



AVEVA™

INTELLIGENCE

Transforming Industrial Data into Actionable Information

People, processes, and devices – every day they generate masses of time-series and plant-floor transactional data, yet without operational and business context the value of this data is limited. The key to remaining competitive is to unlock this industrial data and quickly transform it into business relevant information that is available across the organization. Intelligence provides the self-service access to actionable intelligence that helps drive sustained performance improvements across your organization.



Summary

Intelligence is an enterprise manufacturing intelligence (EMI) solution that automates the extraction, transformation and storage of operational KPIs, metrics and related contextual information across multiple data sources.

Delivering user-friendly analytics and dashboard-based monitoring of metrics enables workers and decision makers across the organization to make informed assessments quickly and confidently.

Business Value

- Empower operational stakeholders to improve plant performance by visualizing and analyzing critical metrics information in near real-time.
- Unlock the data trapped in multiple spreadsheets and disparate plant operational systems to automatically create relevant reports that reflect performance measures in line with your overall business strategy.
- Gain new insights into optimization potentials that may be hidden in disconnected functional domains or separate datasets.
- Maximize the ROI on your industrial investment by creating a single version the truth across your plant floor and enterprise systems and providing context for more transparency into operations.

Intelligence improves operational efficiency, asset utilization and sustainability through increased transparency and decision-making support.

It adds the information and insight you need to understand the true cost and profit contributions from your operations.

By providing a single version of truth across the organization, stakeholders can better align with business targets and make better decisions, faster.

Users can synthesize and map performance data, compare OEE metrics from multiple sites, and track performance against the metrics that matter most.

And with powerful visualization and analysis tools, Intelligence helps users to improve performance across the entire process.

Use Your Data to Maintain Competitiveness

Industrial operations leverage multiple software systems and spreadsheets to manage day-to-day operations in an effective and secure manner. These systems each generate large data sets due to process speed and product flow. Common examples include: process data, alarm data, material, production, consumption, execution and asset utilization logs, quality information, energy usage, and operational costs.

As a result, companies have large amounts of data in multiple silos, and are unable to create timely and relevant reports. This means they cannot accurately reflect, or understand, operational performance in relation to their strategic objectives.

Using spreadsheets to calculate and analyze metrics is not effective. Frequently generated after the fact, spreadsheets quickly become too hard to sustain and too complex for collaborative use across an operation.

Overcoming the Industrial Data Challenge

Intelligence addresses the challenge of handling industrial big data using a standard, off-the-shelf software approach.

The Intelligence enterprise manufacturing intelligence (EMI) / operational intelligence (OI) solution is an easy to use, non-disruptive solution for operational data analysis and information management.

Extract, transform and store a history of operational performance metrics from both time stamp and



relational structured data sources. Continual metric calculations ensure you have an always-up-to-date, accurate picture of your operational performance.

Increase ROI of your Industrial IT Investment

Instead of replacing your existing plant floor and enterprise solutions, Intelligence supplements these systems by adding the information, context and insight necessary to drive operational and financial improvements across your entire business.

Intelligence offers a cost effective way to replace the various worksheets and custom reporting applications a plant or enterprise may use to measure operational metrics. By utilizing a sustainable, common-use information model, Intelligence provides an always up to date "single version of the truth" and enables self-service access to information.

Suitable for any industry, Intelligence continuously computes the critical metrics to determine current plant, multi-plant or infrastructure performance. Unlike traditional business intelligence tools which typically refresh daily- at best – the system provides near real-time visibility of progress against your chosen metrics.



Whether your data comes from your AVEVA system, a process historian, MES, ERP, LIMS or other enterprise or custom legacy application, Intelligence effectively bridges the IT/OT gap. By providing an information model that data

warehouses and enterprise business intelligence tools need, the Intelligence system is able to continually assess your data and automatically calculate the KPIs needed to effectively run your business.

Drive Effective Collaboration

Information visibility at the right time empowers workers and operations decision makers to change the way they plan, schedule or act. Intelligence relates data for a holistic view across different core functions, domains and operations, regardless of where the data resides. This automated data contextualization process helps to:

- Identify and standardize best practices
- Align operational behavior with business targets
- Eliminate ineffective and expensive data extraction and transformation tasks
- Reduce time to action

The ability to analyze metrics in context creates insights to optimize margins (e.g. for business unit operations), to minimize costs with optimized use of energy and raw materials, or to improve operational efficiencies with improved throughput, quality, and asset utilization. This helps foster a performance and improvement oriented culture across the enterprise.

Intelligence Server

Intelligence Server provides the core services managing the acquisition, aggregation and persistence of operational metrics across connected data sources 24/7.

The software uniquely manages contextualization of information across multiple sources of time stamp and relational data, and stores extracted information in a data store optimized for retrieval. Data sources include AVEVA applications (AVEVA MES, Batch Management, Historian, etc.); enterprise data and third-party sources such as historians, MES, HMI/SCADA; and other plant systems.



Configurable Information Model

Intelligence's Information Model is configured and structured using three components:

- Data sources, defining the access to the source system, including type, location and authentication.
- Measures, defining the metric calculations to be performed.
- Dimensions, defining the context added to measures, such as lot ids, shifts, reason codes, etc.

After deployment of the Intelligence model, the software fills a data store by extracting historical data from connected data sources and keeping it current by refreshing information periodically or based on external event triggers. Historical data is loaded in reverse chronological order so users can start analyzing the most recent history instantly, while the system builds the full history for the specified timeframe and resolution.

The Intelligence Server is highly scalable, and can be established in a hierarchical data structure for aggregating multiple databases into one data store.

Data Store

All metrics and context information is maintained and persisted in an open information model (Microsoft SQL Server Database). It provides a single version of the truth that people, data warehouses and enterprise business intelligence tools need to make strategic sense out of industrial or production data.

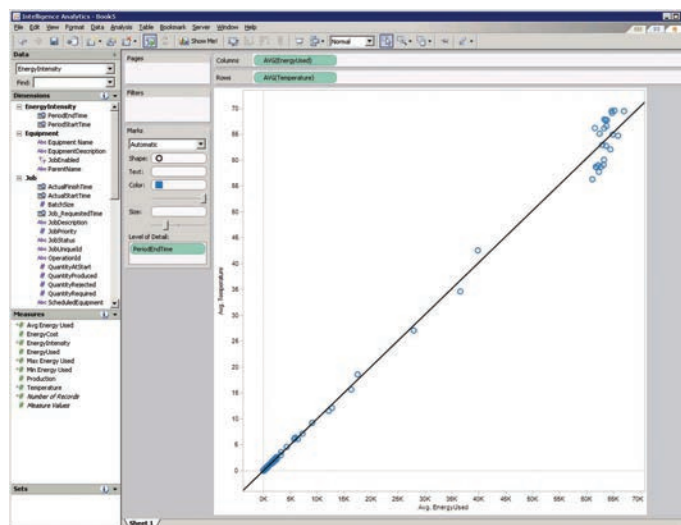
The database is optimized for retrieval and provides open, flexible access with Intelligence Clients (see below), or for any of your preferred analytics, business intelligence (BI), reporting, or client tools, such as Microsoft Power BI, Qlik, SAP Business Objects, just to name a few.

Intelligence Clients – Powered by Tableau Software

For customers looking for intuitive tools, Intelligence offers integrated access with Tableau®, an award winning, easy to use data visualization tool, empowering people to create and publish personalized charts, interactive reports and dashboards for collaboration. This self-reliant approach perfectly complements Intelligence and empowers your industrial and operations employees without needing to turn them into IT experts.

Intelligence Analytics Client

The Analytics Client (Tableau Desktop for enables users to quickly visualize and analyze Intelligence data with simple drag and drop capabilities. Several data visualization objects are available: grids, charts (line, bar, pie, bullet), maps (geographical, heat, tree) and more, all helping to understand the information at a glance or to perform root cause analysis. With a few additional clicks, users can layout and publish interactive dashboards that feature drill-down capabilities.





Intelligence Standard

Intelligence Standard Client provides viewing access to published dashboards, (Tableau Server for Intelligence). Users can browse and navigate the Intelligence data as personalized content, featuring the same visualization and drill down analysis capabilities as the Analytics Client.

High performance data management secures fast response times, even when handling large volumes of Industrial Big Data. Support for several web browsers and mobile devices provides access to Intelligence dashboards anytime, anywhere. Intelligence offers “out-of-the-box content” as preconfigured information models and dashboard content for several AVEVA software applications, including AVEVA MES Software, Batch Management, and the System Platform Historical Alarm database. This content allows a user to be up and running in minutes, delivering new insights and immediate value immediately after installation.



Technical Specifications Operating Systems

Intelligence Standard

- Windows Server 2012 Standard or Data Center Edition
- Windows Server 2012 R2 Standard or Data Center Edition
- Windows Server 2016 Standard or Data Center Edition

Intelligence Clients (Tableau for Intelligence)

- Analytics Client supports Microsoft Windows 7 and later, and OSX 10.10 and later Operating Systems.
- Standard Client support information access through major web browsers and apps for mobile device platforms.

Intelligence clients provide connectivity to the following data sources (strictly in conjunction with Intelligence Server): Microsoft SQL Server, Microsoft SQL Server Analysis Services, Oracle, Microsoft Excel, Microsoft Access or text files.

Database Technology

- Microsoft SQL Server 2012 in Standard or Enterprise Edition
- Microsoft SQL Server 2014 in Standard or Enterprise Edition
- Microsoft SQL Server 2016 in Standard or Enterprise Edition

Data Adapters

AVEVA Historian adapter

- AVEVA eDNA adapter
- OSIsoft PI Server Native adapter (requires OSI PI Data Access option - SDK)
- OSIsoft PI Server OLEDB adapter (requires OSI PI Data Access with PI OLEDB provider)
- Microsoft SQL Server adapter
- Oracle data adapter
- Text File adapter (CSV format)
- A Toolkit is provided to build additional data adapters.

Customer Support and Services

The Customer FIRST Services Program makes it easy to receive the latest AVEVA software and associated applications. To learn more about this valuable program, which maintains and often increases the value of your industrial software applications, please contact your local AVEVA sales representative.

For more information on Intelligence software and other Industrial Information Management solutions, please visit:

<https://sw.aveva.com/monitor-and-control/industrial-information-management/intelligence>

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