

OCTOBER 25, 2023

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# Connecting information: enterprise visualization

How smart cities can turn data into actionable information

Rob Kambach, Director AVEVA Unified Operations Center solutions

AVEVA

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# Extract value through a single pane of glass

AVEVA's industrial IoT platform for smart cities

**AVEVA**

# 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

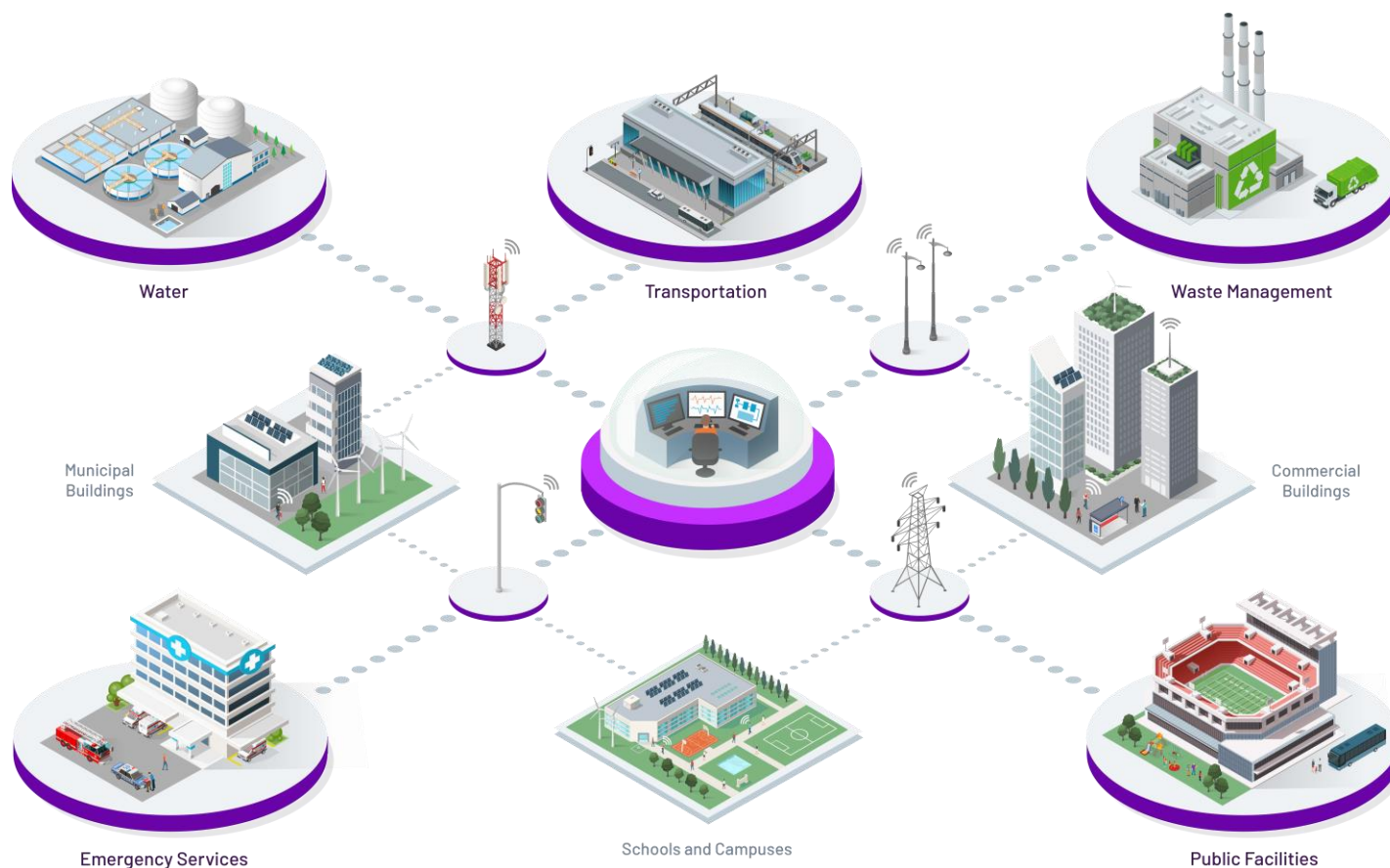
Visibility and multi-org collaboration enabled through agnostic **connectivity, visualization, and sharing**

## 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



# 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





# 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%

- 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**
  - Full write-up: <https://www.wha-group.com/en/sustainability/our-campaigns/governance-economic/1207/unified-operation-center-uoc>





Salem Water Quality Indicators      Indicators      Cyanobacteria      Map

Salem Water Quality Indicators

### Selectors

Select a Date Range

Predefined    Calendar

- All Dates
- Today
- This Week
- Last Week
- This Month
- Last Month
- This Quarter
- This Year
- Last Year

Reset

### HandheldYSI

Selected Records

# 90

Total Records: 4.7k

### pH

HandheldYSI

8.1

### Density Cells per mL

Cyanobacteria

61.3G

### Cyanobacteria

Selected Records

# 673

Total Records: 4.6k

### DO Percent

HandheldYSI

112.8

### Area Counted Total

Cyanobacteria

787.1

### Cyanotoxins

Selected Records

# 262

Total Records: 2.5k

### BGA-PC RCU

HandheldYSI

0.7

Select a Site Code

All	1E	1W	3E	3W	4E
4W	AG	BB	BCR	BO	C2
CFE	HA	HT	LB	LBP	LBS
MG	MI	PK	PS	RF	S2

Salem Water Quality - Cyanobacteria

### Selectors

Select a Date Range

Predefined    Calendar

- All Dates
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- This Quarter
- This Year
- Last Year

Reset

### Algae Speciation

- Bio Volume Percent: 1.15  
Density Cells per mL: 661.69  
Date: September 21, 2021  
Site Code: pk
- Bio Volume Percent: 1.15  
Density Cells per mL: 661.69  
Date: September 21, 2021  
Site Code: pk
- Bio Volume Percent: 2.45  
Density Cells per mL: 6,038.40  
Date: September 21, 2021  
Site Code: bo
- Bio Volume Percent: 0.05  
Density Cells per mL: 539.70  
Date: September 21, 2021  
Site Code: bo
- Bio Volume Percent: 0.12  
Density Cells per mL: 4.53  
Date: September 21, 2021  
Site Code: bo
- Bio Volume Percent: 2.28  
Density Cells per mL: 5,494.17  
Date: September 21, 2021  
Site Code: bo
- Bio Volume Percent: 3.60  
Density Cells per mL: 5,925.62  
Date: September 21, 2021  
Site Code: ht
- Bio Volume Percent: 0.00  
Density Cells per mL: 318.91  
Date: September 21, 2021  
Site Code: ht

### Cyanobacteria

Bio Volume Percent

100

### Cyanobacteria

Density Cells per mL

124G

### Cyanobacteria - Bio Volume Percent

### Cyanobacteria - Density Cells per mL



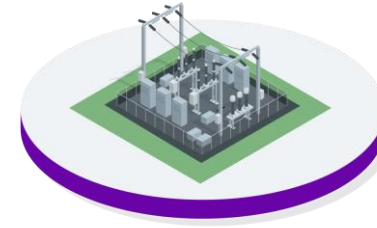
# Existing presence accelerates city-wide digitization & optimization

Water



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

Power



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

AVEVA™ Unified Operations Center

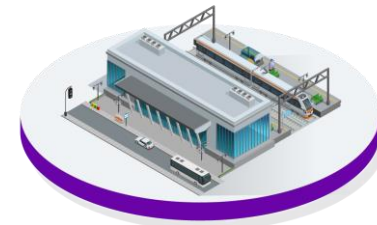


Buildings



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

Transport



AVEVA Marine  
AVEVA PI System

**AVEVA**

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

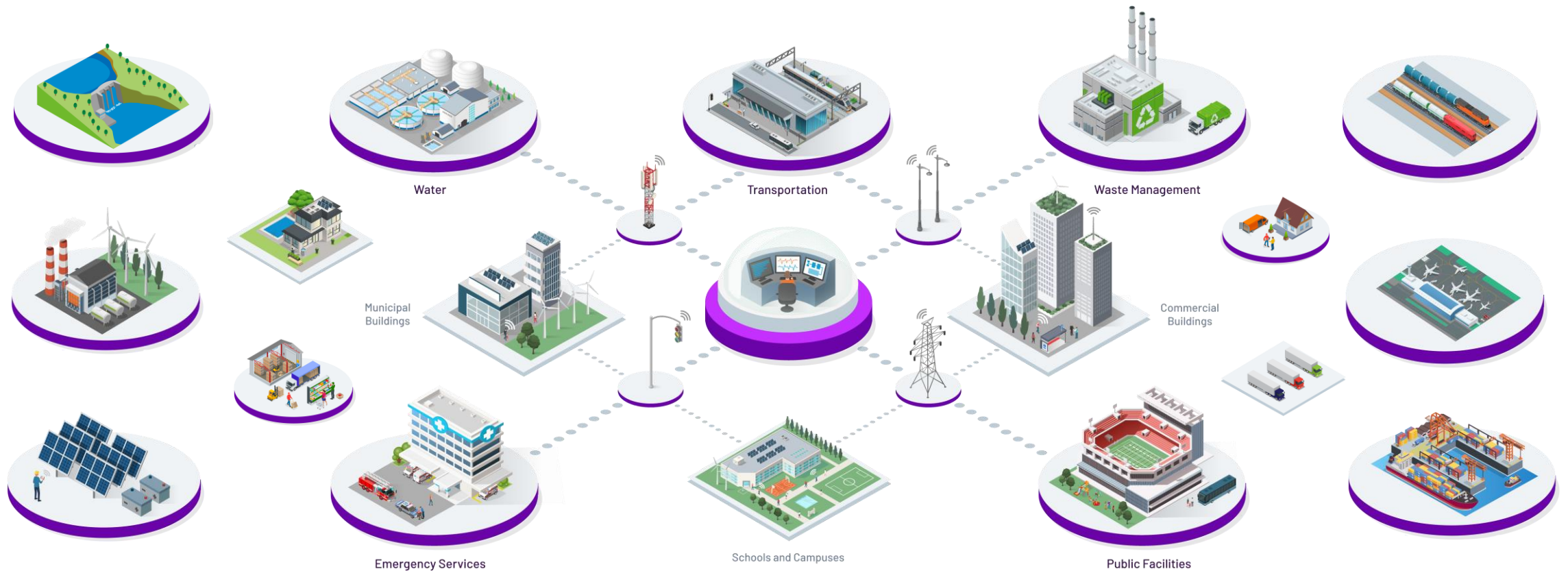


# Smart cities will transform with the connected industrial economy

Clean energy & water value chains

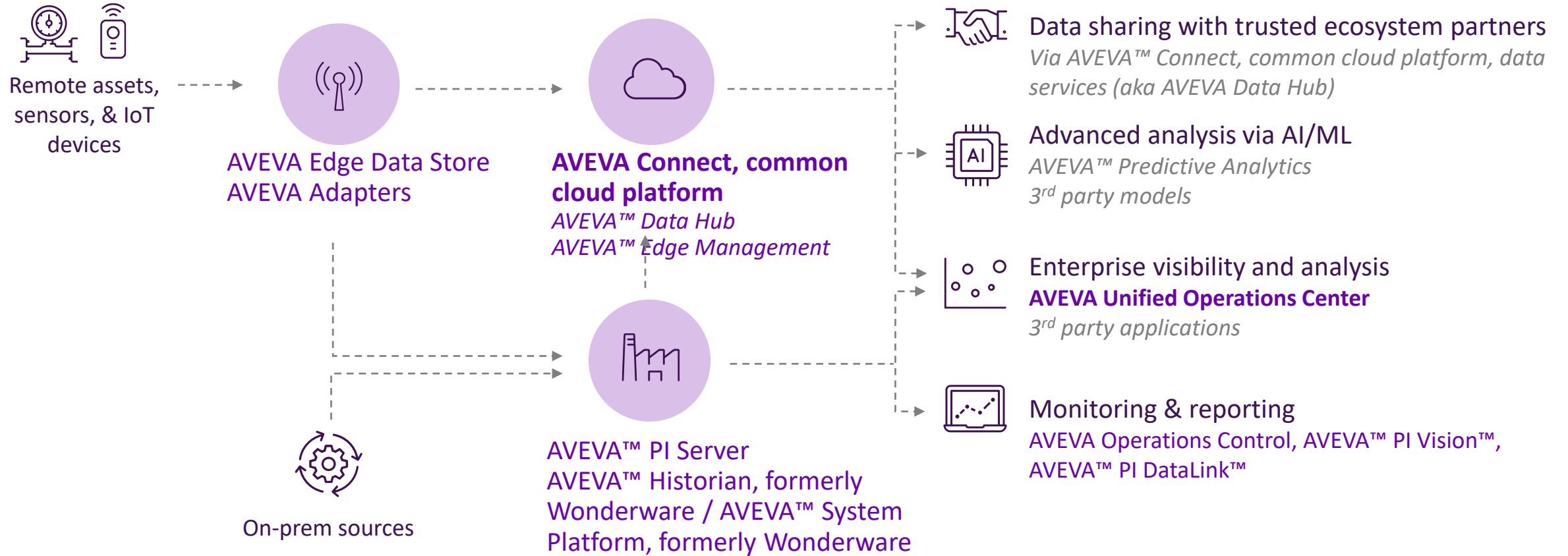
Industrial innovation ecosystems

Smart multi modal transport

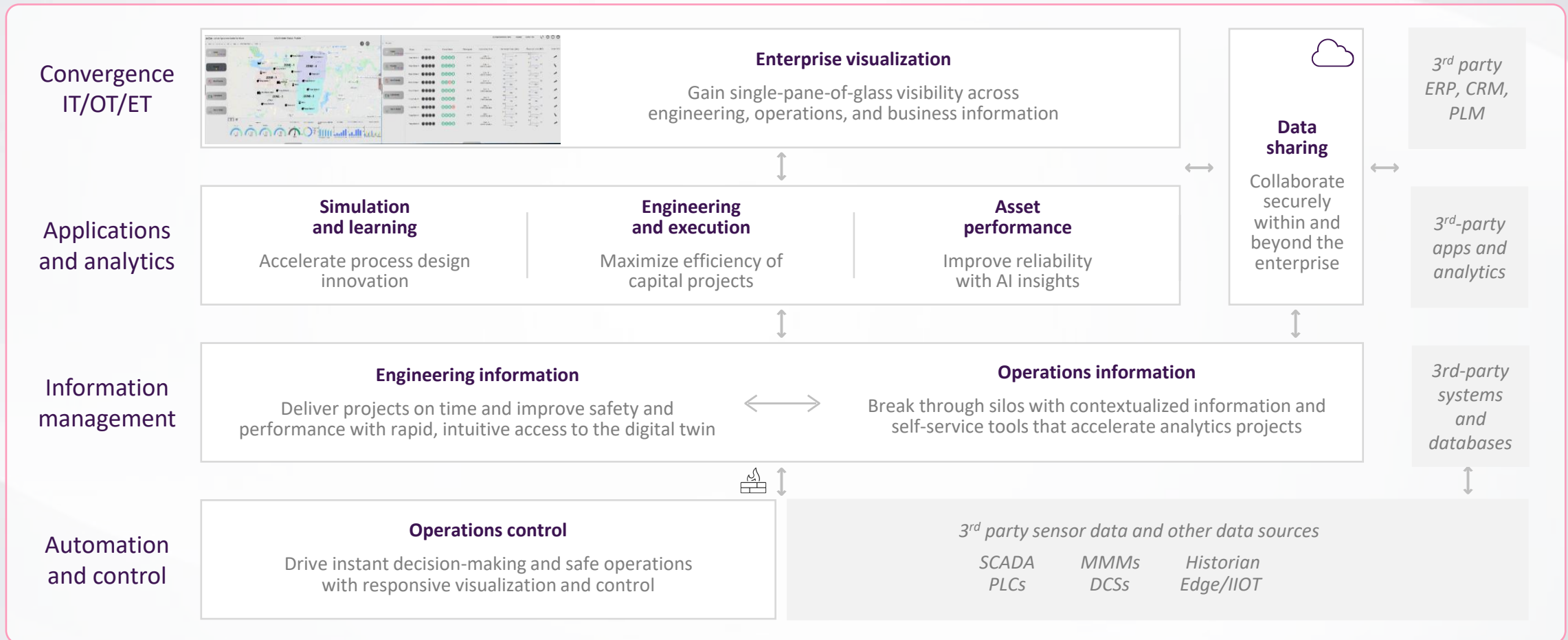




# IoT platform bridges IT/OT, traditional **and new** use cases

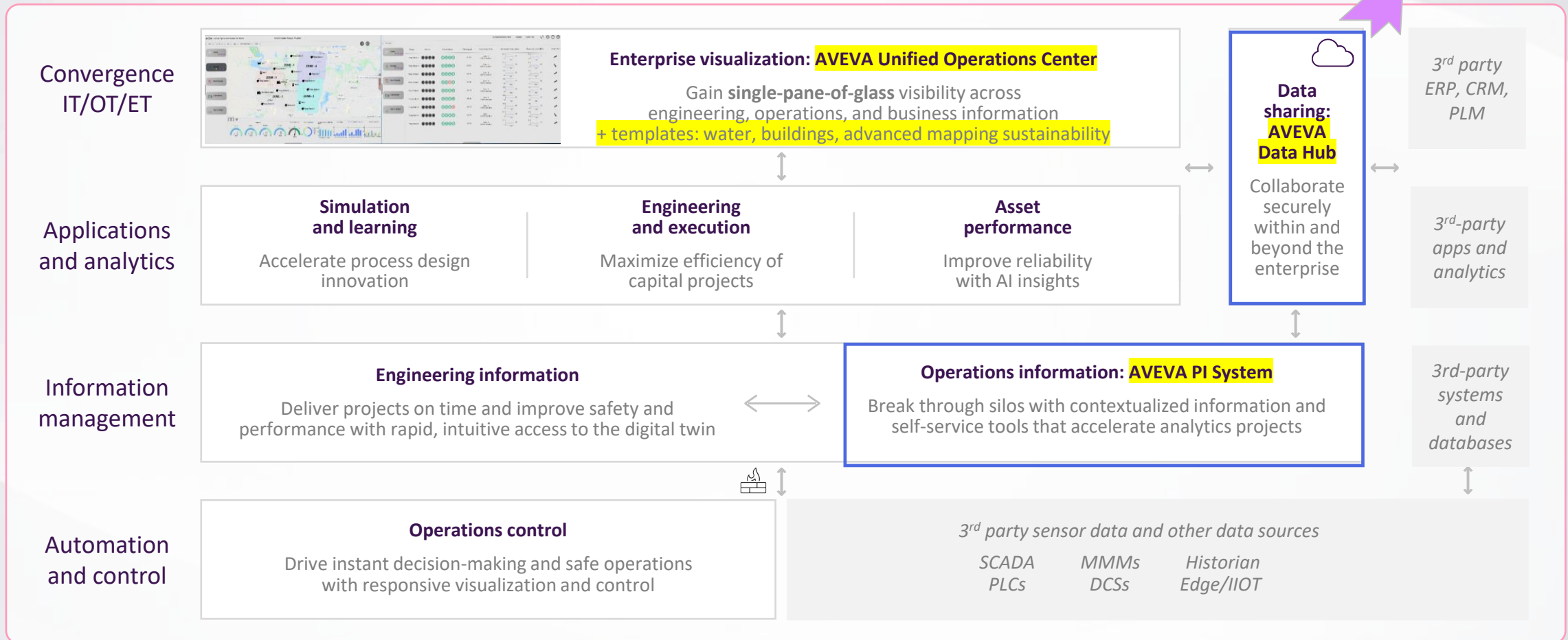


# AVEVA's IoT solution architecture for smart cities



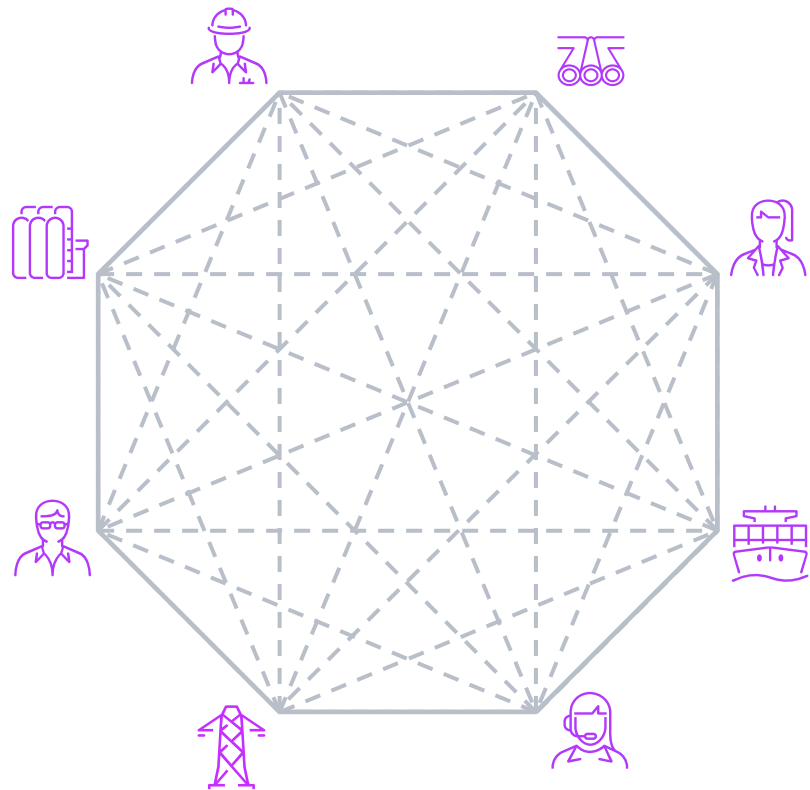
# Acquisition adds **net new** capabilities to our portfolio

Connected industrial economy





# AVEVA's Vision: Enable the **connected industrial economy**



**1. Connect things**



**2. Connect people**



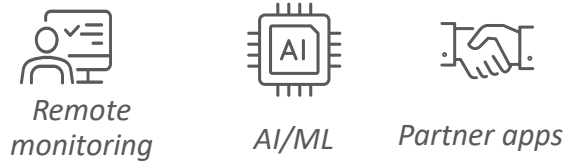
**3. Connect organizations**

**Edge to cloud IIoT platform**

*Companies that share data externally outperform by **3x***

*Opportunity to reduce global emissions by **20%***

# Roadmap: Extend existing investments and accelerate network effect



COMMUNITY

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

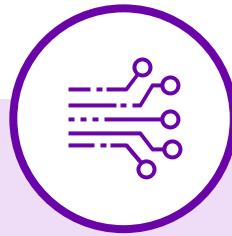
ENTERPRISE

IT/ET  
AVEVA Unified Operations Center

SITE

AVEVA PI Server

EDGE



1. Connect things



2. Connect people



3. Connect organizations

Continued investment in AVEVA Connect, common cloud platform

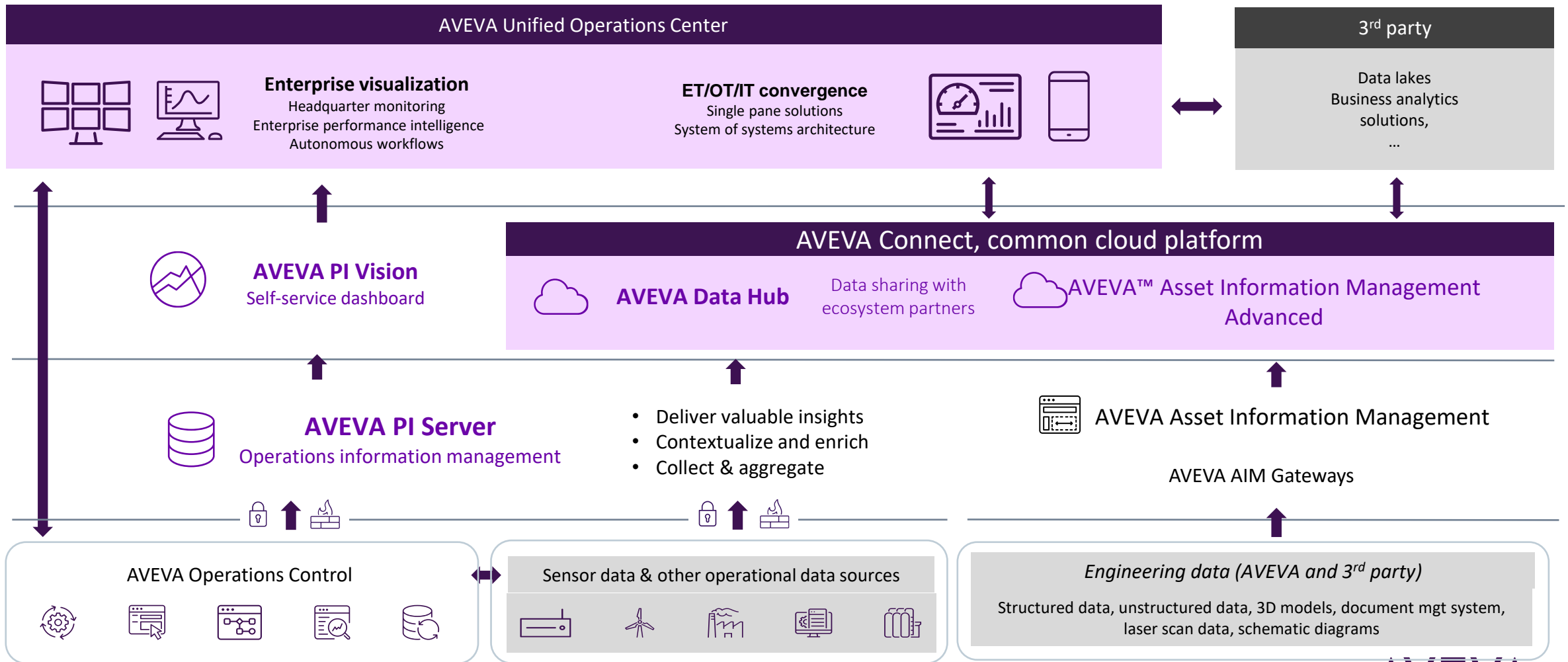
- Additional IoT connectivity
- Continued native integrations

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

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

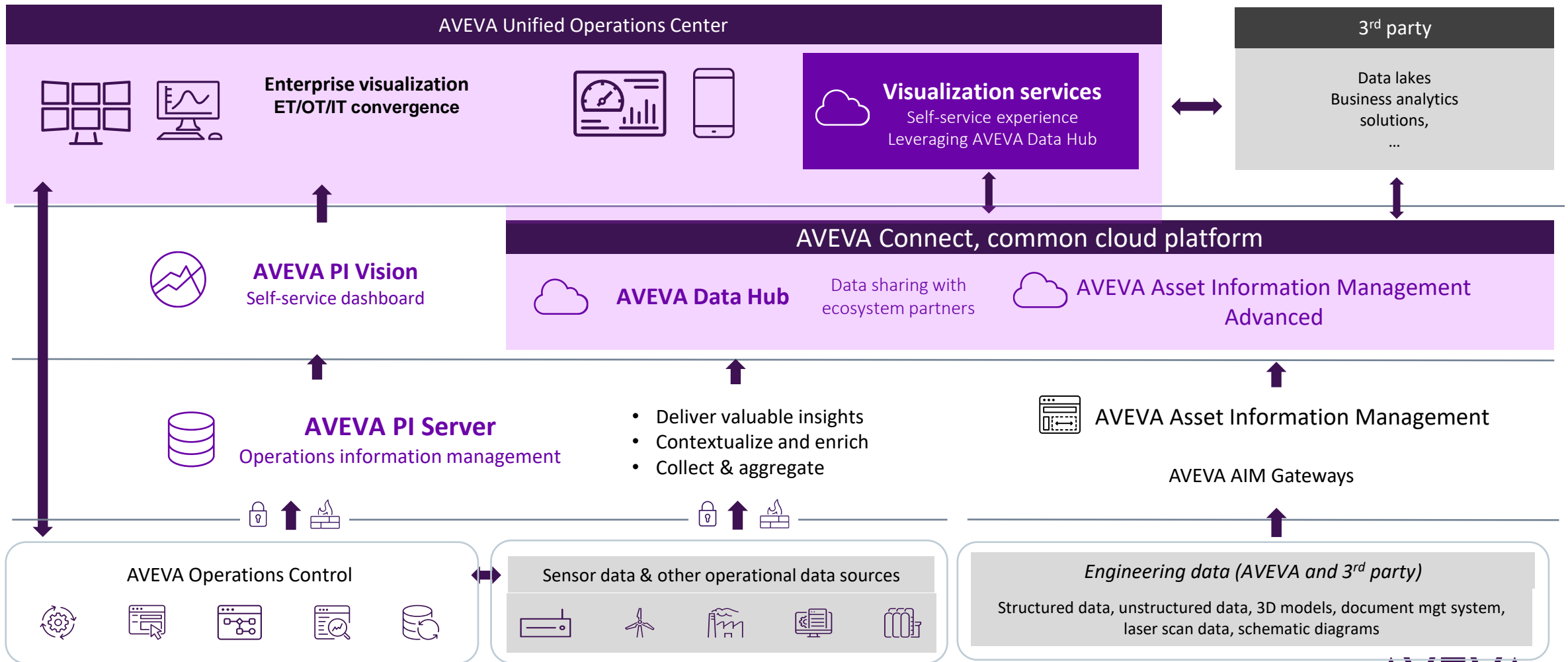


# How customers will experience enterprise visualization roadmap

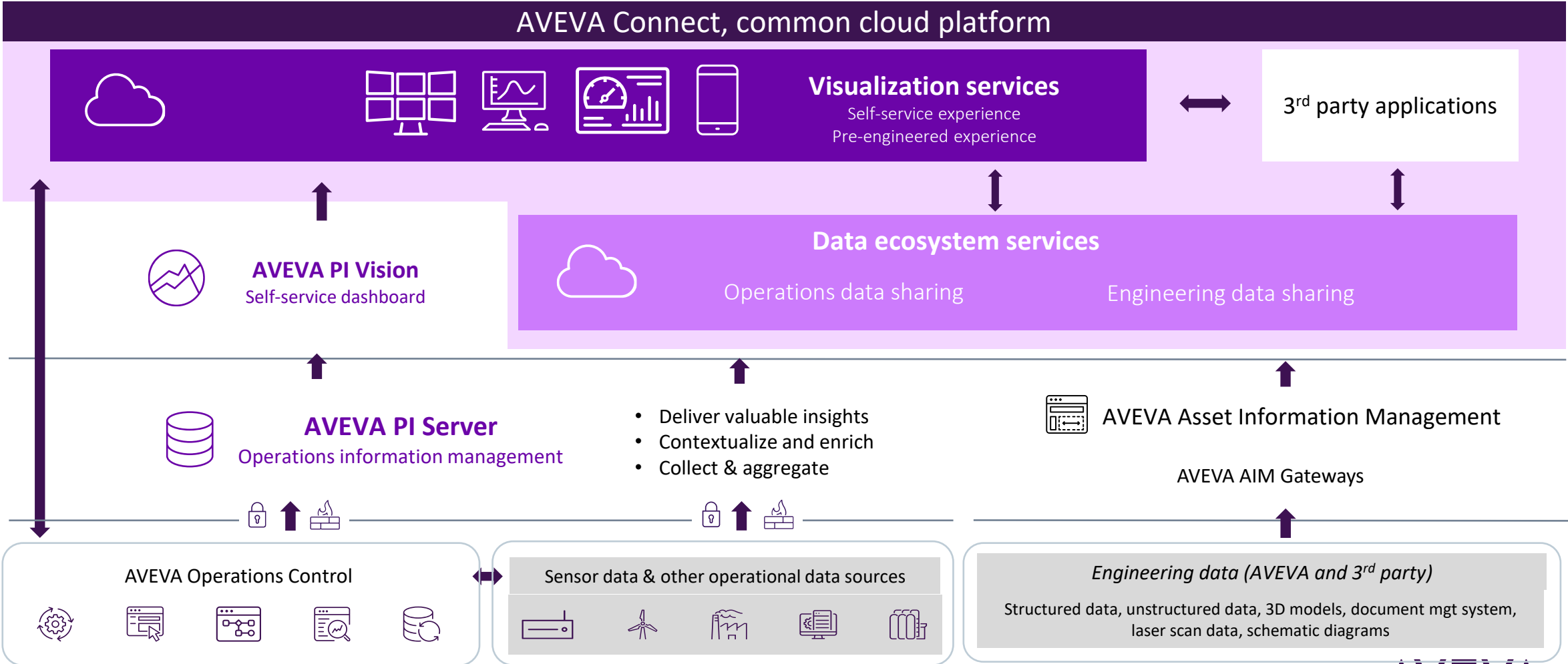




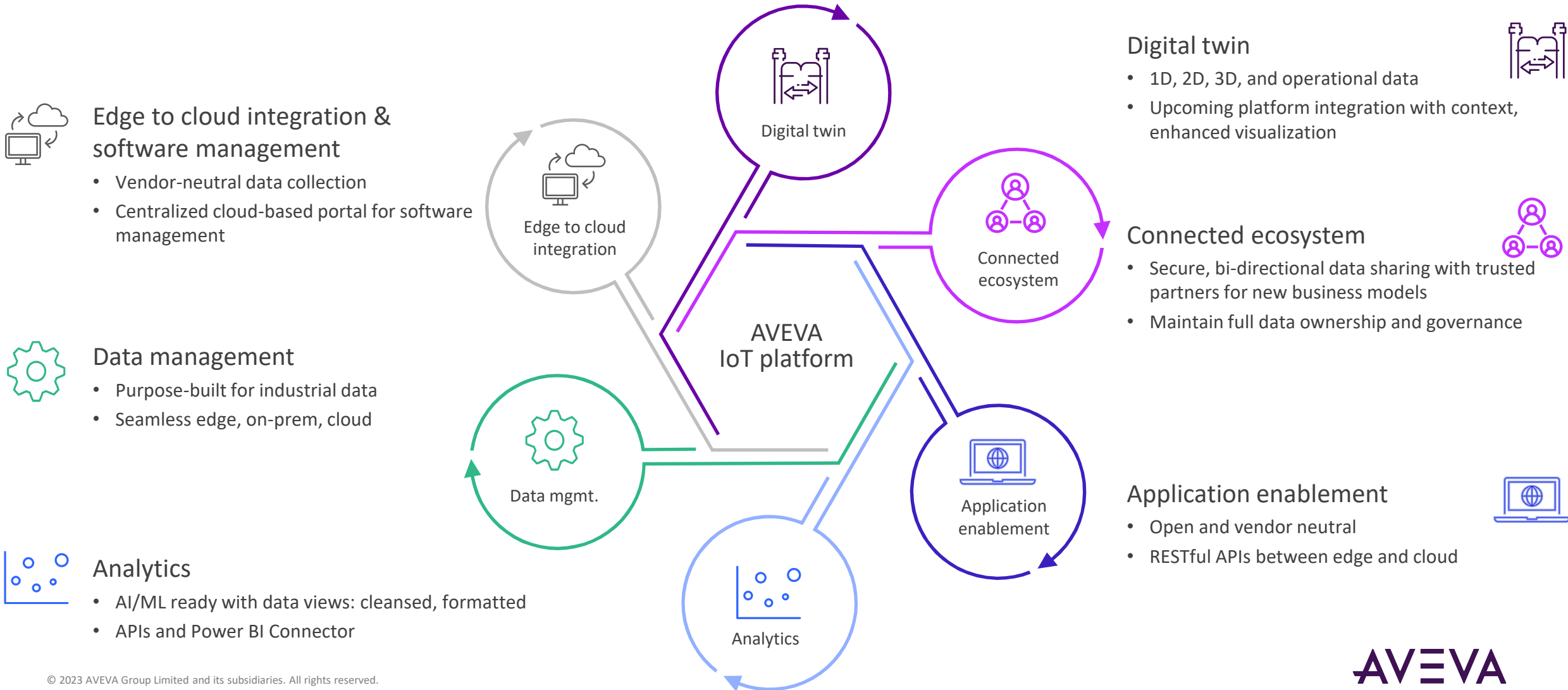
# Enterprise visualization: Phase 1 adds self-service experience



# Enterprise visualization: Phase 2 adds pre-engineered experience



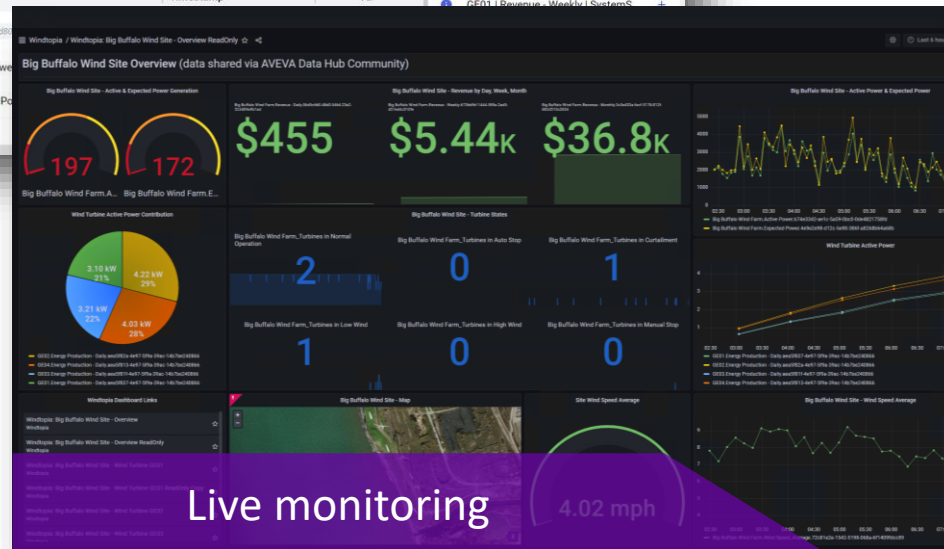
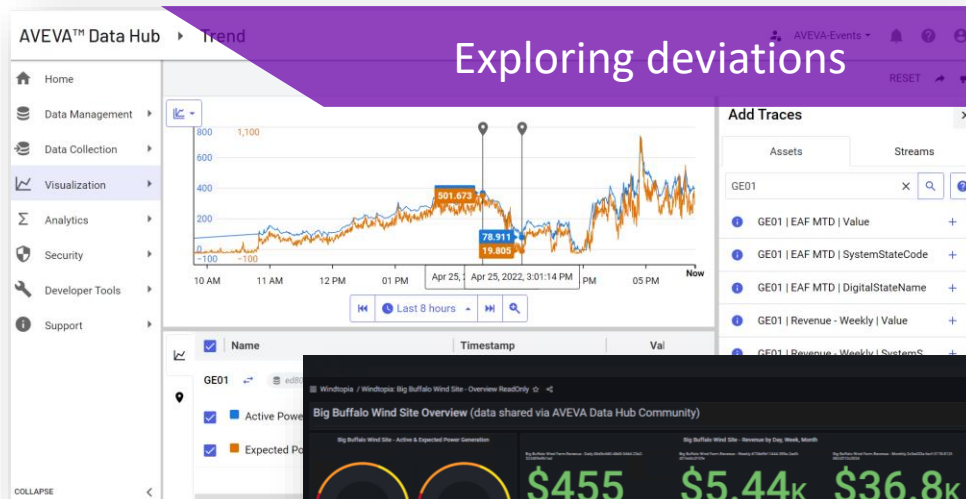
# AVEVA's IoT application platform capabilities and strengths





# Multiple ways to leverage data through an IoT platform

Diverse tools for different types of users





**Total CO2 YTD**  
57,391 ton

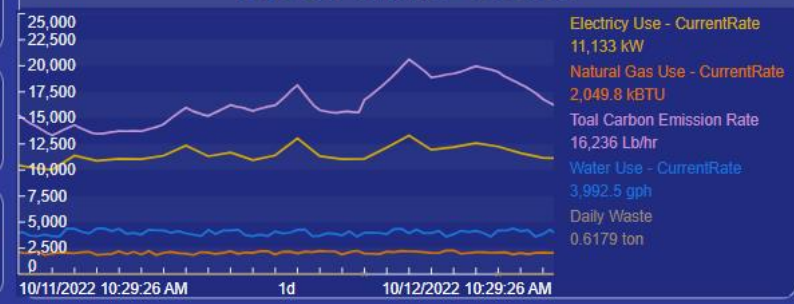
**Cost Savings vs Plan**  
152,053 USD

**Offset Cost**  
1,434,764 \$

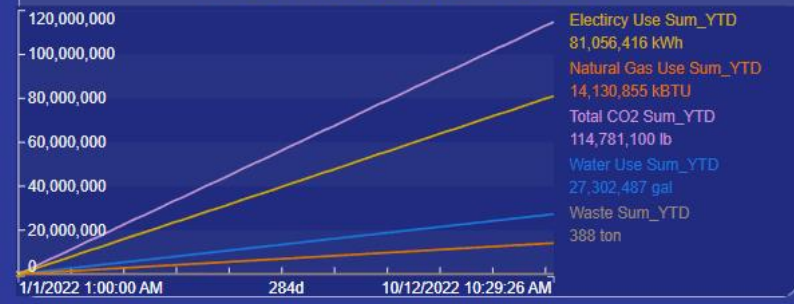
**Site Emissions**  
239.91 Lb/hr  
Direct Carbon Emissions

**Indirect Emissions**  
15,996 Lb/hr  
Indirect Carbon Emissions

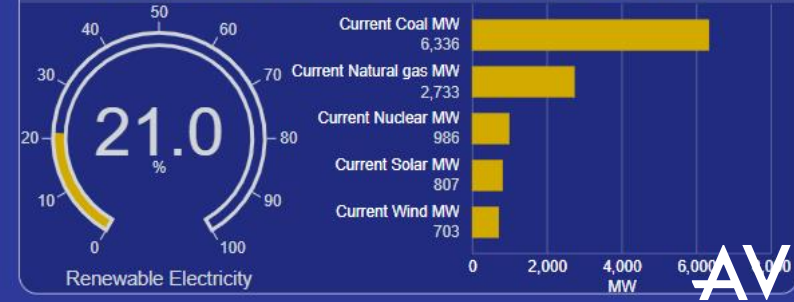
### Real Time Data



### Year To Date Totals



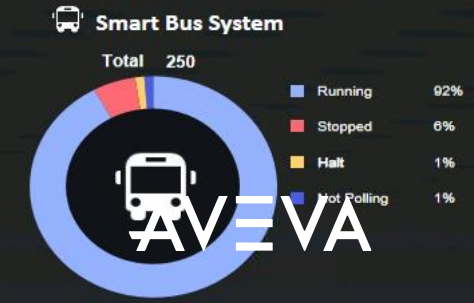
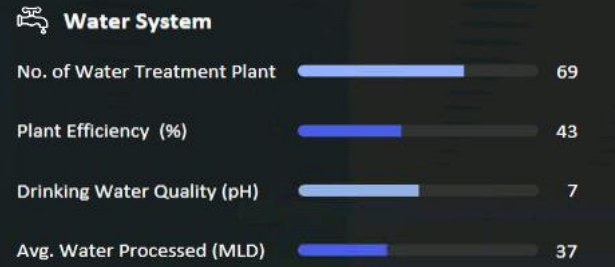
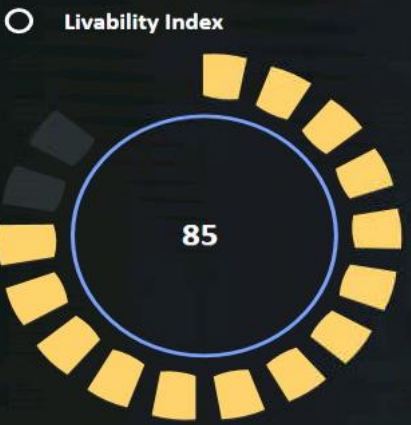
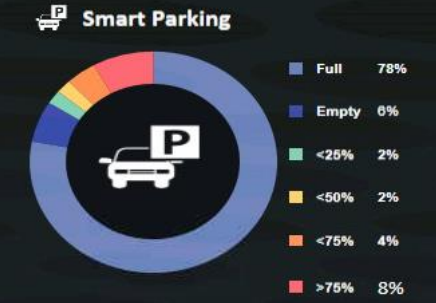
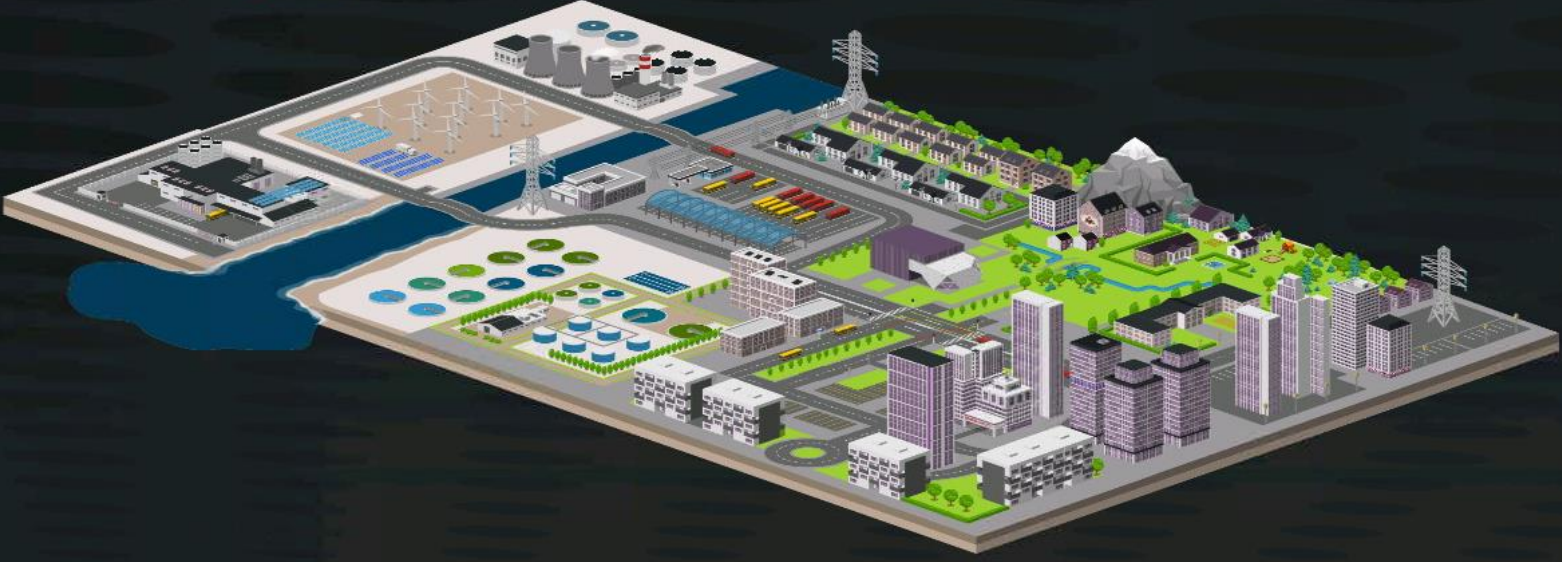
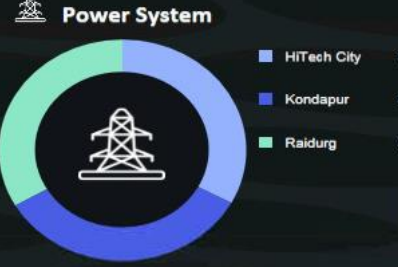
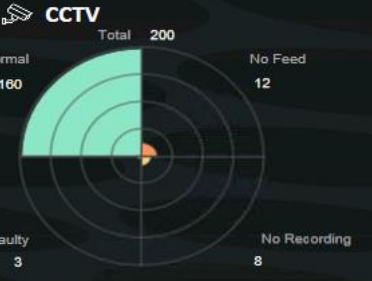
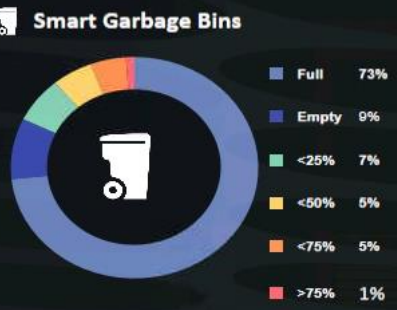
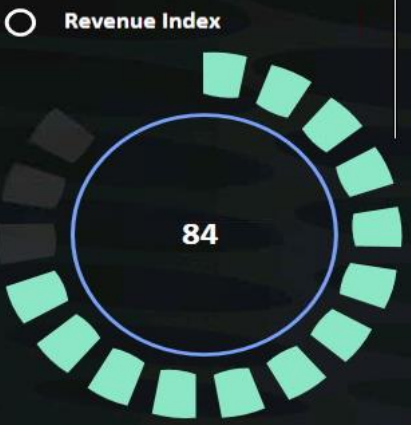
### Local Electrical Grid Sources





# Unified Operations Center for Smart Cities

- Smart Bus
- Street Lighting
- CCTV
- ITMS
- Environment Sensor
- Smart Parking
- Smart Garbage Bins
- STP
- Water
- Power
- IBMS
- SOPs

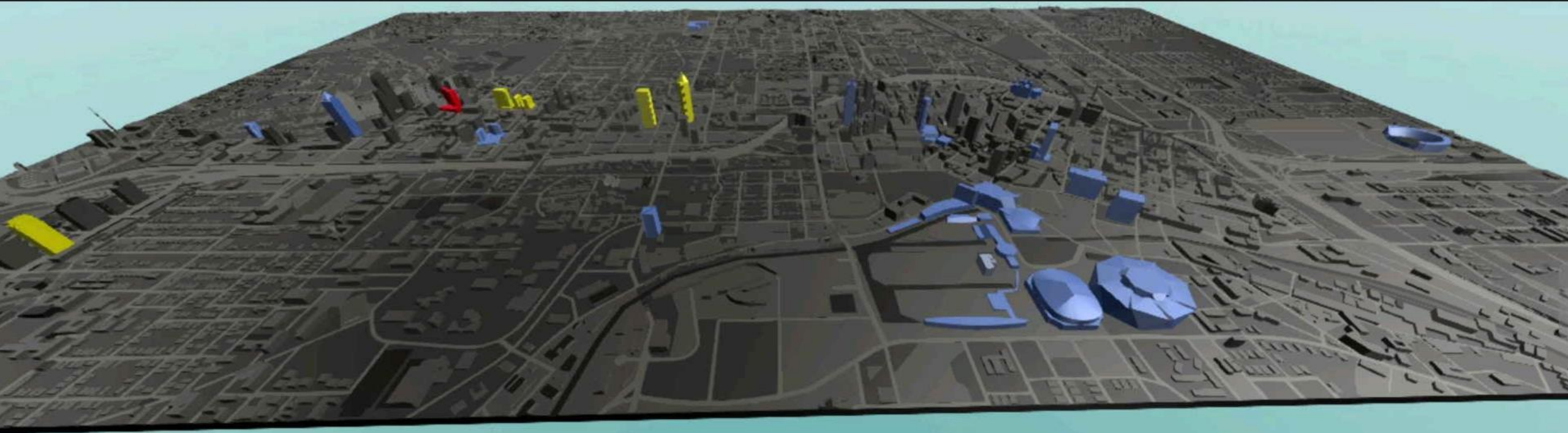




# Unified Operations Center for Smart Cities



- Smart Bus
- Street Lighting
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## Corporate Buildings - Energy Consumption Predictive Status



B_001	Warning	B_011	Warning
B_002	Optimum	B_012	Warning
B_003	Warning	B_013	Optimum
B_004	Warning	B_014	Optimum
B_005	Alert	B_015	Optimum
B_006	Optimum	B_016	Optimum
B_007	Optimum	B_017	Optimum
B_008	Optimum	B_018	Optimum
B_009	Optimum	B_019	Optimum
B_010	Optimum	B_020	Optimum

## KPI

Energy Consumption (KWh)			Water Consumption (M3)		
0	1814	11072	0	6924	41781
Current Month	Last Month	YTD	Current Month	Last Month	YTD
Top Energy Consumption Meter (Current Month)			Top Water Meter (Current Month)		
		0			0
		0			0
		0			0

## SOP Summary

	Active	In Escalation	Reported This Month	Reported Last Month	Reported YTD
AHU-Low Cooling	7	0	0	1	2
AHU-Not Working	15	0	0	1	6
Energy Consumption Predictive Alert	3	0	0	0	1
Energy Consumption Predictive Warning	2	0	0	0	0



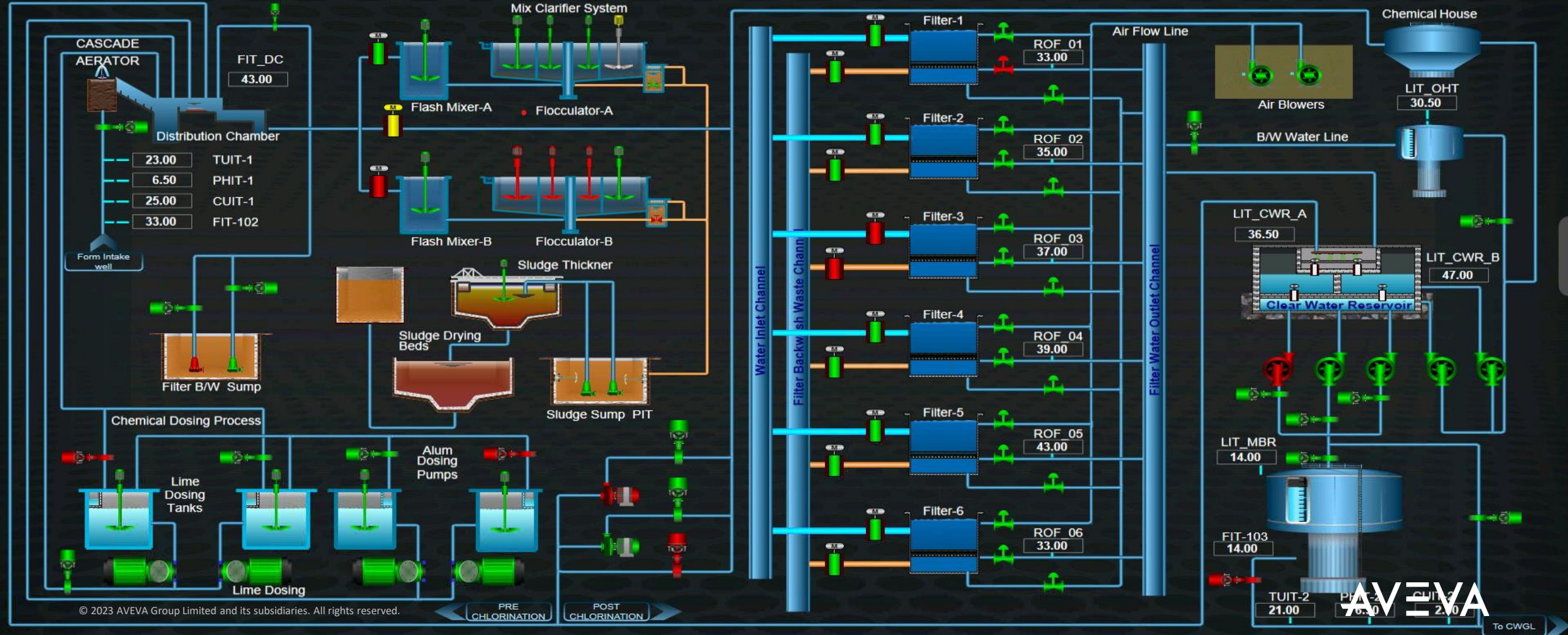


# Unified Operations Center for Smart Cities

Smart Bus | Street Lighting | CCTV | ITMS | Environment Sensor | Smart Parking | Smart Garbage Bins | STP | Water | Power | IBMS | SOPs

Overview | Chemical Dosing | **Mix Clarifier System**

## Water Overview - Main





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# Rob Kambach

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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.



# Thank you!



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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](https://www.aveva.com)