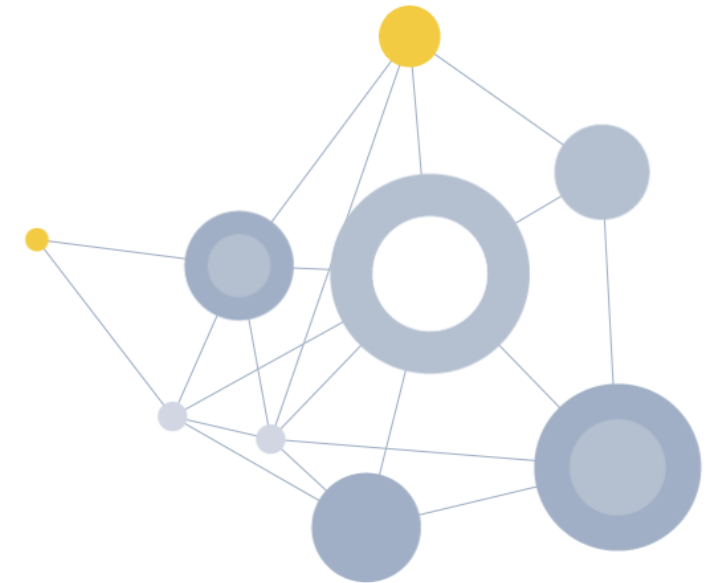# Accelerating Digital Identity with the LEI

The Legal Entity Identifier (LEI):
A catalyst for universal digital identity in blockchain

**Hyperledger Identity Working Group Meeting
June 24, 2020**

Agenda

1. What is an LEI?

2. LEI in the Digital World

3. How does it practically work?

4. Use Cases

LEI

What is an LEI?

What is an LEI?

- The LEI initiative is driven by the Financial Stability Board (FSB) on behalf of the finance ministers and governors of central banks represented in the Group of Twenty (G20).

- The development of a system to uniquely identify legal entities globally had its beginnings in the 2008 financial crisis.

- Regulators worldwide acknowledged their inability to identify parties to transactions across markets, products, and regions for regulatory reporting and supervision.

- The LEI itself is a 20-digit, alpha-numeric code based on the ISO 17442 standard developed by the International Organization for Standardization (ISO).

- The code connects to key reference information that enables clear and unique identification of legal entities participating in financial transactions including their ownership structure.

- The Global LEI System provides freely accessible look up (identification) of the complete database of LEIs and the associated LEI reference data, is available free of any charge or barrier to anyone on the web, operated under the Open Data Charter terms so that LEI data can be used by all users without limitations.

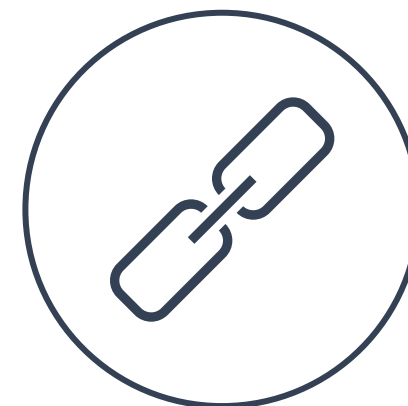# LEI in the Digital World

LEI in the Digital World

- The LEI can have relevance in the digital world by leveraging the strength of the LEI to provide unique and permanent global identification of organizations/businesses.

- One effort is to combine the strengths of the LEI and digital certificates.

- The second effort leverages the use of the LEI in Verifiable Credentials.

- Verifiable Credentials are defined as the format for interoperable, cryptographically-verifiable digital credentials being defined by the W3C standards organization (Verifiable Claims Working Group).
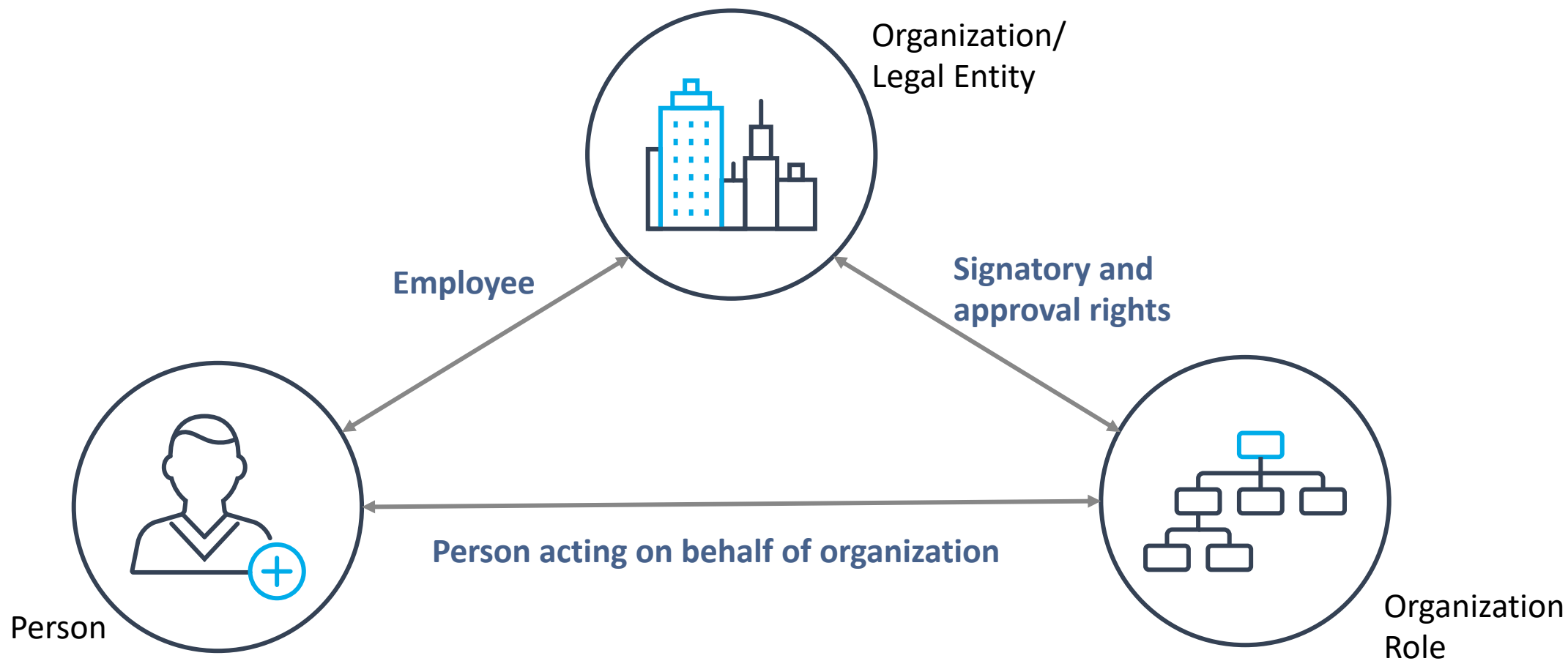
LEI in the Digital World
Use of the LEI in Verifiable Credentials (VCs)

- Proofs of Concept (PoCs) leverage the use of the LEI in Verifiable Credentials (VCs).

- This technique works for automated issuance and verification of organizations having LEIs and using LEIs.

- GLEIF has conducted PoCs that produce VCs, prove identity (based on the LEI) cryptographically, and are recorded on a distributed ledger (blockchain).

- The PoCs allow verification of identity of both legal entities having LEIs and for persons in their official roles within these legal entities.

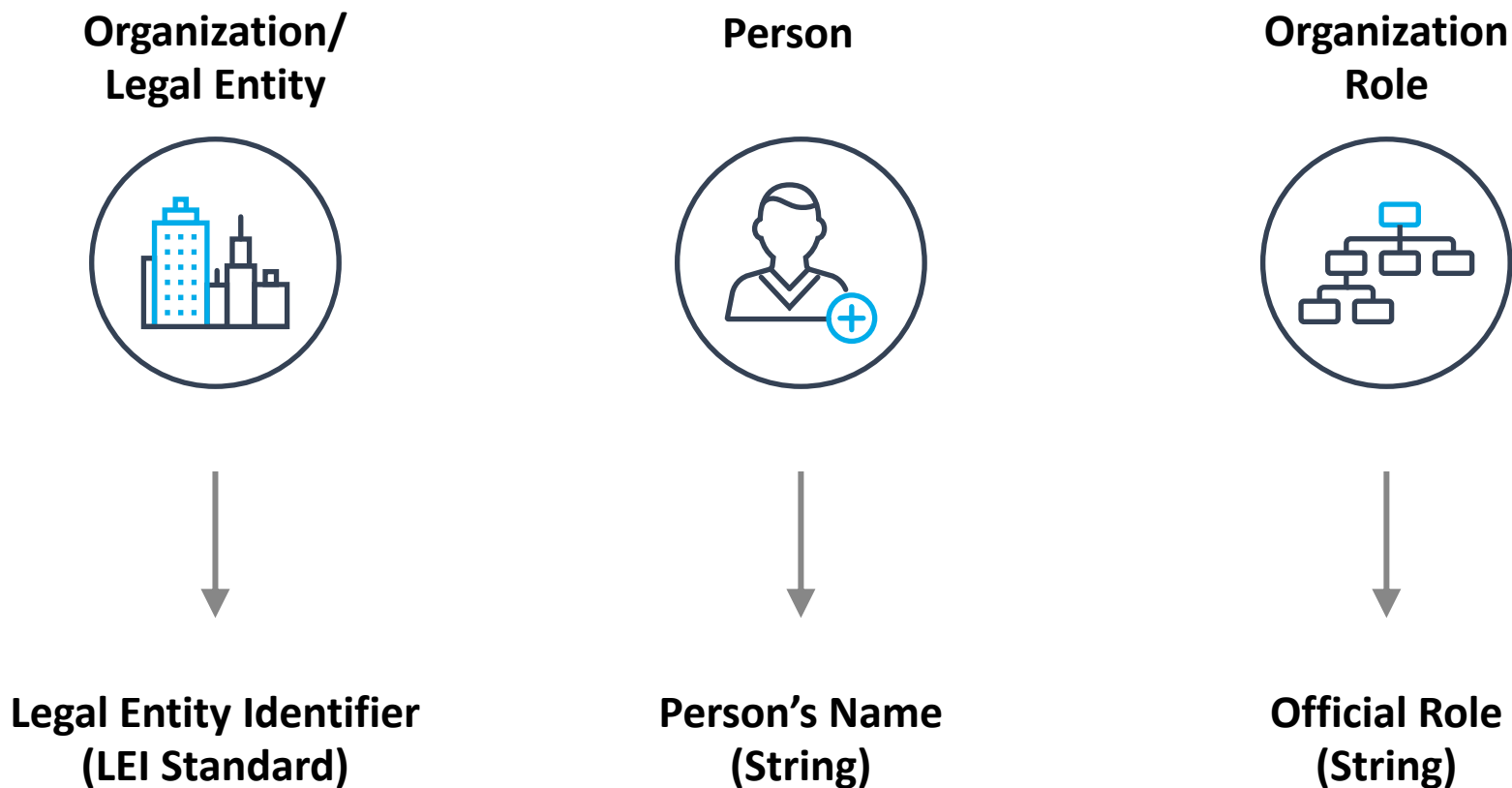- GLEIF, being technology agnostic, has conducted POCs on both Ethereum and Hyperledger blockchains.

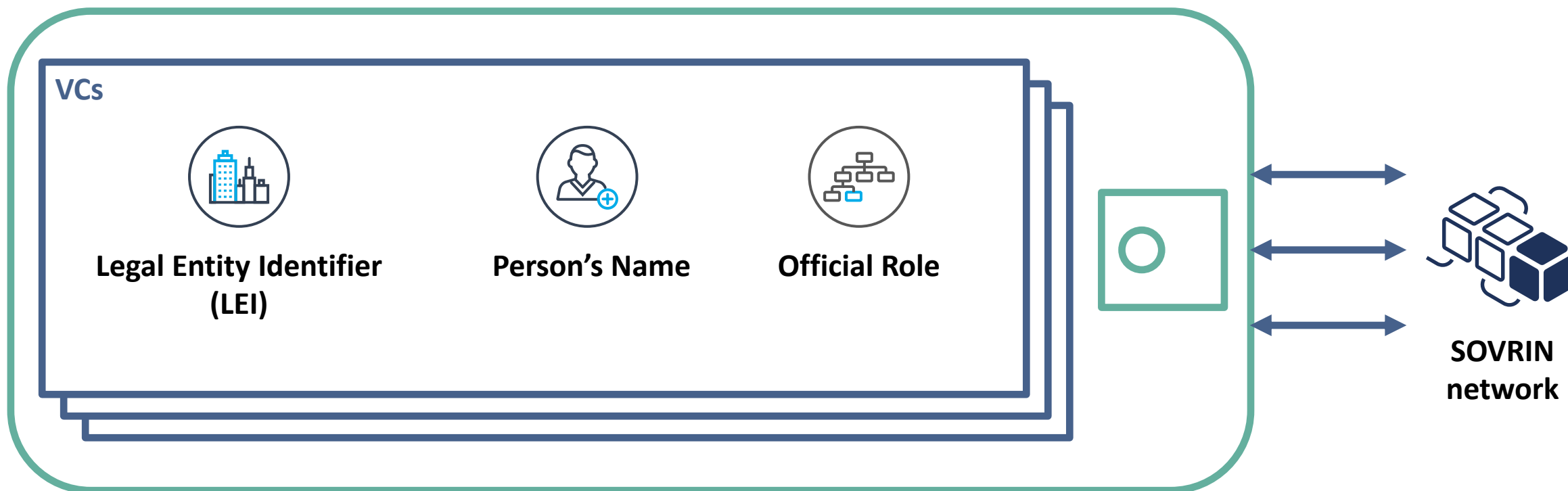# Digital identity and the LEI based on a triple concept

Organization/
Legal Entity

Employee

Signatory and
approval rights

Person

Person acting on behalf of organization

Organization
Role

Digital identity and the LEI based on a triple concept

Organization/ Legal Entity	Person	Organization Role
↓	↓	↓
Legal Entity Identifier **(LEI Standard)**	**Person's Name** **(String)**	**Official Role** **(String)**

Digital Identity and the LEI based on a triple concept
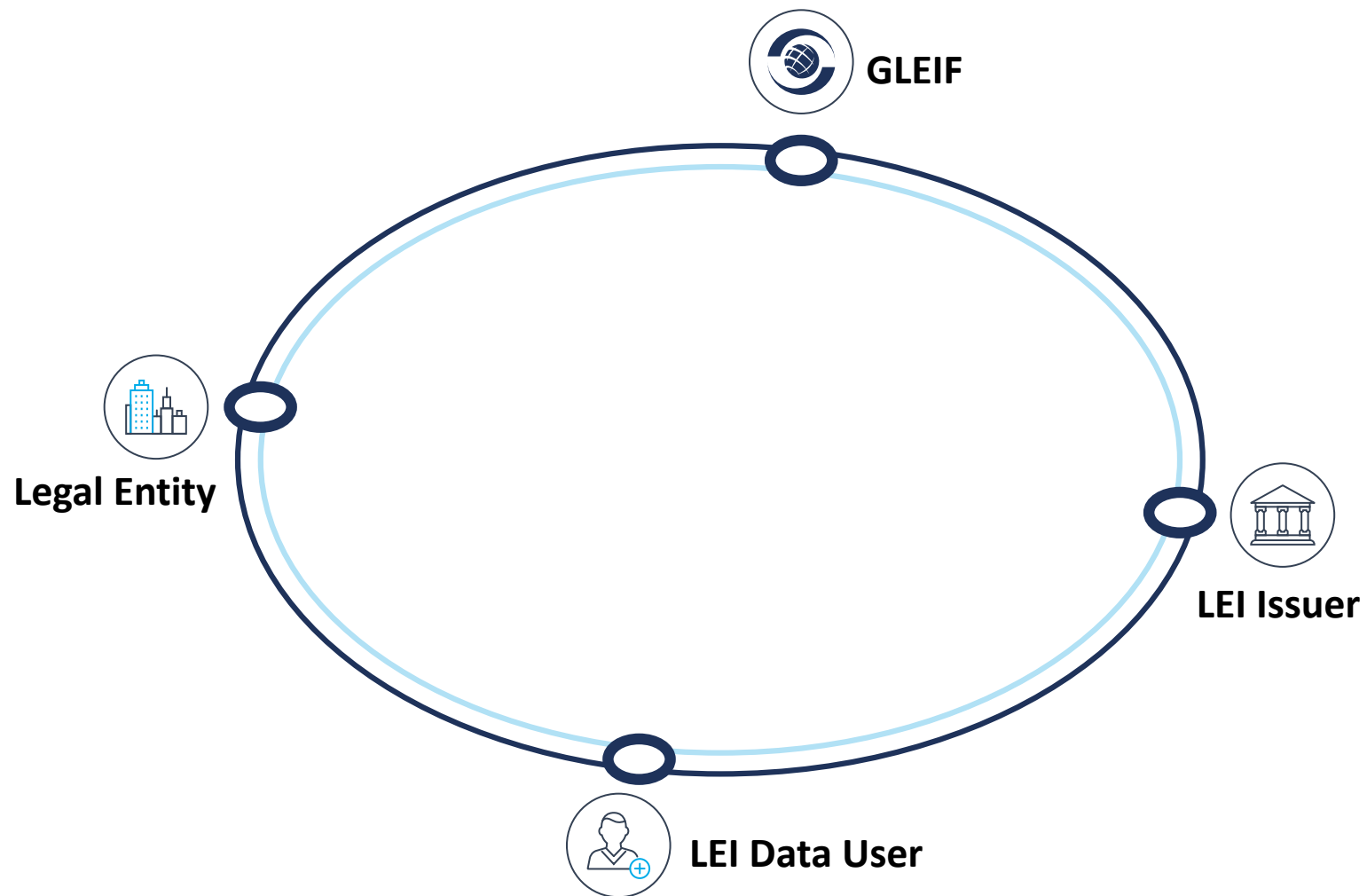## Organization Wallet - Hyperledger example

Organization Wallet

VCs

Legal Entity Identifier (LEI)

Person's Name

Official Role

SOVRIN network

Digital Identity and the LEI based on a triple concept
Chain of Trust

On-chain | Off-chain

Search API

GLEIF

Issues LEI Issuer VC

LEI Issuer

SearchAPI

Issues Legal Entity VC

Legal Entity

Issues Role VC

Person

LEI Data User
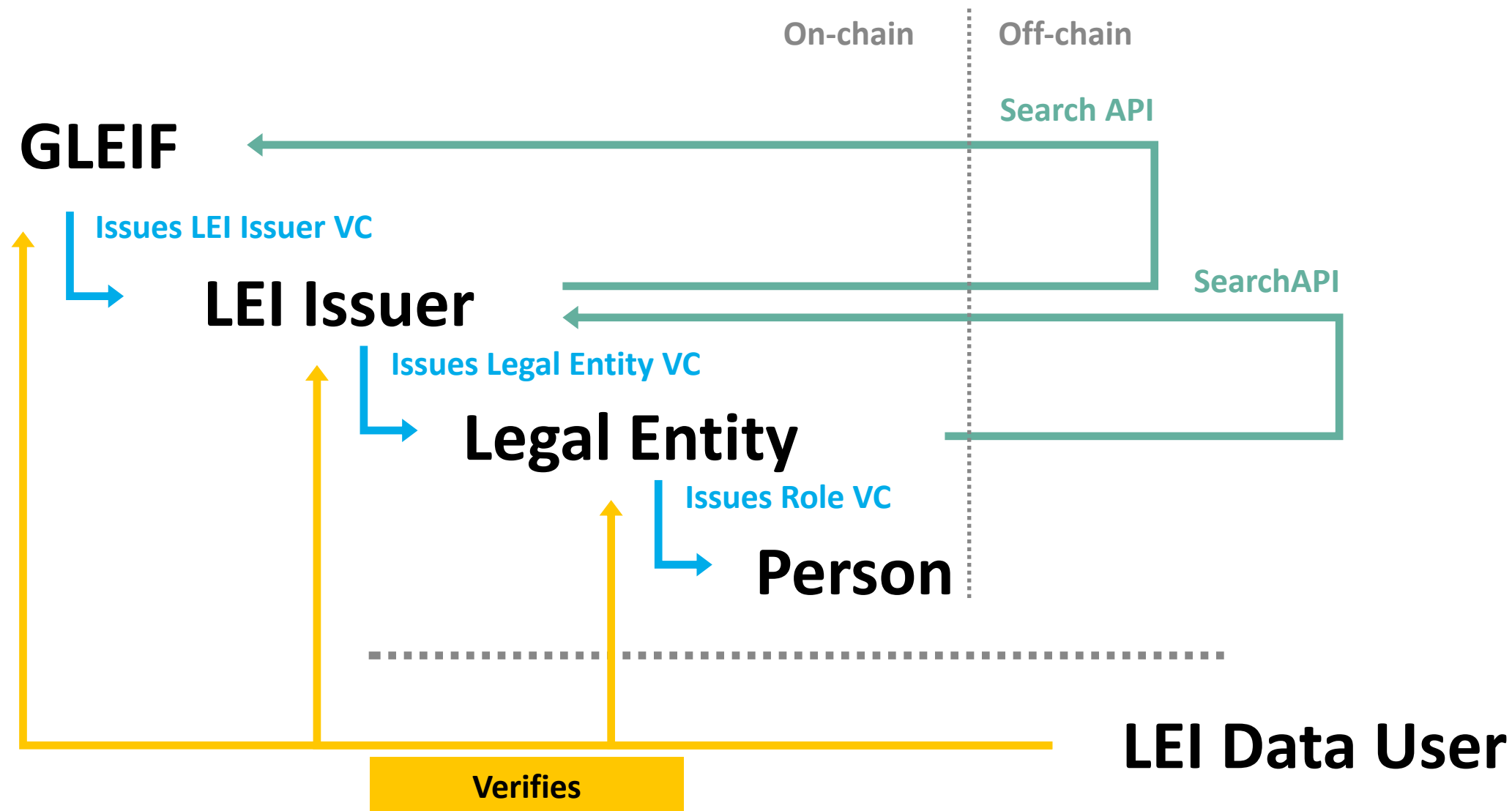
Verifies

How does it practically work?

Four actors in place

GLEIF

Legal Entity

LEI Issuer

LEI Data User
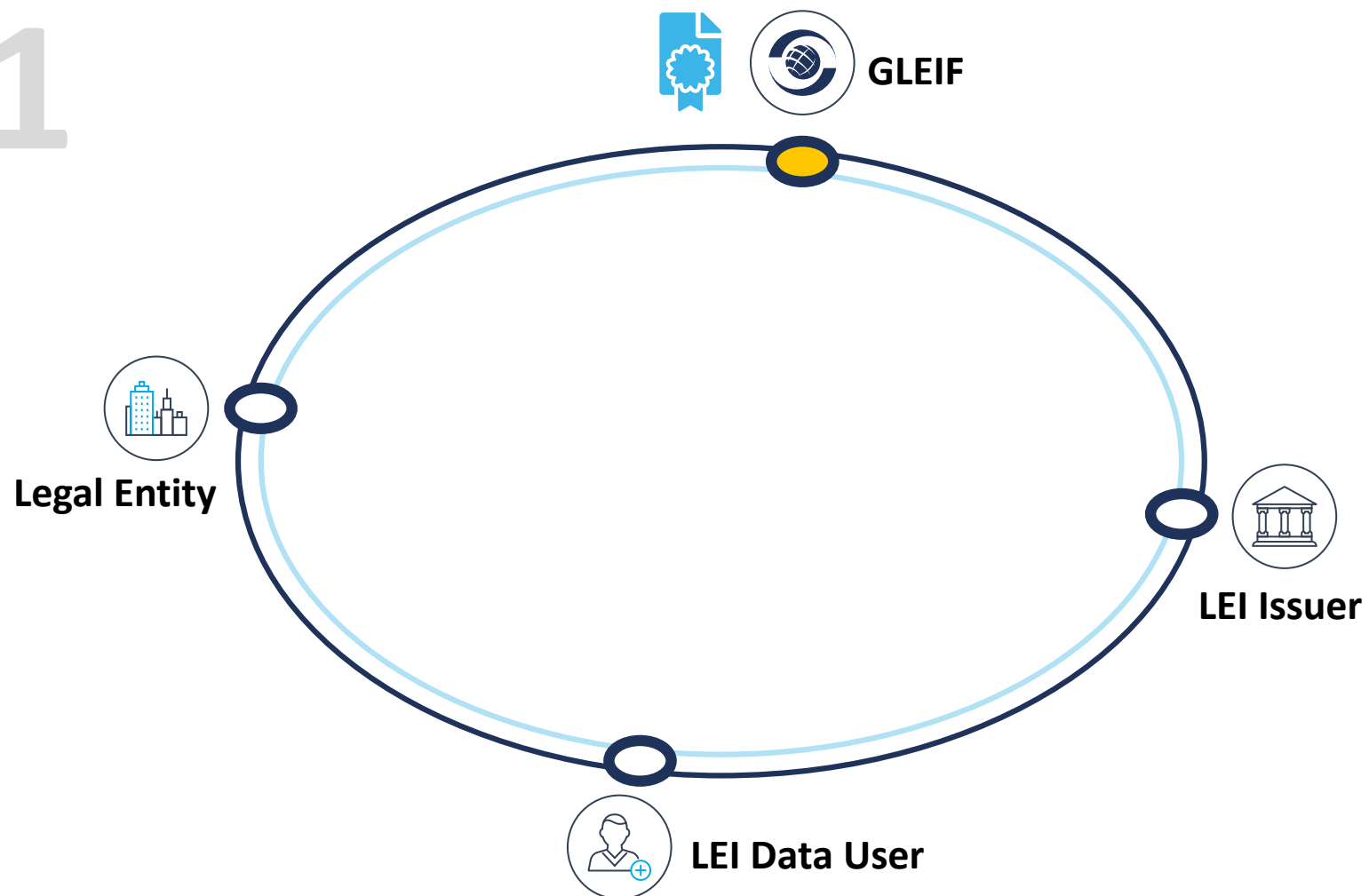
GLEIF receives a Verifiable Credential (VC) issued by the SOVRIN Trusted Framework.
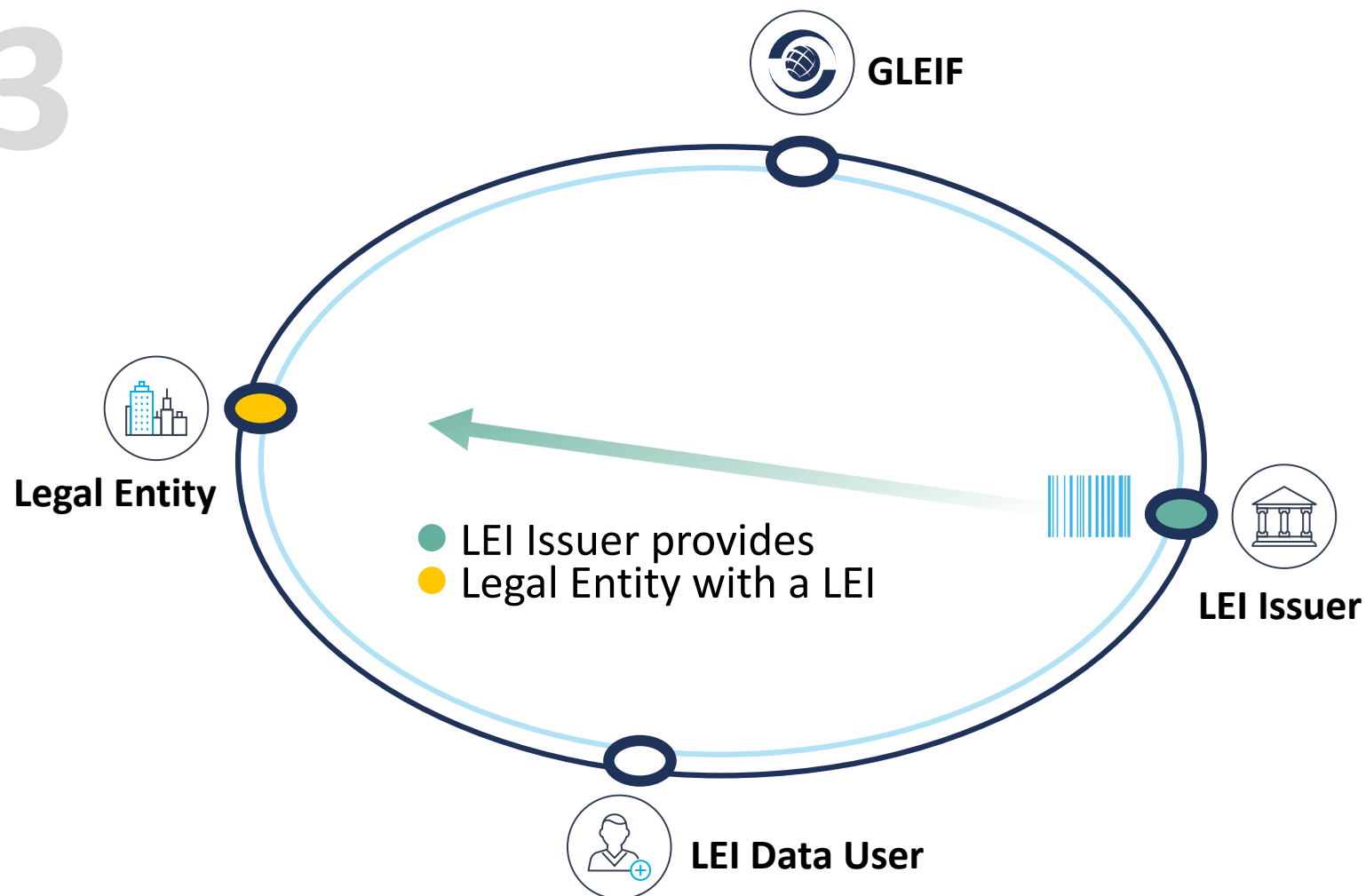
Step 2: GLEIF accredits LEI Issuer

2

GLEIF

Legal Entity

● GLEIF issues ● LEI Issuer
Verifiable Credential

LEI Issuer

LEI Data User
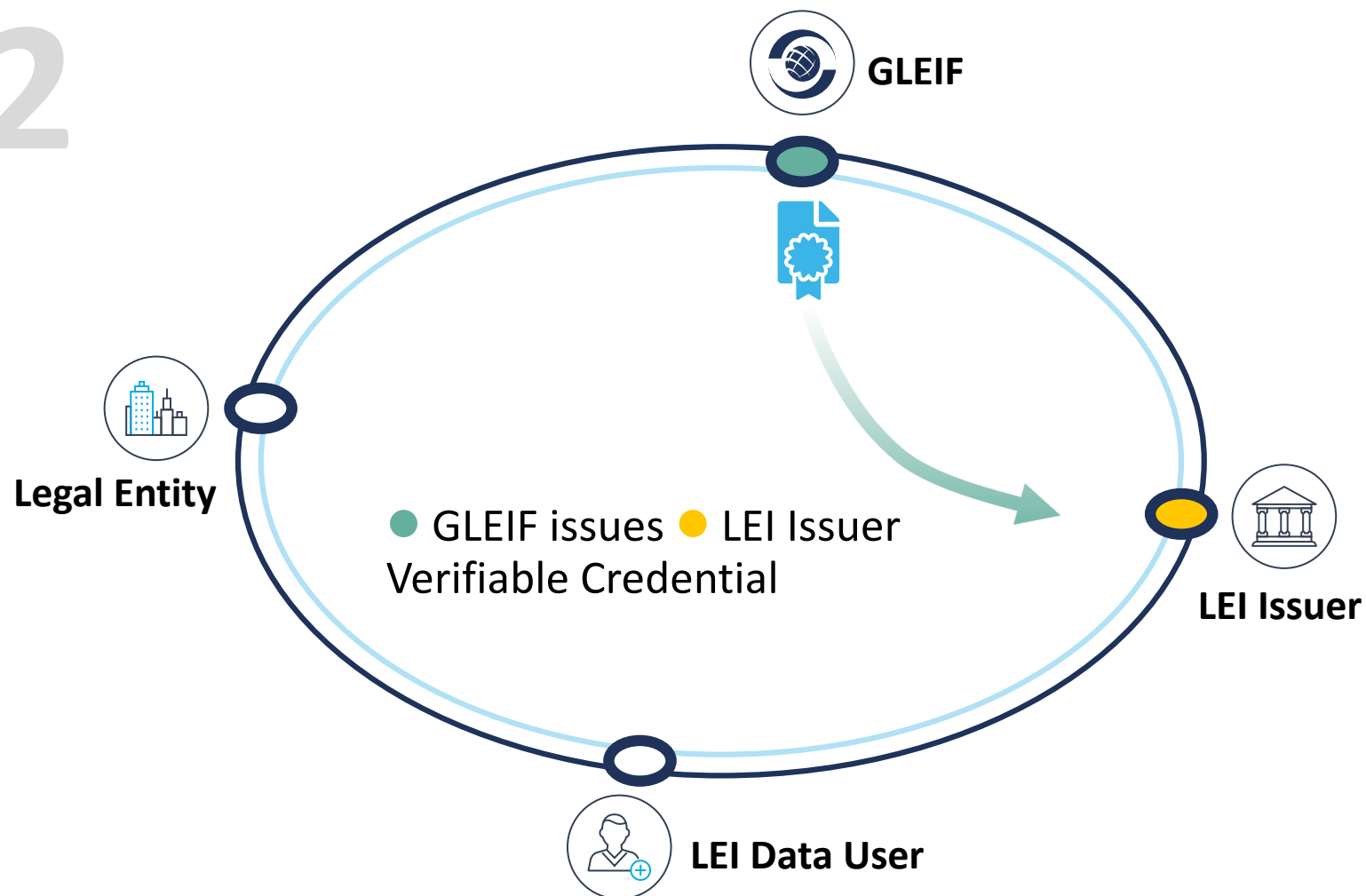
GLEIF certifies LEI Issuer with capability to issue VC to Legal Entities.

GLEIF

Legal Entity

● LEI Issuer provides
● Legal Entity with a LEI

LEI Issuer

LEI Data User

The Legal Entity is validated by the LEI Issuer and receives its LEI.

Step 4: Legal entity requests VC from the LEI Issuer
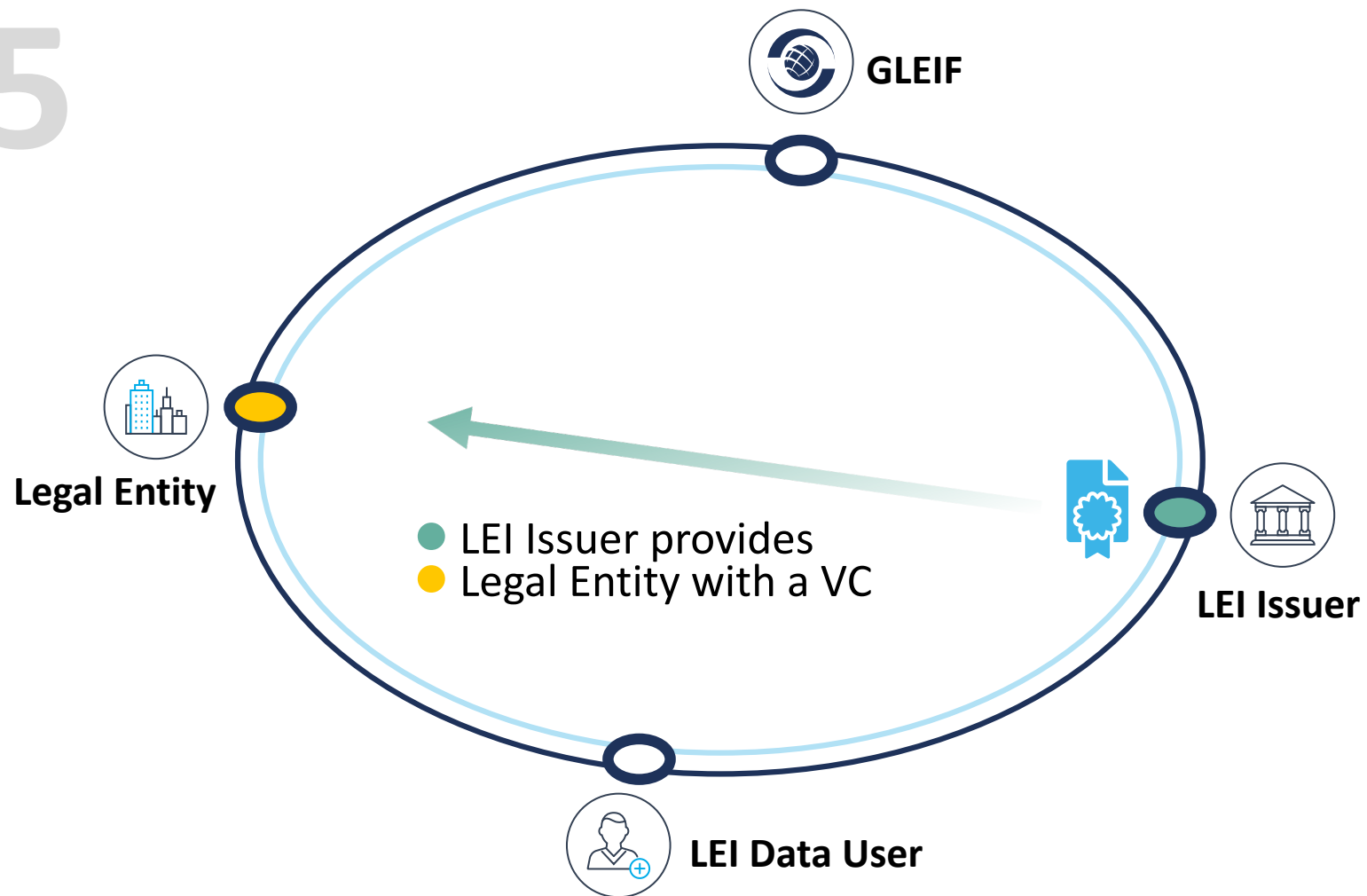

4

GLEIF

Legal Entity requests VC from ● LEI Issuer

Legal Entity

LEI Issuer

LEI Data User
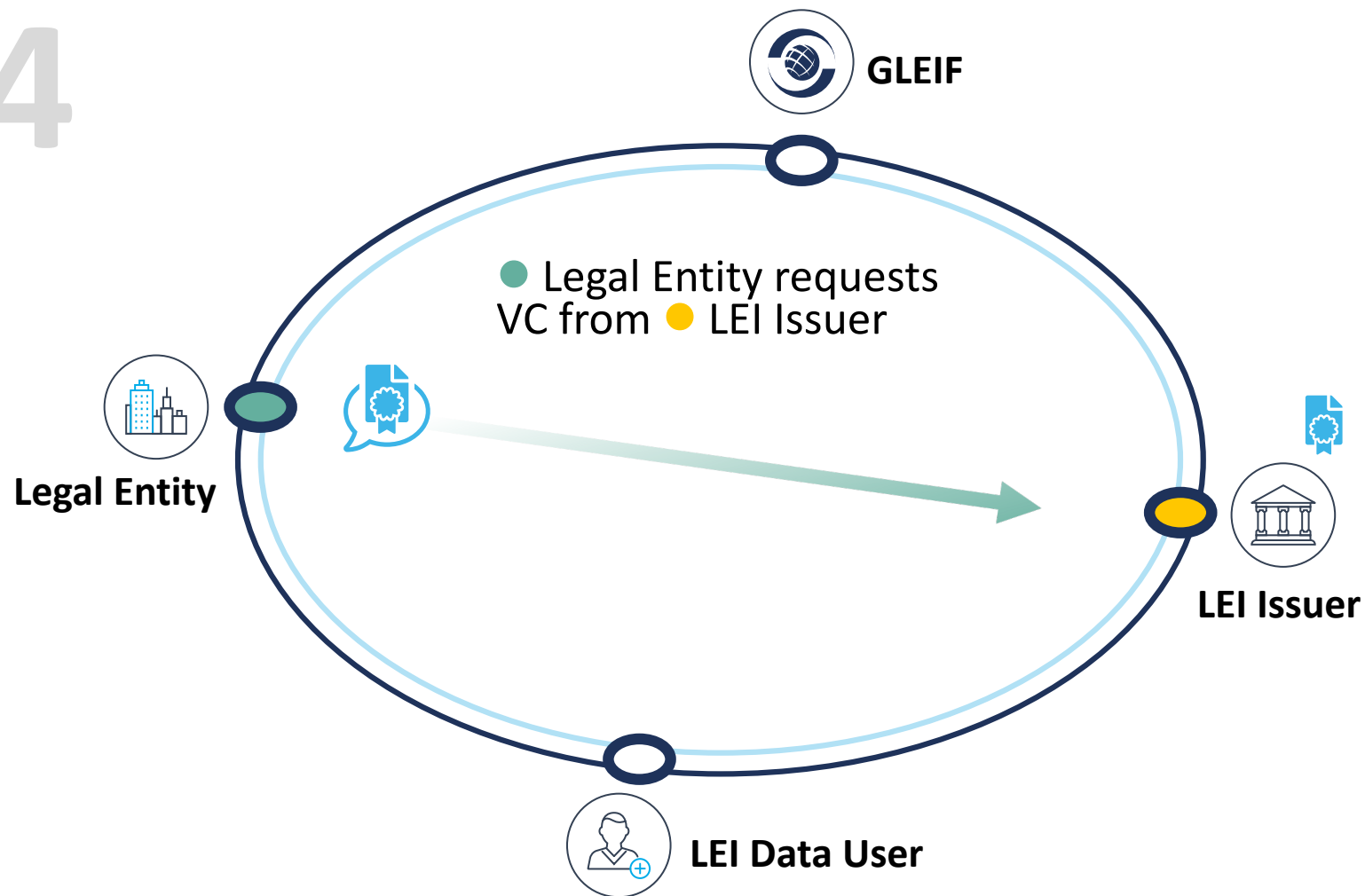
The Legal Entity requests VC in addition to receiving its LEI to establish its digital identity.

5

GLEIF

Legal Entity

LEI Issuer

LEI Issuer provides
Legal Entity with a VC

LEI Data User

The LEI Issuer issues the VC for the Legal Entity.

Step 6: Legal entity to issue VCs to its employees

6

GLEIF

● Legal Entity issues its employees VCs
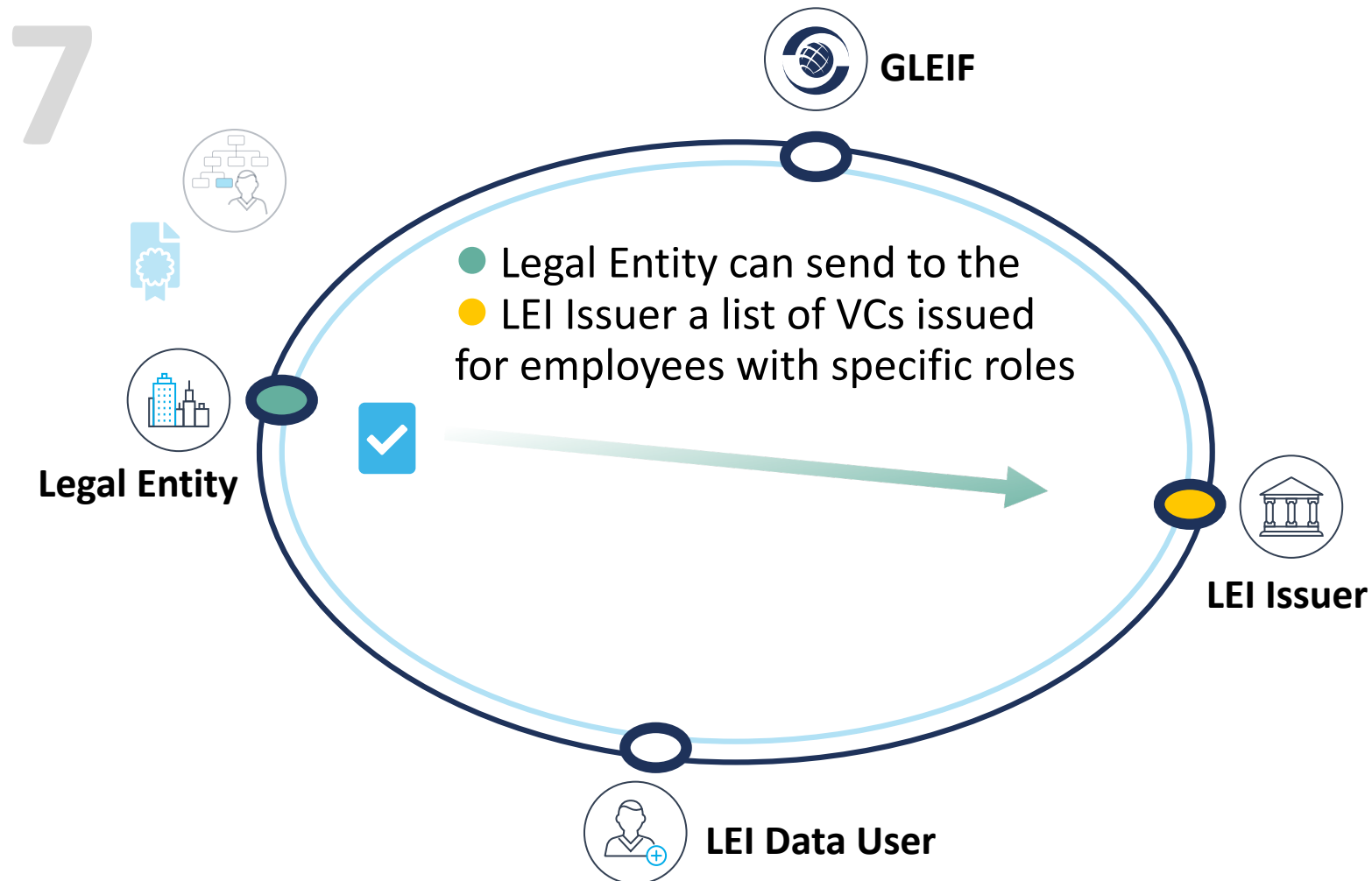
Legal Entity

LEI Issuer

LEI Data User
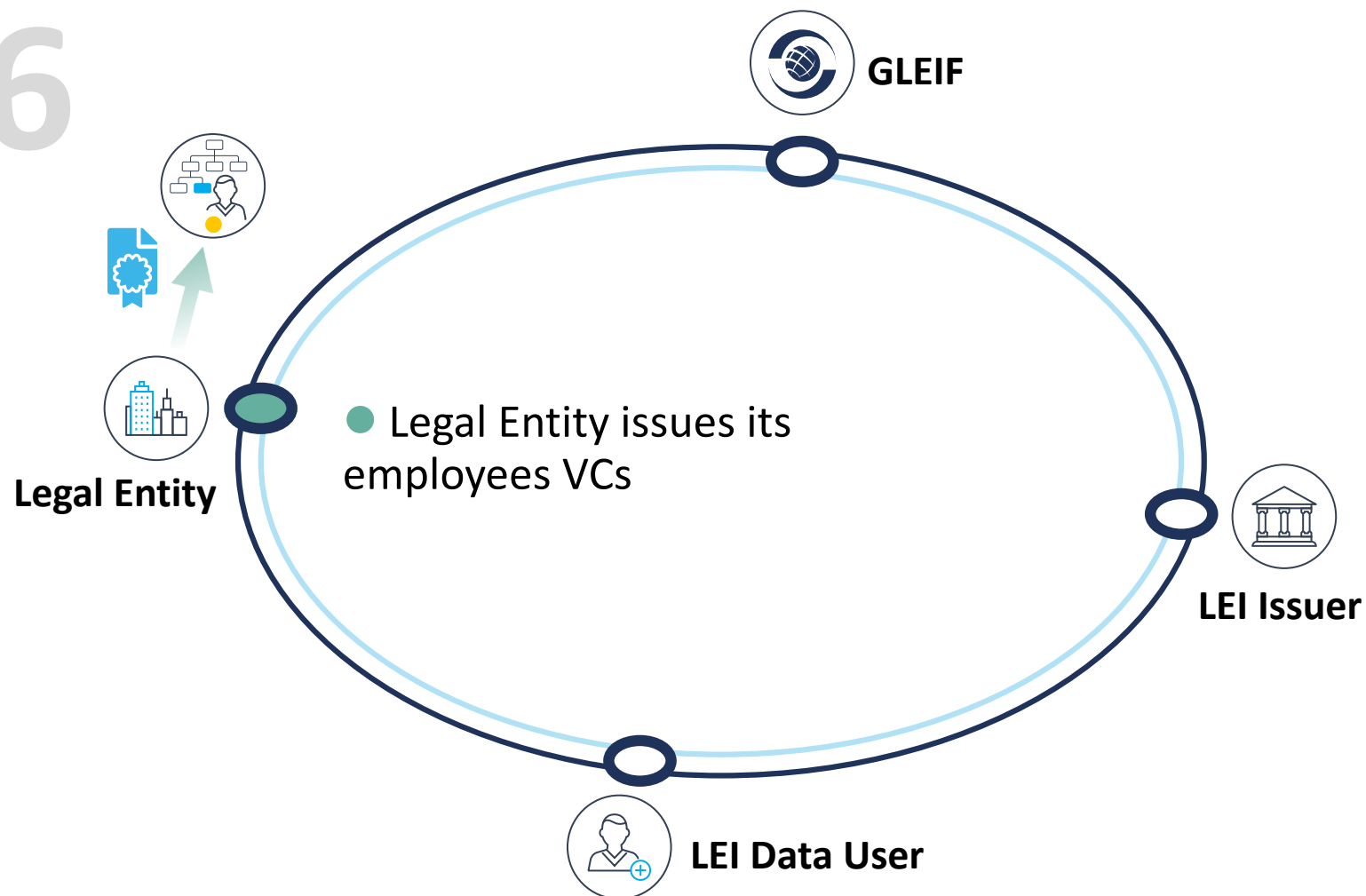
With its VC, the Legal Entity can issue credentials to its employees which identify the official roles that they play in the Legal Entity.

This enables the employees to use their VCs to officially represent the Legal Entity.

These VCs form the Organization Wallet of the Legal Entity.

# Step 7: Legal entity to share the VCs with the LEI Issuer

GLEIF

7

Legal Entity

- Legal Entity can send to the
- LEI Issuer a list of VCs issued for employees with specific roles

LEI Issuer

LEI Data User

In order to enable the discovery of VCs issued by the Legal Entity, roles assigned by the legal entity can be sent to the LEI Issuer.

7

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LEI Issuer reports to GLEIF the list of VCs sent by Legal Entity
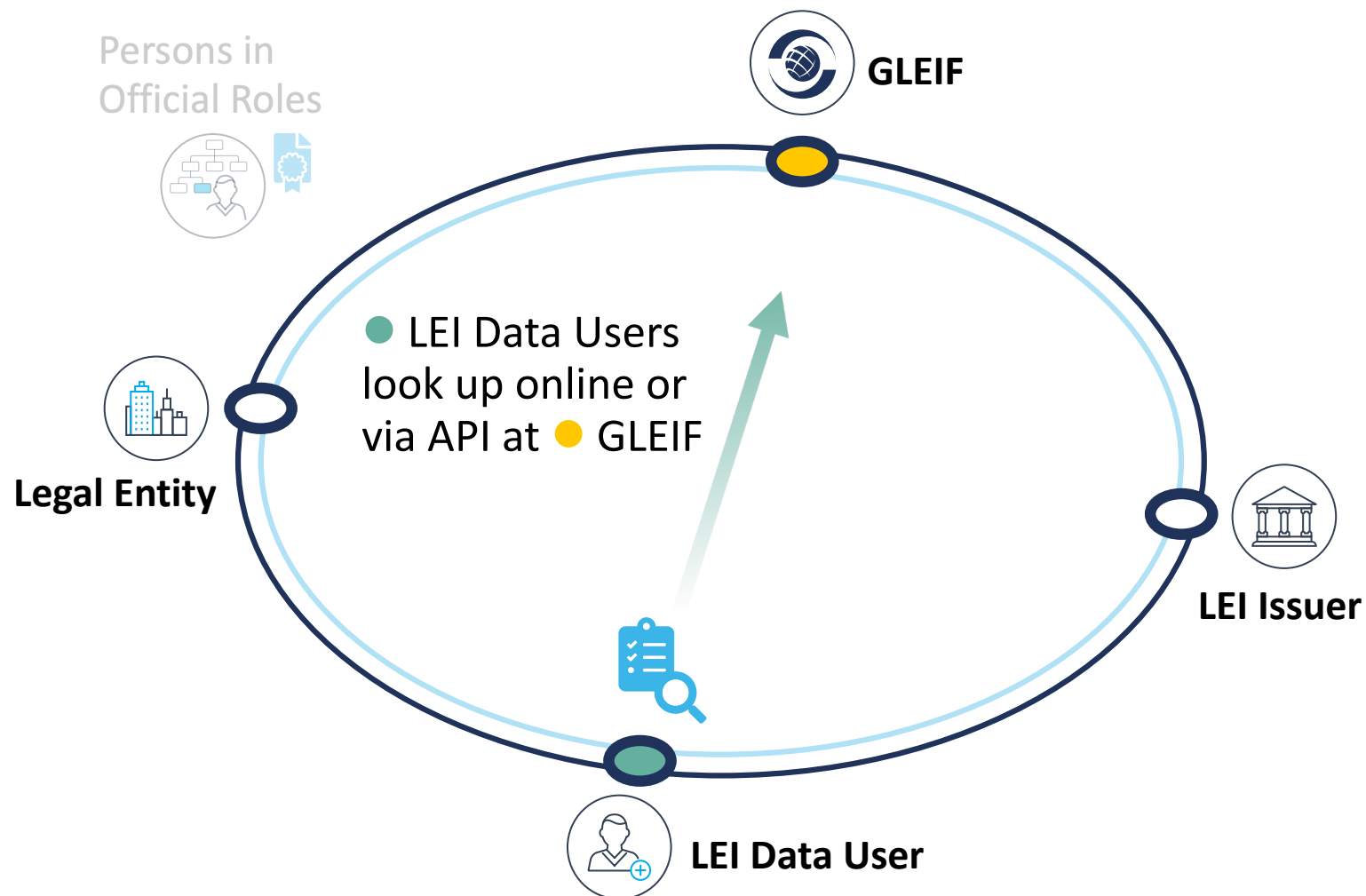
Legal Entity

LEI Issuer
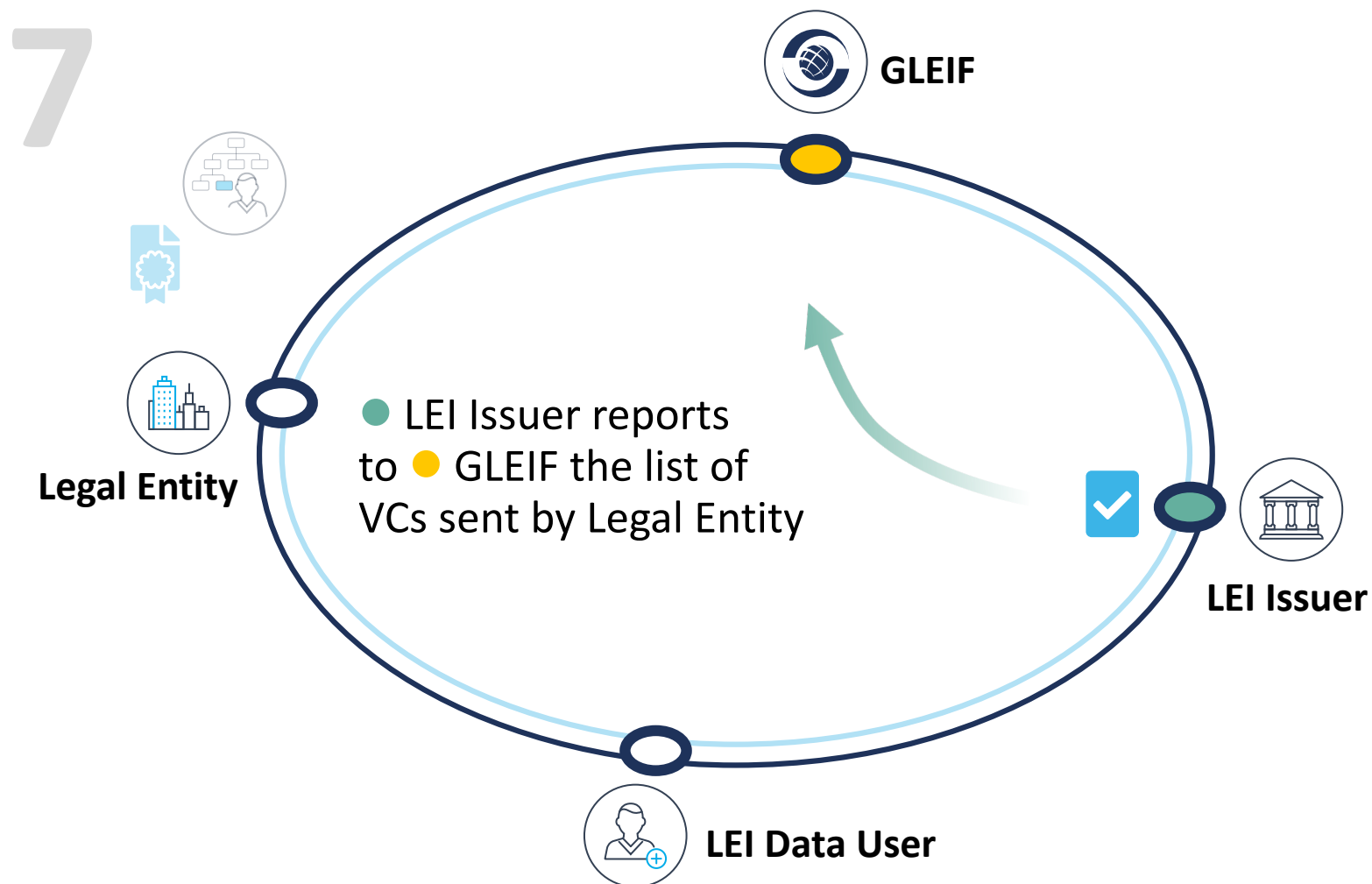
LEI Data User

And subsequently this list can be published in the Global LEI Repository without containing any personally identifiable information (PII).
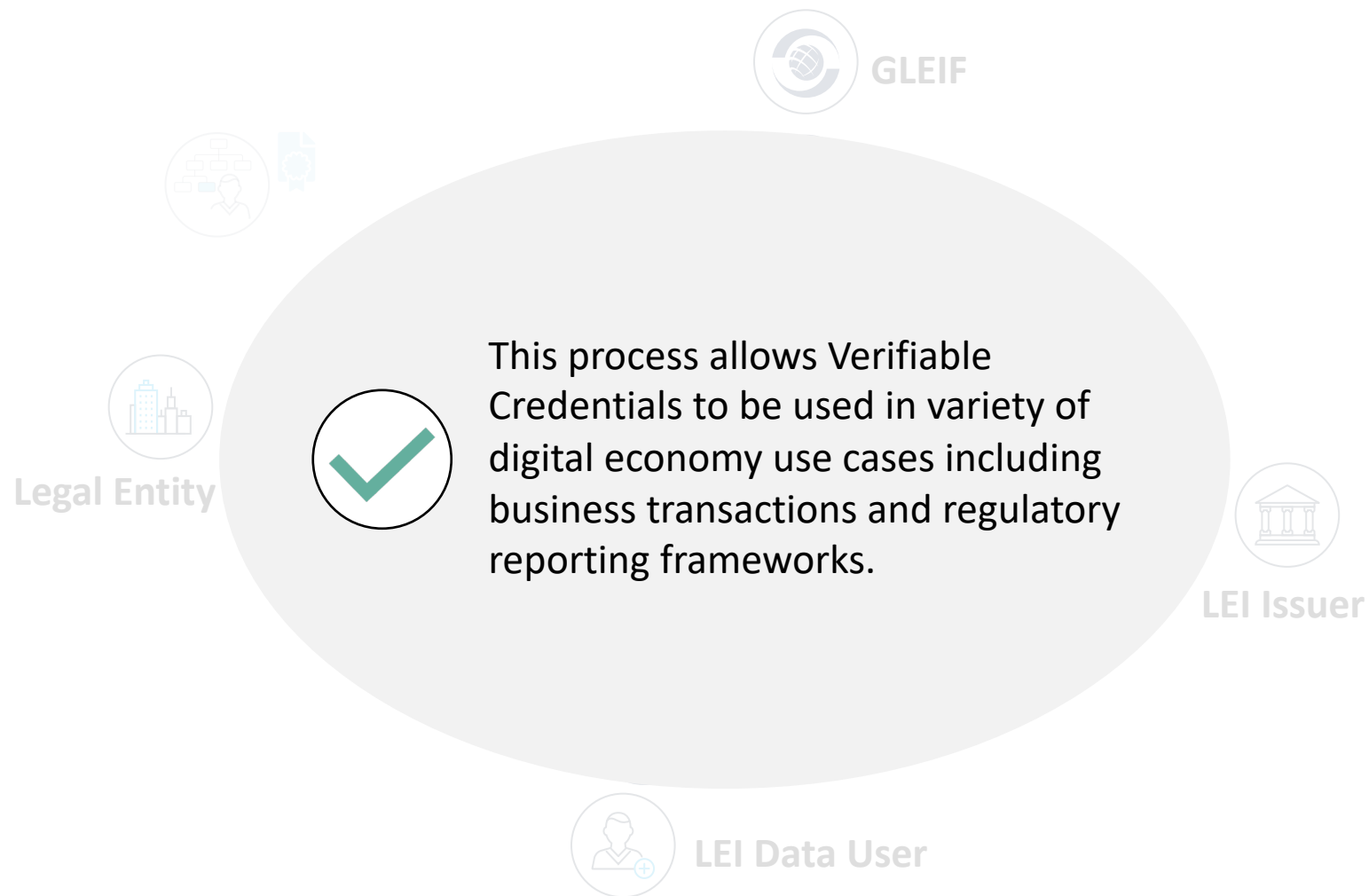
8

GLEIF

● LEI Data User sends
request for verification of VCs
to the ● Legal Entity

Legal Entity

LEI Issuer

LEI Data User
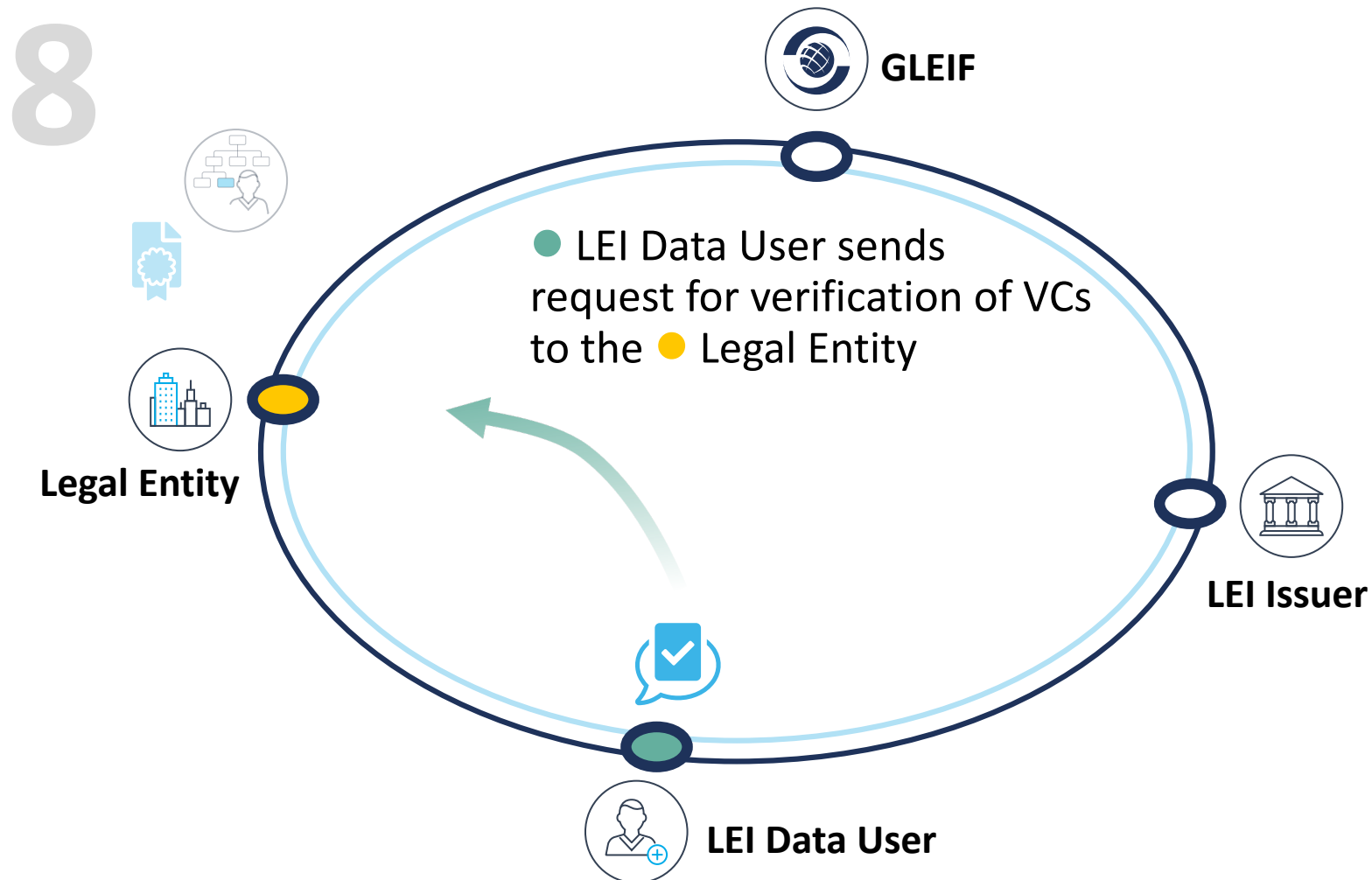
Response will indicate
whether the VC is
authentic and current
(since Legal Entities
will have the ability to
revoke VCs issued to
Persons in Official
Roles).

Result: Complete trust chain and transparency

Persons in Official Roles

GLEIF

● LEI Data Users look up online or via API at ● GLEIF

Legal Entity

LEI Issuer

LEI Data User

Now in addition to the freely accessible look up of LEIs and the associated reference data, LEI Data Users can look up published list of official roles for which VCs have been issued by the Legal Entity.
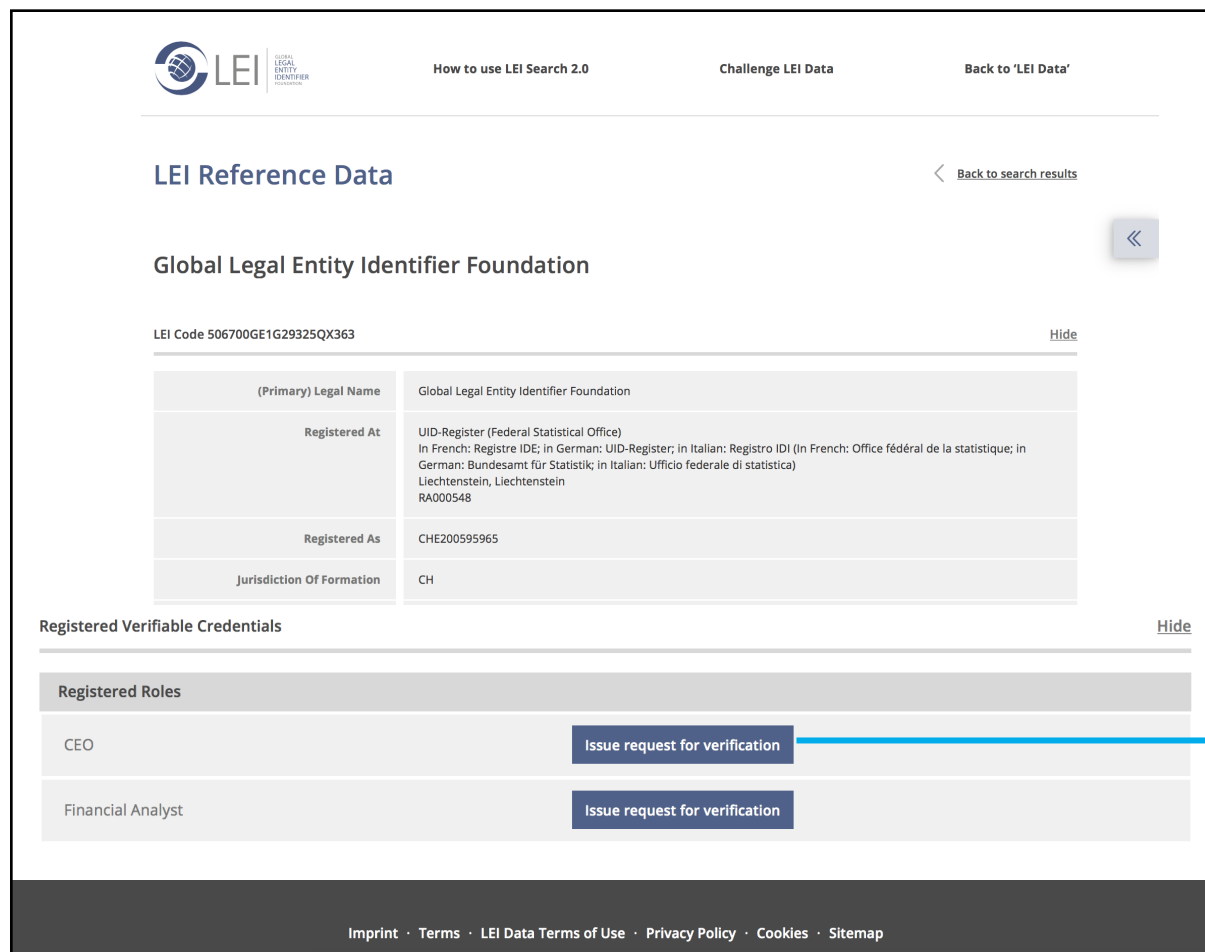
Use case agnostic approach

This process allows Verifiable Credentials to be used in variety of digital economy use cases including business transactions and regulatory reporting frameworks.

How would it look in the Global LEI Repository?
An example

Technical Architecture
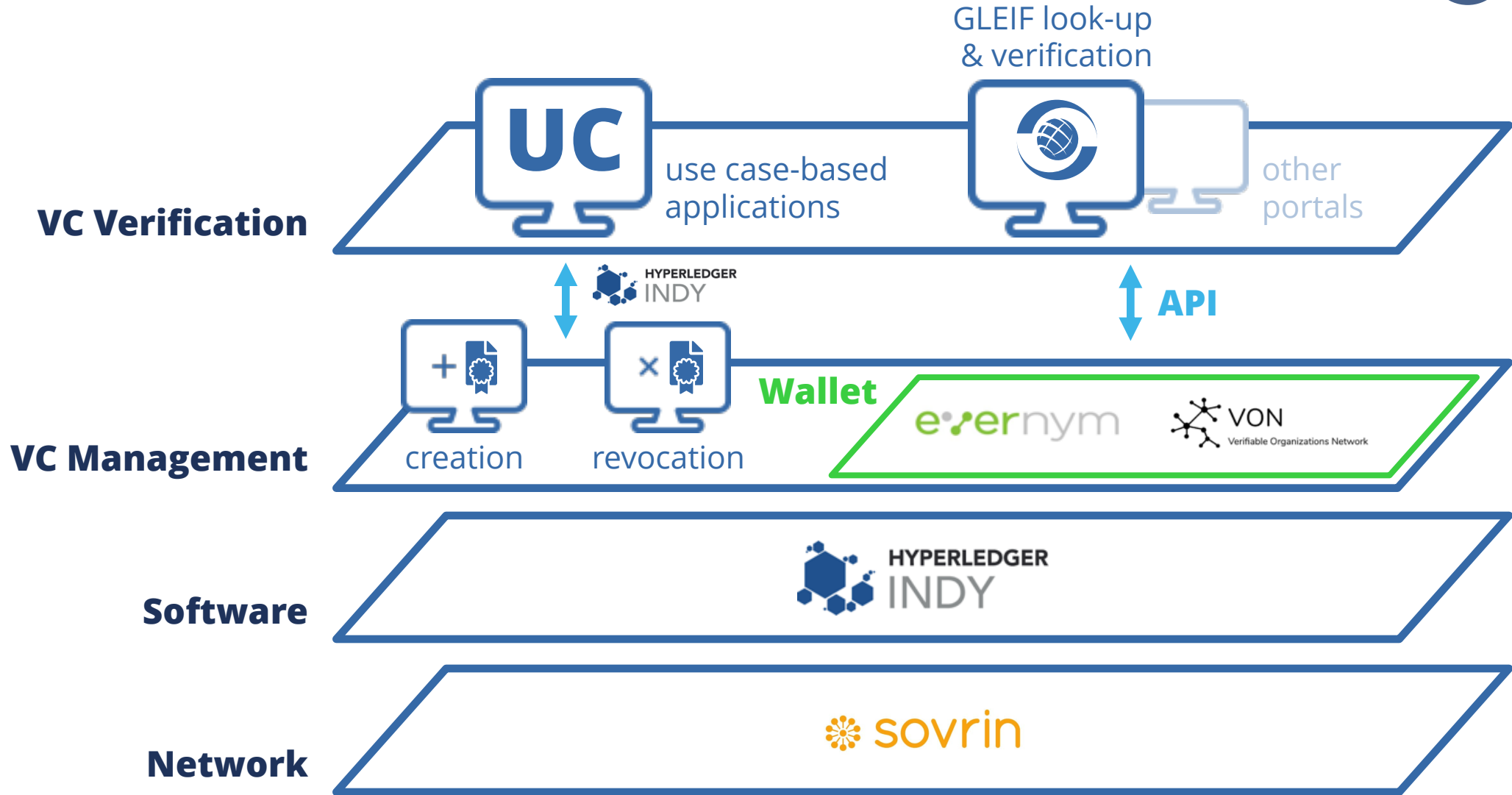
Use Cases

Use Cases

1. Regulatory filing and reporting – by the filer/ reporting entity, by a third-party filer on behalf of the filer/ reporting entity or by an auditor

2. Client onboarding/ know your customer process

3. Import/ export, supply chain, customs/ border control, payment for goods

4. Trusted supplier/ provider network membership and registration

5. Payment systems membership and registration

6. Executing and securing business contracts with clients, suppliers and providers

7. Business entity registration and licenses

8. General Data Protection Regulation

Limitations

LEI

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