



Legal Entity Identifier (LEI) and vLEI developments

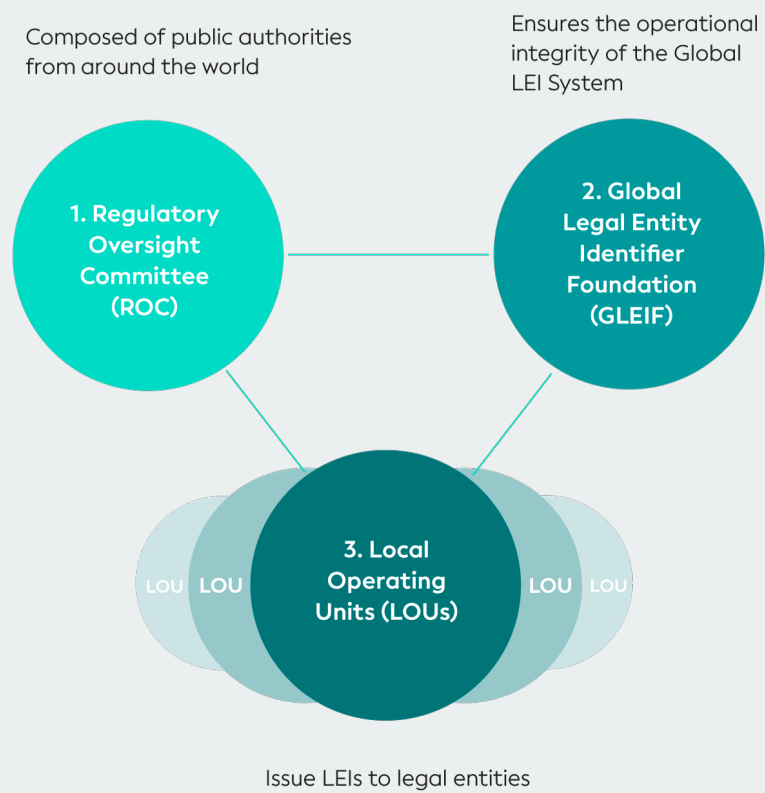
18th CRF Conference, 21-24 September 2022, Maldives
Transforming Business Registries for the Post Pandemic Era

23 September 2022

Ricco Dun, Business Operations GLEIF

The Global LEI System

In 2011, the G-20 leaders supported **"the creation of a global legal entity identifier (LEI) which uniquely identifies parties to financial transactions."**



The 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. Members:
<https://www.leiroc.org/about/membersandobservers/index.htm>
- GLEIF Board has 18 independent directors.



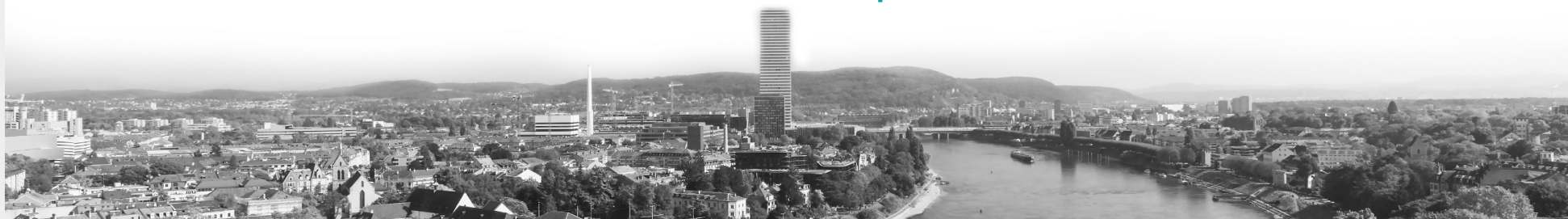
Partners for
LEI issuing (LOUs)

39
and growing



Issued LEIs
to date

> 2 million

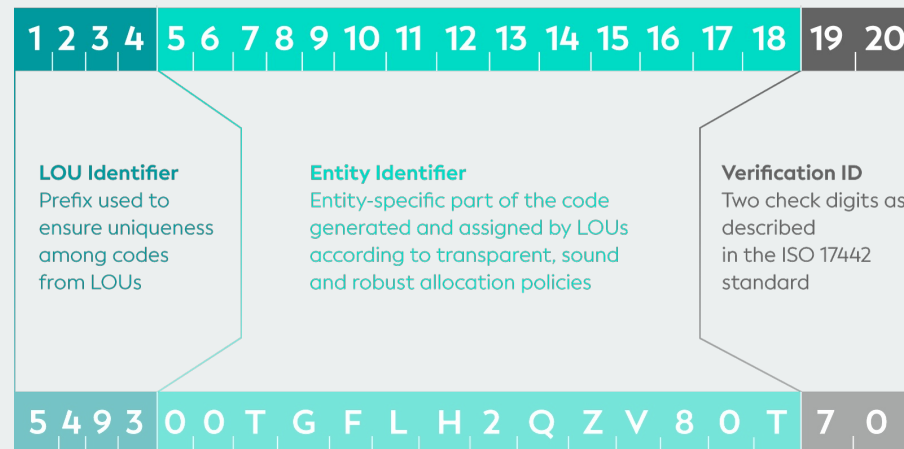


Legal Entity Identifier (LEI)

20-digit, alpha-numeric code based on the ISO 17442 standard

LEI is the linchpin that connects the dots across the universe of entity identification in the digital age

- **Level 1:** Connects to key reference information that enables clear and unique identification of legal entities participating in financial transactions
- **Level 2:** Allows the identification of direct and ultimate parents of a legal entity.

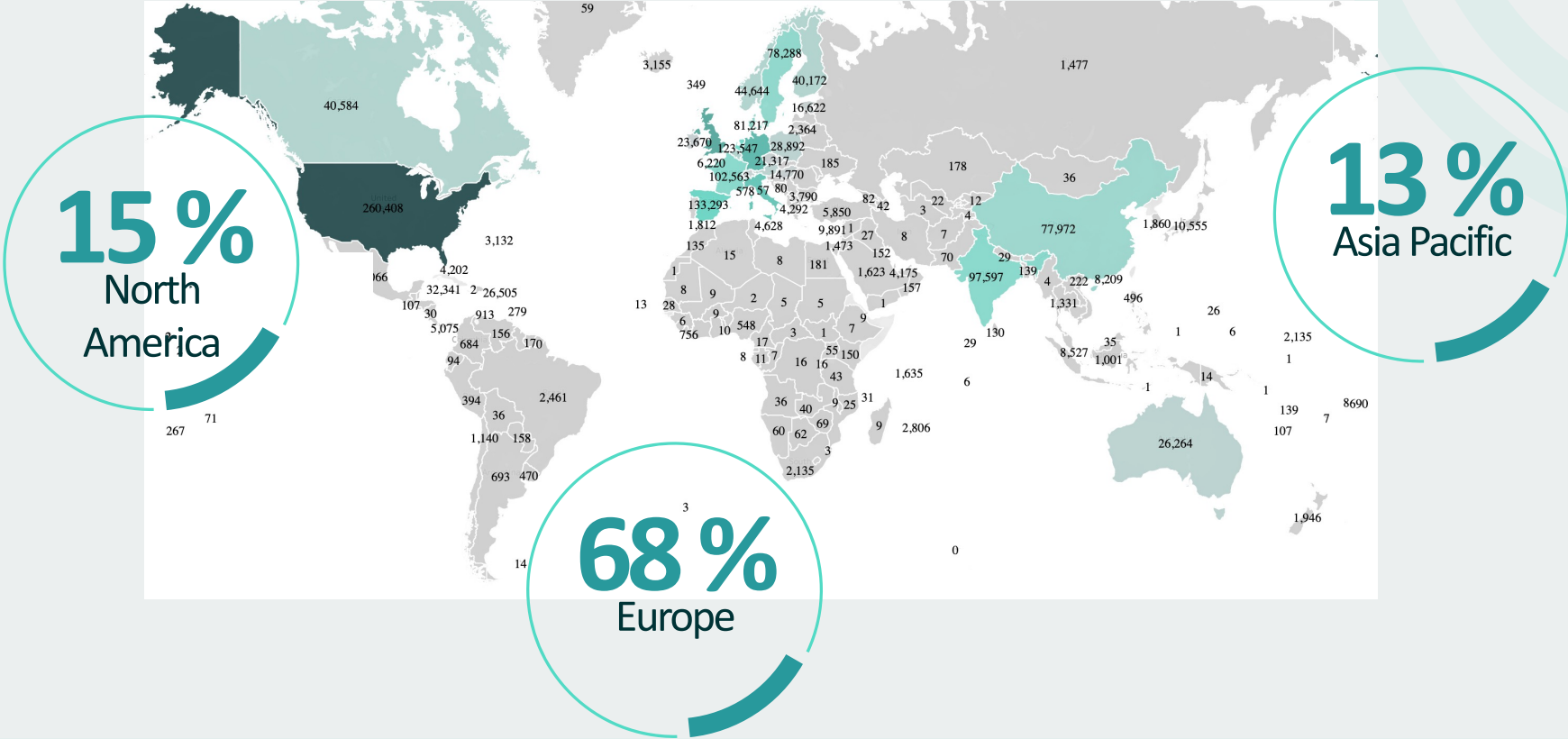


Example: ABB Sécheron S.A., Switzerland

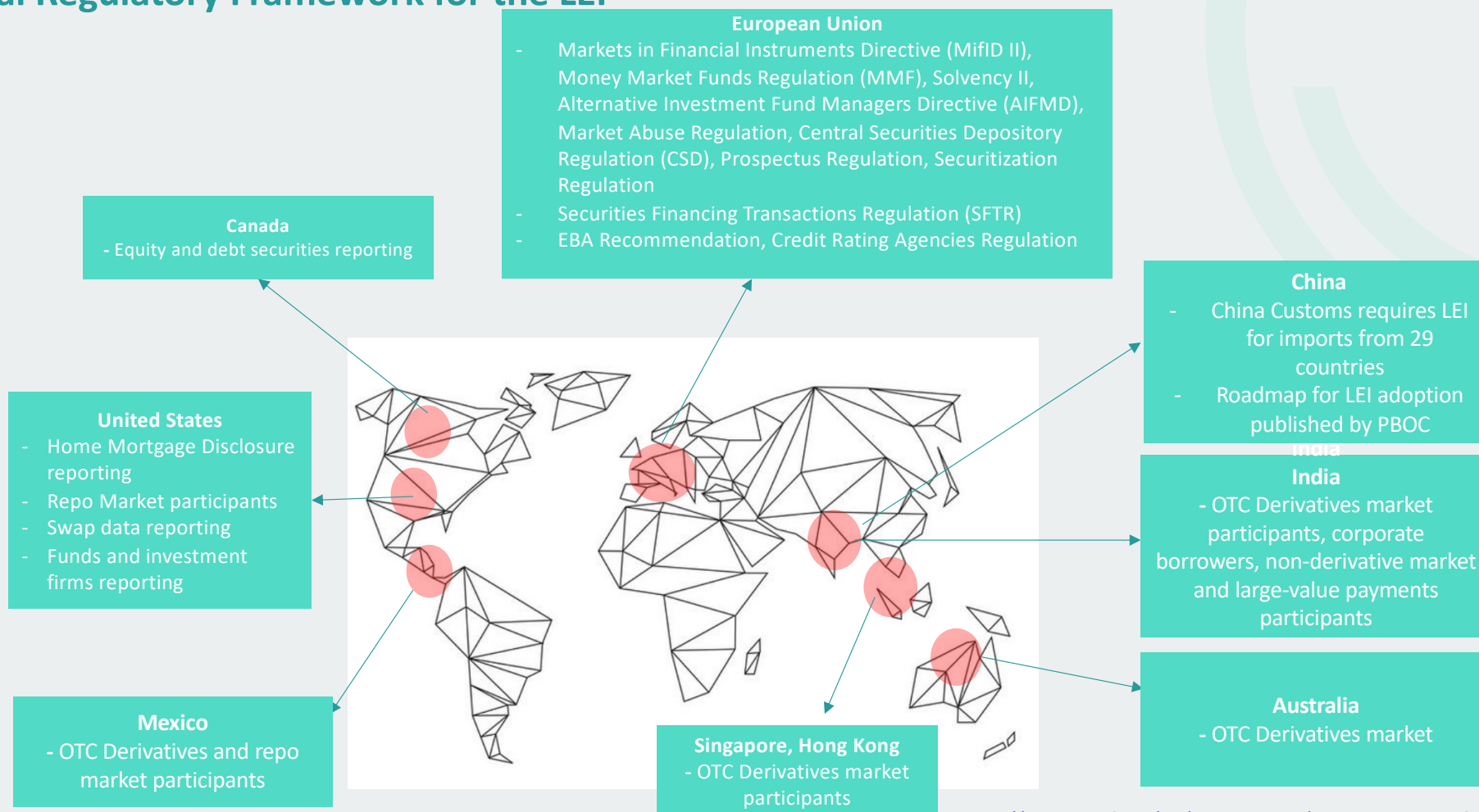
Distribution of the LEIs across jurisdictions

Data as of end of Q2 2022

- By the end of Q2 2022, there were over 2 million active LEIs globally.



Global Regulatory Framework for the LEI

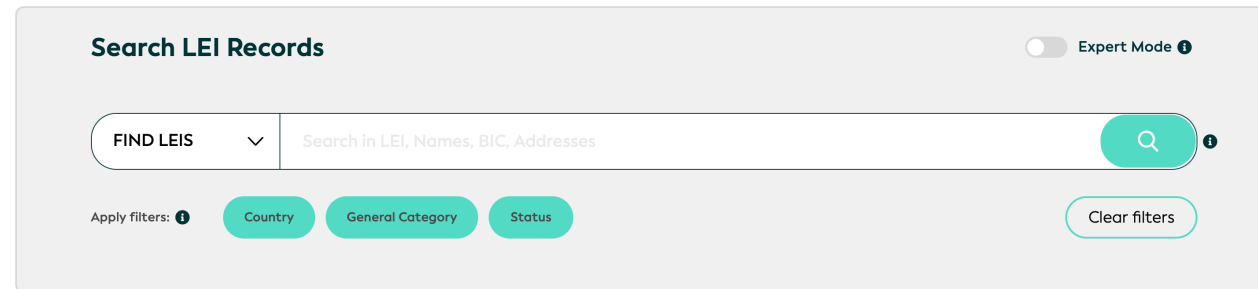


<https://www.gleif.org/en/lei-solutions/regulatory-use-of-the-lei>

Ways to access and use the LEI reference data

- LEI Search: <https://search.gleif.org/#/search/simpleSearch=>

LEI Search 2.0



The screenshot shows the 'Search LEI Records' interface. At the top right, there is a toggle switch for 'Expert Mode' which is currently turned off. Below this, there is a search bar with a dropdown menu labeled 'FIND LEIS' and a search icon. The search bar contains the placeholder text 'Search in LEI, Names, BIC, Addresses'. Below the search bar, there are three filter buttons: 'Country', 'General Category', and 'Status'. To the right of these buttons is a 'Clear filters' button. The interface is clean and modern with a light gray background and teal accents.

- GLEIF API: <https://www.gleif.org/en/lei-data/gleif-api>

The GLEIF API gives developers access to the full LEI Data search engine functionality, including filters, full-text and single-field searches of legal entity and ownership data, and “fuzzy” matching of relevant data fields such as names and addresses.

LEI and its reference data - 1

LEI Code KY37LUS27QX7BB93L28 ⓘ

(Primary) Legal Name	Nestlé S.A.
Transliterated Names	Nestle S.A.
Registered At	Commercial Register (Ministry of Justice) Handelsregister (Eidg. Amt für das Handelsregister; Bundesamt für Justiz) Switzerland RA000549
Registered As	CHE-105.909.036
Jurisdiction Of Formation	CH
General Category	GENERAL
Entity Legal Form	Company limited by shares (en) Société anonyme (fr) Aktiengesellschaft (de) Società anonima (it) MVII
Entity Status	● ACTIVE
BIC Code	NESNCH22XXX
ISIN Code	CH1194355108 CH1194355124 FRO000861643

LEI and its reference data - 2

Addresses ⓘ

Hide

Legal

Hide map

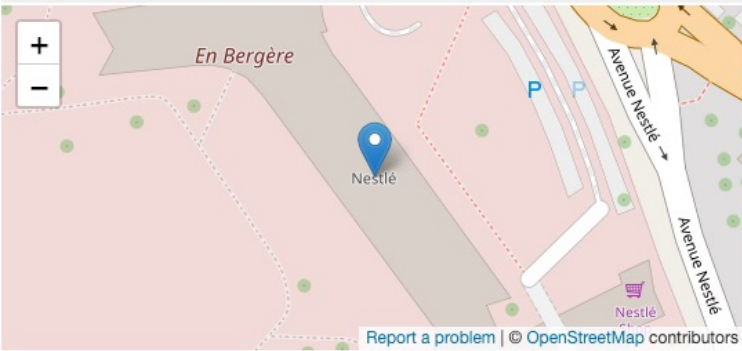
Avenue Nestlé 55

1800

Vevey

CH-VD

CH | Switzerland



Report a problem | © OpenStreetMap contributors

Headquarters

Hide map

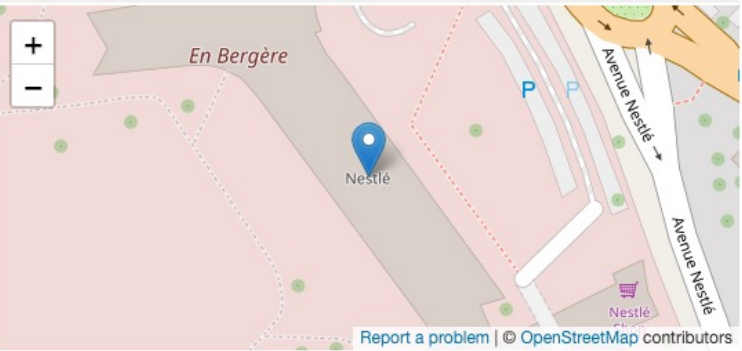
Avenue Nestlé 55

1800

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CH-VD

CH | Switzerland



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LEI and its reference data - 3

Registration details ⓘ



Registration Date	2012-06-06 17:52:00+02:00
Last Update	2022-03-22 22:32:00+01:00
Status	● ISSUED
Next Renewal	2023-02-17 14:57:00+01:00
LEI Issuer	Business Entity Data B.V. (GMEI Utility a service of BED B.V.) EVK05KS7XY1DEII3R011
Corroboration Level	FULLY_CORROBORATED
Data Validated At	Commercial Register (Ministry of Justice) Handelsregister (Eidg. Amt für das Handelsregister; Bundesamt für Justiz) Switzerland RA000549
Data Validated As	CHE-105.909.036

LEI and its reference data - 4

Children

Direct children (64)

Nestlé S.A.


[Wyeth Philippines Inc.](#)   (Direct)

[SMA NUTRITION INDIA PRIVATE LIMITED](#)   (Direct)

[NESTLE R&D CENTRE INDIA PRIVATE LIMITED](#)   (Direct)



[PT NESTLE INDONESIA](#)   (Direct)



[Nestle Australia Ltd](#)   (Direct)

[Nestle Philippines, Inc.](#)   (Direct)



[Maggi-Unternehmungen AG](#)   (Direct)



Ultimate children (106)



[NIFS SA](#)   (Ultimate)

[Wyeth Philippines Inc.](#)   (Ultimate)

[Nestle Hong Kong Limited](#)   (Ultimate)

[NESTLE R&D CENTER \(PTE\) LTD](#)   (Ultimate)

[NESTLE SINGAPORE \(PTE\) LTD](#)   (Ultimate)

[WYETH NUTRITIONALS \(SINGAPORE\) PTE. LTD.](#)   (Ultimate)

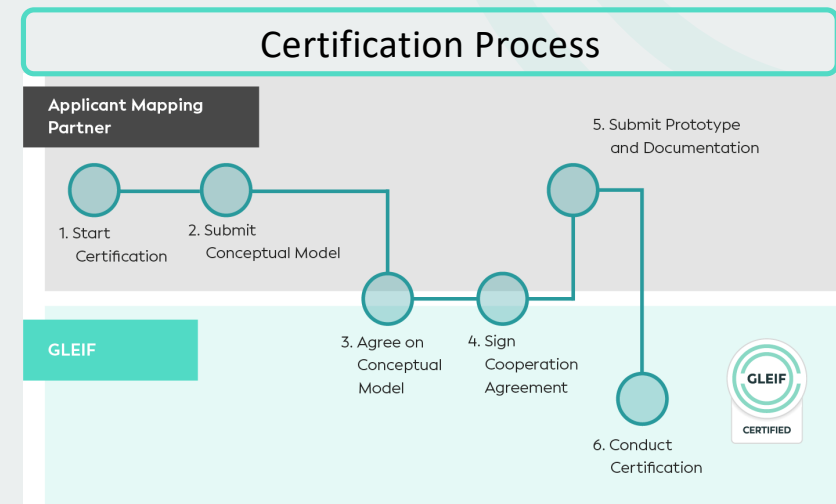
[NESTLE CAPITAL CANADA LIMITED](#)   (Ultimate)

[SMA NUTRITION INDIA PRIVATE LIMITED](#)   (Ultimate)

[NESTLE R&D CENTRE INDIA PRIVATE LIMITED](#)   (Ultimate)

Mapping: the perfect business language

- The LEI reference data already contains the the local identifier (see slide 8).
- The LEI is mapped to other identifiers via the Certification of Mapping service.
- This Service enhances functionality to data users, ensures interoperability across parallel ID platforms, streamlines entity verification processes and reduces data management costs for data users.
- Current partners:
 - SWIFT: BIC
 - ANNA: ISIN



GLEIF Code lists

- Registration Authorities list – RA list
 - <https://www.gleif.org/en/about-lei/code-lists/gleif-registration-authorities-list#>
- Entity Legal Form code list – ELF code list (ISO 20275)
 - <https://www.gleif.org/en/about-lei/code-lists/iso-20275-entity-legal-forms-code-list>
- Official Organizational Roles code list – OOR code list (ISO 5009)
 - No webpage yet

Registration Authorities list – RA list

- Overview of business registers and other relevant registration and validation authority sources;
- First such list ever; created by GLEIF;
- Unique code assigned by GLEIF; e.g. RA000463 – Netherlands – business register Chamber of Commerce;
- Used to verify/validate LEI reference data by LOUs;
- Enlargement in 2022 with many financial supervisory authorities because of the ROC policies on Funds;
- More than 1.000 RAs.

Registration Authorities list – RA list

Available data:

- RA code
- Country + ISO code
- Jurisdiction + ISO code
- International name of the register
- Local name of the register
- International name of the organization responsible for the register
- Local name of the organization responsible for the register
- Website address
- Comments, such as
 - “to be used for banks and some other licensed financial institutions”
 - “to be used as a Validation Authority for funds”
 - “to be used to verify information on sole proprietors”

RA000462	Nepal	NP	Nepal	Company Register		Office of Company Registrar	नेपाल पब्लिक रजिस्ट्रार बोर्ड	http://www.ocr.gov.np/index.php/nep/
RA000962	Nepal	NP	Nepal			Securities Board of Nepal	नेपाल सेक्युरिटीज बोर्ड	https://www.sebon.gov.np/
RA000463	Netherlands	NL	Netherlands	Business Register	Handelsregister	The Netherlands Chamber of Commerce	Kamer van Koophandel	www.kvk.nl/english
RA000464	Netherlands	NL	Netherlands			The Netherlands Authority for the Financial Markets	Autoriteit Financiële Markten	https://www.afm.nl/en/professionals/registers
RA000664	Netherlands	NL	Netherlands	Public Benefit Organisation Register	ANBI-register	Tax and Customs Administration	Belastingdienst	www.belastingdienst.nl
RA000189	New Caledonia	NC	New Caledonia	Register of Companies (Sirene)	Sirene	National Institute of Statistics and Economic Studies	Institut National de la Statistique et des Études Économiques	http://sirene.fr/sirene/public/accueil?siirene_locale=ver
RA000192	New Caledonia	NC	New Caledonia	Register of Commerce and Companies	Régistre du Commerce et des Sociétés	Infogreffe	Infogreffe	www.infogreffe.com
RA000963	New Caledonia	NC	New Caledonia		Répertoire des entreprises et des établissements (Ridet)	Institut de la statistique et des études économiques Nouvelle-Calédonie	Institut de la statistique et des études économiques Nouvelle-Calédonie	https://www.isee.nc/ridet/liste-d-entreprises
RA000466	New Zealand	NZ	New Zealand	Companies Register	Companies Register	Companies Office (Ministry of Business Innovation and Employment)	Companies Office (Ministry of Business Innovation and Employment)	www.business.govt.nz/companies
RA000749	New Zealand	NZ	New Zealand	New Zealand Business Number Register	New Zealand Business Number Register	Companies Office (Ministry of Business, Innovation and Employment)	Companies Office (Ministry of Business, Innovation and Employment)	https://www.nbn.govt.nz/
RA000964	New Zealand	NZ	New Zealand			Financial Markets Authority New Zealand	Financial Markets Authority New Zealand	https://www.fma.govt.nz/
RA000467	Nicaragua	NI	Nicaragua			Registro Público de la Propiedad Inmueble y Mercantil	Dirección Nacional de Registros	http://www.registropublico.gob.ni/
RA000965	Nicaragua	NI	Nicaragua				Superintendencia de Bancos y otras Instituciones Financieras	https://www.superintendencia.gob.ni

Entity Legal Form code list – ELF code list

- Entity Legal Form – ISO standard 20275;
- Overview of all legal forms in all countries in the local language; such as GmbH (Germany), BV (Netherlands), Société Anonyme (France), Ltd. (UK), LLC (USA states);
- Legal forms depend on national legislation; entities with the name ‘limited liability company’ exist e.g. in the UK, New Zealand, Ireland, Singapore and all US states, but these are all different;
- Unique code (4 digit alphanumeric), as described in the standard, assigned by GLEIF (2HBR – GmbH in Germany);
- Used in LEI reference data;
- More than 3.200 ELF in 175 jurisdictions;
- The (jurisdiction of the) ELF code determines the ‘jurisdiction of formation’ in the LEI reference data.

Entity Legal Form code list – ELF code list

- Available data:
 - ELF code
 - Country + ISO code
 - Jurisdiction + ISO code
 - Entity legal form local name
 - Language + ISO code
 - Transliterated name
 - Abbreviations

N3VO	Hong Kong, China	HK		Public unlimited company with a share capital	English	en	Public unlimited company with a share capital	Unltd;Ultld
S2E3	Hong Kong, China	HK		擔保有限公司	Chinese	zh	Dan bao you xian gong si	有限公司
S2E3	Hong Kong, China	HK		Company limited by guarantee	English	en	Company limited by guarantee	Ltd;Ltd.;Limited
UDG6	Hong Kong, China	HK		有股本的私人無限公司	Chinese	zh	You gu ben de si ren wu xian gong si	無限公司
UDG6	Hong Kong, China	HK		Private unlimited company with a share capital	English	en	Private unlimited company with a share capital	Unltd;Ultld
XPES	Hong Kong, China	HK		有限責任合夥	Chinese	zh	you xian ze ren he huo	LP;limited partnership;Limited Partnership
XPES	Hong Kong, China	HK		Limited partnership	English	en	Limited partnership	LP;limited partnership;Limited Partnership

Official Organizational Roles code list – OOR list

- New ISO standard 5009, published in 2022;
- Overview of all official roles in organizations per legal form per country;
- Roles as described in legislation; only in the local language; such as Managing Director, Vorsitzender, Bestuurder, Fondateur, Socio, Accionista, etc;
- Unique code (6 digit alphanumeric), as described in the standard, assigned by GLEIF;
- First version of the list will probably be published in 2022 Q4;
- Almost 2.000 OORs in 84 jurisdictions.

Official Organizational Roles code list – OOR list

- Available data:
 - OOR code
 - Country + ISO code
 - Jurisdiction + ISO code
 - Entity legal form local name
 - ELF code
 - Official organizational role local name
 - Language + ISO code
 - Transliterated name
 - Abbreviations

United States of America	US	New Jersey	US-NJ	Nonprofit Corporation	T4M6	President Board of Trustees
United States of America	US	New Jersey	US-NJ	Nonprofit Corporation	T4M6	Secretary Board of Trustees
United States of America	US	New Jersey	US-NJ	Nonprofit Corporation	T4M6	Treasurer Board of Trustees
United States of America	US	New Jersey	US-NJ	Nonprofit Corporation	T4M6	Registered Agent

LEI Digital Strategy

Digital Certificates as well as Self-Sovereign-Identity Networks

- The LEI has a critical role to play in today's digital world through its ability to provide organizations with unique, permanent identification globally. This especially is important in the context of **identifying legal entities involved in digital transactions**.
- LEI delivers value to both the more mature product - Digital Certificates - and the more recent innovation of **Verifiable Credentials**


LEIs in a digital world

Making LEIs verifiable

- When presenting an LEI, it is not clear if ...
 - the LEI is valid
 - the presenter is the LEI owner or an affiliate
 - the presenter has the right to use it
- As a result ...
 - the recipient of the LEI must still check and verify
 - background checks are often done manually at a high cost

Use case for the vLEI:

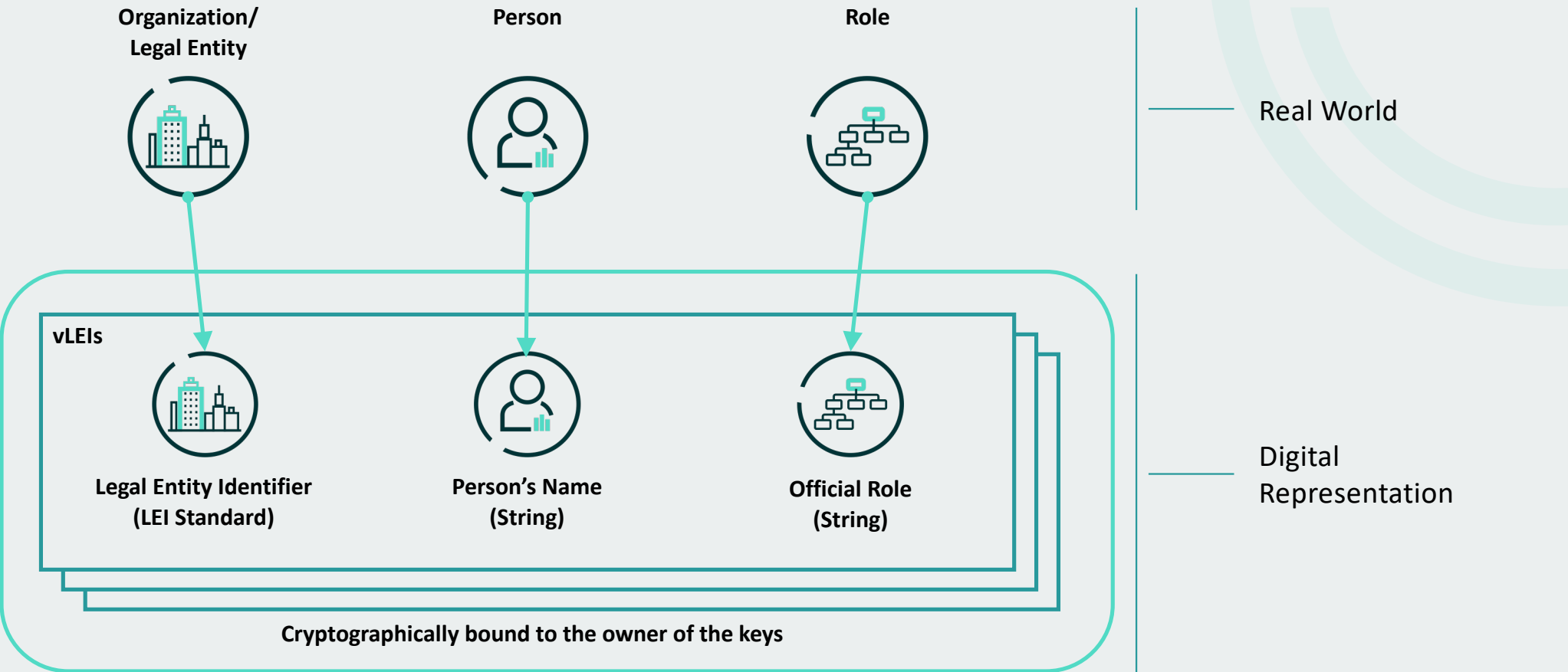
Decentralized identification and verification for organizations as well as the persons who represent their organizations either in official or functional roles



**Solving the common problem
of lack of trust and the costs
involved for creating trust**

Embedding the LEI in digital tools

Representing Organizations, Persons and Roles



Broader application of the vLEI Role Credential

- vLEI Role Credentials issued by Legal Entities to Persons whose **Official Organizational Roles** (ISO 5009 standard) that can be verified both by the Legal Entity as well as against one or more public sources.
- Examples:
 - Legal Entity – Director
 - Legal Entity – Board Chair
- vLEI Role Credential issued by Legal Entities to Persons **in the context of the engagement** of those Persons with the Legal Entities which can be verified by the Legal Entity.
- Examples:
 - Legal Entity – Employees in Functional Roles
 - Legal Entity – Authorized Suppliers
 - Financial Institutions – Clients

The LEI as a Verifiable Credential – the vLEI Trust Chain

- GLEIF is the Root of Trust
 - Root AID (Autonomic Identifier) to establish the Root of Trust
 - Delegated AIDs to issue Credentials
- GLEIF will establish a trusted network of Qualified vLEI Issuers (QVIs)
- QVIs are qualified to issue Entity and Role Credentials:
 - to Legal Entities
 - to Persons who represent Legal Entities either in official or functional roles

GLEIF



Qualified vLEI Issuers



Legal Entities



**Persons Representing
Legal Entities**

The vLEI Ecosystem Chain of Trust and vLEI Credentials

GLEIF

Issues Qualified vLEI Issuer vLEI

Qualified vLEI Issuer

Elements:
Legal Entity LEI
(GLEIF will have one too!)

Issues Legal
Entity vLEI

Issues Legal Entity
Official Organizational
Role vLEI

Elements:
Qualified vLEI Issuer LEI

Elements:
Legal Entity LEI, Person's name,
Official Organizational Role

Legal Entity

Issues Legal Entity
Engagement
Context Role vLEI

Elements:
Legal Entity LEI, Person's name,
Engagement Context Role

Entity Credentials
Role Credentials

The vLEI General Value Proposition

vLEI is a **verifiable credential**. That means that it is a piece of software that owns and encrypts a person's digital identity and its role within the legal entity, linked with the Legal Entity via LEI code also embedded in it.

vLEI can be used to **authenticate yourself** within/and your legal entity when accessing **Distributed Ledger Networks** (e.g. blockchain, Ethereum,..) in a secure way. It can be used in other systems not being based on DLT (based on verified credentials)

vLEI stand alone **cannot sign anything** and is just like an ID card issued by an accredited vLEI issuer (accredited by GLEIF's accreditation process).

vLEI CAN be used to sign documents. The process for signing using vLEI:

- It is needed a software that understands and accepts this credential (KERI underlying software provides wide compatibility) and uses it to sign a document via its encryption.
- this signing software can be provided by different vendors – currently we are using a company based in US.
 - by using this signing tool + vLEI you can sign a document or **even parts of a given document**
e.g. GLEIF Annual Report as an example in the next page: balance sheet figures are signed by the **Controller-CFO**, and overall document signed by **CEO**.

Statement of Comprehensive Income

for the Period from January 1 to December 31, 2021

	Notes	Jan. to Dec. 2021 US\$	Jan. to Dec. 2020 US\$
Fee revenue	3.1	13,201,695	11,987,725
Wages and salaries		-7,059,042	-5,894,056
Social contributions and expenses for pensions and care		-925,652	-780,217
Personnel expenses	3.2	-7,984,694	-6,674,273
Other operating expenses	3.3	-4,773,507	-4,465,448
Other operating income	3.4	162,764	345,590
Amortization and depreciation expense	4.5/4.6/4.7	-1,683,704	-1,070,035
Operating surplus / (loss)		-1,077,446	123,559
Subsidies and donations	3.5	111,690	28,811
Financial income / expense	3.6	-239,631	-61,766
Net surplus / (loss)		-1,205,387	90,604
Changes of components of net equity from actuarial gains and losses in pension and similar obligations	3.2	13,996	-6,984
Items that will not be reclassified to net surplus		13,996	-6,984
Other comprehensive income		13,996	-6,984
Total comprehensive income		-1,191,391	83,620

✓ **Signed in Full By Stephan Wolf**

Official Role: Chief Executive Officer

LEI: 506700GE1G29325QX363



Signed in Full By Steven Joachim

Official Role: Board Chair

LEI: 506700GE1G29325QX363



Signed in Full By Sven Schumacher

Official Role: General Counsel

LEI: 506700GE1G29325QX363



Partially Signed By Ines Gensinger

Engagement Role: Head of Communications

LEI: 506700GE1G29325QX363



✓ **Partially Signed By Annette Booth**

Official Role: Chief Financial Officer

LEI: 506700GE1G29325QX363



Partially Signed By Jan Marxfeld

Engagement Role: Auditor

LEI: 506700GE1G29325QX363



Partially Signed By Armin Imoberdorf

Engagement Role: Auditor

LEI: 506700GE1G29325QX363



International support for the use of the LEI

■ Payments area

- **Financial Stability Board (FSB): cross-border payments** <https://www.fsb.org/2022/07/fsb-explores-options-to-promote-broader-adoption-of-the-legal-entity-identifier-lei-in-cross-border-payments/>
- UN Capital Development Fund: global payments inter-network <https://migrantmoney.uncdf.org/docs/open-regulated-global-payments-inter-network>
- Cross-Border Interbank Payment System (CIPS): Promote LEI in RMB Cross-border Payment Ecosystem [https://www.cips.com.cn/en/standards/legal_entity_identifier_\(lei\)_/57024/index.html](https://www.cips.com.cn/en/standards/legal_entity_identifier_(lei)_/57024/index.html)

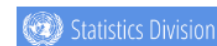
■ (Digital) Identity

- **Bank for International Settlements (BIS): Corporate Digital Identity** <https://www.bis.org/publ/bppdf/bispap126.pdf>
- World Trade Organization & World Economic Forum: the promise of TradeTech: technologies to enhance trade digitalization https://www.wto.org/english/res_e/publications_e/tradtechpolicyharddigit0422_e.htm
- World Trade Organization & International Chamber of Commerce: Standards Toolkit for Cross-border Paperless Trade https://www.wto.org/english/res_e/booksp_e/standtoolkit22_e.pdf
- Association of African Central Banks: foster transparent business relationships in African economies https://aacb.org/sites/default/files/2021_Liste_decisions_CG_reunion_virtuelle_aout_2021.pdf
- **European Systemic Risk Board (ESRB): recommendations on using the LEI to identify legal entities in financial transactions** https://www.esrb.europa.eu/pub/pdf/recommendations/esrb.recommendation201126_on_identifying_legal_entities~89fd5f8f1e.en.pdf and <https://www.esrb.europa.eu/pub/pdf/occasional/esrb.op.18~7977fb4f23.en.pdf?9fd40834eaae4c5f333c4e15471ca94e>

Bulk issuing

- Based on the ESRB recommendations (amongst others), bulk issuing of LEIs seems a logical way forward
- Bulk issuing of LEIs could be done by governments / registration authorities
- Issuing to all (relevant) registered entities
- Discussions with ROC for specific conditions (issuing and updating, financials)
- Start of first pilot project expected soon (both LEI and vLEI)
- Small country; public announcement will follow
- GLEIF open for discussion with any business register

Joint project with UN Statistics Division



TOPICS ▾

DATA ▾

METHODOLOGY ▾

EVENTS ▾

UN Committee of Experts on Business and Trade Statistics

Fifth Meeting of the UN Committee of Experts on Business and Trade Statistics

- Cooperation with UNCEBTS
- UN Statistical Commission March 2022: support for a joint UNCEBTS/GLEIF global initiative on unique identifiers; more concrete proposal expected for the UNSC in March 2023
- Main objectives:
 - Strengthen the transparency on businesses in countries by improving their registration;
 - Improve the availability of unique business identifiers in administrative data sources in countries;
 - Promote access to and sharing of administrative data for statistical business registers.
- Initial focus:
 - Outreach to relevant international/regional organizations;
 - Coordination of technical cooperation activities aimed at strengthening the administrative registration of businesses in countries and the relevant legislation;
 - Development of guidelines and case studies on the importance of a well-functioning registration system in countries for SBRs;
 - Demonstrate the importance and benefit of linking national identifiers with global identifiers (such as the LEI).

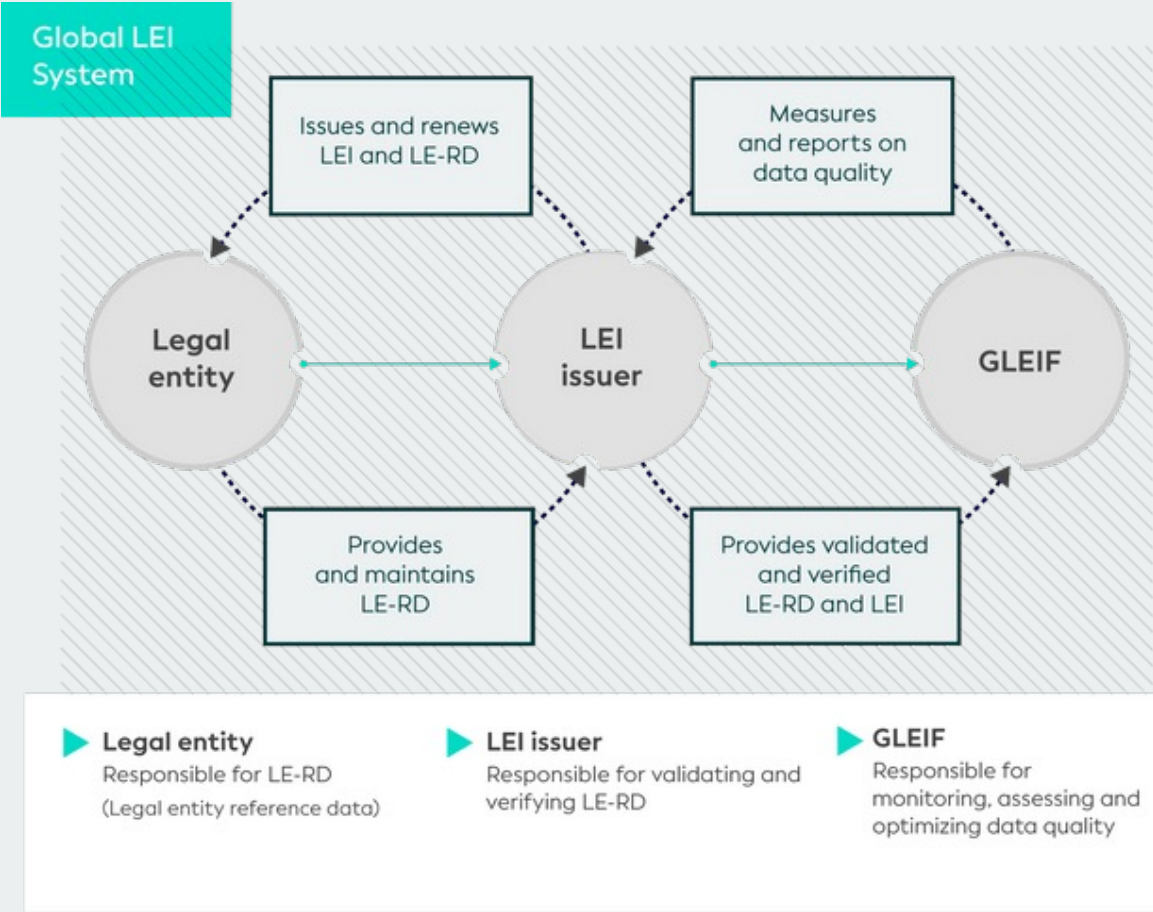


Annex

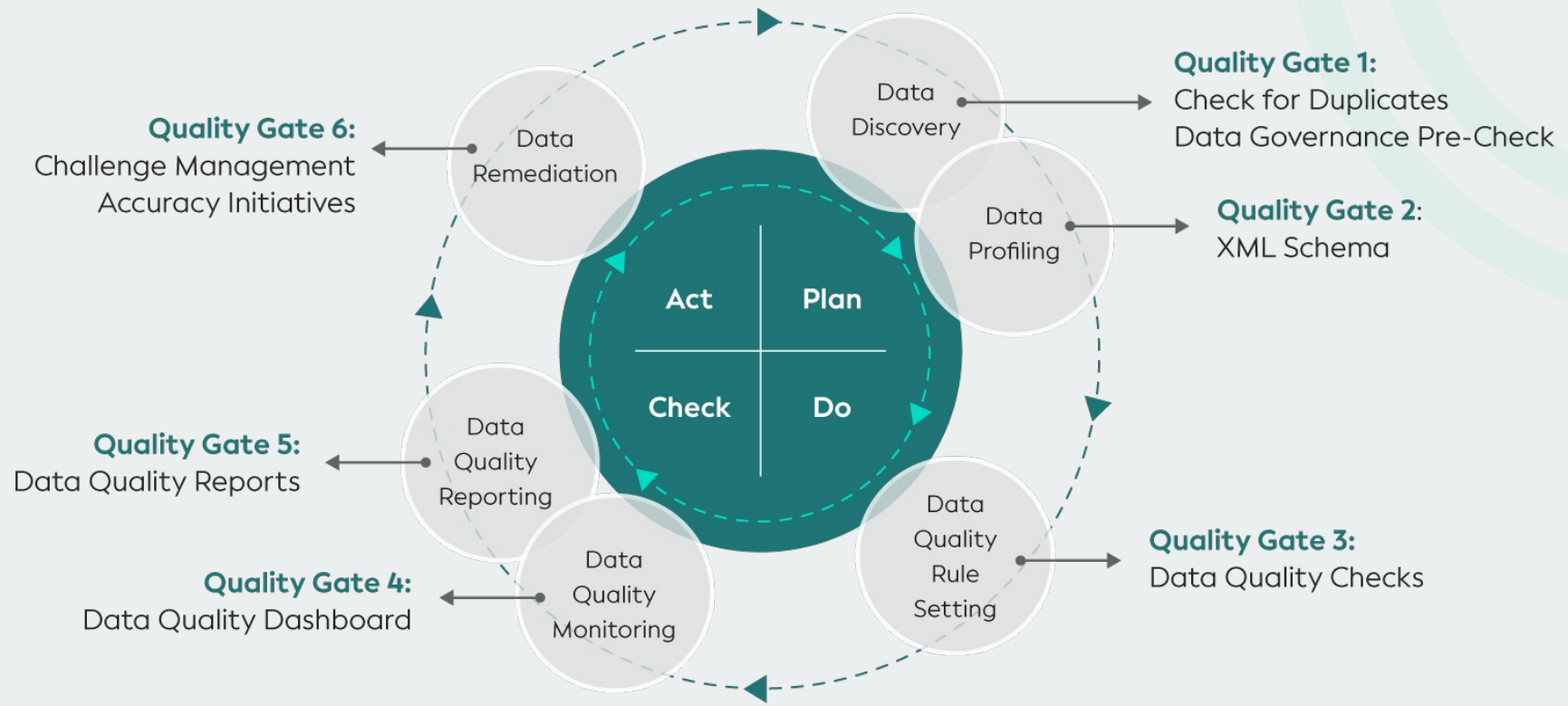
Details on

- Data quality
- vLEI technicals

Global LEI System – Data Quality Value Chain



Data Quality Gates



See Annex for data quality rule setting

Extract data quality rule setting 3.2

Types of data quality checks

- **ELF Corroboration:** Shows the current list of ELF Codes with an expected minimum level of corroboration.
- **ELF Funds:** Shows the current list of ELF Codes that are applicable for fund entities.
- **RA Formats:** Shows the current list of regular expressions for chosen Registration Authorities.
- **RA Funds:** Shows the current list of Registration Authorities that are applicable for fund entities.
- **Sole Proprietor:** Shows the current list of ELF Codes that and their applicability to EntityCategory SOLE_PROPRIETOR.

Examples

ELF Corroboration		
entity_legal_form_code	corroboration_compliance	effective_date
11GD	FULLY_CORROBORATED	31.07.2021
12N6	FULLY_CORROBORATED	31.07.2021
157O	PARTIALLY_CORROBORATED	31.07.2021
15JS	FULLY_CORROBORATED	31.07.2021
17R0	PARTIALLY_CORROBORATED	31.07.2021
1A0A	FULLY_CORROBORATED	31.07.2021

RA Formats	
registration_authority	regex
RA000001	^[0-9]{1,6}\$
RA000013	^[0-9]{2}\s[0-9]{3}\s[0-9]{3}\s[0-9]{3}\$
RA000014	^[0-9]{3}\s[0-9]{3}\s[0-9]{3}\$
RA000015	^[0-9]{3}\s[0-9]{3}\s[0-9]{3}\$
RA000017	^(\d{1,6})\$ ^(\\d{1,6})\\s?([a-z])\$ ^(\\d{9,10})\$ ^(\\d{8,13})\$
RA000025	^(BE\\d{10})\$ ^(\\d{9,10})\$ ^(\\d{3,4}\\d{3}\\d{3})\$
RA000059	^(\\d{11})\$ ^(\\d{3}\\d{3}\\d{3}\\d{3}\\d{2})\$ ^(\\d{2}\\d{3}\\d{3}\\d{3}\\d{1,4}\\d{2})\$
RA000065	^(\\d{9})\$

Source: <https://www.gleif.org/en/lei-data/gleif-data-quality-management/data-quality-checks/details>

The model-fostering LEI adoption

Digital Transformation of entire industries

- Digital transformation, e.g., Platform Economy, Artificial Intelligence, Distributed and federated Networks etc., is changing the way we interact with each other
- Digital Identity and Strong Authentication become vital for distributed systems spanning many actors
- vLEIs are going to address many business needs in all industries:
 - Supply chain/trade/trade finance
 - Telecom
 - National identity solutions
 - Financial sector services (payments, AML,CFT, sanctions screening, cryptocurrencies)
 - Private sector reporting to the public sector

Each vLEI requires an underlying LEI !



vLEI signing features

Advantages

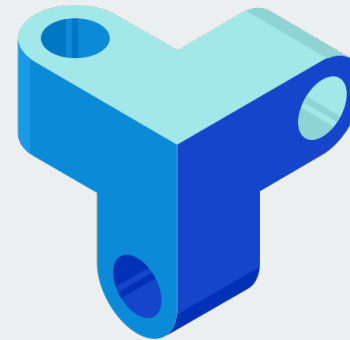
- very flexible: it can be used in different platforms: all kinds of DLT platforms are compatible thanks to the underlying Keri middleware.
- It can be used also in non-DLT environments, like the ones based on verifiable credentials.
- allows to include the signer role – so ISO 5009 that defines corporate roles can be directly applied
- the documents can be signed partially per sections: splits accountability of sections among different people within the legal entity

Disadvantages

- It needs to be used with a third party signing software tool and for reading the signatures of the signed document you need a dedicated software/plugin:
 - these software tools are build up ad-hoc, not standardized
 - today there is no legislation, standardization or directives behind them.
- the generated signature is an “electronic signature” , and is NOT a “digital signature”
this means that are added technical proofs to the signed document to provide signer identity whereas, a digital signature uses a recognized and audited two key for asymmetric encryption and brings the charge of the proof on the contra party (which is critical on addressing who should demonstrate its authenticity).

The vLEI ecosystem is in full accordance with ToIP standards

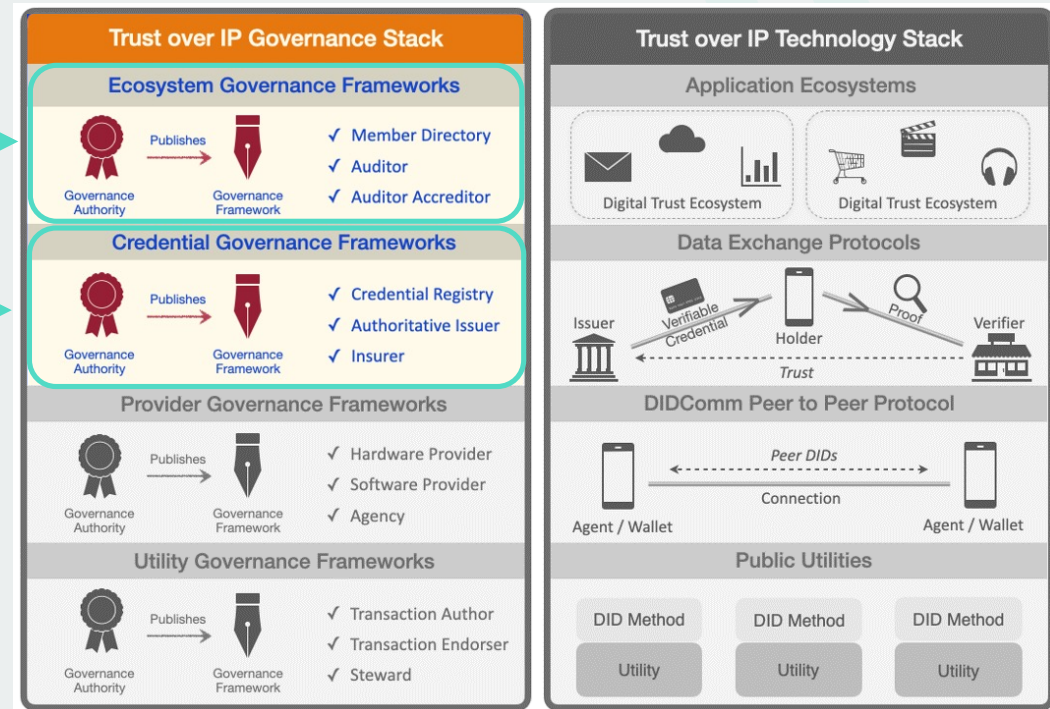
- Launched May 2020
- Grew from 27 to 125 member companies in less than six months
- Founding Members include Mastercard, IBM, Accenture, Government of British Columbia, LG, GS1, Mitre, SICPA, R3, Kiva, and 4 universities
- GLEIF joined ToIP as Contributor Member
- Hosted by the non-profit Linux Foundation
 - Home to over 250 of the world's leading open source/open standard projects including Cloud Native Computing, Hyperledger, Automotive Grade Linux, Hyperledger, and the Decentralized Identity Foundation



TRUST
Over IP
FOUNDATION

vLEI Governance Frameworks

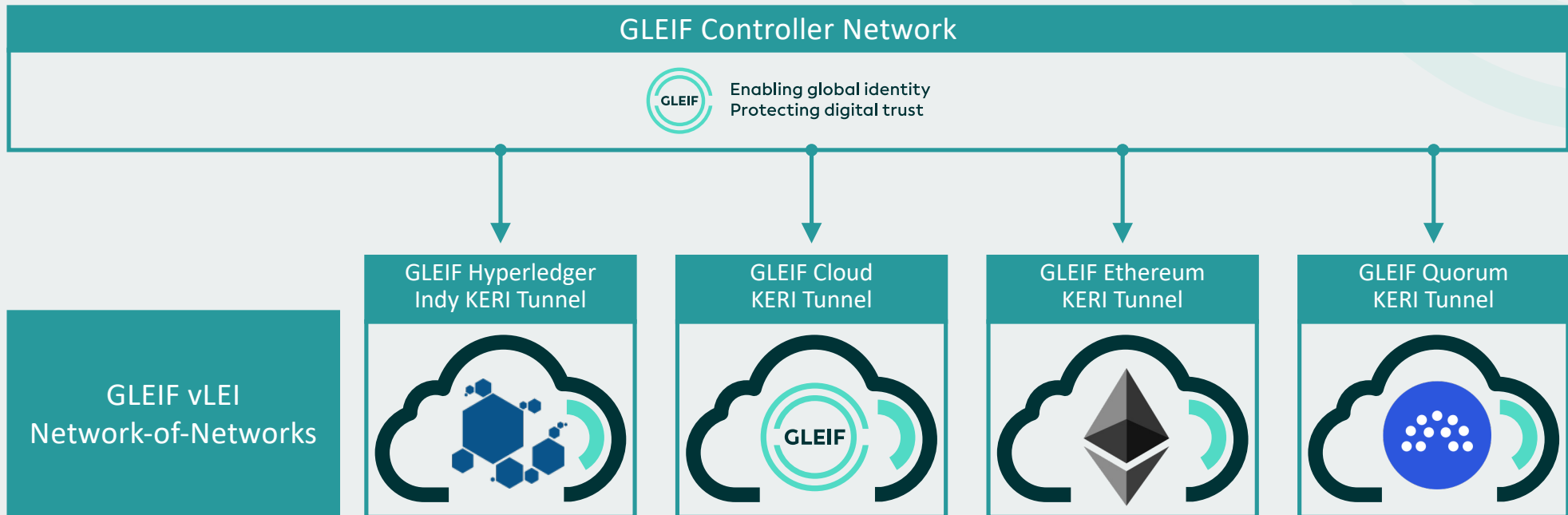
- vLEIs will be issued by vLEI Issuers of two types:
 - Existing LEI issuers who elect to issue vLEIs
 - New issuers who will issue vLEIs by calling APIs provided by GLEIF and current LEI issuers
- All vLEI Issuers will be qualified under the GLEIF vLEI Ecosystem Governance Framework
 - **A ToIP-compliant Layer 4 governance framework**
- The vLEI family of Verifiable Credentials will be defined by the GLEIF vLEI Credential Governance Framework
 - **A ToIP-compliant Layer 3 governance framework**



Network-of-networks

True interoperability and portability

- Development of the capabilities needed for issuance, verification and revocation of vLEIs do not need to operate on blockchain or distributed ledger technology.
- This would allow GLEIF to **connect to any blockchain or distributed ledger technology SSI network or cloud infrastructure** without the need for custom implementation, cost and overhead of operation.



GLEIF's vLEI approach

Agnostic to any network

- Development of the capabilities needed for GLEIF to issue and verify vLEIs does not need to operate on blockchain or distributed ledger technology.
- GLEIF has implemented **KERI (Key Event Receipt Infrastructure)** and related technical capabilities to support fully decentralized portable secure key management operations on self-certifying identifiers.
- Currently engaged in piloting, GLEIF plans to announce the launch of the vLEI Issuer Qualification Program shortly and to plan for implementation of the vLEI ecosystem and infrastructure later in 2022.

Interoperability

- This would allow GLEIF to **connect to any blockchain or distributed ledger technology SSI network** without the need for custom implementation, cost and overhead of operation.
- KERI is **Quantum Safe**. It is resistant to attacks by both classical and quantum computers.



- <http://github.com/WebOfTrust/keri>

Limitations

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