



# Multi-national entity relationships and cross-platform connectivity on a global scale

Introduction to relationship records of LEI (Legal Entity Identifier) data

28<sup>th</sup> Meeting of the Wiesbaden Group on Business Registers – The Hague

3 October 2023

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# Agenda

1. GLEIF intro
2. Entity relationships in the Global LEI System
3. Working with LEI data: Identify ultimate parents



# Who is Global Legal Entity Identifier Foundation (GLEIF)?

- GLEIF is a **not-for-profit Swiss foundation**, founded by the Financial Stability Board (FSB).
- GLEIF is overseen by **65 regulators and 19 observers** in the Regulatory Oversight Committee (ROC) from more than 50 countries.
- GLEIF Board has **19 independent directors**.
- GLEIF makes available the **LEI data free of charge**.



Partners for  
LEI issuance (LOUs)

**37**  
and growing



Issued LEIs  
to date

**> 2.4 millions**



# Legal Entity Identifier (LEI) and Key Reference Data

Who is who? Who owns whom?

## "Level 1"

LEI Code 894500451FZY32C0B274 ⓘ

(Primary) Legal Name	Liberty Holdco Ltd.
Registered At	Registry of Companies (General Registry) Registry of Companies (General Registry) Cayman Islands RA000086
Registered As	CO-364933
Jurisdiction Of Formation	KY
General Category	GENERAL
Entity Legal Form	limited liability company (en) MPUG
Entity Status	● ACTIVE
Entity created at	2000-03-31T15:00:00Z

- EntityID & Authoritative source
- Entity creation date
- Address information (...)

## "Level 2": Direct & ultimate parents & fund relationships

Parents ⓘ

Hide

Parents

🔗 Published Relationship ⓘ

🔗 Lapsed Relationship ⓘ

🔗 Reporting Exception ⓘ

楽天グループ株式会社 🔗 (Direct Parent) ⓘ

楽天グループ株式会社 🔗 (Ultimate Parent) ⓘ

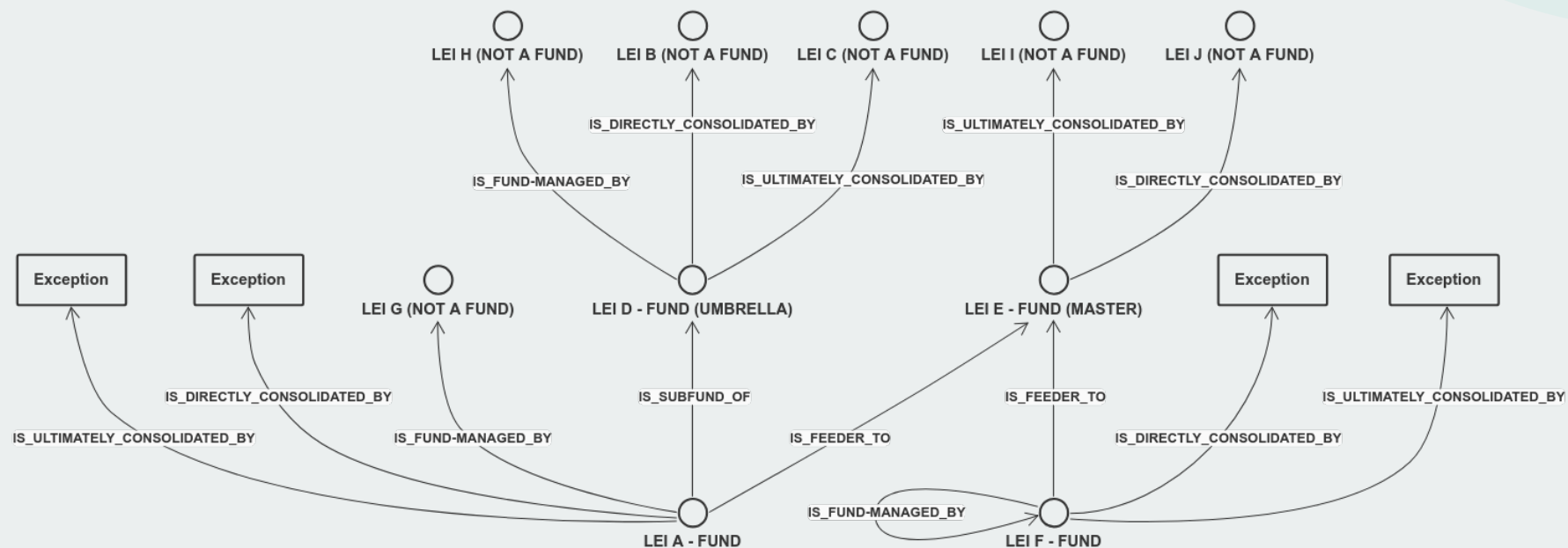
LEI Data is available free of charge in various formats:

- GLEIF API: <https://api.gleif.org/docs>
- LEI Search: <https://search.gleif.org>
- Golden Copy: <https://www.gleif.org/en/lei-data/gleif-golden-copy>

# Entity relationships in the Global LEI System

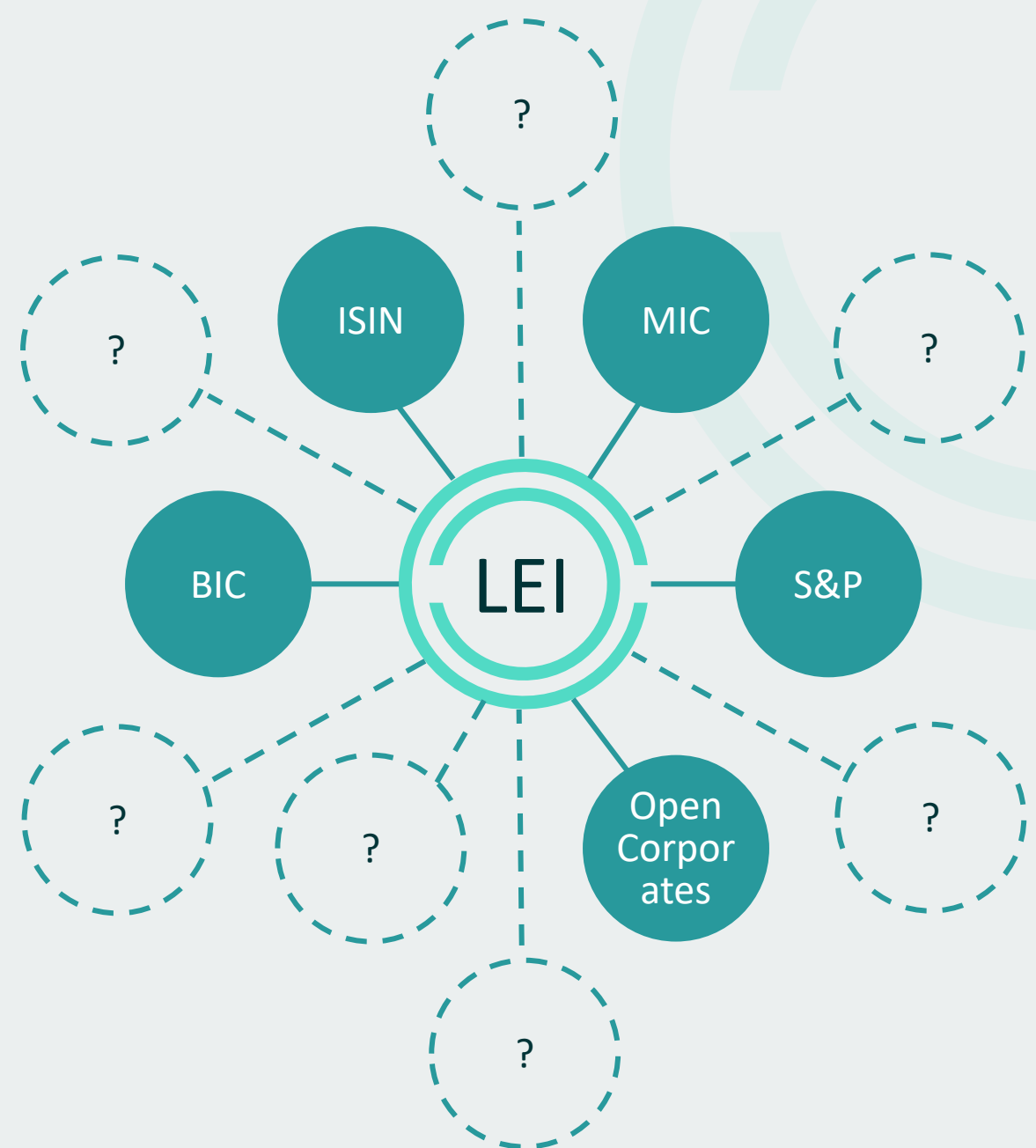
... can get quite interesting

- Accounting consolidation parent relationships
  - Direct & ultimate parents
  - Reporting exceptions
- International branches
- Fund relationships
  - Fund managers
  - Sub-funds
  - Feeder funds
- Represented as graph structure
- Child reports its parents
- Relationships reported accross multiple jurisdictions and accross multiple LEI issuers



## GLEIF has established certification program for mapping partners and has successfully collaborated with following organizations

- SWIFT:
  - Bank Identifier Code (BIC)
  - Market Identifier Code (MIC)
- ANNA:
  - International Securities Identification Number (ISIN)
- S&P Global Market Intelligence
  - S&P Company ID
- Open Corporates
  - OpenCorporates ID



# Mapping Partners

## MIC - LEI mapping

- The first MIC-LEI mapping file published in Nov. 2022
- About 900 mapping pairs and 780 unique LEIs covered as of April 2023
- Update monthly
- Link: <https://www.gleif.org/en/lei-data/lei-mapping/download-mic-to-lei-relationship-files>

## BIC - LEI mapping

- The first BIC-LEI mapping file published in Jan. 2018
- Over 22,000 mapping pairs and 20,000 unique LEIs covered as of March 2023
- Update monthly
- Link: <https://www.gleif.org/en/lei-data/lei-mapping/download-bic-to-lei-relationship-files>

## S&P Global Company ID – LEI mapping

- The mapping went live in Nov. 2022
- Mapping is published via LEI search and GLEIF API
- Over 98% of the LEI population is covered
- Update weekly
- Available on LEI Search and GLEIF API

## ISIN - LEI mapping

- The first ISIN-LEI mapping file published in April 2019
- 28 NNAs opted in covering 63 jurisdictions
- Over 8 million mapping pairs and 90,000 unique LEIs covered as of April 2024
- Update daily
- Link: <https://www.gleif.org/en/lei-data/lei-mapping/download-isin-to-lei-relationship-files>

# Mapping Partners

## OpenCorporates ID - LEI mapping

- The first OpenCorporates ID-LEI mapping file published in April 2023
- Over 50% of the LEI population is covered (not all legal entities with LEIs are officially registered - e.g., funds)
- Update bi-weekly
- Available via LEI search and GLEIF API by the end of May
- Link: <https://www.gleif.org/en/lei-data/lei-mapping/download-oc-to-lei-relationship-files>

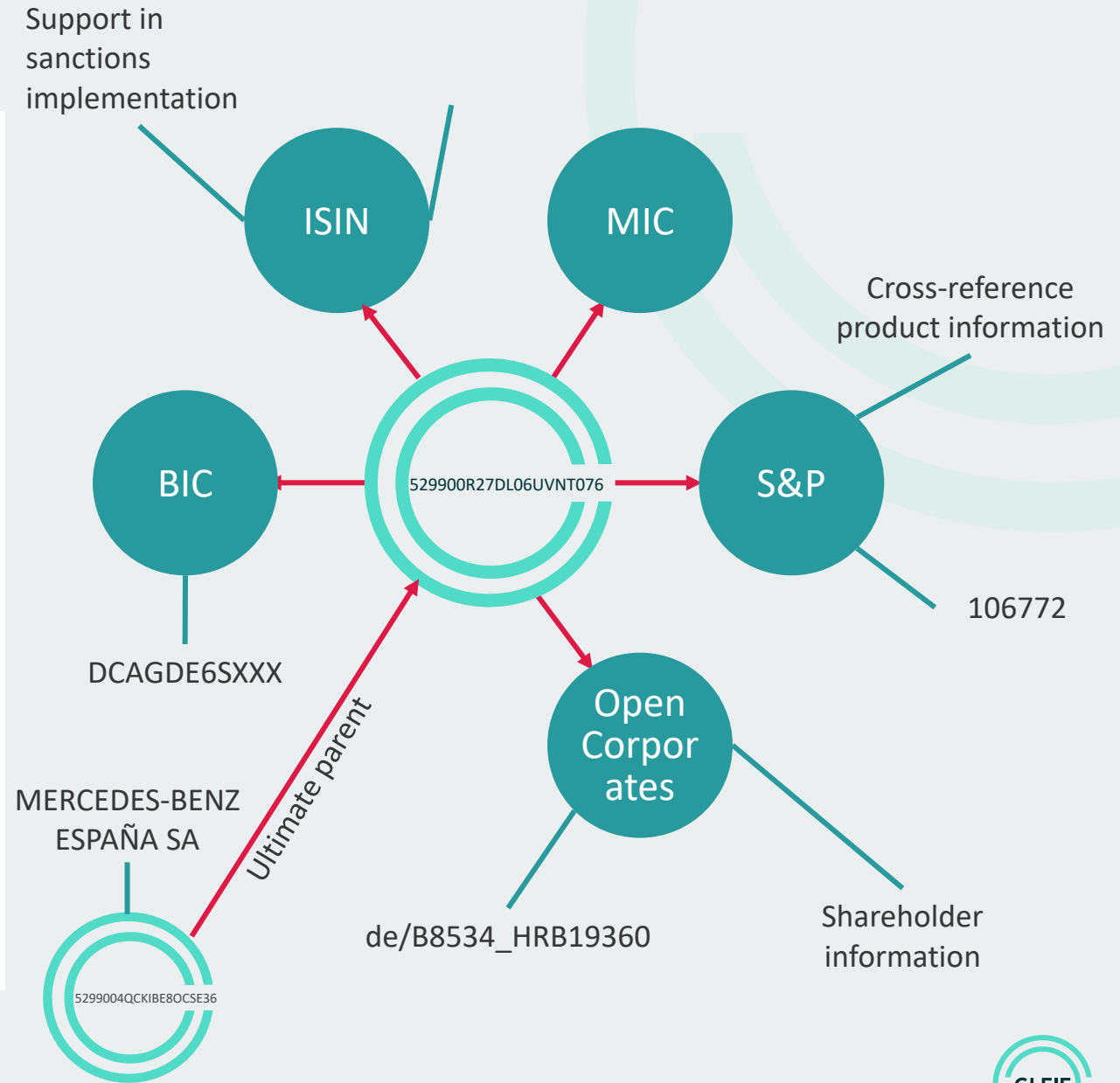


# Example

LEI Code 529900R27DL06UVNT076 ⓘ

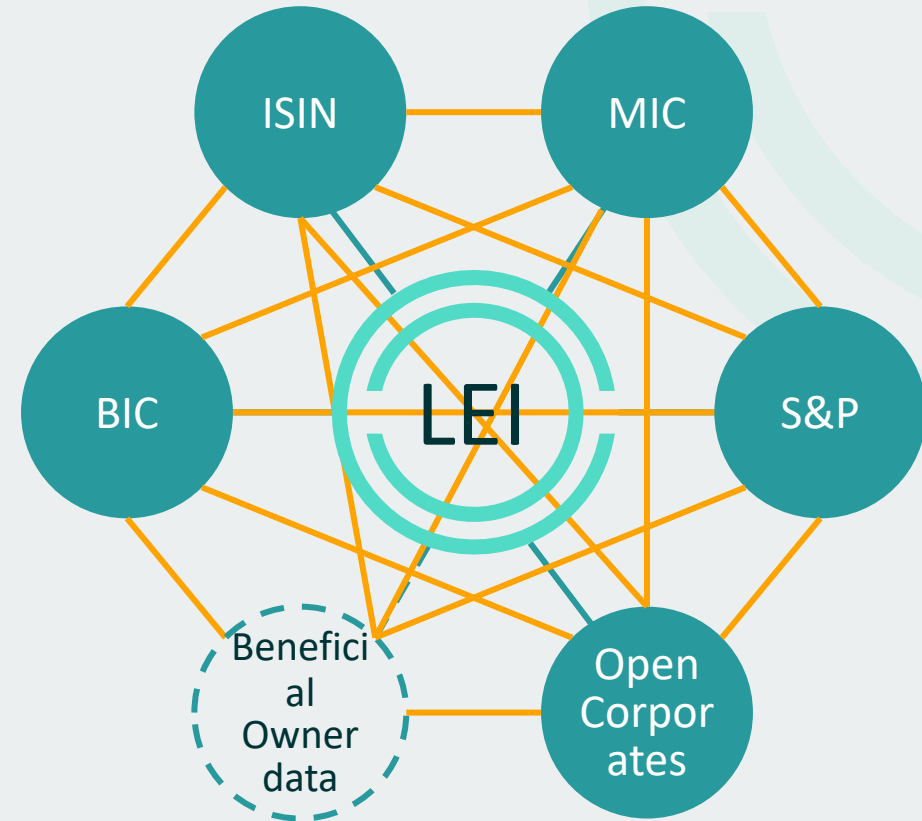
Hide

<b>(Primary) Legal Name</b>	Mercedes-Benz Group AG
<b>Registered At</b>	Commercial Register (Local Court Stuttgart) Handelsregister (Amtsgericht Stuttgart) Stuttgart, Germany RA000351
<b>Registered As</b>	HRB 19360
<b>Jurisdiction Of Formation</b>	DE
<b>General Category</b>	GENERAL
<b>Entity Legal Form</b>	Aktiengesellschaft (de) 6QQB
<b>Entity Status</b>	● ACTIVE
<b>Entity created at</b>	1998-07-30T22:00:00Z
<b>BIC Code</b>	DCAGDE6SXXX
<b>OpenCorporates ID</b>	<a href="https://opencorporates.com/entities/de/B8534_HRB19360">de/B8534_HRB19360</a>
<b>ISIN Code</b>	DE000A2YNZX6 DE000A2GSLY0 DE000A289XG8 DE000A2GSCW3 DE000A169NC2 <a href="#">Show all (16)</a>
<b>S&amp;P Global Company ID</b>	106772



# Mapping Benefits

- Interconnectivity
- Standardization
- Enrichment of data
- Verification of overlapping data
- Seamless processes across ecosystems
- Interoperability



# Entity relationships in the Global LEI System

## Jupyter Notebooks

- Accounting consolidation parent relationships
  - Direct & ultimate parents
  - Reporting exceptions
- International branches
- Fund relationships
  - Fund managers
  - Sub-funds
  - Feeder funds
- Represented as graph structure
- Child reports its parents
- Relationships reported across multiple jurisdictions and across multiple LEI issuers

### Exemplary jupyter notebooks prepared by GLEIF:

- Ultimate\_Parents\_PLC\_GB.ipynb
  - Identify ultimate parents of British Private Limited Companies with jurisdiction Japan
- Umbrella\_Funds.ipynb
  - Identify non-Mexican fund managers for Mexican funds and analyse umbrella funds and their sub funds in Mexico
- Feeder\_Funds.ipynb
  - Investigate Dutch feeder funds and their master funds

# Identify child entities in scope

## Leverage Golden Copy Files & ELF Codes

- Scope:
  - Entities in Great Britain
  - Public Limited Companies
  - Ultimate parent relationships
- Data source:
  - Golden Copy Files
  - Data of 28 August 2023
  - Free of charge
- Entity Legal Forms (ELF) code list
  - ISO Standard 20275
- Registration Authority (RA) code list
  - >1,000 business registers globally

Statistics of child entities with LegalJurisdiction GB and ELF code “B6ES” (Public Limited Company):

	RegistrationAuthorityID	Local name of organisation responsible for the Register	Jurisdiction (country or region)	Entity.EntityCategory	#LEI
0	RA000585	Companies House	England and Wales	GENERAL	4,091
1	RA000587	Companies House	Scotland	GENERAL	124
2	RA000586	Companies House	Northern Ireland	GENERAL	15
3	...	...	...	...	...

To further reduce the scope, we only use LEIs with RegistrationStatus ISSUED → **2,801** entities remain

# Identify parent entities

## Leverage relationship records

- Relationship information:
  - StartNode: Child entity
  - EndNode: Parent entity
  - Exception: No parent reported
- Exception Reasons:
  - No consolidating parent exists
  - Parent information is not public
  - Parent does not have an LEI
- Managing LOUs:
  - Local experts
  - Validate reference data
  - Accredited by GLEIF

Out of **2,801** ISSUED child entities with LegalJurisdiction GB and ELF code “B6ES”:

**2,279** do not report an ultimate parent:

	Exception.Reason	#LEI
0	NO_KNOWN_PERSON	1,009
1	NON_CONSOLIDATING	772
2	NATURAL_PERSONS	274
3	NO_LEI	198
4	NON_PUBLIC	26



**444** report an ultimate parent relationship. These child entities are:

- listed in 5 different authoritative sources (e.g. RA000585 - Companies House)
- managed by 8 different ManagingLOUs (e.g. London Stock Exchange)

	StartNode.NodeID	RelationshipType	EndNode.NodeID
0	21380013V6JI2T3MOG16	IS_ULTIMATELY_CONSOLIDATED_BY	213800K3UGDI64TUAH80
1	21380018AJDKNF3A6712	IS_ULTIMATELY_CONSOLIDATED_BY	2138002P5RNKC5W2JZ46
2	2138001AYIWOIRA1D327	IS_ULTIMATELY_CONSOLIDATED_BY	2138003CSNVJEPFZ3U52
3	...	...	...

# Analyze ultimate parent entities

## Leverage cross-border data managed by multiple LEI issuers

- Overcoming language barriers:
  - Translated legal name
  - Transliterated legal name
  - Same for address information
- Mapping:
  - Gather additional information
  - Identifiers: BIC, ISIN, MIC, S&P Global, Open Corporates
- Cross-border information:
  - Different registration authorities
  - Managed by various LEI issuers
  - But still: standardized format!**

Out of **444** ultimate parents, we are only interested in **17** parents with LegalJurisdiction Japan:

	LEI	Entity.LegalName	LegalName.xmllang	OtherEntityName	OtherEntityName.xmllang	OtherEntityName.type
0	2NRSB4GOU9DD6CNW5R48	三井物産株式会社	ja	Mitsui & Co., Ltd.	en	ALTERNATIVE_LANGUAGE_LEGAL_NAME
1	3538000246DHJLRTUZ24	富士通株式会社	ja	FUJITSU LIMITED	en	ALTERNATIVE_LANGUAGE_LEGAL_NAME
2	35380028MYWPB6AUO129	株式会社三井住友 フィナンシャルグループ	ja	Sumitomo Mitsui Financial Group, Inc.	en	ALTERNATIVE_LANGUAGE_LEGAL_NAME
3	...	...	...	...	...	...

# Analyze ultimate parent entities

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  - But still: standardized format!**

Out of **444** ultimate parents, we are only interested in **17** parents with LegalJurisdiction **Japan**:

	LEI	Entity.LegalName	LegalName.xmllang	OpenCorporatesID
0	2NRSB4GOU9DD6CNW5R48	三井物産株式会社	ja	jp/1010001008767
1	3538000246DHJLRTUZ24	富士通株式会社	ja	jp/1020001071491
2	35380028MYWPB6AUO129	株式会社三井住友 フィナンシャルグループ	ja	jp/2010001081053
3	...	...	...	...

The **17 Japanese ultimate parents** are:

- listed in 2 different authoritative sources (e.g. RA000412 – Companies Registration)
- managed by 3 different ManagingLOUs (Tokyo Stock Exchange, London Stock Exchange & Bloomberg)

Example: LEI 213800DGPY4ZCTVJVQ23 has jurisdiction GB with authoritative source RA000585 (Companies House) is managed by London Stock Exchange, while its ultimate parent with LEI 5299009QN2NZ191KLS29 has jurisdiction JP with authoritative source RA000412 (Companies Registration) and is managed by Tokyo Stock Exchange.

**Thank you for your interest!**  
Questions?





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