OMRON

SEPTEMBER 2022

Investing in Manufacturing Performance & Operational Resilience
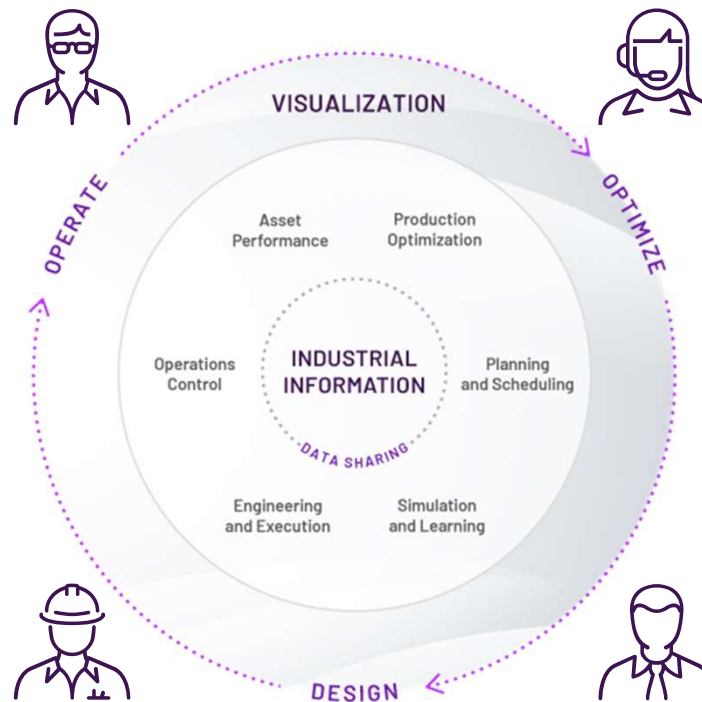
Fabio Terezinho – AVEVA VP Global OEM Sales

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Introduction

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AVEVA is a leader in sustainable industrial platforms and software

AVEVA is uniquely positioned to deliver a **complete digital thread purpose build for industry**

- **FTSE 100** listed on the London Stock Exchange

- **Market leading positions** in operations information

- **Global partner ecosystem** of **over 5,000** partners

- **Open and agnostic** solutions

VISUALIZATION

OPERATE

OPTIMIZE

Asset Performance

Production Optimization

Operations Control

INDUSTRIAL INFORMATION

Planning and Scheduling

DATA SHARING

Engineering and Execution

Simulation and Learning

DESIGN

Ecosystem

20,000+ customers	**8+** industries
6,500+ employees	**5,500+** partners

RESULTS

20% reduction in capital project costs	**16%+** reduction in energy usage
30%+ improvement in overall equipment effectiveness	**$100M** saved from preventing asset downtime

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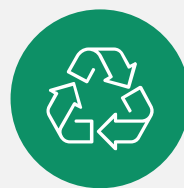# Industries are facing complex challenges in a changing market

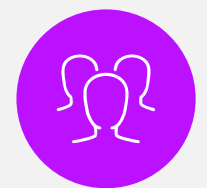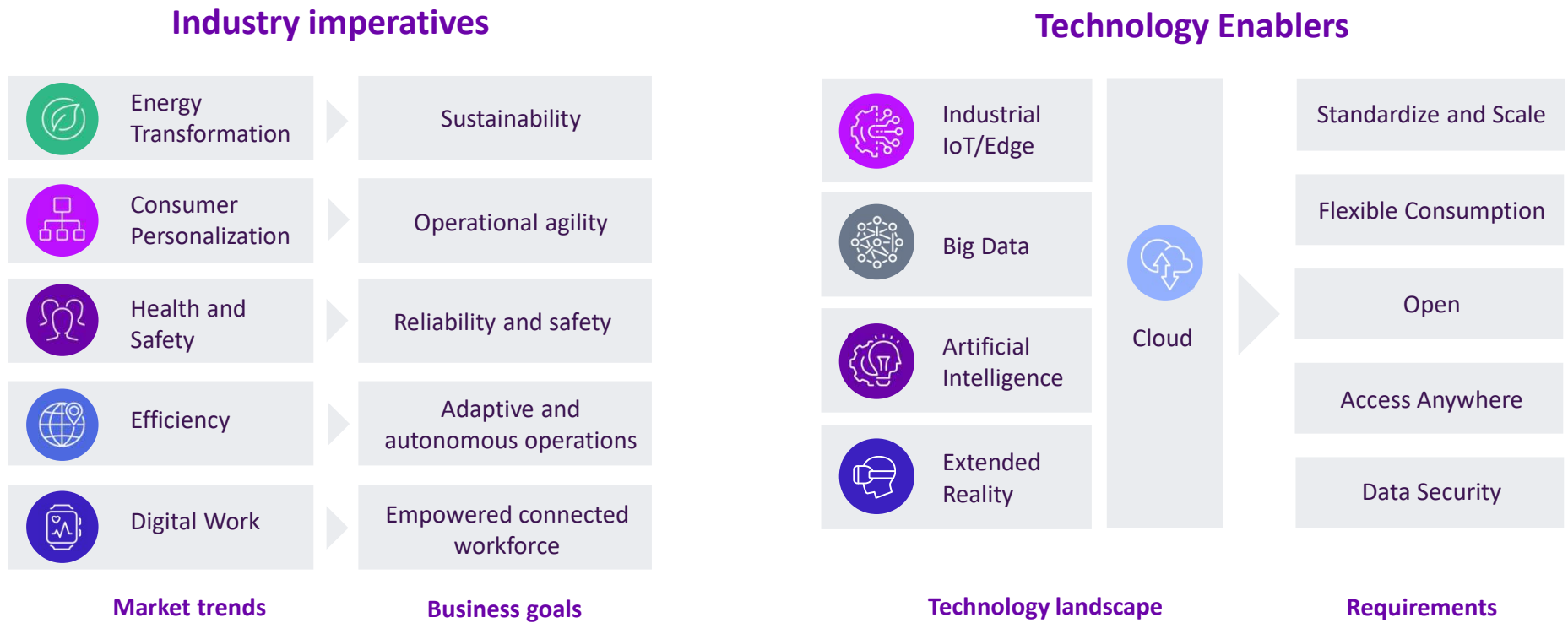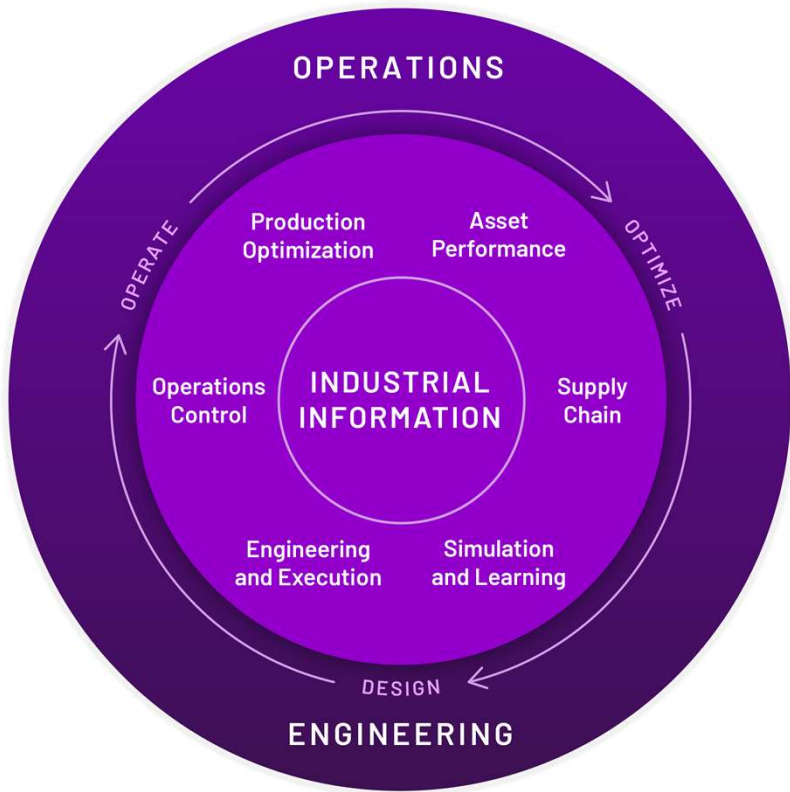| ESG regulations	Supply chain and service disruptions	Consumer desire for green alternatives	Commodity price fluctuations	Labor shortages and remote work
Improve sustainability, reduce carbon intensity and emissions	Capital projects and supply chain agility and resilience	New materials, processes, and facilities for circular economy	Operational efficiency, optimized planning and scheduling	Connected and empowered workforce, autonomous operations

Manufacturing Performance & Operational Resilience

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The new business and technology imperatives

Industry imperatives

Market trends		Business goals
Energy Transformation	→	Sustainability
Consumer Personalization	→	Operational agility
Health and Safety	→	Reliability and safety
Efficiency	→	Adaptive and autonomous operations
Digital Work	→	Empowered connected workforce

Market trends   **Business goals**

Technology Enablers

Technology landscape		Requirements
Industrial IoT/Edge		Standardize and Scale
Big Data		Flexible Consumption
Artificial Intelligence	Cloud	Open
Extended Reality		Access Anywhere
		Data Security

Technology landscape   **Requirements**

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Asset and Process lifecycle shaped by the market environment

OPERATIONS

OPERATE

OPTIMIZE

Production Optimization

Asset Performance

Operations Control

INDUSTRIAL INFORMATION

Supply Chain

Engineering and Execution

Simulation and Learning

DESIGN

ENGINEERING

Provide remote 'digital' teams rich information and **decision support** to **collaborate** and work efficiently

Run **agile, continuously optimized** supply chains to protect the bottom line

Operate critical assets **reliably and safely** with reduced manual supervision

Re-plan CapEx and drive highest levels of **engineering efficiency**

Connected Worker

Digital Twin

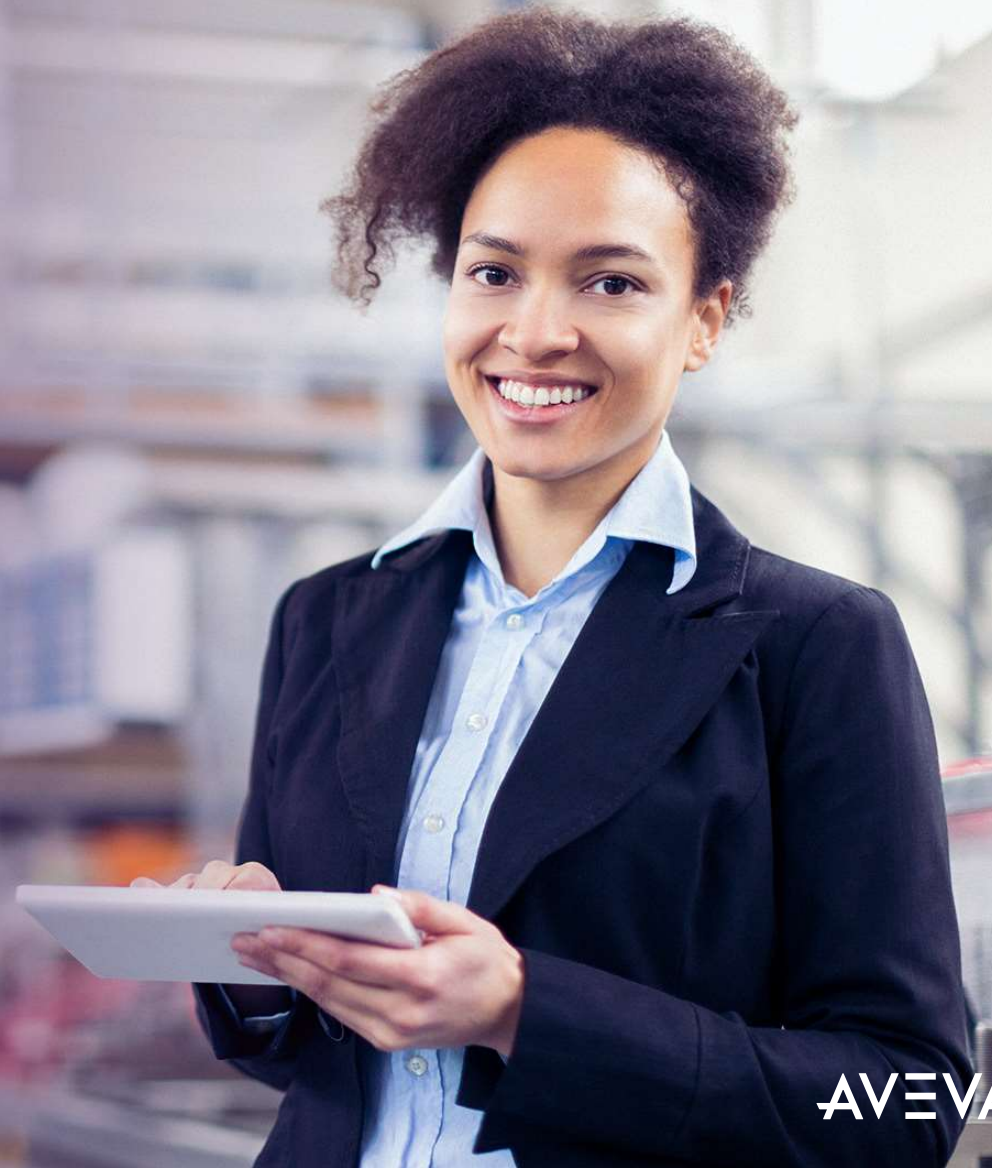Artificial Intelligence

Cloud

Big Data

Industrial IoT/Edge

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Enabling the
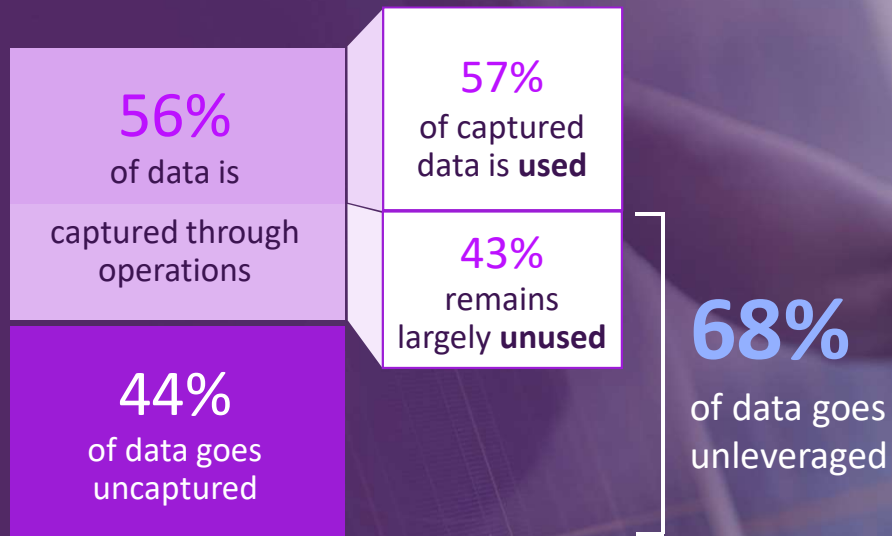## Connected Industrial Economy

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50%

of all industrial data was created in the last 2 years. In 2024 that will still be true.

Statista, June 2021

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According to Seagate,
only **32%** of the data available
to enterprises was put to work

56%
of data is
captured through
operations

44%
of data goes
uncaptured

57%
of captured
data is **used**

43%
remains
largely **unused**

68%
of data goes
unleveraged

Source: The Seagate Rethink Data Survey, IDC, 2020
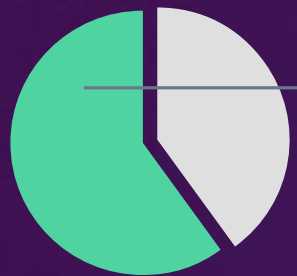
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Industrial companies struggle to share timely, accurate data across their global ecosystem

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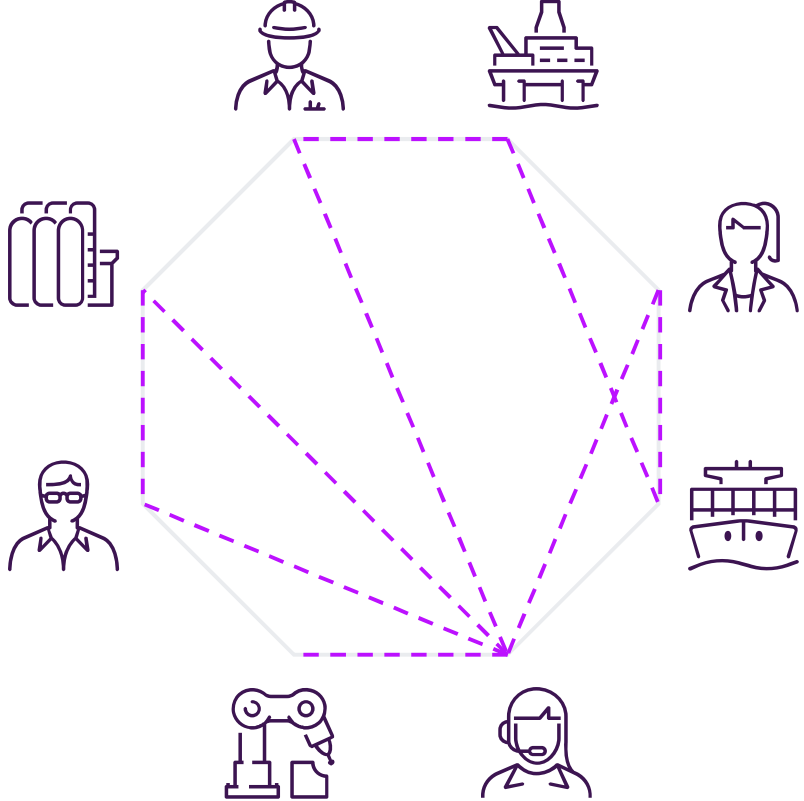
Imagine if all parties in a value chain were optimized in parallel: Data is the accelerator of the connected industrial economy

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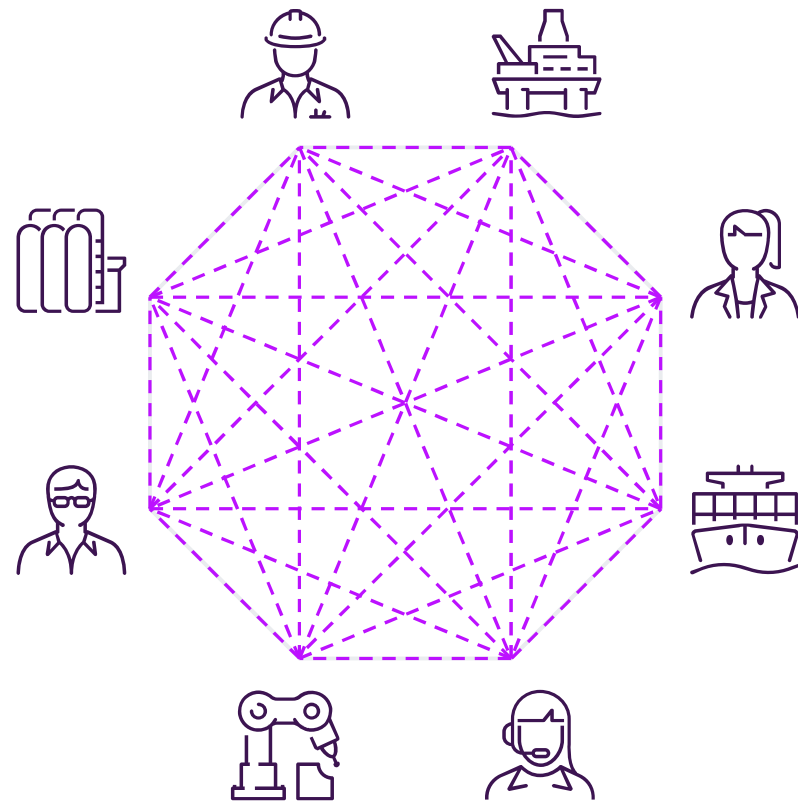
Organizations that share data externally
with their partners generate

3x more measurable economic benefit

than those that do not.

Organizations adopting data
hub strategies will achieve
outcomes dependent on
shared data with at least

60% lower cost.
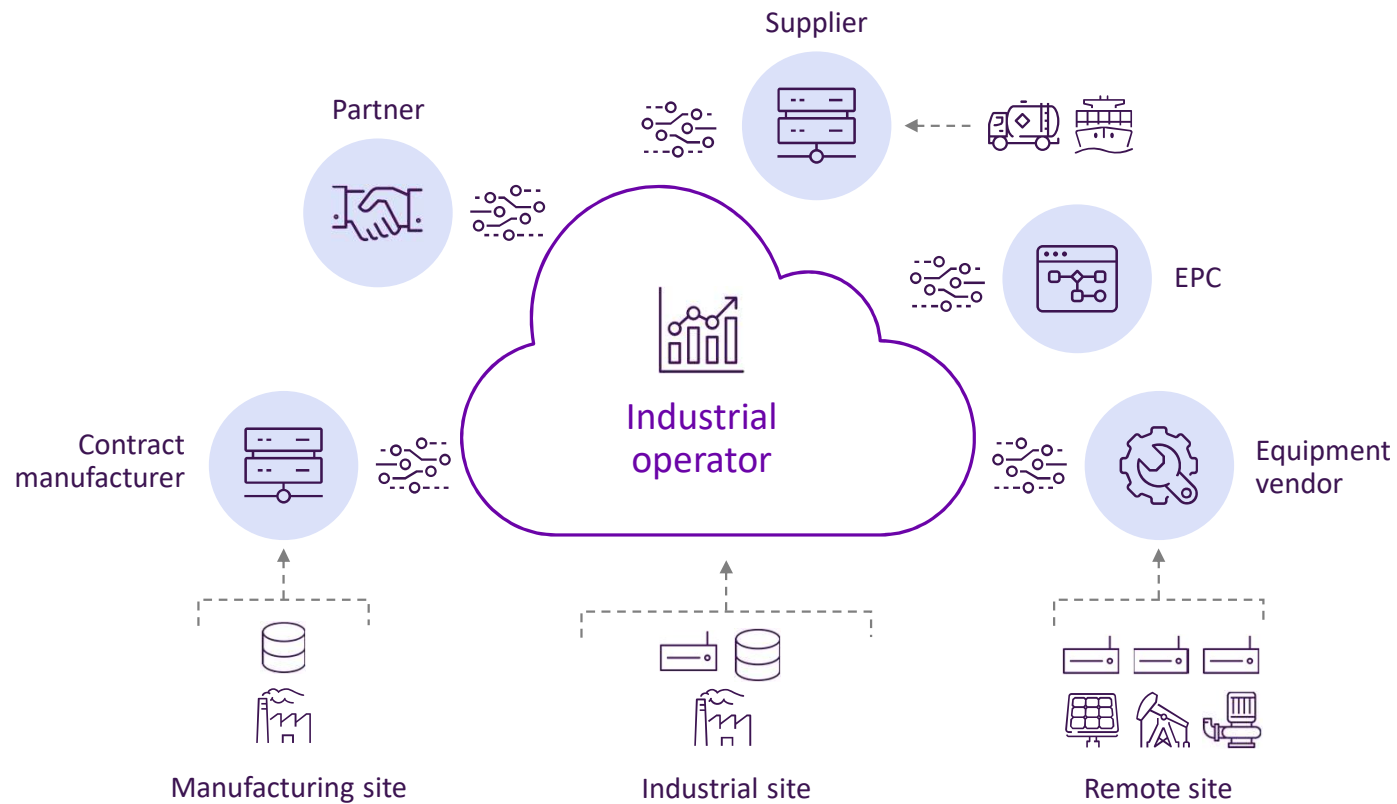
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Data becomes the foundation of a connected community

Partner

Supplier

EPC

Contract manufacturer

Industrial operator

Equipment vendor

Manufacturing site

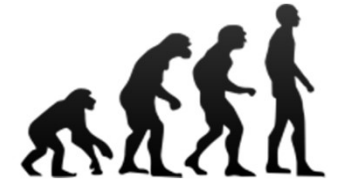Industrial site

Remote site

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Typical Architectures

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Industrial Internet of Things (IIoT) / Industry 4.0

Evolution of Industrial Automation Systems

Limited functionality
local operation / voice calls

Limited reach
fixed location of automation, machine, plant / size, distance

Low scalability
proprietary systems and protocols / black box

Multiple functionalities
operations, performance, analysis, supply chain, etc / voice calls, messages, photos, social, networking, etc

Global reach
mobility, internet, low cost with economies of scale

High scalability
standard protocols, apps, ecosystem / native apps, networks, ecosystem

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Success is Local, and Cloud...and Edge!

It's not one flavour over the other – Industry 4.0 is about creating optimal combinations

| Local computing	Cloud computing	Cloud + Edge computing

Local computing
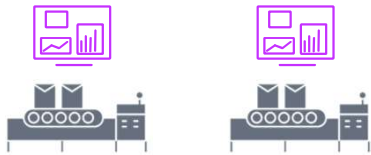
- Difficult maintenance
- Slow upgrade cycle
- Works disconnected
- Guaranteed cyber-security
- High speed, low latency
- Large install-base

Cloud computing
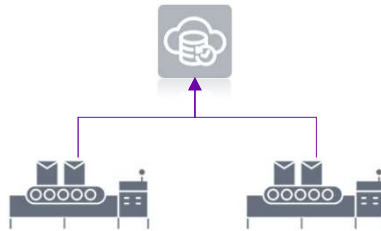
- Aggregate and combine
- Access anywhere, any time
- Frequent upgrades of functionality
- Requires connection
- Lower reliability for real time operations
- Limited control for communication optimization

Cloud + Edge computing
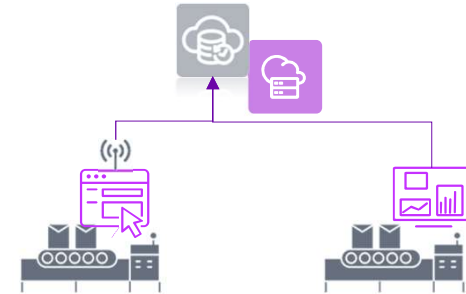
- Combines best of local & cloud computing benefits
- Access anywhere, any time
- Works off-line with high-speed local processing
- Frequent upgrades of functionality
- Out-of-the box setup, rapid replacement strategies
- Requires occasional access to internet

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Hybrid solutions

It's not one flavour over the other – Industry 4.0 is about creating optimal combinations
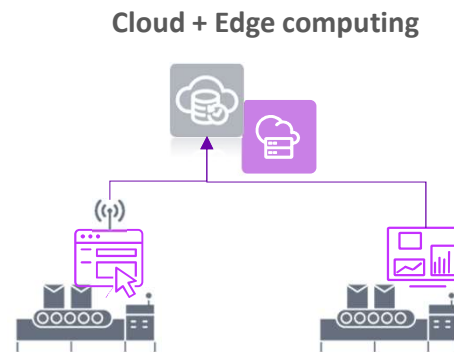
Cloud + Edge computing

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Industrial Internet of Things (IIoT) / Industry 4.0

Main components

C L O U D

P R E M I S E

Cloud Analytics and Mobile Access

analytics, consolidation, artificial intelligence (AI), machine learning (ML), remote management/deployment, remote notifications and monitoring, integration with other cloud platforms

Edge devices

data acquisition, high-speed logic, powerful algorithms, data preparation, link to cloud, local maintenance, local operation

Instrumentation and Controllers

operational real-time control, raw data measurements

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Main Benefits

Productivity   Reliability   Security

Portability

Windows   Windows IoT   Windows Embedded Compact   Linux

Mobility

Interoperability

OPC UA

MQTT.ORG
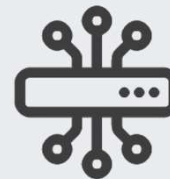
Real-world examples

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Digital Transformation example at ADNOC

A V Ξ V A + OSIsoft.

Intelligent Operations Unified Operations Center (UOC) for Oil & Gas Operations

Early results of
## $80M Savings per run
From value chain optimization

Deployed at scale across
14 OPCOs

Improved Visibility
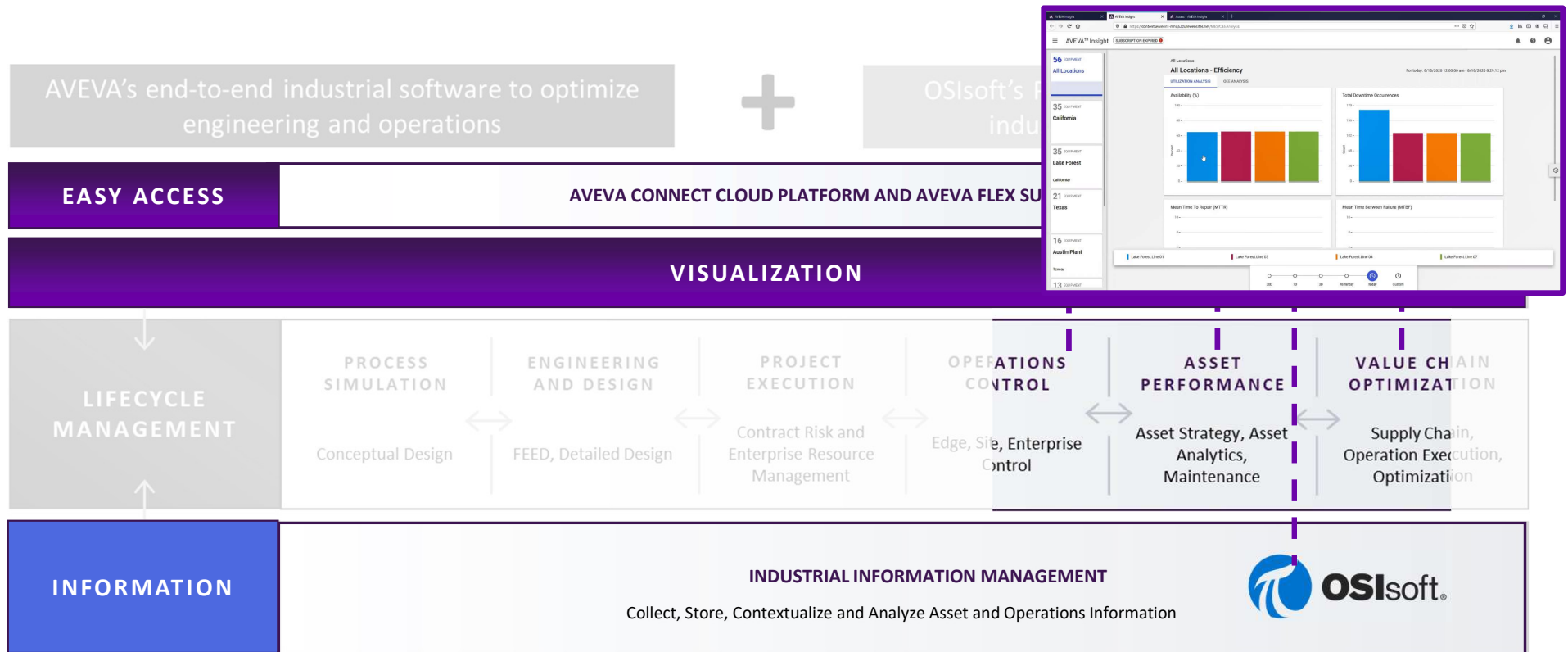For faster decision making

Abu Dhabi National Oil Company (ADNOC) implemented the Panorama Command Center within ADNOC to monitor, control and optimize the performance of the entire end-to-end value chain across their 14 operating companies (OPCOs).

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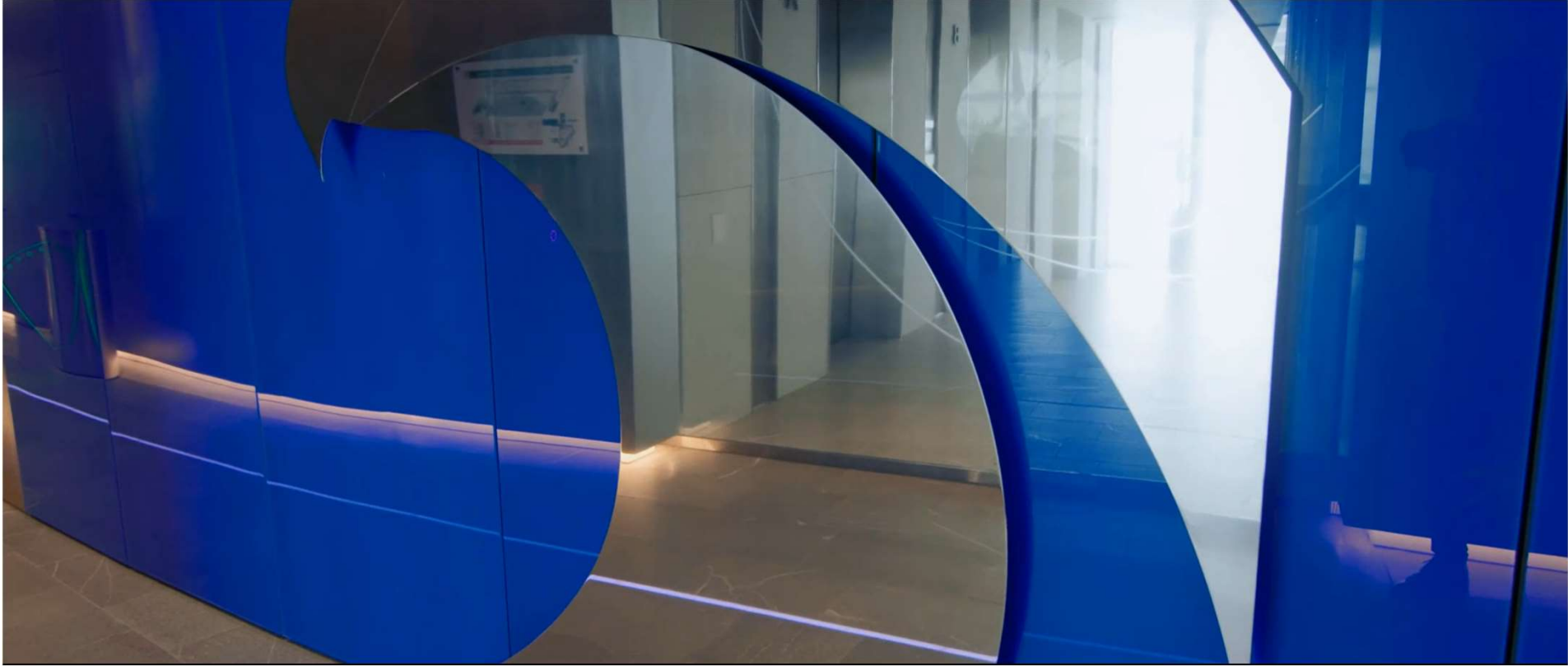
Combining world-class software to drive Performance Intelligence

Cloud Hybrid Example: Integrated and Unified Aggregation, Visualization, Analytics

AVEVA's end-to-end industrial software to optimize engineering and operations

+

OSIsoft's industrial

EASY ACCESS	AVEVA CONNECT CLOUD PLATFORM AND AVEVA FLEX SU

VISUALIZATION

LIFECYCLE MANAGEMENT

PROCESS SIMULATION	ENGINEERING AND DESIGN	PROJECT EXECUTION	OPERATIONS CONTROL	ASSET PERFORMANCE	VALUE CHAIN OPTIMIZATION
Conceptual Design	FEED, Detailed Design	Contract Risk and Enterprise Resource Management	Edge, Site, Enterprise Control	Asset Strategy, Asset Analytics, Maintenance	Supply Chain, Operation Execution, Optimization

INFORMATION

INDUSTRIAL INFORMATION MANAGEMENT

Collect, Store, Contextualize and Analyze Asset and Operations Information

OSIsoft®

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Home   Alerts   Cases   Reports

Refreshed: 02/22/2021 09:56 AM   ⟳   ◯ Auto

Alerts

Show Trends | Change State | Project Notes | Case History | Quick Filter ▾

Search 🔍

Assets ▾

- 📂 All Assets
  - 📂 WINDTOPIA
    - + 📁 ATLANTIC OCEAN WIND FARM
    - + 📁 BIG BUFFALO WIND FARM
    - + 📁 BLACK MESA WIND FARM
    - + 📁 **BLACK WOLF WIND FARM**
    - + 📁 FOEHN ALPS WIND FARM
    - + 📁 LEVANTER IBERIA WIND FARM
    - + 📁 NORDIC SEA WIND FARM
    - + 📁 PACIFIC OCEAN WIND FARM
    - + 📁 SIROCCO SANDS WIND FARM

Name	↑	Alert State	Runtime Status	Case Status	Open Cases	Closed Cases	1 Day Event History	Alerts
GE 08 GENERATOR		✓	●					
GE 08 MECHANICAL		✓	●					
GE 08 PERFORMANCE		✺	🔺					
GE 09 GENERATOR		✓	●					
GE 09 MECHANICAL		✓	●					
GE 09 PERFORMANCE		✓	●					
GE 10 GENERATOR		✓	●					
GE 10 MECHANICAL		✓	●					
GE 10 PERFORMANCE		✓	●					

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We are addressing the new imperatives of our customers
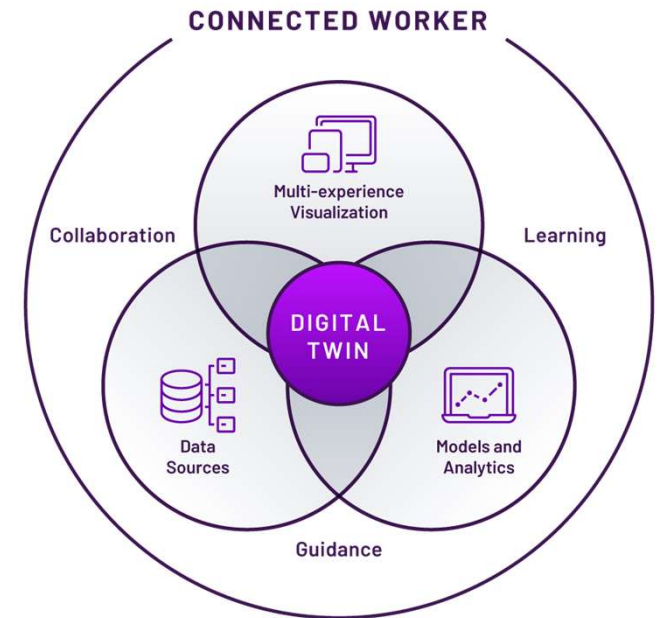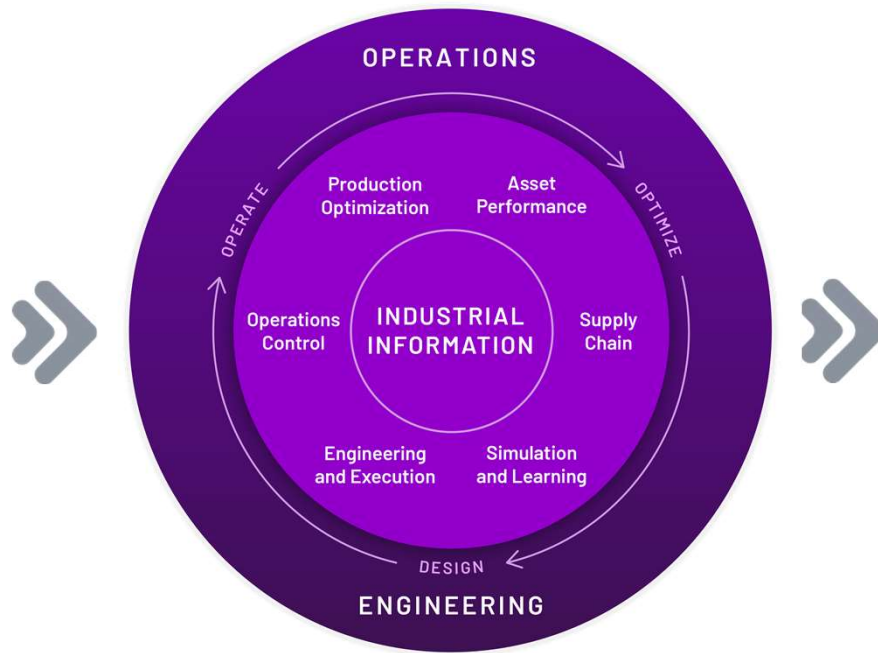
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@avevagroup

ABOUT AVEVA

AVEVA is a global leader in engineering and industrial software driving digital transformation across the entire asset and operational life cycle of capital-intensive industries.

The company's engineering, planning and operations, asset performance, and monitoring and control solutions deliver proven results to over 16,000 customers across the globe. Its customers are supported by the largest industrial software ecosystem, including 4,200 partners and 5,700 certified developers. AVEVA is headquartered in Cambridge, UK, with over 4,400 employees at 80 locations in over 40 countries.

aveva.com

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