

SENTINEL RISK MANAGER

Comprehensive Post-Trade Risk Management for Exchanges and CCPs

The trading environment is experiencing dramatic change worldwide. The global financial crisis and subsequent regulatory changes have significantly elevated the importance of central counterparties (CCPs) and exchanges within the financial services industry. The breadth, complexity and velocity of trading and clearing continues to grow. Clearinghouses have exposure to the same customers across multiple venues. Financial instruments that were previously traded OTC will have to be cleared through CCPs. These factors increase the need for complex post-trade risk management.

Specifically designed to address the sophisticated risk management needs of today's CCPs and exchanges, Sentinel Risk Manager from NASDAQ OMX® provides all the functionality required to measure and manage real-time risk, thus protecting the integrity of the clearinghouse and its members. Best-in-class data visualizations across asset classes facilitate enterprise-wide risk management and add more transparency to margin requirements.

A single Sentinel Risk Manager implementation can service multiple clients or aggregate risk across multiple clearing houses. In addition, Sentinel Risk Manager can be fully integrated to the NASDAQ OMX Genium INET and X-stream clearing systems or any other external margin engine.

A proven solution, Sentinel Risk Manager is in use in the U.S. and Europe.

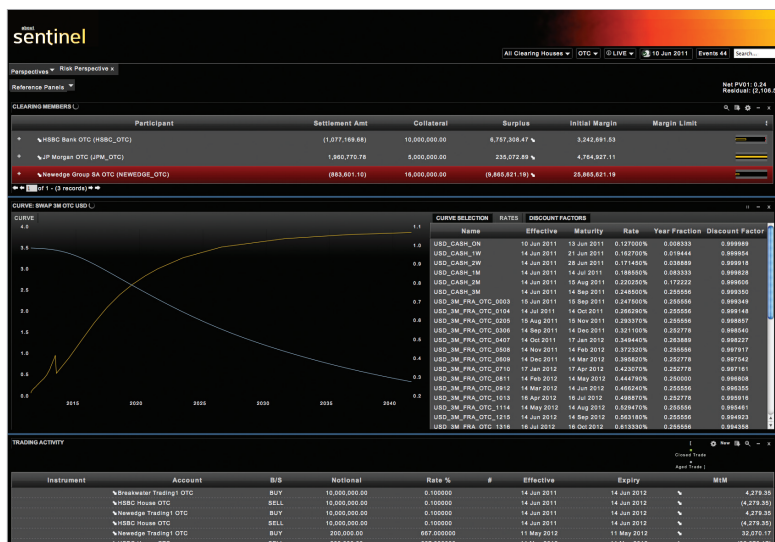
MANAGES ALL RISK FUNDAMENTALS

The 2008/2009 financial crisis demonstrated that the financial industry's approach to risk management was inadequate. NASDAQ OMX identified seven risk management fundamentals that are essential to maintaining market integrity and improving corporate governance and financial performance in today's more complex post-trade ecosystem. Sentinel Risk Manager was specifically architected to incorporate these fundamentals.

➤ **Strong data visualization:** A dashboard of all key risk indicators ensures that critical information is fully visible at all times on a single screen in a clear and intuitive fashion. Access is available across the enterprise, including "push" technology to deliver live updates.

➤ **Unmatched defensive safeguards:** To prevent risk breaches and other violations from going undetected, Risk Manager incorporates multiple safeguards enabling early identification and resolution of issues before they become critical. Robust functionality for setting static and dynamic limits, business rule definitions, automatic escalation and root cause analysis is included.

➤ **Real-time:** Real-time risk information allows risks to be managed when they occur rather than after the event.



- **Holistic view:** Supports simple and complex aggregation of data regardless of source, enabling risk to be managed on an integrated basis across the enterprise.

- **Adaptability:** A graphical workflow engine supports the addition and customization of business rules without changing the underlying software. This enables the ability to respond quickly to new market opportunities or regulations, providing significant competitive and cost advantages.

- **Control:** Efficient and precise default management tools give risk managers full control when the worst happens.
- **Resilience:** Sentinel Risk Manager is architected to provide the resilience characteristics typically associated with trading systems. All components have high resilience and can be deployed to ensure there is no single point of failure. Processing is stateless so recovery is seamless in the event of an infrastructure failure.

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#	NPV	DF	Type	Fix Date	Pay Date	Amount	Accrued	Rate	Effective	Expiry	Day Count Fraction
0	588,856.52	0.999945	FIXED		01 Jul 2011	588,888.89	472,222.22	2.000000%	15 Mar 2011	01 Jul 2011	0.294444
1	(99,324.54)	0.999945	FLOAT	11 Mar 2011	01 Jul 2011	(99,330.00)	(80,015.83)	0.331100%	15 Mar 2011	01 Jul 2011	0.300000

- **Reporting:** Comprehensive interactive and operational reporting, enabling users to define, save and modify their own reports and schedule on a regular or ad-hoc basis.
- **Market data management:** Graphically displays real-time curve construction including live updates to rates and discount factors; supports multiple curve types.
- **Scenario analysis:** Comprehensive scenario analysis calculates changes in risk in response to trade, price or other changes in the underlying risk model.
- **OTC clearing module:** Sophisticated pricing and margin calculation to meet new OTC derivative clearing requirements.

SOPHISTICATED FUNCTIONALITY

Key functionality includes:

- **Risk/margin aggregation & analysis:** Real-time risk margin evaluation at trade and account levels across participant and account aggregation history.
- **Limit management:** Limit setting at all levels, dynamic or static; event-driven monitoring automatically generates real-time alerts in response to limit breaches; ability to configure which users are notified of which events.

DEDICATED PARTNER

For more than 40 years, NASDAQ OMX has been a leader in creating electronic technology solutions for the exchange industry. We have a long history of partnering with marketplaces worldwide to provide the strategic guidance, technology tools and ongoing support to help them meet their goals. With Sentinel Risk Manager from NASDAQ OMX, in addition to gaining an exceptional technology platform, marketplaces benefit from the unwavering commitment and dedicated support of the world's largest exchange company.

More Information

For more information visit www.nasdaqomx.com/whatwedo/markettechnology.