



AVEVA WORLD

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APRIL 8, 2025

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# Establishing your modern data infrastructure with AVEVA PI Server

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AVEVA WORLD 2025

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# Agenda

Establishing your modern data  
infrastructure with AVEVA PI  
Server

Moscone West Center  
San Francisco

Introduction

The modern PI Server: available now / coming soon

Future roadmap: researching & considering next

Wrap up

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# Introduction



# Operational inefficiencies pose challenges



**91%** of industrial organizations affected by resource scarcity<sup>1</sup>

## RESOURCE UTILIZATION



**37%** of global energy use comes from industrial sector<sup>2</sup>

## SUSTAINABILITY



**\$1.4 trillion** lost annually to unplanned downtime<sup>3</sup>

## ASSET HEALTH



**15-20%** of many organizations' sales revenue lost to quality-related costs<sup>4</sup>

## INCONSISTENT QUALITY



**52%** of manufacturing executives cite budget constraints as significant hurdle<sup>5</sup>

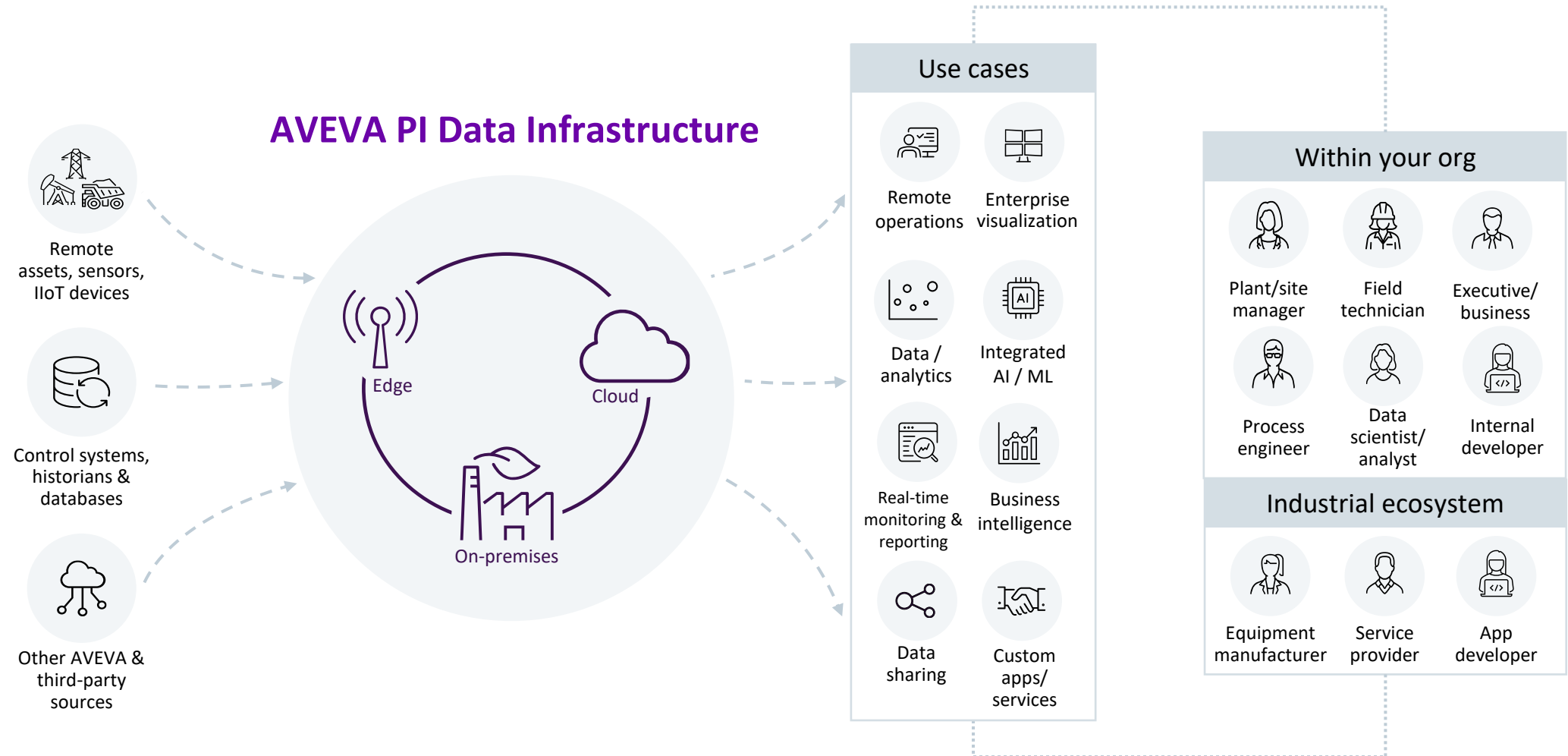
## COST ESCALATION

### Sources:

1. Sapio Research, *Circularity: No Time to Waste*, 2024
2. International Energy Agency, *Industry*, 2023
3. Siemens AG, *The True Cost of Downtime*, 2024
4. American Society for Quality, *Cost of Quality*, 2024
5. AVEVA, *Industrial Intelligence: 2024 Industry Insights Report*, 2024

# Hybrid data infrastructure

from edge to plant to community





AVAILABLE NOW / COMING SOON

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# The modern PI Server

AVEVA

# The modern PI Server

Secure, manageable and performant

Modern hybrid authentication

Hybrid infrastructure options

New licensing models

Hybrid data patterns + new use cases

# The modern PI Server

**Secure, manageable and performant**



INCREASES IN  
PERFORMANCE AND  
AGILITY AT SCALE!



Modern hybrid authentication

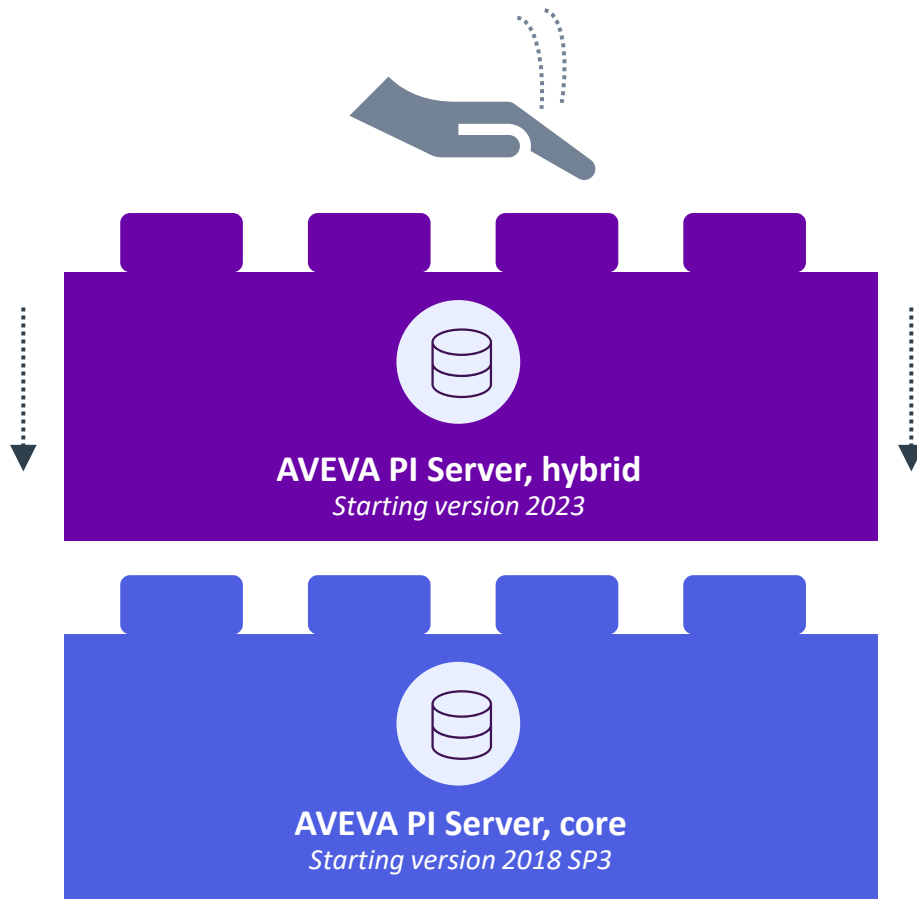
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# Complementary value of PI Server branches

Flexibility to deploy best option across environments, supporting varied system data needs



- ✓ Concept of branching PI Server has been years in the making
- ✓ Both branches, **hybrid** and **core**, are part of PI Data Infrastructure
- ✓ Hybrid branch -> **Enterprise-level** data management capabilities
- ✓ Core branch -> Stay **up to date** and **secure** with as needed patches for environments with low tolerance for software changes
- ✓ Both are reliable and secure options and will continue to advance over time

# Enhanced manageability for clients

Reduce admin effort with several manageability enhancements

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## PI AF Client 2024

### Features

- **File-based Known Servers Table (KST)** for AF SDK applications, like AVEVA PI DataLink
- **Localization is now sim-shipped with PI AF Client** – no more MUI kits

### Benefits

- Easier access and management of the PI Data Archive KST
- Eliminate potential issues from Windows updates
- Streamlined language selection without additional installations



# Improved performance & throughput at scale for PI Server

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Meeting the challenge of increasing volumes of data, analytics, and data agility



## AVEVA PI Server 2024

### Features

- Improved PI Update Manager performance
- Out-of-order event handling improvements
- More throughput efficiencies for the PI Data Archive
- Archive Subsystem enhancements

### Benefits

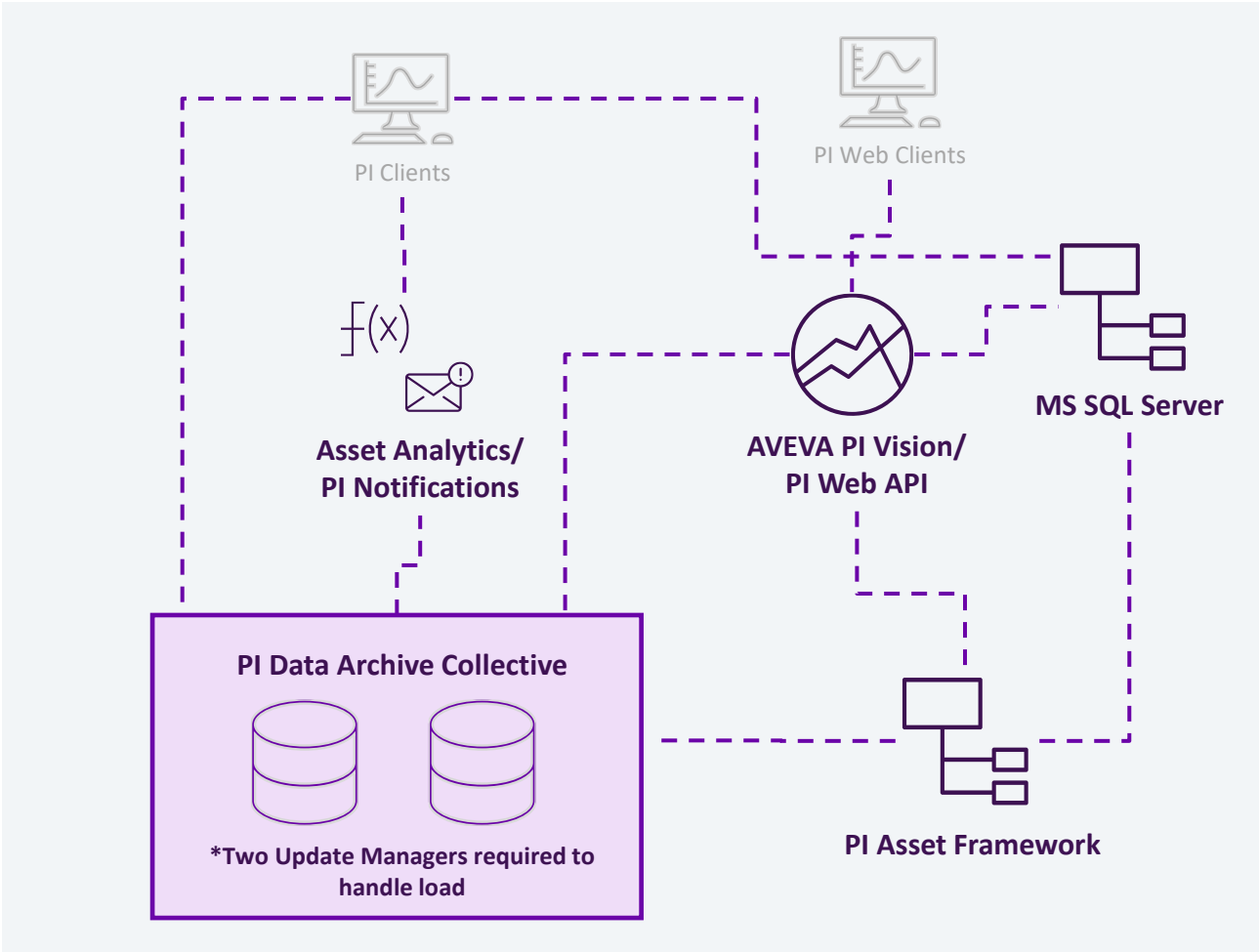
- Increased scale for asset analytics
- More recalculations, less performance hit
- Quicker response to outages
- Improved data read performance, read cache tuning

# Rearchitecting to meet ever-growing data needs

Do 2X more with less

- **AVEVA PI System topologies**  
<https://docs.aveva.com/bundle/pi-server-f-topologies>
- Network diagrams, hardware specs, recommended configurations, performance

Topology performance metric	Max. value
Inbound data rate (events/sec)	200,000
Asset Analytics evaluated/sec	30,000
Event Frame generations/day	10,000
AVEVA PI Vision connections	200
AF SDK recorded data rate (events/sec)	2,250,000



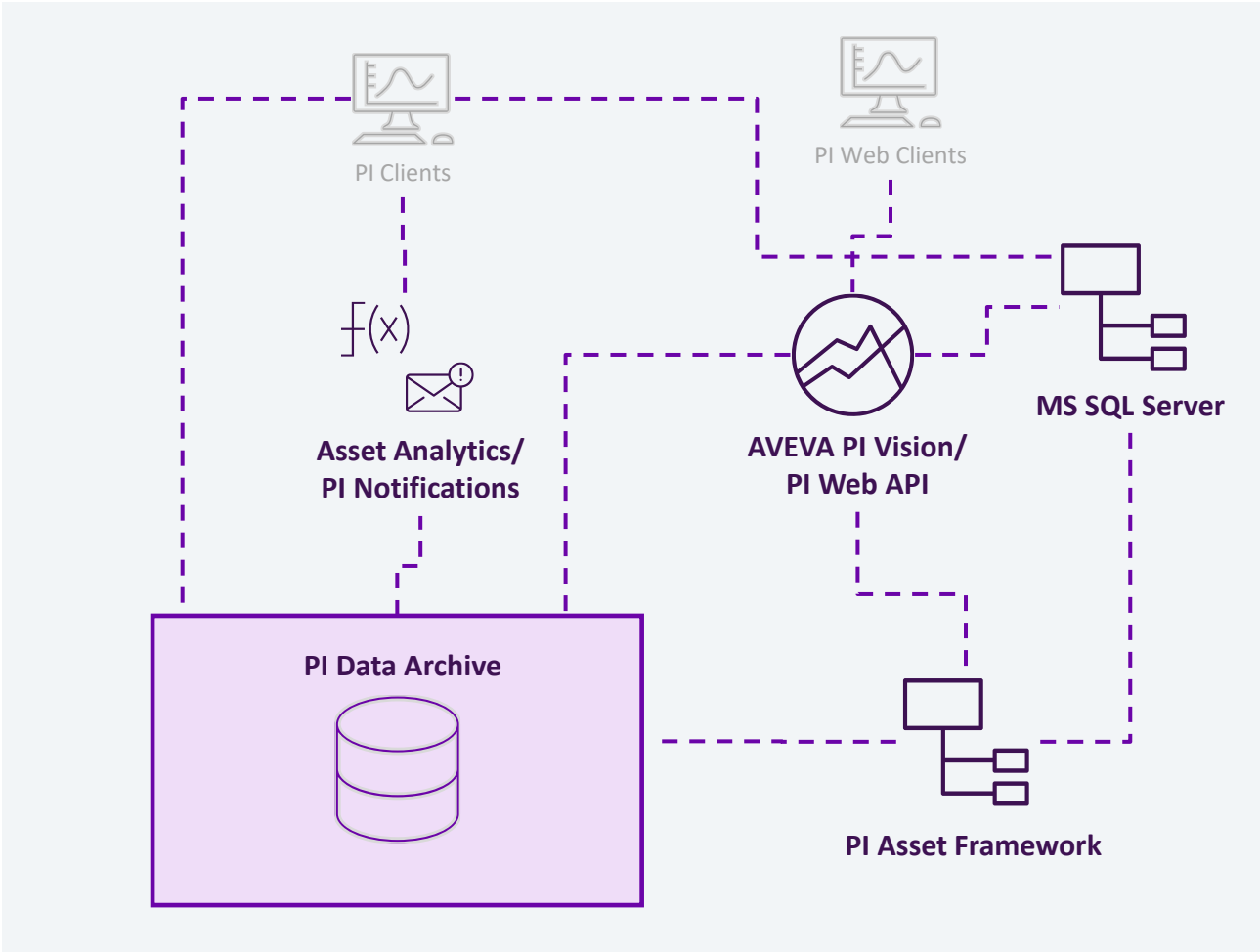
Before AVEVA PI Server 2024

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AF SDK recorded data rate (events/sec)	2,250,000



With AVEVA PI Server 2024

# The modern PI Server

Secure, manageable and performant



INCREASES IN  
PERFORMANCE AND  
AGILITY AT SCALE!



**Modern hybrid authentication**



-OR-

Entra ID



Your IdP

Hybrid infrastructure options

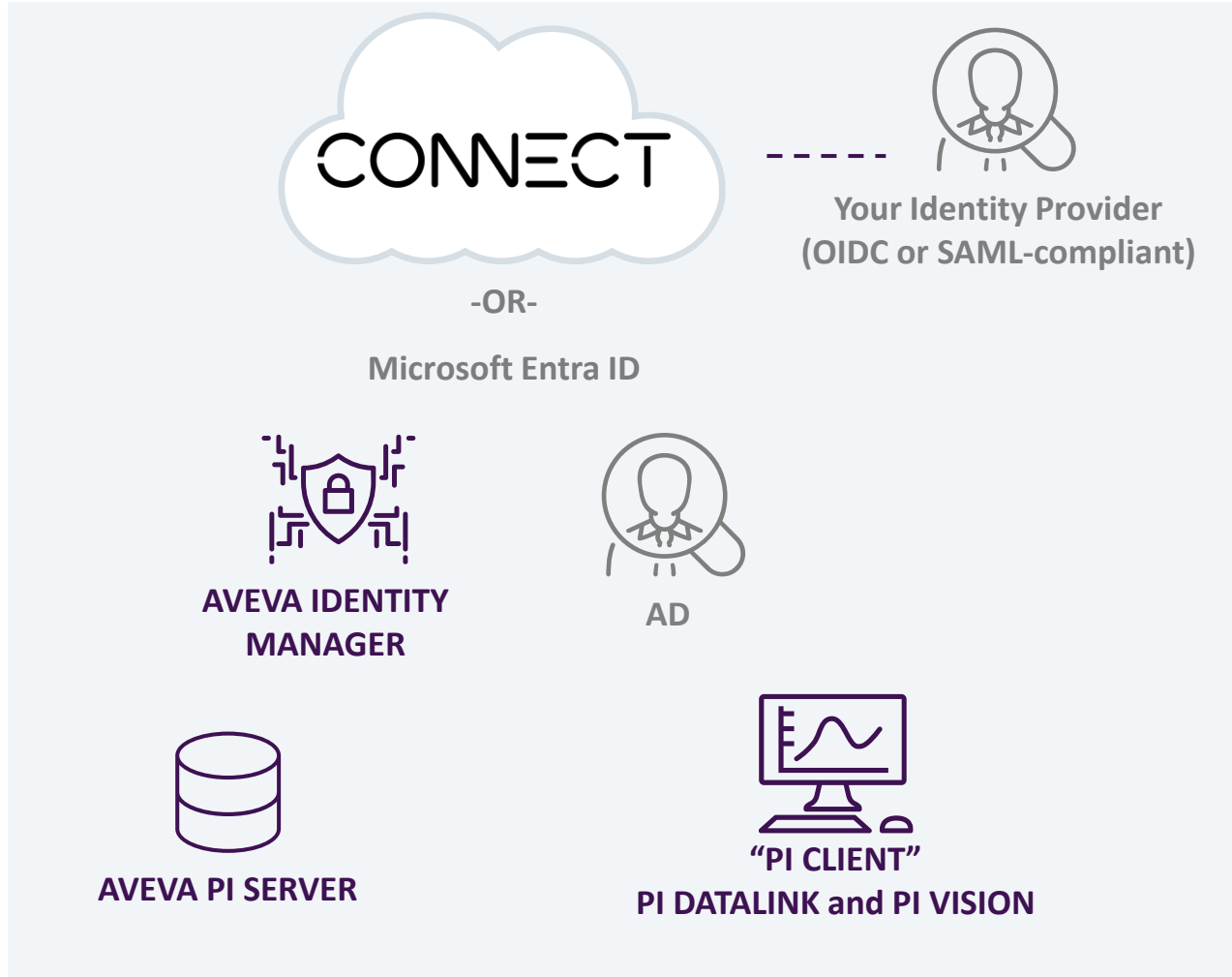
New licensing models

Hybrid data patterns + new use cases

# Modern hybrid authentication

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More simplified, flexible, and scalable security with support for OIDC



- **Expanded authentication options** to meet your enterprise needs
- **Enhanced security** with federated identity and access management
- **Reduce IT admin burden**
- **Improved user productivity** with single sign-on (SSO)
- **Expanded architectural options for PI Vision** — no need for Kerberos delegation

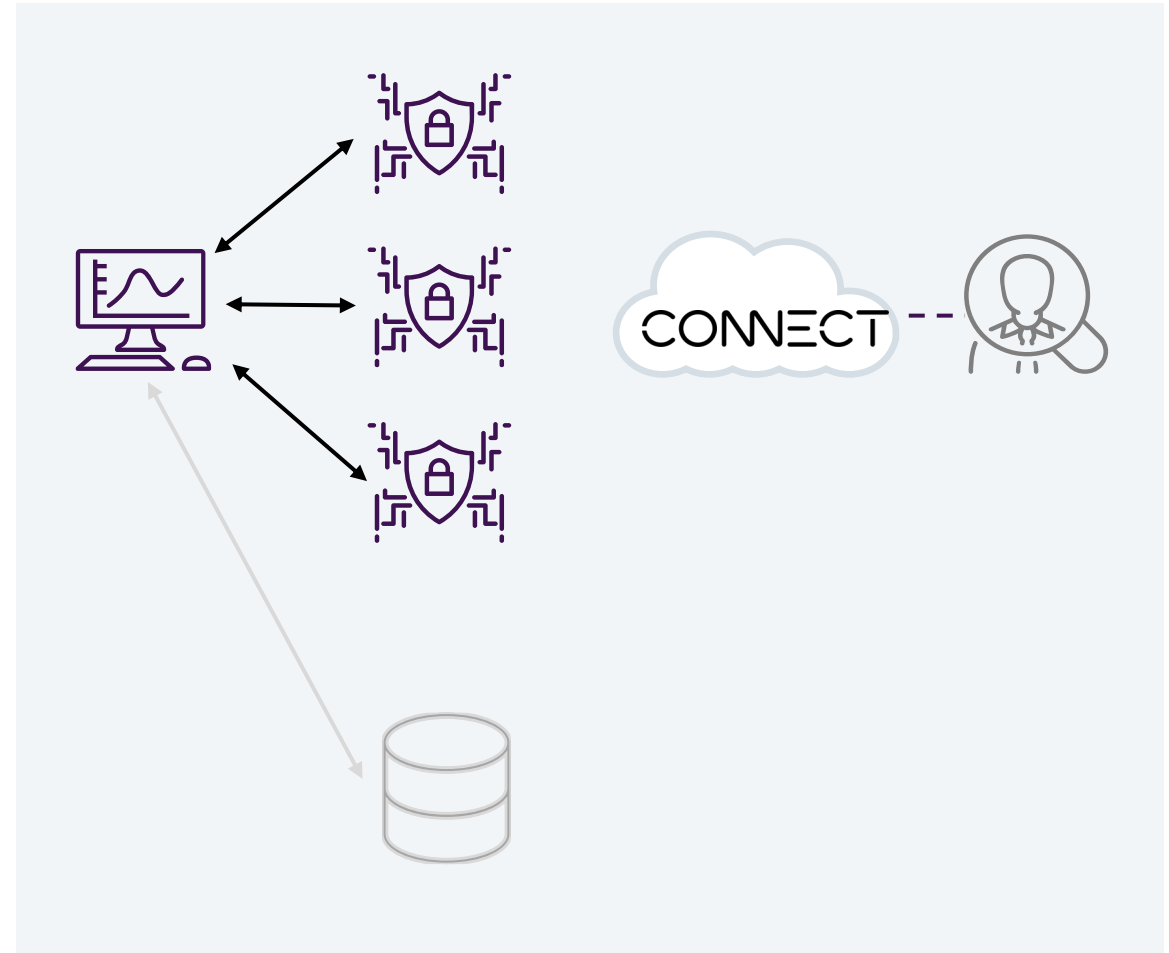


# Redundancy for claims-based authentication



## Support highly available modern authentication

- AVEVA Identity Manager (AIM) is a standalone authentication server, acting as a local identity provider
- Configured to federate user authentication with CONNECT or Microsoft Entra
- Only a single AIM System Management Server (SMS) is currently supported
- Enhance architecture to support multiple identity servers, ensuring that claims-based authentication remains highly available



# The modern PI Server

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Hybrid infrastructure options



PIFD



amazon  
RDS

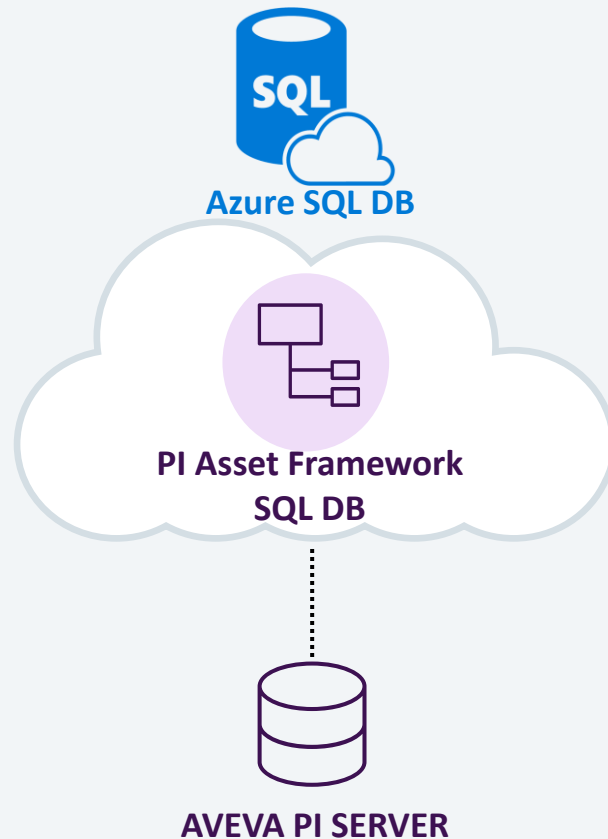
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Hybrid data patterns + new use cases

# Hybrid infrastructure options

## Leverage cloud-managed SQL

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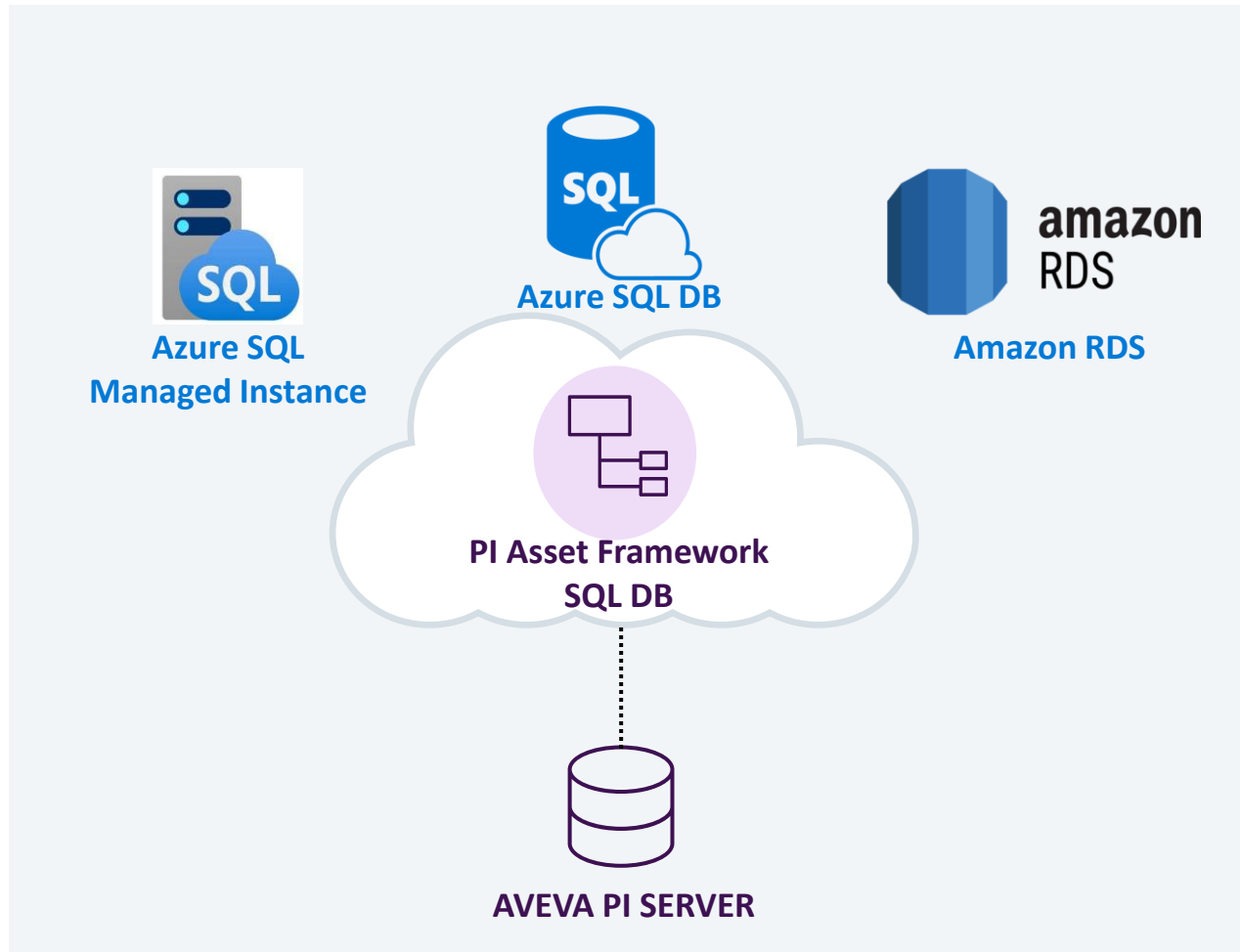


- **Extend hosting options** for PI Asset Framework SQL database from Microsoft SQL Server to cloud-hosted
- Ease cloud migration and **offload SQL administrative tasks**
- **Decrease infrastructure costs** and admin work so staff can focus on operations data value

# Hybrid infrastructure options



## Leverage cloud-managed SQL



### Features

- **Expanded cloud-based SQL hosting options** from Azure SQL DB to Azure SQL Managed Instance and Amazon Relational Database Service (RDS)
- **Support for PI SQL Data Access Server Real-Time Query Processing (RTQP)** with managed SQL deployments
- **AF Audit Trail support**

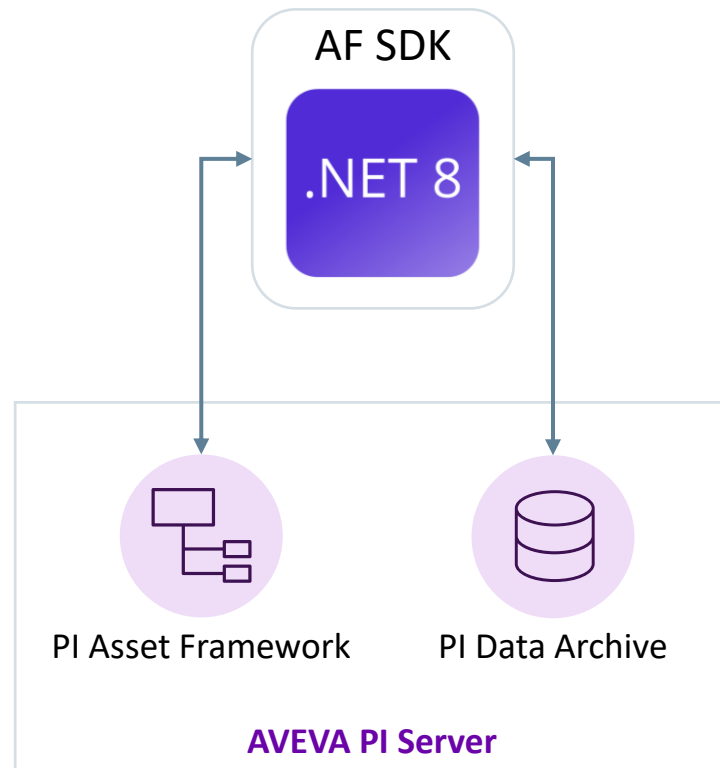
### Benefits

- Standardize SQL workloads on cloud provider of choice
- Ease cloud migration and offload AF SQL admin tasks to Microsoft Azure
- Lower costs from IT overhead and on-demand usage with more automation

# AF SDK support for latest .NET implementation



Enable your modern applications to more easily consume AVEVA PI System data



## Features

- AF SDK support for .NET 8.0, the latest version of the cross-platform, open-source framework optimized for modern applications and developer workflows

## Benefits

- Build custom PI System applications on modern technology stack
- Decrease development time and platform dependencies
- Increase applications' life cycle, performance, and compliance



# The modern PI Server

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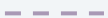


Modern hybrid authentication



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RDS

**New licensing models**



PI to CONNECT

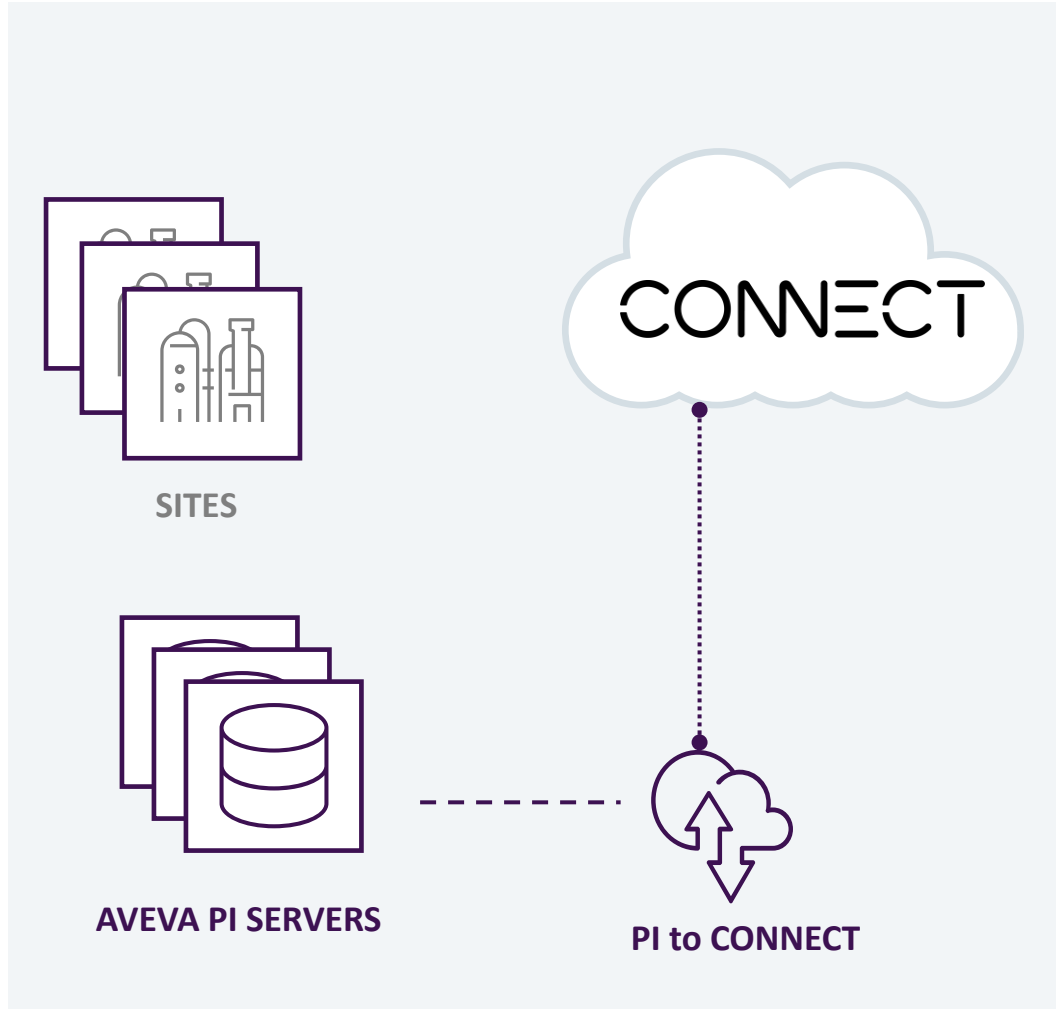


Hybrid data patterns + new use cases

# New licensing models

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Dynamic “usage-based” Aggregate tag model – to maximize business agility



## Features

- PI Server tags licensed in bulk **without node or site limits**
- **Automatic measurement** and reporting of tag usage via PI to CONNECT
- **Central monitoring** of tag usage in CONNECT

## Benefits

- Spread tags across PI Server deployments and **flexibly architect**
- **Free up staff by centrally managing** multi-site & multi-server
- Deploy new PI Servers or ramp up tags **without need to make an additional purchase or resize servers**

# The modern PI Server

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Hybrid infrastructure options

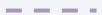


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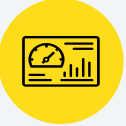
New licensing models



PI to CONNECT



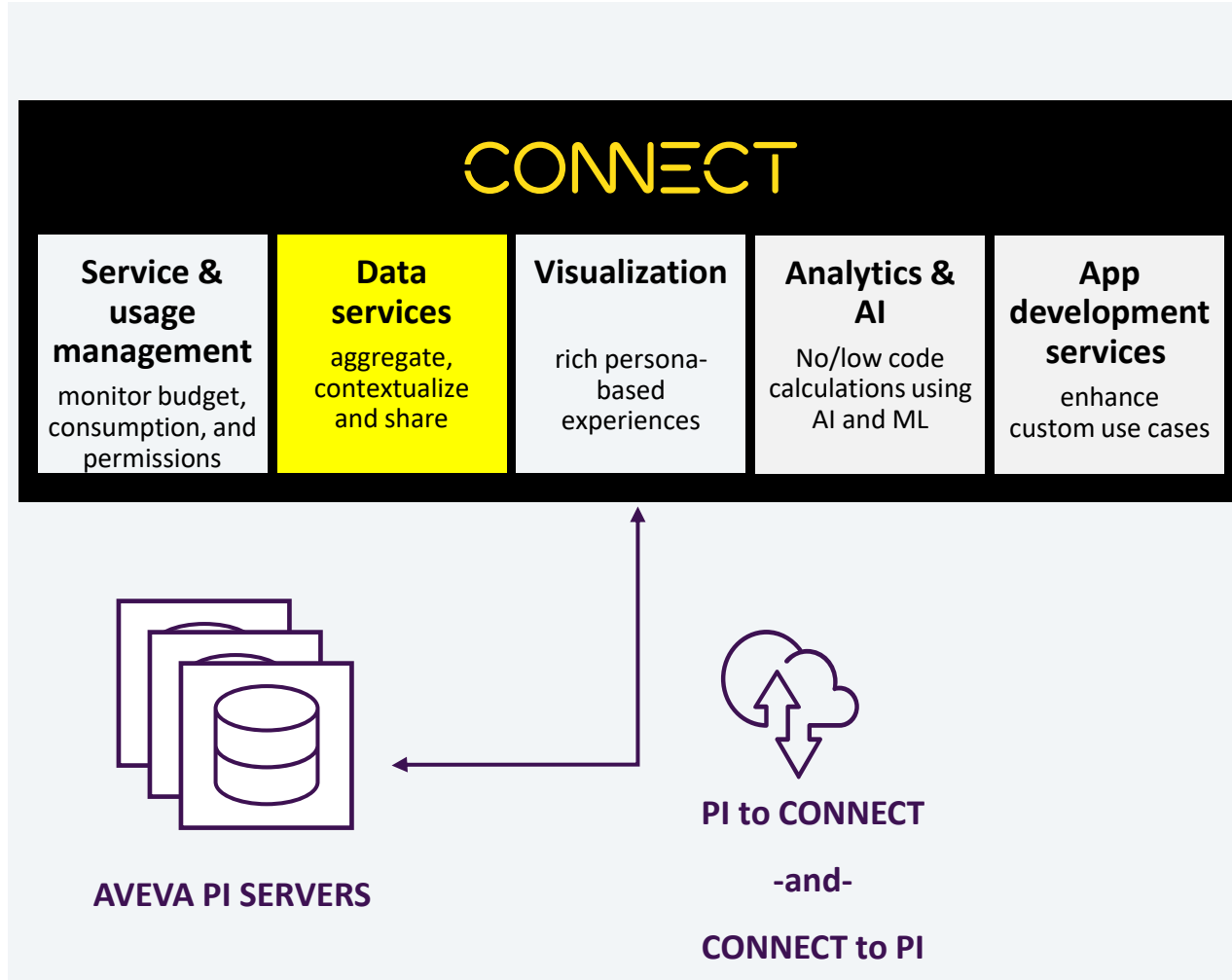
Hybrid data patterns + new use cases



# Hybrid data patterns and new use cases

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Extend the value of your PI Server data and address emerging use cases

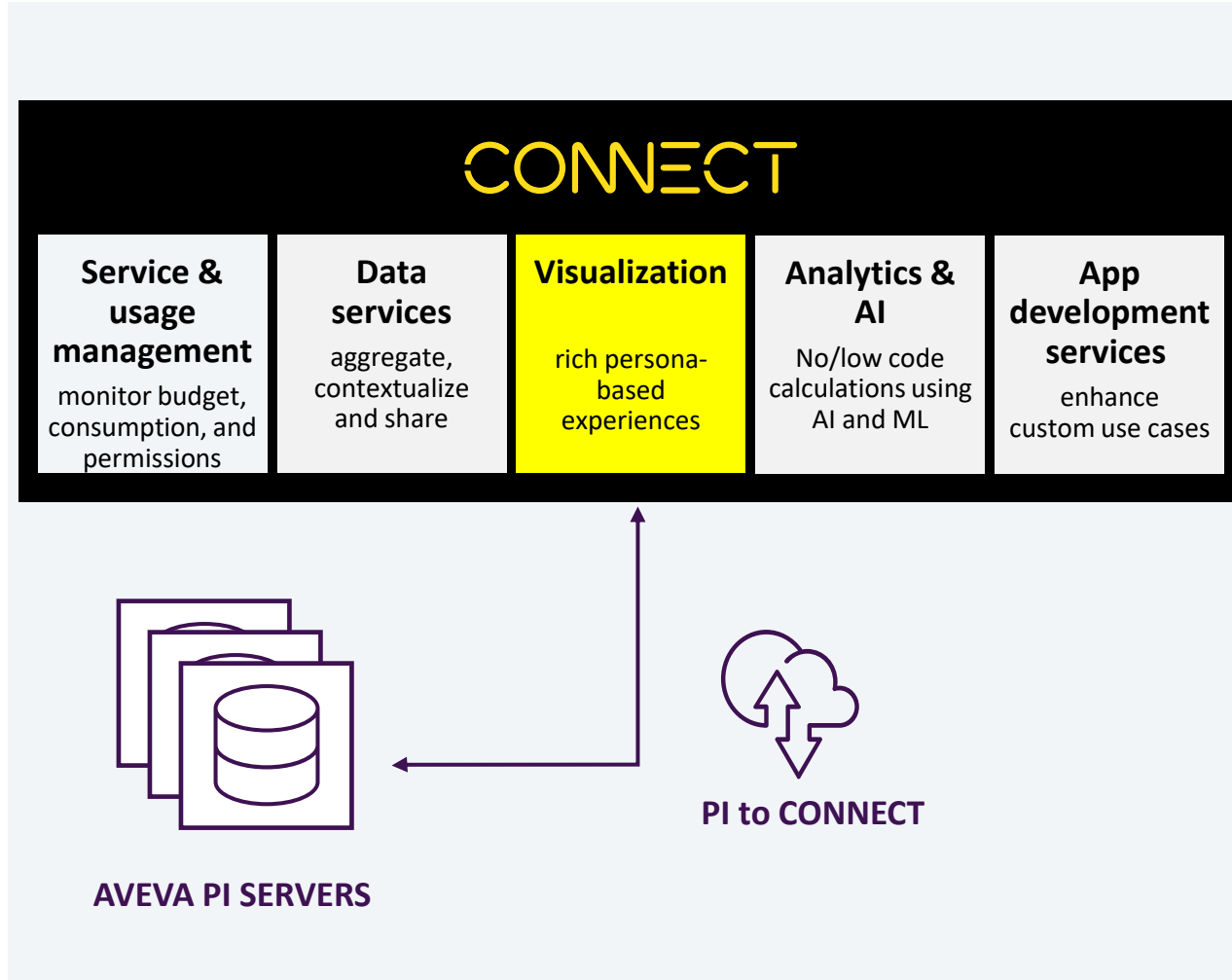


- **Aggregate, relate, and enrich industrial data** from different System of Records and sources
  - **Send PI tag and AF element data** to CONNECT data services
  - Write CONNECT data services streams **back down to PI tags**
- Build and manage a **central data repository** for BI, data and analytics, and AI / ML tools
- **Share operations data** between other CONNECT users and external partners with Communities

# Hybrid data patterns and new use cases

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Extend the value of your PI Server data and address emerging use cases



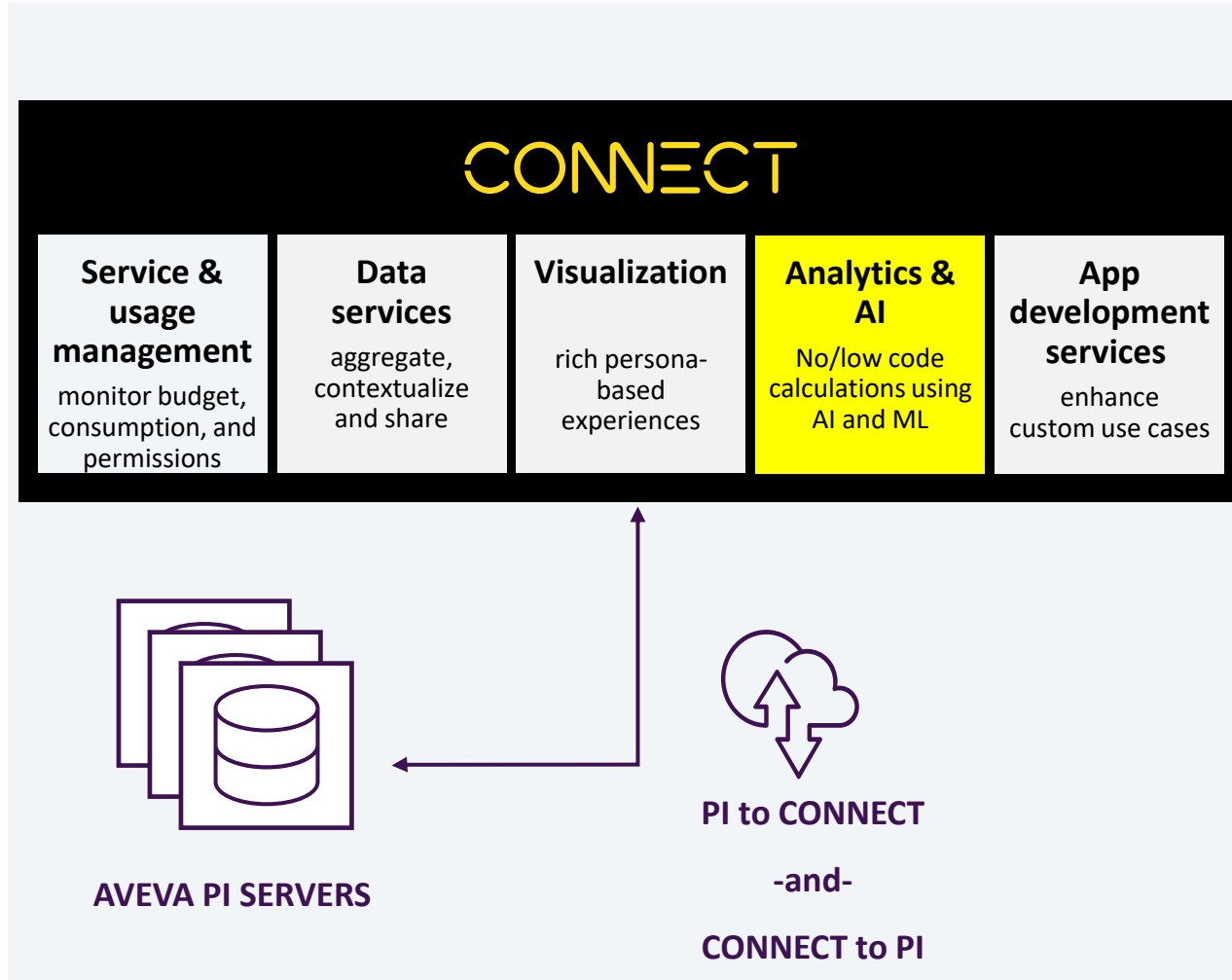
- **Converge disparate data sources & systems** in CONNECT, in context to one other
- **Craft role-based visualizations** for different functional users with self-service and pre-defined experiences
- **Expedite analysis using an Industrial AI Assistant** to answer natural language questions



# Hybrid data patterns and new use cases

AVAILABLE  
NOW

Extend the value of your PI Server data and address emerging use cases



- Enable domain experts and citizen analyst to solve **industrial use cases with AI**
- **Train models with PI Server data** sent to CONNECT
- **Fast time to value** with pre-built models and templates
- **Model, predict, and prescribe** operational outcomes and quality optimization + write-back results to PI Server

RESEARCHING/CONSIDERING NEXT

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# Future roadmap



# Researching and considering next

## Future considerations

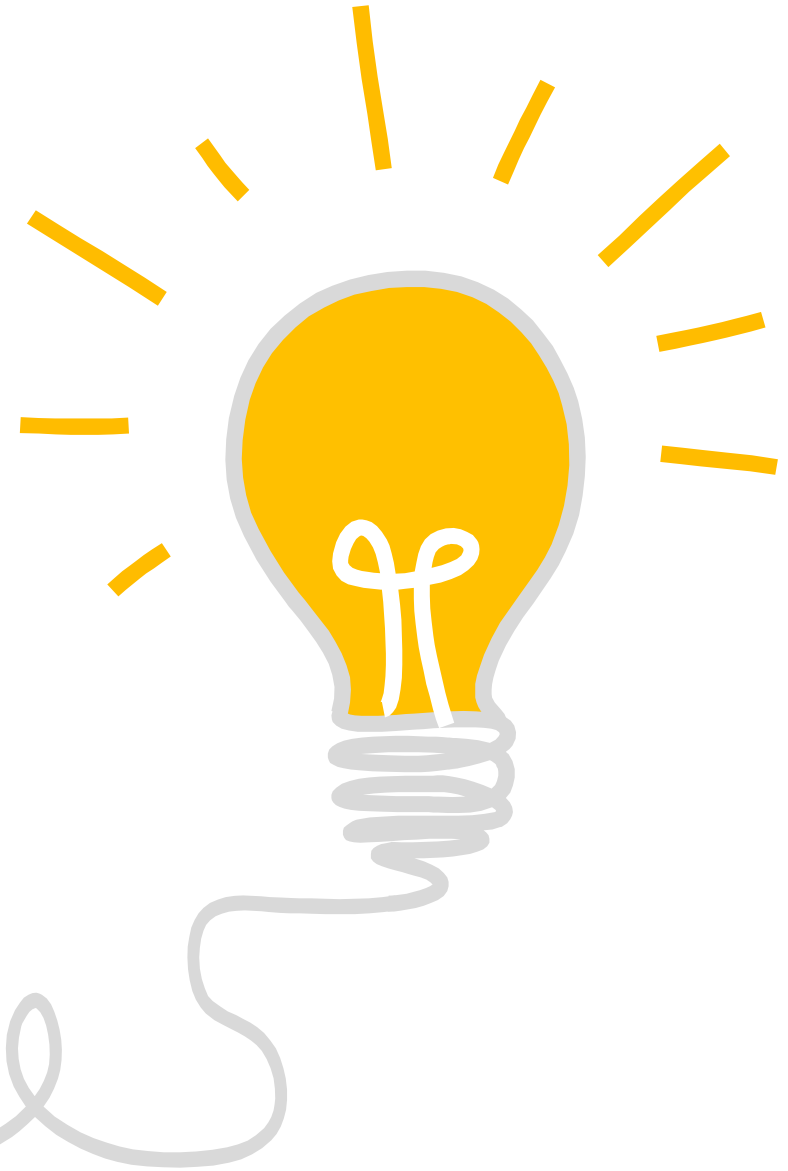
- **Continued scale-out of asset analytics:** to handle massive use of AF and Asset Analytics
- **More options for deploying PI Server in AD-less environments:** support OIDC for back-end services.
- **High-value remediations:** continuing our commitment to the security, scalability, and reliability of AVEVA PI Server, core branch, releasing fixes through patches on as needed basis.
- **Asset and event handling across PI Data Infrastructure:** extend PI System to use asset and events for cloud-based dashboarding, reporting, data science, BI, etc. with collection storage and transfer of asset metadata and event data



# Influence the AVEVA product roadmaps

<https://pisystem.feedback.aveva.com>

Let us know your product feedback!



# Innovation zone

Exciting, modern &  
engaging experience

**5 key zones:** CONNECT, operate &  
optimize, design & build, industrial  
sustainability, experiential zone  
(hands-on activities)

**45+ sponsor and exhibitor booths**

CONNECT ecosystem partner kiosk

Partner solution sessions

Guided tours by industry

Game and leisure areas



# Day 2 - AVEVA PI System sessions

## **Operations on-ramp to AI and advanced industrial analytics**

Wednesday, April 09 @ 11:15 AM

Room 2009-2011

## **Easily deploy AVEVA Adapters to remotely collect operations data at scale**

Wednesday, April 09 @ 1:15 PM

Room 2000

## **Offloading admin overhead with cloud-managed SQL for AVEVA PI Server**

Wednesday, April 09 @ 2:00 PM

Room 2000

## **Supporting expanding needs with AVEVA PI Vision**

Wednesday, April 09 @ 2:30 PM

Room 2000



# Day 3 – User community sessions

## Interactive community series:

### Industrial data management trends, insights, and best practices

Fireside chat with ARC Advisory analysts

Thursday, April 10 @ 10:15 AM

Room 2006

### Customer panel: Transforming raw data into actionable insights

Panelists from Albermarle, Flint Hills Resources, and TremcoCPG

Thursday, April 10 @ 11:15 AM

Room 2006

## Interactive workshop:

### Real-world data management scenarios and collaborative solutions

Thursday, April 10 @ 1:15 PM

The Hub

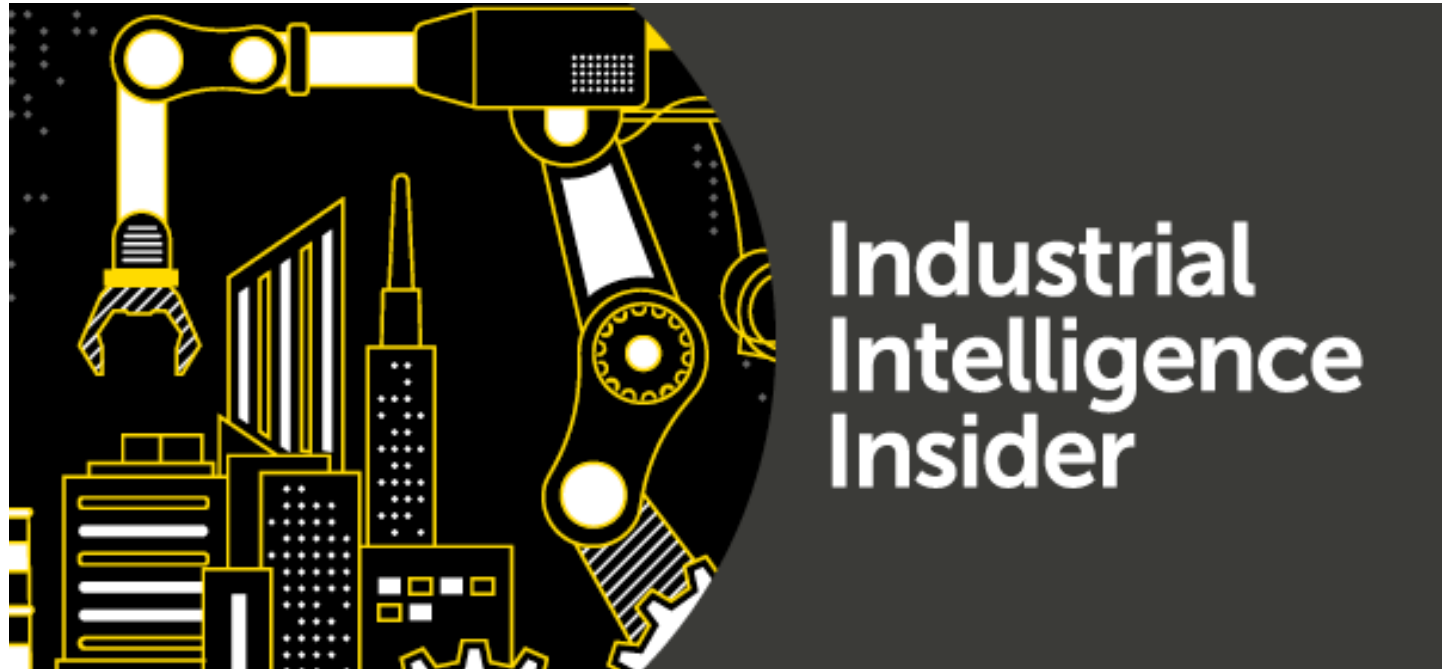


# New! Industrial Intelligence Insider Newsletter

Stay up to date with the latest product news on AVEVA and CONNECT

Each issue includes:

- Key industry insights & trends
- Product release updates
- Event details
- And more!





# 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.

Visit us in the Innovation Zone!

# 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.

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