

AVEVA PI WORLD



Bring Context and Analytics to PI Server Data

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AVEVA



Welcome to
our PI cooking
show!

We think you'll be pleased with our recipe's turnout

Our steps will leave us with something most all of us, across industries, can enjoy:

An overview of how to operate and monitor pumps properly and the performance parameters that need to be monitored in a preventive or predictive monitoring program

And we'll be doing so using ingredients and applications that you, as PI System users, already have!



AVEVA

At the end we will be left with equipment that runs:

1. More consistently
2. More safely
3. More efficiently





We'll use the following ingredients

Comprising both data and PI System tools:

- Real-time pump operations data
- PI Server
 - PI Data Archive
 - Asset Framework
 - Asset Analytics
 - Event Frames
 - Notifications
- PI Vision
- PI Integrator for Business Analytics



Let's get
started!

NOW LET'S FOCUS ON

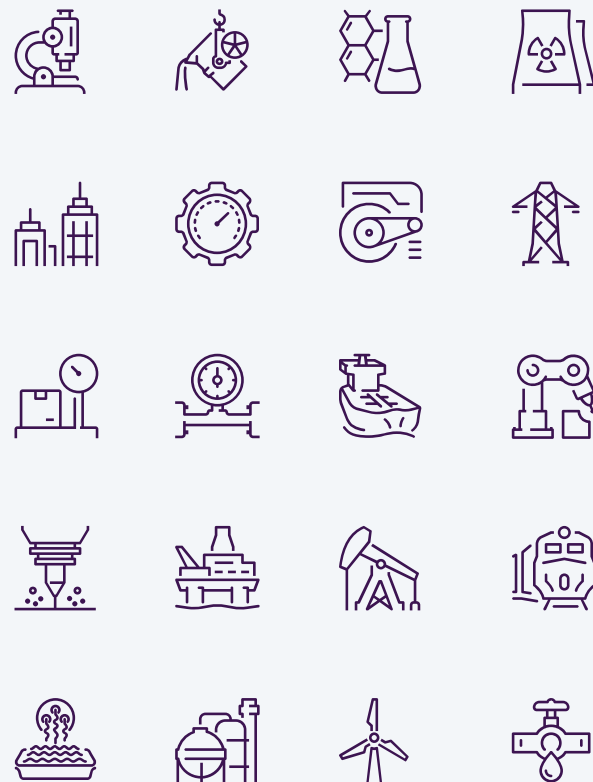
Real-time data collection

Real-time data ▶ PI Data Archive ▶ Asset Framework ▶ Asset Analytics ▶ Event Frames ▶ Notifications ▶ PI Vision and PI Integrators

Data collection

Robust connectivity technology for secure and reliable data collection from any operational data source

- Choose from a rich set of off-the-shelf products to pull time-series data from hundreds of different vendor systems, assets, and sensors
- Collect data from remote assets previously isolated due to harsh conditions or poor network connectivity



PI Interfaces

PI Connectors

PI Adapters

NOW LET'S FOCUS ON

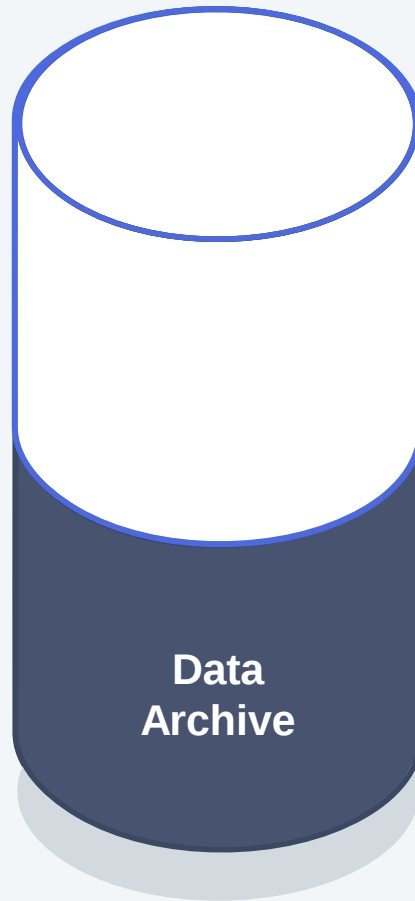
PI Data Archive

Real-time data ▶ **PI Data Archive** ▶ Asset Framework ▶ Asset Analytics ▶ Event Frames ▶ Notifications ▶ PI Vision and PI Integrators

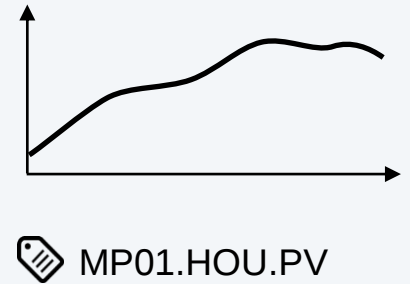
Data Archive

Optimized storage & access
to massive volumes of
operational data

- Store millions of data streams indefinitely
- Maintain the full original fidelity of your data
- Keep your data online for immediate, real-time retrieval
- Store future data from predictive models and other sources



PI Server



PLEASE STAND BY WHILE WE SWITCH BETWEEN THE PRESENTATION AND THE LIVE SYSTEM

NOW LET'S FOCUS ON

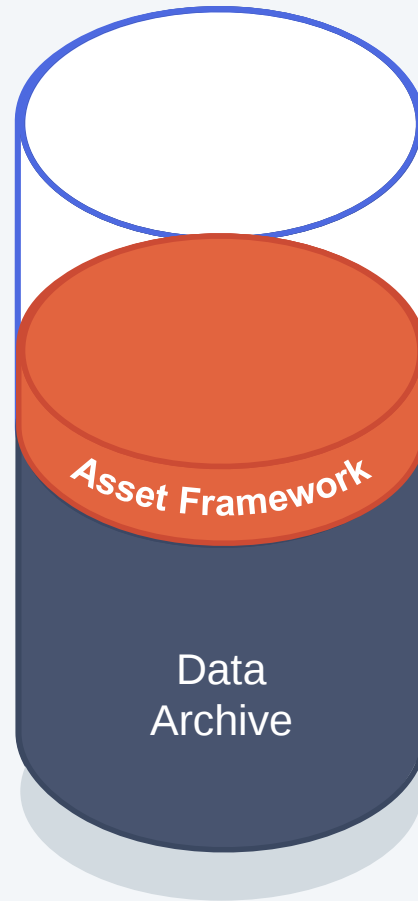
Asset Framework

Real-time data ▶ PI Data Archive ▶ **Asset Framework** ▶ Asset Analytics ▶ Event Frames ▶ Notifications ▶ PI Vision and PI Integrators

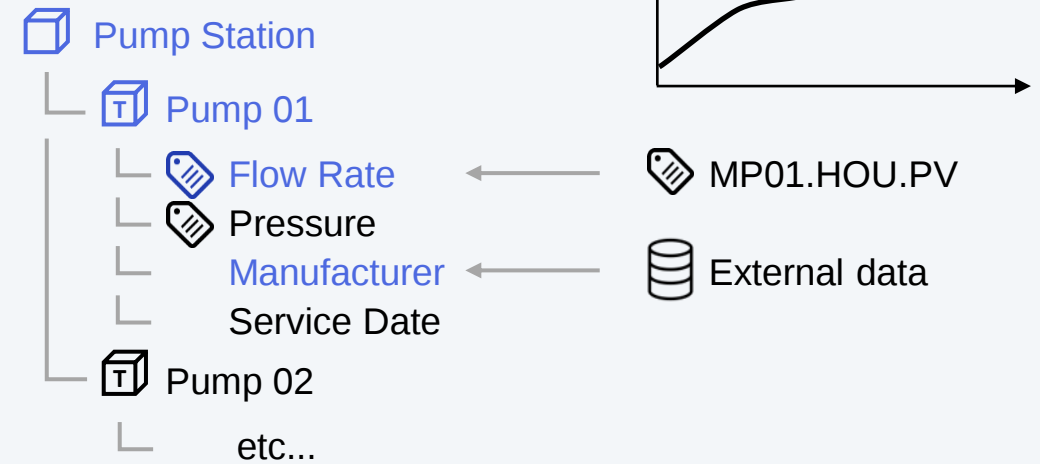
Asset Framework

Organize and contextualize your operational data in a way that makes sense to users across your enterprise — not just SCADA experts

- Label data with human-friendly names
- Group related data into Assets
- Add metadata and context manually or from external systems
- Standardize groupings, labels, and units with Templates

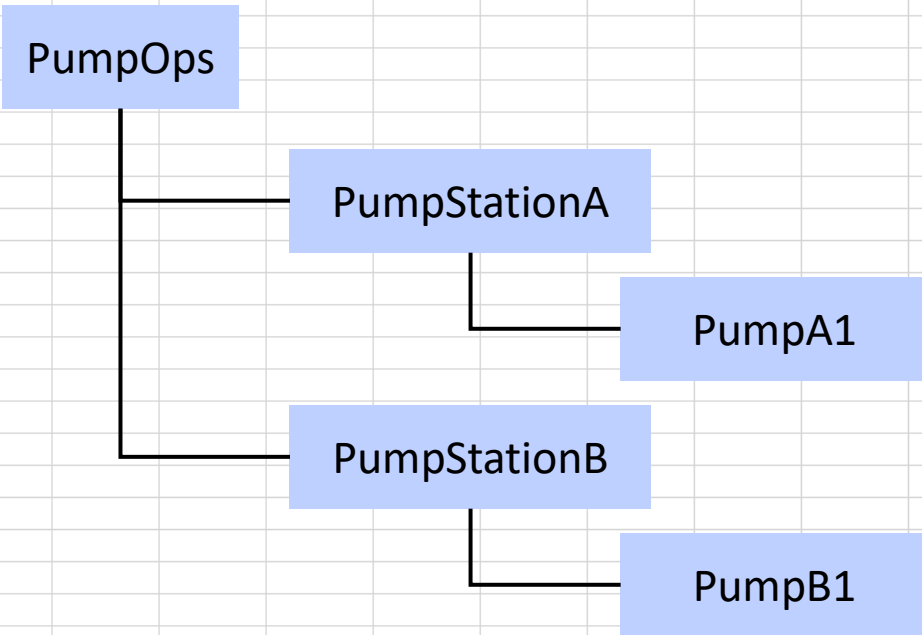


PI Server



A1 Selected(x)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Selected(x)	Name	ObjectType	pointsource	pointtype											
2	x	PumpOps-PumpStationA_PumpA1.Absolute Vapor Pressure	PIPoint	PumpOps-PLCData	Float32											
3	x	PumpOps-PumpStationA_PumpA1.Bearing Temperature	PIPoint	PumpOps-PLCData	Float32											
4	x	PumpOps-PumpStationA_PumpA1.Discharge Pressure	PIPoint	PumpOps-PLCData	Float32											
5	x	PumpOps-PumpStationA_PumpA1.Flow	PIPoint	PumpOps-PLCData	Float32											
6	x	PumpOps-PumpStationA_PumpA1.Hydraulic Power	PIPoint	PumpOps-PLCData	Float32											
7	x	PumpOps-PumpStationA_PumpA1.Input Shaft Power	PIPoint	PumpOps-PLCData	Float32											
8	x	PumpOps-PumpStationA_PumpA1.Motor Winding Temperature	PIPoint	PumpOps-PLCData	Float32											
9	x	PumpOps-PumpStationA_PumpA1.Speed	PIPoint	PumpOps-PLCData	Float32											
10	x	PumpOps-PumpStationA_PumpA1.Status	PIPoint	PumpOps-PLCData	Int32											
11	x	PumpOps-PumpStationA_PumpA1.Suction Pressure	PIPoint	PumpOps-PLCData	Float32											
12	x	PumpOps-PumpStationA_PumpA1.Vibration Acceleration	PIPoint	PumpOps-MQTT	Float32											
13	x	PumpOps-PumpStationA_PumpA1.Vibration Displacement of Peak-to-Peak	PIPoint	PumpOps-MQTT	Float32											
14	x	PumpOps-PumpStationA_PumpA1.Vibration Frequency	PIPoint	PumpOps-MQTT	Float32											
15	x	PumpOps-PumpStationA_PumpA1.Vibration Velocity	PIPoint	PumpOps-MQTT	Float32											
16	x	PumpOps-PumpStationA_PumpA2.Absolute Vapor Pressure	PIPoint	PumpOps-PLCData	Float32											
17	x	PumpOps-PumpStationA_PumpA2.Bearing Temperature	PIPoint	PumpOps-PLCData	Float32											
18	x	PumpOps-PumpStationA_PumpA2.Discharge Pressure	PIPoint	PumpOps-PLCData	Float32											
19	x	PumpOps-PumpStationA_PumpA2.Flow	PIPoint	PumpOps-PLCData	Float32											
20	x	PumpOps-PumpStationA_PumpA2.Hydraulic Power	PIPoint	PumpOps-PLCData	Float32											
21	x	PumpOps-PumpStationA_PumpA2.Input Shaft Power	PIPoint	PumpOps-PLCData	Float32											
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23	x	PumpOps-PumpStationA_PumpA2.Speed	PIPoint	PumpOps-PLCData	Float32											
24	x	PumpOps-PumpStationA_PumpA2.Status	PIPoint	PumpOps-PLCData	Int32											



PumpOps-%@Pump Station Name%_ %@Pump Name%.%Attribute%

PLEASE STAND BY WHILE WE SWITCH BETWEEN THE PRESENTATION AND THE LIVE SYSTEM

NOW LET'S FOCUS ON

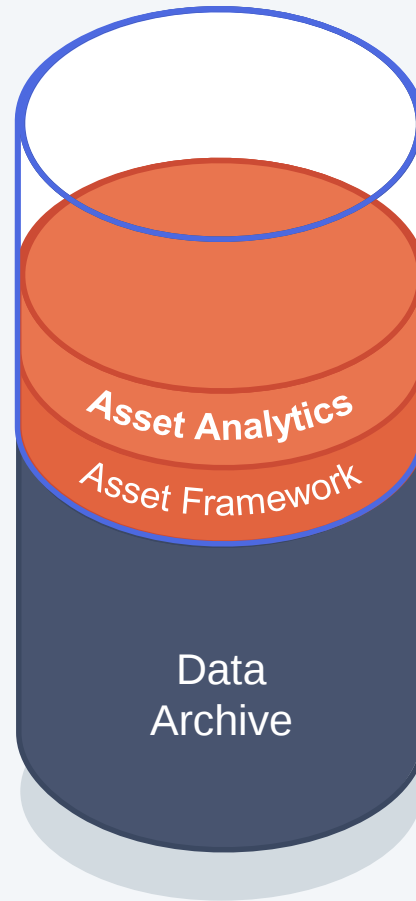
Asset Analytics

Real-time data ▶ PI Data Archive ▶ Asset Framework ▶ **Asset Analytics** ▶ Event Frames ▶ Notifications ▶ PI Vision and PI Integrators

Asset Analytics

Standardize and centralize your operations calculations and KPIs with continuous real-time results

- Create mathematical expressions without programming skills
- Migrate equations from Excel or other tools
- Templatize and roll out calculations across multiple assets in bulk
- Backfill calculation results as far back as you have source data



PI Server

$f(x)$ Pump Efficiency

Pump Station

Pump 01

Flow Rate

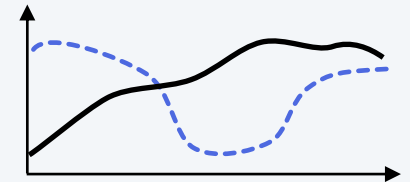
Pressure

Manufacturer

Service Date

Pump 02

etc...



MP01.HOU.PV

External data

Hydraulic Efficiency = Hydraulic Power / Input Shaft Power x 100



Run Hours = (Duration when Status = 1)

**since the last maintenance date)*



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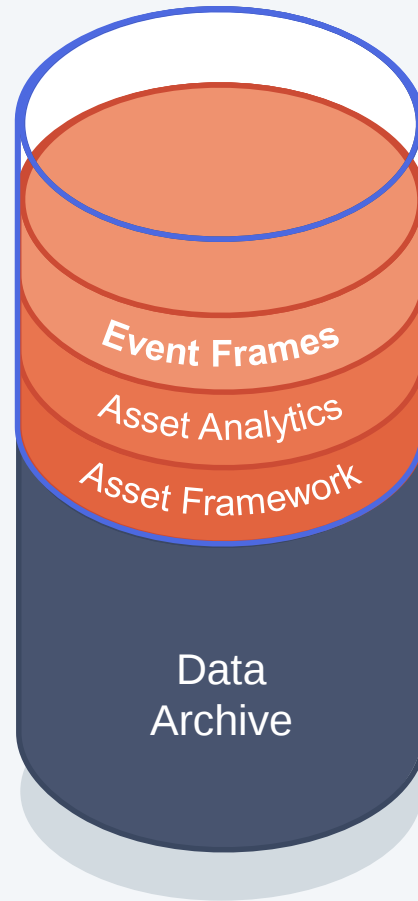
Event Frames and Notifications

Real-time data ▶ PI Data Archive ▶ Asset Framework ▶ Asset Analytics ▶ **Event Frames** ▶ **Notifications** ▶ PI Vision and PI Integrators

Event Frames

Automatically **bookmark important time-ranges** across your critical assets

- Find the minute that matters in a decade's worth of data
- Capture events based on process thresholds or other KPI triggers
- Store related context and calculations within Event Frames
- Easily analyze and compare these events in bulk



PI Server

 Low Efficiency Event

$f(x)$ Pump Efficiency

 Pump Station

 Pump 01

 Flow Rate

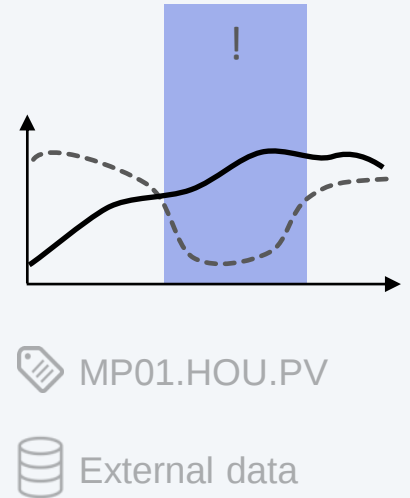
 Pressure

 Manufacturer

 Service Date

 Pump 02

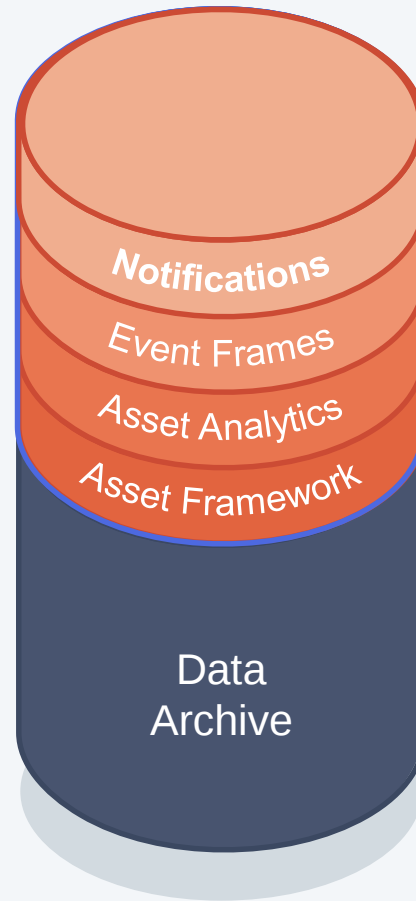
etc...



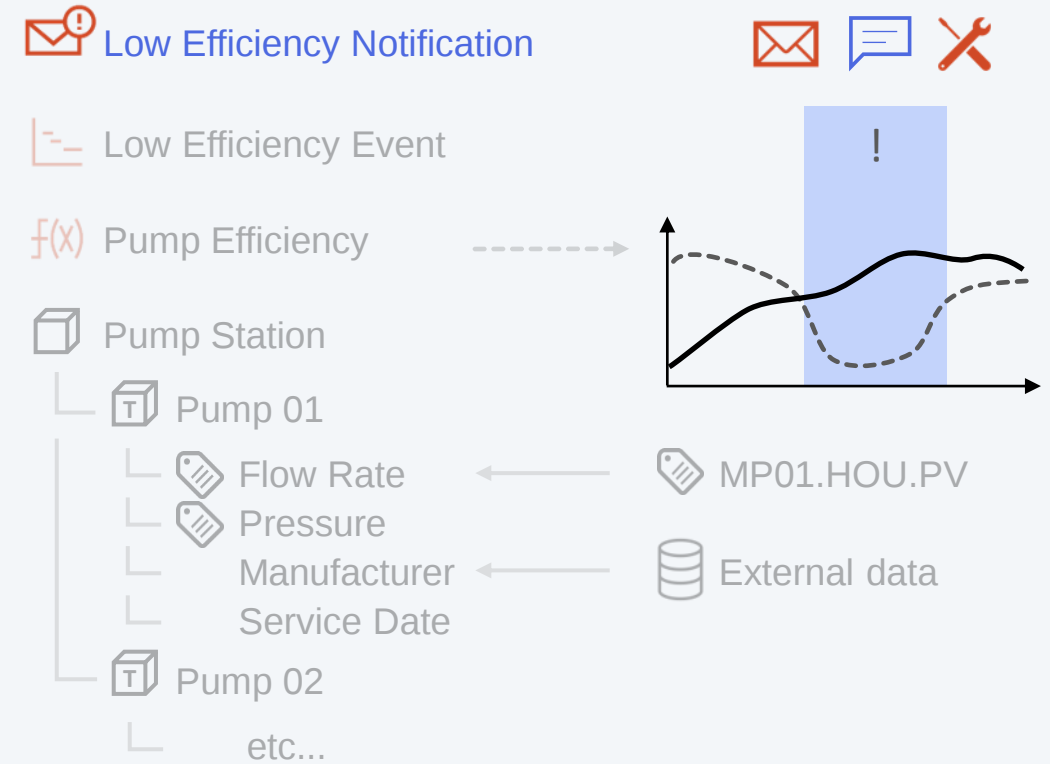
Notifications

Automatically send alerts to the right people with the right information

- Configure notification emails to contain values, trends, links, and attachments
- Design specific email formats for different recipients
- Send to individuals or groups, and automatically escalate if unacknowledged
- Send directly to web services for integrating with 3rd-party systems



PI Server



The background consists of a vertical gradient of purple shades, transitioning from a light lavender on the left to a dark, almost black purple on the right. A solid dark grey horizontal bar spans the width of the image, positioned in the middle. The text is centered within this bar.

PLEASE STAND BY WHILE WE SWITCH BETWEEN THE PRESENTATION AND THE LIVE SYSTEM

Analytics?
What about PI
ACE?



NOW LET'S FOCUS ON

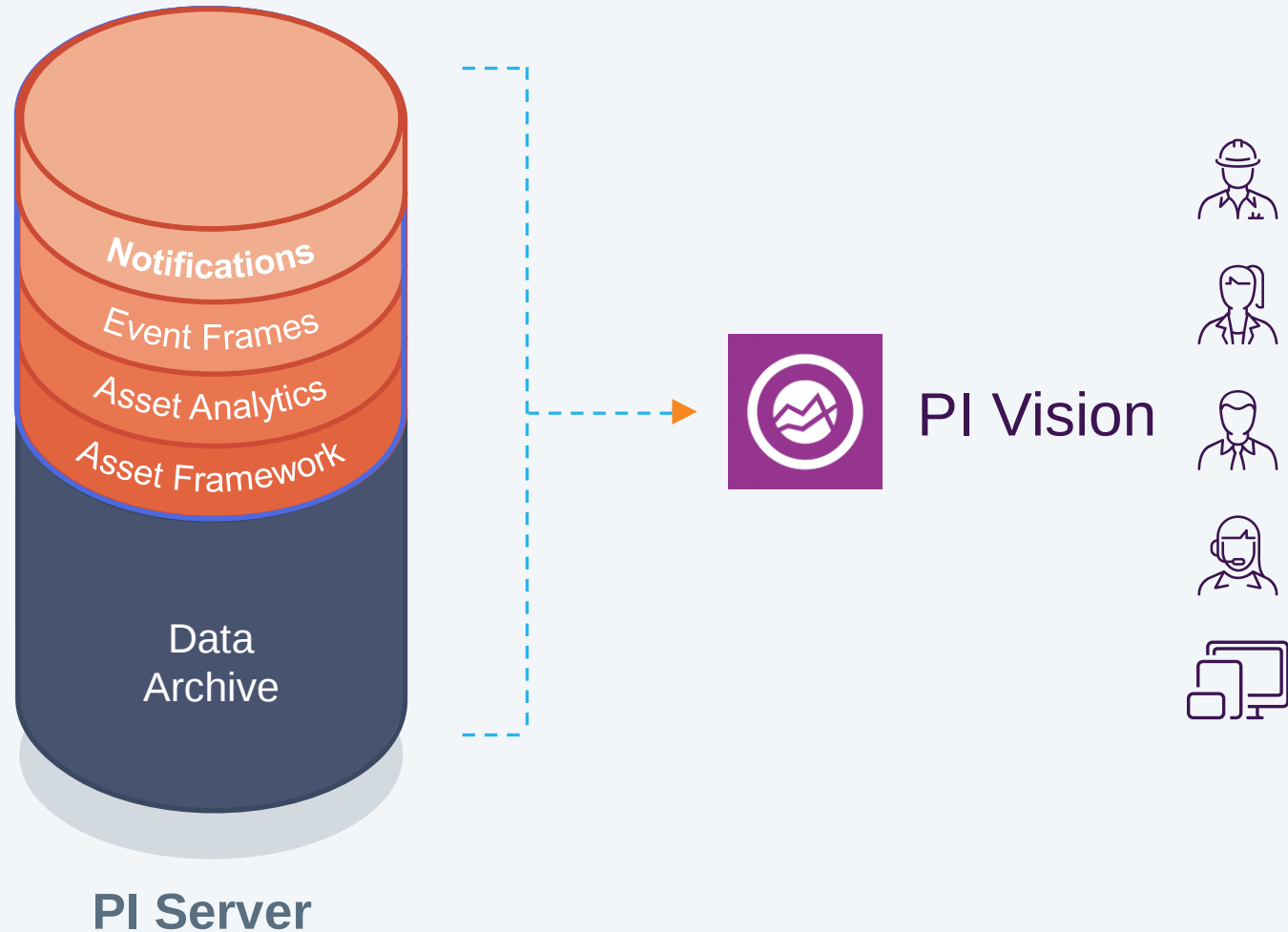
PI Vision & PI Integrators

Real-time data ▶ PI Data Archive ▶ Asset Framework ▶ Asset Analytics ▶ Event Frames ▶ Notifications ▶ **PI Vision and PI Integrators**

PI Vision

Unified **visualization infrastructure** for PI System data

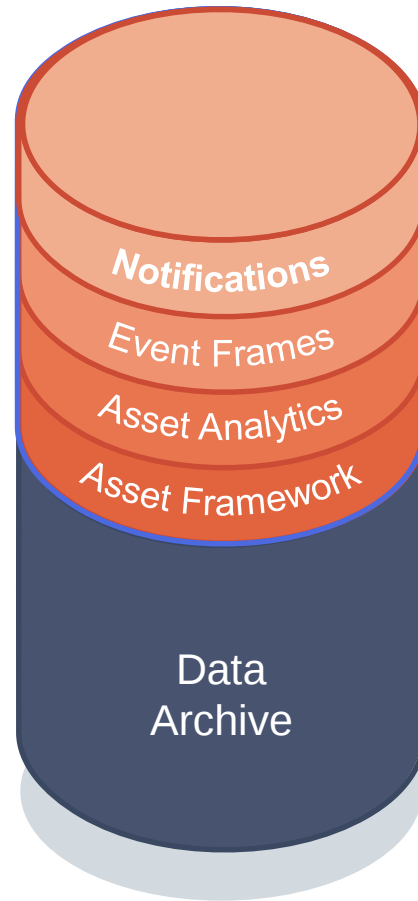
- Create powerful monitoring displays in minutes with PI Vision's intuitive drag-and-drop tools
- Collaborate and share displays with just a hyperlink
- Access data from the field, on any device
- Ensure only the right people access your valuable data, thanks to Windows Active Directory integration



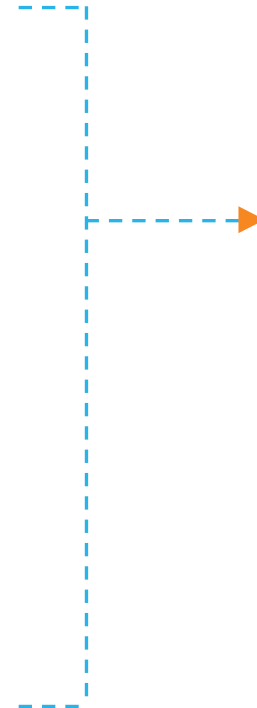
PI Integrator for Business Analytics

PI Integrators wrangle and format **complex datasets** so that you don't have to

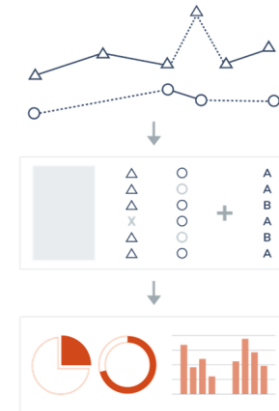
- Cleanse outliers and uneven data points
- Shape and augment raw sensor data
- Analyze operations data using familiar tools such as IBM Cognos, Oracle Analytics, Power BI, Qlik, SAP BI, Sisense, Tableau, TIBCO Spotfire, or any tool that accesses data using Open Database Connectivity (ODBC) or SQL standards



PI Server



PI Integrator



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Let's address
your
questions!

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