LSEG Markets Technology Risk

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.

Real-time risk management and collateral system

LSEG Markets Technology Risk is a resilient and extensible multi-instrument real-time risk management and collateral system. It is used in trading and clearing workflow to minimise counterparty risk and enable stakeholders to maximise capital utilisation.

The rich features of the Risk product forms part of LSEG's post trade suite that includes the Clearing and Depository offerings. Combined, the post trade suite provides a fully integrated, reliable, cost-effective, and agile suite of products for the full spectrum of post-trade requirements.

LSEG Markets Technology Risk helps post-trade businesses stay compliant with CPMI-IOSCO principles of the financial market infrastructure (PFMI) and provides controls for trading venues that aspire to offer pre-emptive gating of transactions or reactive collateral calls in real-time through stringent market, credit, and liquidity risk measures.

Key facts

01

A real-time risk product: A true real-time risk system responsive to pre-to-post-trade transactional, referential, and market data events with full revaluation of risk models.

02

High performance: Full revaluation of value at risk at 2,500 trades/ second for pre-novation checks and <40us impact on orders for exposure evaluation as pre-trade checks.

03

Leveraging GPU technology: Native GPU acceleration, allowing such augmented compute density to cost-effectively realise previously prohibitive workloads in near real time.

04

Includes first line risk workflow: First line risk (FLR) workflows such as official margin runs, stress tests, reverse stress tests, what-if analysis, and back testing to run in parallel and asynchronous to the real-time path within single digit seconds latency.

05

Configurable risk models: Market leading risk model configurability for multi-instrument class margining by allowing multiple models of initial margins, additional margins, and marking-to-market valuations, to effect on a single margin account.

06

Tight integration with collateral management: Closely integrated collateral management module that leverages on margin position behaviour and margin risk models for efficient collateralisation.

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Functional highlights

01

Configurable account structure: User configurable, multi-tiered account structures with position and trade inheritance via rule-based grouping.

02

Configurable margin models: Configurable margin models for initial margin, additional margins (wrong way, liquidity, concentration, credit, etc.) and valuations.

03

Configurable limit setting: Configurable limit setting at all levels with event-driven monitoring and real-time alerts in response to limit breaches and collateralisation checks.

04

What-if analysis: Functionally rich pending queue behaviour for interrogation and what-if analysis of transactional events that are pended based on risk limit checks.

05

Configurable FLR workflow: Configurable FLR workflows that can be invoked for all accounts, for a group of members, for a member, or a single account.

06

Management of cover-n default fund: Computation and management of the cover-n default fund and member contribution with guided default management workflow and hedge recommendations.

07

Efficient collateral management: Efficient collateral management through configurable margin position offsets, risk based dynamic haircut schemes, limits, and utilisation policies.

08

Web-based UI: Real-time web-based UI for member and FLR user interactions.

09

Workflow manager and scheduler: Inbuilt workflow manager for automatic scheduling and configuration of the FLR operational day.

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# Key business benefits

Improved capital efficiency: LSEG Markets Technology Risk manages margining and collateralisation needs as a central risk service, for assets such as cash equities, listed derivatives, rates and repos (traded in regulated markets), or forwards and swaps of rates and FX (traded off exchange). The system provides cross margining capabilities by considering hedging benefits across instrument classes by applying multiple risk models on a portfolio and collateral to exist comingled with margin positions.

Stringent real-time risk checks: LSEG Markets Technology Risk can be leveraged for wider protection with more stringent pre-trade risk management (PTRM) together with tighter market protection and clearing certainty across the trade value chain. Its low latency real-time central risk engine pre-emptively manages risk through pre-trade, pre-novation and post-novation checks and integrates with external eco-systems through its satellite of gateways to establish a low latency risk centric market protection service.
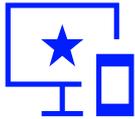
Enhanced hosted services for members: Real-time workflows accessible to member users through operationally harmonised web-based UIs can open opportunities for clearing houses and trading venues. They may offer chargeable hosted services to their members, such as a margin service for conflict resolution for bilateral negotiations and an enhanced PTRM service with simulated order strategy creation under optimal margin requirements, etc.

Leveraging 25+ years of experience: Benefit from the 25+ years of experience implementing mission critical capital market infrastructure at over 40 customer sites across the world. LSEG works with its clients to devise solutions, drive transition management, deploy applications and provide go-live and post-go-live operations support.

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Key components

The risk models are coded in C++ and CUDA. The CUDA risk models are hosted on GPUs for accelerated parallel performance for fast revaluation of the risk models.

The C++ build is used for less compute intense needs and for calibration of risk model runs off the GPUs. Therefore, the system also can run in a fully CPU only mode, as a scalable deployment option.
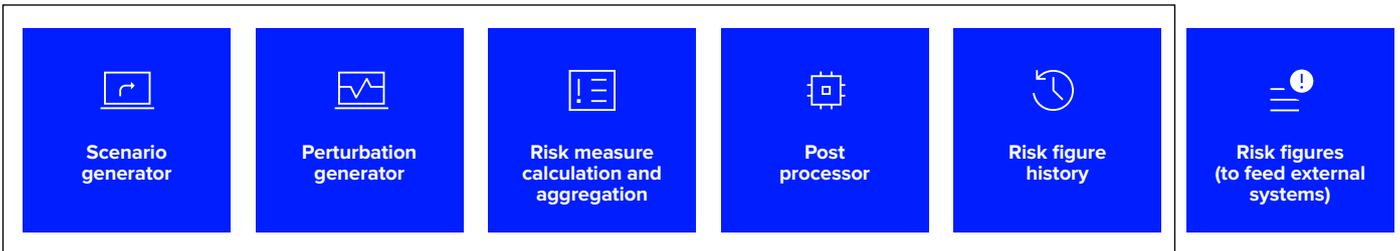
An API offers users to consume data in real-time providing access to all input and output transactional information used for risk and collateral management for a tighter integration with surrounding eco-system.

Key Components of LSEG Markets Technology Risk

Risk dashboard and results management

Dynamic reporting	Real time analysis UI	Intermediate figures	Pricing configuration	Model configuration	Screen and report customerisation

Risk exposure and aggregation management

Scenario generator	Perturbation generator	Risk measure calculation and aggregation	Post processor	Risk figure history	Risk figures (to feed external systems)

Pre-processing and simulation system

Pre processing API	Data clean up and validation	Integration and pre processing	Incremental scenario analyser	Pricing engine	Risk model

Integrated systems data

| Position and trade data management	Reference data management	Real time market data	Historic market data management

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Technical overview

Leveraging a proven technology platform: LSEG's Risk 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 and trading to post-trade processing that are deployed in multiple customer sites across the globe.

Manages risk in real-time across instrument classes: LSEG Markets Technology Risk is a modular, distributed and scalable system that manages risk in real-time across multiple instrument classes. It embodies multiple risk models applied to one or more cross instrument class portfolios to generate an array of risk measures.

Cost-effective to test, deploy, run, maintain and upgrade: Built on a low-cost Linux platform and designed to run on low maintenance commodity hardware infrastructure or directly on the Cloud, LSEG Markets Technology Risk is cost-effective to test, deploy, run, maintain, and upgrade.
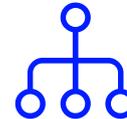
Ensuring resiliency and quick recovery: The multi-component system is managed by LSEG's proprietary process management and life-support system, SysGuard, eliminating all single points of failure, ensuring resiliency, and recovery to provide an uninterrupted/non-stop service.

High performance and extensive scalability: The systems demand on hardware for scalability is modest. Compute scalability is achieved by adding more GPU or CPU resources to the risk compute farm. The system can also be partitioned by members. There is no architectural limit to the system's scalability. This is achieved via its 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.
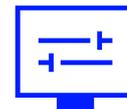
Configurable integration framework: Configurable gateway instances provide the necessary interfacing with upstream and downstream systems to receive and send relevant data. The interfacing framework is written using LSEG's proprietary scripting language and enables a very short build to production time with configurable rule-based mapping and data modelling capabilities. Standard gateways such as FIX and SWIFT are available out of the box. An API is available for users to consume data in real-time providing access to all input and output transactional information used for risk and collateral management for a tighter integration with surrounding eco-system.

Technical features

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

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

– Web-based front ends
– Database: Postgre SQL or Oracle
– Operating system: Linux
– NVidia GPUs

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Contact us

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