Industry cloud for consumer products

Keith Chambers, Vice President, Manufacturing Solutions
Ted Combs, Industry Principal, Consumer Products
Evermore challenging Ecosystem

Source
- Ingredient shortages
- Supply delays

Make
- Availability & cost of labor
- Cost of inventory

Deliver
- Changing channels
- Regulations

Market & Sell
- Circularity & ESG
- Changing demand

AGRICULTURE & FISHERIES
TRANSPORTATION & STORAGE
PRIMARY PROCESSING
SECONDARY PROCESSING
TRANSPORTATION & STORAGE
CHANNELS

TRANSPARENCY

8.0 BILLION PEOPLE

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Manufacturers are digitally transforming to survive & thrive

Emergent Technology

- Artificial intelligence
- Cloud
- Big data
- Industrial IoT/Edge
- Extended reality

Advanced technology is converging to provide a digital thread connecting demand, through the smart factory to delivery

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The **challenges** AVEVA works to solve for CP manufacturers

**Product quality & food safety**
- Meet quality and safety standards
- Reduce waste
- Prevent product recalls
- Protect consumer preference and loyalty
- Track product and production history

**Operational excellence**
- Reduce production costs
- Increase production efficiency
- Improve yield & throughput
- Capture knowledge and insights
- Drive standardized work processes

**Asset health**
- Improve uptime
- Extend the life of aging equipment
- Reduce unplanned downtime
- Utilize condition-based and predictive maintenance

**Energy, water & sustainability**
- Manage the impact of volatile energy costs
- Improve water treatment and utilization efficiencies
- Meet sustainability targets
- Be a good corporate citizen

**Connected ecosystem**
- Share data with customers and suppliers
- Operate remotely
- Contribute to connected process and practice across entities
- Balance agility and efficiency
Industry 4.0, smart manufacturing and the smart factory

Connected world

Smart manufacturing
Smart manufacturing is the digitalization of the manufacturing network to transform and improve production’s response to changing conditions.

Key drivers
Drive best practice
Improved planning
Resilient sourcing
Channels to market
Customer service
Autonomous operations

Smart factory
The smart factory applies technology and standard work to innovate how factories operate. Smart factories are an underlying capability of smart manufacturing.

Key drivers
Changing ways of work
Labor turnover
Unit costs
Consistency and quality
Sustainability and circularity

Smart products

Industry 4.0
A “strategic” cross-industry vision of collaborative manufacturing based on IoT

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However, not all transformations succeed

74% of organizations have a smart factory initiative

By 2025, three out of five manufacturers’ smart factory initiatives will stall.

Source: “How to Extract the Full Value From Smart Factories”, Simon Jacobson, Gartner, 2022
How to maximize the value from your smart factory

A hybrid/cloud portfolio, delivering smart factory use cases across the manufacturing network

Establish the platform

Accessibility to data is the biggest barrier to realizing value.

Iot at the edge
Pervasive, real-time data collection from sensors, IoT devices and remote assets

On-premises OT systems
Enriched industrial data available 24/7 for critical operations

Information in the cloud
Scalable data services available for a wider array of users, tools and applications

Align to your operating model

Old ways of working aren’t viable, design your operating model to create a culture of performance.

Scale and sustain the benefits

Leverage the benefits of your scale: best practices, cost of ownership, agility and resilience.
Our industry cloud vision for consumer products

A hybrid/cloud portfolio, delivering smart factory use cases across the manufacturing network

Establish the platform

- Purpose-built to meet the demands and challenges of industrial information.
- Open and agnostic, connect to any data source.

Align to your operating model

- Deliver net new value from smart factory use cases with a hybrid cloud approach.

Scale and sustain the benefits

- Scale the benefits across your manufacturing network. Share and collaborate across your ecosystem.
NEUTRAL PLATFORM

Deliver a neutral industrial platform

To accelerate value creation from AVEVA and partner applications

AVEVA™ Connect:
Access to applications and AVEVA Flex credit management
NEUTRAL PLATFORM

Deliver a neutral industrial platform

To accelerate value creation from AVEVA and partner applications

Data aggregation & sharing services (AVEVA™ Data Hub)

AVEVA Connect:
Access to applications and AVEVA Flex credit management
NEUTRAL PLATFORM

Deliver a neutral industrial platform

To accelerate value creation from AVEVA and partner applications

AVAILABLE
Partner applications

HERE
AVEVA apps
- Production performance use cases

HERE
Connect visualization Services

AVAILABLE
Data aggregation & sharing services (AVEVA Data Hub)

AVEVA Connect:
Access to applications and AVEVA Flex credit management

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NEUTRAL PLATFORM

Our strategic roadmap:
Accelerate value creation from AVEVA and partner applications with a neutral industrial platform

Partner apps
AVEVA apps
In-house apps

Connect platform services
• Data services
• Visualization
• Modeling & analytics
• & more to come

CONNECT Industrial intelligence-as-a-service

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Connect data services – AVEVA Data Hub

Expanding the footprint of our data management services

*Engineering data: 1D, 2D, 3D (future)*

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**Process data (streams)**
- Timestamp
- Depth
- Pressure
- Quality
- Information
- Temperature
- Flow
- Quality
- Information

**Asset context (assets)**

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**Events & context (MES events & reference data)**

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A hybrid/cloud evolution

Event & reference data ingress to AVEVA Data Hub

- **Data curation:**
  - Specific to the dataset, Initial release will include MES performance data.
  - Future releases will add the full MES data model, and other products will also provide curated events (such as AVEVA™ PI event frames)
  - Data is pushed from MES to ensure on-premise updates are correctly reflected in AVEVA Data Hub (for instance reclassifying a downtime event)

- **Data ingress:**
  - A common event data adapter for AVEVA Data Hub
  - Creates the data graph within AVEVA Data Hub from reference data, event types and the relationships between them
Connect data services - AVEVA Data Hub

Delivering hybrid smart factory capabilities

- AVEVA Data Hub is being enhanced to:
  - Store event data.
  - Store reference data
  - Store & query rich relationships (GraphQL language)

- AVEVA manufacturing solutions are being enhanced to:
  - Integrate natively with AVEVA Data Hub
  - Provide out-of-the-box publishing of MES data, with guaranteed delivery

- Managed service provided by AVEVA in the cloud

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Connect visualization services

Composable dashboards with self-service and pre-defined experiences

- Self-service dashboard creation in a browser, accessible on any device
- Craft unique experiences by role and use case need
- Save, edit, and share displays
- Rich experiences with complex multi-level navigation and drill-down, including:
  - Process analysis
  - Production events
  - Graphical elements library
  - Maps and GIS data
  - Video surveillance
  - Operational Tower views
- Engineered dashboard development tools, for a highly visual and interactive experience
Connect visualization services

Rapid information synthesis for the citizen analyst

- Two dashboard types:
  - *Self-service* – user created views assembled from a default and customized/imported content library
  - *Pre-defined* – engineered views providing a more structured and interactive visualization experience

- Craft many dashboards for different use cases and data visualization needs

- Incorporate data from both AVEVA Connect and third-party sources

- Assemble lists of assets and previously associated content for easy review

- Manage user creation permissions, access to each visualization type, and individual dashboards
# Modeling and analytics services – AVEVA™ Advanced Analytics

Combine your existing data with AI-enabled applications for faster and smarter decisions

<table>
<thead>
<tr>
<th>PERVASIVE CONNECTIVITY with AVEVA Data Hub</th>
<th>DIGITAL TWIN – Linked to ADH Assets</th>
<th>“AI” ENABLED APPLICATIONS</th>
<th>SCALE EFFORTLESSLY</th>
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</thead>
</table>
| AVEVA Data Hub is system of record for AVEVA Advanced Analytics – direct read/write data in/out of AVEVA Data Hub | Calculations  
First principal models  
Machine learning models  
Alerts & recommendations | Quality throughput  
Energy efficiency  
Digital services | Create “Classes” that can apply calculations and models to tens, hundreds, or thousands of assets or processes |

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Rapid information synthesis for the citizen analyst

Complete framework for AVEVA Advanced Analytics
- Adapters for several source types in addition to AVEVA Data Hub (native)
- Calculation engine with flexible equations, statistics, data flows, scripting, etc. (aka Threads)
- Flexible AI applications, from easy wizard configuration, to data science scripting
- Analysis of historical and current data in various tables and charts with operational recommendations
- Alert and incident management
- Automated ML model refresh
- Scale across thousands of assets or processes
Our industry cloud vision for consumer products

A hybrid/cloud portfolio, delivering smart factory use cases across the manufacturing network

Establish the platform

- Purpose-built to meet the demands and challenges of industrial information.
- Open and agnostic, connect to any data source.

Align to your operating model

- Deliver net new value from smart factory use cases with a hybrid cloud approach.

Scale and sustain the benefits

- Scale the benefits across your manufacturing network. Share and collaborate across your ecosystem.
Align to your operating model

• Empower employees at every level with visibility and actionable insights
• Industrial cloud platform provides key capabilities for visibility, understanding and collaboration
  • What is the plan
  • How am I doing against the plan
  • What do I need to do
  • Who can help me
  • How do I engage them
  • How can I improve
Smart factory use cases

Enhancing sense and respond decision making

**Issue resolution**
- Capture, track and resolve Issues
- Call for help with local or remote SMEs

**Skills management**
- Deliver and track training
- Accelerate upskilling and certifications

**Knowledge sharing**
- On the job content creation
- Instructions, video and trouble shooting

**Predictive throughput**
- Production Rate
  - Run length
  - Cycle time
- Material cost/unit production

**Predictive quality**
- Run CpK
- First pass quality %

**Predictive energy efficiency**
- Energy cost
- Unit production

**Industrial cloud platform**
Our industry cloud vision for consumer products

A hybrid/cloud portfolio, delivering smart factory use cases across the manufacturing network

**Establish the platform**

- Information in the cloud: Scalable data services available for a wider array of users, tools and applications.
- IoT at the edge: Pervasive, real-time data collection from sensors, IoT devices and remote assets.
- On-premises OT systems: Enriched industrial data available 24/7 for critical operations.

**Align to your operating model**

- Deliver net new value from smart factory use cases with a hybrid cloud approach.
- Purpose-built to meet the demands and challenges of industrial information. Open and agnostic, connect to any data source.

**Scale and sustain the benefits**

- Scale the benefits across your manufacturing network. Share and collaborate across your ecosystem.
Business benefits of our industrial cloud platform

How our customers are accelerating their digital transform and scaling faster on the cloud

- Agile & resilient
  - Accelerate time to value
  - Fast deployment & automatic updates
  - Flexible subscription

- Hybrid systems
  - Connect edge to cloud
  - Integrate existing IIoT stack with hybrid SaaS

- Trusted insights
  - Create a real-time digital twin
  - Turn data into actionable insights with analytics, AI & visualization

- Connect teams
  - Open connectivity enables extended communities
  - Secure collaboration

Certified data security and > 99% uptime

The broadest and deepest industrial software with seamless collaboration in a single industrial cloud platform

Customers experience at least 20% efficiency gain by moving to the cloud

Working with 6,400+ cloud customers globally

Per week 105,000+ unique user sessions

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Standardize best practices across your manufacturing network.
Enterprise visualization

Our industrial cloud platform can scale across your entire business for insight and accountability

Sustainability | Efficiency | Quality | Agility | Supply chain
Connected community: Powering your industrial ecosystem
In Closing

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<tr>
<th>Establish the platform</th>
<th>Learn more....</th>
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| To unlock value, data must be accessible, secure and trustworthy. A common foundation, which eliminates silo’s and provides context is essential. | Expo  
Checkout the consumer products story at the Expo Tower. |

| Align to your operating model | Wednesday, 9:20  
AVEVA Data Hub is storing something new, and it’s a ”must-see” event. |
|-----------------------------|----------------------------------|
| Deploy the capabilities of the cloud to drive a performance culture within your smart factory. | Wednesday, 2:10  
Get more out of your data with AVEVA Advanced Analytics |

| Scale and sustain the benefits | Thursday, 2:10  
Real-time operations visibility for consumer products manufacturers |
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<td>Leverage best practices, enterprise-wide information visualization and data sharing with an eco-system to multiply the benefits/</td>
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AVEVA is a world leader in industrial software, providing engineering and operational solutions across multiple industries, including oil and gas, chemical, pharmaceutical, power and utilities, marine, renewables, and food and beverage. Our agnostic and open architecture helps organizations design, build, operate, maintain and optimize the complete lifecycle of complex industrial assets, from production plants and offshore platforms to manufactured consumer goods.

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.

Learn more at www.aveva.com