



*Enabling global identity
Protecting digital trust*



Expanding the verifiable LEI (vLEI) Ecosystem

Trust over IP 5th Anniversary Virtual Symposium
Advancing Digital Trust Together
November 19, 2025

Agenda

1. How do the LEI and vLEI deliver secure, certain and verifiable Organizational Identity?
2. Enabling identification, permissioning, authentication, and digital signing – application examples





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How do the LEI and vLEI deliver secure, certain and verifiable Organizational Identity?

Identifying organizations with 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 – Part 1.

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 Türkiye Gıda Sanayi Anonim Şirketi (Direct)

Nestle Middle East FZE (Direct)

Nestle Dubai Manufacturing L.L.C. (Direct)

Nestle Middle East Manufacturing LLC (Direct)

Nestle Lanka PLC (Direct)

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

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)

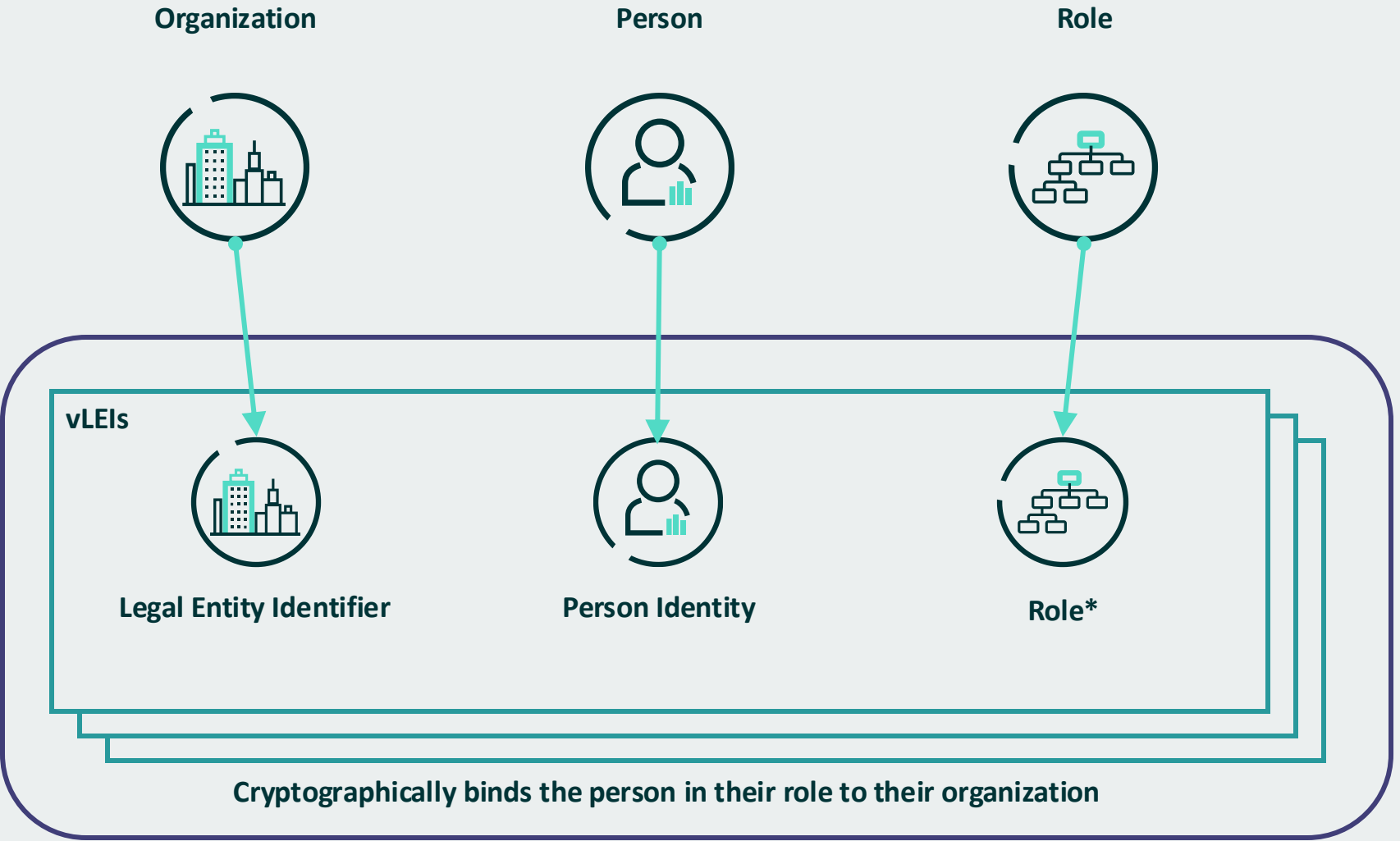
Nestle Lanka PLC (Ultimate)

Fondation Nestlé pour l'étude des problèmes de l'alimentation dans le monde (Ultimate)

Nestle (Thailand) Limited (Ultimate)



Identifying organizations and representing the connection among Organizations, Persons and Roles



- Two types of vLEI Role Credentials
 - For official roles- Official Organizational Role vLEI Credentials
 - For functional role – Engagement Context Role vLEI Credentials

vLEI use cases – Permissioning, Authentication, Digital signing



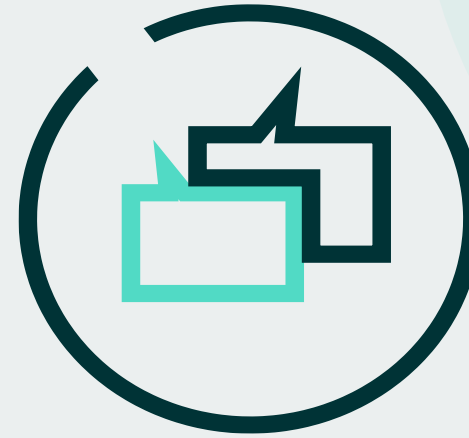
Permissioning

Confirmation that a legal entity, or representative of this legal entity is authorized to access a system or to perform an action



Authentication

Verification of the cryptographic validity of the vLEI credential and signature



Digital signing

Digital sealing or signing (of documents, contracts, reports, invoices, data) by a legal entity or authorized representative

Digital Tools Features Analysis

Digital Tools Features Matrix: Signing



Features	vLEIs as Authentic Chained Data Containers	First generation Verifiable Credentials	eSeals	Digital Certificates
Digital Signatures	✓	✓	✓	✓
Persistent Digital Signatures	✓	✓ <small>only those VCs on a blockchain</small>	✗	✗
Single Level Issuance	✓	✓	✓	✓
Delegable Authority/Multi-level Issuance	✓	✗	✗	✗
Non-repudiability	✓	✓	✓	✗
Signing logging	✓	✗	✗	✗
Signing in Full and in Part	✓	✗	✗	✗
Horizontally-scalable Signing Infrastructure	✓	✗	✗	✗

Digital Tools Features Matrix: Verification



Features	vLEIs as Authentic Chained Data Containers	First generation Verifiable Credentials	eSeals	Digital Certificates
Verifiable Provenance to a Global Root of Trust	✓	✗	✗	✗
Instant Revocation State Verification	✓	✓	✗	✗
Decentralized Revocation	✓	✓	✗	✗
Privacy-respecting Revocation	✓	✓	✗	✗
Revocation by Any Party within the Chain of Authority	✓	✗	✗	✗

Digital Tools Features Matrix: Security



Features	vLEIs as Authentic Chained Data Containers	First generation Verifiable Credentials	eSeals	Digital Certificates
Multi-signatures	✓	✗	✗	✗
Secure Custodial Key Management	✓	✗	✗	✗
Key Rotation	✓	✗	✗	✗
No Reliance on Web Security	✓	✗	✗	✗
Post-quantum proof	✓	✗	✗	✗
Zero Trust Architecture	✓	✗	✗	✗

Digital Tools Features Matrix: Global Applicability



Features	vLEIs as Authentic Chained Data Containers	First generation Verifiable Credentials	eSeals	Digital Certificates
Decentralized Authority	✓	✓	✗	✗
Globally Trusted Credentials	✓	✗	✗	✗
Global Root of Trust	✓	✗	✗	✗
Global Governance	✓	✗	✗	✗
International Standardization	✓	✓	✓	✓
Multiple Roots of Trust in a Single Ecosystem	✓	✗	✗	✗



Important points to take away from Digital Tool Features Analysis

■ Global applicability

- Identification of organizations with the LEI uses an internationally recognized global standard (ISO 17442 Part 1)
- Digital signing with vLEIs uses anticipates the approval of an internationally recognized draft global standard developed by **XBRL International D6 Working Group**
- Standard **LEI XBRL taxonomy** can be included as part of broader XBRL taxonomies
- Authentication, Permissioning and Verification of organizations with vLEIs uses an internationally recognized global standard (ISO 17442 Part 3)

■ Unparalleled cryptographic security making vLEIs post-quantum proof leveraging

- Root of trust with Linked credentials requiring multiple layers of infrastructure to be compromised
- Linked credentials with multi-signature feature and stronger identity authentication at issuance
- No reliance on web 'security'
- Key pre-rotation/rotation/ability to recover keys



■ Verification

- Automated decentralized verification of key state instantly indicated if a credential has been revoked

■ Plus . . .

- the ability to verify the connection among Organizations, Persons and Roles
- only digital tool with the capability to bring verification down to persons
- Enables organizations to leverage credentials with delegated authority both within and outside the organization

Qualified vLEI Issuers Update

- **8 QVIs currently**
 - 6 based in Asia
 - 1 based in EU
 - 1 based in US
- **vLEI Issuer Pipeline**
 - 17 organizations





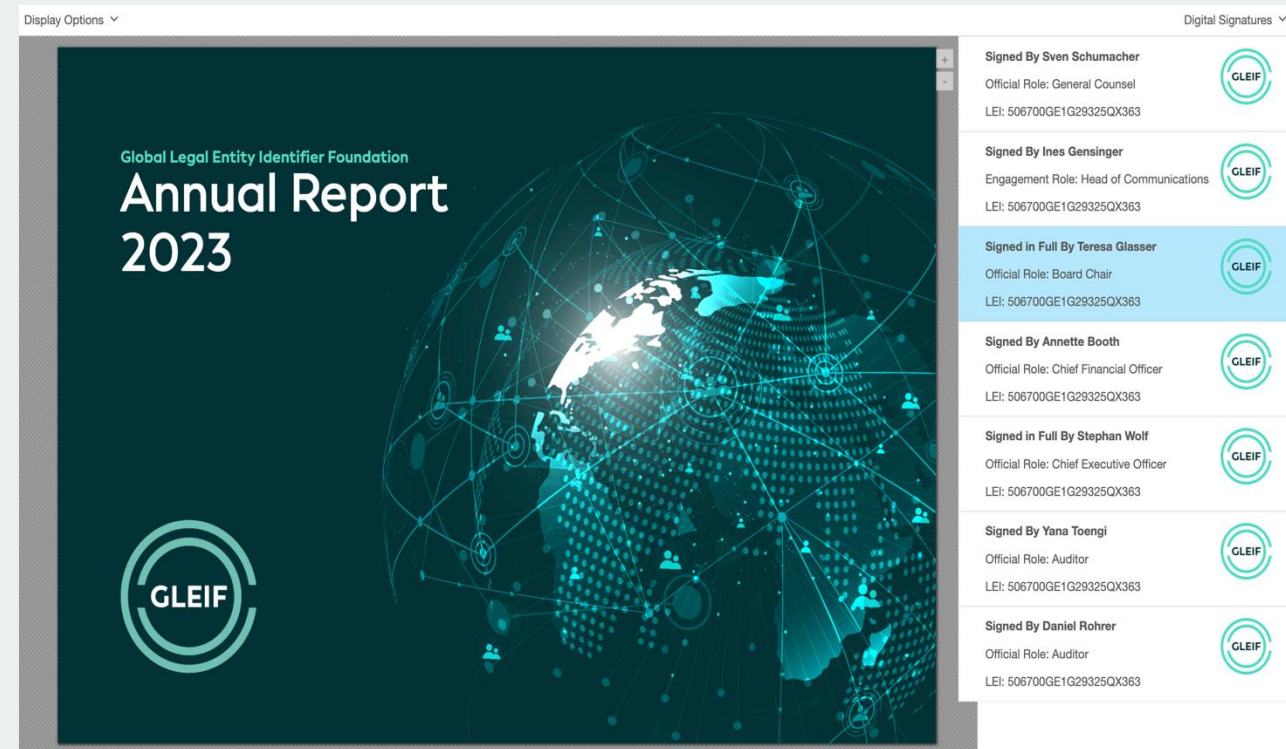
Enabling identification, permissioning, authentication, and digital signing - application examples

Using vLEIs: Private sector report submission to the public sector

Permissioning, authentication and signing with vLEIs

Demo of vLEIs signing Inline XBRL with vLEIs using draft standards developed by XBRL International D6 Working Group

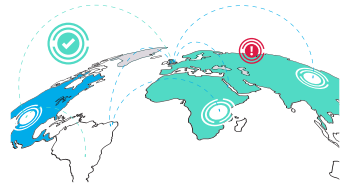
- **vLEI credentials issued**
 - vLEI credentials are issued to certain officers and employees/managers of the organization.
- **Content signed**
 - Specific sections/parts of a report, for example, can be signed by officers and employees/managers of the organization with their vLEIs.
 - The same report also can be signed in its entirety by officers and employees/managers of the organization with their vLEIs.
- **Permissioned access and report submission**
 - Submitters present their vLEIs to access public sector portal
- **vLEI access and signing credentials presented and verified**
 - Status of the vLEI credentials (key state not revoked) and the cryptographic signatures are verified.



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

Why the LEI and vLEI in trade?

Secure and reliable legal entity identification helps:

	Cross-border payment	Fraud and risk mitigation	Financial inclusion	Supply chain Efficiency	ESG stewardship
Challenge	<ul style="list-style-type: none">▪ AML Screening▪ Realtime due diligence▪ Cost	<ul style="list-style-type: none">▪ Sanctions▪ Information in silos▪ Name matching ambiguity	<ul style="list-style-type: none">▪ Access to trade and supply chain financing	<ul style="list-style-type: none">▪ Lack of interoperability▪ Fragmentation▪ Manual work prone to error	<ul style="list-style-type: none">▪ Regulation compliance▪ Cost
How can the (v)LEI help?	<ul style="list-style-type: none">▪ Minimize false positives	<ul style="list-style-type: none">▪ Cross-border Identification of parties across the suply chain directly (e.g. buyer and seller) and indirectly (e.g. customs, insurance)	<ul style="list-style-type: none">▪ Validated again local public registers	<ul style="list-style-type: none">▪ Unambiguous identification▪ Transparency and security▪ Minimize fraud	<ul style="list-style-type: none">▪ Machine readable, open data, and easily integrated▪ API to LEI Repository
LEI	Unique, accurate (high data quality), scalable, consistent (parent relationship data), users can challenge it.				
vLEI	Digital and cryptographic advancement of the traditional Legal Entity Identifier (LEI). vLEI enables decentralized and automated verification of an organization's identity.				



LEI in Supply Chains

LEI in Trade and Trade Digitalization





LEIs will generate \$60 billion in efficiency savings by reducing information and transaction costs.







Digital Standards Initiative



WORLD TRADE BOARD
Connecting Markets and People









Digital Standards Initiative

Key Trade Documents and Data Elements

Digital standards analysis and recommendations—
An integrated framework for digitalising the entire supply chain



Digital Standards Initiative

Trust in Trade

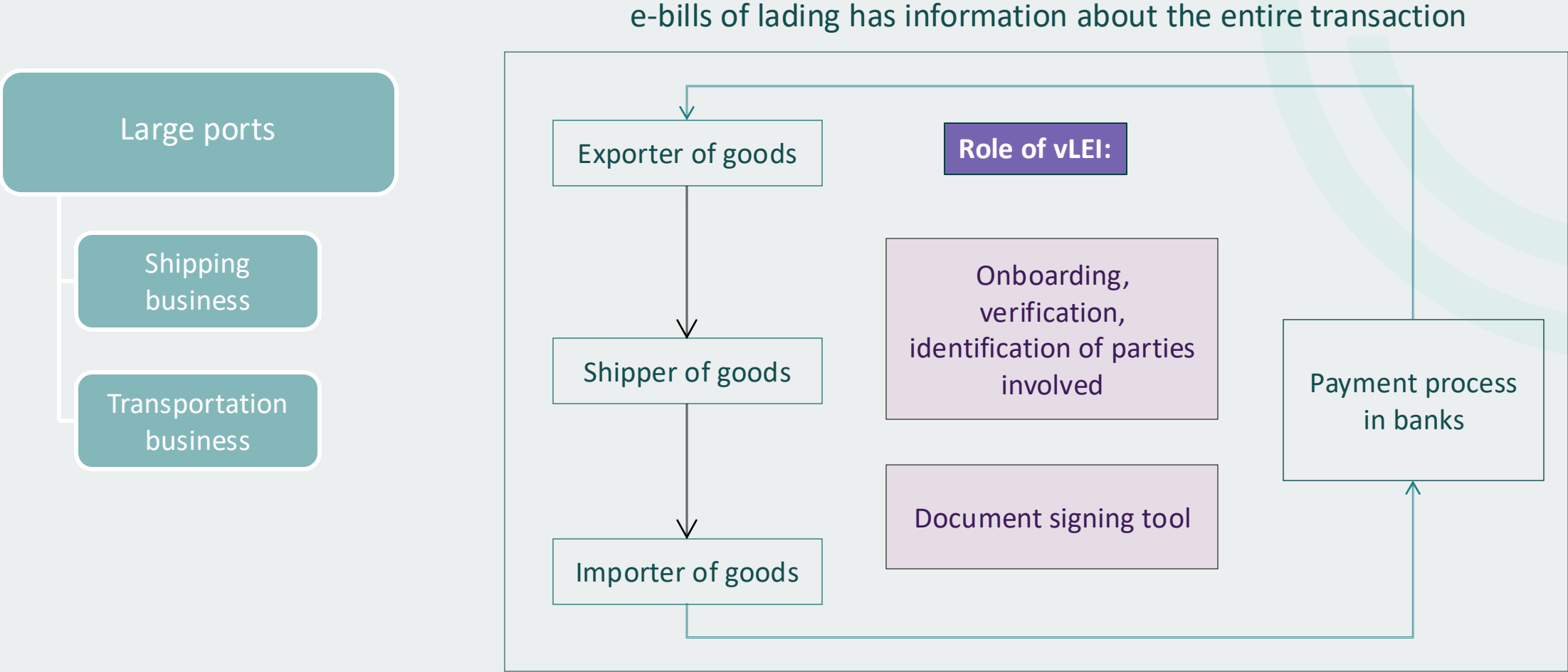
Verifiable Trust: A foundational digital layer underpinning the physical, financial, and information supply chain



Application of vLEIs - Digital Trade Documents Exchange Platforms

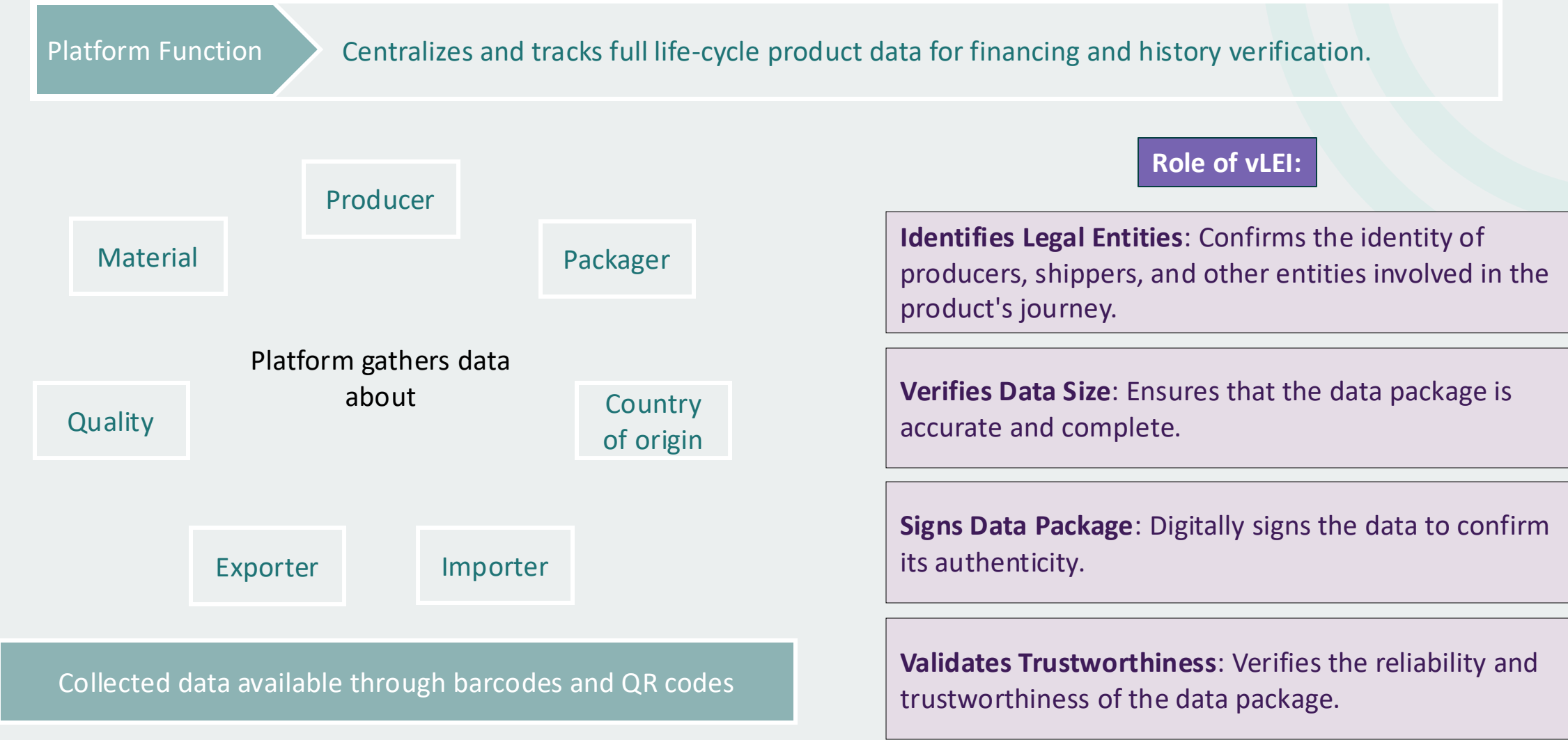


Application of vLEIs - e-bills of Lading



e-bill of Lading: Utilizes vLEI to identify enterprises and their employees on a digital trade platform, serving as both a unique identification and an online authentication and document signing tool.

Application of vLEIs - Product Traceability



Application of vLEIs – ESG

The platform gathers ESG data from various sources, including IoT and other digital inputs.

The platform analyzes the collected data to evaluate the SMEs' environmental, social, and governance (ESG) performance.

Based on the analysis, service partners produce comprehensive ESG reports for SMEs.

SMEs with strong ESG credentials can access green financing from banks, improving their financial opportunities.

SMEs may undergo an ESG audit conducted by a professional institution to validate their ESG performance.

The ESG reports are converted into verifiable credentials, backed by implementer’s blockchain for authenticity and integrity.

How vLEI Will Help:

Each SME is issued a vLEI, which they use as a secure login credential to access the ESG platform.

The vLEI extracts the SME's Legal Entity Identifier (LEI), identifying the SME and linking it to supply chain and ESG information.

All ESG data for the SME is tagged under their LEI, ensuring that the data is accurately linked to the specific SME.

The platform successfully verifies and tags the ESG data using vLEI, ensuring its authenticity and traceability throughout the process.



Application of vLEIs - Pharma Industry

Problem:

Uncertainty over the authenticity of prescriptions, hospitals, doctors, and patients involved.

Varying costs of medical procedures and consultations make it hard to verify which prescriptions are genuine.

Difficulty in securely sharing prescriptions across borders.

Role of vLEI:

vLEI identifies hospitals, doctors, and patients to ensure authenticity.

vLEI digitally signs and verifies prescriptions, ensuring they are genuine and trustworthy.

Encapsulates medical information in verifiable credentials, making cross-border exchanges secure and reliable.



LEI and vLEI in KYC: Simplifying Onboarding

KYC process

Customer provides LEI

Bank uses LEI to identify the organization with certainty and with access to validated reference data about the organization.

Customer obtains vLEI

The customer can use the vLEI to sign and submit documentation required by the bank during the initial KYC process.

Subsequent business and onboarding

The customer can reuse the vLEI to apply for additional bank services.

Permissioning

The vLEI can be used to permission access by the customer to banking services replacing traditional username and password and other forms of multifactor authentication.

The vLEI also will:

Speed up transaction processes by eliminating the need to repeat KYC verification, allowing faster access to financial services.

Reduce information asymmetry, providing consistent and verified information across all transactions, which builds trust and accountability.

Lower operational costs by reducing the need for manual verification, saving on human resources and minimizing administrative work.



Using vLEIs: Trust in voice calls and texts

Verification of corporate voice calls with vLEIs by the first QVI - Provenant

Companies and telco operators engaged in corporate voice calls will leverage the vLEI to instantly verify the authenticity of the caller

- Helping companies reach their customers
 - Customer service, Tech support
- Enables a call center to prove the right to use a local phone number although the origin of the call is international

GSMA Foundry launches Open Verifiable Calling project, building on proven live deployments to restore trust in Global Voice Communications

Richard Cockle, Head of the GSMA Foundry, said:

“Everyday consumers are increasingly confronted with the decision of whether to trust the calls or messages they receive. At the GSMA, we are dedicated to exploring and advocating for innovative solutions that empower mobile consumers to maintain trust in their communications.”

- <https://www.gsma.com/get-involved/gsma-foundry/content-type/news/gsma-foundry-launches-open-verifiable-calling-project-building-on-proven-live-deployments-to-restore-trust-in-global-voice-communications/>



Music Industry Use Case: Songwriting, Publishing, Recording Agreements

Problem:

Creators do not have an easy way to document information needed by publishers and labels, or a way to delegate this work to authorized representatives.

Music companies receive data about new music via texts and emails.

Legal contracts are entered into catalog management systems manually.

Fraud and poor data security run rampant throughout the music industry.

Solution:

Verified writer identities – cryptographically secure publisher connections and identity verification.

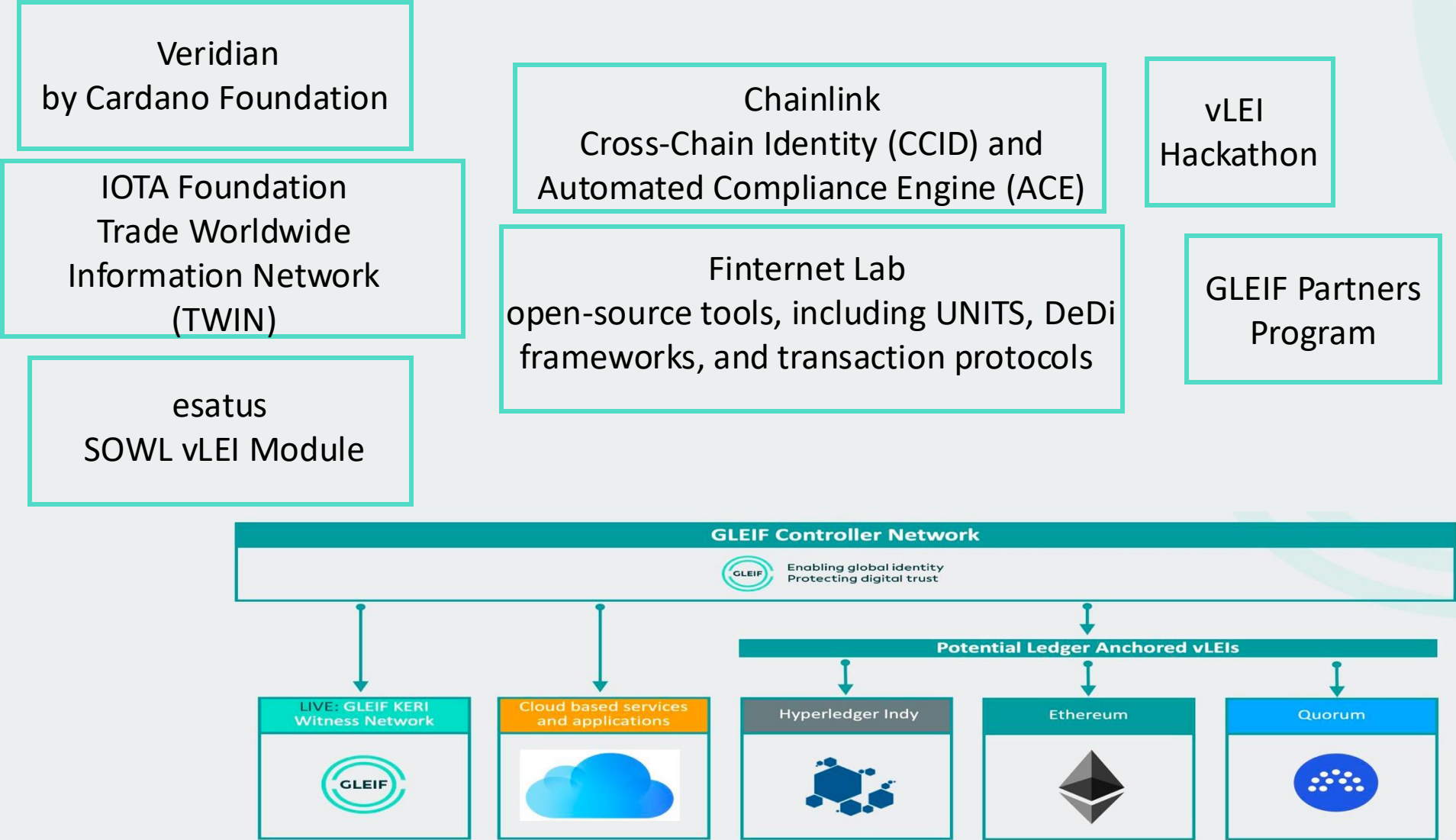
Verifiable compositions – machine readable writer and publisher data secured with digital signatures.

Secure workspaces – collaborative deal rooms for writers and their teams.

Role of the LEI & vLEI:

The combination of identity verification and legal authority verification, encapsulated in a cryptographic credential that detects tampering, leads to verification across databases.

vLEI Interoperability and Portability Engagement



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