# AVEVAWORLD

OCT 28, 2025

# What we accomplished at Provelt!

**Operations Control Technical Symposium** 

Ahmed Aly Khalil

Pierre Hery



**INDUSTRIAL SUMMIT 2025** 

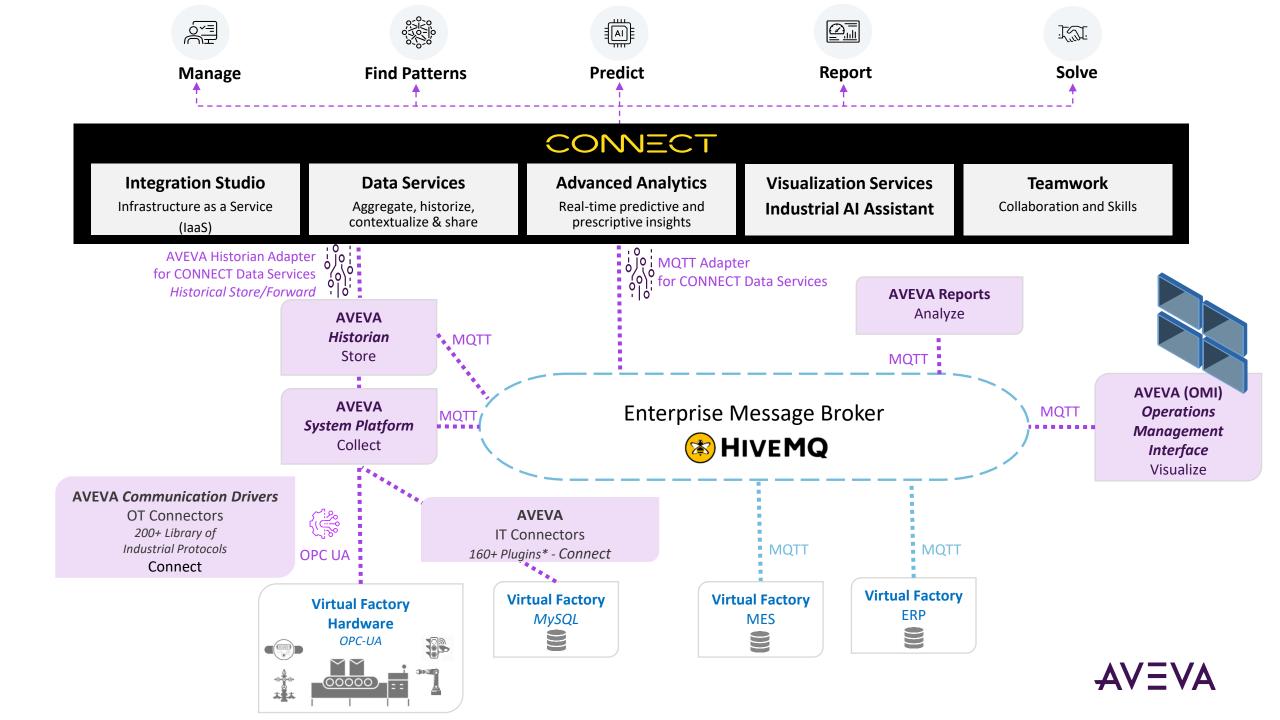
# Agenda

Session/Provelt! Introduction

Use Case 1 – On Premise

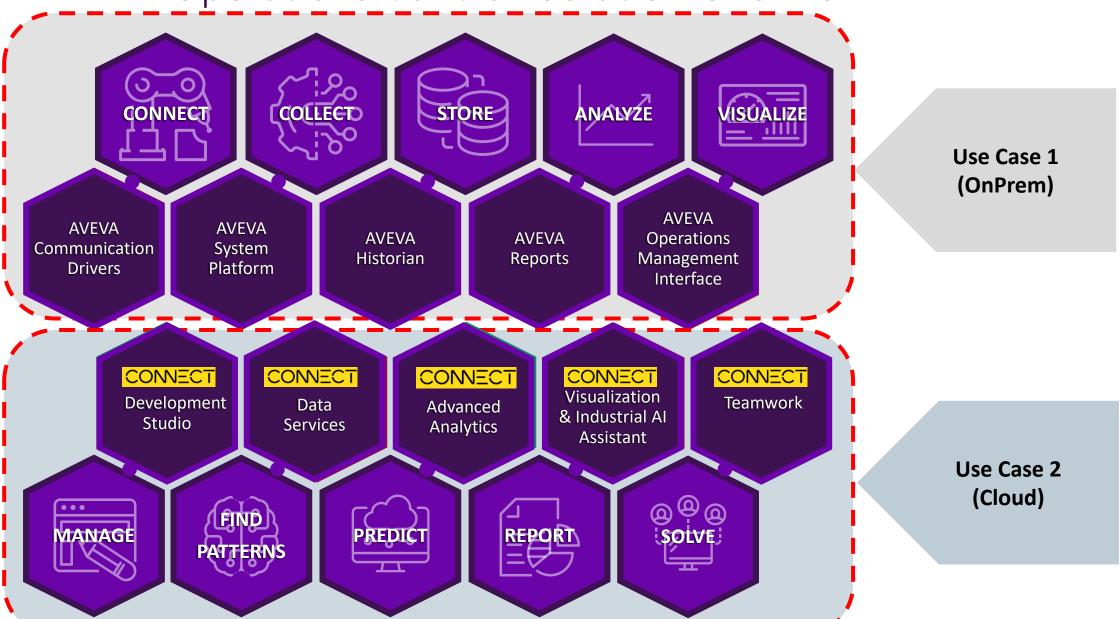
Use Case 2 – Cloud





### PROVEIT!

### AVEVA™ Operations Control: Solution Overview



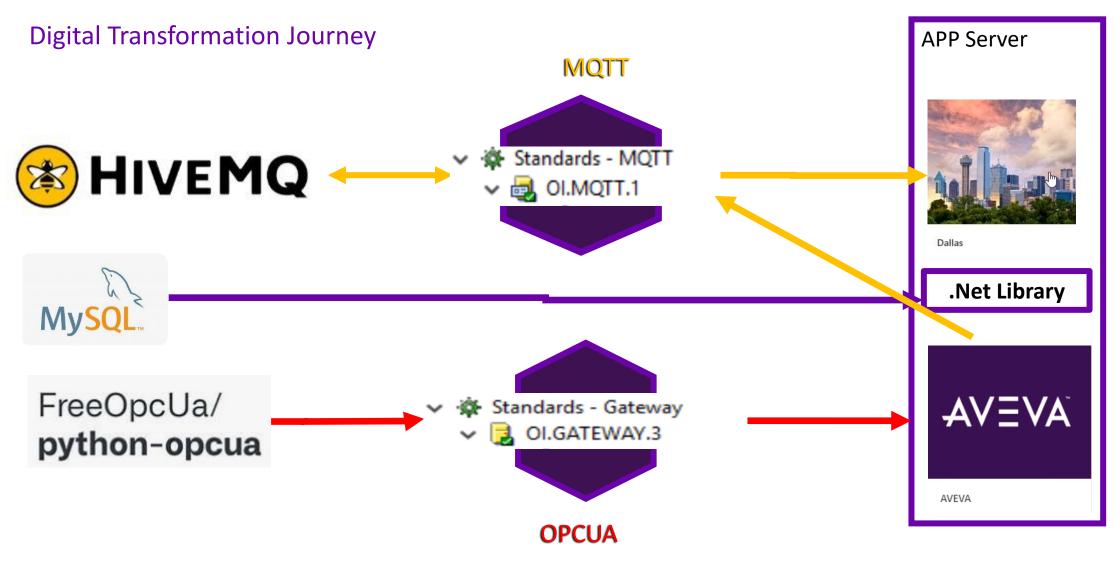
# Use Case One

Ahmed Aly Khalil



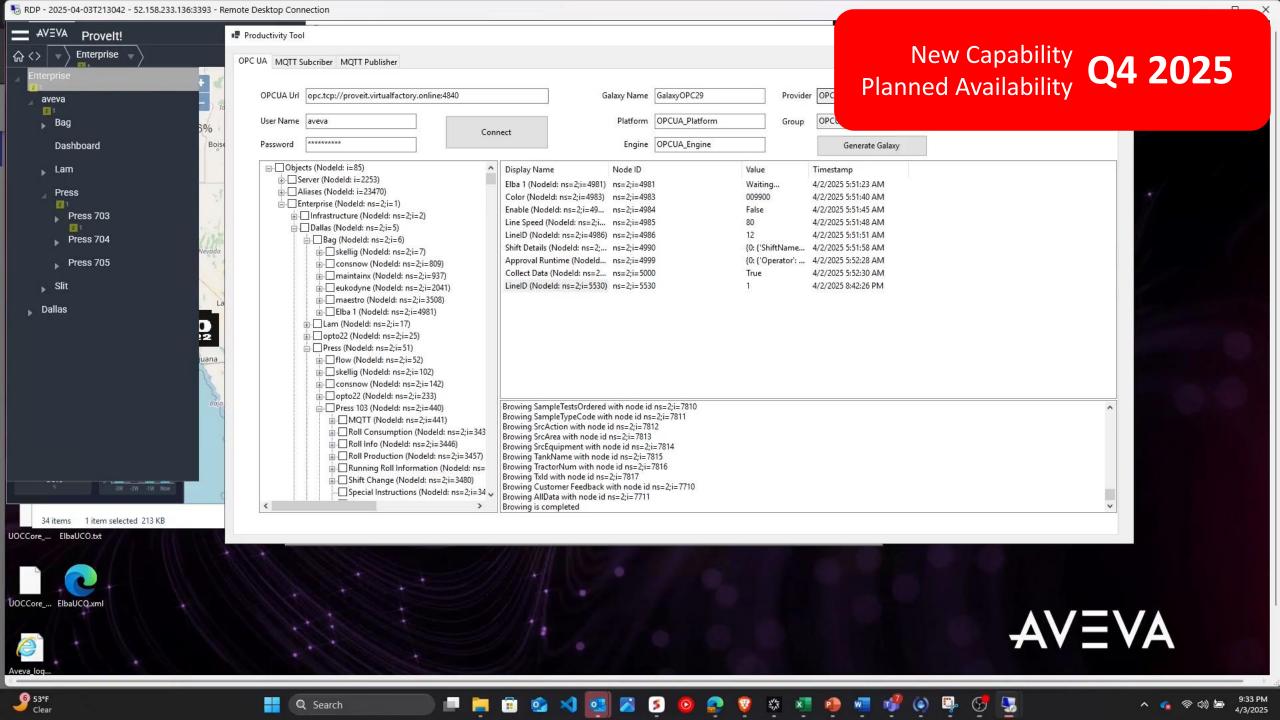


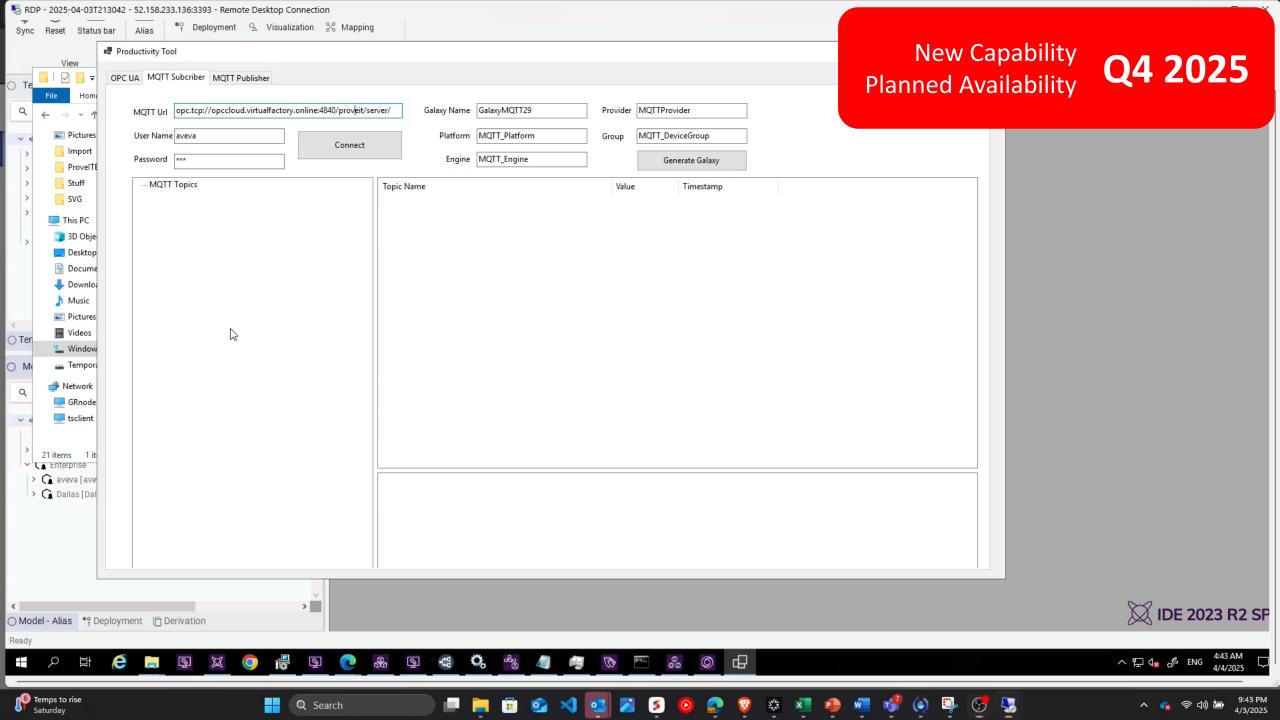
### Connect – AVEVA Communication Drivers

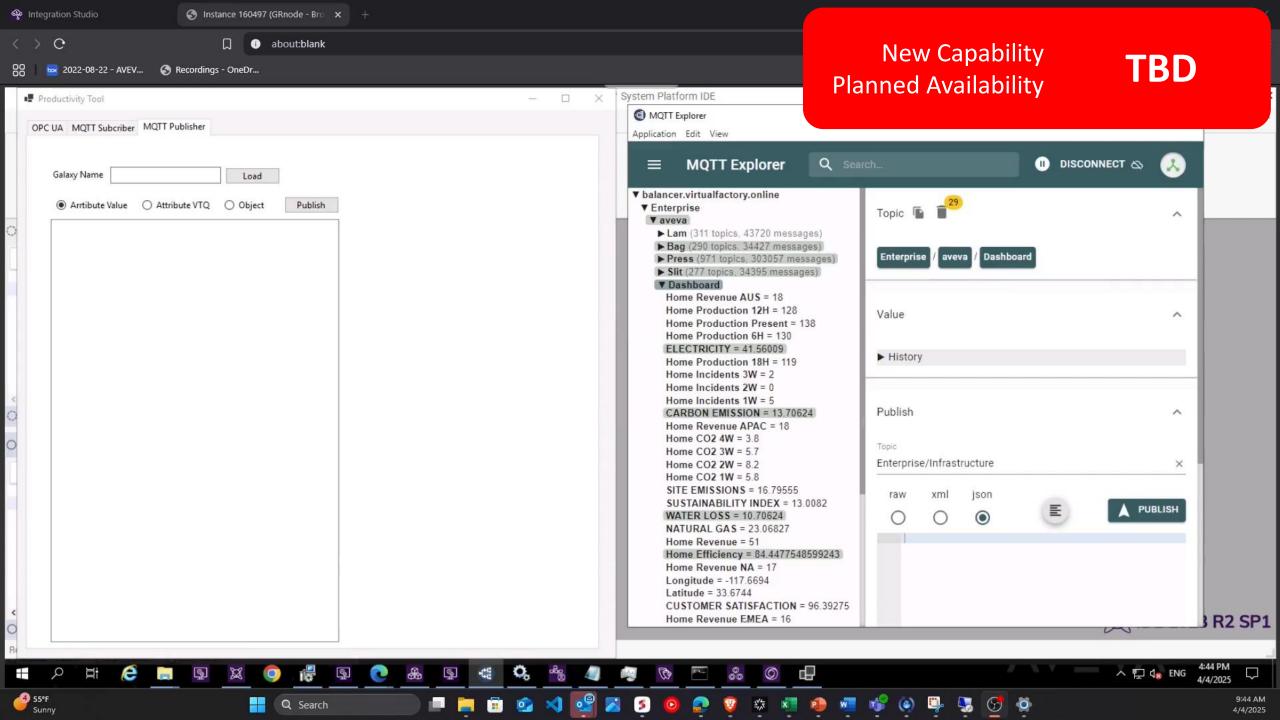






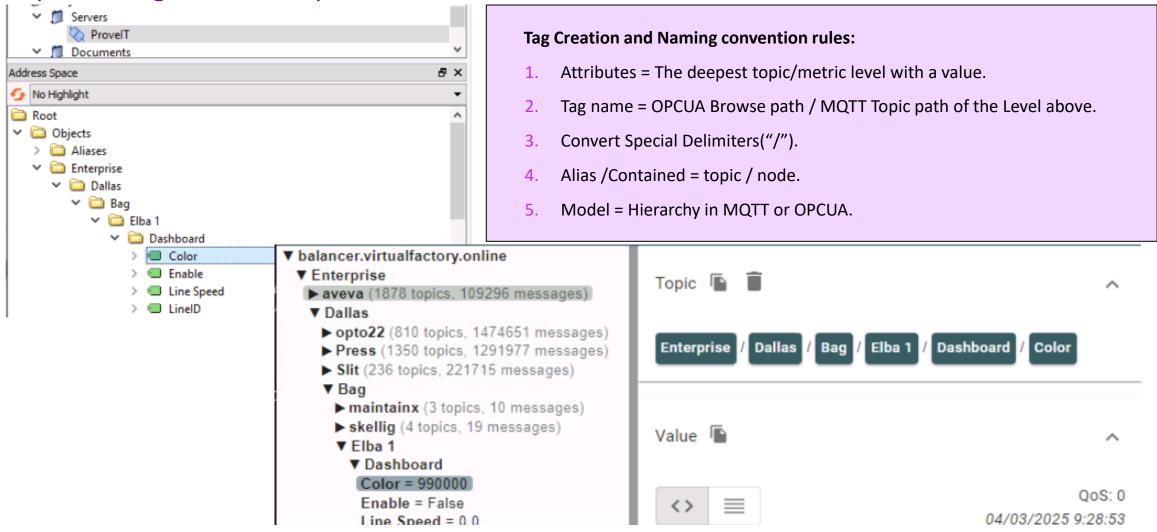






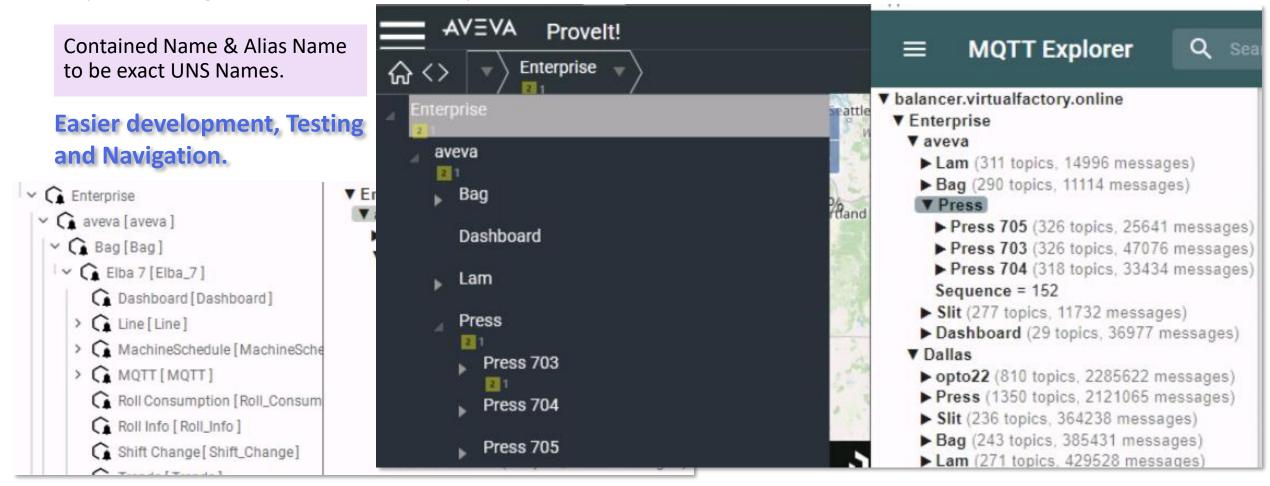
## Collect – AVEVA System Platform

Implementing UNS inside System Platform



## Collect – AVEVA™ System Platform

Implementing UNS inside AVEVA™ System Platform





## Collect – AVEVA System Platform

Implementing UNS inside System Platform

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:TEMPLATE=\$Dashboard					
:Tagname	Area	Host	ContainedName	AliasName	LinePath.InputSource(MxReferenceType)
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Enterprise##Dallas##Bag##Elba_1##Dashboard	Enterprise##Dallas##Bag##Elba_1	MQTT_Engine	Dashboard	Dashboard	MQTTProvider:MQTT_DeviceGroup.Enterprise/Dallas/Bag/Elba 1/Dashboard/LinePath





### Store – AVEVA™ Historian

- AVEVA™Historian Web client
  - Contextualized trends by passing tag name in web client links.



```
computedUrl https://HISTORIAN...

Default Value https://HISTORIAN:32573/ClientWeb/content#hidenavigation

tagList = MyViewApp.Navigation.CurrentAsset+"##MQTT.actual_speed_percent";

tagList = tagList+","+MyViewApp.Navigation.CurrentAsset+"##MQTT.actual_speed_mts_min";

tagList = tagList+","+MyViewApp.Navigation.CurrentAsset+"##Roll_Info.Roll_Produce_Details";

computedUrl = historian_url+"?tags="+itagList+"&chartType="+chartType+"&DurationHours="+duration+"#hidenavigation";
```



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## Visualize – AVEVA™ Operations Management Interface

#### Design

#### Data Driven Approach

- Graphics standard/reusable graphics
  - 1 layout / ISA level.
  - 1~2 Symbols / ISA level.

#### Benefits

- Utilizing OMI APPS.
  - Content Presenter Lines Dashboards.
  - Graphics repeater for Schedule
- Minimal efforrt





## Graphic repeater / JSON

- 1 shared DB connection
- Execution of JSON format on the DB side.
- JSON format Results
- Results Saved in Big strings
- Benefits:
  - Faster execution
  - With one symbol each JOB line in the DB was presented.

```
SELECT

JSON_ARRAYAGG(

JSON_ARRAY(

IFNULL(CAST(sub.JobNum AS CHAR), '0'),

IFNULL(CAST(sub.BCD AS CHAR), '0'),

IFNULL(CAST(sub.FilmAvailableApproved AS CHAR), '0'),

IFNULL(CAST(sub.InkApproved AS CHAR), '0'),

IFNULL(CAST(sub.MountingApproved AS CHAR), '0'),

IFNULL(CAST(sub.PlateApproved AS CHAR), '0'),

IFNULL(CAST(sub.PlateInspectionApproved AS CHAR), '0'),
```



## Visualize – Operations Management Interface

#### **Contextualize Implementation**

- Auto fill
- Containment and references"Me."
- Alarms aggregation.











## Visualize – AVEVA™ Operations Management Interface

#### **Implementation**

- UI/UX Figma design
- Import SVG.
- Animation added as needed.
- Examples:
  - Overview page
  - Background
  - Line representations













### Analyze – AVEVA Reports for Operations

- AVEVA Reports MQTT driver
  - Connects to MQTT broker directly
  - OBroke MQTT broker
  - PROVEIT team give us a shout out for that
  - Olssue fixed before Conference





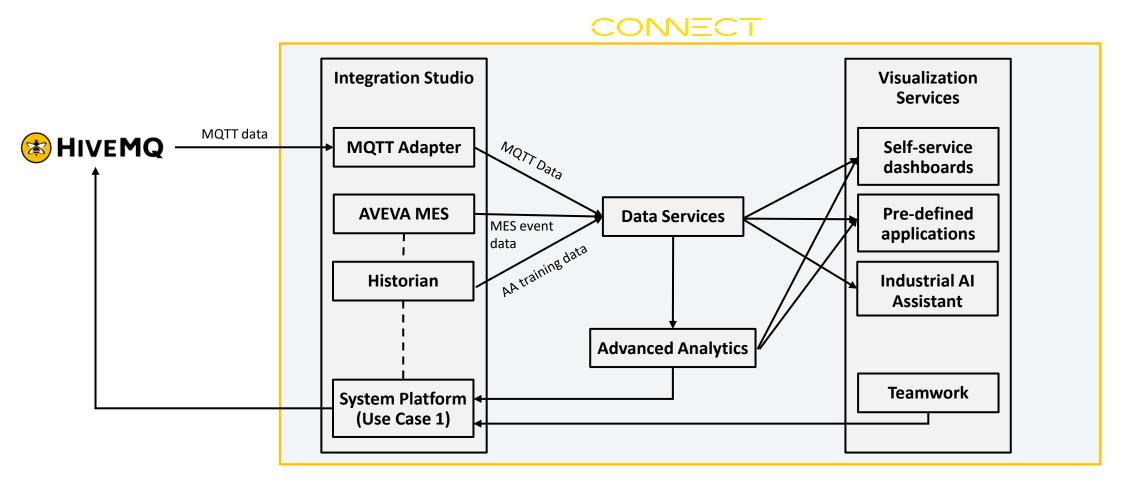
# Use Case Two

Pierre Hery



### High-level data flow breakdown

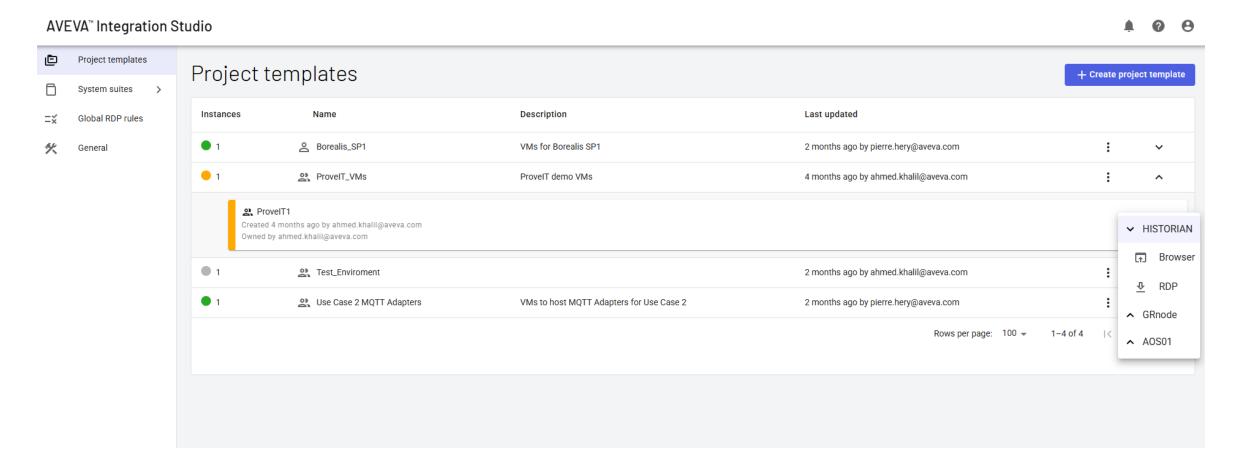
The detailed breakdown for each component will be explained in subsequent slides





## Manage – AVEVA Development Studio

Used Integration Studio VMs to host and manage the software tools of the demo

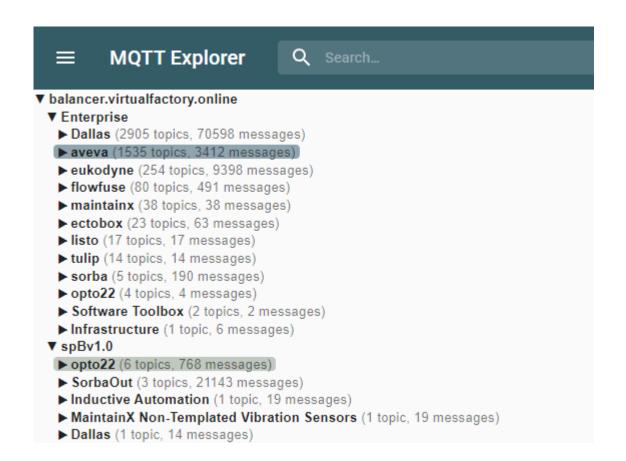




### Find Patterns – CONNECT Data Services

#### Used MQTT Adapter to subscribe to the entire UNS Broker and stream it to CONNECT Data Services

- Subscribed to the entire Namespace
  - Conference data
  - AVEVA data
  - Other vendor data
- Handled both Vanilla and Sparkplug MQTT data
  - Standard MQTT Adapter functionality





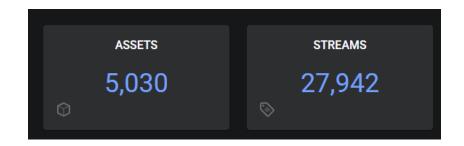
### Find Patterns - CONNECT Data Services

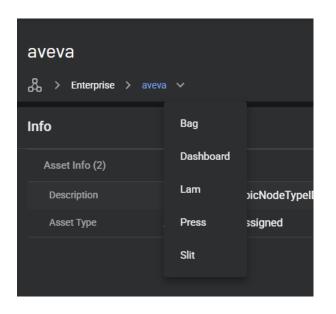
New Capability Planned Availability

Q3 2025

#### R&D work on Adapter gave us additional functionality

- Original Adapter only supported JSON payloads
  - R&D Adapter supported additional data formats
  - Allowed us to capture more data from Namespace
  - MQTT Broker was a "black box"
    - No enforcement on data structure, organization, format, naming, etc
- Asset handling
  - Logic used the CONNECT Data Services Asset API to create assets
  - Creation of streams in CDS and mapping of streams to assets
  - Replication of Broker's semantic model to CONNECT Visualization Services
- What were the results?
  - 5,030 assets and 27,942 streams created
  - Ability to navigate through asset hierarchy intuitively







### Find Patterns – CONNECT Data Services – Data Views

#### Used Data Views to format CDS data for external consumption through REST API

- Demonstrated ability to structure CDS data for external consumption
  - Democratizes data for third party AI/ML applications, analytics platforms, data science enablement, etc

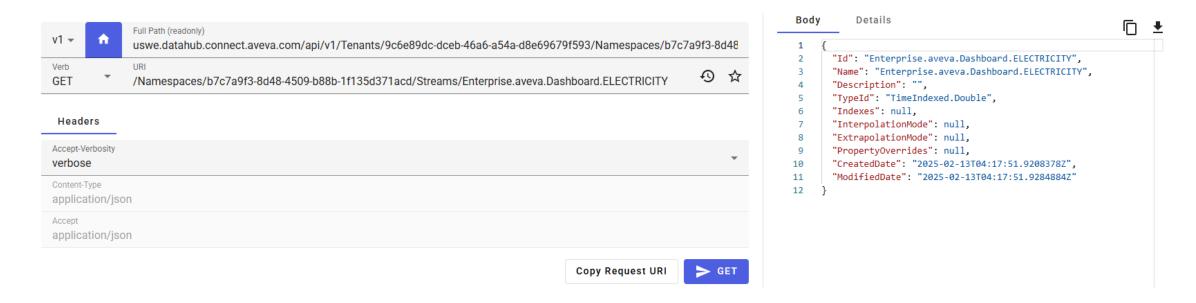
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### Find Patterns – CONNECT Data Services – API Console

#### Used the API Console GUI to showcase "low-code" interaction with CDS REST API

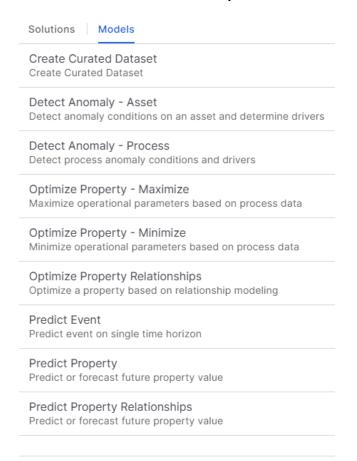
- Demonstrated ability to use console to configure and test API requests
  - Used forward slash (/) to build API route to select specific streams
  - Showed response area to view the API request responses
  - Request URI can be copied onto clipboard and pasted into API client tool (such as Postman)

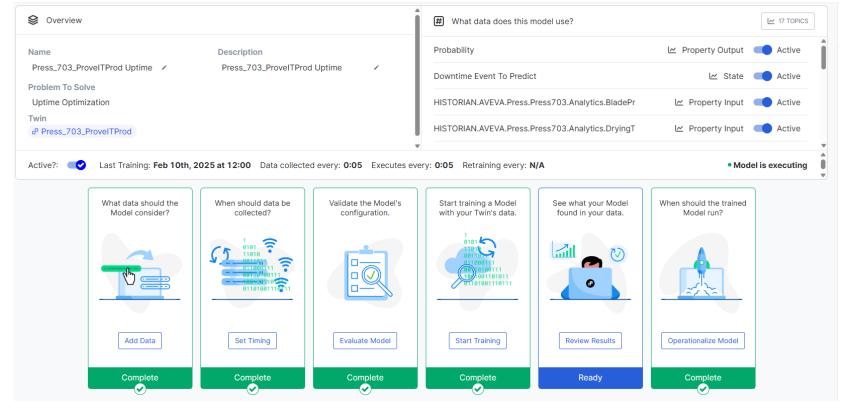




#### Used Advanced Analytics to further evaluate the UNS data

Created a Predict Uptime model in Advanced Analytics to analyze uptime/downtime of a press







#### Devised 30 days of model training data

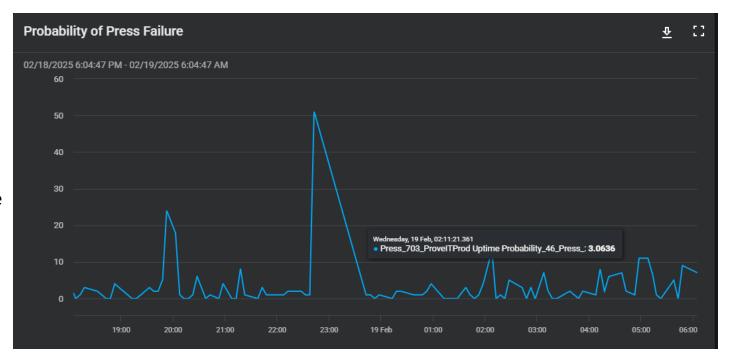
- MQTT Broker could not provide 30 days of training data with anomalies
- Created 30 days of training data in CSV file
  - Used press uptime and downtime states provided by conference
    - "Running", "Clean Plates", "Maintenance Downtime", etc
  - Devised data for operating conditions during these press states
    - Created real-world tags to represent press parameters that impacts press states
    - Created logical values for these tags over 30 days
- Fed the training data to Advanced Analytics
  - Used CSV replay utility to backfill CSV data into AVEVA Historian
  - Replicated AVEVA Historian data to CDS
  - Backfilled 30-day CDS data to Advanced Analytics
- Taught model conditions that have historically led to specific press failure states

Year	Month	Day	RunningState	InkFlowRatePV	InkFlowRateSP	QCScanIndex	RollCount	RollSize
2025	January	1	Clean Plates	255.37	300	622	244247	295
2025	January	1	Clean Plates	256.66	300	616	238551	295
2025	January	1	Clean Plates	262.94	300	446	173820	295
2025	January	1	Clean Plates	264.09	300	710	279977	295
2025	January	1	Clean Plates	265.99	300	491	193236	295
2025	January	1	Clean Plates	266.11	300	519	204631	295
2025	January	1	Clean Plates	266.79	300	389	153366	295
2025	January	1	Clean Plates	267.37	300	340	133160	295
2025	January	1	Clean Plates	268.25	300	542	212138	295
2025	January	1	Clean Plates	272.00	300	318	125648	295
2025	January	1	Clean Plates	274.51	300	312	118645	295
2025	January	- 1	Clean Plates	275.08	300	283	111134	295
2025	January	1	Clean Plates	277.11	300	243	90664	295
2025	January	- 1	Clean Plates	278.70	300	217	78754	295
2025	January	1	Clean Plates	280.47	300	225	84964	295
2025	January	- 1	Clean Plates	280.77	300	189	66319	295
2025	January	1	Clean Plates	283.65	300	169	61139	295
2025	January	- 1	Clean Plates	288.50	300	142	49477	295
2025	January	1	Clean Plates	289.48	300	131	44304	295
2025	January	- 1	Clean Plates	292.22	300	79	23837	295
2025	January	2	Clean Plates	257.10	300	1291	505404	295
2025	January	2	Clean Plates	257.26	300	1224	481035	295
2025	January	2	Clean Plates	258.73	300	1193	469388	295
2025	January	2	Clean Plates	259.50	300	1097	434422	295
2025	January	2	Clean Plates	260.02	300	1143	450993	295
2025	January	2	Clean Plates	260.17	300	1114	439864	295
2025	January	2	Clean Plates	260.62	300	1059	416542	295
2025	January	2	Clean Plates	261.06	300	1089	428724	295
2025	January	2	Clean Plates	261.38	300	1178	464205	295
2025	January	2	Clean Plates	261.66	300	1326	519383	295
2025	lanuar.	2	Class Distan	261.04	200	070	2/2/07	205



#### After training, simulated real-time data with anomalies

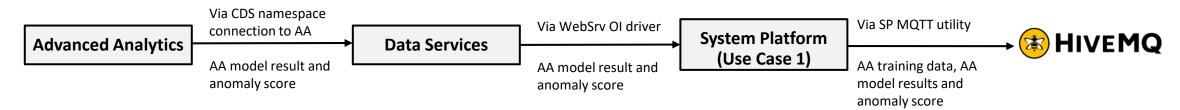
- Used CSV replay utility to simulate real-time data for the same tags
  - Simulated real-time operating conditions of the press
  - Introduced anomalies to the dataset to deviate from training data
- What were the results?
  - An anomaly score
  - A probability of failure score from 0-100%
    - Real-time
    - Occasional spikes due to potential upcoming failure
- Allows for predictive maintenance!





#### Advanced Analytics model results can be used in other ways

- Can publish probability of failure score back to the UNS (clumsily)
  - Advanced Analytics platform writes back the score to CDS
  - Score can be extracted from CDS via the REST API
    - WebSry Communication Driver can extract the score via REST API
  - Score can be published back to MQTT Broker through System Platform
  - Published training data back to UNS as well
  - "Closed the loop" on data flow



- Configured email alerts for probability of failure score
  - If score > a specific threshold, receive an alert via email



### Report – CONNECT Visualization Services

#### Used R&D utility to publish OMI screens to the cloud as experiences

Required mapping System Platform tag references to CONNECT stream references

• "Me." -> "CDS"			
IVIC. > CD3	Card_Press704.WorkOrder	→ attribute("stream:CDS.Enterprise.aveva.Press.Press 704.Line,OEE.WorkOrder")	[-
	Card_Press704.LineID	→ attribute("stream:CDS.Enterprise.aveva.Press.Press 704.Dashboard.LineID")	[-
	Card Press704 LineSpeed	→ attribute("stream:CDS.Enterprise.aveva.Press.Press 704.Dashboard.Line Speed")	

Required running some commands in the command prompt to login to CONNECT and select target Namespace

```
Open CMD with this location: C:\Program Files (x86)\AVEVA\UOP\CLI

uoc login ->> To login to CONNECT from VM

uoc savetoken ->> To enable self service content

uoc publishviewapp -v Executive -n CDS ->> To publish the viewapp

uoc unpublishviewapp -v Executive -n CDS ->> To unpublish the viewap

uoc logout ->> To logout from CONNECT from VM
```

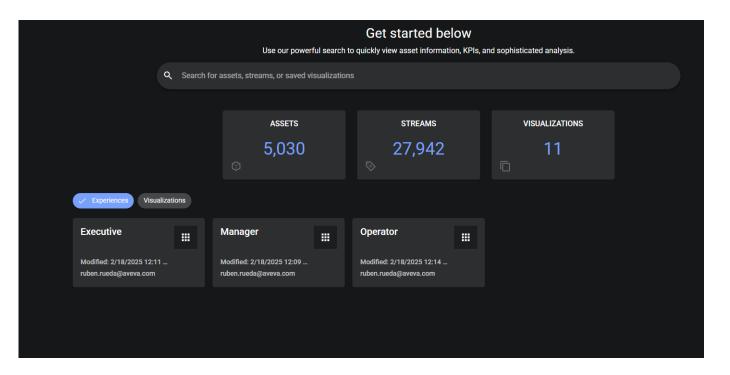


New Capability Planned Availability

**TBD** 

#### Used R&D utility to publish OMI screens to CONNECT

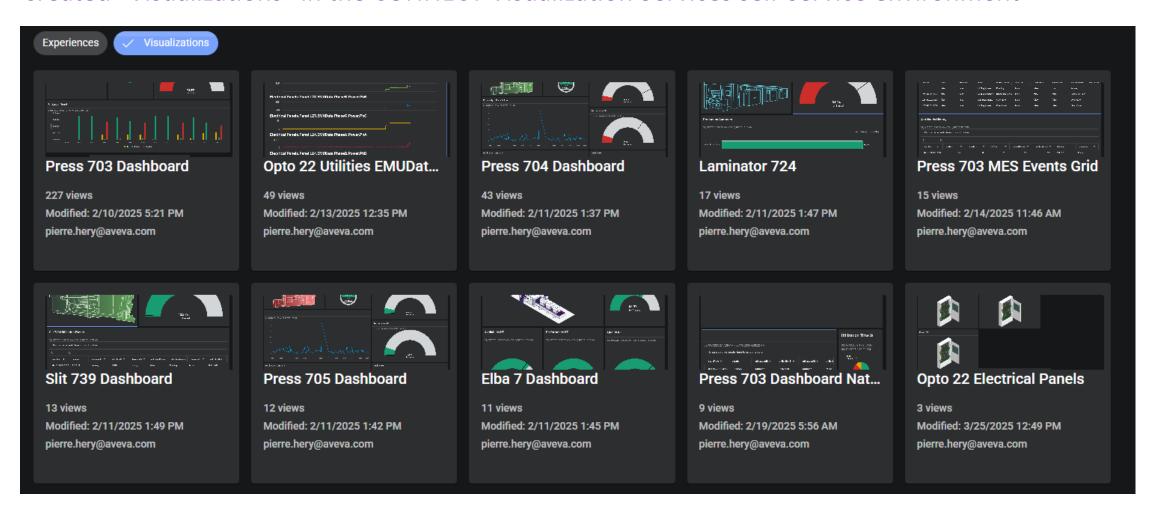
- Resulted in "Experiences" tiles showing up in the "Experiences" tab in CVS
  - At the time, "Experiences" were called "Applications"
- Clicking on specific "Experience" tile launched OMI application in the cloud
  - Published the same application 3 times with different names
  - Demo video of this later....





# Report – CONNECT Visualization Services

Created "Visualizations" in the CONNECT Visualization Services self-service environment

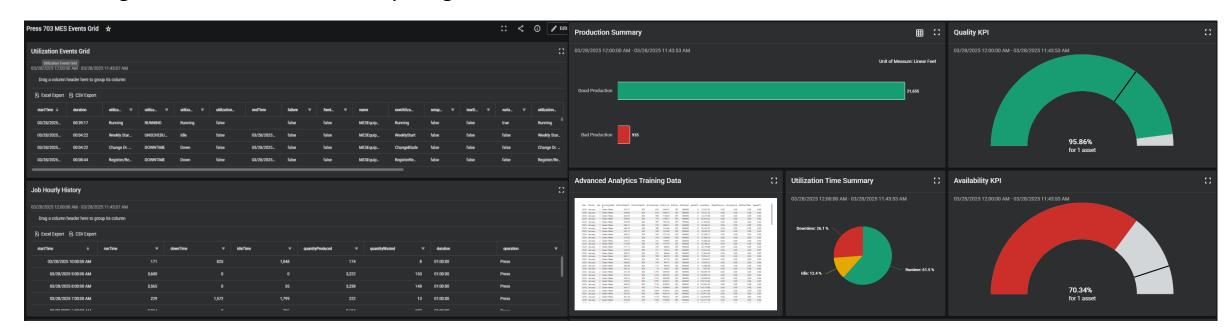




## Report – CONNECT Visualization Services

#### Generated MES data to make use of Asset Efficiency widgets

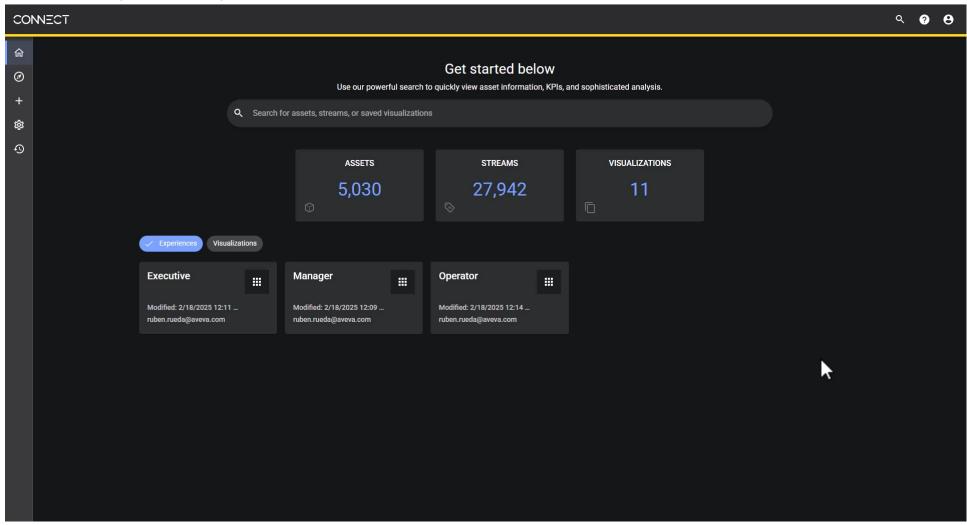
- We wanted to show the full breadth of Visualization types
- Used AVEVA MES to generate event-type data
  - Streamed to CONNECT using AVEVA Events to CONNECT agent
- Able to generate rich asset efficiency widgets





# Report – CONNECT Visualization Services

Created hybrid "Experiences" with embedded "Visualizations"





#### Solve – AVEVA Teamwork

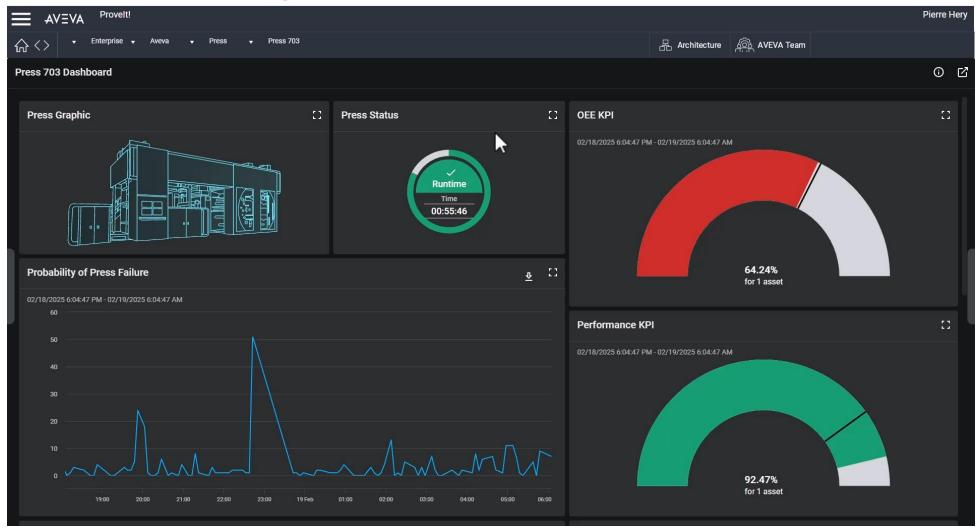
#### Showcased Teamwork "Issues" functionality

- Published "Experiences" allowed us to tell a story around the Press 703
  - Dashboard included important OEE KPIs relating to the press
  - Dashboard also included the line chart for probability of press failure
  - Teamwork was embedded on slide-in pane via URL OMI Widget
- Once plant manager notices probability of failure is high, he/she could alert an operator via a Teamwork issue
  - Configured a Press failure investigation form to help an operator solve the potential press failure issue



### Solve – AVEVA Teamwork

#### Demo of Teamwork integration





#### Solve – AVEVA Teamwork

#### Teamwork manual entry could be published to the UNS!

- Can publish form results back to UNS
  - Press maintenance tech enters manual data entry into the form
  - WebSrv Communication Driver can extract the data via Teamwork's REST API
  - Score can be published back to MQTT Broker through System Platform



#### AVEVA Industrial Al Assistant

#### Used the IAIA chatbot to ask questions on data aggregated into CDS

- Asked generic questions on our data
  - Level 1 questions like averages of our AA training data
- Asked IAIA insightful question on Opto 22 data
  - Limitations due to the fact that the IAIA is still in beta
  - Guardrails had to be up but....
  - No hallucinations and potentially dangerous recommendations!

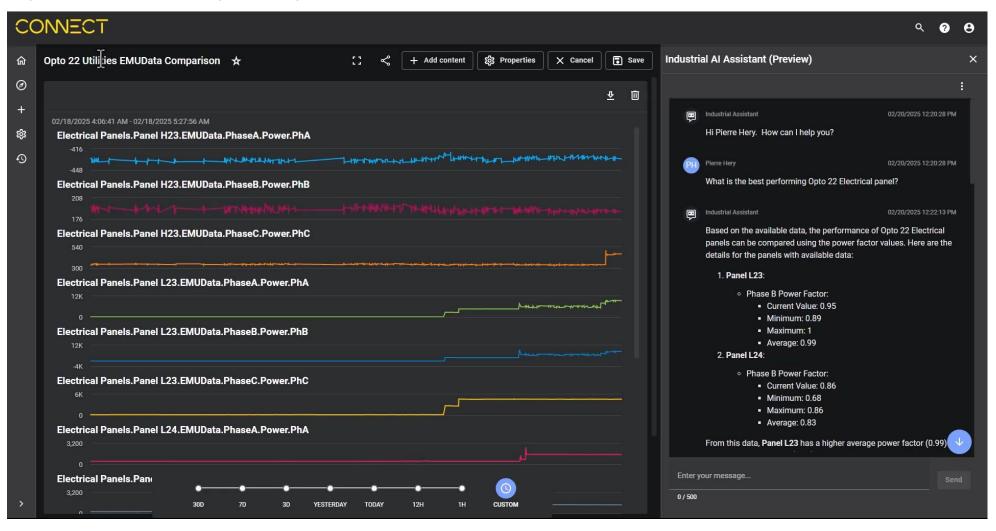


#### AVEVA Industrial AI Assistant

# New Capability Planned Availability

**Q2 2025** 

#### Opto 22 electrical panel question demo





# **AVEVA Operations Control**







ANALYZE



AVEVA
InTouch/Edge
AVEVA
System
Platform/Plant
SCADA

AVEVA
Historian
AVEVA
Historian Clients

AVEVA Reports for Operations Operations Management Interface



CONNECT **Data Services** 

AVEVA
Advanced
Analytics

CONNECT **Visualization** 











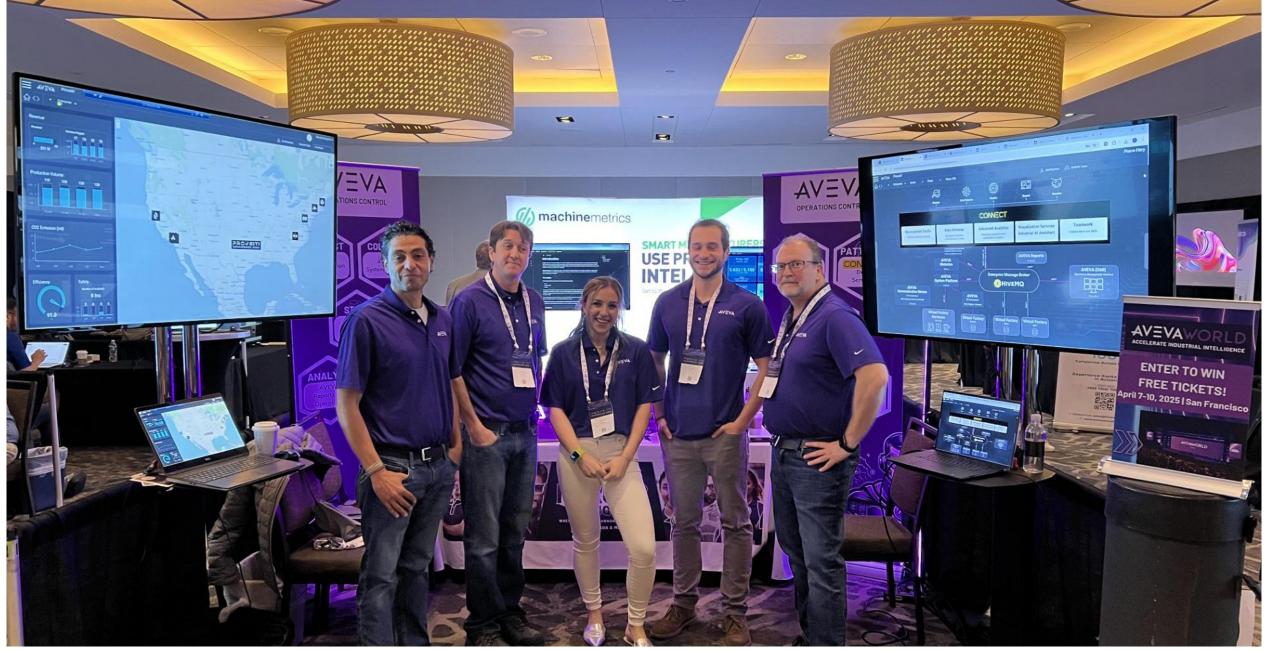






# QUESTIONS?





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The Company shall not be obliged to disclose any revision to these forward-looking statements to reflect events or circumstances occurring after the date on which they are made or to reflect the occurrence of future events.







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Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life's essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

Named as one of the world's most innovative companies, AVEVA supports customers with open solutions and the expertise of more than 6,400 employees, 5,000 partners and 5,700 certified developers. The company is headquartered in Cambridge, UK.

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