

Unified Operation Center for Cities

System of Systems Approach Unlocks Collaboration and Enhanced Decision Support

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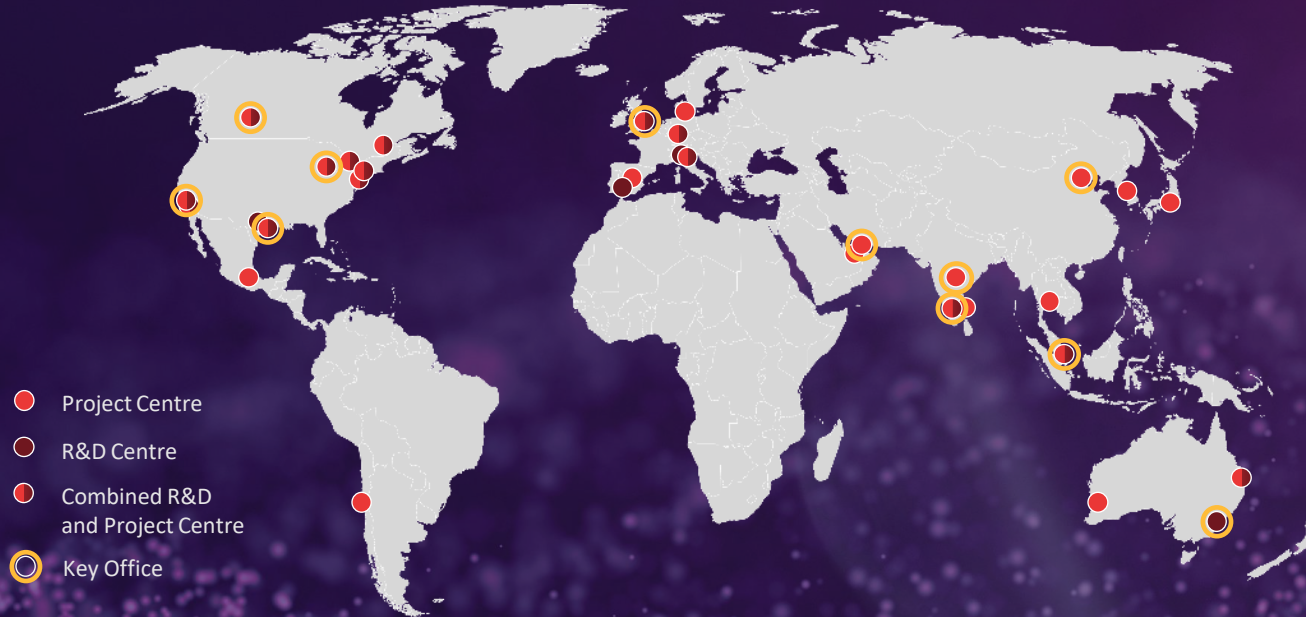
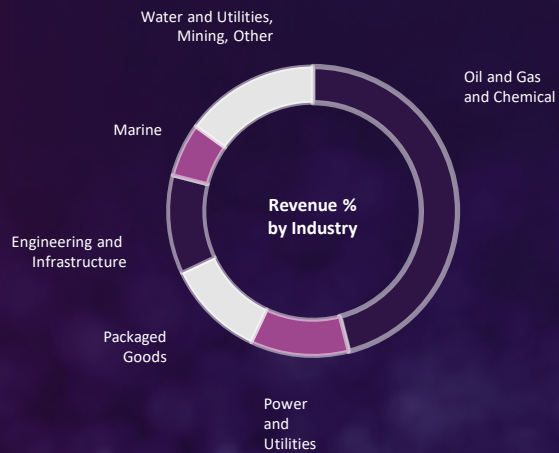
ACE

Industrial Software Solutions

AVEVA

Distributor

Wherever your geography, AVEVA is nearby to collaborate



Collaborating with
16,000
customers

Process
10 trillion+
industrial transactions per day

Monitor
20 billion+
industrial parameters

Storing and managing
12,000+ TB
of information per year

- **4400** people
- **32+** R&D & project centers
- **16%** of sales on R&D
- **85%** of R&D NextGen programs
- **4200** partners
- **5700** certified developers

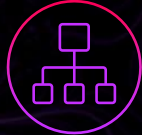
Smart Cities/Infrastructure - A World in Constant Change

MARKET ENVIRONMENT

Rising Urbanization/
Competition for Tax Base



Ageing Infrastructure



Shifting transportation
modes and preferences



Focus on Stewardship
and sustainability



Growing safety, security,
and privacy concerns



Shifting workforce
expectations



IMPERATIVES

**Efficient Use
Of Capital**

**Effective asset investment
planning and maintenance**

**Improve efficiency and effectiveness
of transportation infrastructure**

**Create a sustainability plan
to enhance brand**

**Deploy and manage safety
and surveillance systems**

**Improve workforce efficiency
and capability**

TECHNOLOGY TRENDS



Cloud



IoT/Edge



Mobility



Digital Twin



Big Data, Machine
Learning, and AI



AR/VR

Smart City Drivers

Safety, Efficiency, Sustainability, Livability

- Citizen experience
- Reduced congestion
- Increased public transport use
- Improved emergency response
- Reduced energy consumption
- Land usage decisions
- Safe, reliable water/sanitation
- Many disparate IT/OT system vendors
- Increasing regulatory and safety norms by authorities



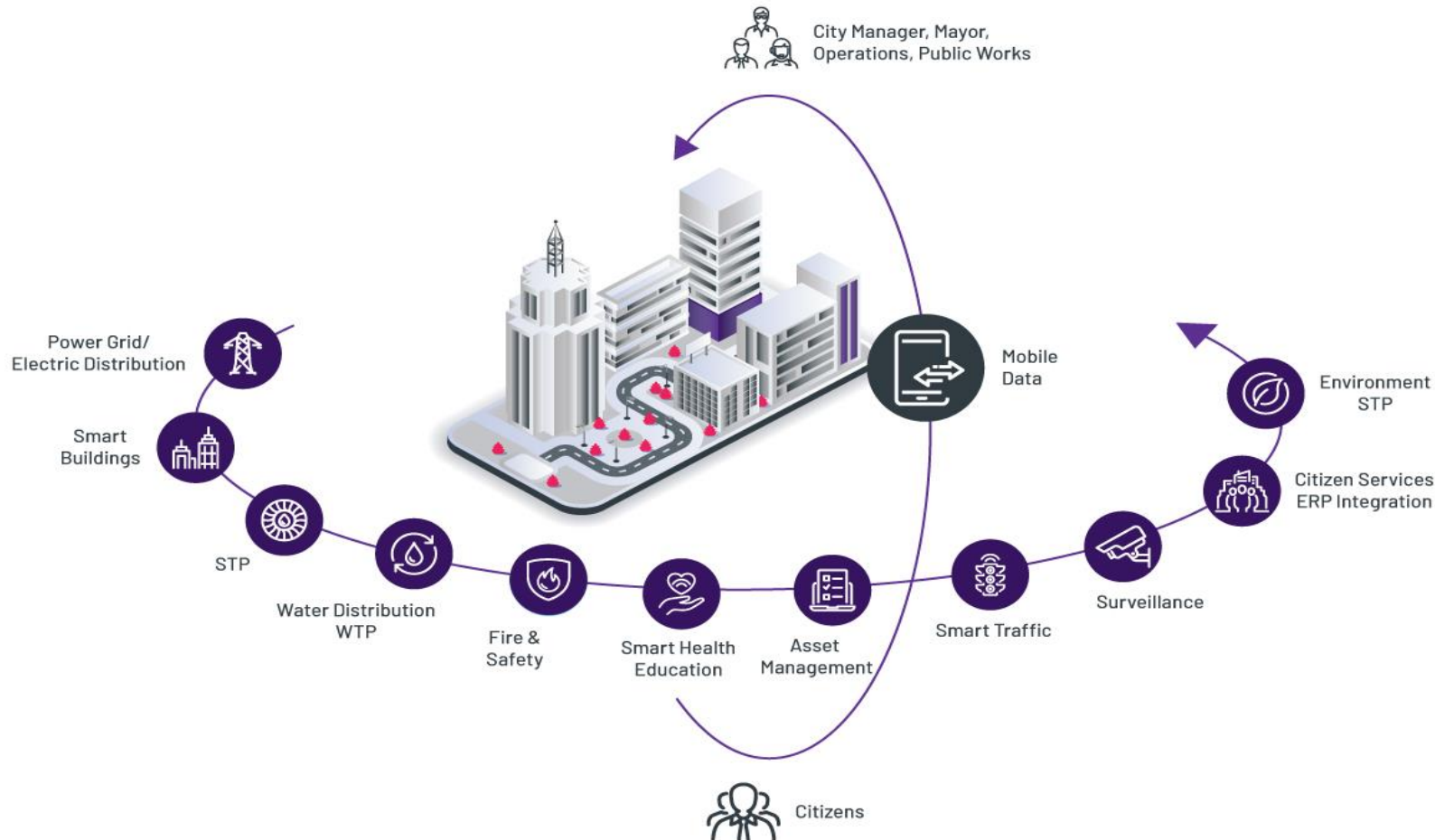
[Source: Smart Cities Council Smart Cities Readiness Guide](#)



AVEVA's Solution Approach

Our Smart Cities Mission

We empower cities to deliver **safer, more reliable, and more efficient** services by digitally connecting **assets, operations, and people**.



Make faster, more informed decisions and speed crisis response

Minimize Risk to People, Assets, and Operations

Reduce Energy and Operational Costs

Optimise Performance of Employees, Assets, and Operations

Single Pane of Glass Operational Command and Control

Delivering a single version of the truth by integrating all available data sources

Map Based Status
& Selector

Real-time KPI
Dashboards

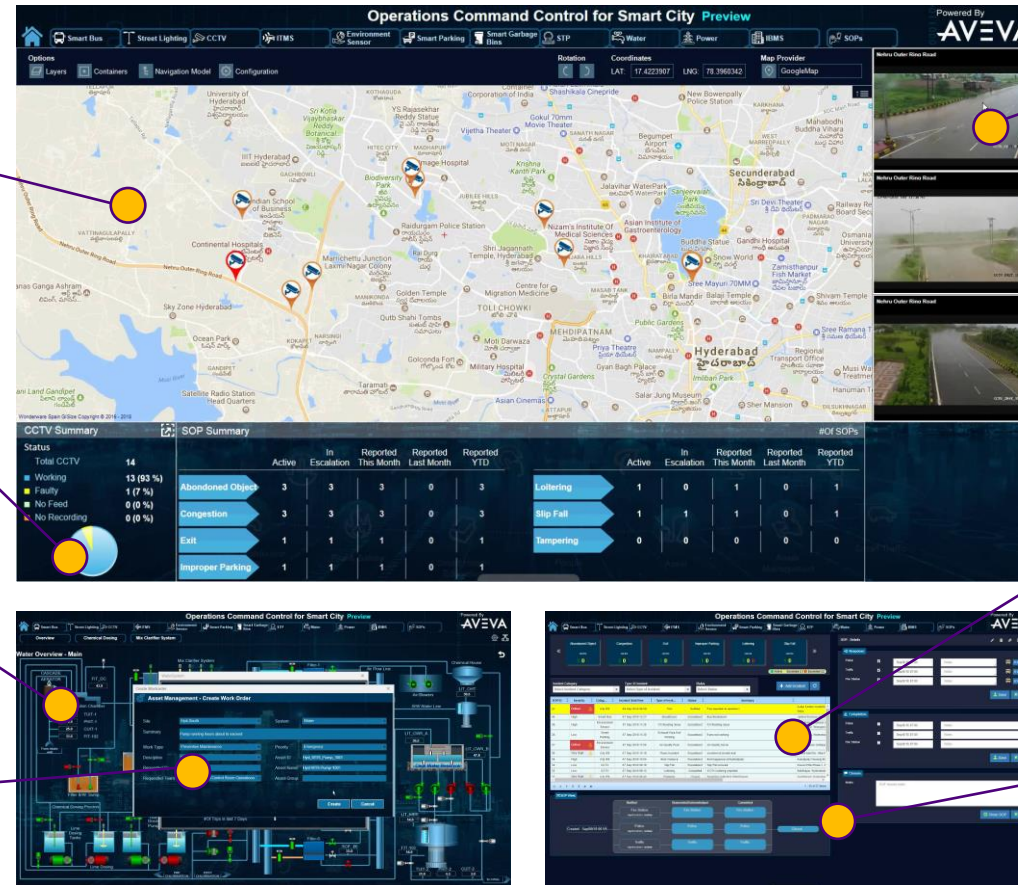
Live Process
Graphics

Integrated Work
Order
Management

Live Camera
Feeds

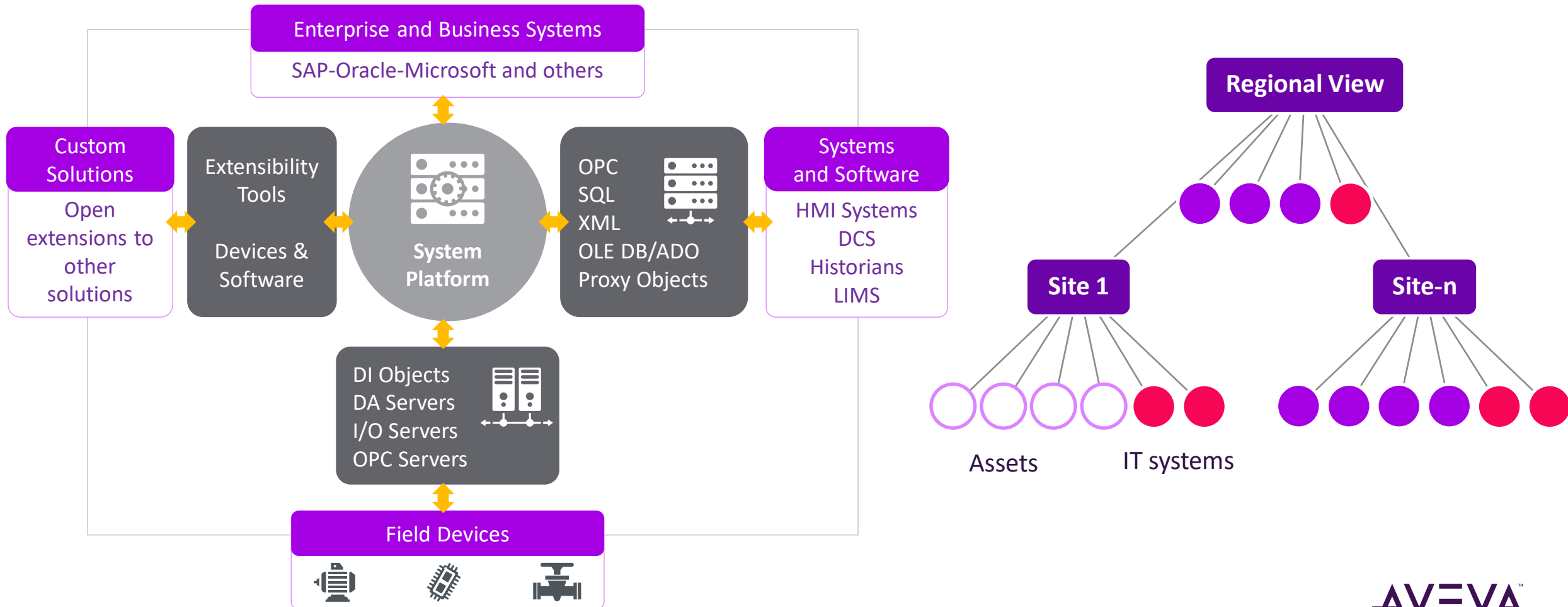
Alarm Grid

SOP Dashboard &
Detailed View



Unifying System of Systems Approach

Connect, Collect, Integrate, Analyze, and Act from disparate data sources across multiple sites



Why AVEVA?

Unmatched technology, experience, capability, and approach



More than Visibility

Content/Context
at the **CORE**

- Experience with mission critical systems
- Scalability: Apt for Large/Global integration projects
- Cross-Domain Experience: O&G, MMM, Water and Wastewater, Power, Smart Cities, Facilities, Airports, Ports, Rail, Tunnels
- Platform-centric and templated solution
- Standardization at everything we do
- Support for all devices
- Unique deployment approach
- Hardware-agnostic approach
- *Build-once-deploy-anywhere* approach
- Ability to integrate any systems creating Systems of Systems
- Seamless IT/OT Convergence and establishing single pane of glass



Customer Success Stories

Naya Raipur Development Authority

India's First Green Field Smart City

• Challenges

- Rapid urbanization creating severe pressure on city resources
- Unequal distribution of city resources causing lack of social inclusion
- Livability challenges for citizens related to environmental sustainability
- Inefficient city operations creates citizen frustration

• Solution

- Leveraged System Platform, InTouch HMI, and Workflow to create an integrated command and control centre
- Integrated grid, water, building, street lighting, rapid transport, CCTV, e-governance, energy management and city help desk applications

• Results

- Unified Smart City platform developed and deployed
- Well satisfied customer with a solution of which they feel proud
- Created a live reference for other cities pursuing a similar Smart City initiative as part of a government mandate
- Developed technical and domain knowledge
- Ready template for future deployments

“Extremely well conceptualized, planned & executed. Naya Raipur will enable Chhattisgarh to technologically leap frog with its state of the art Central Command Centre. The infrastructure created is world class. The city is futuristic.”



Built to accommodate

5.6 million

residents by 2031



1 Control Center

for multiple infrastructure systems throughout the city



100K+ I/O Points

integrated to achieve system

AVEVA

City of Barcelona

Centralized Control of Real-Time Information

- **Challenges**

- A solution was needed to enhance the availability and functionality of the city's resources such as elevators, escalators, public fountains, parks and gardens
- More effectively manage the city's water consumption for both irrigation and public use
- Implement a scalable system that enables the integration of new city processes and facilities

- **Solution**

- Leveraged System Platform and InTouch HMI (Standard Edition) to create a centralized control room solution to ensure real-time information availability across multiple city infrastructure functions

- **Results**

- The city has optimized water consumption via a communications infrastructure built upon the existing irrigation network via a customized SCADA system
- Wonderware System Platform provides a modular structure composed of standardized communication equipment and protocols ensuring connectivity between existing and future systems, as well as scalability to adapt to the needs of the city
- The open platform allows seamless management in real-time of tailored-made applications via a centralized control system

“ The remote monitoring of infrastructure processes is key to our success. The integrated software solutions enable our team to ensure energy use and supply of water is optimized to coincide with public demand. ”



Managing infrastructure for
1.6 million
residents



1 Control Center
for multiple infrastructure
systems throughout the city



Rapid Expansion
to new systems using object-
oriented system model

El Prat International Airport

Centralized Control of Barcelona's International Gateway

- Challenges

- Airport control systems handle thousands of signals simultaneously and present this information simply and in context to enable operators to quickly and accurately interpret it.
- The existing control platform required operators to learn up to 20 different technologies and tools, so training was difficult, operations were not smooth, stress was high and costs were rising.

- Solution

- Leveraged System Platform, InTouch HMI, Historian, and Information Server to create an integrated command and control centre for all airport operations
- Developed common interface for all control systems / PLCs regardless of vendor
- Integrated climate, mechanical transport, plumbing, sanitation, lighting, pneumatic waste, low voltage, and fire detection systems

- Results

- The AVEVA solution controls the processes throughout the airport that manage the terminal building, cooling and heating power plant, as well as auxiliary buildings for luggage transport.
- The system, which originally managed 35,000 signals, now handles 700,000 inputs through 80 servers that make up five control environments. In the final phase, signals are expected to increase to nearly one million.

“The centralization of operations that we get with Wonderware helps manage around 700,000 signals and is essential for a critical infrastructure like this. We can now quickly respond to incidents and also be proactive in optimizing management.”



Ensuring safe travel for
30+ million
passengers per year



1 Control Center
for multiple systems
throughout the airport

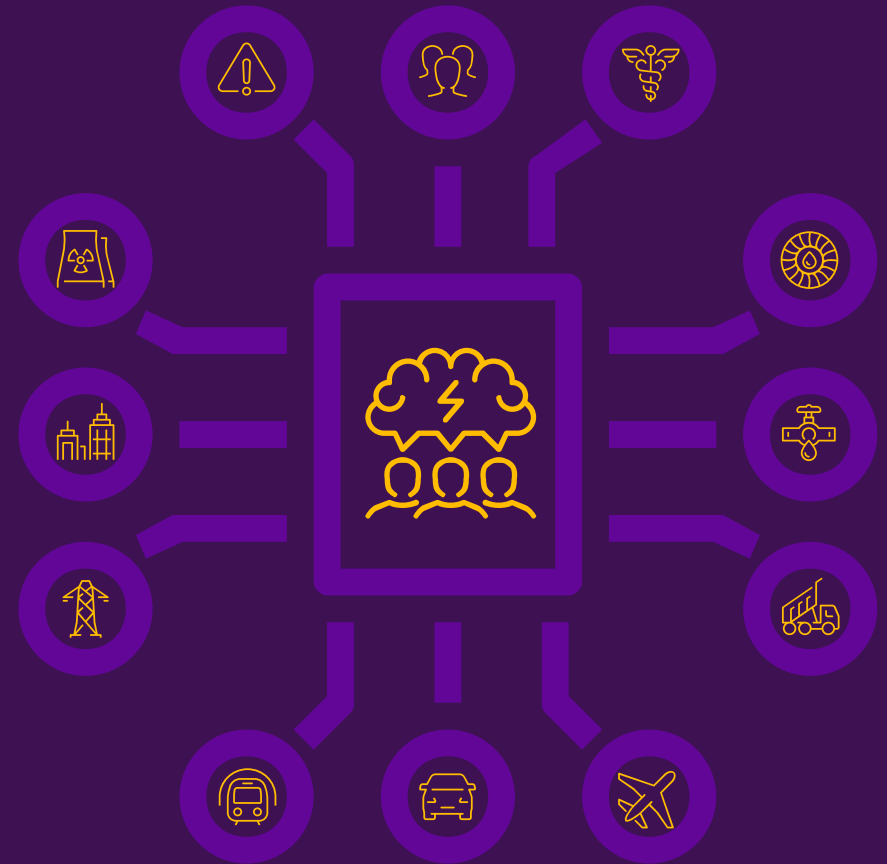


700K+ I/O Points
integrated to achieve system

Unified Operations Center for Cities

Connecting Assets, Operations, and People to Improve Operational Efficiency and Decision Support

- **80% increase in Engineering Efficiency** through reusable, modular approach, processes and operations optimization.
- **40% increase in Operational Efficiency** via improved situational awareness, data exchange, standard process deployment and workflow management.
- **50% increase in IT Efficiency** based on cybersecurity, redundancy, vendor-agnostic seamless integration, and zero-client install.



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