Connecting information: enterprise visualization

How smart cities can turn data into actionable information

Rob Kambach, Director AVEVA Unified Operations Center solutions
Extract value through a single pane of glass

AVEVA’s industrial IoT platform for smart cities
How AVEVA helps address top sustainability challenges

**Transition to net zero**
- Reduce GHG emissions and fuel consumption throughout operations and fleet
- Shift to renewable power sources wherever possible

**Circular economy**
- Streamline waste management and recycling processes
- Minimize water loss in treatment, distribution, collection, and reclamation processes

**Resiliency & agility**
- Operation-wide visibility and collaboration tools for single-pane-of-glass operations control
- Single source of truth data management for confident, informed decisions
How we support market and business imperatives

Visibility and multi-org collaboration enabled through agnostic connectivity, visualization, and sharing

Addressing city challenges
- Data silos hampering coordinated response
- Supporting multiple entities and stakeholders
- Integrating disparate systems
- Optimizing workflows and efficiencies

Addressing business imperatives
- Operational agility and resiliency
- Operational efficiency
- Transformation of work
- Asset reliability and safety
- Sustainability and net zero

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AVEVA has a proven international track record

Operational agility and resiliency

Real-time insight and management of critical infrastructure systems across Nava Raipur has reduced response times by 60%.

Operational efficiency

Output has increased from 12 M gallons to 20-30 M gallons and cost savings estimated at $15 M over 7 years.

Transformation of work

With over 260 engineering accounts connected across five continents, increased collaboration has improved IT agility by 20%.

Asset reliability and safety

Optimized water consumption via a communications infrastructure built upon the existing irrigation network.

Sustainability and net zero

62% reduction in gas usage and projected $197M in savings over 60 years.

Achieve carbon neutrality by 2025.

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Savings with data-driven decisions at Pimpri-Chinchwad, India

- 2 million people in Western India
- 4600 individual municipal systems and applications – traffic to water

IMPACT
- Reduced energy use by >15%
- Cut water losses by 18%
- Cut traffic congestion by >20%

ENERGY USE CUT BY 18-22%

Full video: https://www.youtube.com/watch?v=BNJSS4nDln4
WHA Thailand turns industrial properties into smart facilities

- Comprehensive deployment covers environmental and CCTV monitoring
  - Water and air quality
  - Rainfall
  - Water & wastewater production
  - CCTVs for infrastructure, road, utilities
  - Solar, and more
- Supporting predictive maintenance and energy optimization
- IMPACT: Reduced 75 tons of CO2 GHG emissions/year

Existing presence accelerates city-wide digitization & optimization

**Water**
AVEVA™ Operations Control (Edge to Enterprise)
incl HMI SCADA
1,400+ customers

**Power**
AVEVA™ PI System™
AVEVA™ Data Hub
500,000+ MW monitored

**Buildings**
Incl campuses
600M+ square feet of facilities monitored,
3,500+ infra customers

**Transport**
AVEVA Marine
AVEVA PI System
'Data ecosystem' allows a city to move as one connected community

Water
AVEVA Operations Control (Edge to Enterprise) incl HMI SCADA

Buildings
Incl campuses 600M+ square feet of facilities monitored

Power
AVEVA PI System AVEVA Data Hub

Service providers

Analytics vendors

Transport
AVEVA Marine AVEVA PI System

'Data ecosystem' allows a city to move as one connected community

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Smart cities will transform with the connected industrial economy

Clean energy & water value chains  Industrial innovation ecosystems  Smart multi modal transport

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IoT platform bridges IT/OT, traditional and new use cases

Remote assets, sensors, & IoT devices

AVEVA Edge Data Store
AVEVA Adapters

AVEVA Connect, common cloud platform
AVEVA™ Data Hub
AVEVA™ Edge Management

AVEVA™ PI Server
AVEVA™ Historian, formerly Wonderware / AVEVA™ System Platform, formerly Wonderware

Data sharing with trusted ecosystem partners
Via AVEVA™ Connect, common cloud platform, data services (aka AVEVA Data Hub)

Advanced analysis via AI/ML
AVEVA™ Predictive Analytics
3rd party models

Enterprise visibility and analysis
AVEVA Unified Operations Center
3rd party applications

Monitoring & reporting
AVEVA Operations Control, AVEVA™ PI Vision™, AVEVA™ PI DataLink™

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AVEVA’s IoT solution architecture for smart cities

Convergence
IT/OT/ET

Applications and analytics

Information management

Automation and control

Enterprise visualization
Gain single-pane-of-glass visibility across engineering, operations, and business information

Simulation and learning
Accelerate process design innovation

Engineering and execution
Maximize efficiency of capital projects

Asset performance
Improve reliability with AI insights

Engineering information
Deliver projects on time and improve safety and performance with rapid, intuitive access to the digital twin

Operations information
Break through silos with contextualized information and self-service tools that accelerate analytics projects

Operations control
Drive instant decision-making and safe operations with responsive visualization and control

Data sharing
Collaborate securely within and beyond the enterprise

3rd party ER, CRM, PLM

3rd-party apps and analytics

3rd-party systems and databases

Data sharing
Collaborate securely within and beyond the enterprise

3rd party sensor data and other data sources
SCADA
PLCs
DCSs
Historian
Edge/IIOT
Acquisition adds net new capabilities to our portfolio

Convergence IT/OT/ET

Applications and analytics

Information management

Automation and control

Enterprise visualization: AVEVA Unified Operations Center

Gain single-pane-of-glass visibility across engineering, operations, and business information + templates: water, buildings, advanced mapping sustainability

Simulation and learning
Accelerate process design innovation

Engineering and execution
Maximize efficiency of capital projects

Asset performance
Improve reliability with AI insights

Engineering information
Deliver projects on time and improve safety and performance with rapid, intuitive access to the digital twin

Operations information: AVEVA PI System
Break through silos with contextualized information and self-service tools that accelerate analytics projects

Operations control
Drive instant decision-making and safe operations with responsive visualization and control

3rd party sensor data and other data sources
SCADA
PLCs
MMMs
DCSs
Historian
Edge/IIOT

Collaborate securely within and beyond the enterprise
Data sharing: AVEVA Data Hub

3rd party ERP, CRM, PLM
3rd party apps and analytics
3rd party systems and databases

Connected industrial economy
AVEVA’s Vision: Enable the connected industrial economy

1. Connect things
2. Connect people
3. Connect organizations

Companies that share data externally outperform by 3x
Opportunity to reduce global emissions by 20%
Roadmap: Extend existing investments and accelerate network effect

1. Connect things
   - Additional IoT connectivity
   - Continued native integrations

2. Connect people
   - Hybridization toward/from platform
   - AVEVA Connect, common cloud platform visualization, Q3 2023
   - Industry portals, 2024

3. Connect organizations
   - Released Q1: AVEVA Data Hub communities
   - APIs for partners and augmented developer platform
   - Increasing data types, BI/AI/ML analytics

Continued investment in AVEVA Connect, common cloud platform

AVEVA Connect, common cloud platform
Data, visualization, analytics (future)

Remote monitoring
AI/ML
Partner apps

COMMUNITY

ENTERPRISE

SITE

EDGE

Remote assets
AVEVA Edge
Data Store

AVEVA Historian,
formerly Wonderware

AVEVA System
Platform, formerly
Wonderware

AVEVA PI Server

AVEVA Unified Operations Center
How customers will experience enterprise visualization roadmap

**AVEVA Unified Operations Center**
- Enterprise visualization
  - Headquarters monitoring
  - Enterprise performance intelligence
  - Autonomous workflows
- ET/OT/IT convergence
  - Single pane solutions
  - System of systems architecture

**AVEVA PI Vision**
- Self-service dashboard

**AVEVA PI Server**
- Operations information management

**AVEVA Operations Control**

**AVEVA Data Hub**
- Data sharing with ecosystem partners

**AVEVA Connect, common cloud platform**

**AVEVA Asset Information Management**
- Advanced

**AVEVA Asset Information Management Gateways**

**3rd party**
- Data lakes
- Business analytics solutions,

**Engineering data (AVEVA and 3rd party)**
- Structured data, unstructured data, 3D models, document mgmt system,
  - laser scan data, schematic diagrams

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Enterprise visualization: Phase 1 adds self-service experience

AVEVA Unified Operations Center

- Enterprise visualization
- ET/OT/IT convergence

Visualization services
Self-service experience
Leveraging AVEVA Data Hub

AVEVA Connect, common cloud platform

- AVEVA Data Hub
  - Data sharing with ecosystem partners
- AVEVA Asset Information Management
  - Advanced

AVEVA PI Vision
Self-service dashboard

AVEVA PI Server
Operations information management

- Deliver valuable insights
- Contextualize and enrich
- Collect & aggregate

AVEVA Operations Control

Sensor data & other operational data sources

AVEVA Asset Information Management

AVEVA AIM Gateways

3rd party
Data lakes
Business analytics solutions,
...

Engineering data (AVEVA and 3rd party)
Structured data, unstructured data, 3D models, document mgt system, laser scan data, schematic diagrams

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Enterprise visualization: Phase 2 adds pre-engineered experience

AVEVA Connect, common cloud platform

AVEVA PI Vision
Self-service dashboard

AVEVA PI Server
Operations information management

Visualization services
Self-service experience
Pre-engineered experience

Data ecosystem services
Operations data sharing
Engineering data sharing

Sensor data & other operational data sources

AVEVA Asset Information Management
AVEVA AIM Gateways

Engineering data (AVEVA and 3rd party)
Structured data, unstructured data, 3D models, document mgmt system, laser scan data, schematic diagrams

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AVEVA’s IoT application platform capabilities and strengths

Edge to cloud integration & software management
- Vendor-neutral data collection
- Centralized cloud-based portal for software management

Data management
- Purpose-built for industrial data
- Seamless edge, on-prem, cloud

Analytics
- AI/ML ready with data views: cleansed, formatted
- APIs and Power BI Connector

Digital twin
- 1D, 2D, 3D, and operational data
- Upcoming platform integration with context, enhanced visualization

Connected ecosystem
- Secure, bi-directional data sharing with trusted partners for new business models
- Maintain full data ownership and governance

Application enablement
- Open and vendor neutral
- RESTful APIs between edge and cloud

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Multiple ways to leverage data through an IoT platform

Diverse tools for different types of users

- Exploring deviations
- Predicting expected power
- Live monitoring
- Fleet reporting & analysis
Rob Kambach

Director AVEVA Unified Operations Center solutions

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Questions?
Please wait for the microphone.
State your name and company.

Please remember to...
Navigate to this session in the mobile app to complete the survey.

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ABOUT AVEVA

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