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Hybrid cloud architectural design considerations for AVEVA™ Operations Control

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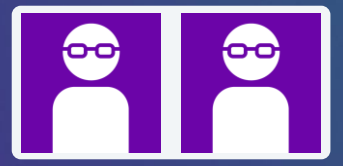

AVEVA

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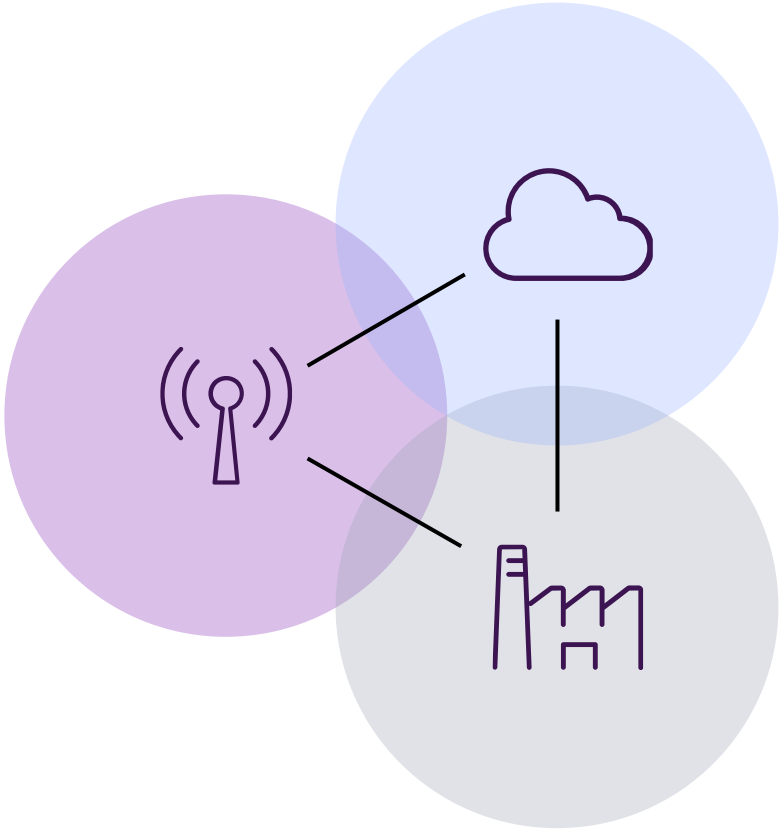
What is a hybrid cloud architecture?

Edge to cloud architectures support OT, IT and IIoT

Key terms

At the **edge**

Pervasive, real-time data collection from sensors, IIoT devices and remote assets



In the **cloud**

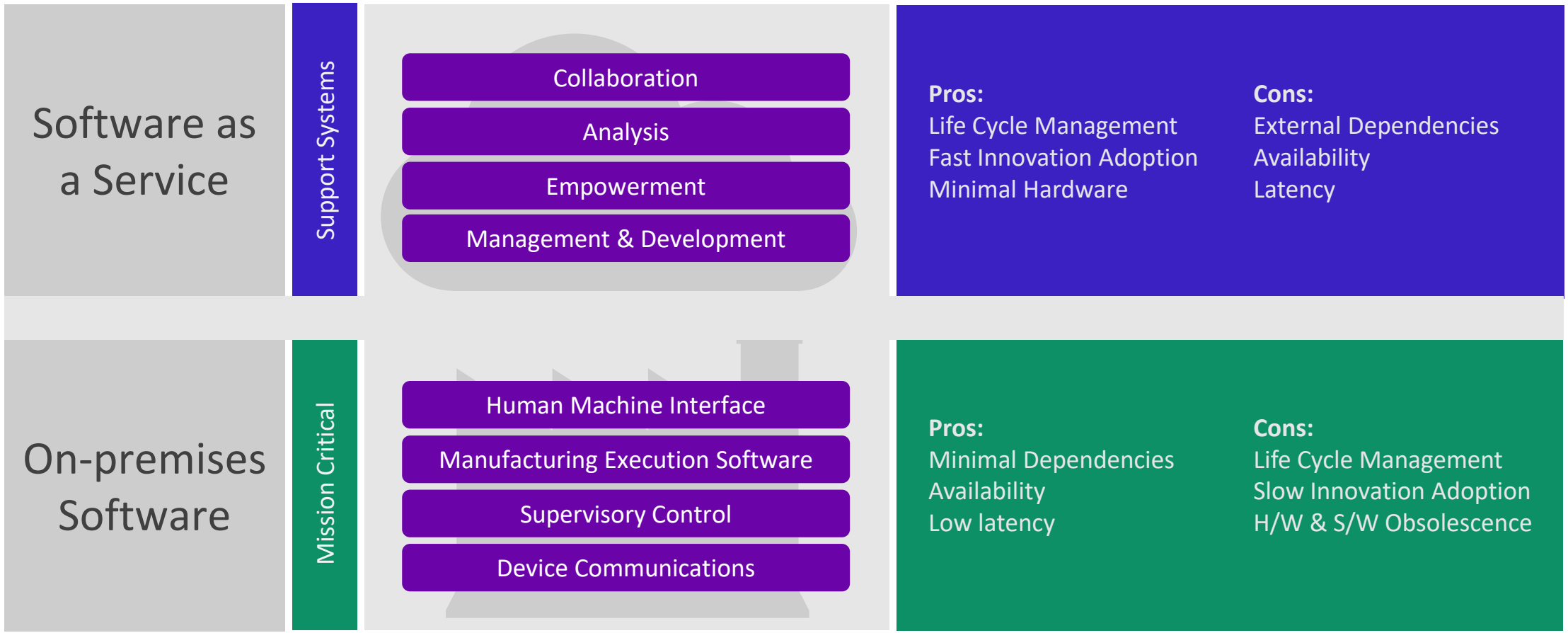
Scalable data services available for a wider array of users, tools and applications

On-premises

24/7 availability for critical operations

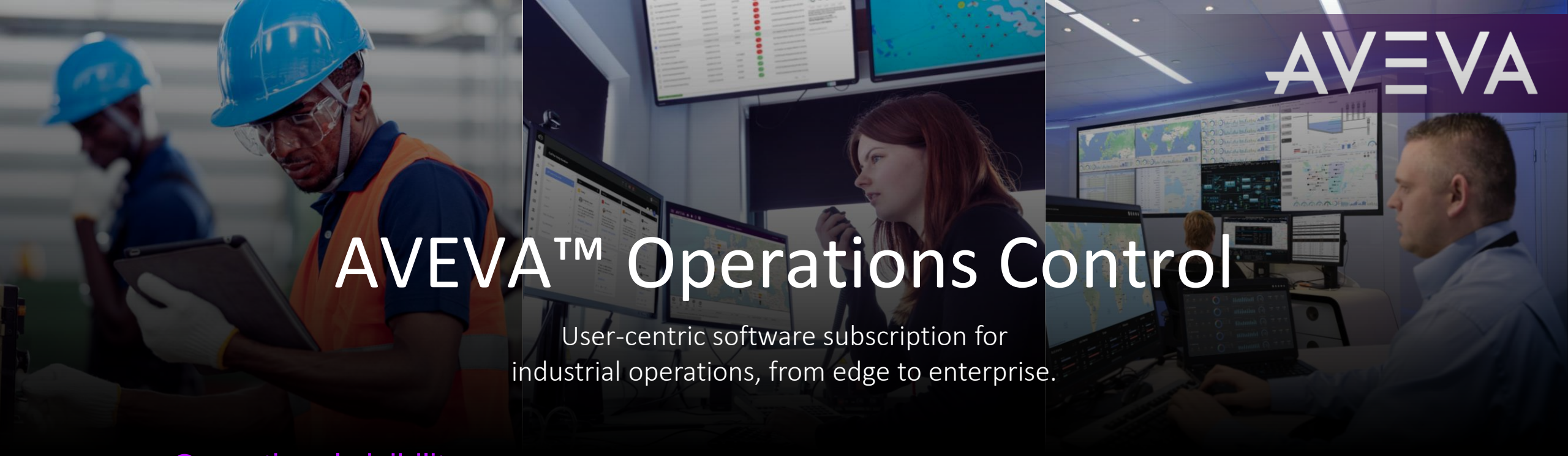
Hybrid SaaS software strategy

Leverage advantages of both on-premises and software-as-a service for industrial operations



Things to consider in a hybrid cloud environment:

- Where does data or information originate?
- Where does it get stored?
- Who needs access to the data or information?
- How will they access it?
- What form do they need to see it in?
- What other information is valuable to have alongside?
- Where else does data need to go?



AVEVA™ Operations Control

User-centric software subscription for
industrial operations, from edge to enterprise.

Operational visibility

Gain a clear perspective into operations relative to the user's role through superior visualization applications.

Data analysis

Drill-down through information layers and leverage tools that allow users to examine data in detail.

Digital thread

Ensure everyone can interpret the same outcomes and remove the burden of recreating data sets and insights.

Collaboration

Bring teams together and promote operational continuity through messages, chat and calls for help.

Coordination & Learning

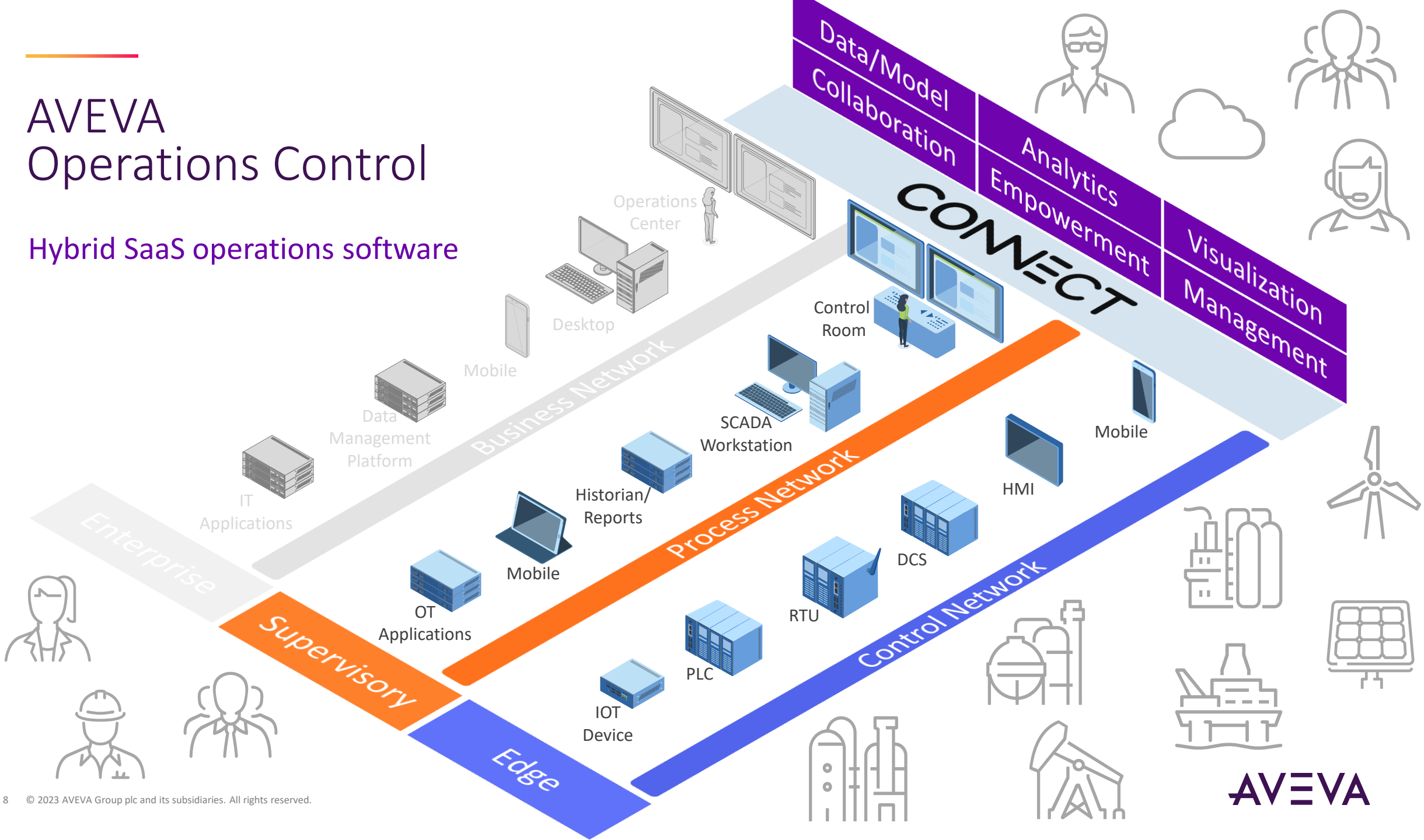
Develop skillsets and retain knowledge digitally to reduce onboarding and time away from operations.

Vendor agnostic

Software purpose-built for industry and leveraging a wider set of AVEVA and 3rd party devices and applications.

AVEVA Operations Control

Hybrid SaaS operations software



Types of *edge visualization*

Panel-based Operations

Static workforce

Operation and maintenance teams perform tasks, monitor equipment, and ensure production efficiency at stationary displays and control stations located on or near the process equipment.

Tablet-based Operations

Mobile workforce

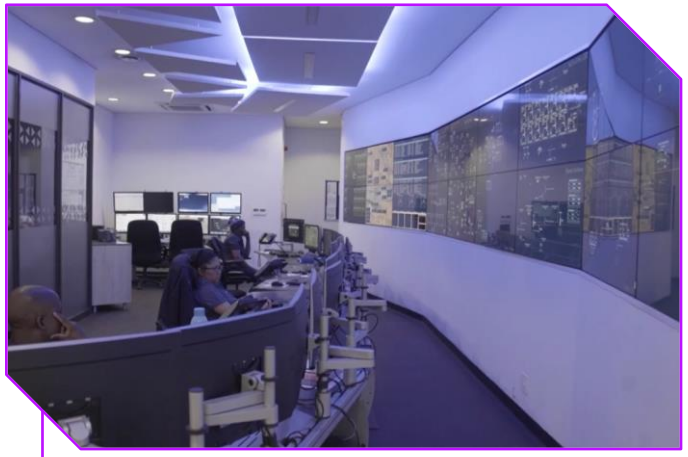
Mobile technicians utilize tablets and other connected devices to perform tasks and monitor the performance of field-based assets or equipment without stationary displays.

Off-site Operations

Remote equipment access

Operations use case benefiting from remote connection to individual equipment controls that are operated in a non-aggregated environment for security or other management purposes.

Types of *supervisory visualization*



Control Room

Operations administration

Centralized control team accountable for managing production performance and providing workforce guidance across site-based or geographically dispersed operations.

Area Workstation

Facility and process oversight

Segmented operations user with broad process supervision and dispatching responsibilities for both site-based and geographically dispersed operations personnel.

Mobile Supervisor

Operational management

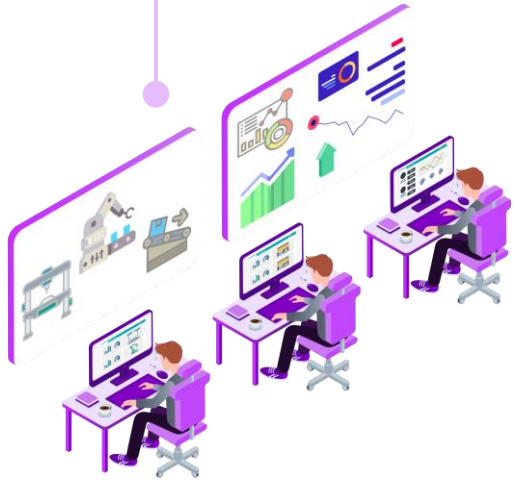
Managers as a connected worker charged with guiding stationary and mobile operations teams using tablets and other devices to ensure schedules and production requirements are met on time.

Rethinking HMI/SCADA means a holistic approach that empowers connected workers

- Mobility through unlimited visualization
- Cloud to enhance collaboration and knowledge sharing

- Ensure everyone operates from the same digital thread
- Providing process guidance to increase decision agility

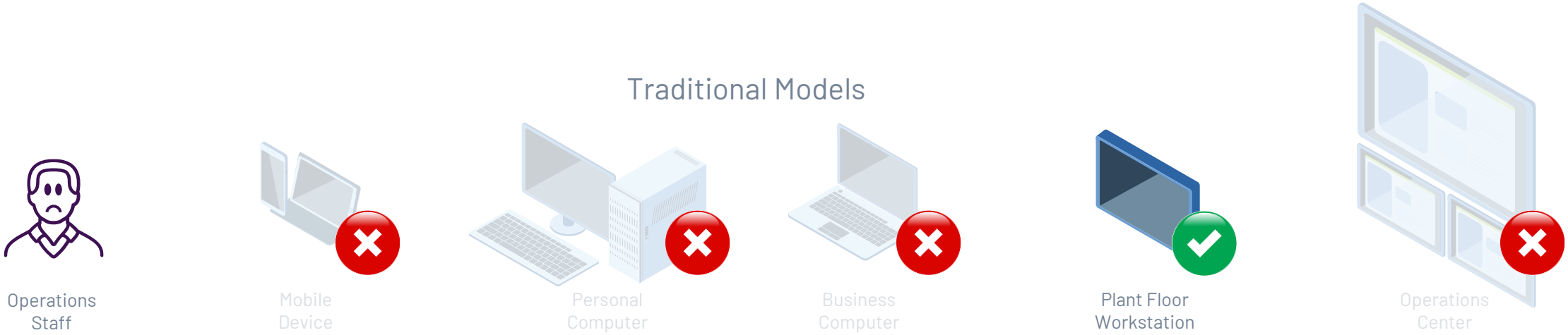
- Augment with unstructured and ad-hoc information
- Leverage machine learning and AI capabilities



Device flexibility for the connected worker

Powered by AVEVA Connect user based commercial model

Traditional Models



AVEVA Operations Control

Users move between devices and expect consistency

Components of AVEVA™ Operations Control

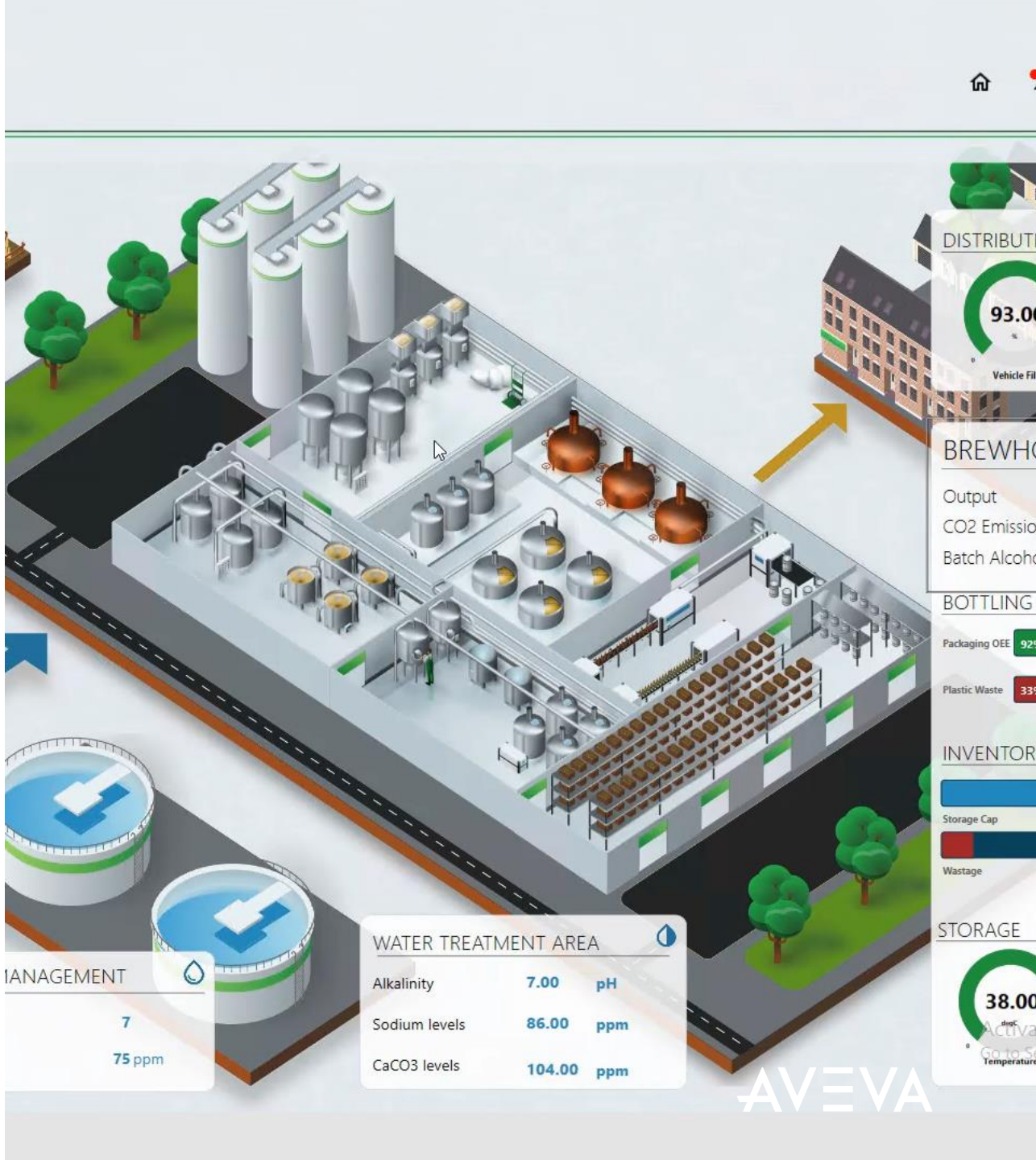
Components of AVEVA™ Operations Control

On-premises

- HMI/SCADA servers
- HMI/SCADA client
- Historian servers
- Historian clients
- Reporting
- Communications drivers
- Development

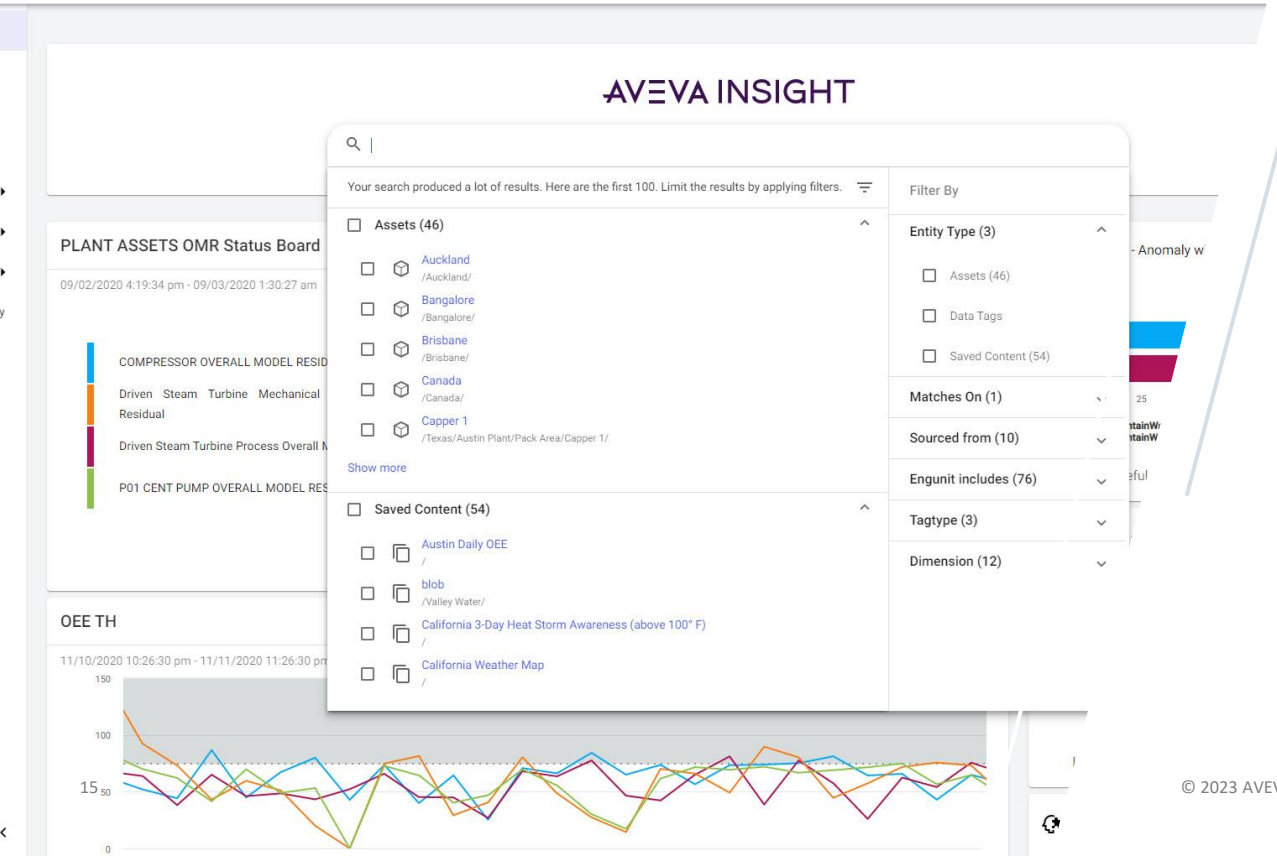
Cloud / SaaS

- Data analytics *(AVEVA Insight)*
- Knowledge and collaboration *(AVEVA Teamwork)*
- Development *(AVEVA Development Studio / Integration Studio)*
- User and entitlement management *(AVEVA Connect)*



AVEVA Insight

Self-service dashboards and customizable alerts for optimizing operations and OEE using process analytics



Accelerate results and scale more efficiently with a single digital thread throughout your organization that enables different departments to work together seamlessly.

Optimize processes that reduce waste, improve energy efficiency (sustainability), increase uptime, and optimize throughput, asset reliability and asset life.

AVEVA

AVEVA™ Insight components

AVEVA Insight Publisher

- Local data buffering / store & forward
- Management and publishing of data
- HTTPS 443 outbound only

AVEVA Communication Drivers

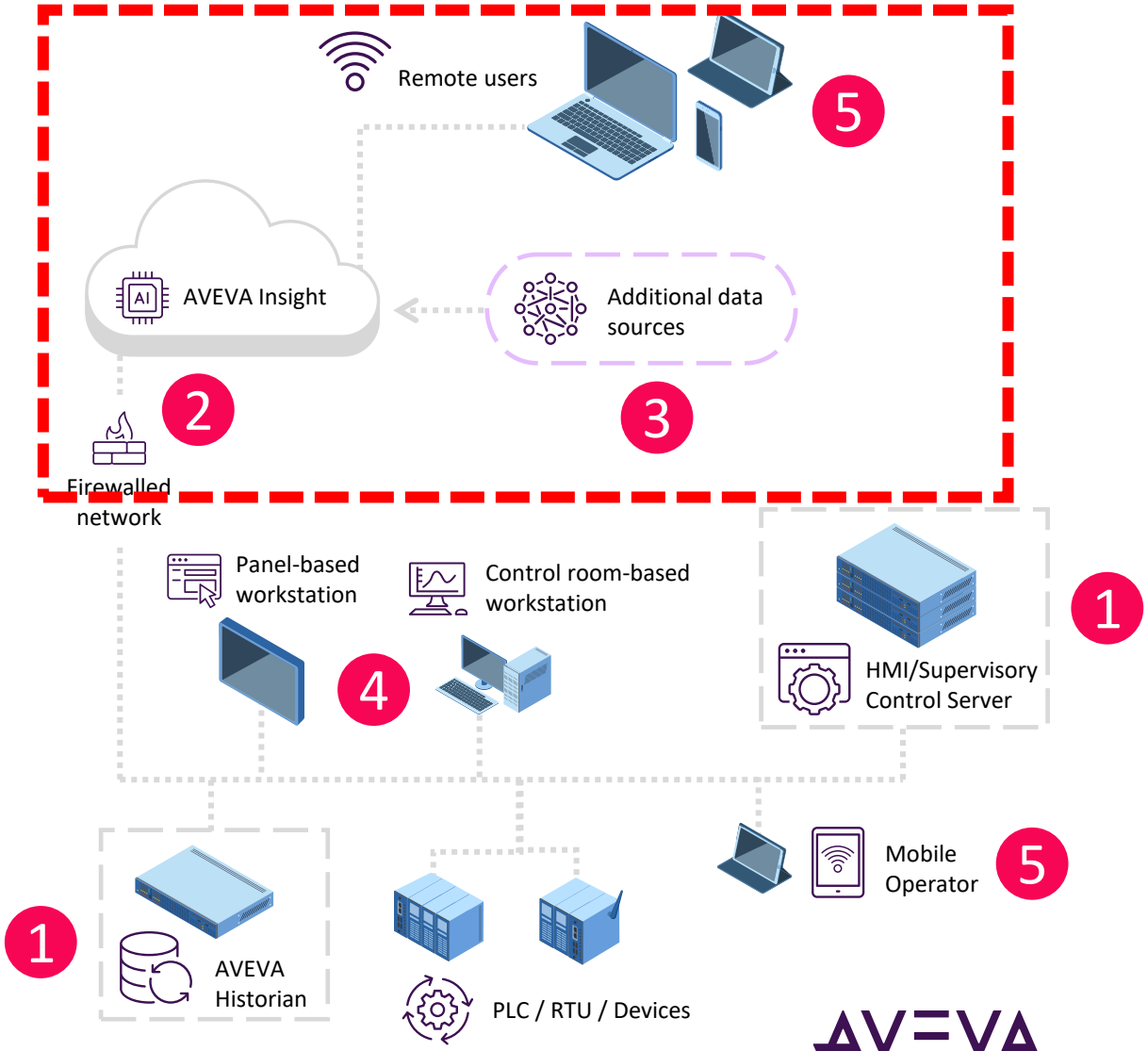
- OPC-DA driver included
- Additional drivers optional purchase

DMZ SecureLink

- Easy to configure, industrialized HTTPS proxy
- Supports daisy-chaining and port selection, to securely route through multiple levels of firewall + DMZ

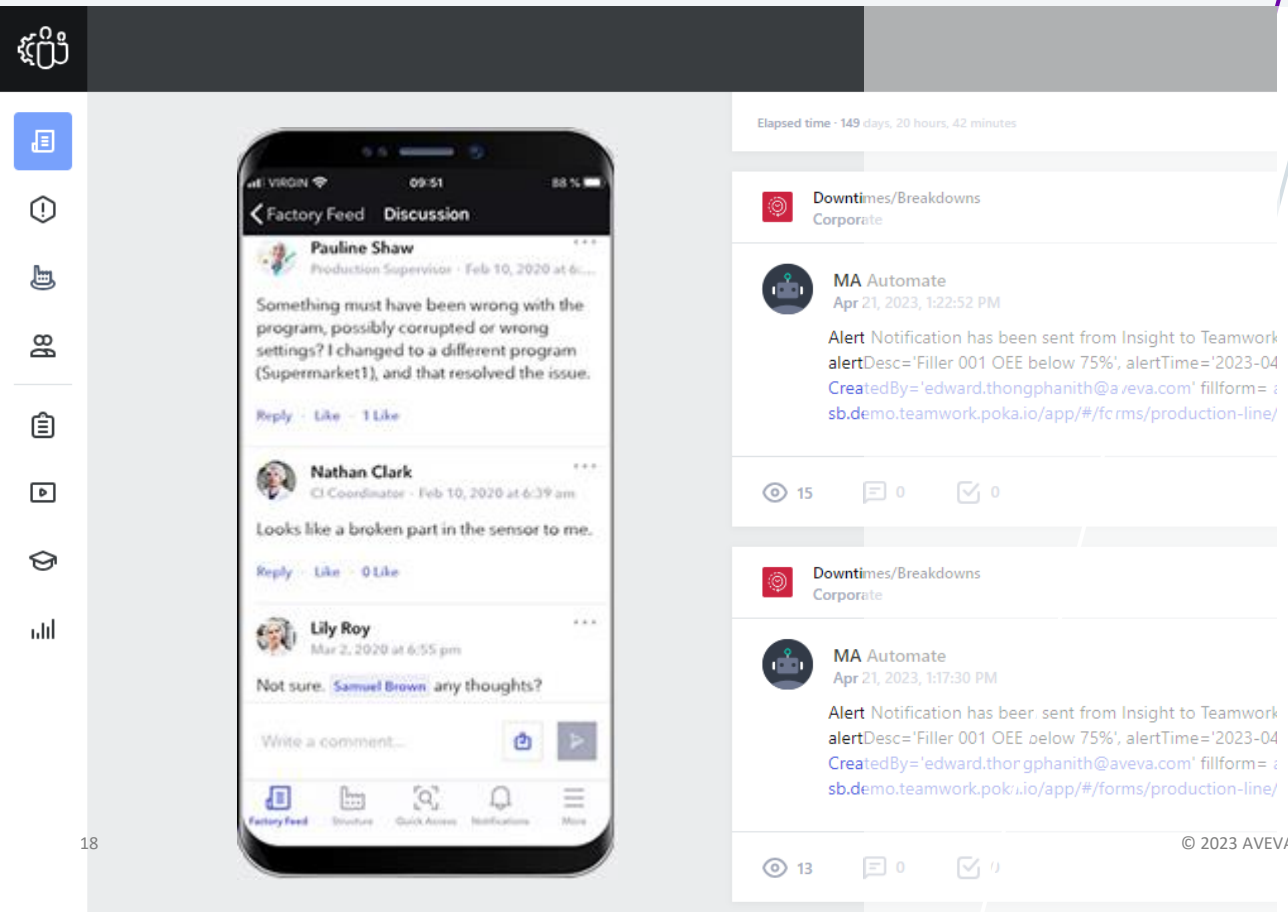
Getting started to leverage Cloud is easy with AVEVA

1. Configure data publishing from existing AVEVA HMI/SCADA or AVEVA Historian (or third-party systems)
2. Setup AVEVA's DMZ Link utility to securely pass through firewalled network topologies
3. Connect additional data sources using cloud connectivity or manual data imports.
4. Add AVEVA Insight information into HMI/SCADA displays using out of the box widgets/extensions
5. Access through a web browser, or get the mobile app for access & alerts on the go



AVEVA Teamwork

Enables industrial organizations to implement skills development, knowledge sharing and collaboration management across their enterprise from the cloud

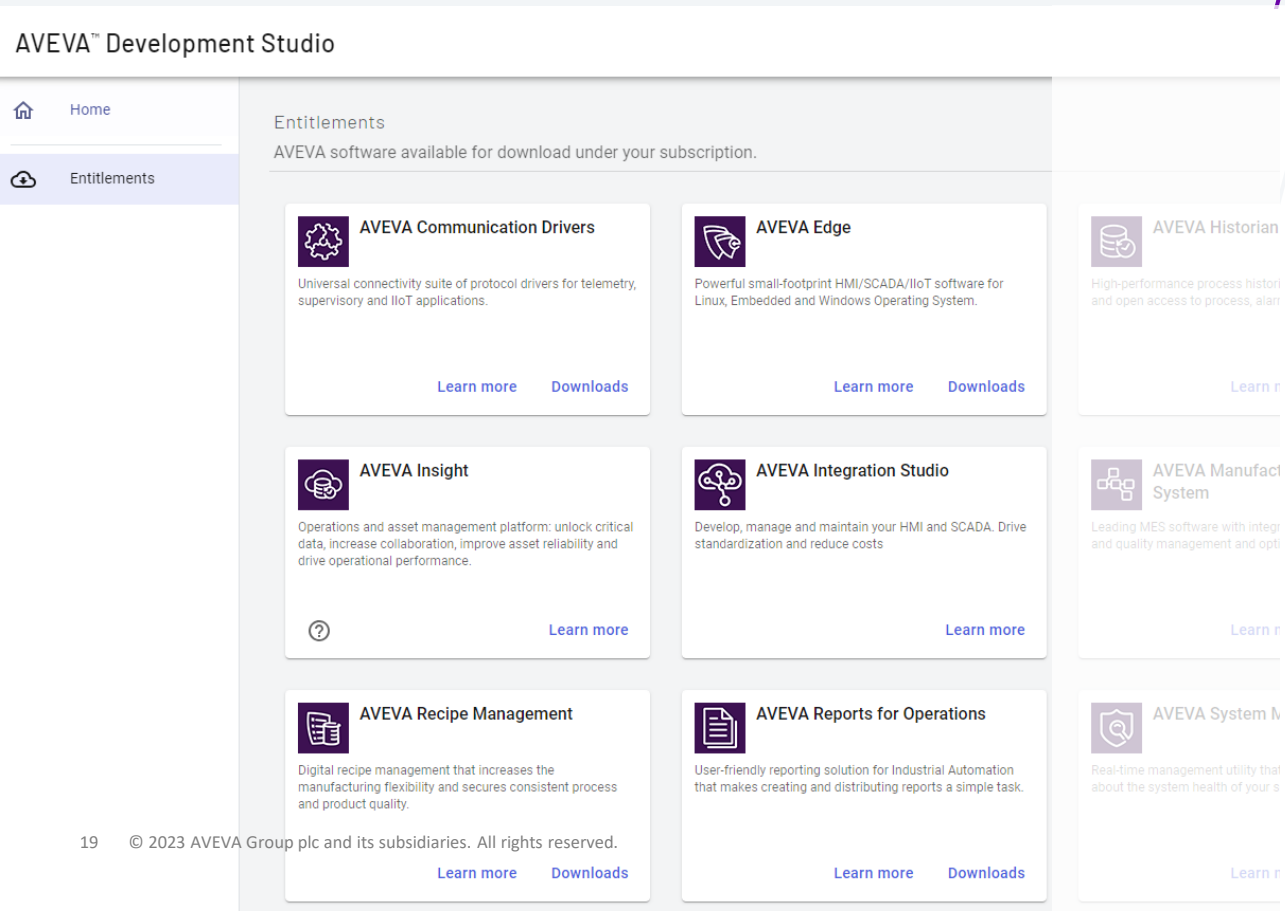


Reduce the time it takes to get frontline workers up to speed on basic skills needed to run today's complex industrial operations and create a digital knowledge repository that standardizes and stores best practices.

Optimize worker processes that reduce waste, improve energy efficiency (sustainability), increase uptime, and optimize throughput, and reliability.

AVEVA Development Studio

Is an engineering environment for developing, maintaining and managing AVEVA Operations Control applications that help drive standards and best practices



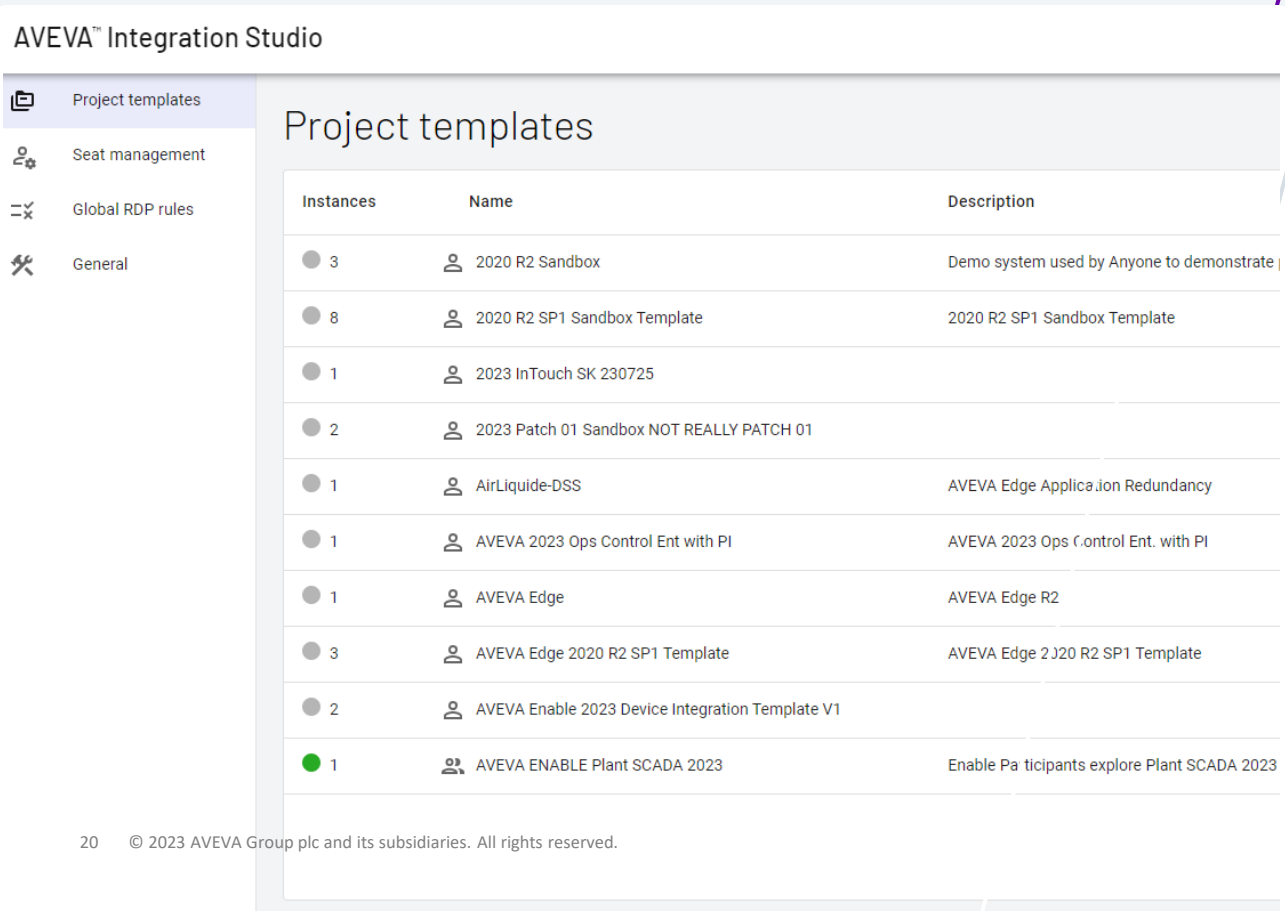
Drive Enterprise-Wide Standardization using a unified model that represents your process, equipment and industrial systems.

Richer Customized Application Content with limitless customization by leveraging and integrating disparate silos.

Extends system lifecycles and maintainability through centralized application management and deployment in networked environments.

AVEVA Integration Studio

Infrastructure-as-a-service cloud hosted development environment that facilitates greater collaboration, rapid project creation and scalability on demand



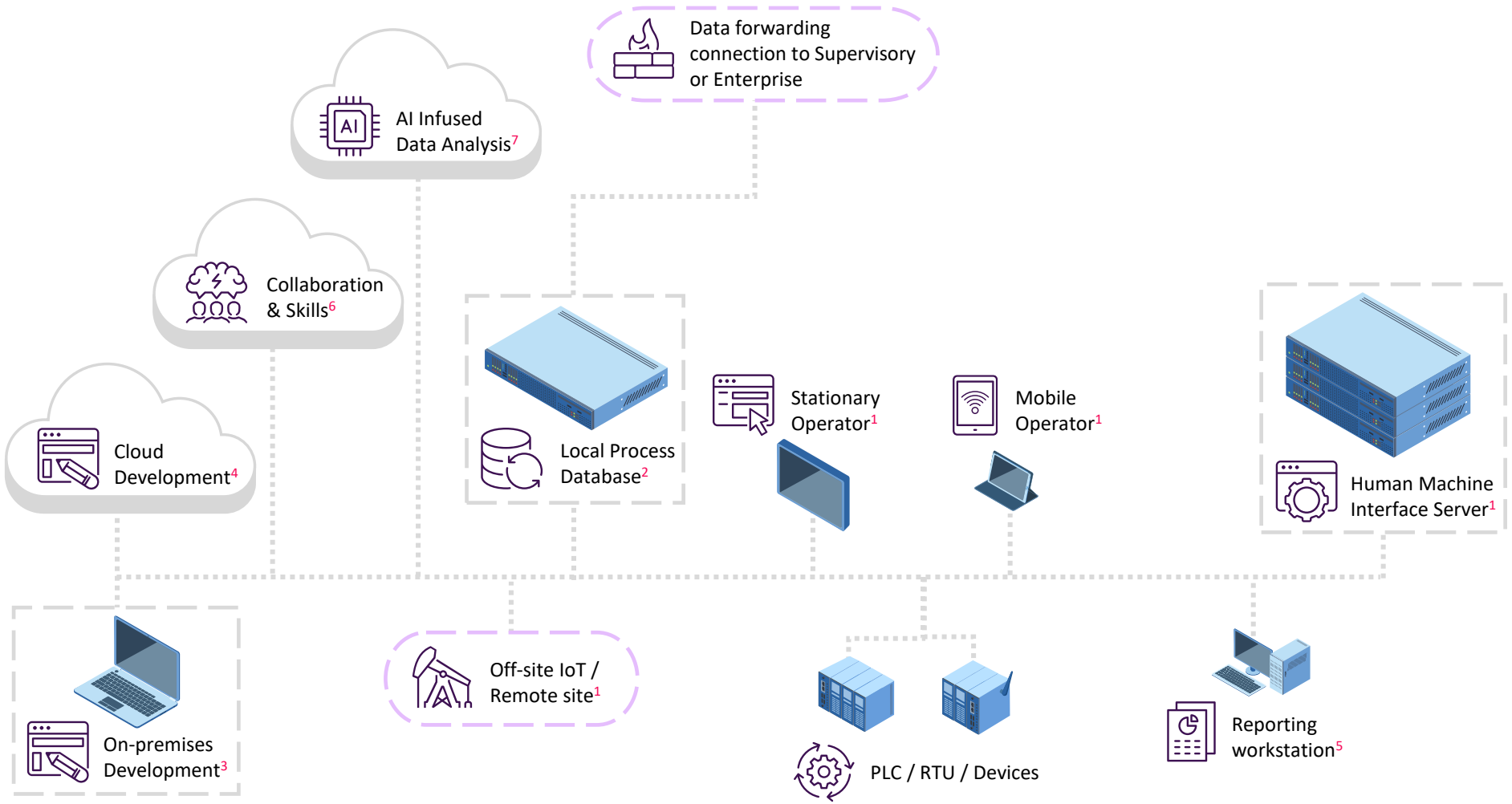
Improve engineering **efficiency** by enabling developers to rapidly provision software and servers.

Monitor actual cost-based usage during the development lifecycle and provide faster project start-ups

Eliminate configuration **burden** and **errors** by ensuring compatibility and accuracy of implementations with pre-installed and validated images.

How to apply AVEVA™ Operations Control in a hybrid architecture

Reference architecture – Edge package

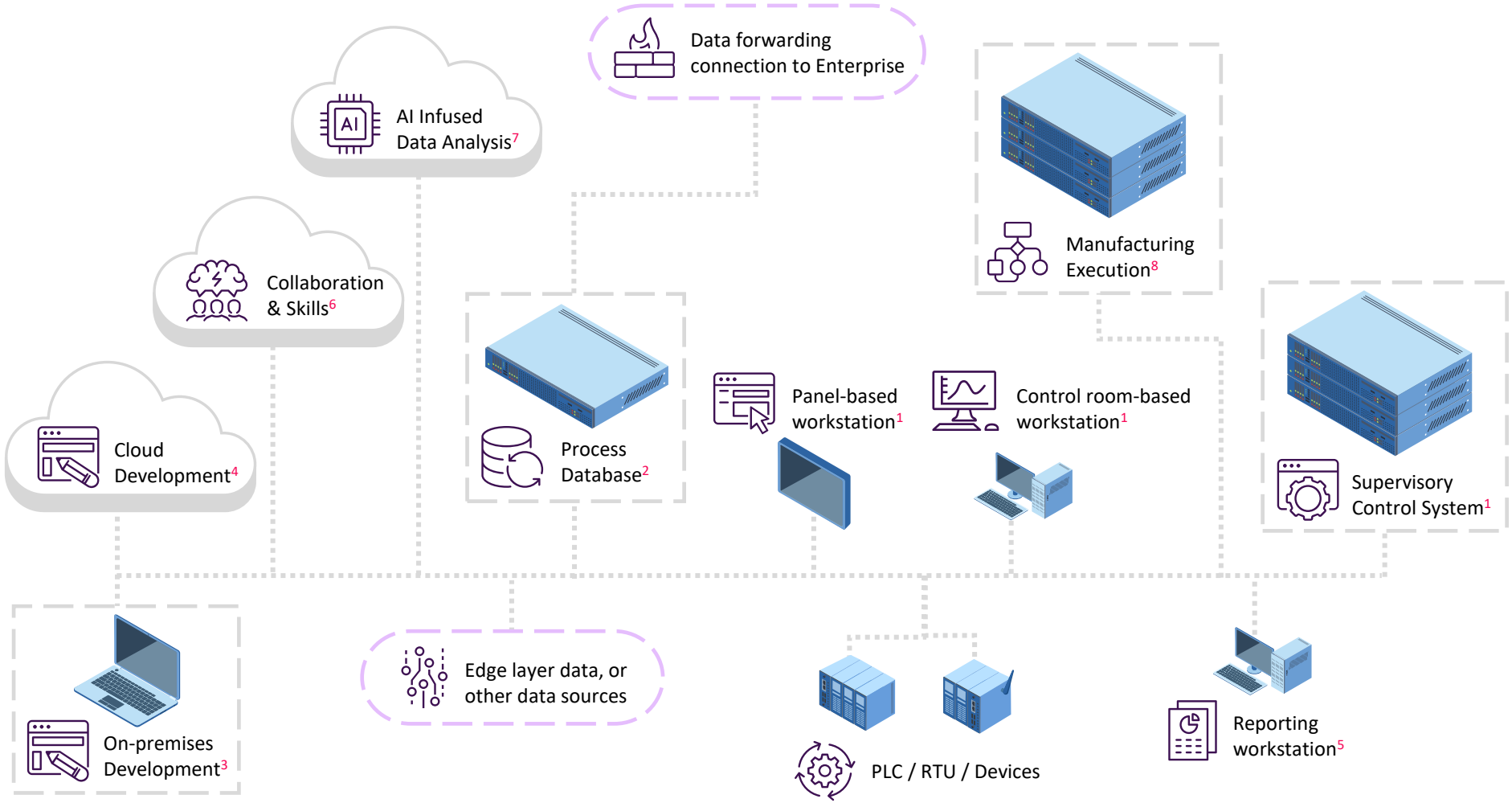


AVEVA Offers

AVEVA Operations Control - Edge

1. AVEVA InTouch or AVEVA Edge
   - \+ AVEVA Communication Drivers
   - \+ AVEVA System Monitor
   - \+ AVEVA Historian Client
2. AVEVA Historian, Local Edition
3. AVEVA Development Studio
4. AVEVA Integration Studio
5. AVEVA Reports for Operations
6. AVEVA Teamwork
7. AVEVA Insight
   - \+ [OPTIONAL] AVEVA Insight, Guided Analytics

Reference architecture – Supervisory package

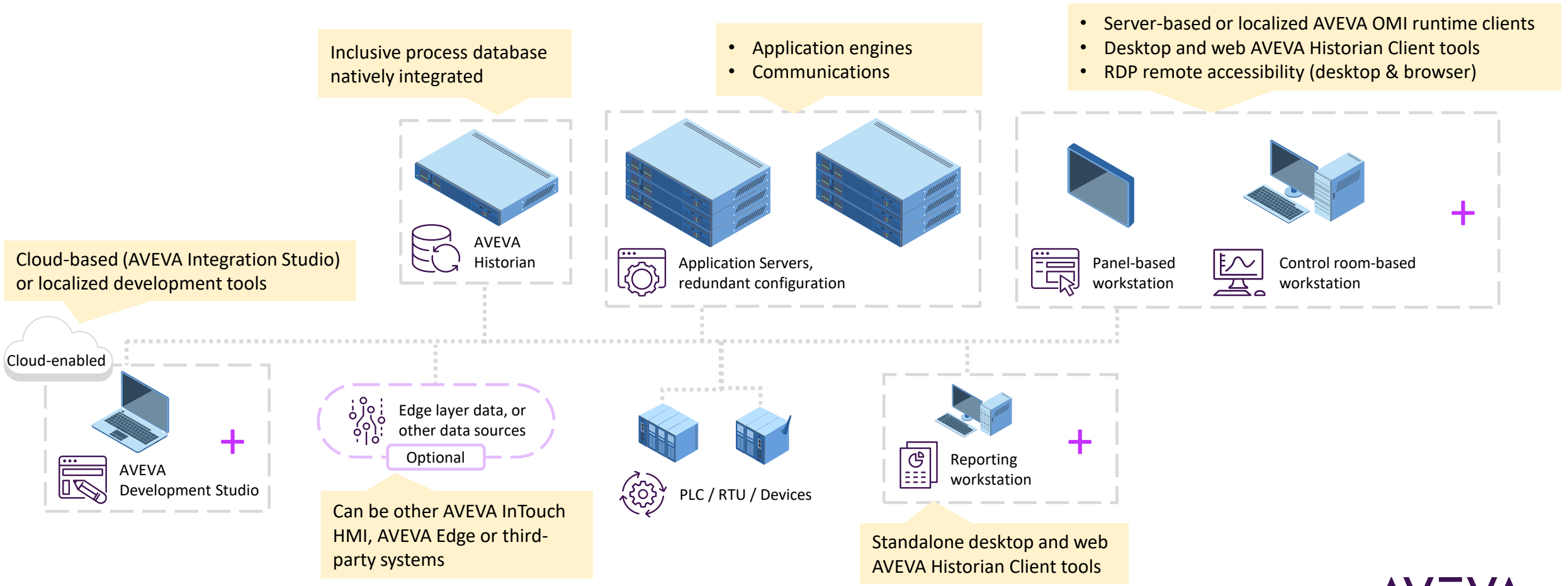


AVEVA Offers

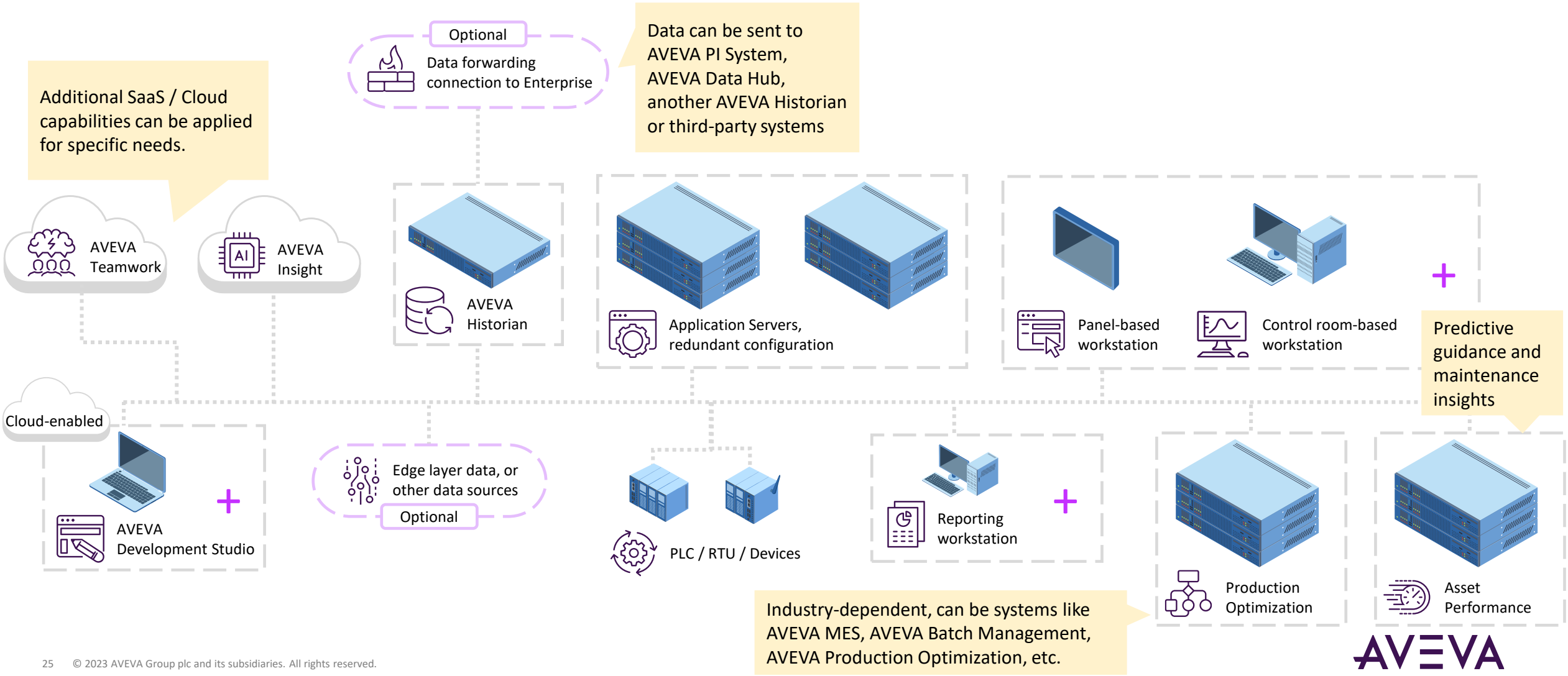
AVEVA Operations Control - Supervisory

1. AVEVA System Platform or AVEVA Plant SCADA
   - + AVEVA Operations Management Interface
   - + AVEVA Communication Drivers
   - + AVEVA System Monitor
   - + AVEVA Historian Client
2. AVEVA Historian
3. AVEVA Development Studio
4. AVEVA Integration Studio
5. AVEVA Reports for Operations
6. AVEVA Teamwork
7. AVEVA Insight
   - + [OPTIONAL] AVEVA Insight, Guided Analytics
8. [OPTIONAL] AVEVA Manufacturing Execution System
   - + AVEVA Batch Management
   - + AVEVA Recipe Management
   - + AVEVA Work Tasks

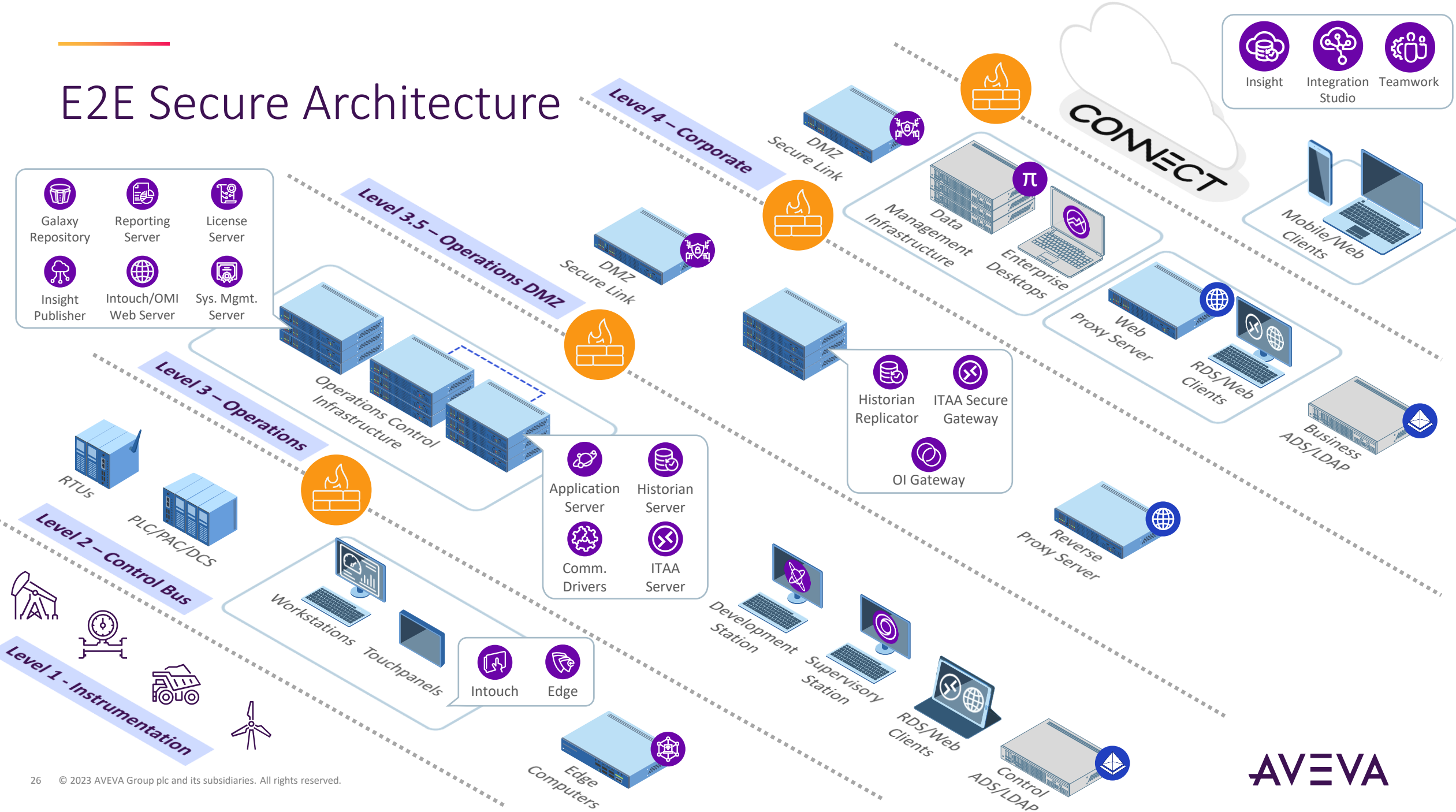
Example Architecture – Basic, AVEVA Operations Control Supervisory



Example Architecture – Expanded, AVEVA Operations Control Supervisory



E2E Secure Architecture



AVEVA’s proactive stance on cybersecurity

The three layers of security and control: A shared responsibility.

Responsible for security "at" use

Customer end users

- User management, roles & permissons
- Protecting account credentials

Responsible for security "in" the cloud

AVEVA cloud solutions

- Customer data
- Platform, applications, identity & access management
- Operation systems, network and firewall configuration
- Client- side data encryption & data integrity, authentication, server-side encryption (file system and data), network traffic encryption, integrity, identity

Responsible for security "of" the cloud

Public cloud service provider

- Software
- Compute, storage, database, networking
- Global infrastructure
- Regions, availability zones, edge locations

Cloud Security

Azure and AWS Hosting

Physical Security

- Azure and AWS Regional Datacenters are protected by layers of defense-in-depth security

Information Security

- Provides in-transit and at-rest data encryption
- Key Vaults protects keys, secrets, and certificates
- Virtual Networks and Network Security Groups
- Threat Management and Intrusion Detection

Amazon and Azure Certifications

- ISO/IEC 27001, 22301, 27017, and 27018
- CSA Star Gold
- SOC 1, SOC 2, and SOC 3
- And many others…

AVEVA™ Connect | Security Fulfilling Highest Standards

Security is “Baked in” by AVEVA from the beginning

Cloud Offer Security Requirements

- Threat Model review of Cloud Architecture
- Penetration testing based on threat model
- Checkmarx scan
- No 7.0+ SDL (security development lifecycle) items currently in backlog
- Answering IT Cloud Security Questions in RFPs

AICPA Service Organization Control Reports
AICPA
SERVICE ORGANIZATIONS
SOC
aicpa.org/soc
Formerly SAS 70 Reports

cloud security alliance®
CSA

Security Development Lifecycle (SDL)

- All product teams have completed specific training to avoid vulnerabilities

Third Party Certification

- CSA Secure
- SOC-2 (System & Organization Controls)
- ISO 27001 (Information Security Management)

Security Confidence- Customer Engagement

- Joined Cloud Security Alliance
- Became recognized with International standard
- Pro actively have a Re Answered set of Security questions from Industry

AVEVA

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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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.

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