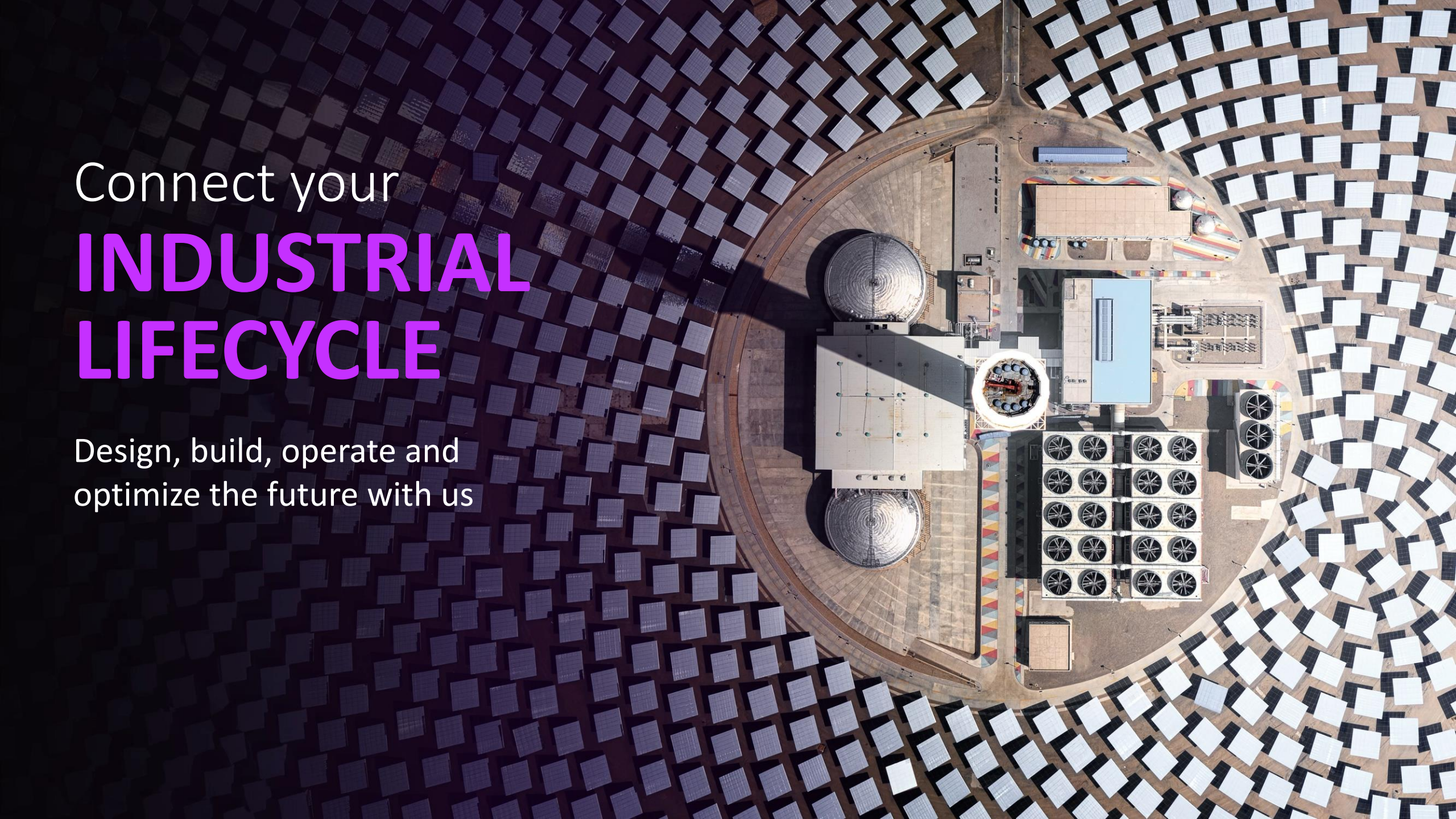
AVEVAWORLD

SAN FRANCISCO

Connect your

INDUSTRIAL LIFECYCLE

Design, build, operate and optimize the future with us



Demanding an industrial value chain that's DIGITAL, INTEROPERABLE AND RESILIENT
Tech trends and market dynamics are driving TRANSFORMATION
To prepare for the next-generation workforce and the CONNECTED INDUSTRIAL ECONOMY
AVEVA

Imagine
the next evolution of industry

Design

Build

Operate

Optimize

CONNECT

Industrial intelligence for the connected industrial economy

Seamless experience

Applications and analytics

Design & build | Operate | Optimize

Information

Engineering information ⟷ Operations information

Assets and devices

Ecosystem
of developers and partners

AVEVA

CONNECT

Extending your existing investments and capabilities

Seamless experience

Applications and analytics

Design & build

Operate

Optimize

Information

Engineering information

Operations information

Partners

AVEVA Unified Engineering

Wonderware

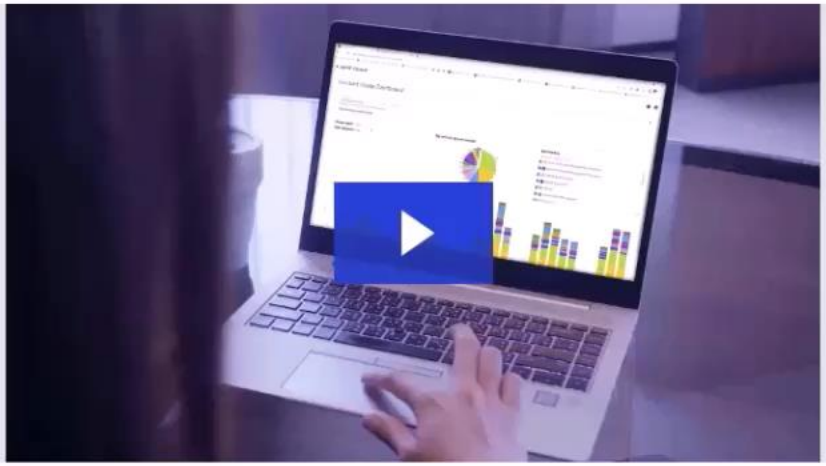
AVEVA

AVEVA™ Connect

Sign in

Your industrial platform

Unlock new levels of industrial intelligence and drive digital transformation



Enhance collaboration

Be future-ready

Accelerate ROI

Learn more

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AVEVA

System status

Terms and Conditions

Revenue (YTD)

$ 63.000

Revenue (MTD)

$ 12.000

Average LCOE

$ 0.13 / kWh

Total Energy Generation (MTD)

2.5 GWh

Plant Load Factor (MTD)

Performance Ratio (MTD)

Energy Based Availability (MDT)

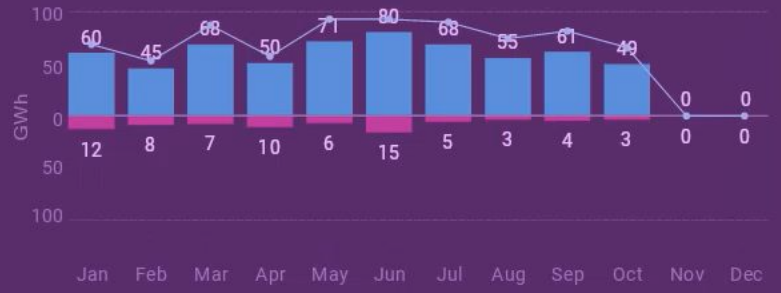
Time Based Availability (MDT)

DC to AC Ratio (MTD)

Avg Turbine CF (MTD)

Active to Reactive PR (

Generated vs Lost



Operational Costs vs Budget

Turbine Power Coefficient Comparison

Partners
3rd Party

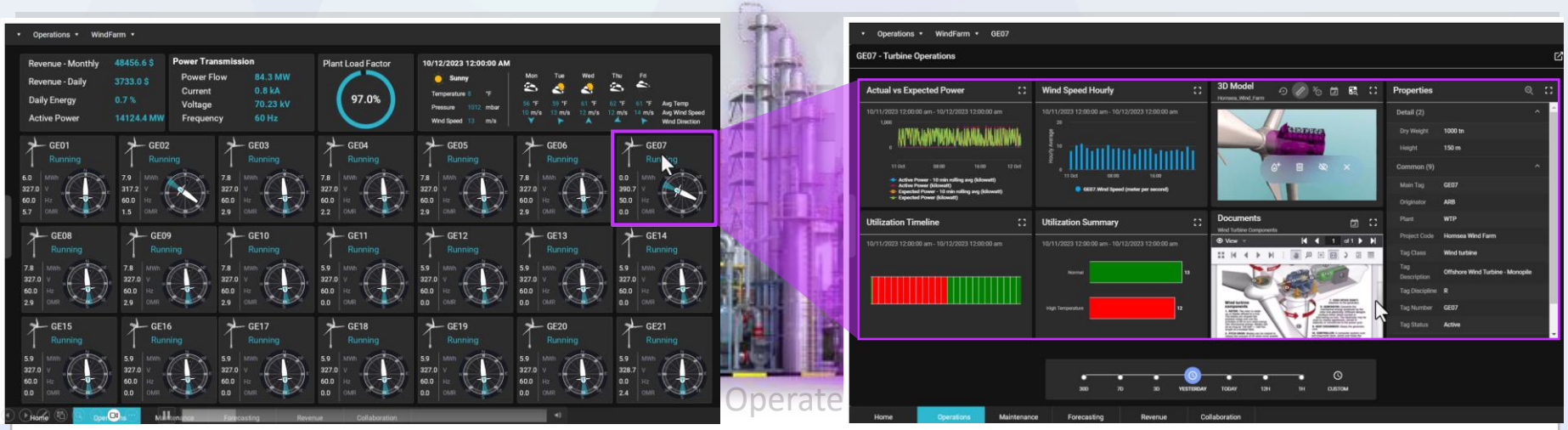
CONNECT

Extending your existing investments and capabilities

Seamless experience

Applications and analytics

Information



Engineering information

Operations information

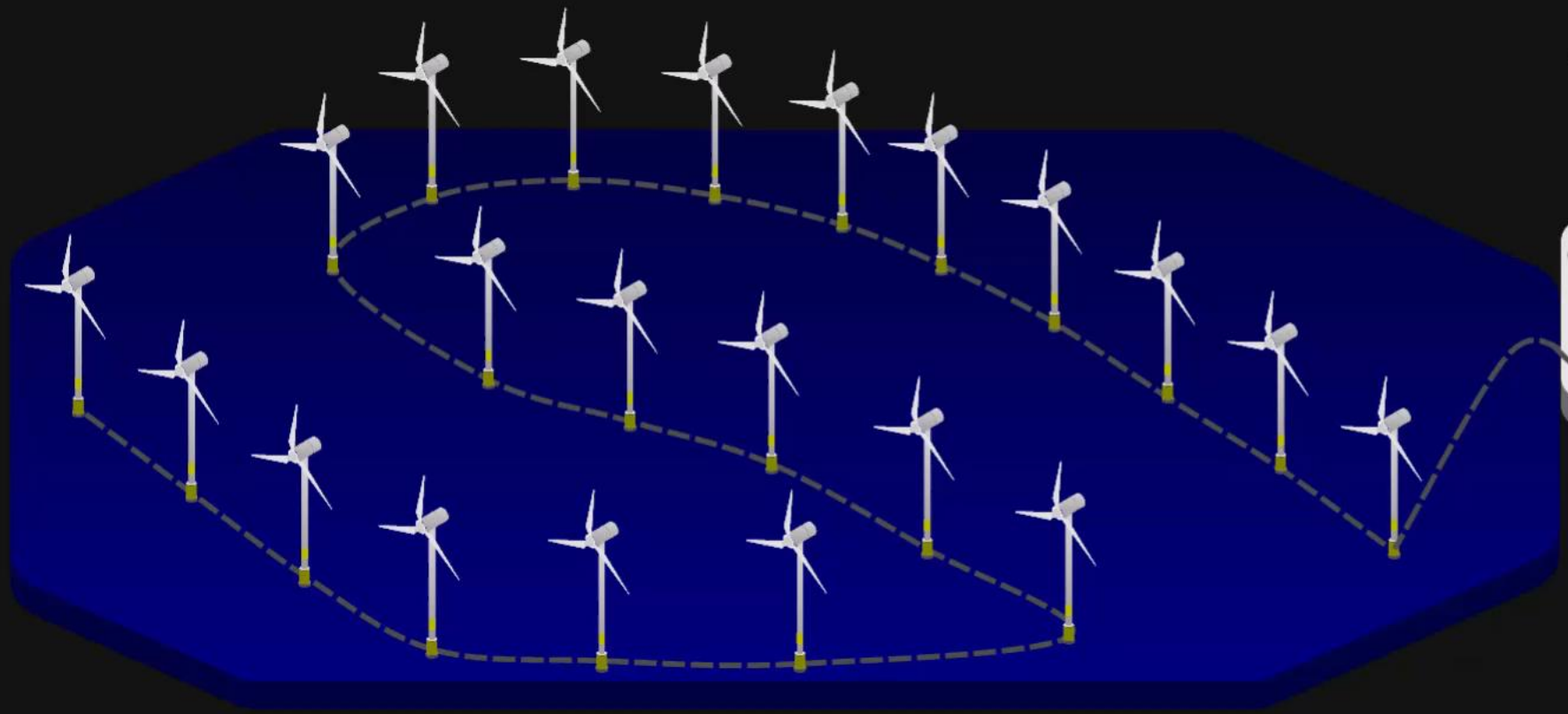
Ecosystem
of developers and partners

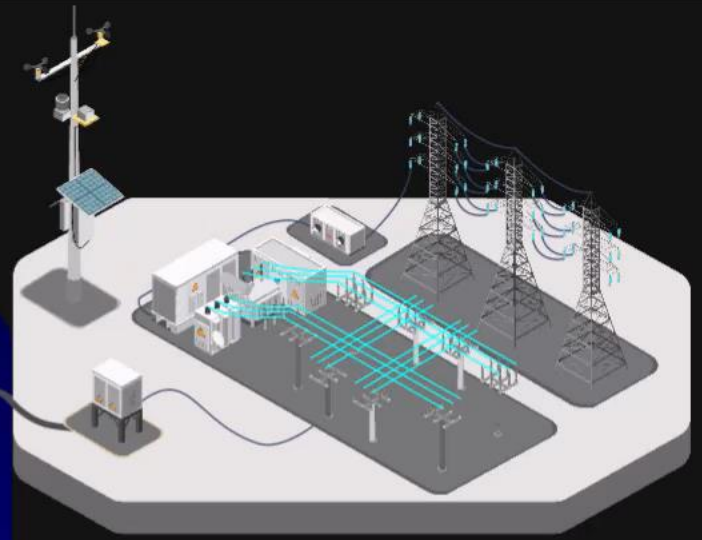
AVEVA Unified Engineering

Wonderware

AVEVA

Operations





97.0%
Plant Load Factor

98.0%
Time Based Availability

94.0%
Energy Based Availability

56.0Hrs
MTBF

95.0%
Grid Availability

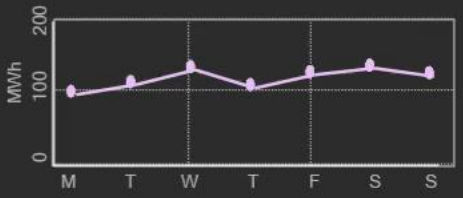
LCOE
$ 41 / MWh

$ 123
Revenue Change Today

Energy Generated Today
380 MWh

0.05 T CO2
Environmental Benefits

Generation



Home | Operations | Maintenance | Forecasting | Revenue | Collaboration

Revenue - Monthly	48456.6 $
Revenue - Daily	3733.0 $
Daily Energy	0.7 %
Active Power	14124.4 MW

Power Transmission

Power Flow	84.3 MW
Current	0.8 kA
Voltage	70.23 kV
Frequency	60 Hz

Plant Load Factor

10/12/2023 12:00:00 AM

Sunny

Temperature	8	°F
Pressure	1012	mbar
Wind Speed	13	m/s

	Mon	Tue	Wed	Thu	Fri	
	56 °F	59 °F	61 °F	62 °F	61 °F	Avg Temp
	10 m/s	13 m/s	12 m/s	12 m/s	14 m/s	Avg Wind Speed
	▼	▶	▲	▲	▶	Wind Direction

	MWh	V	Hz	OMR
GE01 Running	6.0	327.0	60.0	5.7
GE02 Running	7.9	317.2	60.0	1.5
GE03 Running	7.8	327.0	60.0	2.9
GE04 Running	7.8	327.0	60.0	2.2
GE05 Running	7.8	327.0	60.0	2.9
GE06 Running	7.8	327.0	60.0	2.9
GE07 Running	0.0	390.7	50.0	0.0
GE08 Running	7.8	327.0	60.0	2.9
GE09 Running	7.8	327.0	60.0	2.9
GE10 Running	7.8	327.0	60.0	2.9
GE11 Running	5.9	327.0	60.0	0.0
GE12 Running	5.9	327.0	60.0	0.0
GE13 Running	5.9	327.0	60.0	0.0
GE14 Running	5.9	327.0	60.0	0.0
GE15 Running	5.9	327.0	60.0	0.0
GE16 Running	5.9	327.0	60.0	0.0
GE17 Running	5.9	327.0	60.0	0.0
GE18 Running	5.9	327.0	60.0	0.0
GE19 Running	5.9	327.0	60.0	0.0
GE20 Running	5.9	327.0	60.0	0.0
GE21 Running	5.9	328.7	0.0	2.4

Operations ▾ WindFarm ▾ GE07

GE07 - Turbine Operations

Actual vs Expected Power

10/11/2023 12:00:00 am - 10/12/2023 12:00:00 am

Wind Speed Hourly

10/11/2023 12:00:00 am - 10/12/2023 12:00:00 am

Utilization Timeline

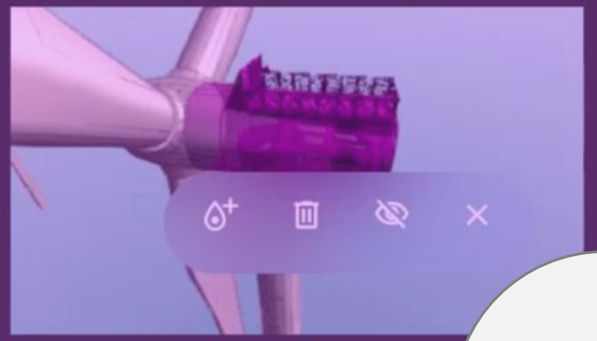
10/11/2023 12:00:00 am - 10/12/2023 12:00:00 am

Utilization Summary

Partners
3rd Party

3D Model

Hornsea_Wind_Farm



Documents

Wind Turbine Components

AVEVA
Engineering data

Properties

Detail (2)

Dry Weight	1000 tn
Height	150 m

Common (9)

Tag	GE07
	ARB
	WTP
Code	Hornsea Wind Farm
Class	Wind turbine
Tag Description	Offshore Wind Turbine - Monopile
Tag Discipline	R
Tag Number	GE07
Tag Status	Active

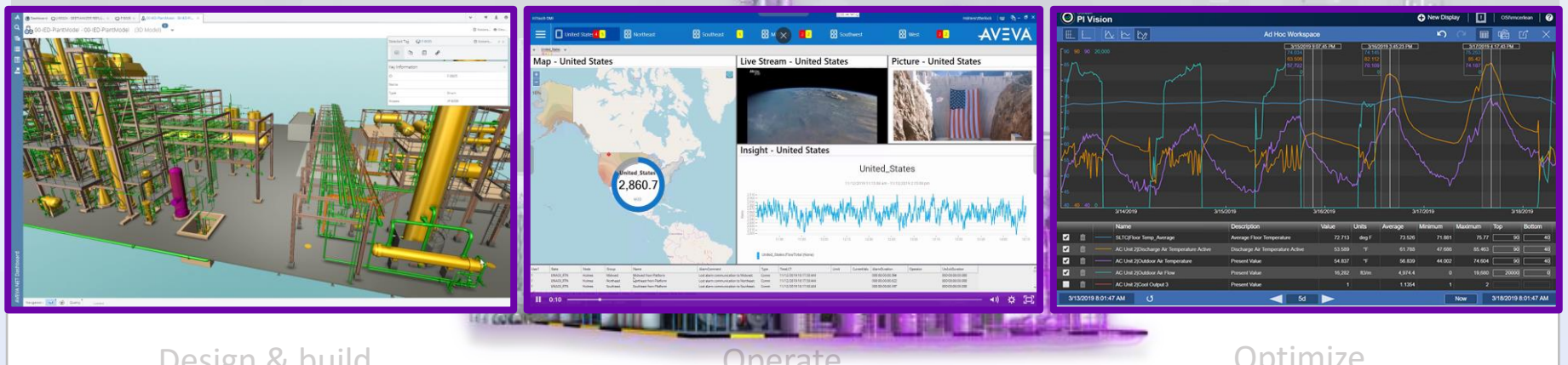
30D 7D 3D YESTERDAY TODAY 12H 1H CUSTOM

Home | Operations | Maintenance | Forecasting | Revenue | Collaboration

CONNECT

Extending your existing investments and capabilities

Seamless experience



Applications and analytics

Design & build | Operate | Optimize

Information

Engineering information | Operations information

AVEVA Unified Engineering | Wonderware | PI

Ecosystem of developers and partners

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COLLAPSE

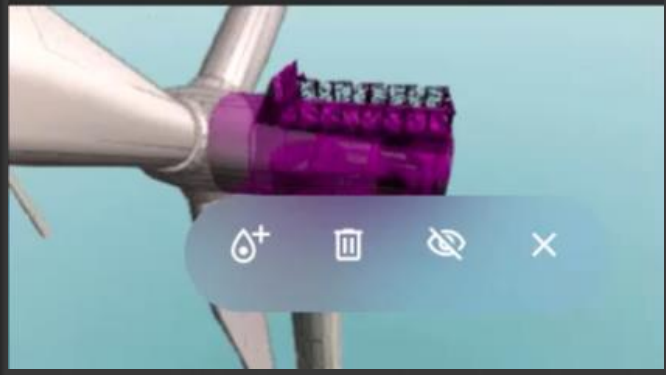
Dashboard001

+ Add | Settings | Save

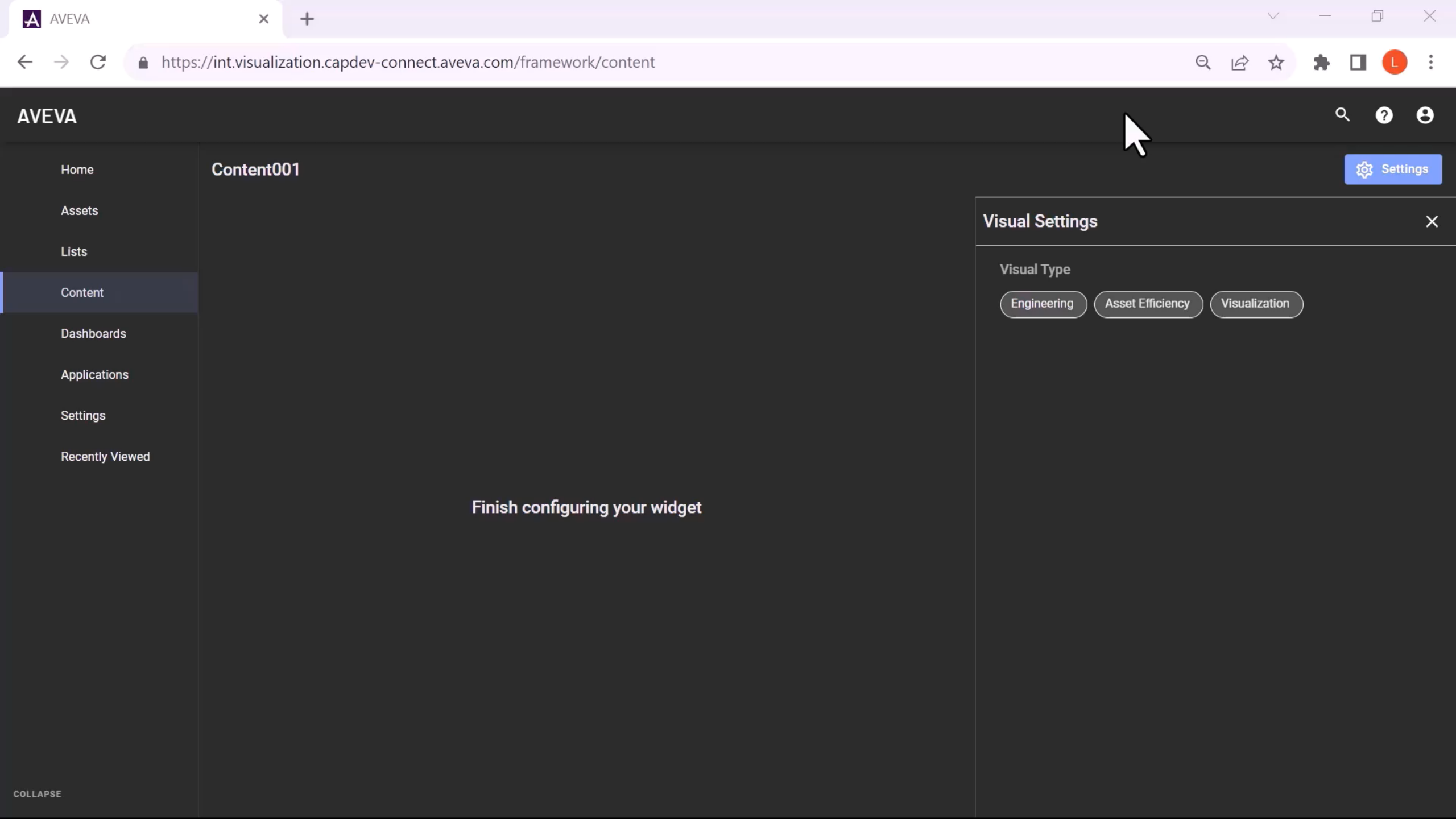
Hornsea Farm Map

10/12/2023 12:00:00 am - 10/12/2023 8:55:39 pm

Hornsea_Wind_Farm



30D | 7D | 3D | YESTERDAY | TODAY | 12H | 1H | CUSTOM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Visual Type
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Asset Efficiency
Visualization

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Dashboard001

+ Add | Settings | Save

Hornsea Farm Map

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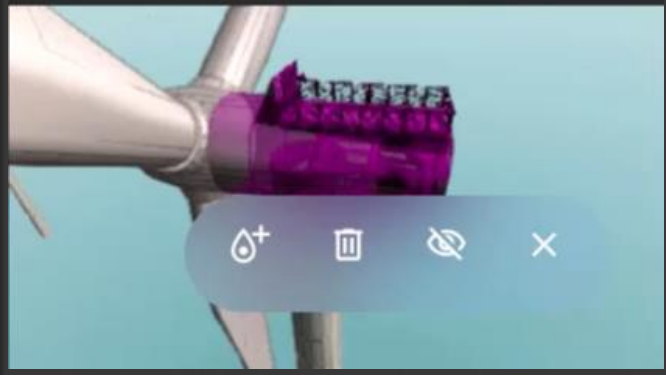
Hornsea_Wind_Farm



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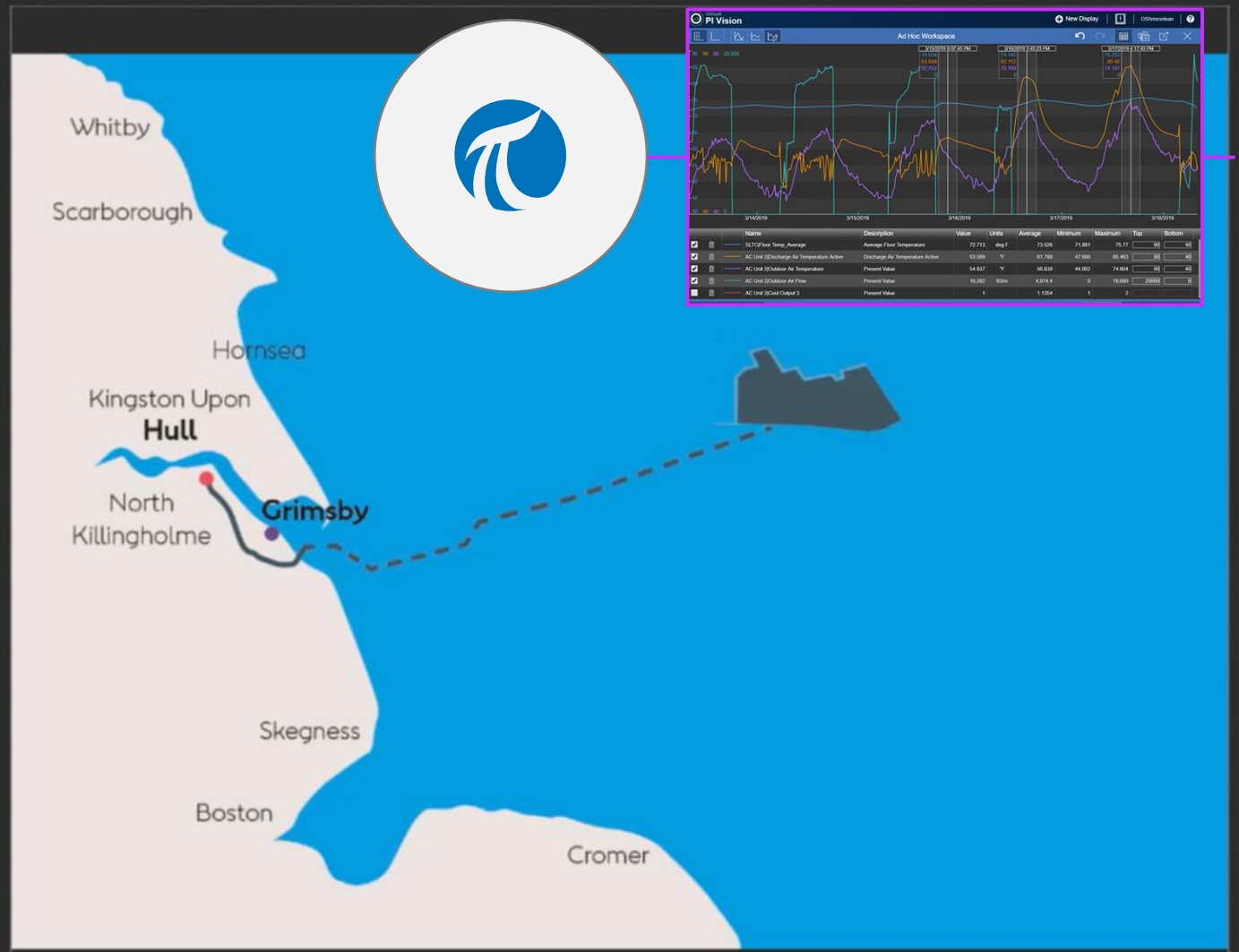
Content001

Graphic | Settings | Save



Graphic Browser

Search

ISOM_UOCCP_...

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Content001

Graphic | Settings | Save

Graphic Browser

Search

ISOM_UOCPO_...
ISOM_UOCPO_...
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ISOM_UOCPO_...
ISOM_UOCPO_...
ISOM_UOCPO_...
UOCCL_Gauge...
UOCCL_Gauge...

CONNECT

New value realization: Analytics

Seamless experience

Applications and analytics

Information

Design &

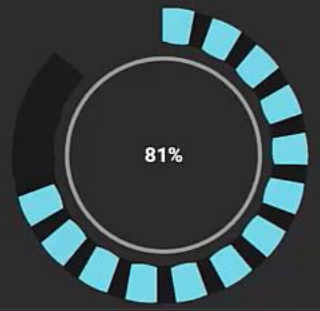
pe rate

Engineering information

Operations information

AVEVA

Avg Plant Availability (MTD)



Total Losses (MTD)

- Transmission Losses 365 (27%)
- Soiling Losses 339 (25%)
- Conversion Losses 415 (31%)
- Other Losses 226 (17%)

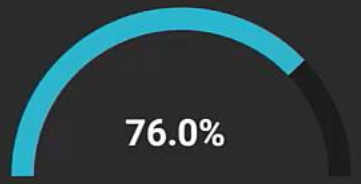
Maintenance Cost (MTD)

- Labour 353 (36%)
- Material 286 (29%)
- Service 179 (18%)
- Others 168 (17%)

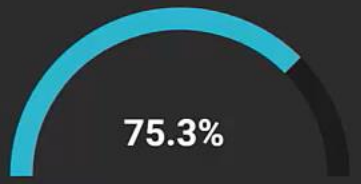
OEM Response & Repair Analysis (hrs)

	0	100
Avg Acknowledge Time		
Avg Intervention Time		
Avg Response + Resolution		
Mean Time to Repair		
Mean Time between Failure		

Maintenance Ratio



Preventive Vs Corrective Ratio



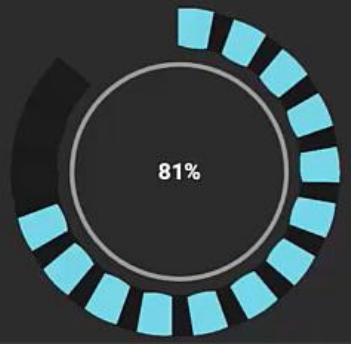
Schedule Attainment

Asset Id	Equipment Type	Status	Recent Inspection	Upcoming Mainten.	Work Order Status	Priority	Actions
GE01	Wind Turbine	Running	02-10-2023	10-12-2023	–	–	
GE02	Wind Turbine	Running	10-09-2023	25-11-2023	–	–	
GE07	Wind Turbine	Stopped	05-07-2023	05-11-2023	Open	1	

Total Downtime (MTD)

- Turbine Shutdown 3 (27%)
- Curtailment 3 (27%)
- Scheduled Maintenance 2 (18%)
- Others 3 (27%)

Avg Plant Availability (MTD)



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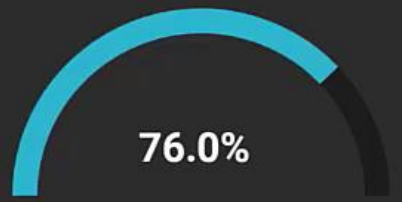
Maintenance Ratio



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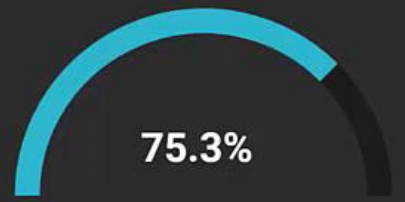

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INNOVATION LAB
Applying industrial generative AI

AVEVA

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COLLAPSE

Hornsea Performance

Edit

Actual vs Expected Power

10/12/2023 12:00:00 am - 10/12/2023 10:00:34 am

Turbine Summary

10/12/2023 12:00:00 am - 10/12/2023 10:00:34 am

	CURRENT VALUE
Turbines in Normal Operation	9
Turbines in Low Wind	0
Turbines in Auto Stop	12
Turbines in Curtailment	0

Wind Speed

Utilization TIme Line

10/12/2023 12:00:00 am - 10/12/2023 10:00:34 am

Utilization Summary

10/12/2023 12:00:00 am - 10/12/2023 10:00:34 am

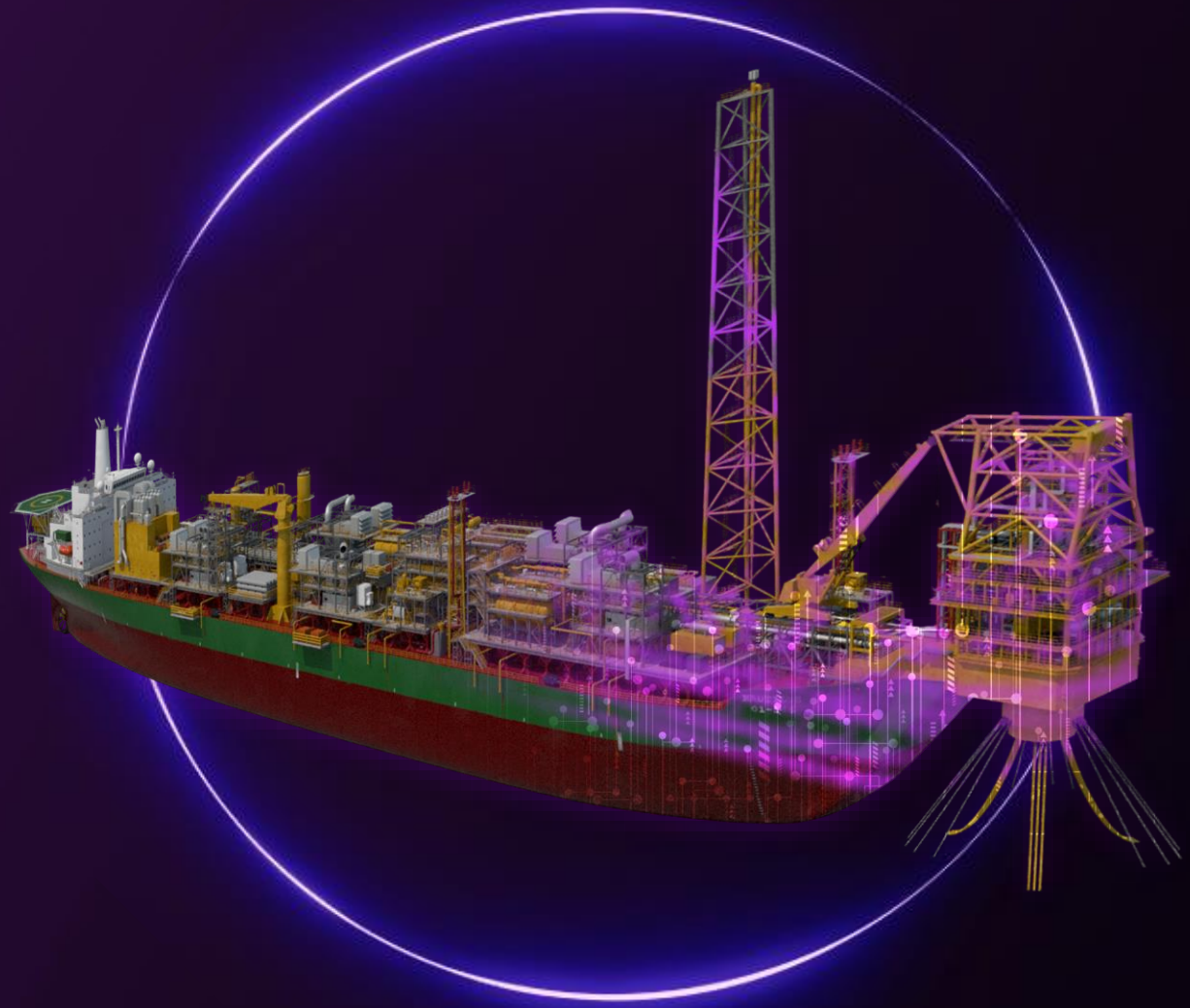
Equivalent Availability MTD

43.96
%

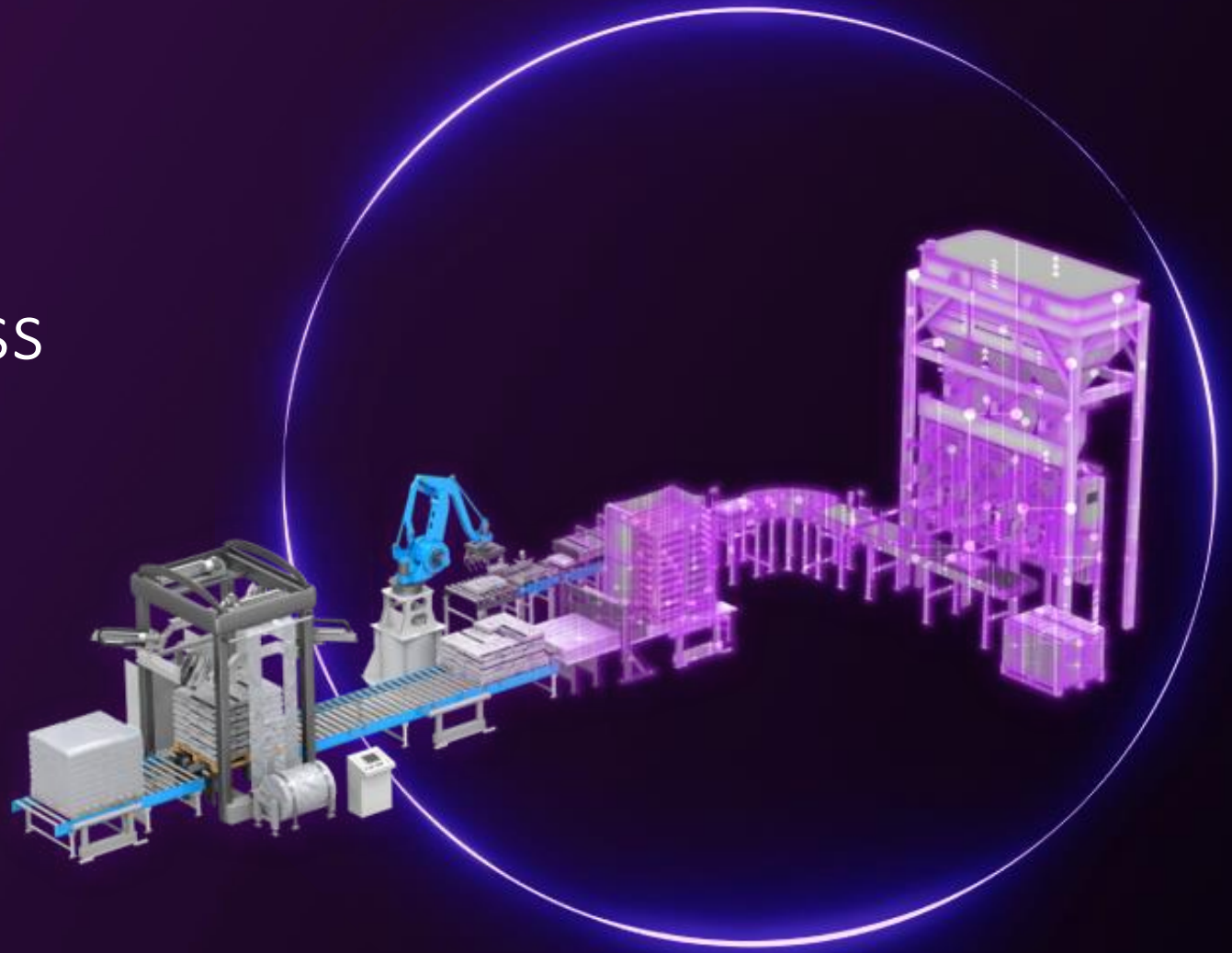
30D 7D 3D YESTERDAY TODAY 12H 1H CUSTOM

Delivering a seamless experience from digital twin to **digital enterprise**

Delivering a seamless experience from digital twin to **digital enterprise**



Delivering a seamless experience from digital twin to **digital enterprise**



THANK YOU

AVEVAWORLD

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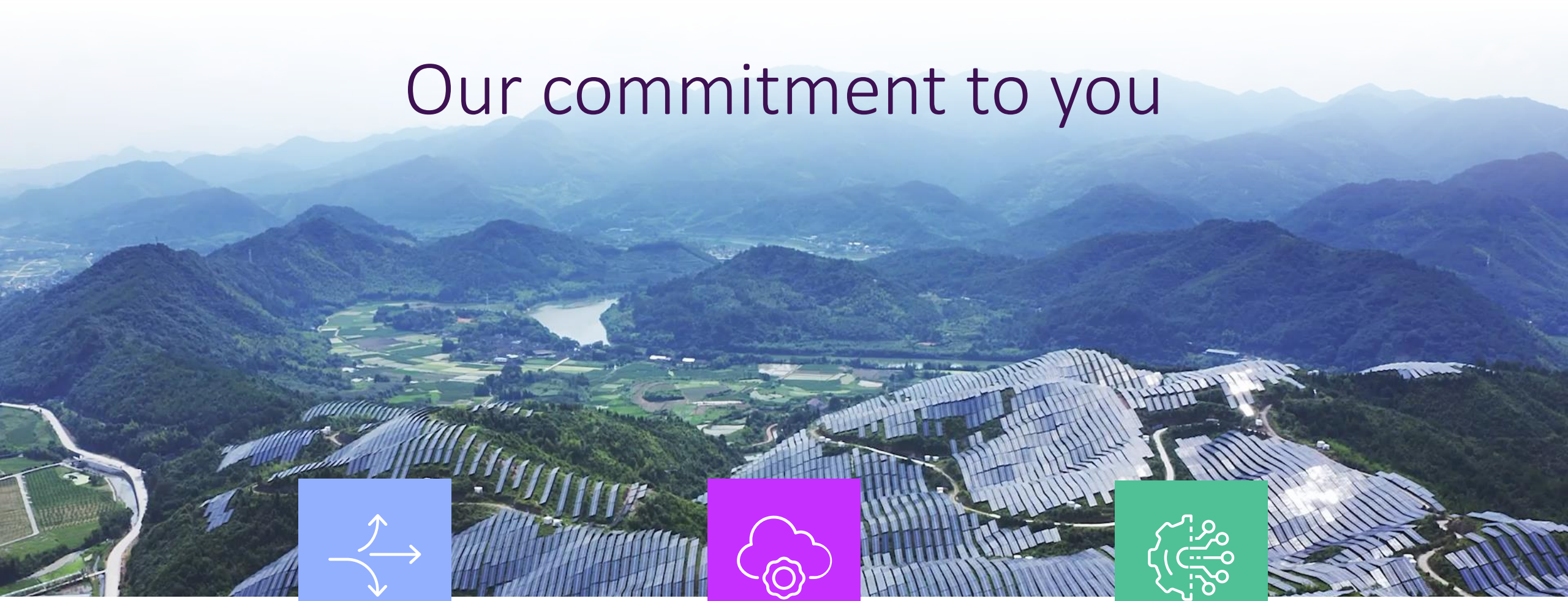
Collaboration with you inspires us

AVEVA

Our commitment to you



Extend the value of existing investments

Deliver a neutral industrial platform

Unlock net new value and net new use cases

AVEVA

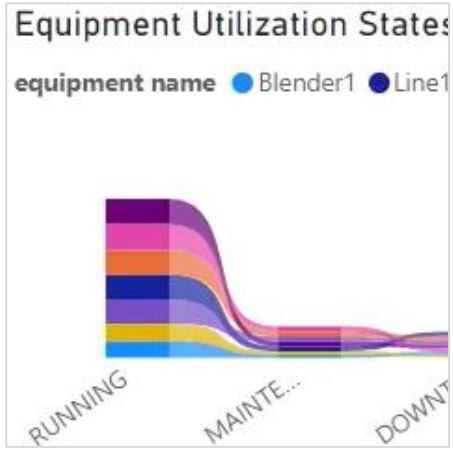
Announcing more great capabilities

SEAMLESS COLLABORATION:

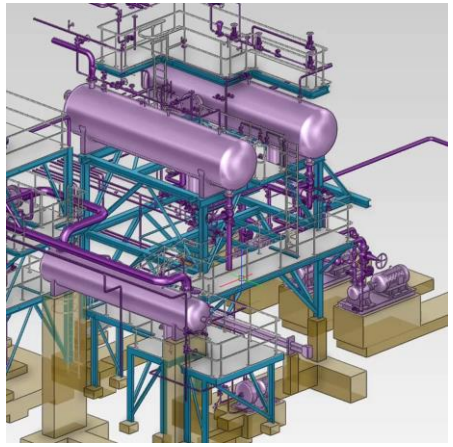
AVEVA Unified Engineering

DATA WITHOUT BOUNDARIES:

AVEVA PI Data Infrastructure



And more from our partners



EXPANSIVE HMI / SCADA:

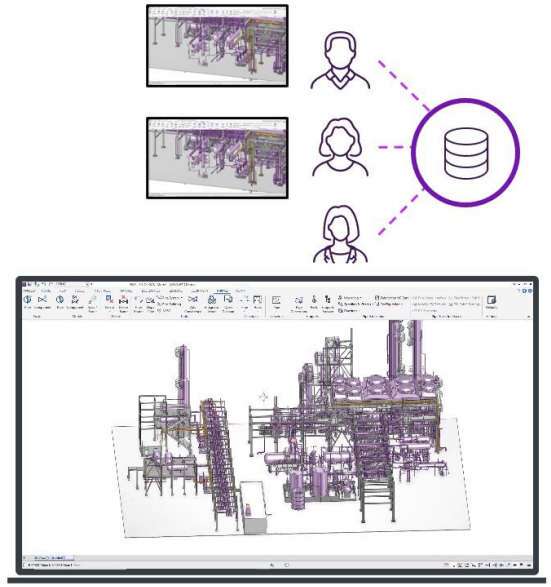
AVEVA Operations Control R2

ANALYZE EVENT DATA IN THE CLOUD:

AVEVA Data Hub

NEW

Unmatched collaboration with AVEVA Unified Engineering



NEW

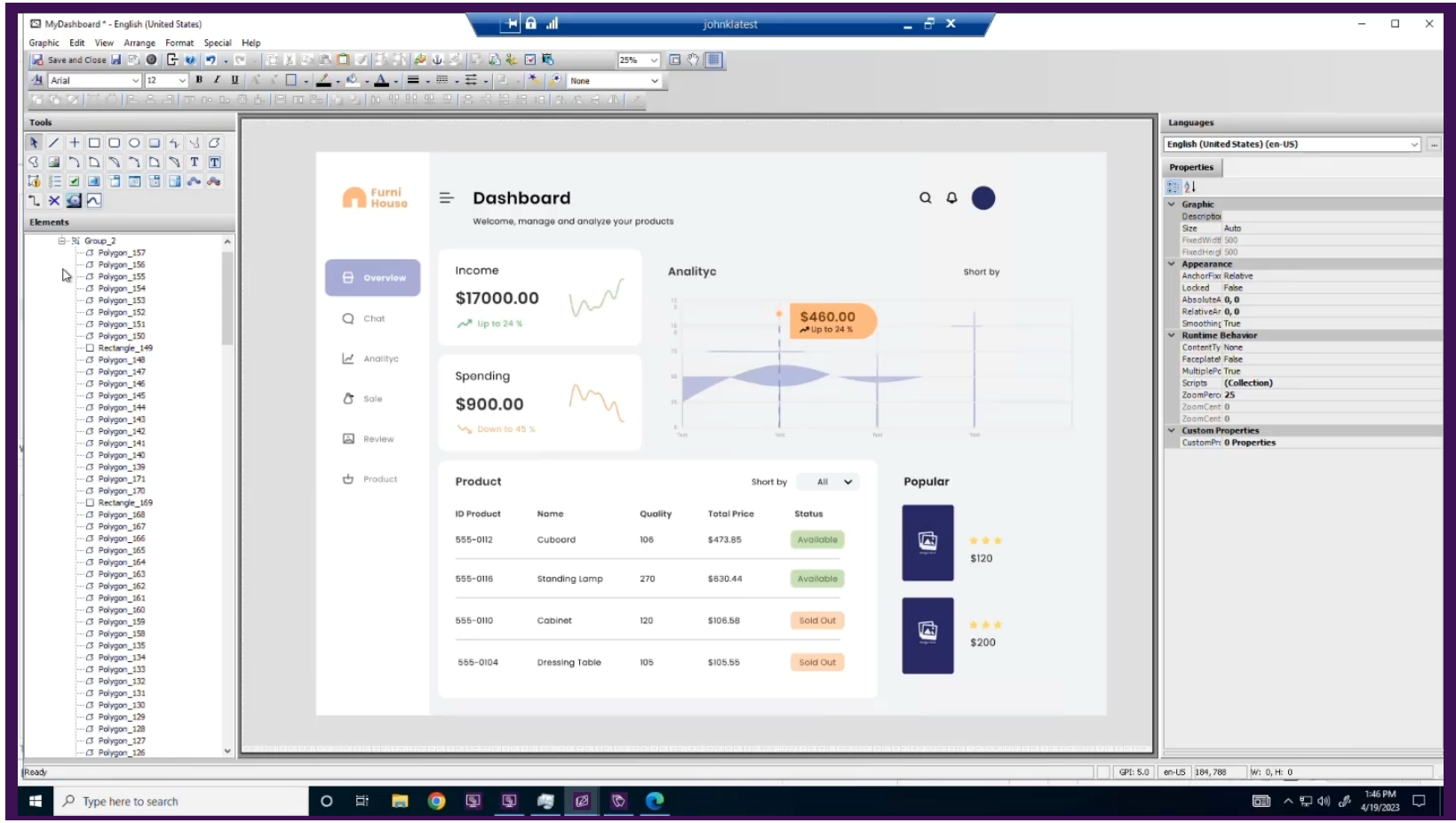
- Centralized architecture
- Ease of community data sharing
- Work anywhere, see changes in real-time
- Persistent customization and 3rd party integrations

IMPACT

- Reduce time to set up and modify projects by 70%
- Lower administration overheads

COMING SOON

Unified experience with AVEVA Operations Control 2023 R2



NEW

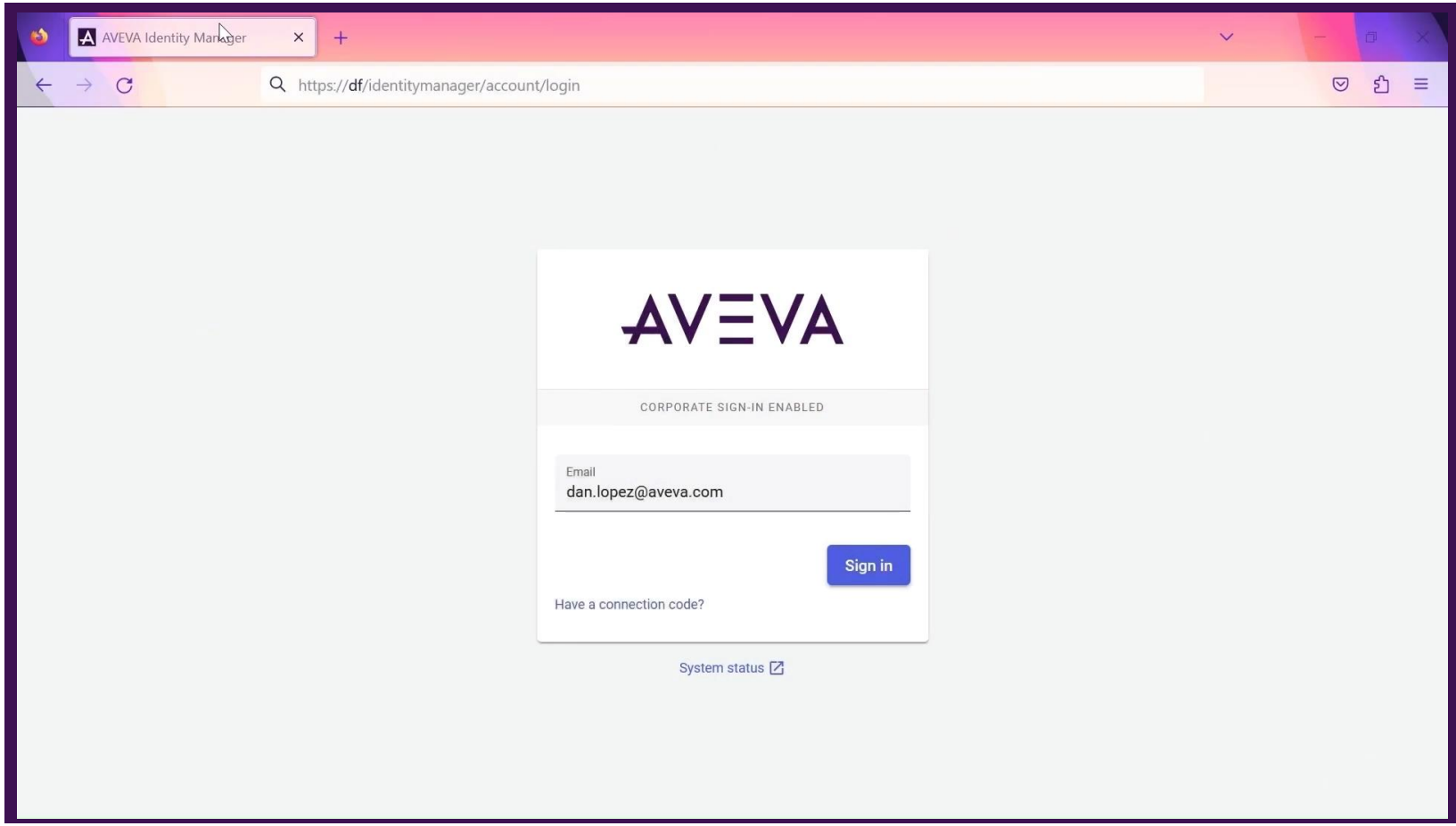
- OMI with a full web experience
- SVG import of industrial graphics for engineering efficiency
- Adding OPC UA methods for flexibility and operations efficiency

LEARN MORE

- Operations control geek track
- Expo
  - Operations control edge and supervisory
  - Enterprise visibility

NEW

Flexibility you need with AVEVA PI Data Infrastructure



NEW

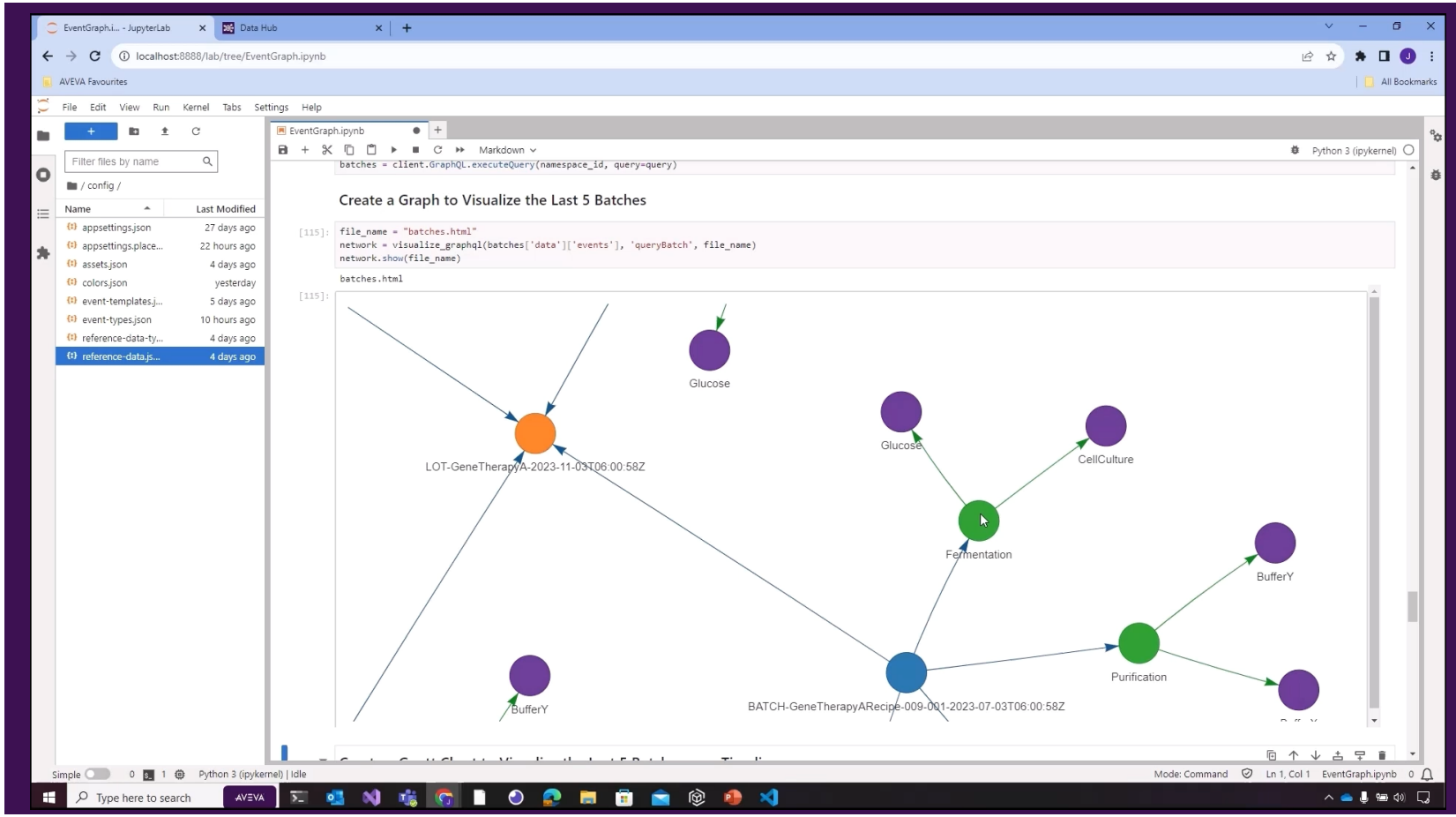
- Hybrid offer from edge and plant to cloud and community
- Modern authentication via SSO reduces IT burden
- Deploy PI Server hybrid or core branches to support your data needs

LEARN MORE

- AVEVA PI System roadmap
- Expo: Techy fun zone

NEW

Analyze events data using advanced tools with AVEVA Data Hub



NEW

- Leverage MES and other event data at scale and in the cloud
- Capture relationships with meaningful context
- Real-time AI insights with **AVEVA Advanced Analytics**

IMPACT

- Achieve payback in <6 months

LEARN MORE

- NEW! Ecosystem track

Source: Forrester Consulting, The Total Economic Impact™ of AVEVA Data Hub; Study based on a composite organization, October 2023

STRATEGIC ROADMAP

Accelerate value creation from AVEVA and partner applications with an open and neutral industrial platform

CONNECT Industrial intelligence-as-a-service

AVEVA apps	In-house apps	Partner apps

Connect platform services

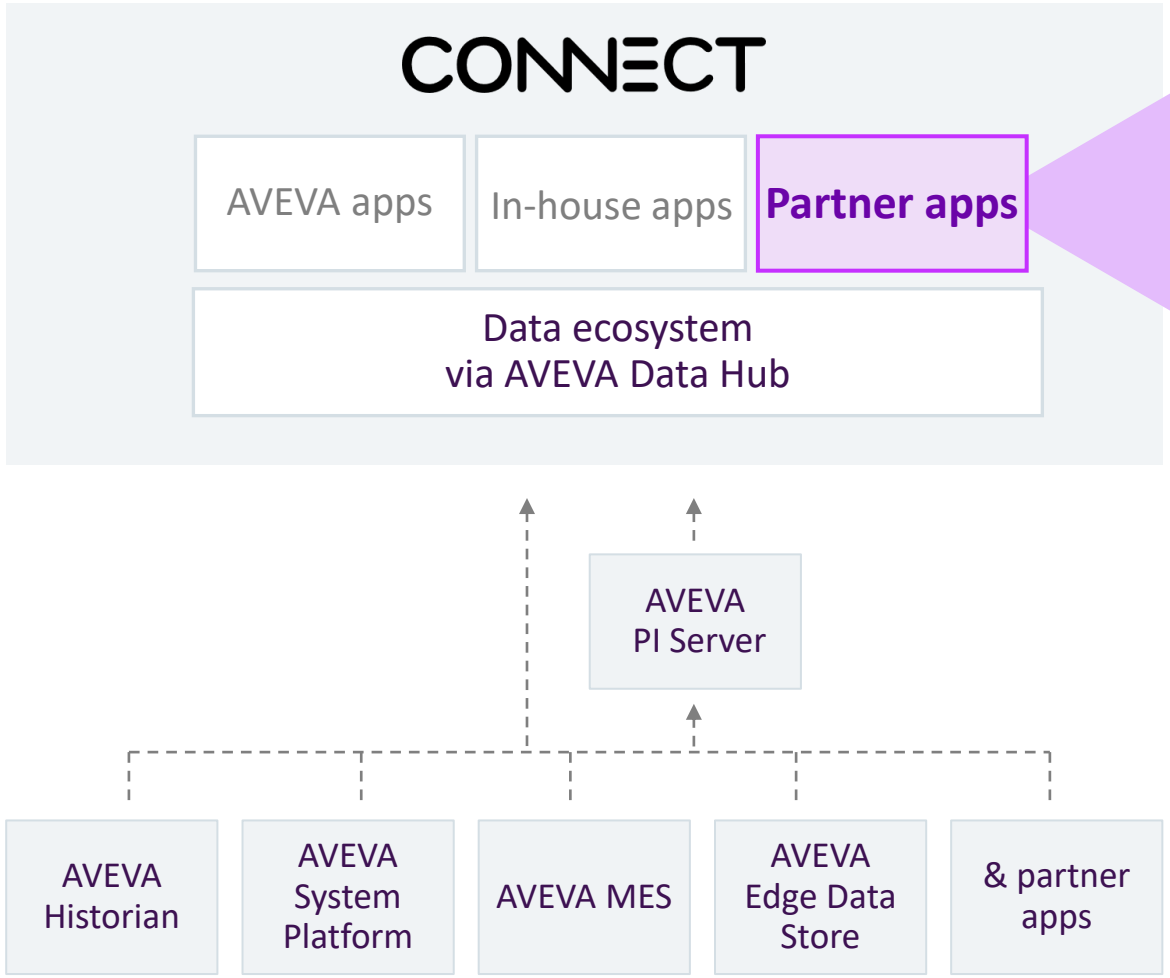
- Data ecosystem
- Visualization
- Modeling & analytics
- Application enablement

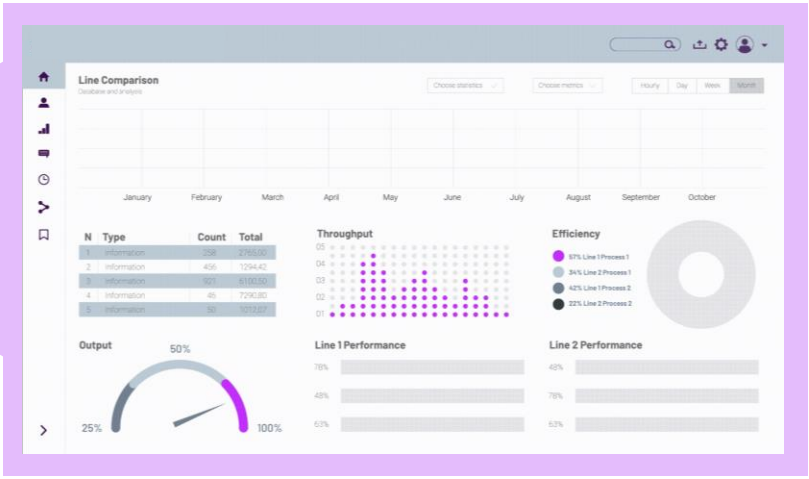
& more to come

Platform strategy accelerates new value-added applications

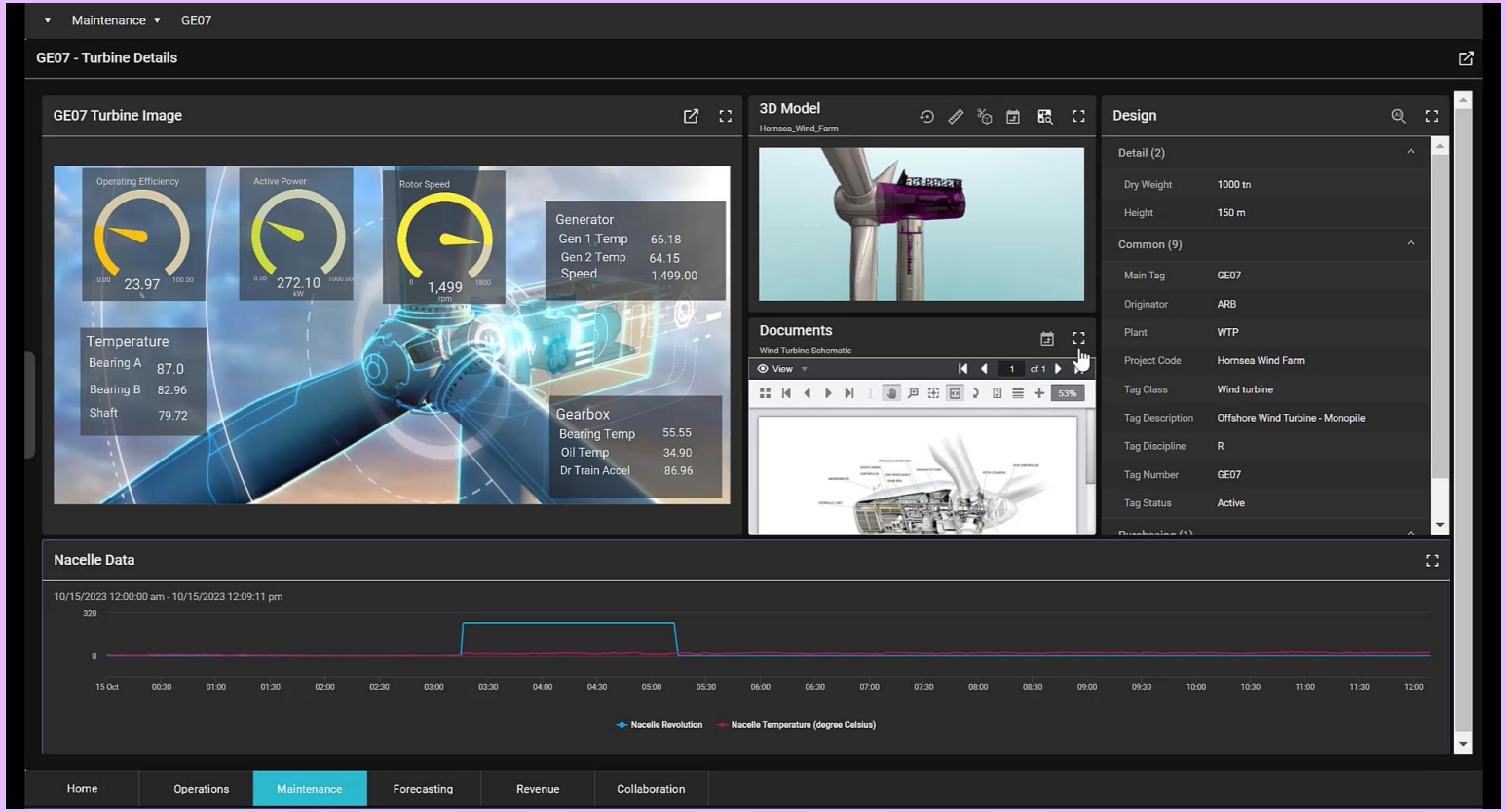
All apps / scenarios will pull **FROM** AVEVA Data Hub

All sources send **TO** AVEVA Data Hub





Seamless visualization across 1D, 2D, 3D engineering and operations data



CONNECT

AVEVA apps	In-house apps	Partner apps

Data ecosystem

AVEVA

Adding more data, more visualization, more capabilities to enable new use cases

Standalone applications → **Integrated NEUTRAL industrial platform**

Industrial generative AI

Applications, models, application-enablement services

Combined IT/OT/ET visualization, self-service

Pre-defined and immersive

Developer tools: New developer package

Linked data, customer, partner etc.

Engineering, 1D, 2D, 3D

Production event data

Time-series data

Remote monitoring
Data science

Utilization analysis
Advanced OEE

Holistic digital twin
Operator training

Project transparency
Benchmarking

AVEVA

Our software
+ your expertise
are driving
real-world change

Discover

- Roadmap sessions
- Expo booths, including

  Industrial AI & analytics
  AVEVA Connect
- **Ecosystem track**

AVEVA

AVEVAWORLD

SAN FRANCISCO