LSEG Markets Technology Surveillance

The LSEG Markets Technology suite provides robust, scalable and high-performance solutions for operators of trading venues, clearing houses, central securities depositories, and related businesses. The products are used by LSEG to operate its own businesses and are proven in demanding global markets and regulatory environments.

Resilient, scalable, and adaptive surveillance system

LSEG Markets Technology Surveillance is a multi-asset, multi-market product focused on improving the efficiency of market abuse investigations. A high-performance system that is cost-effective to implement, manage and enhance.

The feature rich, resilient product offers an extensive range of out-of-the-box functionality and has a proven track record of up-time and operational availability.

Key facts

01

Feature rich surveillance product: Out-of-the box surveillance solution for equity, fixed-income and derivative instruments on a single robust platform that meets standard surveillance requirements off-the shelf, leading to reduced time-to-market and lower implementation risk.

02

Scala languages for alert configuration: Includes a comprehensive alert configuration workbench (PATLAB) to build Scala alert algorithms to detect patterns of trading behaviour leveraging already proven models and functions.

03

Integrated business analytics: Users can leverage preferred data visualisation and analytics tools to augment alert investigation. Create interactive dashboards that combine surveillance data with external complimentary data to provide a complete picture.

04

Leveraging machine learning technologies: Machine learning based anomaly and outlier detection is offered as an add-on module to help calibrate alert parameters. The standard pattern-miner functionality can be leveraged to mine historical data to discover missed market manipulations and for continuous calibration of alert parameters.

05

Real-time surveillance capability: Real-time alerting and investigation capabilities enable the identification of potential market abuse and manipulation attempts for immediate action to maintain an orderly market.

06

Scalable system: Scalable both horizontally and vertically to quickly respond to increased transaction volumes without software changes, solely by means of application configuration.

07

High performance and throughput: Production processing performance of 150,000 messages per second per partition and managing a billion messages per trading day on off-the shelf commodity hardware.

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Functional highlights

01

Self-serviceability: User definable alert, reports and dashboards with extensions to external platforms to leverage and extend surveillance features.

02

Multi-asset and market support: Extensive support for a multitude of asset classes including equity, fixed income, currencies, commodities and their derivatives. Capability to consolidate data from multiple markets/asset classes within the confines of a single instance.

03

Alert ingestion gateway: Alerts and warning from external systems can be ingested to optimise the alert workflow and management efficiencies.

04

Interactive dashboards to track market conditions: User configurable interactive dash boards derived via user-preferred data visualisation tools with options to drill down to the microsecond granular data points.

05

Order book and market replay: An intuitive tool to visualise every detailed marketplace event in its exact chronological order with full control of the event replay. A popular tool amongst users, the market replay module serves as a key investigation tool for both real-time and post-trade market abuse investigation initiatives. The replay functionality greatly improves alert investigation efficiency and can be leveraged to explain complex inter-related events, across multiple instruments via a synchronous replay of the events with many options to filter and highlight events of relevance to the investigation.

06

Market-driven product roadmap: LSEG Markets Technology Surveillance is designed for ease of use, automated operational cycles and systematized upgrade methodologies. These principles enable the product to adopt a nimble, functionally rich and technically innovative roadmap that is industry practitioner, client and market led and validated.

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Key business benefits
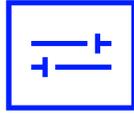
Adaptable to changing business needs: Self-Serviceability is the cornerstone of the surveillance product. Amidst its rich collection of functionality, our customers on average adjust the alert configurations 2–3 times per week to modify or introduce new alerts into production without needing any assistance. This is an indication of the flexibility offered to the users to change, test and deploy alerts and reports into production without incurring additional costs or dependence on internal IT or vendor.

Meets time-to-market needs: An easy to configure base product includes readily deployable, out-of-the-box functionality on which enhancements can be quickly brought to market. Technology and feature enhancements are delivered through an agile roadmap with input from surveillance practitioners. Current initiatives focus on reducing time to market, cost of ownership and investment into a set of disruptive technologies to enhance efficiency of the surveillance users.

Improved market engagement: Via interactive dashboards and analytics, the system enhances the engagement quality of the market supervision team with its regulators and market participants alike.
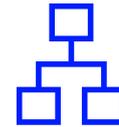
Low total cost of ownership: The system is fully scalable both horizontally and vertically, allowing for rationalised infrastructure investment to match the scale of the operation as the business grows, while preventing unnecessary infrastructure tie-in.

Best-in-class technology and reliability: A hallmark of LSEG Markets Technology Surveillance is its robust fault tolerance and disaster recovery capability that has recorded unparalleled up time across its implementations. The resilient system is designed to avoid single points of failure and uses parallel, concurrent processes to ensure zero transaction loss during all types of failover events.

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Key components

LSEG Markets Technology Surveillance is a fast, resilient and functionally complete surveillance system that supports multiple markets/assets on a single platform. It leverages a distributed process architecture, where logical units of a large system are broken down into smaller manageable processes, deployed on off-the-shelf commodity servers and high-bandwidth networks.

Individually designed, decoupled and modular components are at the root of the clean software design. This architecture is key to remaining cost-effective and competitive in today's fast evolving marketplace.
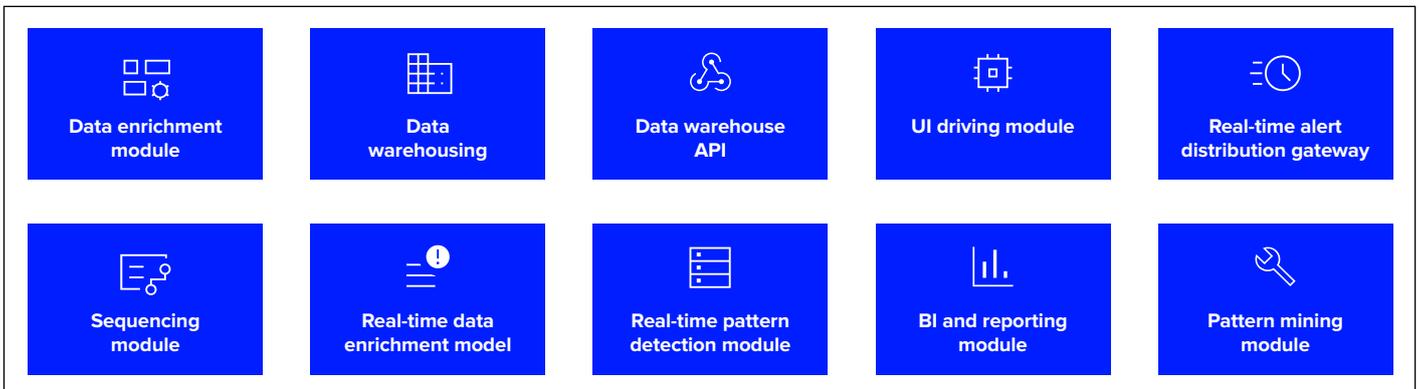
The system includes an 'alert development sandbox', that allows users to enhance the alert algorithms using the Scala scripting languages along with features to test, debug and deploy modified and new alert algorithms into production without needing vendor or IT assistance.

Key Components of LSEG Markets Technology Surveillance

Surveillance users

Data scientists	Alert report development	Surveillance operations	Market supervision UI	Regulators/ member firms

Core surveillance modules

Data enrichment module	Data warehousing	Data warehouse API	UI driving module	Real-time alert distribution gateway
Sequencing module	Real-time data enrichment model	Real-time pattern detection module	BI and reporting module	Pattern mining module

Integrated client systems

Data-driven interactive data analytics and collaborations tools	Interactive data visualisation tool	Big data processing module	Storage module

Monitored data sources

Exchange	News sources	External data sources

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Technical overview

Proven technology platform: LSEG's Surveillance product is built on top of the LSEG Markets Technology Advanced Platform, enabling high performance real-time processing together with the superior resiliency that characterises all our products from order routing to post trade across our customer base.
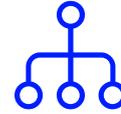
Ensuring resiliency and quick recovery: This multi-component system is managed by LSEG 's proprietary process management and life-support system, SysGuard. This approach eliminates single points of failure, ensuring resiliency and quick recovery to provide an uninterrupted service.

Leveraging big data technologies: Integrate Python libraries and statistical packages such as R, MATLAB and Scikit-learn for deep learning. These packages or software solutions leverage proven techniques for clustering, classification, forecasting, finite state machines, optimisation, statistical analysis etc. that can leapfrog the surveillance capability, detection accuracy and confidence.

High performance and extensive scalability: Operating on a low-cost Linux platform and run on low maintenance commodity hardware infrastructure, the Surveillance product is cost-effective to test, deploy, maintain and upgrade. Complimented by proven technologies, the system provides a superior cluster computing service that supports acyclic data flow and in-memory computing for feature engineering and actionable insights.

A feature rich flexible product: Functional and operational features of LSEG Markets Technology Surveillance can be enhanced through a wide array of parameters and rules. This enables a very short build to production time with configurable rule-based mapping and data modelling capabilities.

Integration to external machine learning platform: LSEG Markets Technology Surveillance also includes a machine learning toolkit (an add-on module) with a set of outlier detection algorithms. These algorithms can be leveraged to initiate the use of machine learning to enhance market supervision and monitoring functions.

An intuitive web-based user interface: LSEG Markets Technology Surveillance offers a web-based and a thin-client user interface. It leverages a micro-services architecture and provides options to integrate additional user-built analytics, dashboards and reports promoting user-led enhancements to the surveillance toolkit.

Technical features

LSEG Markets Technology Surveillance can be deployed across a varying spectrum of configurations.

– Distributed, message-based
– Software-based fault tolerance with zero data loss
– Business rule engine

– Web-based front ends
– Database: Oracle
– Operating system: Linux

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Contact us

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