

Visualizing Big Data

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Data visualization technology aids capital markets applications.

With data lying at the heart of most capital markets functions, the need to interpret and analyze data is driving the adoption of data visualization technology, which can express complex interrelationships in a way that's accessible to human traders.

"Big Data, new regulations such as Basel III, and the need for intra-day or real-time visibility into exposures, positions and profitability are the primary drivers behind data visualization in capital markets," Hugh Heinsohn, vice president of marketing at Panopticon Software, told Market Media.

Banks, hedge funds, mutual funds, and other financial services firms make extensive use of the data visualization capabilities of Panopticon's data visualization products to analyze risk, sensitivities, liquidity, P&L and compliance, and provide managers with informed views of market movements, trading activity and exposures.

"Capital markets firms must make sense of the massive amounts of data at their disposal," said Heinsohn. "They need to use information gleaned from historical databases and take real-time market activity into account."

Panopticon fulfills the critical function of data visualization in capital markets, said Heinsohn, which is the ability to tie into multiple data sources, including real-time streaming data from complex event processing (CEP) engines and data feeds, as well as historical tick databases.

Panopticon can handle the real-time streaming output of complex-event processing (CEP) engines from Oracle, StreamBase, OneTick, and Sybase. "CEP engines are used extensively in the infrastructure of capital markets firms in risk analysis, trade monitoring, trader surveillance, and algo trading applications," Heinsohn said.

Panopticon can also handle real-time streaming feeds from the message buses most commonly used in capital markets firms (e.g., ActiveMQ, SonicMQ and Qpid) and can connect directly to specialized tick databases storing massive amounts of trading data, including Kx kdb+, OneTick, Sybase IQ, and Thomson Reuters Velocity Analytics.

Capital markets firms often embed Panopticon capabilities into their own proprietary systems using the company's Developer SDK or the Rapid Development Kit. For example, users can interface with the data visually and then execute trades or take other actions directly from within the visualizations.

"Many firms have substantial investments in proprietary trading platforms," said Heinsohn. "The availability of an SDK for Panopticon data visualization functionality is very attractive for such firms, since they can tightly integrate our visual data analysis tools into their systems, which improves user acceptance, reduces training time and increase efficiency."



Data Visualization Aids Capital Markets

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Complex-event processing and tick databases expand analytics capabilities.

Data visualization technology is fanning out to support rapid visual analysis of large data sets and real-time data in financial services.

"There is an increased awareness of how fast things can go wrong in a trading environment," Chris Elmore, senior vice president, Panopticon Software, told Markets Media.

"Firms use our systems to monitor trading activity, exposures and liquidity in real time," he said. "They also use our tools to monitor compliance on best execution and spot fraudulent or unusual activity."

Panopticon's data visualization tools are optimized for capital markets applications, Elmore said. It supports direct connections to real-time message buses (QPID, Apache MQ, Sonic MQ), CEP engines (Oracle, Sybase, Streambase, and tick databases (Kx, OneTick, Thomson Reuters Velocity Analytics).

Factors driving adoption of visualization technology in capital markets include increasing deployments of CEP technology in capital markets firms, requirements for visibility into real-time streaming data feeds, and increasing need for time series data analysis that required federation of real-time sources (CEP and message buses) and tick databases, Elmore said.

There are also a large number of features/functions in the software that are based on specific customer requirements from capital markets customers, including J.P. Morgan Chase, Citi and Citadel.

Visualizations provide users with interactive filtering and other tools that vastly improve analytical efficiency by reducing the amount of time required to isolate outliers and expose trends in large amounts of real-time data.

"We have a number of data visualizations that are particularly useful in capital markets applications, including candlestick graphs, Open High Low Close [OHLC] graphs, treemaps, heatmaps, and horizon graphs," Elmore said.

Panopticon distributes through partners, including Sybase, Thomson Reuters and GoldenSource, and also has OEM partners such as Sky Road that embed its tools into their own product offerings.

Sky Road clients, ranging from startup hedge funds to large multi-strategy asset managers, include trading firms, whose strategies rely on the real-time processing and analysis of an ever increasing volume of order flow, and market data, while ensuring that portfolio information is communicated in a timely fashion with their trading partners.

"Panopticon enables our customers to monitor their portfolios in a visual manner that enables them to pinpoint sensitivities, performance, and risk quickly and in an actionable manner," Eiman Abdelmoneim, principal at Sky Road, told Markets Media.

Sky Road has embedded Panopticon's visualization tools into its Motion platform. As the amount of data required for traders to make good decisions increases,

With the addition of Panopticon's Developer SDK within Motion, users have access to interactive filtering and other tools that vastly improve analytical efficiency by reducing the amount of time required to isolate outliers and expose