

LSEG Real-Time Data

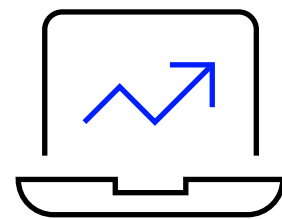


LSEG DATA &
ANALYTICS

Today, data is where the alpha is

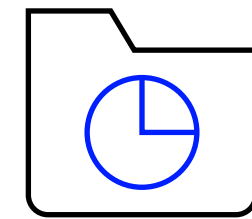
As a result, trading teams are thinking more strategically about how they source and use data. They are optimising their use of data across their trading operations and are placing more emphasis on data quality and governance. Trading teams are also bringing on new talent with coding skills to drive innovation with big data and alternative data, as well as through artificial intelligence and machine learning capabilities.

Important uses of Real-Time Data within trading teams include:



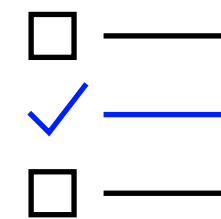
Front office

- Powering trading and risk systems with data and analytics
- Executing trades and performing execution analysis such as transaction cost analysis (TCA)
- Detecting trading patterns with artificial intelligence (AI) and machine learning (ML)



Middle office

- Undertaking portfolio management
- Managing market and credit risk
- Complying with regulations such as trade surveillance and reporting



Back office

- Working through post-trade processes
- Performing clearing, confirmation and settlement
- Conducting accounting and auditing



Trusted data is essential for creating value

To power all of these activities and processes, trading teams need to work with real-time data they can trust.

LSEG Real-Time Data provides comprehensive coverage, with access to 100+ million instruments and exclusive data sets. LSEG cleans, tags, standardises and normalises the Real-Time Data to enhance its quality. So, trading teams can use it immediately within their technology to connect, discover, build relationships and transact in a safe, effective and efficient way.

LSEG brings together this data from a deep and broad array of sources into a technology ecosystem that delivers the data to where the trading team needs to use it. Trading teams can engage with Refinitiv Real-Time Data alongside other content and analytics, enabling teams to bring together proprietary, customer and third-party technology. LSEG Real-Time Data:

- Onboards more content than anyone else (100M+ instruments) and in a world of exploding data sources and regulations such as MiFID II, this is vitally important
- Has the widest range of cross-asset market and pricing data, providing 9 million price updates per second for over 84 million instruments and 2.5 terabytes of real-time pricing daily
- Provides unique and exclusive content sets including:
 - Exclusive Tradeweb® corporate and sovereign bond pricing across over 50,000 unique bonds
 - Only vendor with MarketAxess for over 35,000 instruments priced, covering over 90% of liquid market
 - Reuters News
 - LSEG FXall®
- Dozens of other exclusive data sources from around the globe

The data that trading teams use can make a real difference to the success they achieve. Firms choose us and stay with us because of the extraordinary range of data we publish, as well as the high quality of that data.



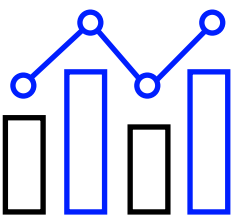
Your data is your competitive advantage

Having data that your teams can trust, and that can contribute to generating alpha – whether they are working with it personally or are using it within artificial intelligence or machine learning applications – has never been more important. LSEG Real-Time Data recognises that today, to get the most out of data, there is so much more to consider. LSEG Real-Time Data provides:

- **A unified and extensible data model** – The data model makes data easier to onboard and use. The model supports complex and varied data types, including bespoke trade status indicators and full depth-of-market order book data
- **Simplification and standardisation** – Logical and consistent use of FIDs across asset classes and venues
- **Complete core data** – Always provided per asset class, either supplied by the data source or derived by LSEG
- **Normalisation, not homogenisation** – Data is truly normalised, using consistent field identifiers across all asset classes and venues
- **Choice in how data is provided** – Real-Time Data can be consumed in a variety of ways, including in the cloud, via APIs and via servers located in-house

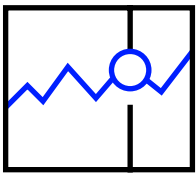
Real-Time Data's symbology, normalisation processes, reference data, entitlements and other elements are all aligned with the LSEG Data Platform's approach, empowering organisations to do more with their data to create value.

The following pages briefly describe the different types of LSEG Real-Time Data that trading teams can engage with.



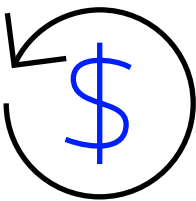
Deeper, broader market data

Access more than 80 million instruments, including exclusive content sets, with greater geographical coverage



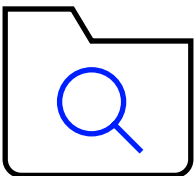
Machine ready data

Make better decisions with our filtered, cleaned and integrated data sets



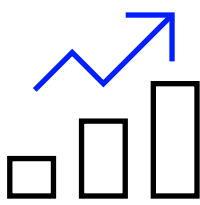
Lower TCO

Minimise costs with consolidated data services, connectivity and service delivery options



Discoverable data

Quickly find the content your users need, when they need it, with our standardised data and symbology normalisation



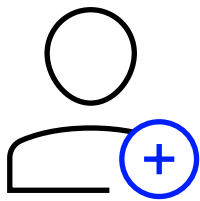
Fast and efficient delivery

Streamline your workflows with efficient, low-latency optimisation and cloud delivery options



Easy to integrate

Integrate content with users' workflow applications with consistent field identifiers. Full backwards compatibility with legacy models



Simple onboarding

Streamlined onboarding process helps you avoid complicated and long periods of waiting to access the content



Trusted data

Meet MiFID II high-frequency, trading-specific transaction reporting requirements with our tools and industry-leading reference data

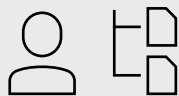


The LSEG Real-Time Data Catalogue

Equities Data

API

LSEG pricing data ensures profitable equity research, covering over 7.1 billion in shares traded per day in over 70,000 companies. Assets in over 500 exchanges are included. LSEG Tick History has time-stamped tick data dating back to 1996.



Global Equity

API

Our global equity indices cover over 10,000 stocks from 51 markets, broken down into different countries, regions and sectors.



Fixed Income

API

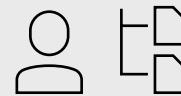
Global fixed-income pricing from over 800 contributors and over 70 exchanges. Exclusive data from Tradeweb, ICAP and other leaders gives you complete line of sight across the fixed-income markets. Pricing service covers 2.5 million securities including government and corporate bonds, U.S. municipal bonds, bank loans, derived equities, MBS and securitised products, derivatives, structured notes and money market instruments.



Fixed Income

API

Indices covering global sovereign bonds; Canadian, Singaporean, Malaysian corporate bonds; Sukuk and CDS.



Convertible Bonds

The most widely used and accepted benchmarks for measuring the performance of convertible bond investments.



Derivatives – Futures and Options

API

Covers all global exchange-traded financial and commodity futures and options contracts across 49 countries and 100 regulated exchanges.



FX and Money Market

API

Comprehensive coverage of all financial reference, real-time pricing, historical pricing and indices data relating to the trading of currencies, currency derivative instruments, short-term money market instruments and interest rate derivatives. New blended composite rates provide best indicative bid/mid/ask available. Data comes from more than 2,000 market-making contributors.



Foreign Exchange (FX)

API

LSEG/HKEX RMB currency Indices (RXY): independent, transparent and timely benchmarks for RMB against China’s most important trade partners’ currencies.



API

API deliveries available



For humans



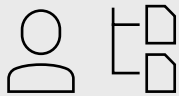
For machines



LSEG WM/R Benchmark



LSEG provides intraday and closing spot rates, forward rates and NDFs for more than 150 currencies.



Economics



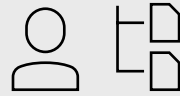
Macro data such as national, financial and external accounts; to micro detail, on housing, energy, automotive and other industries and key indicators for sub-national areas. 52 key indicators for up to 130 countries for easy comparisons. Over 8.5 million active economic indicators with history back to the 1950s for major markets, back to the 1980s for smaller markets.



Polling



Reuters Polls provide clients with the widest range of views of what top forecasters in financial markets are thinking with regard to economic indicators, foreign exchange, central bank interest rate policy, money market rates and bond yields.



Cryptocurrency

CryptoCompare order book and trade data for 50 coins, sourced from a wide variety of trusted exchanges. More cryptocurrency sources to be added in 2021.



Commodities Indices



Tracks baskets of commodities to reflect price movements and are recognised as a major barometer of commodity prices and markets. LSEG/CoreCommodity – CRB Index, comprising a basket of 19 commodities, with 39% allocated to energy contracts, 41% to agriculture, 7% to precious metals and 13% to industrial metals.



Energy



Power, gas and carbon research and forecasts; interactive maps and weather data. Global crude and product spots/forwards/ diffs; fair value swaps and strips; Polymerupdate; independent price assessments; fundamentals and forward prices from Argus, Platts, ICIS Heren.



Commodities Real-Time, Delayed, Historical Pricing



Exchange data and OTC prices, specialist supply and demand fundamentals covering agriculture, energy and metals – along with exclusive research and forecasts, weather and commodity trade flows.



Agriculture



Editorial sourced prices – CIF/ FOB U.S., French Spot OTC prices, Euvegoils, Asia editorial (palm), Brazil Grains – Prospere, JJH, Jacobsen, etc.



Metal



Metal Bulletin prices and indices, Asian Metal (Ferrous Metals Spot prices), ETF Physical holdings, Custeel (Chinese Ferrous Spot prices), etc.



API deliveries available



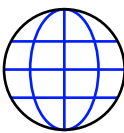
For humans



For machines

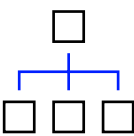
More quality data from LSEG

Firms often use Real-Time Data alongside other types of data supplied by LSEG. Data sets are normalised for easier and more rapid consumption. Below is a list of the data sets that LSEG provides across all data categories.



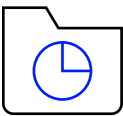
NEWS AND COMMENTARY

- Commentary
- Global and Domestic News
- Newsletters
- Significant Developments
- Video
- Commodities Research and Forecasts
- Sentiment



MACROECONOMIC DATA

- Country Data
- Economic Indicators and Polls
- Industrial Activity



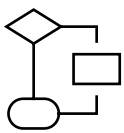
SPECIALISED DATA

- Commodities Fundamentals
- Deals and Transactions Intelligence
- Mutual Fund Data (LSEG Lipper®)
- Quantitative Analytics and Models
- Private Equity Data



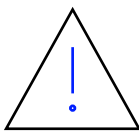
REFERENCE DATA

- Index Constituents and Weightings
- Industry Classifications
- Security Identifiers
- Terms and Conditions



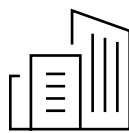
SUPPLY CHAIN DATA

- Suppliers
- Distributors
- Network of Relationships
- Type, Relevance and Characteristics of Relationships



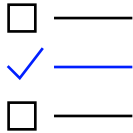
RISK AND REGULATORY

- Official California Code of Regulations
- KYC Org ID
- People Screening
- Regulatory Intelligence
- Risk Screening



COMPANY DATA

- Broker Research
- Business Classifications
- Credit (CDS)
- Company News
- Competitors
- Corporate Actions
- Debt and Syndicated Loans
- Entity Risk (Corporate Structures)
- ESG Data (Ranking and Ratings)
- Estimates
- Events and Transcripts
- Fundamentals
- M&A
- Officers and Directors
- Ownership and Bond Holdings
- Private Company Data
- Shareholder Activism Intelligence
- LSEG StarMine® Scores
- Transactions
- Valuation



RISK AND COMPLIANCE

- Know Your Client (KYC)
- Operational Risk Management
- Regulatory Risk Management
- Legal Disputes
- Arbitration
- Administrative Case Law
- Jury Verdicts
- Tax Case Law
- Court Dockets
- Court Filings
- Laws and Regulations
- Bills (Legislation)
- Court Rules
- Financial Regulations
- Science Regulations
- Tax Regulations
- Statutes
- Treaties

Data analytics and pricing services

Creating real value with intelligent data

To get more out of your Real-Time Data, engage with LSEG Data Analytics and Pricing Services to power your pre-trade, at-trade and post-trade workflows.

Our analytics and pricing solutions are underpinned by the breath and depth of our data, ranging from cross-asset market data to regulatory and reference data, as well as our data management technologies. LSEG offers a range of possibilities for firms to engage with, including:

- **Data Analytics** – For example, the Instrument Pricing Analytics API offers flexibility and control with parameters that meet your needs, including calculation preferences. Instruments covered include bond, options, swaps, volatility surfaces, zero coupon curves and forwards analytics.
- **Evaluated Pricing Services** – Engage with independent, global evaluated pricing for more than 2.6 million fixed-income securities, derivatives and bank loans. Some 90 countries and 175 exchanges are covered. Direct access to evaluators 24/5. Expertise on hard-to-value derivatives including CLOs, CDOs, complex derivatives and structured notes.
- **Entity Data** – Rely on LSEG information about issuers and other critical wholesale market participants. LSEG collects, cleanses, cross-references and stores the data financial firms need, removing the need for them to manage this resource-intensive work. More than 3.3 million entities in over 250 jurisdictions covered, as well as 1.3 million legal entity identifiers.
- **Regulatory Services** – Work with data solutions specific to each key regulation to help manage compliance requirements and regulatory change. Solutions include:
 - MiFID II
 - LIBOR Transition
 - FRTB
 - EU Benchmark Regulation
 - Solvency II
 - Shareholder Disclosures



Data management

LSEG makes it easy for financial firms to connect data across the enterprise

For financial services firms, strong data management is a new form of competitive advantage. The right approach to enterprise data management can enable trading teams to find and use the information they need to generate value, from deploying a new trading strategy to understanding fresh opportunities in new markets. Good enterprise data management also empowers firms to optimise the value of data, minimise total cost of ownership, simplify data governance and ensure regulatory compliance.

LSEG provides a range of data distribution architectures, from on-premises data delivery to fully managed services and data and analytics in the cloud. Clients receive the essential components necessary for data integration and distribution across the enterprise, such as technologies that simplify data mapping and symbology, data access controls that centralise entitlements and publishing services, as well as real-time monitoring and reporting capabilities that support cost management.

Explore further at: refinitiv.com/en/market-data/data-management





Data management – distribution

Choose the Real-Time Data format that suits your needs

LSEG Real-Time – Direct

Provides low-latency, direct connections to leading exchanges

We have completely redesigned our LSEG Real-Time – Direct offering from the ground up. It is optimised for the increased volume of today’s exchanges and networks, demand for lower latency and increased compute power of the latest hardware.

LSEG Real-Time – Full Tick

Every tick, trade and quote

Full Tick Real-Time Data provides access to our unmatched breadth and depth of content from thousands of exchanges and OTC markets. This premium, high-updating low-latency feed is available via LSEG Real-Time Managed Distribution Service, or our deployed real-time offering.

LSEG Real-Time – Optimized

Designed for where bandwidth and update rate control is critical

Real-Time – Optimized is our market-leading quote-conflated real-time data service. Providing access to the full Real-Time data set, Real-Time – Optimized is made available without the need for an installed device or application, via WebSocket APIs. This supports rapid application development and simple migration of existing real-time applications into the public cloud. LSEG Real-Time – Optimized is delivered via the LSEG Data Platform.

The LSEG Data Platform delivers a single, consistent data experience, making it easier for our customers to access, distribute and create with LSEG and third-party data.

Built and delivered in the cloud, the LSEG Data Platform integrates and distributes real-time and non-real-time data, from pricing and reference data to news and ESG. Enhanced by platform capabilities, including a consistent data model with uniform symbology and tagging, as well as authorisation, entitlements and usage managements, the LSEG Data Platform allows our customers to spend less time managing data and more time building applications that meet their workflow needs. And as LSEG continues to invest in our data infrastructures from LSEG data centers to select cloud locations, the LSEG Data Platform enables our customers to reimagine their approach to analytics, technology innovation, data distribution and cost management.

Data management – distribution

Consume Real-Time Data where and when you need it

LSEG Real-Time Managed Distribution Service

Our LSEG Real-Time Managed Distribution Service can help your organisation to be more efficient, unleash innovation and run your applications in a cost-effective way, whether you need an internet connection to market data, co-location of your application or a fully managed market data environment.

By leveraging our strategic data centers all around the world and our managed service expertise, you can access real-time feeds and our platform as a service to allow you to run your applications and market data environment with full transparency and control.

LSEG Real-Time Distribution System

Firms can choose to access Real-Time Data in a deployed model. The LSEG Real-Time Distribution System provides market data services via a hosted and managed distribution technology platform. Have data delivered to your private or public cloud, or to your physical premises.

Through this approach, LSEG offers a comprehensive set of managed services for solutions deployed at your site, including platform management, monitoring, 24x7 support and on-site resources and training. This approach is a great first step toward a fully hosted and managed solution for those who aren't able to move to a fully hosted environment immediately, or for those who cannot adopt a fully hosted model for business or regulatory reasons.

Data management – capabilities

Connect with the additional benefits of LSEG Real-Time Data

LSEG Real-Time Data Access Control System

LSEG Real-time Data Access Control System is the industry's most widely used system for managing data entitlement, usage and reporting across the enterprise. Customers manage their user entitlements, ensuring proper control and auditable records of which users and applications are entitled to publish data, and whether there are entitled users who are not using their data access.

LSEG Developer Community

Tap into our brain trust of data experts with full access to tools, documentation, sample code, learning materials and community Q & A forums to help you work effectively and get the results you need from our APIs, SDKs, tools, data and capabilities. Consider this your ultimate toolkit to get the most out of LSEG huge range of financial market data, which is gathered from a rich network of data provider partners, delivered through our feeds (Real-Time and Historical Tick Data) and connected to your workflow via our free APIs. We believe the developer is the critical value generator for innovation in the digital economy and it is our mission to help developers get their job done. Start with sample code or an API key to play around with our interactive documentation console. Ask the community a question or watch a short video on how developers put our intelligent information to work.

MyLSEG Portal

A single log-in that brings all your products and services together in one place, LSEG provides a consolidated, personalised entry point to answers, product information, support and billing.

- Type questions or keywords into the Search to find answers to product, content, technical, billing and admin queries. Or reach out directly to Support for help
- Access learning videos, guides and brochures for more than 100 products. Launch products, request free trials or demos, and download software
- Personalise your dashboard for the solutions you use. Access LSEG thought leadership and events. Read product change notifications and FAQs

