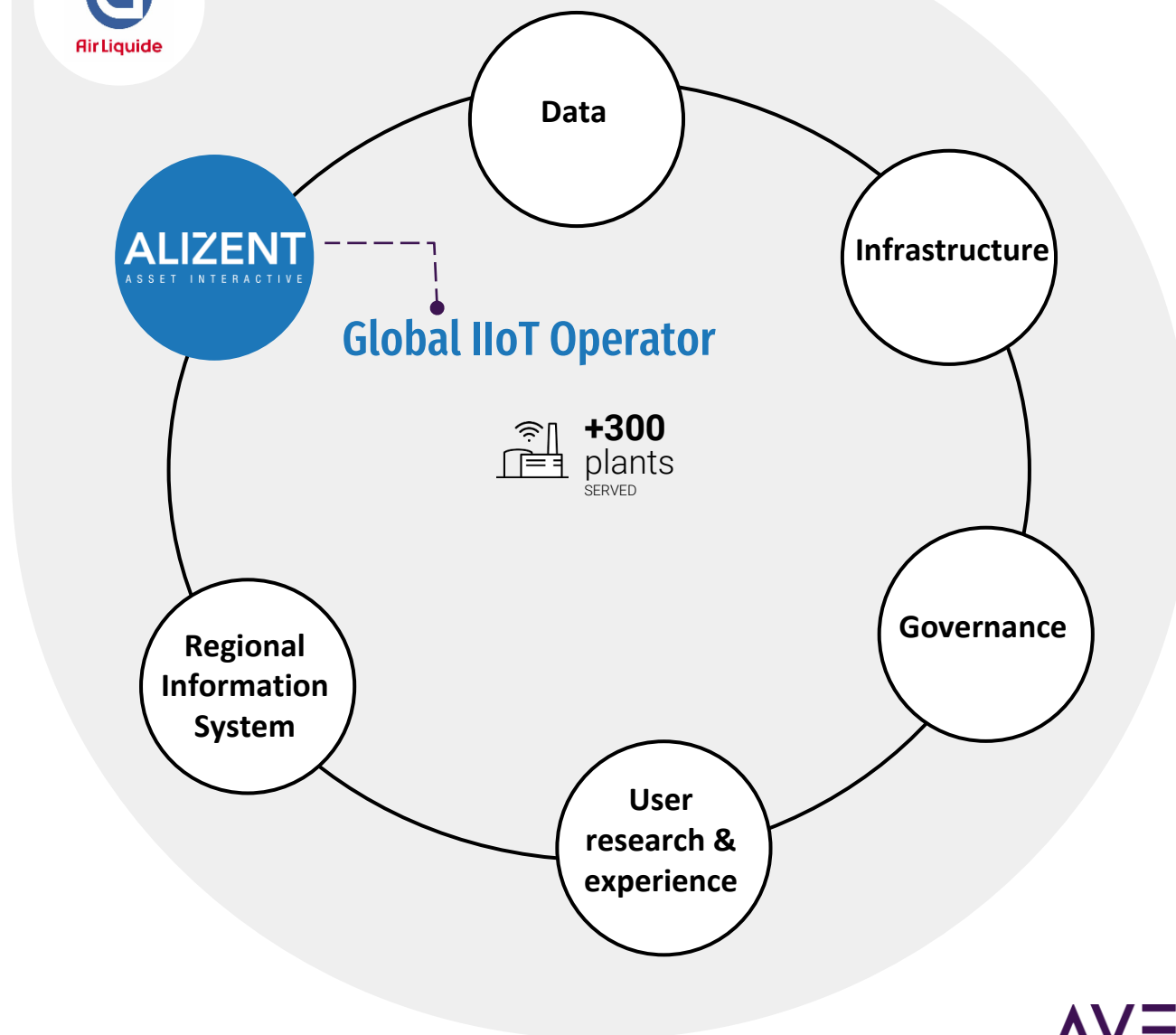
ALIZENT

ASSET INTERACTIVE

Global Partner that transforms Asset-Intensive industries by leveraging digital technologies

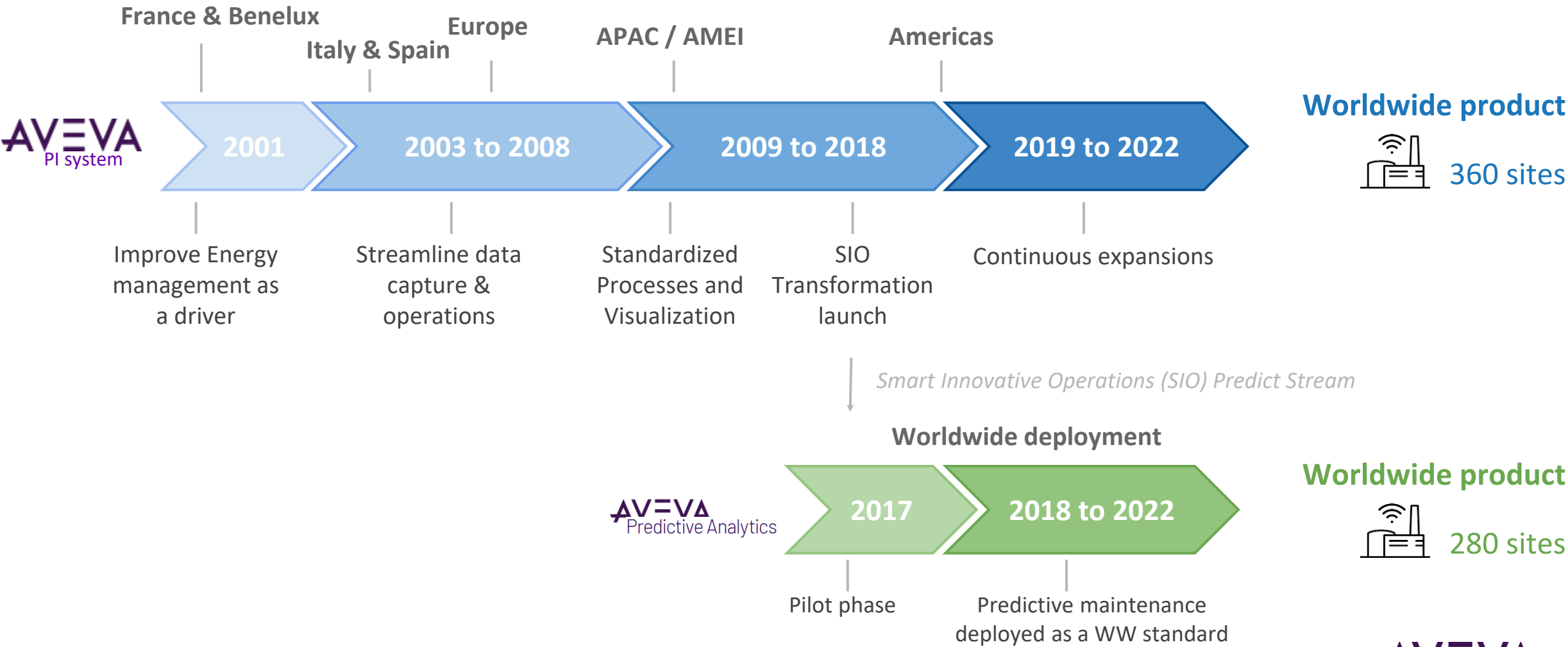


Air Liquide digital entities



AVEVA

AVEVA PI System & Air Liquide



A global strategy



Challenge

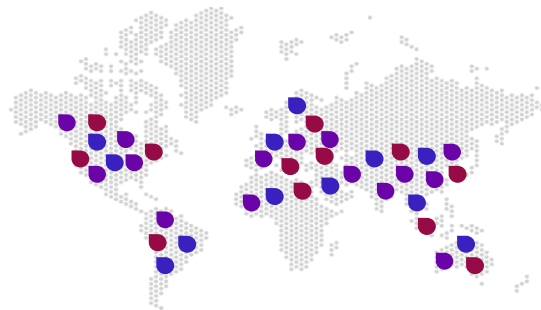
Ensure **CONTINUITY & PERFORMANCE** of operations

- Reliability
- Efficiency
- Safety

Solution



Use **AVEVA PI Asset Framework** to get a standardized and complete monitoring of each asset



Benefits

Centralized Operations & Governance
Worldwide **synergies**
Data **worldwide** accessibility
Fast deployment
Agility to **replicate**

Data as an asset...



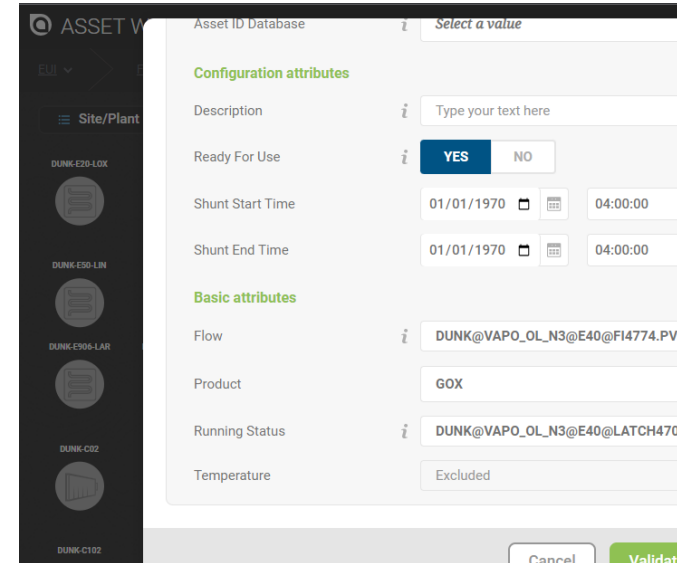
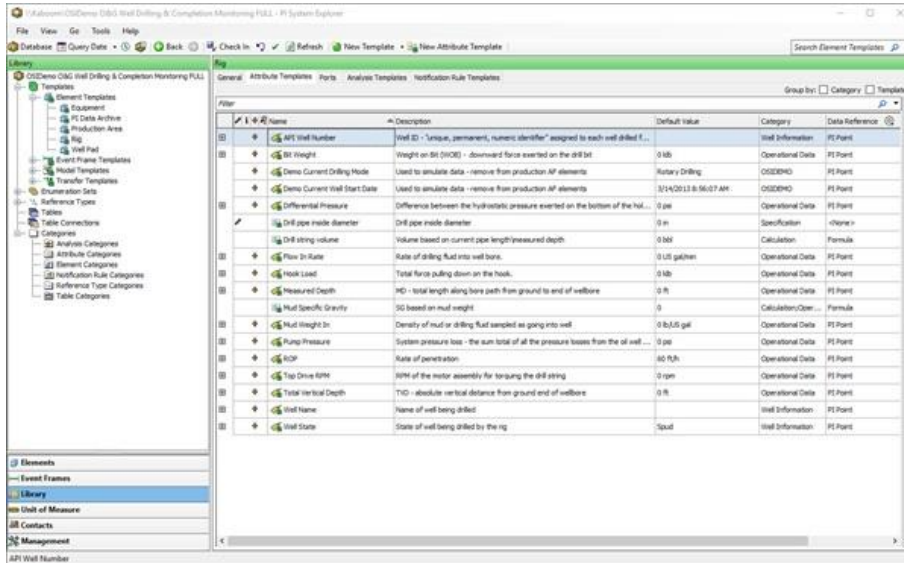
To exemplify how Air Liquide is solving this challenge, we will follow the example of a compressor located here in the Netherlands!

Improve Data Consistency



“We needed a way to manage very easily our data referential with hardened and standardized templatization on a global scale”

AVEVA PI AF as a cornerstone for data consistency



AVEVA PI Asset Framework

- Structure your assets
- Facilitate and automate assets creation
- Standardize assets regardless of their geolocation

Asset Wizard (on top development)

- Enhance user-friendliness and ensure robust AF configuration methodology
- Assets visualisation via modular flow charts
- Full transparency on configured data for any user

Improve Asset Reliability



AVEVA PI AF as a cornerstone for AVEVA Predictive Analytics integration



- Models deployed for each compressor
- Mechanical, electrical parameters used in models

**Model output:
Overall Model Residual KPI**

- OMR describes asset behavior deflection

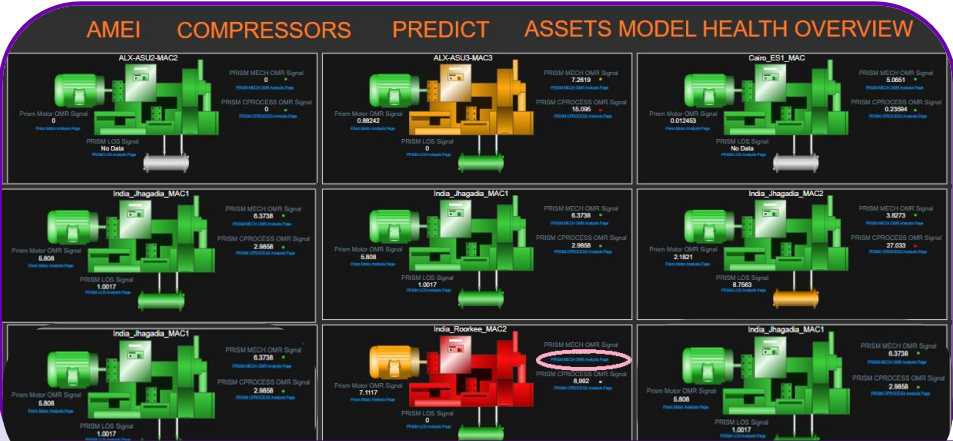
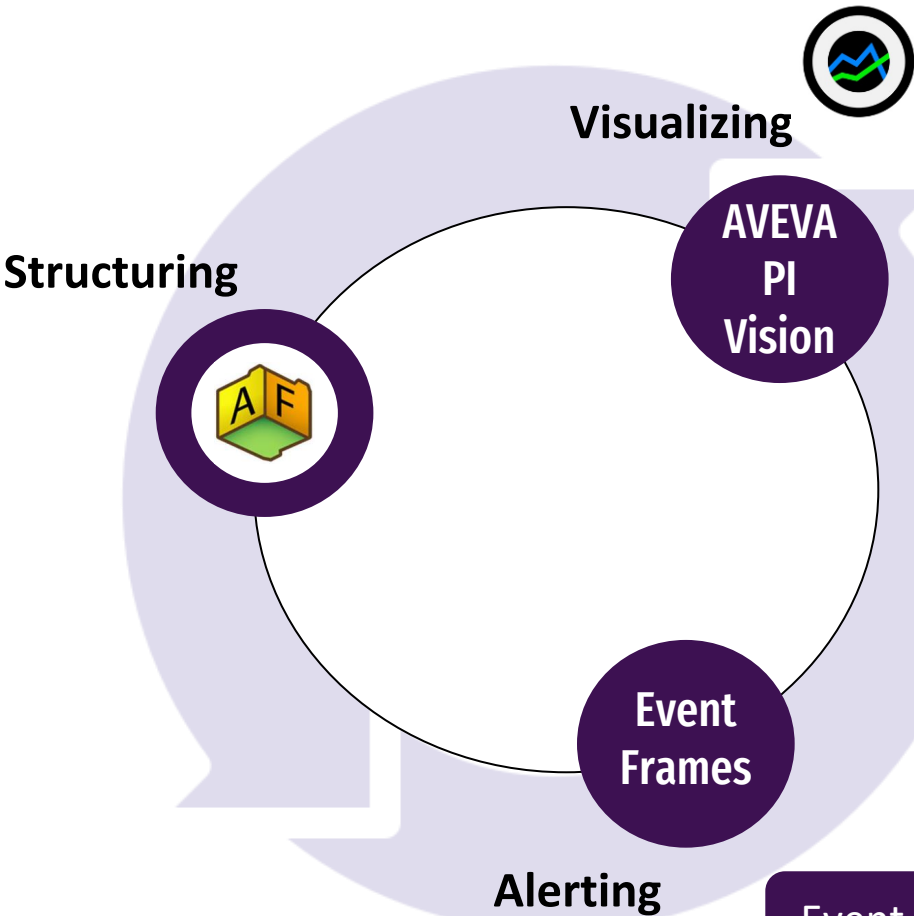
Real time push of OMR values into PI Data Archive

- Using UFL Interface



		OMR Overall Average Values	11.608 %
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AVEVA PI AF as a cornerstone for data visualization and alerting

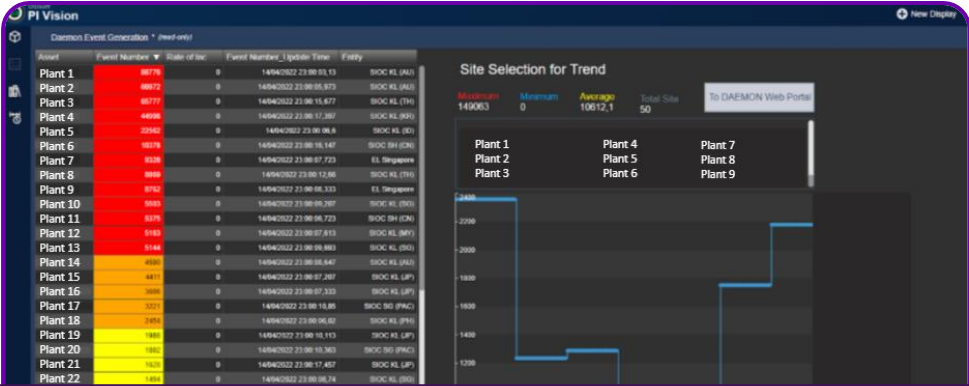
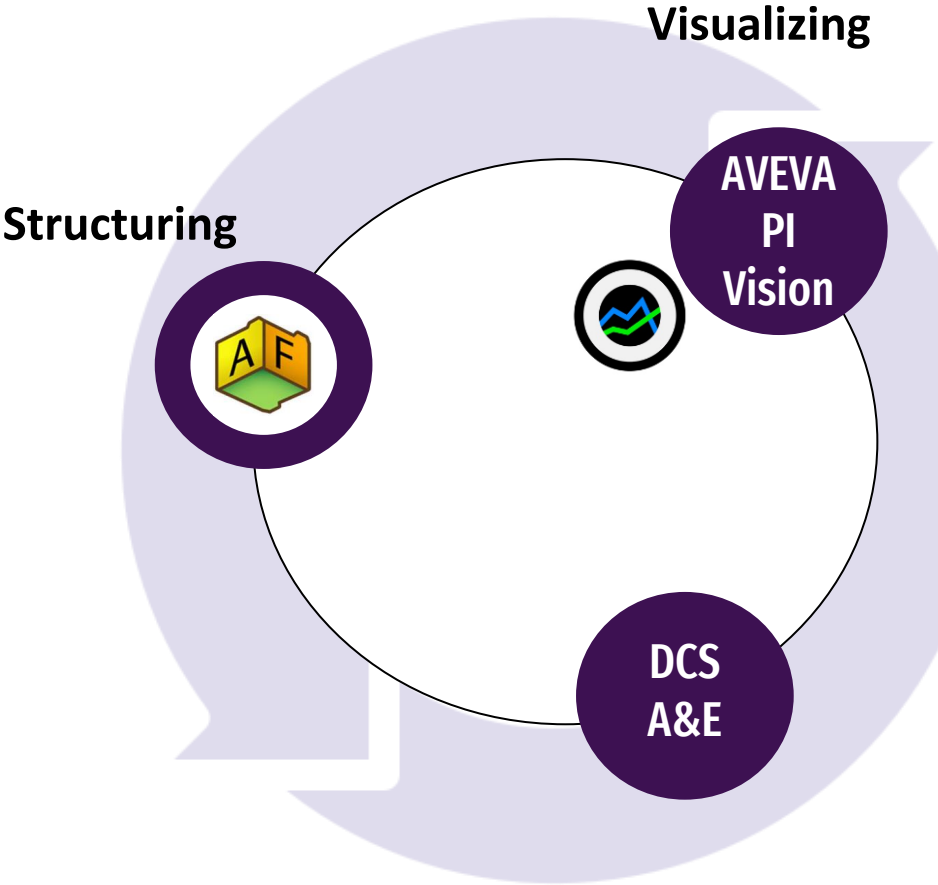


With this methodology, operations analysts can quickly visualize if a compressor is showing signals of a potential failure and take action if needed

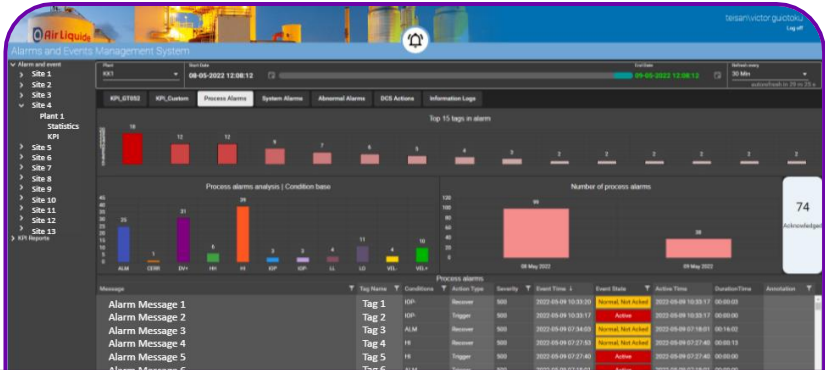
Event Name	Asset	Start Time	End Time	Acknowledgment	Severity	Duration
BEP - Gap Deviation	GHEN-C01-CCOMP	4/25/2022 12:31:00 AM	In Progress	Acknowledge	Major	1d 18h
EMS - Power Model Deviation	GHEN-C01-CCOMP	4/25/2022 1:29:00 AM	In Progress	Acknowledge	Major	1d 17h
Predict - Mechanical OMR Out	GHEN-C01-CCOMP	4/25/2022 6:30:00 PM	In Progress	Acknowledge	Minor	1d
Predict - Motor OMR Out	GHEN-C01-CCOMP	4/25/2022 6:32:00 PM	In Progress	Acknowledge	Minor	1d
EMS - Compressor Antisurge High	GHEN-C01-CCOMP	4/26/2022 6:32:00 PM	In Progress	Acknowledge	Critical	6m 38s

Event Frames are configured to automatically register significant drifts of performance, which will be further analysed by the operations team

AVEVA PI AF as a cornerstone for data visualization and alerting



By integrating the A&E solution with AVEVA PI AF, we are able to see in AVEVA PI Vision how many alarms and events are being generated for each plant and take action if needed



Web tool shows alarms and events in each plant, following guidelines from ISA 18.2

Improve Asset Efficiency



Two Complementary approaches to monitor assets efficiency

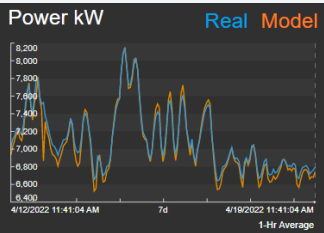
Billions of data sent every day to our PI System

Tag Referential per Assets



EMS: Efficiency Monitoring System

Models based on historical tags



✓ Detects automatically through models any efficiency deviation & operating rules

BEP: Best Economical Performance

Operational momentum comparison



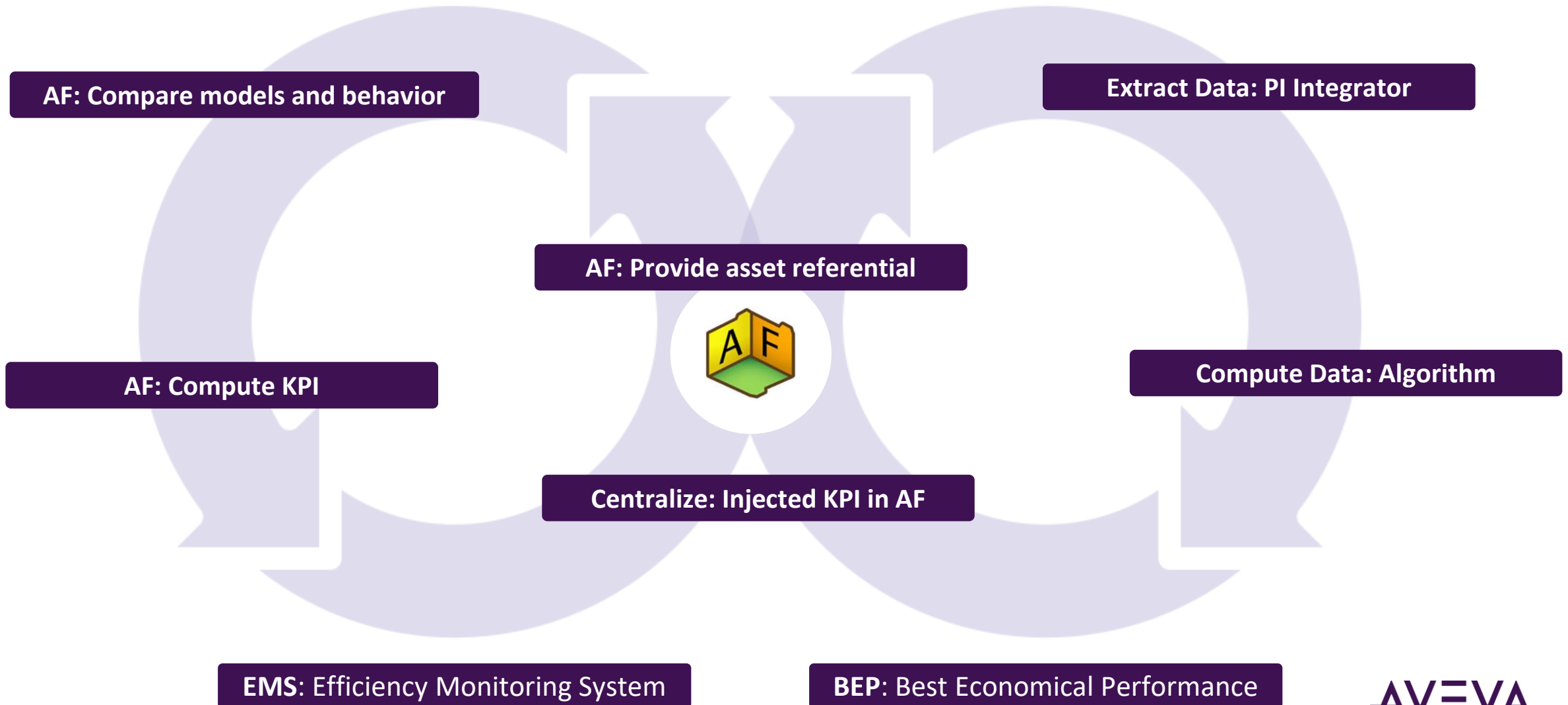
✓ Detects automatically gaps to best economical performance and advise on how to reach the optimum



ALERT
(PI Event Frame)

AVEVA

AVEVA PI AF, a centralizer for efficiency monitoring

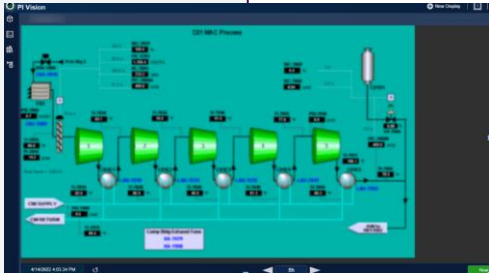


AVEVA PI AF, a lever for data visualization



Understand: AVEVA PI Vision

- Cross checking between both tools directly in the PI Vision display
- Direct URL links to solutions



Alerts: PI Event Frame

- Real time
- All streams = Same place
- Prioritized

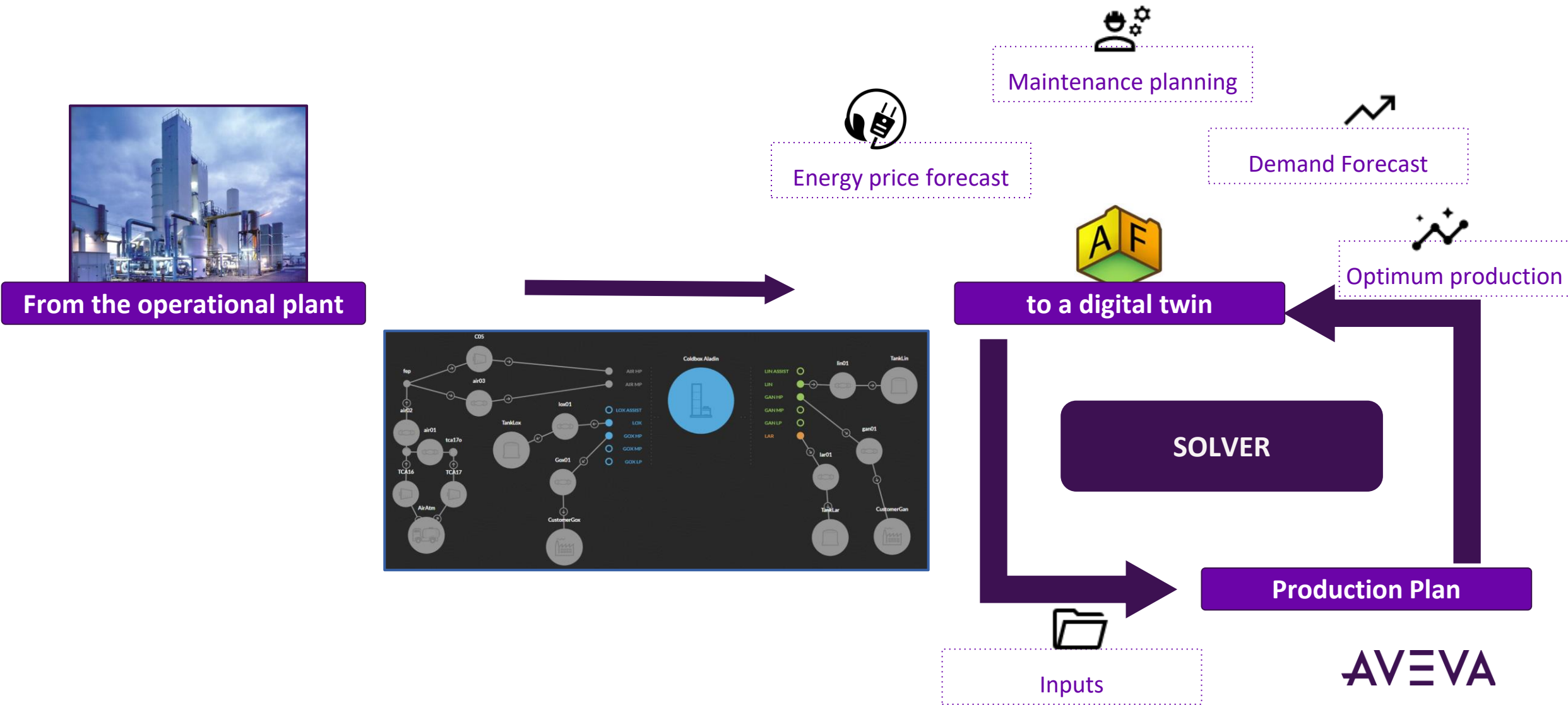
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Centralize: Injected KPI in AF

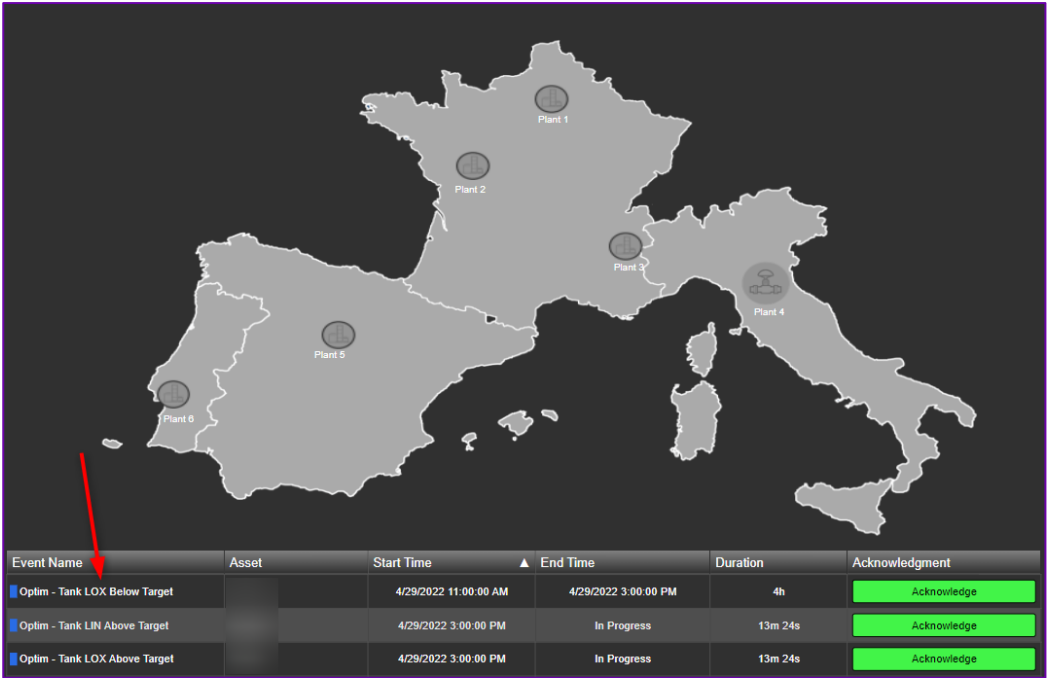
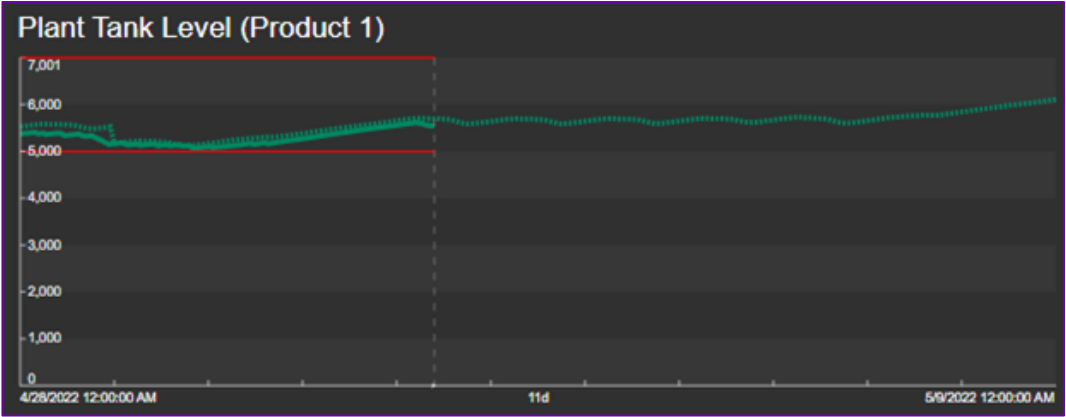
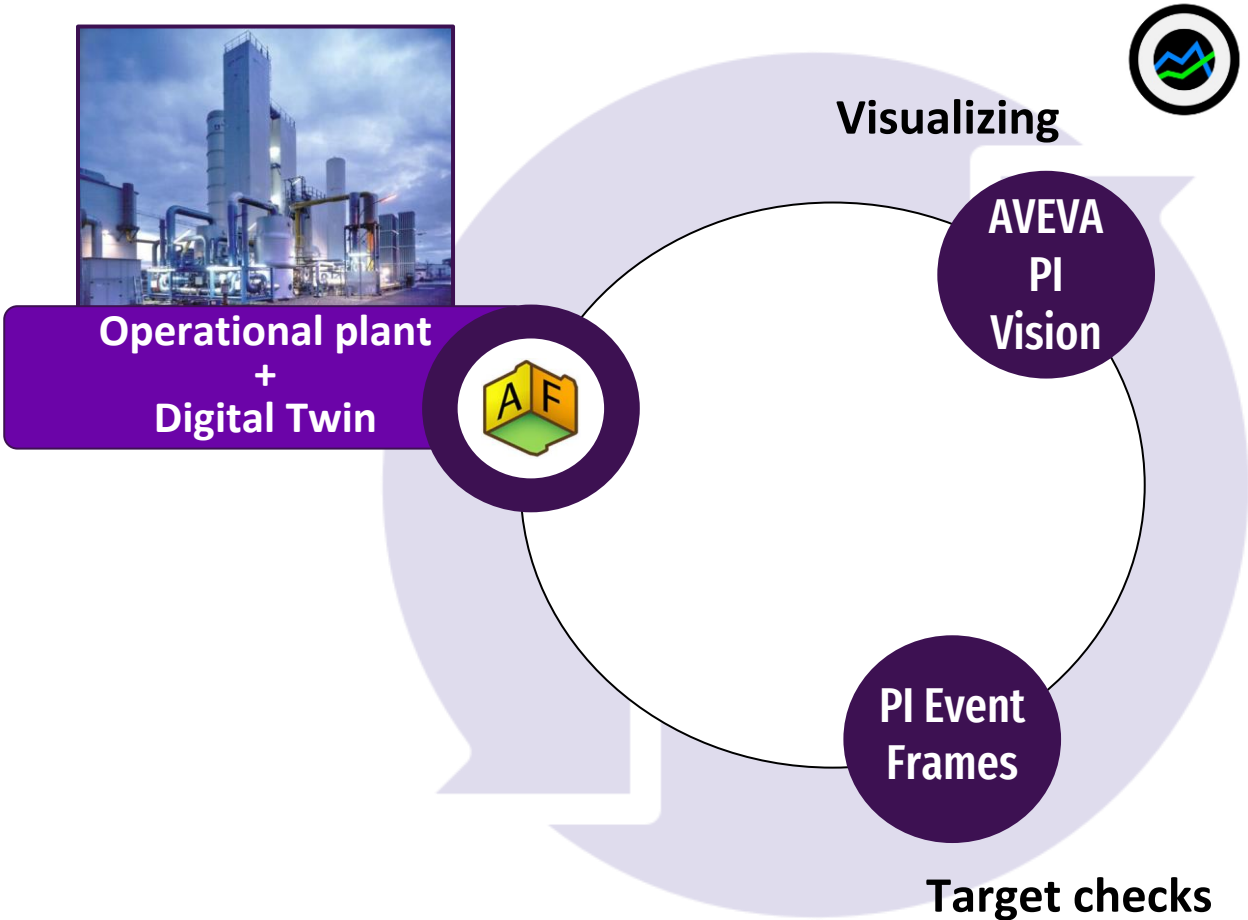
Optimize operations



Feeding the digital twin through AVEVA PI AF



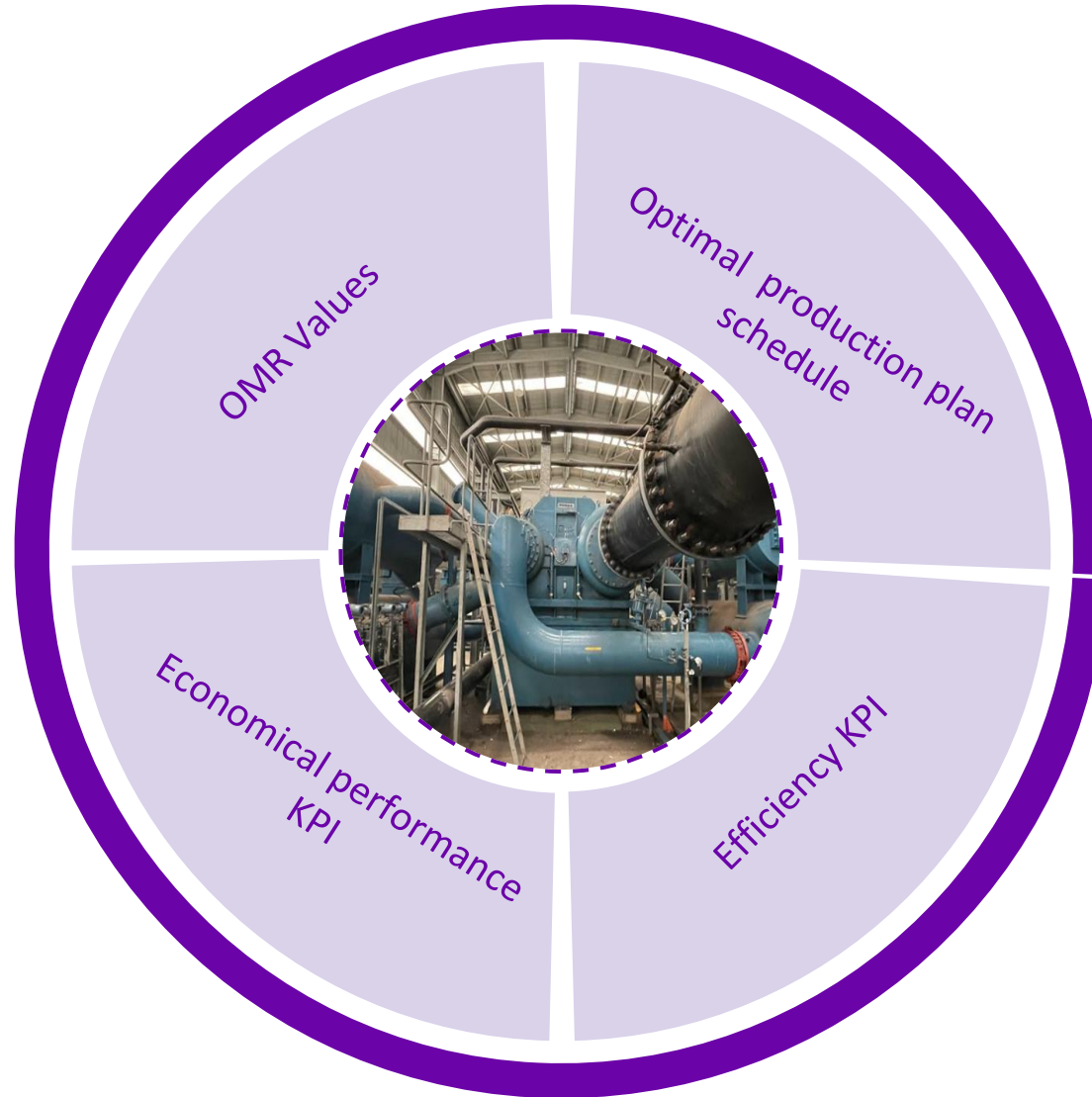
Feeding the digital twin



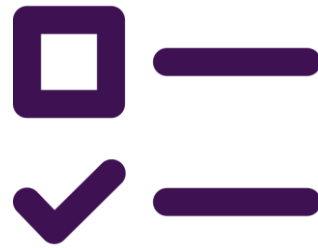
AF, our cornerstone

AVEVA

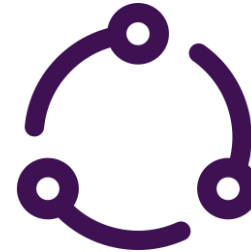
The end of our journey



Why choose AVEVA PI Asset Framework?



Versatility



Interconnectability



**Easy
Adoption**



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