



*Enabling global identity  
Protecting digital trust*



# Organizational Identity and Organizational Credentials

Achieved with the verifiable LEI (vLEI)  
Eurofiling Conference  
June 13, 2023

# Agenda

1. The need for secure, verifiable Organizational Identity
2. How has this/is this being done today?
3. End-verifiable Organizational Credentials – vLEIs

Appendix - Overview of the Global LEI System





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## The need for secure, verifiable Organizational Identity

# The need for Organizational Identity

## Secure, certain, verifiable

- There is a need when dealing business to business, business to consumer and private sector to public sector to know with certainty the entity with which you are dealing.
- So this requires a person or thing to prove their authority to represent an organization outside the boundaries of the organization.
- We all are familiar with the negative realities of not knowing with certainty the entity with which you are dealing
  - Identity impersonation
  - Fraud
  - Social engineering - phishing/smishing
  - Robocalls

## Keeping pace with digital transformation

- Original focus/purpose for the LEI and for GLEIF was identification of entities engaged in certain financial transactions which led to the 2008 global financial crisis
- The LEI also can be useful as our world undergoes digital transformation
  - Digital engagement
  - Digital transactions
  - In both 'local' and 'global' interactions
- Can the existing ways of identifying organizations handle the challenges that this digital transformation presents?
- Or, is there an opportunity for secure, verifiable Organizational Identity to be realized more cheaply, with certainty, by leveraging improvements in automated cryptographic verification?
- And to decrease, and in some cases, eliminate risks?



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## How has this/is this being done today?

## Existing solutions/approaches

- Current solutions Digitize rather than Digitalize
  - Digital certificates
  - eSeals
  - Forms of multi-factor authentication
    - Usernames/passwords
    - Sending/inputting verification codes
    - Are you human? Challenges
    - Call backs
    - Biometric verification
- Insufficient solutions using Verifiable Credentials
  - That do not cryptographically anchor Organizational Identity with certainty to a Root of Trust
  - And do not chain the credentials of the people who represent their organizations cryptographically to the organization's identity

**The common problem of lack of secure and certain verifiability still exists.**

**Costly and time consuming workarounds exist as well as the cost of breaches and exposures and the human factor.**



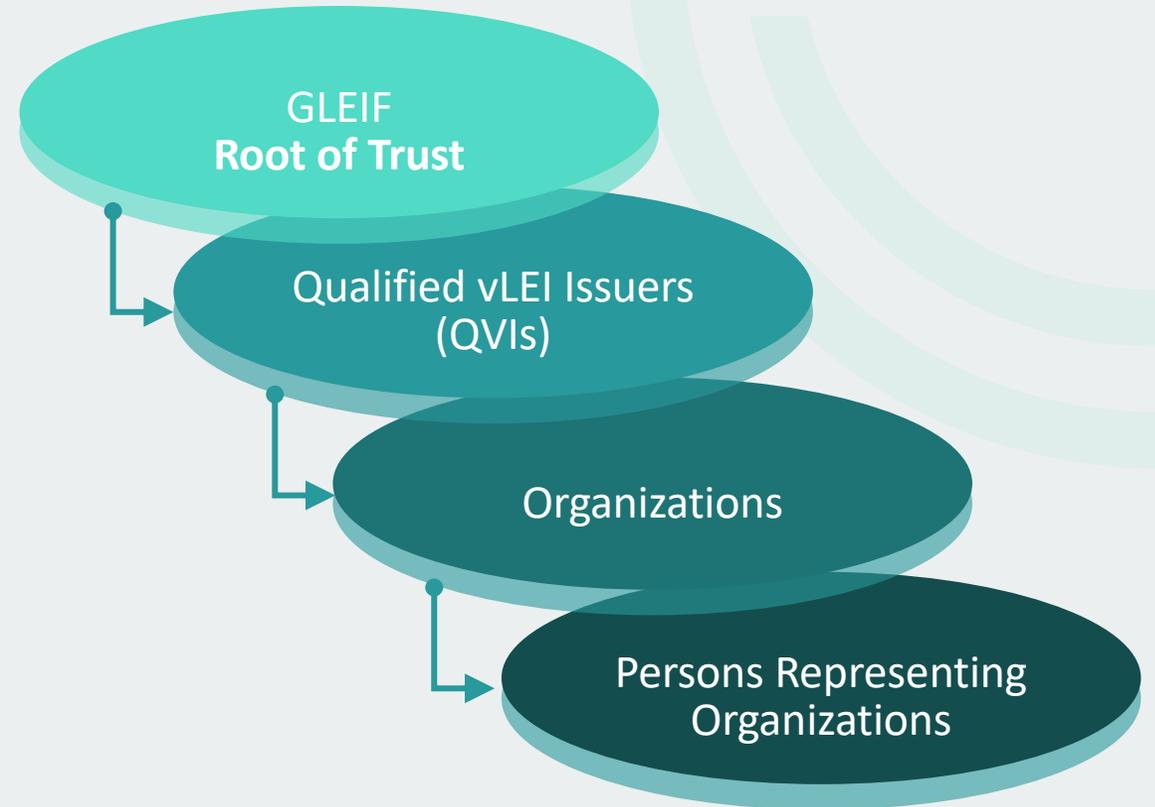
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## End-verifiable Organizational Credentials – vLEIs

# The verifiable LEI (vLEI) Ecosystem

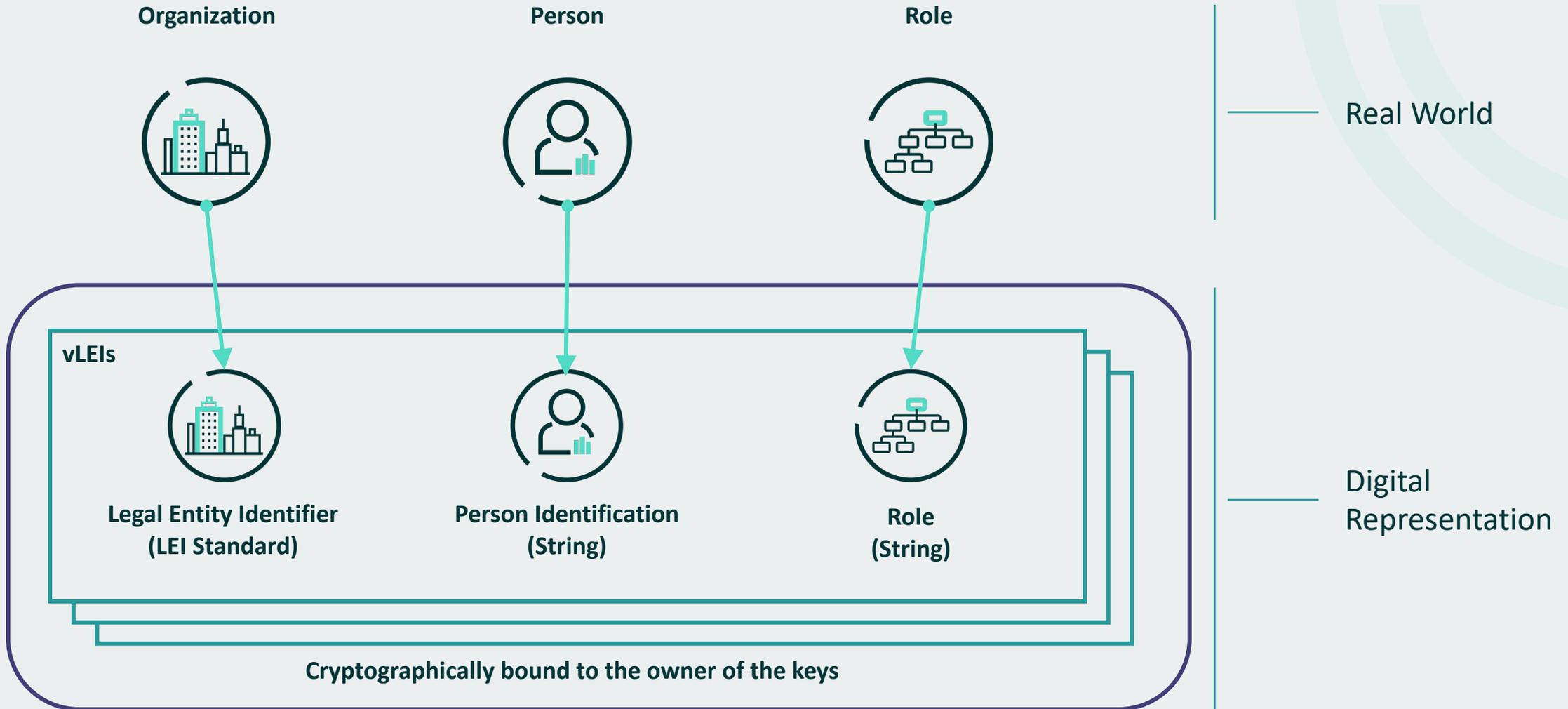
## The vLEI Trust Chain

- The Global Legal Entity Identifier Foundation (GLEIF), as manager of the Global LEI System, has created the verifiable LEI (vLEI) Ecosystem.
- Each vLEI requires an underlying LEI.
- GLEIF has established itself as the **Root of Trust** for the vLEI Ecosystem and chain of trust (using cryptographic Autonomous Identifiers).
- A trusted network of **Qualified vLEI Issuers (QVIs)** can issue Organizational Credentials - vLEIs
  - to Organizations
  - to Persons who represent their organizations either in official or functional roles enabling **verifiable authority**



# Representing Organizations, Persons and Roles

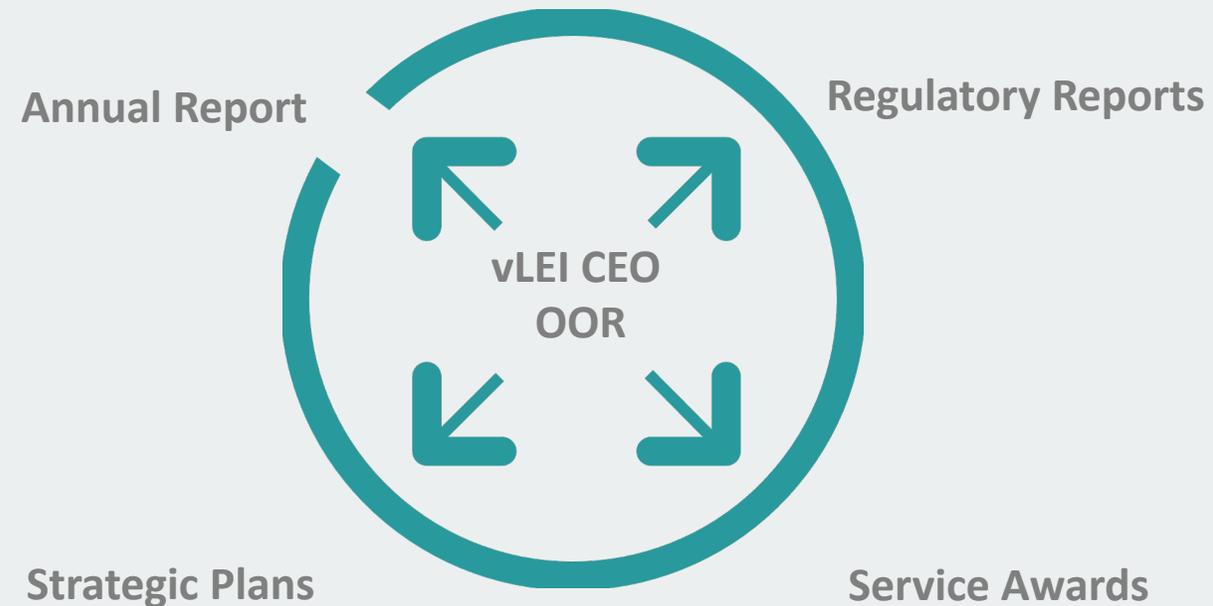
Securely, with certainty and end-verifiability



# Using Organizational Credentials

## Official Organizational Role (OOR) vLEI Credentials

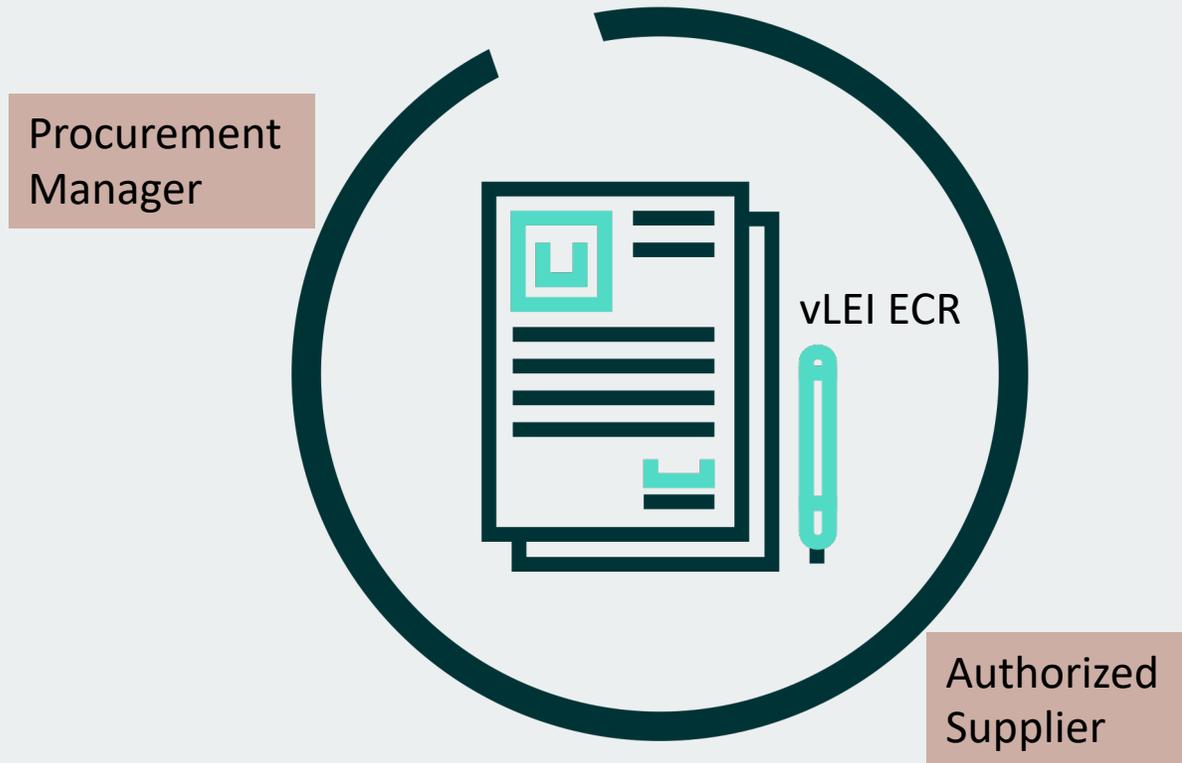
- Organizations can authorize QVIs to issue vLEI credentials to persons who represent their organizations in official roles.
- Roles can be verified against one or more public sources or through documents provided by the organization, such as Board minutes or resolutions, statutes or articles, which would validate the name and the role of the OOR Person.
- Lists of Official Organization Roles have been standardized by the ISO 5009 standard.
- Example: vLEI Role Credential for a CEO
  - Can be used to:
    - carry out official duties and powers conferred legally or required by regulation, e.g., annual reports, regulatory reports
    - carry out internal policies, duties or tasks, e.g., approve strategic plans, sign employee service awards



# Using Organizational Credentials

## Engagement Context Role (ECR) vLEI Credentials

- Organizations also can authorize the issuance of vLEI credentials to persons **in the context of the engagement** of those persons with an organization, which can be verified by the organization.
- Example:
  - vLEI Role Credentials issued by an organization to its authorized suppliers
  - Requirements for use defined by the organization
    - Could require authorized suppliers to submit invoices signed with their vLEI Role Credentials to eliminate presentation of fraudulent invoices



## vLEIs in action

### Example: signing GLEIF's Annual Report

#### ■ vLEI Credentials issued

- OOR and ECR vLEI Credentials issued to certain officers and employees/managers of the organization.

#### ■ Submission signed

- Specific sections/parts of a report, for example, can be signed by officers and employees/managers of the organization with their OOR and ECR vLEIs.
- The same report also can be signed in its entirety by officers and employees/managers of the organization with their OOR and ECR vLEIs.
- It is now possible to extend the signing and verification to an organization's auditors

#### ■ vLEI Credentials presented and signatures verified

- Status of the vLEI Credentials and the validity of the signatures on the submission are verified.

Digital Signatures		Display Options
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	

<https://www.gleif.org/en/about/governance/annual-report> (browser based, no plugin required)

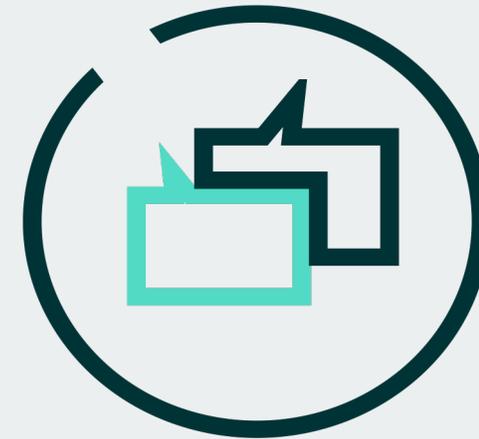
## Broader application for regulatory filings



Accepts filing upon successful verification and checks



- Regulatory authority
- verifies the validity of the vLEI credential and signature
  - checks that the LEI is valid and that a filing was expected by this organization



Reporting entity submits filing to regulatory authority signed with vLEIs



## vLEI approach – key capabilities

### The vLEI ecosystem and infrastructure delivers a Zero Trust Architecture for Organizational Identity using Organizational Credentials.

- 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.
- Issuance, verification and revocation of vLEIs do not need to operate on blockchain or distributed ledger technology which would allow GLEIF to **connect to any blockchain or distributed ledger technology or cloud infrastructure.**



### vLEI credentials are chained Authentic Chained Data Containers (ACDCs)

- Provides cryptographic anchoring of organization identity securely and with certainty to a Root of Trust
- Chains the credentials of the people who represent their organizations cryptographically to the organization's identity
- Similar to the concept of a chain-of-custody, ACDCs provide a verifiable chain of traceability of the contained data.
- A chained (tiered) proof-of-authority enables delegation of authority and delegated authorizations.
- Connects vLEI Credentials for issuance, verification and revocation

# vLEI credentials can be used to digitally sign many things in many ways

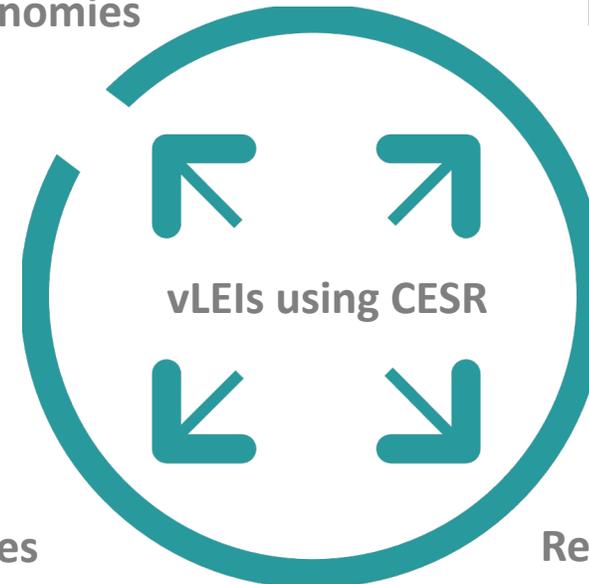
## Composable Event Streaming Representation (CESR)

- Specific content, for example, specific sections/parts of a report, can be signed by one or more officers and employees/managers of an organization using their OOR and ECR vLEIs.
- The entire content of the same report, for example, also can be signed in its entirety by one or more officers and employees/managers of an organization's using their OOR and ECR vLEI Credentials.
- GLEIF is participating in the XBRL International Digital Signing Working Group (D6WG) to contribute to the standardization of signing XBRL formats with vLEIs

### Sample use cases

XBRL individual facts and partial/full taxonomies

Reports/  
Forms



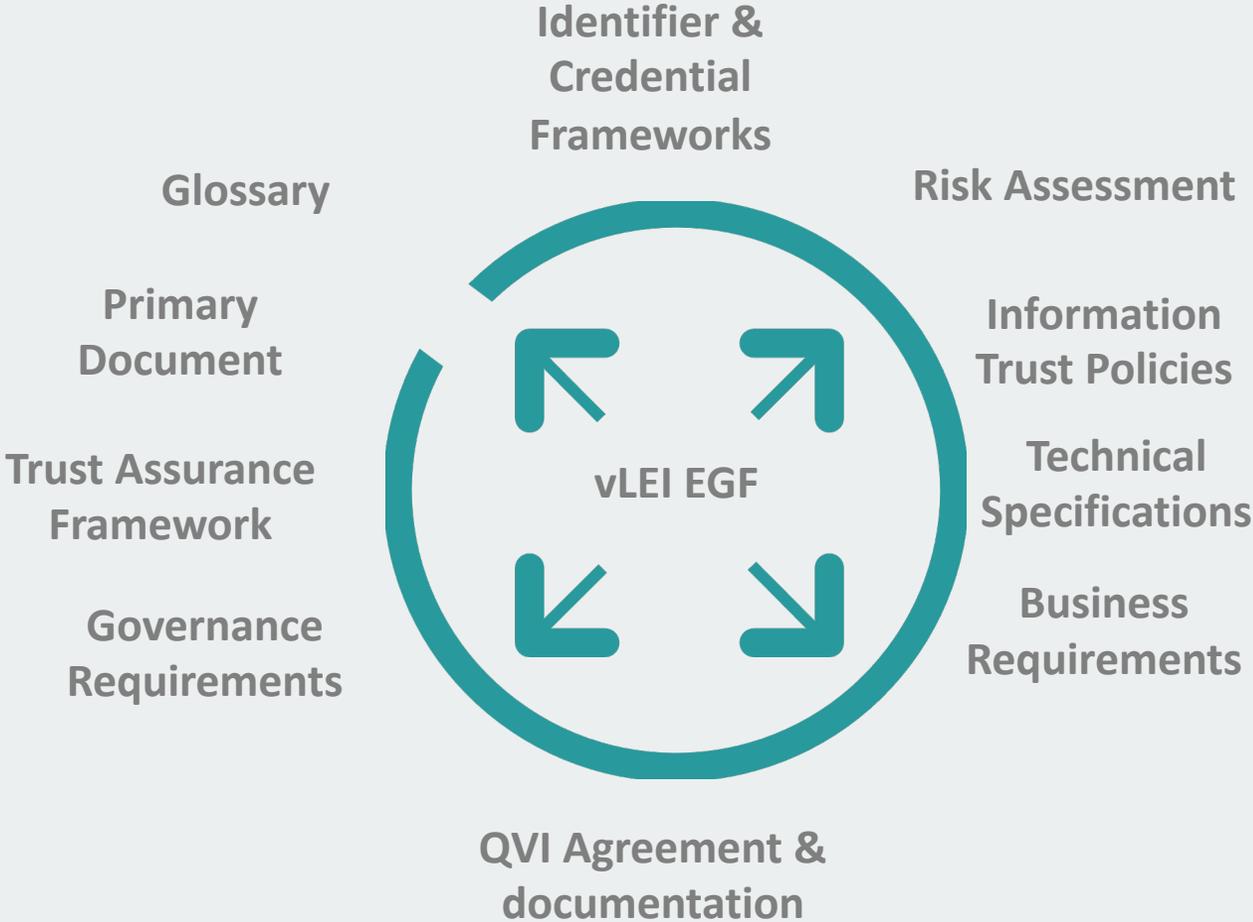
Financial Messages

Report/Taxonomy  
Packages

# The vLEI ecosystem and infrastructure is governed by the vLEI Ecosystem Governance Framework

- The vLEI Ecosystem Governance Framework defines the vLEI operational model and describes how vLEI issuing stakeholders will qualify for and perform their roles in the Global LEI System.
- The vLEI EGF has been created in full accordance with standards and recommendations Trust over IP Foundation using the ToIP EGF metamodel.
- The ToIP Foundation is hosted by the non-profit Linux Foundation.
- GLEIF is the Governing Body of the vLEI Ecosystem Governance Framework.

<https://www.gleif.org/en/vlei/introducing-the-vlei-ecosystem-governance-framework>





## Appendix: Overview of the Global LEI System

# 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."**

Composed of public authorities from around the world

Ensures the operational integrity of the Global LEI System



Issue LEIs to legal entities



# 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 the Regulatory Oversight Committee (ROC) with
  - **71 regulators** and
  - **19 observers**
  - from **50 countries**
- GLEIF Board has **18 independent directors**.
- **39 Partners** for LEI issuing (**LOUs**) and growing
- **> 2,350,000 issued LEIs** to date



# The LEI

- The LEI is a life-long identifier **owned** by the respective legal entity.
- It points to the associated reference data.
- The LEI is an ISO standard ISO 17442.

**Nestlé S.A.**

LEI Code KY37LUS27QX7BB93L28 Hide

(Primary) Legal Name	Nestlé S.A.
Transliterated Names	Nestle S.A.
Registered At	Commercial Register (Ministry of Justice) Handelsregister (Eidg. Amt für das Handels Switzerland, Switzerland RA000549
Registered As	CHE-105.909.036
Jurisdiction Of Formation	CH
Entity Legal Form	Aktiengesellschaft MVII
Entity Status	● ACTIVE
BIC Code	NESNCH22XXX

Level 2 Data: Who Owns Whom

Parents

NATURAL\_PERSONS (Direct Parent Exce)

Direct children (69)

Nestlé S.A.

- [Maggi-Unternehmungen AG](#) (Direct)
- [Nestle Marcas S.A.C](#) (Direct)
- [네슬레코리아 유한책임회사](#) (Direct)
- [Nestle Waters Brasil - Bebidas E Alimentos Ltda.](#) (Direct)
- [Nestle Brasil Ltda.](#) (Direct)
- [Nestle de Colombia S.A.](#) (Direct)
- [Nestle Türkİ ye Gıda Sanayi Anonİ mşİ rketİ](#) (Direct)
- [Nestle Middle East FZE](#) (Direct)
- [Nestle Dubai Manufacturing L.L.C.](#) (Direct)
- [Nestle Middle East Manufacturing LLC](#) (Direct)
- [Nestle Lanka PLC](#) (Direct)

Sections

- Empty fields
- Entity details
- Addresses
- LEI Registration details
- LOU details
- Level 2 Data: Who Owns Whom

Ultimate children (110)

- [Maggi-Unternehmungen AG](#) (Ultimate)
- [Nestle Marcas S.A.C](#) (Ultimate)
- [Galderma Nordic AB](#) (Ultimate)
- [네슬레코리아 유한책임회사](#) (Ultimate)
- [CPW Brasil Ltda.](#) (Ultimate)
- [Chocolates Garoto SA](#) (Ultimate)
- [Nestle Waters Brasil - Bebidas E Alimentos Ltda.](#) (Ultimate)
- [Nestle Nordeste Alimentos E Bebidas Ltda.](#) (Ultimate)
- [Nestle Brasil Ltda.](#) (Ultimate)
- [Nestle de Colombia S.A.](#) (Ultimate)
- [Nestle Middle East FZE](#) (Ultimate)
- [Nestle Dubai Manufacturing L.L.C.](#) (Ultimate)
- [Nestle Middle East Manufacturing LLC](#) (Ultimate)
- [Nestle Lanka PLC](#) (Ultimate)
- [Fondation Nestlé pour l'étude des problèmes de l'alimentation dans le monde](#) (Ultimate)
- [Nestle \(Thai\) Limited](#) (Ultimate)

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