

# ALTAIR® PANOPTICON™: COMPREHENSIVE DATA VISUALIZATION AND BUSINESS INTELLIGENCE SOFTWARE

Altair® Panopticon™ provides business users, analysts, traders, and engineers with the monitoring and analysis tools they need to conduct successful, profitable operations while maintaining a close eye on anomalies, trends, clusters, and outliers. They can make insightful, informed decisions based on massive amounts of fast-changing data.

Panopticon is enterprise-class software you can deploy in the cloud (public or private) or on-premises. It connects directly to virtually any data source, including big data sources, SQL and NoSQL databases, flat files, and real-time message queues. Users can develop dashboards incorporating streaming data sources and design sophisticated visual user interfaces without needing to write a single line of code.



## REAL-TIME VISIBILITY INTO YOUR OPERATIONS

Delays in decision-making are costly. Waiting makes it likely you will be late to take advantage of profitable opportunities and avoid threats. The right data visualizations – combined with clean, enriched data – help decision-makers focus on the most important information without losing sight of the big picture.

Panopticon's filtering tools enable users to zoom in and out on the timeline, remove false positives, and focus on exceptions. Users can solve difficult problems quickly, understand complex relationships in seconds, and identify issues requiring further investigation with just a few clicks.

### Panopticon combines:

- Intuitive visual data analysis with high-density displays
- Comprehensive filtering and alerting, enabling efficient comparison and identification of correlations, trends, exceptions, and anomalies
- In-memory data blending with both streaming real-time and historic data
- Fast UI-based configuration and development with no coding



Panopticon users work in an array of industries including finance, automotive, heavy equipment, energy, and more.

Panopticon supports automatic data monitoring with on-screen and/or email alerts or webhook messages. Collaborate as a group by claiming, delegating, resolving, and commenting on shared alerts, and create your own personalized alert rules.

### **Enterprise-Class Data Exploration and Reporting**

Understand the structure, interrelationships, causal links, and outliers in your data. Get a comprehensive view of your operations from every angle. Securely develop and share dashboards and reporting screens throughout the enterprise.

### **Focus on Outliers**

Data visualizations help decision-makers focus on the most important information without losing sight of the big picture.

### **Leverage All Data Sources**

Altair's visual analytics software includes native connectors for virtually any data source, from big data repositories and real-time streaming sources to SQL and NoSQL databases and flat files.

### **Code-Free Development**

Build analytical dashboards with a point-and-click user interface. Respond quickly to changing business requirements, reduce risk and cost, and deploy new applications and dashboards in minutes.

### **Advanced Visual Analysis**

Automatically create smart dashboards and generate charts based on data source keywords. Visualize complex datasets using automatic machine learning and predictive models, including “best fit” or “bring-your-own” models, without leaving the user interface.

### **Visualize Real-Time Streaming Data**

In addition to standard historical data sources, Panopticon can accept, process, and visualize data with nanosecond accuracy, which is critical in many securities trading and industrial environments.

Real-time data is a stream of continuous timestamped messages delivered in sequential order, usually transported on a message queue like Kafka or MQTT. To make use of such fast-changing data, the system must be able to subscribe to updates as they appear. This is different than the traditional database model, which requires the data to first be stored and indexed before being “pulled” from the repository into a system for processing. Panopticon's real-time functions allow you to use data while it's in motion through the server.

Panopticon can handle high velocity/high volume data from multiple streams and make on-the-fly comparisons with historical information stored in high-performance in-memory time series databases — down to the nanosecond timestamp if needed. They can rewind and play back data streams at different speeds — in real time, faster than real time, or slower than real time.

Panopticon's capabilities empower an organization to quickly process and visualize large volumes of data so decision-makers can react to changing conditions in real time. For example, they can take immediate action when a dashboard reveals potentially fraudulent activity or other threats, and jump on opportunities to improve operations or profits as they arise.

### Proactive Alerts

Panopticon's proactive alerts make it easy to highlight anomalies in trading and/or market activity. You can set up a new alert in a few minutes and specify whether the designated users will receive alerts on their screens, via email, webhooks, and/or sounds. Define proactive alerts using data from streaming data sources, including CEP engines, real-time message queues, and/or historical trading data stored in virtually any kind of database.

### STREAM PROCESSING WITH NO CODING

Panopticon connects directly to a range of streaming and historic sources, including Kafka, and supports these critical functions:

- **Real-time data prep:** Combines streaming data with historic data
- **Calculation engine:** Calculates performance metrics based on business needs
- **Aggregation engine:** Aggregates data as needed
- **Alerting engine:** Highlights anomalies against user-defined thresholds



You can deploy Panopticon quickly — in days, not months — and new users can start building their own robust, customized dashboards within just a few hours.

### LEVERAGE ALL DATA SOURCES

Panopticon lets you extract real value from your existing data infrastructure without implementing new middleware or developing custom code. Panopticon offers native data connectors for a huge variety of sources, including:

- Message buses: ActiveMQ, AMPS, DolphinDB – Streaming, Google Cloud PubSub, Kafka, KsqlDB – Streaming, MQTT, RabbitMQ, Redis Streams, Solace
- CEP engines: Kx kdb+tick, OneTick CEP, TIBCO StreamBase
- Tick/time series databases: Dolphin DB, InfluxDB, KsqlDB, Kx kdb+, OneTick, Timescale DB
- NoSQL: Cassandra, Elasticsearch, MongoDB
- Relational databases: All JDBC-compliant SQL databases including Oracle®, Microsoft® SQL Server®, Postgres, MySQL, MonetDB, and more
- Cloud: Amazon S3, Google Cloud Platform, Google Analytics, Livy Spark, Microsoft® Azure®, Microsoft® OneDrive®, web services
- Cloud: Amazon S3, Google Cloud Platform, Google Analytics, Microsoft Azure, Microsoft OneDrive, web services
- Flat files: Json, SVG, Text, Excel/CSV, XML, Arrow IPC, HTML tables
- Python and R



## MULTIPLE DEPLOYMENT OPTIONS

Implement Panopticon at the desktop, workgroup, or enterprise level or embed it into your own applications.

### Streaming Analytics in the Cloud

Deploy Panopticon on AWS, Azure, Google Cloud, and Oracle Cloud. It's also fully compatible with containerized cloud implementations using Kubernetes.

### Multi-Tenant

Clients needing a “zero footprint” implementation can use Panopticon’s multi-tenant capabilities. This supports lower total cost of ownership (TCO), unlimited scalability, and automatic updates.

### On-Premises

Many Panopticon clients prefer to deploy the software on-premises in implementations protected by their own firewalls. This gives IT teams complete control over every aspect of their system’s data security, integrations, and reliability.

### Embed

Panopticon is designed for embeddability – we have numerous OEM partners and clients who have made Panopticon an integral component in their own applications. Embedding Panopticon provides users with visual analytics capabilities within the context of business applications. Panopticon makes embedding easy with support for single sign-on (SSO), automated embed link generation, and cross-origin resource sharing (CORS).

## APPLICATIONS

Our customers use Panopticon to continually optimize their operations.

**Manufacturing:** Analyze sensor data, make on-the-fly comparisons with historical data, flag potentially serious issues without reducing overall equipment effectiveness (OEE).

**Energy:** Oil and gas producers, pipeline companies, and electrical grid operators require up-to-the-second views of system performance.

**Telecommunications:** Network operators correlate and analyze data streaming from routers, towers, control systems, and third-party systems to make insightful, informed decisions.

**Retail Banking:** Visualize credit applications, loan performance, exposures, currency and interest rate fluctuations, and asset prices to identify fraud and reduce risk.

**Securities Trading:** Buy-side and sell-side firms use Panopticon to monitor and analyze best execution, TCA, latency, client flow, MiFID II and MiFIR compliance, profitability, and more. Analyze market conditions and activity to make smart timing and execution decisions and develop insights into the pricing characteristics of all liquidity providers. Identify cases of potential spoofing, quote stuffing, wash trading, and other fraudulent activity. Playback through series of trades tick-by-tick to gain an precise understanding of causal relationships.