LSEG Academy

James Perkins

Director of Customer & Solutions Learning Global Data, Feeds & Analytics

How to Optimise Financial Data for Al: Tools, Techniques, and Use Cases



About LSEG Academy

- Learn Anytime, Anywhere: 500+ on demand courses
- **Instructor-Led Classes:** Interactive, multiple languages
- Market Insights & Intelligence: Experts deliver industry market and briefing sessions
- **Certifications:** Learn essential skills and receive foundational certifications









Trade Compliance

Store all your trades, media chats with a fu Global Relay.

LSEG Data Library for Python

Data Analysis

Analytics: LSEG Yield Book

The Municipal Markets





Getting Started

Discover the available features, build your layout, and explore useful apps for Fixed Income users.

Start Learning →



Traders

VIDEO COURSE

Leverage LSEG Solutions for identifying trading opportunities in the market, access real time pricing, reliable & accurate news and utilize our trading capabilities.

Workspace • Continuous Learning • 🕒 87 min



Sales

VIDEO COURSE

Discover the LSEG Solution for Sales professionals to identify market trends, analyze valuable insights, facilitate trades, and manage relationships effectively.

Workspace • Continuous Learning • (79 min



Middle and Back Office

VIDEO COURSE

Learn more about how LSEG supports Middle and Back Office functions to effectively manage business transactions and minimize business risks.

Workspace · Continuous Learning · (5) 15 min



Visit the **LEARNING CENTRE**

Risk Manager

Access the data and insights you need to monitor credit and market risk

Workspace - Continuous Learning - (44 min

Agenda

- 1. Financial Data & Analytics Al Landscape
- 2. Financial AI Hype vs. Reality
- 3. Optimising Financial Data for Al
- 4. Al Data and Technology Requirements



Resources

LSEG Academy

<u>lseg.com/en/training/learning-centre</u>

Data Catalogue

lseg.com/en/data-analytics/financial-data

Data Discovery

datadiscovery.lseg.com

24x7

Customer Support

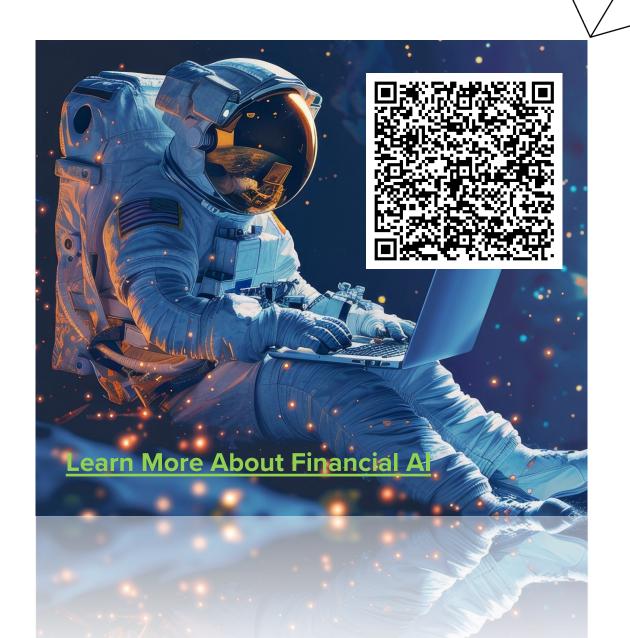
New <u>support.lseg.com</u> myaccount.lseg.com

Developer Community

developers.lseg.com

Global Phone Numbers

myaccount.lseg.com/en/phoneus



Financial Data & Analytics Al Landscape

LSEG Academy

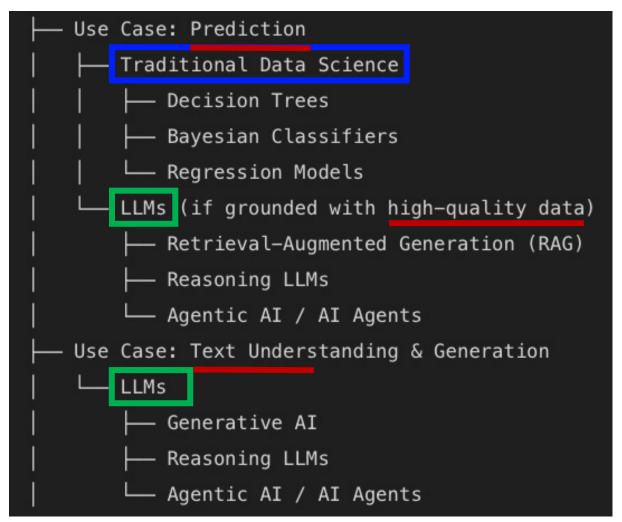
LSEG Academy

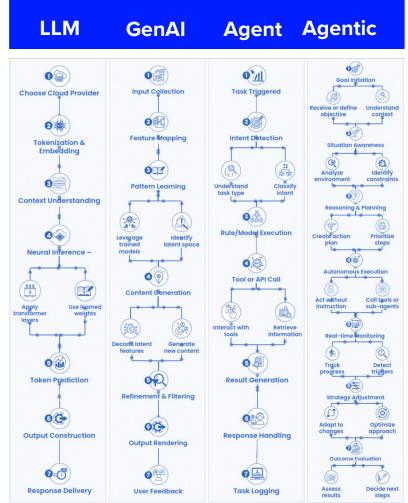
Disclaimer

The content in this presentation is provided by LSEG for your personal information only and is not intended for trading purposes or deciding to carry out a transaction or trade. Nor does it provide any form of advice, or make any recommendation regarding financial instruments, investment, or product. LSEG shall not be liable for any errors, inaccuracies, or delay in content, or for any actions taken in reliance thereon. LSEG expressly disclaims all warranties, expressed or implied, as to the accuracy of any of the content provided, or as to the fitness of the information herein for any purpose.

Defining Artificial Intelligence (AI)







"Al" has a range of definitions

Financial Data Catalogue

LSEG Academy

An Industry View

Data Categories

Macroeconomic

Pricing & Reference

Unstructured Text

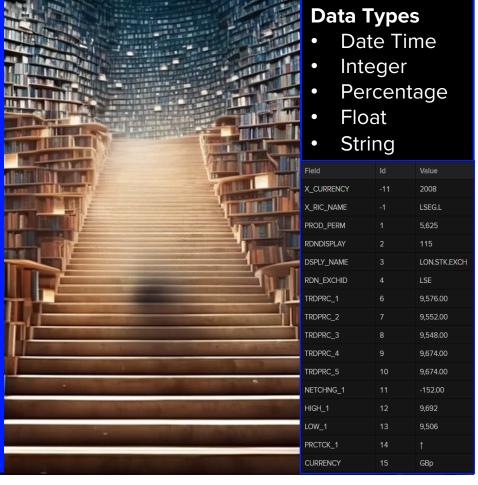
Company

Risk Intelligence

Analytics

Instrument TypesBondsLoans

- Currencies
- Commodities
- Indices
- Economic
- Equities
- Funds
- Futures
- Options
- Interest Rates
- Warrants
- Synthetic
- Hybrid
- Entities
- Vessels
- People



LSEG D&A Data Catalogue

Financial Data & Analytics Al

LSEG Academy

Practice and segmentation

- Data Science
- Quantitative Analysis
- Quantitative Trading
- Algorithmic Trading
- Risk Management
- Compliance
- Financial Analysis

- Data Visualization
- Cloud Architecture
- Software Development
- Database Engineering
- Project Management
- Data Consulting
- Business Management

Buy-side



Banks



Investment Banking



Corporates



amazon



LSEG DATA & ANALYTICS

LSEG Academy

Focus on Data

terabytes of data stored

financial price updates per second

merger and

acquisition deals

company financial data points per year economic time series

Global Presence

40k customers, 400k users, 170 countries

Partnerships and Brands























Cloud Collaborative













Data & Tech Expertise

Managed services, consulting, data and technology SMEs

Data & Analytics Trends

Where are the shifts?

- Cloud migration
- Liquidity fragmentation
- Algo trading
- Sustainable finance
- Crypto & digital assets
- Risk-free rates (RFRs)
- Regulatory mandates
 (MiFID, Basel 3.1 / FRTB, DORA, SFDR, 2a-5)
- EU AI Act
- Alt data demand





LSEG Academy

Financial Al Hype vs. Reality

LSEG Academy

How Al Is Growing Fast On Wall Street

JP Morgan

Investment Banking & Risk

• **LLMs** automating tasks: email, research, creation.

Risk Management

 Al models forecast exposure to interest rate, credit, and liquidity risks, aiding compliance with stresstesting regulations. Forbes

Morgan Stanley

Wealth & Investment Advisory

- OpenAl GPT-4-PA, supports FAs.
- Attends meetings, takes detailed notes, drafts emails. - <u>CNBC</u>

Goldman Sachs

 GenAl assistant to bankers, traders and asset managers. <u>CNBC</u>



"The AI revolution will cut nearly \$1 trillion a year out of S&P 500 budgets, Morgan Stanley says".

Fortune

"global investment banks can boost their frontoffice productivity by as much as 27%–35% by using generative Al." Deloitte

LSEG Academy

What's not being highlighted

- Up to 85% of Al projects in finance fail—mainly due to data issues, talent gaps, and misaligned strategies. Source: ProPair/RedPoint Research, Forbes
- Challenges Stalling Al Implementation In The Financial Sector. source: Forbes
- 30% GenAl projects abandoned after POC due to data quality. Source: Gartner
- Early financial GenAl chatbots prone to hallucinations (nonexistent inferences) due to low quality or incomplete data (increasing regulatory and reputational risk). source: Moody's

"There's a lot of success theater out there when it comes to applying artificial intelligence in banking" Source: CNBC



"Al Is Failing at an Overwhelming Majority of Companies Using It, MIT Study Finds" Futurism

Financial AI - Data



LSEG Academy

"without the right data, even the best algorithms can deliver mediocre, or worse, misinformed results."

David Schwimmer Chief Executive Officer, LSEG

World Economic Forum

Top Al Data Sources

Model Challenges

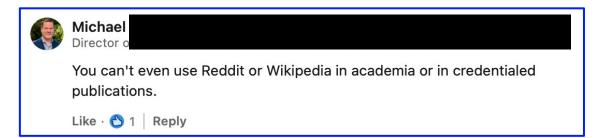
- Low signal-to-noise ratio
- Informal language
- Context fragmentation
- Demographic skew

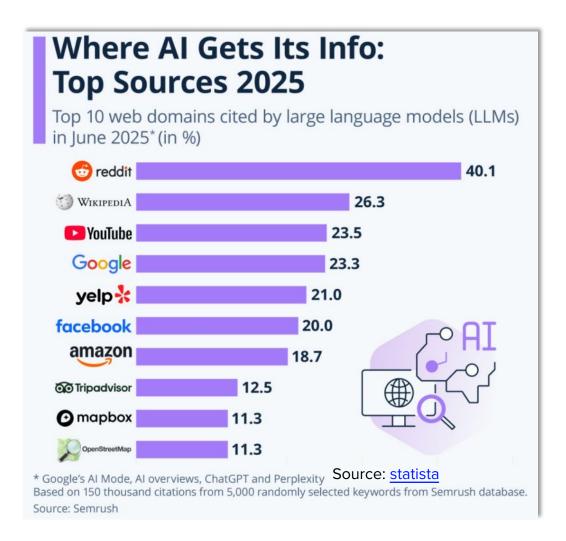
- Echo chambers
- Licensing
- User consent
- Redundancy



This is very dangerous. Reddit rewards high volume user activity but a very small group of moderators rule many large popular subreddits with an iron fist.

Like · 💍 2 Reply





LSEG

Academy

Financial Data - Expertise

Across **equity and fixed income** are the implications of corporate actions understood?

Are nuances like trade qualifiers being captured in trading models?

For **futures and options** are contract rollover adjustments being made?

Does the model consider regional market holidays and time difference?

For **volatilities** are the right interest rate curves and dividend assumptions being made?

For **commodities** have seasonal adjustments been made to the data?





Financial data has unique nuances

How to Optimise Financial Data for Al: Tools, Techniques, and Use Cases

Optimising Macroeconomic Data for Al

Macroeconomic Data

Understanding the global economy

Local Date	Count down						Indicator Name	Period	Reuters Poll		tual	Surprise	Prior	Revised	Min	Max	Count	Smart Econo	Predict Surprise
2 Aug		08:30 ≈	=		${\rm al}$	18.2 12.0	Non-Farm Payrolls	Jul	175k	11	14k	-61.0k	206k	179k	70k	225k	72	181.7k	6.7k
2 Aug		08:30 ≈	:		al	18.2 12.0	Unemployment Rate	Jul	4.1%	₹ ↑ 4.	.3%	0.20%	4.1%		4.0%	4.2%	71	4.10%	0.00%
2 Aug		08:30 ≈	:		al	18.2 12.0	Average Earnings YY	Jul	3.7%	3	.6%	-0.10%	3.9%	3.8%	3.6%	3.9%	33	3.71%	0.01%
2 Aug		10:00 ≈	:		al	18.2 12.0	Factory Orders MM	Jun	-2.9%	-3	.3%	-0.40%	-0.5%		-5.5%	1.0%	33	-2.67%	0.23%
4 Aug		20:30		•	$a\mathbf{l}$	18.2 12.0	JibunBK Comp Op Final	Jul		Real-T	im		52.6						
4 Aug	0	20:30 ≈	=	•	al	18.2 12.0	JibunBK SVC PMI Final SA	Jul		(ear-i		E	53.9						
5 Aug		03:45		П	al	19.2 12.0	HCOB Composite PMI	Jul					51.3						



LSEG

Academy

- ✓ Real-time Indicators
- ✓ Economic forecasting
- ✓ Economics point-in-time
- ✓ Emerging markets
- Consumer and business sentiment
- ✓ National and international
- ✓ Comparable economics



Source: LSEG Datastream, LSEG Workspace

Optimizing Macroeconomic Data for Al

Considerations

- Useful in macro forecasting models or signal enrichment for trading.
- Low-frequency, lagged, often revised data.
- Requires feature engineering to handle sparsity and noise (rolling averages, lagged features, statistical methods)

Risks

- Models trained on final data are cheating: "corrected past," vs. investor view.
- Causal misinterpretation, overestimate prediction accuracy.

Guidance

- Use point in time (PIT) data, real-time data, or confidence intervals.
- Consider real-time vs. final signal separation.

Example Datasets

CPI, GDP, unemployment, central bank announcements, macro indicators.

#Instead of: CPI = 2.5% #Use: CPI = 2.5% ± 0.4% CЫ = 5.2% ∓ 0.4%





LSEG Global Macro Forecasts



announcements, macro indicators.

Optimising Pricing Data for Al

Pricing Data

Valuing securities

Timeframe

- ✓ Real-Time (streaming, delayed)
- ✓ Historical

Source

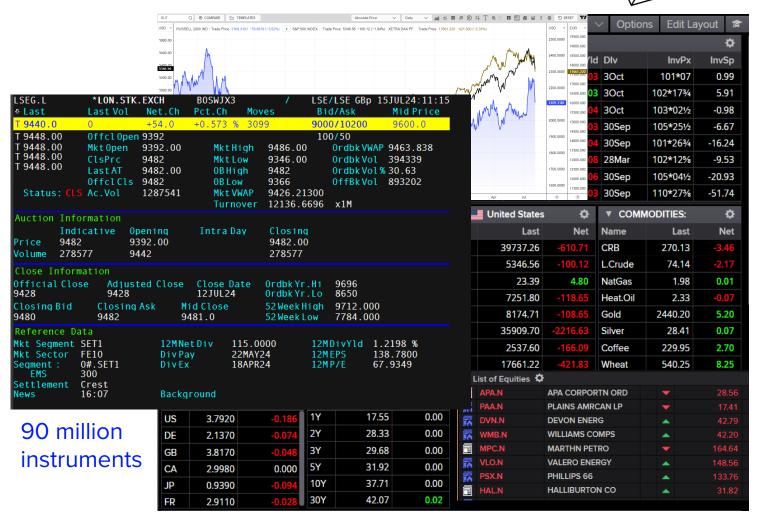
- ✓ Exchange-traded instruments (ETI)
- ✓ Over the counter (OTC)

Type

- ✓ Contributed pricing
- ✓ Composite pricing
- ✓ Evaluated pricing

"Pricing" can refer to absolute price, or to spread, yield or volatility per trading convention





Source: LSEG Workspace

Optimizing Pricing Data for Al

LSEG Academy

Considerations

- Supports high-frequency, real-time models, valuations.
- Requires trade qualifier filtering, outlier detection, tick aggregation (e.g., VWAP).

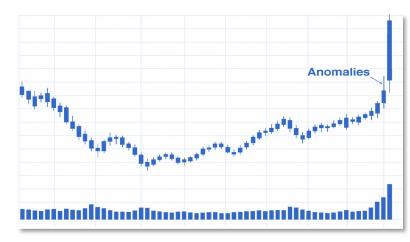
Risks:

- Noise amplification, anomalies
- Look-ahead bias
- Overfitting to historical prices.

Guidance:

- Remove or flag price spikes / drops
- Create price buckets (bars)
- Manage securities lists: delisting, expiration, maturity, default, corporation actions, ticker changes

Examples: Real-time quotes, bid/ask, volumes, tick-level trades, end-of-day prices.



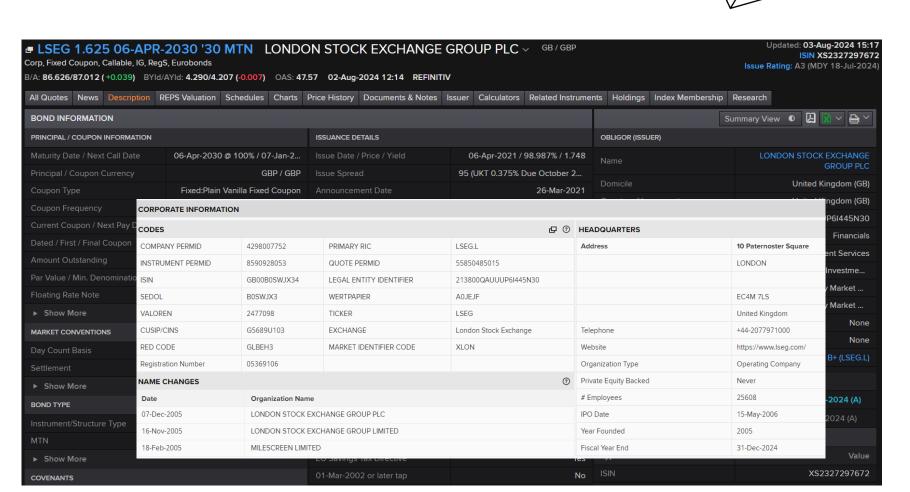
[]→ London Stock Exchange Gro	oup PLC					Ti	ime and Sales	
Timestamp	Bid	Bid Size	Ask	Ask Size	L	ast Trade	Volume	VWAP
06-Aug-2025 16:08:54.297	10,005	872	10,010	1,031	\triangle	10,010	6	9,962
06-Aug-2025 16:08:53.759	10,005	872	10,010	647	•	10,010	11	9,962
06-Aug-2025 16:08:05.585	10,005	735	10,010	1,175	\Diamond	10,005	112	9,962
06-Aug-2025 16:08:02.842	10,005	639	10,010	1,406	\triangleleft	10,005	138	9,962
06-Aug-2025 16:08:02.839	10,005	754	10,010	1,406	\triangle	10,005	115	9,962
06-Aug-2025 16:08:02.144	10,005	384	10,010	1,241	abla	10,005	90	9,962
06-Aug-2025 16:08:02.144	10,005	384	10,010	1,241	Δ	10,005	90	9,962
06-Aug-2025 16:08:02.83	EG Re	eal-Time	10,dT6	EG Pri	cin	a Serv	vice ₁₁₅	9,962
06-Aug-2025 16:08:02.842	10,005	639	10,010	1,406	Δ	10,005	138	9,962

Optimising Reference Data for Al

Reference Data

Security master

- ✓ Security details
- ✓ Entity details
- ✓ Descriptive information
- √ Identifiers
- ✓ Fixed Income Terms and conditions:
 - ✓ Issuer Info
 - ✓ Maturity Date
 - ✓ Amount Issued
 - ✓ Amount Outstanding
 - ✓ Coupon
 - ✓ Schedules
 - ✓ Ratings
 - ✓ Prospectus...



80 million securities

Source: LSEG Workspace

LSEG
Academy

Optimising Reference Data for Al

Considerations

- Often used across platforms (trading, risk, compliance).
- Some fields are static (e.g., ISIN, issue date), others change (e.g., credit rating, status).
- Ensure consistent identifiers and definitions across systems to avoid mismatches.

Risks

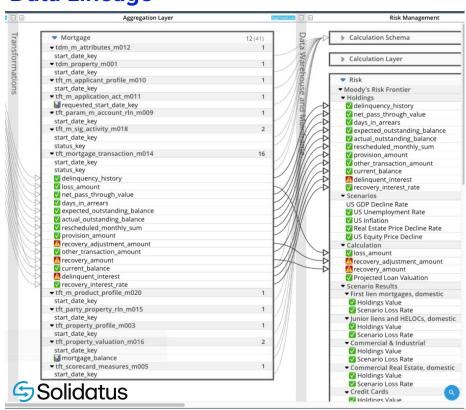
- Some instruments may lack key fields like maturity date or coupon frequency.
- Variations in issuer names or instrument descriptions can confuse entity resolution.
- Without change-tracking models may learn from outdated data.

Guidance

- Create master mapping table and use "golden source".
- For missing data use peer/industry group data as proxy.
- Track data lineage.



Data Lineage



LSEG Reference Data

Examples: Bond Coupons, Maturity Date, Credit Rating, Dividend Yield, Parent Company, Identifiers

Optimising Symbology for Al

Symbology

Data mapping and stitching

- Combining datasets using common identifiers.
- 100+ different market identifiers which can change: SEDOL, ISIN, CUSIP, RIC...

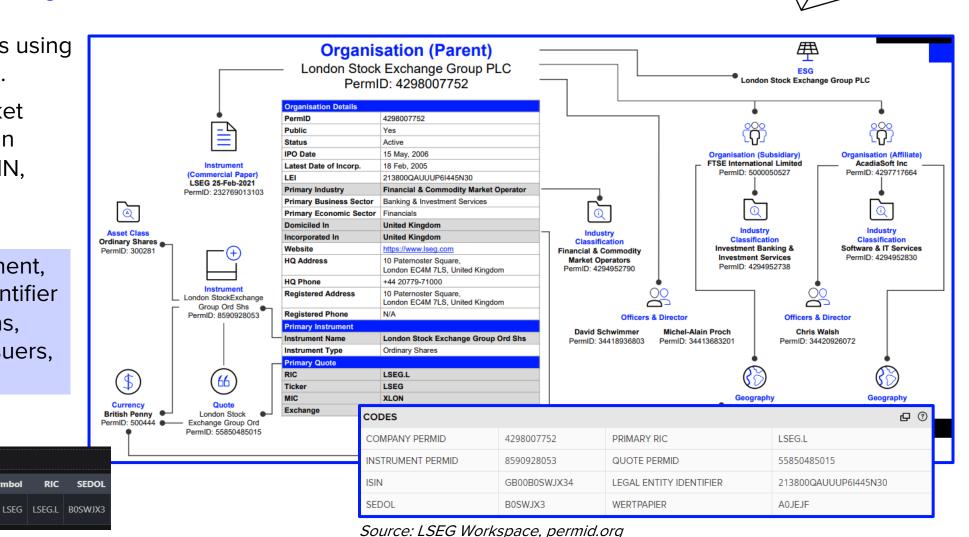
PermID: open, permanent, machine-readable identifier spanning organizations, instruments, funds, issuers, and people

rdp.convert symbols('LSEG.L')

IssuerOAPermID

4298007752

LSEG.L



LSEG

Academy

Symbology Conversion via API

TickerSymbol

Londor

Optimising Symbology for Al

Considerations

- Symbology is essential for all securities workflows.
- Necessary for linking across datasets (i.e., pricing, reference, analytics).
- Al needs a unified mapping

Risks

- Bonds often have ISIN, CUSIP, internal IDs
- Corporate actions can break historical continuity.
- Same ticker across markets or asset classes confuses models.

Guidance

- Implement master symbology layer
- Contextualize instruments beyond IDs
- Leverage Open Standards (i.e. <u>PermID</u>)
 LSEG Reference Data

API Query API Response

```
"from": [
    "identifierTypes": [
      "LEI"
    "values": [
      "213800QAUUUP6I445N30"
"to":
    "objectTypes": |
      "organization"
    "identifierTypes": [
       PermID'
"reference": [
 "name",
 "status",
 "classification"
"type": "auto"
```

```
"data": [
      "input": [
          "value": "213800QAUUUP6I445N30",
          "identifierType": "LEI"
      "output": |
           "value": "4298007752",
          "identifierType": "PermID",
          "objectType": "organization",
          "name": "London Stock Exchange Group PLC"
          "status": "Active",
          "classification": "Financials"
  "requestId": "fbfced2b-4f63-4f15-8330-
cfc243db7493",
  "effectiveAt": "2022-04-22T13:38:35.375Z",
  "messages": []
```

LSEG Academy

LSEG Symbology

Optimising Unstructured Text for Al

Unstructured Text

LSEG Academy

News, Research, Filings, Transcripts

- ✓ Financial markets
- ✓ Capital markets
- ✓ Commodities
- ✓ Companies and industries
- ✓ Sentiment
- ✓ Breaking news
- ✓ Research reports
- ✓ Transcripts
- ✓ Filings



Machine ready data



Source: LSEG Workspace, MarketPsych, Machine Readable News

2-3 million news articles published daily

Meta data + tagging

Optimising News & Research for Al

Considerations:

- LLMs used for summary, classification, and sentiment.
 - Reuters Super Summaries
 - LSEG MarketPsych NLP Engine
- NLP must handle jargon, sarcasm, and entity disambiguation.
- Requires temporal alignment with market data for causality.
 - Accuracy can improve by combining datasets (i.e., <u>Tick History</u>)

Risks:

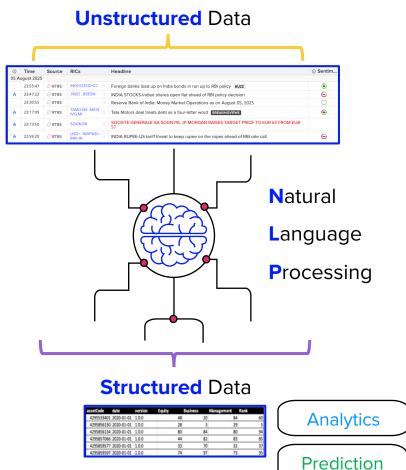
- Misinformation, misinterpretation, misunderstanding.
- Time lag between events and market reaction.

Guidance:

- Prioritize reputable sources, tag each article with credibility score.
- Calibrate for sensational or ambiguous headlines.
- Tag entities to structure (dates, events, people, company names...)
- Use sentiment tagging to capture tone.

Examples: Financial news and commentary, earnings coverage, social media.





LSEG News Data

Optimising Transcripts for Al

MarketPsych Transcript Analytics

Original text

Detailed JSON output

All aggregated levels

UI and API

Section
Speaker

Sentence

Detailed word level NLP output

Aggregation levels



Examples: Transcripts from company earnings calls



LSEG

Academy

Exploring Al Mentions in Earnings Calls and Building Thematic Portfolios

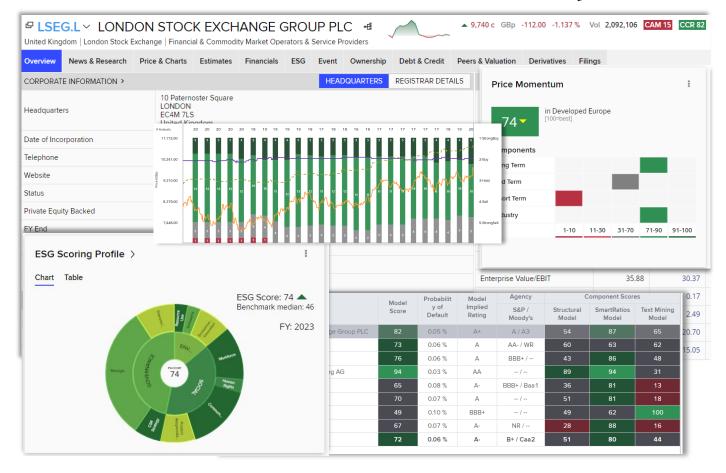
Optimising Company Data for Al

Company Data

Understanding and valuing companies

- Unstructured
 - ✓ News & Research
 - ✓ Filings
 - ✓ Transcripts
- Structured
 - ✓ Pricing
 - ✓ Reference Data
 - Company events
 - Corporate actions
 - Deals data and league tables
 - ESG
 - Fundamentals
 - Estimates
 - Organisation entity data
 - Ownership, insider, institutional profiles
 - People (D&O)
 - Private company profiles and financials
 - Private equity and venture capital data
 - M&A

LSEG Academy



48k+ publicly traded companies 200k+ private companies

Source: LSEG Workspace

Optimising Company Data for Al

/ LSEG Academy

Considerations

- Both structured (revenue..) and unstructured data (footnotes.).
- Companies report on different fiscal calendars.
- Data may come from filings (10-K, 10-Q), vendor feeds, or company websites.

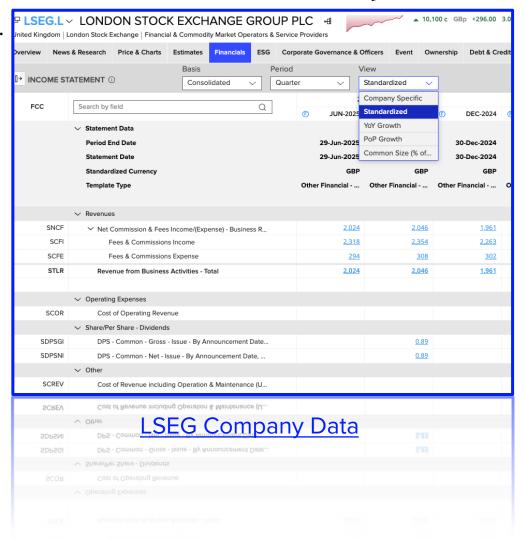
Risks

- Data gaps and missing values. (especially for smaller or private companies).
- Inconsistent definitions, delayed reporting. (models may miss current trends).

Guidance:

- Use standardized datasets with auditability.
- Harness peer and industry metrics to address gaps
- Use consistent sources, track revisions and history.

Examples: Revenue, EBITA, ESG Scores, Debt, Earnings Estimates, Industry Specific KPIs



Optimising
Risk Intelligence Data
for Al

LSEG

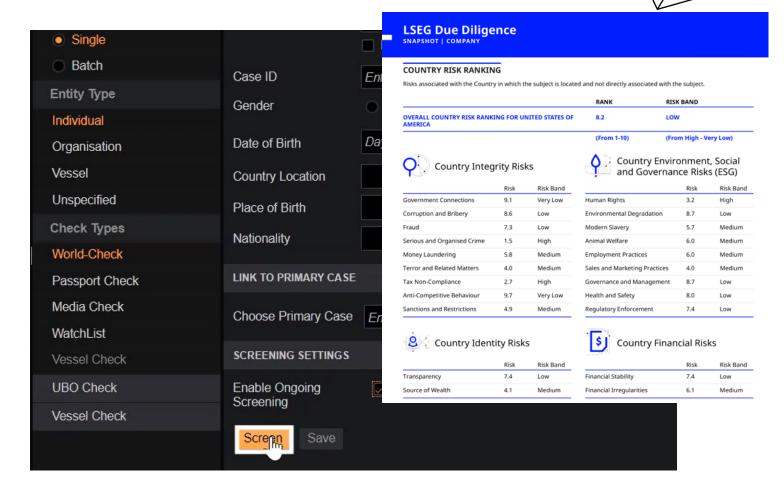
Risk Intelligence Data

Tracking global risk and regulation

- ✓ Sanctions
- ✓ Law and regulatory enforcement
- ✓ Politically exposed persons (PEPs)
- ✓ State-owned enterprises
- ✓ Adverse media
- ✓ Ultimate Beneficial Owner
- ✓ Account Verification
- ✓ Identity Verification
- ✓ Regulatory Data
- ✓ KYC (know your customer)
- ✓ Fraud detection

480+ regulatory lists 2.4m+ PEPs

*Other datasets also support regulatory compliance



LSEG

Academy

Source: LSEG World-Check, LSEG Due Diligence

LSEG Academy

Considerations

- Use cases include document verification, fraud detection, and/or spotting political/legal risk.
- Variations in how names, addresses, or IDs are recorded can confuse models.
- Data is often governed by strict rules (e.g., GDPR).
- Al decisions must provide transparency and accountability.
- Risk data often includes confidential financials, exposure metrics, and internal assessments.

Risks

- Improper handling of PII.
- Regulatory definitions and thresholds may change.
- Al may learn and perpetuate unfair practices (Al Ethics Concerns)

Guidance

- Consistent formatting for names, addresses, dates
- De-duplicate and resolve entities,
- Store flag to indicate opted in to AI-based risk assessments.



Examples: PII such as names, addresses, ID numbers, and financial history, sanctions lists, regulatory directives and jurisdictional laws.

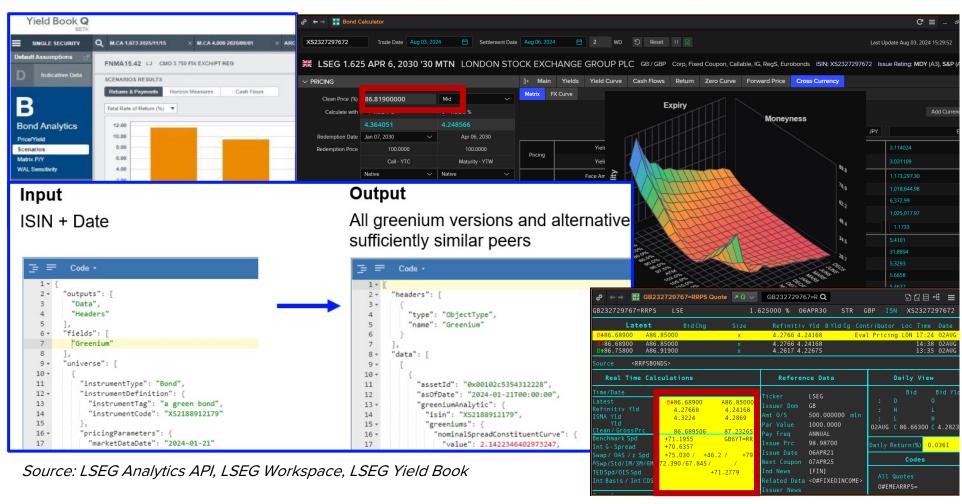
Optimising Analytics for Al

LSEG

Analytics

Calculation engines

- ✓ Valuations
- ✓ Hedging
- ✓ Spreads
- ✓ Yields
- √ Volatilities
- ✓ Risk metrics
- ✓ Greenium
- ✓ Modelling
- ✓ Statistics
- ✓ TermStructures



LSEG
Academy

Analytics are derivative data and are limitless

Optimising Analytics for Al

LSEG Academy

Considerations

- Pervasive throughout the financial ecosystem.
- Use cases across valuations, risk, trading.
- Only as good as the input data behind them.

Risks

- Potential for black box challenge to explain to clients and regulators.
- Regulatory compliance
- Model drift

Guidance

- Implement explainability layers
- Understand inputs (<u>white papers</u>)
- Consider hybrid models
- Strong data and model governance



Examples: Bond price/yield calculator, historical OAS spreads, equity options volatility calculations.

Al Data and Technology Requirements

LSEG

Al Data and Technology Requirements

7 Key Questions

Latency	1. What frequency of data does your Al model require?			
Volume	2. What are your AI data consumption volumes?			
Transfer	3. Where does your Al model reside?			
Delivery	4. What's the best delivery for your Al?			
Access	5. Who needs access to the AI data?			
Licensing	6. Are there any AI restrictions on your data?			
Maintenance	7. How are you managing AI data changes?			

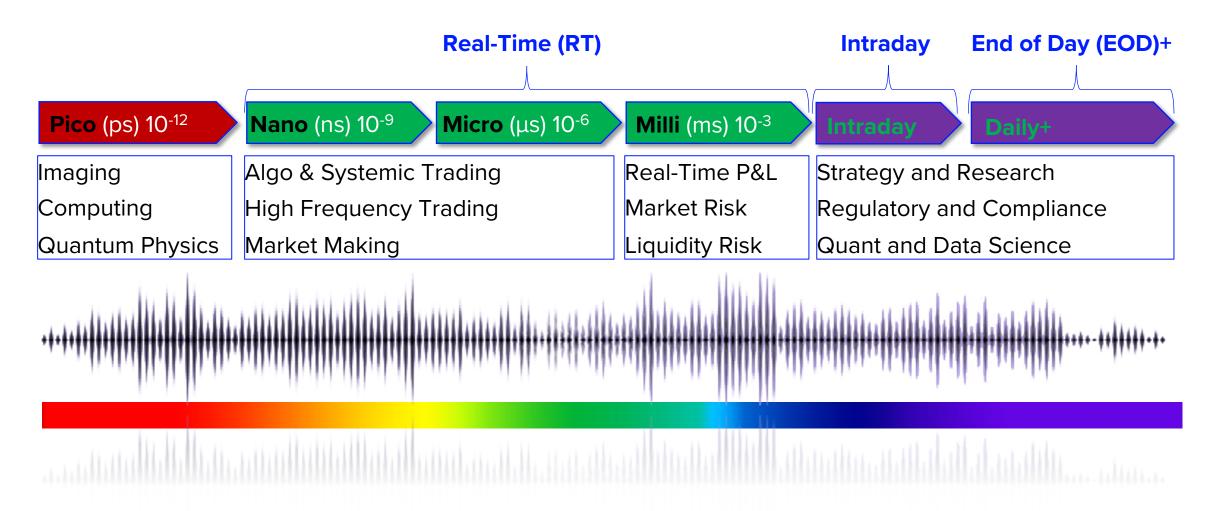




Data Latency

What frequency of data does your Al model require?

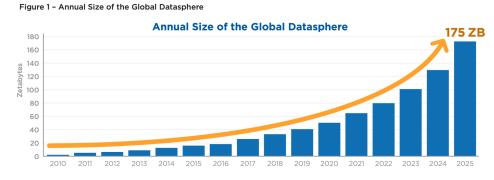




Data Volume

What are the AI data consumption volumes?

- Security "Watch List" Size (unique instruments / datapoints)
- 2. Coverage (regional, global, segment)
- 3. Timeframe (# Days, Years, Min, Sec...)



Source: Data Age 2025, Seagate and IDC Global DataSphere

Data Requirement Examples		1s	15m	EOD
20 Historical Economic Series				20
100 FX Rates		8m		
1000 Mutual Fund NAVs				1000
1 Equity Future Price	21m			

LSEG Academy

latency

Watch list size times update frequency = daily volume

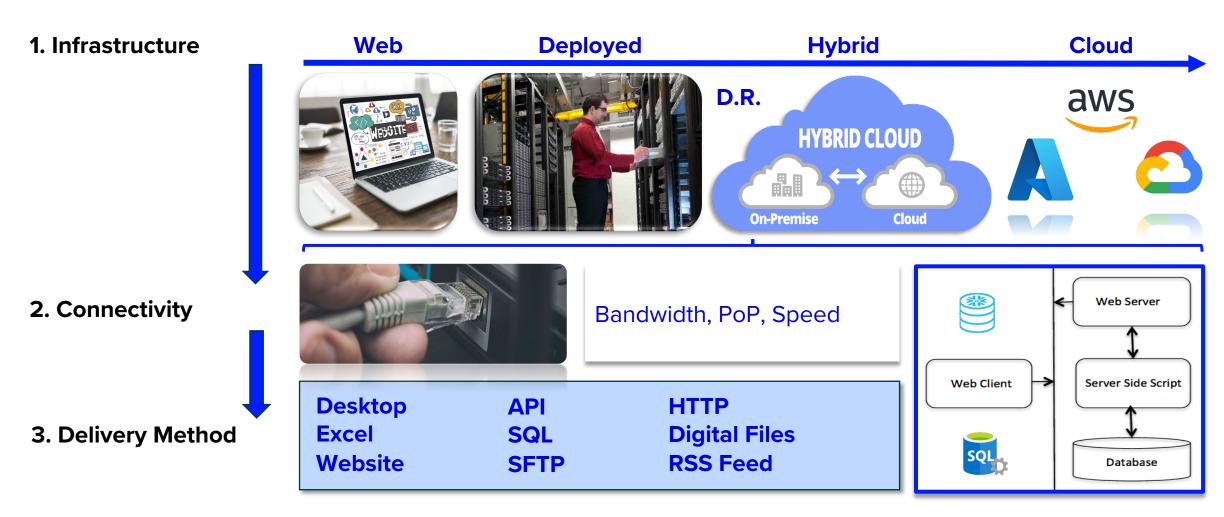
YoY data volume most often increases

*Volume decisions infers technology, delivery, and licensing decisions

Data Transfer

Where does your AI model reside?





Data Delivery

What's the best delivery for your Al?

Desktop

Website

Single user access

Single or multiuser.

Desktop + Mobile



API

Supports real-time data + high traffic

API Decision Tree

SFTP / FTP

Bulk Data File Delivery SQL

LSEG Academy

Direct, complex, high-performance database operations

Performance

Language

WebSocket GraphQL gRPC REST Java
C++
C
C#
Python

Open Source: GitHub

LSEG Developer Community

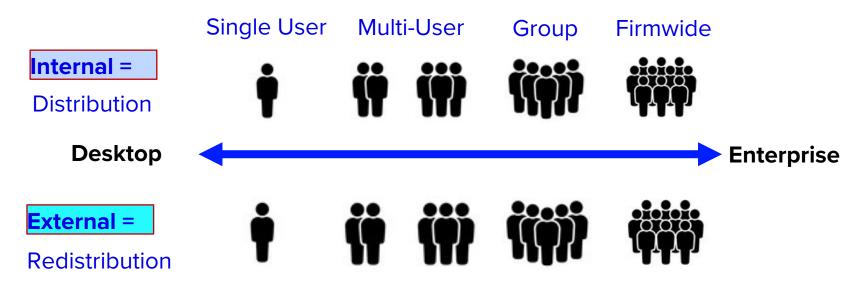
MCP

Al Model

Data Access

Who needs access to the Al data?







Technical, Workflow, and licensing considerations

* Data can as well be accessed through Partners solutions and applications

MCP Al Model

Licensing

Are there any AI restrictions on your data?

Raw Data

- As received: can only be used in the format as supplied by the Data Provider
- Normalized: data can be reformatted
- Modified: data can be changed, but not become 'Derived Data

Derived Data

Data created in whole or in part from Raw Data, which cannot be readily reverse engineered to recreate the Raw Data.

Non-Display Usage (NDU)

Use of data for purposes other than display to users. In many cases Derived Data licences fall under NDU policies.

****Check contractual terms with your data provider for exact definitions and terms.****

LSEG Academy

Timeliness of Data

<u>Real-time</u> data in most cases has different duties – fees, obligations and restrictions – from delayed, <u>End-Of Day (EOD)</u> or <u>historical</u> data.

Artificial Intelligence (AI) Use

Covered under existing NDU Derived Data and/or application use rules, which may require additional licensing for AI use.

Some data providers prohibit use of their data in Al solutions.

"LSEG's core data licensing principle is to license the "what" (use case) and not the "how" (technology)."
"LSEG generally does not restrict the use of LSEG data within Al technologies by clients."

Source: LSEG Data & Feeds and Workflows in Artificial Intelligence - Client Notification

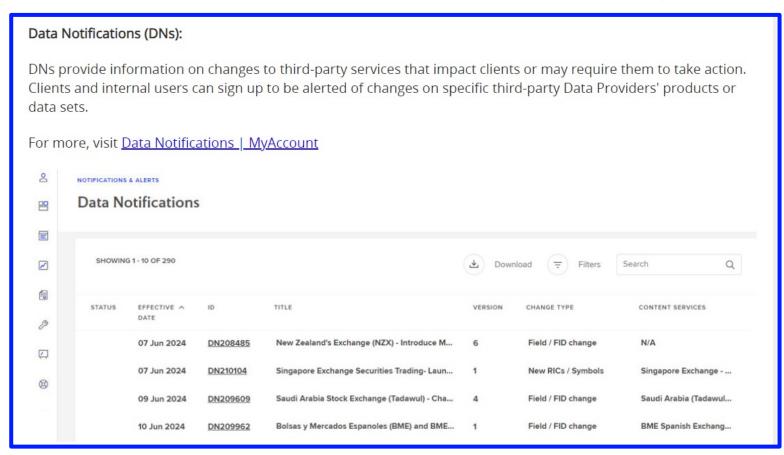
Maintenance

LSEG Academy

How are you managing Al data changes?

- Data is constantly changing:
 - Market events
 - 2. Data provider changes
 - 3. Regulations
- Ongoing data and system updates are needed





Data Notifications | MyAccount (Iseg.com)

Notifii API

LSEG + Industry Changes

Recap - How to Optimise Financial Data for Al

Key Points

1. Financial Data & Analytics Al Landscape

- Defining AI: Data Science vs. LLMs
- Regulatory Drivers, Liquidity Challenges, and Financial Data

2. Financial Al – Hype vs. Reality

- 85% of Al projects in finance fail—due to data and skills issues...
- Al is only as good as the data behind it

3. Optimising Financial Data for Al

- Specific guidance across Macroeconomic, Pricing & Reference,
- Unstructured Text, Company, Risk Intelligence, and Analytics.

4. Al Data and Technology Requirements

- 7 key Al data and technology questions to answer.
- Al licensing requirements and data maintenance.



LSEG Resources

24x7

Data Catalogue

<u>lseg.com/en/data-analytics/financial-data</u>

Data Discovery

datadiscovery.lseg.com

Academy

lseg.com/en/training/learning-centre

Customer Support

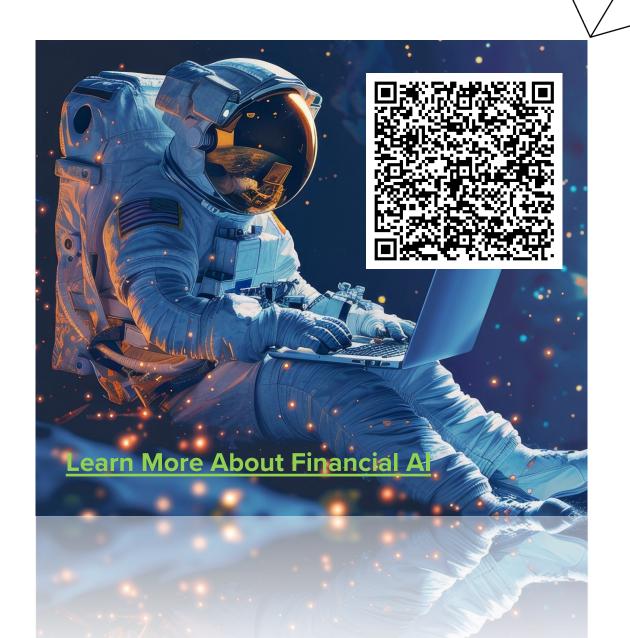
New <u>support.lseg.com</u> myaccount.lseg.com

Developer Community

<u>developers.lseg.com</u>

Global Phone Numbers

myaccount.lseg.com/en/phoneus



LSEG Academy

Thank You

