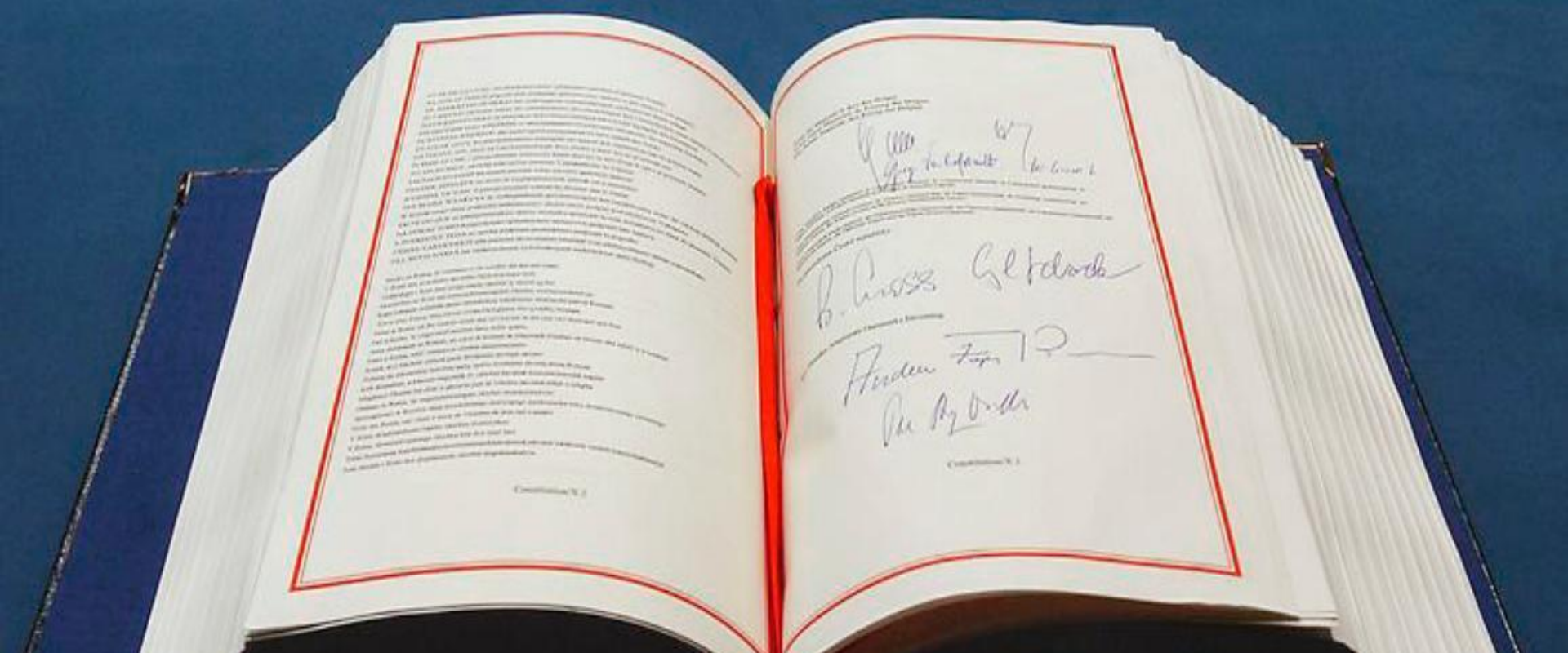




An introduction

European Blockchain Service Infrastructure

Daniel Du Seuil – ESSIF convenor and Belgian representative in EBP



DLT/blockchain as a technology to support a new government model/social contract?



OECD Working Papers on Public Governance No. 43

The uncertain promise of
blockchain for
government

**Juho Lindman,
Jamie Berryhill,
Benjamin Welby,
Mariane Piccinin Barbieri**

<https://dx.doi.org/10.1787/d031cd67-en>

1

How did EBSI started?

EBSI, European Blockchain Service Infrastructure



European Blockchain Partnership (EBP)

Collaborate to let EU take the lead in blockchain

2018

EBP background

2017

**Tallinn declaration on
eGovernment**



In 2017, Member States and EFTA countries signed the Tallinn declaration on eGovernment outlining the importance of having efficient and secure digital public services in order to achieve the full potential of the Digital Single Market.

2018

**European Blockchain
Partnership
declaration**



In 2018, 27 EU Member States, Norway and Lichtenstein signed a declaration creating the European Blockchain Partnership (EBP) with the ambition to provide digital public services matching the required level of digital security and maturity of today's society.

2019

**European Blockchain
Services Infrastructure**

On 14 February 2019, the European Commission published the 2019 Telecommunications Work Programme of the Connecting Europe Facility (CEF) creating initial funding conditions for EBSI.

Our ambition is to establish global leadership in blockchain and distributed ledger technologies



Joined-up political vision (EU-MS)

Joint declaration on the establishment of the European Blockchain Partnership [EBP] and the development of the European Blockchain Services Infrastructure [EBSI] for cross-border digital services of public interest.



Public-private partnership

Supporting the creation of the International Association of Trusted Blockchain Applications [INATBA]; a multistakeholder organisation to promote trust and interoperability at global level.



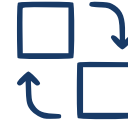
Connecting Global Expertise

The EU **Blockchain Observatory** and Forum brings together the leading global experts to identify obstacles, incentives and practical solutions to promote blockchain uptake.



Investing in EU Innovation and start-ups

Through the **Connecting Europe Facility and H2020 Programmes**, the EU is co-investing in the most advanced digital infrastructure and the most innovative EU start-ups **New** EU investment scheme for AI and blockchain + support programme.



Promoting an enabling DSM

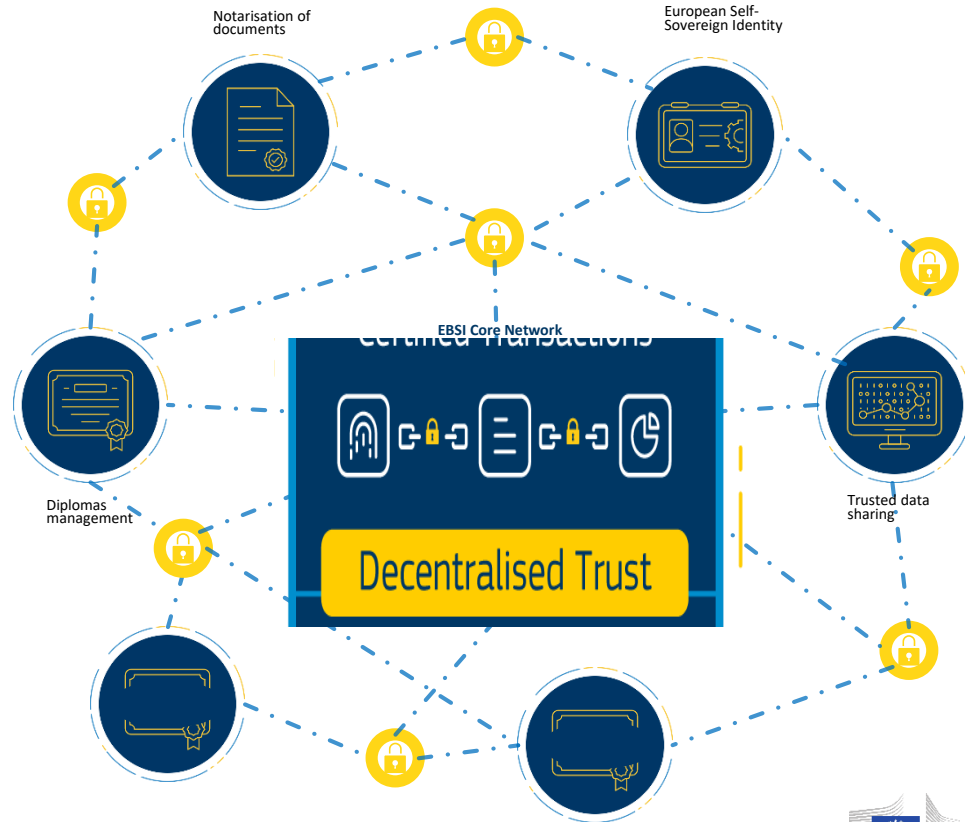
Promoting and enabling legal framework **interoperable standards** and skills development.

What is EBSI?

The European Blockchain Services Infrastructure (EBSI) is a **blockchain infrastructure** that offers **cross-border public services**.

The vision is for EBSI to become a **network** where EBP Members can flexibly use the infrastructure to **cooperate** via cross-border public services, **connect** existing solutions or **integrate** specific services.

These services include use cases that are identified and selected each year by the Member States (EBP) and the European Commission.



What is EBSI trying to achieve?

EBSI's aim is to enhance **cross border** public services provided to the citizen and businesses, to enhance government or public authorities collaboration, in support of **EU policies** and in full **compliance** with EU regulation, meeting the highest standards in terms of sustainability, privacy and security.



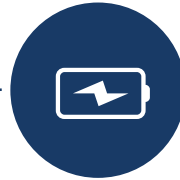
Cross border

enhance cross border services provided by government to the citizen



Mobility

enhance cross border citizen and enterprise mobility



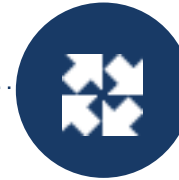
Sustainable

support use cases that enhance environmental and green deal policies



Compliance

compliance with GDPR, eIDAS, SDGR...



Enabler

reinforce blockchain capacities in Europe

Additionally to the generic infrastructure, EBSI includes 4 initial use cases + 3 new use cases

These use cases enable you to **simplify administrative processes, increase efficiency** and **instill trust in citizens**. These can be used to start piloting EBSI applications as they come with sample code.



Notarisation of documents

Leverage the power of blockchain to create trusted digital audit trails, automate compliance checks in time-sensitive processes and prove data integrity.



European Self-Sovereign Identity

Implement a generic Self-Sovereign Identity capability, allowing users to create and control their own identity without relying on centralized authorities.



Diplomas management

Give access to education credentials, with control by citizens, significantly reducing verification costs and improving authenticity trust.



Trusted data sharing

Securely share data (e.g. IOSS VAT identification numbers and import one-stop-shop) amongst customs and tax authorities in the EU.

+ SME funding + Asylum + European Social Security Platform

EBSI aims at seizing the opportunities offered by blockchain in particular to exploit them for enhancing cross border services

2019

Initial funding conditions

In early 2019, the European Commission published the 2019 Telecommunications Work Programme of the Connecting Europe Facility (CEF) creating initial funding conditions for EBSI.

2020

Release of the first version of EBSI

In early 2020, release of the first version of EBSI. Start of EBSI testing by EBP members, national administrations and interested public authorities parties.

2021

Digital Europe Programme

From 2021 on EBSI will be supported under the Digital Europe Programme. New use cases selected by the EBP will be added, cooperation with industry reinforced and more legal certainty provided for market actors through regulatory sandbox activities

The story of EBSI in a nutshell. From idea to production.



Benefits from the adoption of blockchain (with EBSI)



Simplifying Administrative Processes

- **Reduce significant effort** in any kind of information **checks and audits** with other entities
- **Reduce the burden for cross-border information sharing** and synchronization with other EU organisations / agencies / citizens
- **Deployment of decentralised trust services** that eliminate the need for manual checks or data processing pipelines



Enhancing Trust with external stakeholders

- **Enhance trust in members and external stakeholders of DGs** through the use of the EBSI Wallet with Self Sovereign Identity (EBSI SSIF) and Verifiable Credentials and EBSI
- blockchain distributed ledger technology and Smart Contracts' **Transparency increases trust** of the users towards the **procedures and data handling of EC DGs**



Increasing Efficiency

- **Enhanced performance** through the use of local copies of apps and data and **interoperability** with existing systems
- **Enhanced security and resilience**



Increasing Transparency

- **Increase transparency and traceability of transactions and data** managed by the EC DGs and in cross-border services



Enabling Regulatory Compliance

- **Compliance with General Data Protection Regulation (GDPR)**
- EBSI Core Services enable **compliance with eIDAS**



Data harmonisation

- Ensures data harmonisation due to **distributed ledger technologies, increased reliability** of records and **easy detection of anomalies**

2

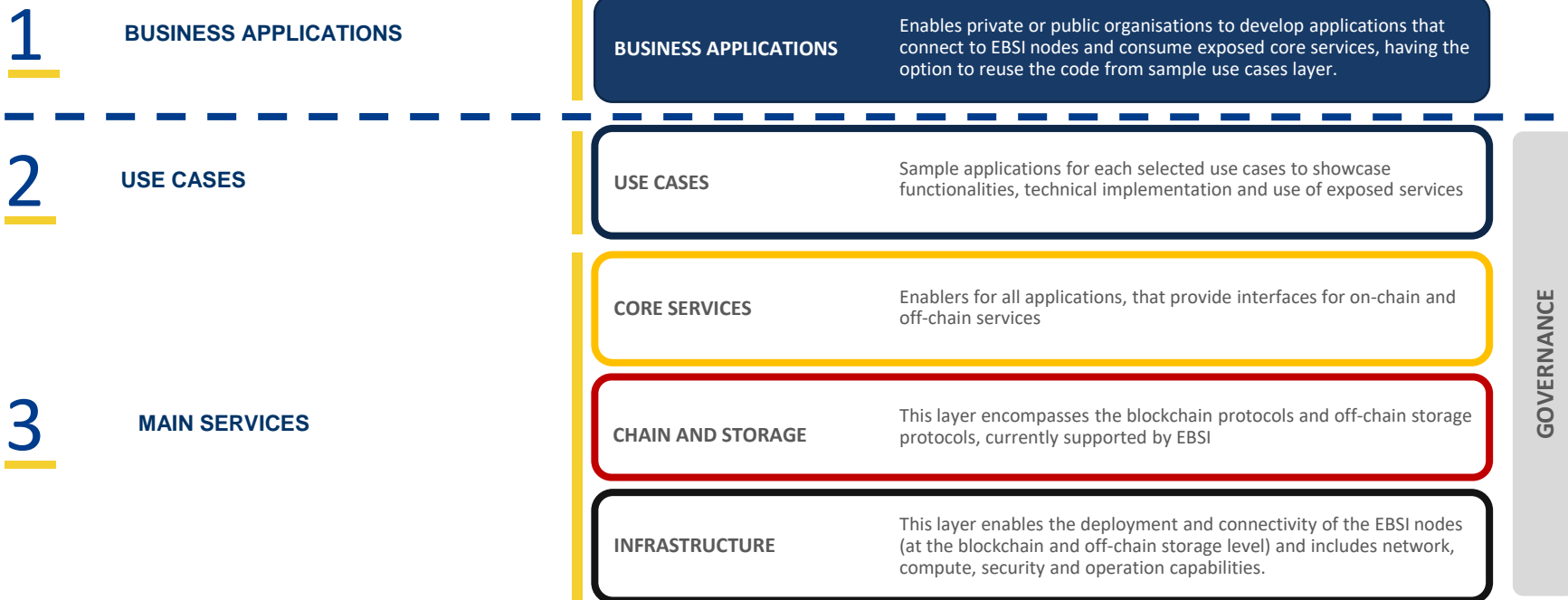


A technical view

EBSI, European Blockchain Service Infrastructure

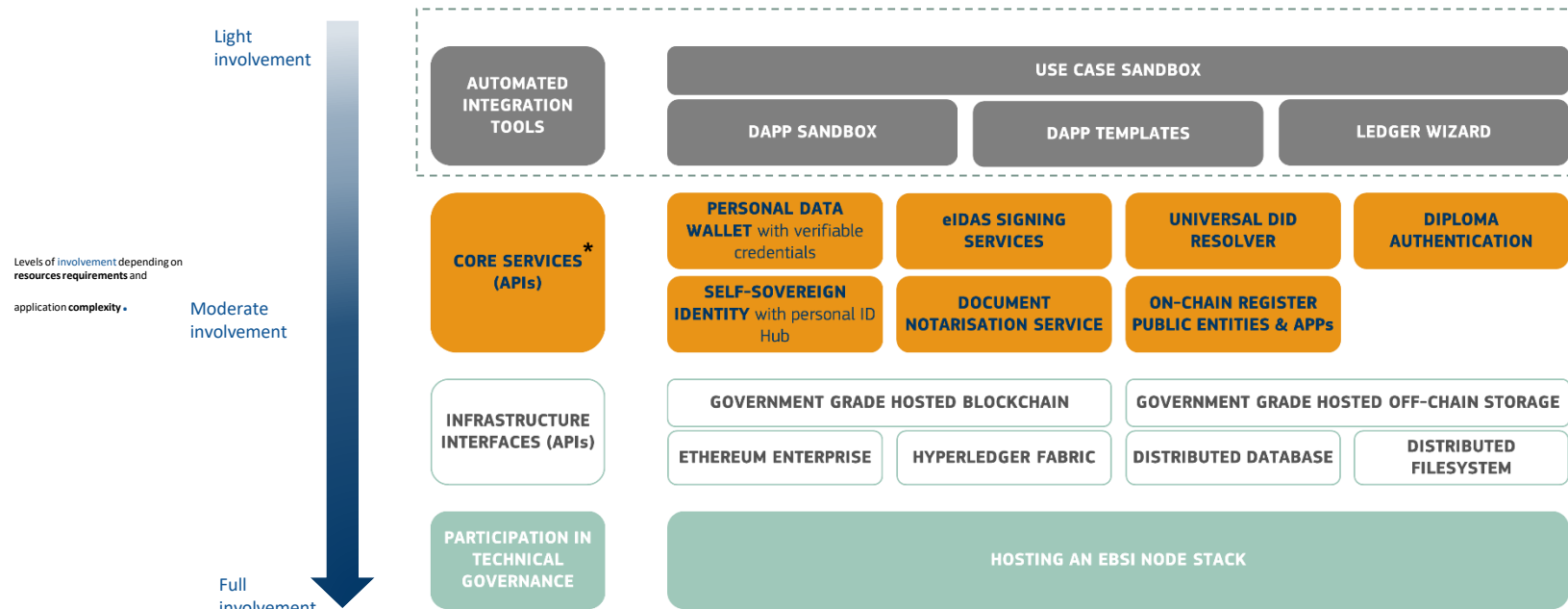
EBSI at a glance

The EBP members will operate EBSI nodes at national level. These nodes will be able to create and broadcast transactions that will update the ledger. The architecture will be composed of three main layers.



EBSI Core Services available for application development

This is an overview of the **interface stack** and **integration points** available to integrate your application to EBSI. The full documentation is available [here](#).



NOTE: Some EBSI v1 Core Services have partial functionality. Please refer to relevant documentation for more information

What are the benefits of the EU-wide EBSI network?

EBSI Stack Nodes will exist in Member States and in trading partners outside the EEA. The EBSI Stack provides:

- **Increased resilience** from a network of systems and data that can take over from failed nodes and distributes proofs of actions geographically
- **Enhanced trust** with the use of blockchain smart contracts and ledgers
- **Enhanced cyber security** from the enforcement of encryption practices
- **Enhanced performance** for cross border systems through the use of distributed data and code execution
- **Granular** capabilities that can suit small and large Member States as well as cross border or local applications



This is the status of the EBSI network (end of 2020)

24 Member State Nodes

24 nodes have been requested by Member State institutions from 14 Member States, of which:

- 16 nodes have been connected with all available services
- 3 nodes are currently in the process of connection
- 5 nodes are in the preparatory stages to connect
- 8 nodes are in the process of being on-boarded

+

6 Commission Nodes

=

At least 30 Node TestNet and growing



2



EBSI use cases

EBSI, European Blockchain Service Infrastructure

EBSI use cases

Overview of functionalities



Notarisation of documents

Leverage the power of blockchain to create trusted digital audit trails, automate compliance checks in time-sensitive processes and prove data integrity.



Use case: Notarisation of documents

Overview of core functionalities



Notarisation of a document

Allows notarisation of files submitted by the user together with the related metadata while building a trusted audit trail.



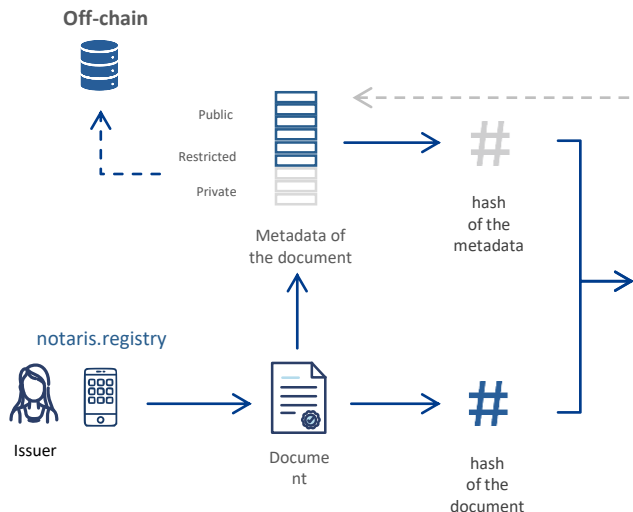
Verification of authenticity/ integrity of files

Allows users to generate an imprint of a file and retrieve any existing registration related to the imprint, and the associated metadata.

notaris.registry

Notarise.

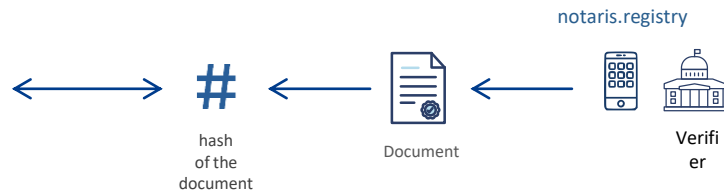
Keep records of your documents.
Make them verifiable / auditable.



>> EBSI <<

Verify.

Verify document's authenticity.
Enhance transparency / Protect against fraud.



EBSI use cases

Overview of functionalities



European Self-Sovereign Identity

Implement a generic Self-Sovereign Identity capability, allowing users to create and control their own identity without relying on centralized authorities.



Use case: European Self-Sovereign Identity

Overview of core functionalities



Registration

Users can request their own self-sovereign identity (i.e. users control what is shared with whom)

Issuers can request their registration

Authentication

Users can authenticate using a strong authentication online (i.e. national eID)

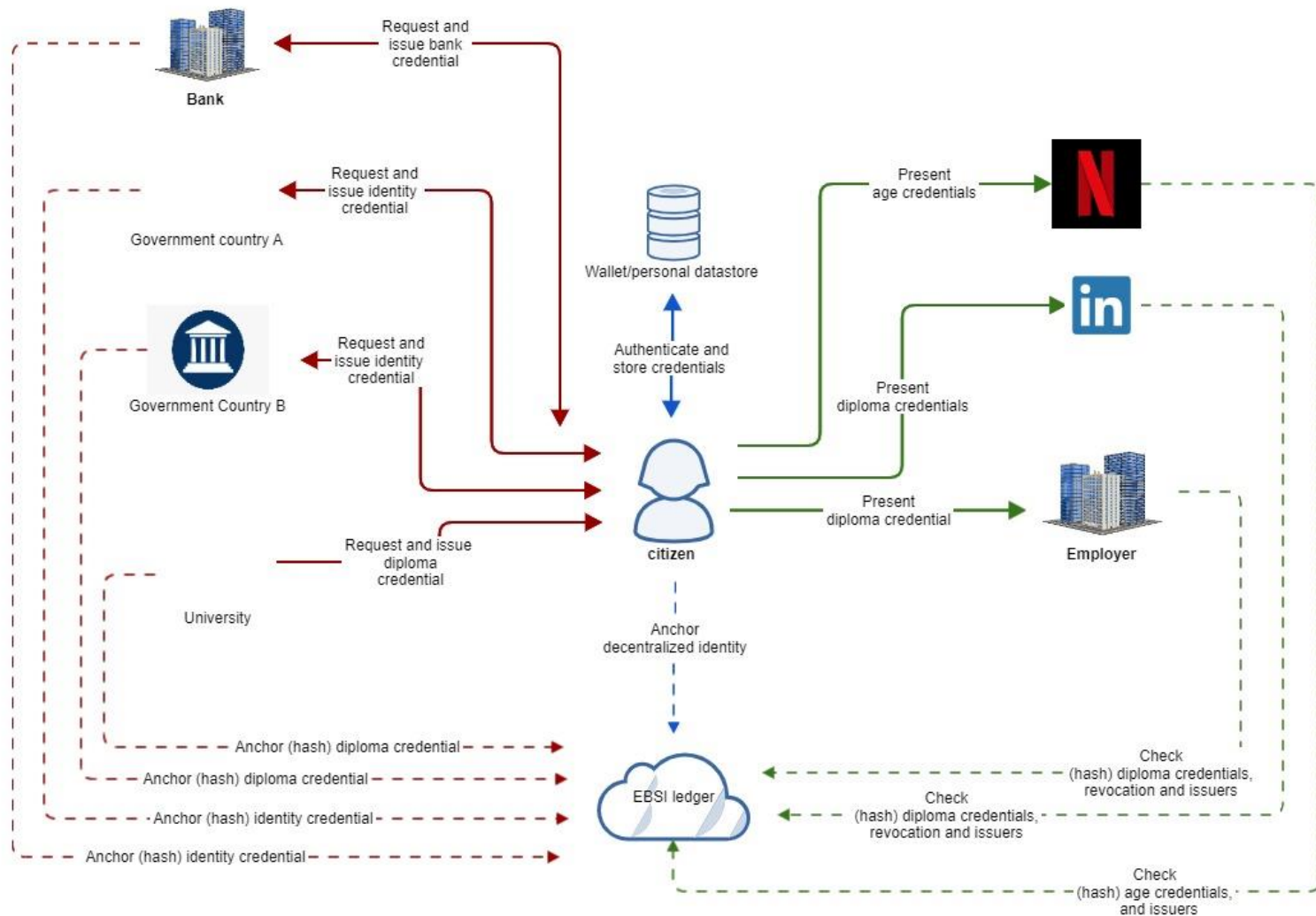
Verification

Users can:

- Request / obtain / present verifiable claims and credentials
- Request verifiable consent / mandate

Issuers can:

- Verify identifications
- Suspend / revoke credentials



EBSI use cases

Overview of functionalities



Diploma

Give access to education credentials, with control by citizens, significantly reducing verification costs and improving authenticity trust.



Use case: Diplomas management

Overview of core functionalities



Credential request

The student can request the issuance of a credential of his/her final qualifications in an education institution and gets it stored in his e-wallet

Credential Presentation: Application to an Higher Education Institution (HEI)

The student wants to enroll at an university of another state and can use his EBSI compliant e-wallet to request the enrollment

Credential Verification: Acceptance of the student at the HEI

The HEI verifies the documentation received by the student and enrolls him/her in the institution

Third party credential presentation: Application for an apprenticeship

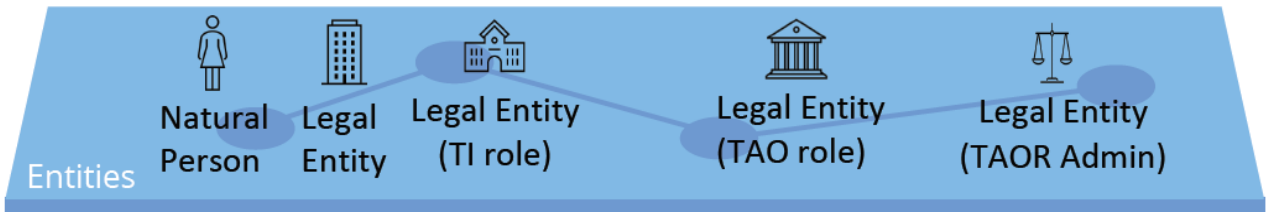
Once the student graduates, he/she applies for an apprenticeship. The company is able to verify the students' graduation and accepts his request

Credential Audit: Setting up a new business / Apply to EU funding

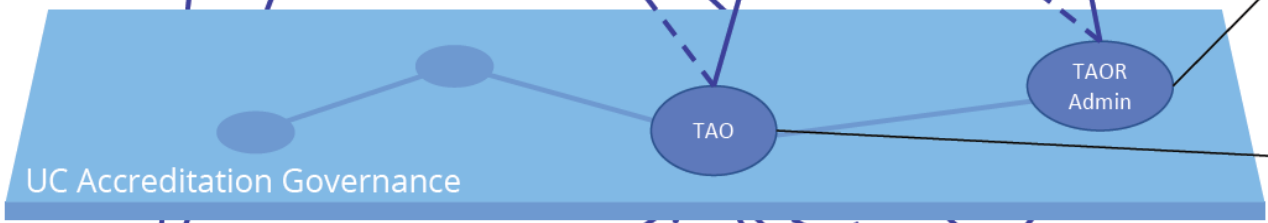
The trainee graduates wants to set up his/her business in his/her home country or apply for EU funding and uses his digital credentials stored in his/her e-wallet

Generic

Entities: Natural Persons and Legal Entity



Domain Accreditation Governance. Each domain may have a different legal meaning for accreditation processes, bodies, etc.

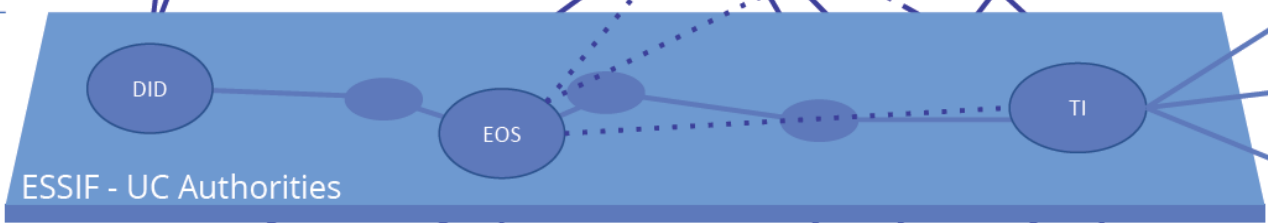


TAOR Admin: offline check to verify Legal Entity entitlement to become TAO

TAO: offline check to verify Legal Entity entitlement to become TI

UC Domain

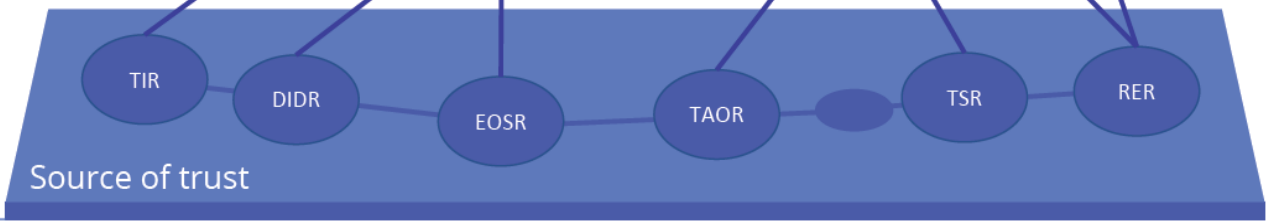
V Credential Authoritative source (Domain UC' legal entities can play different roles)



- High LoA
- Substantial LoA
- Low LoA

ESSIF Domain

Ledger



EBSI use cases

Overview of functionalities



Trusted data sharing

Securely share data (e.g. IOSS VAT identification numbers and import one-stop-shop) amongst customs and tax authorities in the EU.



Use case: Trusted data sharing

Overview of **existing** and **future** core functionalities



Registration/identification of a new user

(due in future versions)

A user interacting with the Trust Data Sharing Service must be first identified and authenticated before being able to publish or consult content on it.

Publication of content

An identified entity can publish, update and delete content on the Trust Data Sharing Service for a specific group.

Consultation of content

An identified entity can consult shared content on the Trusted Data Sharing Service, in compliance with data confidentiality and data protection requirements

Change/Update the data model

(due in future versions)

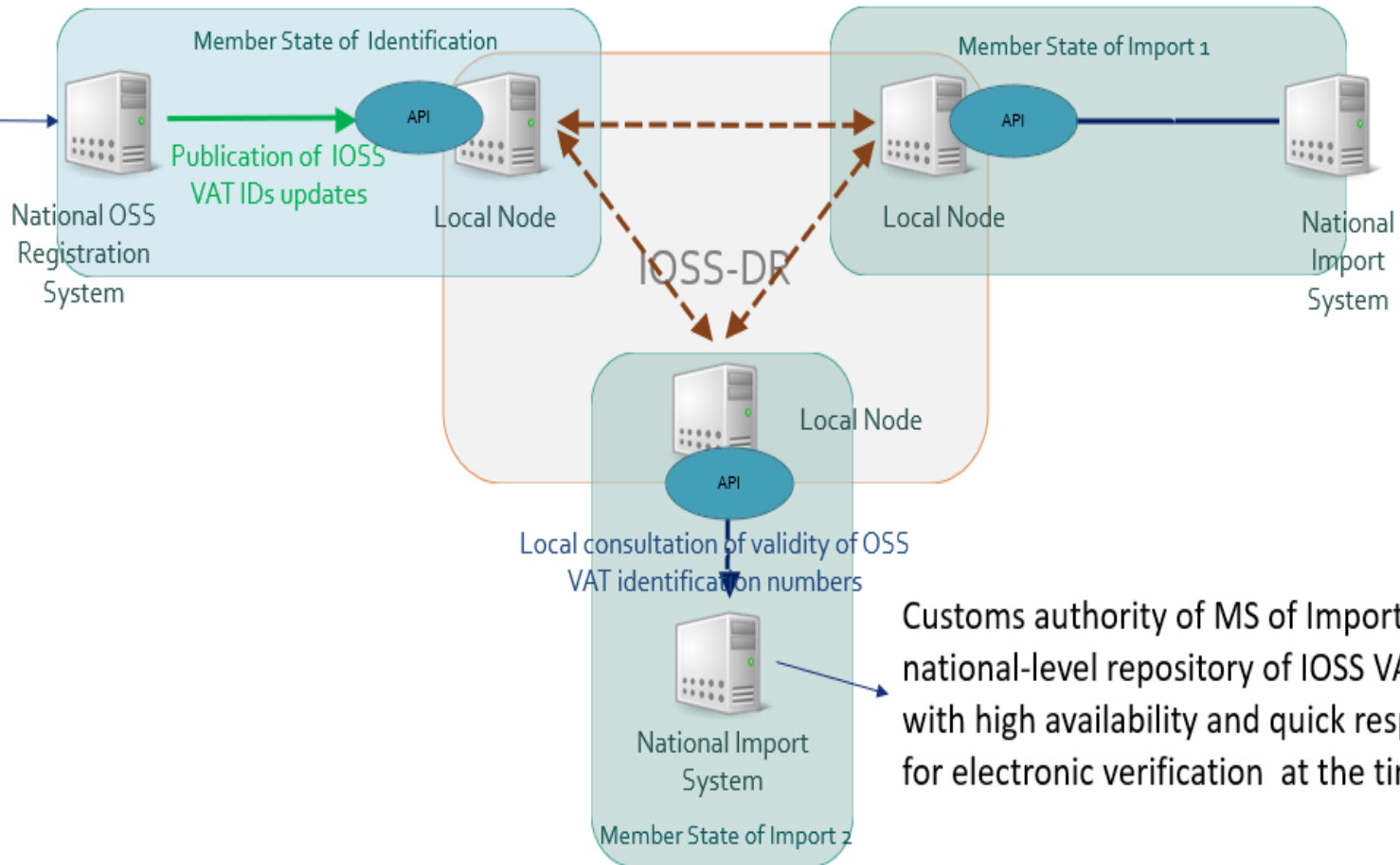
The Group Admin can update/change the existing data model related to a specific workflow, supporting simultaneously multiple versions if needed

Change/Update the business rules

(due in future versions)

The Group Admin can update/change the existing business rules related to a specific workflow, by supporting simultaneously multiple versions if needed.

Taxable person registers for IOSS (at Taxation MSA)



Customs authority of MS of Import need a national-level repository of IOSS VAT identifiers with high availability and quick response times for electronic verification at the time of import

3

 Want to learn more?
EBSI, European Blockchain Service Infrastructure

Ready to get started?

Reach out to us to learn more!

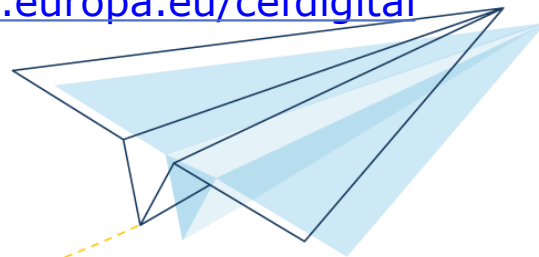
Or visit our Connecting Europe Facility website www.ec.europa.eu/cefdigital

Contact your national representative in the
European Blockchain Partnership:

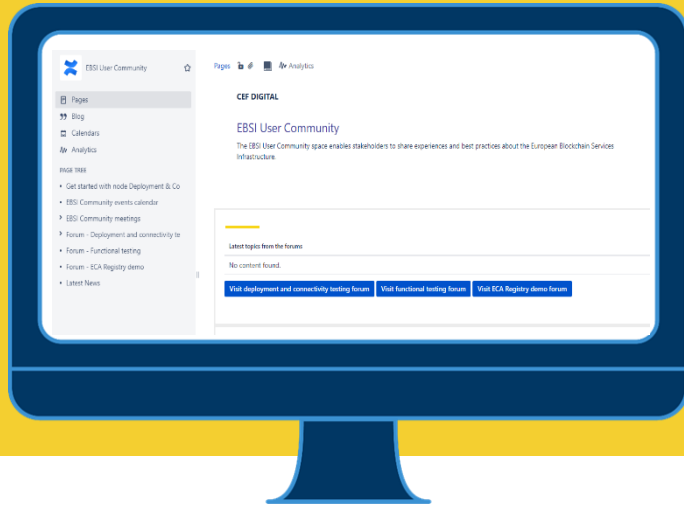
CNECT-EUBLOCKCHAIN@ec.europa.eu

Learn more about the European Blockchain Partnership on:

<https://ec.europa.eu/digital-single-market/en/news/european-countries-join-blockchain-partnership>



Join the EBSI user community



Raise your questions and share insights

The European Commission set up a user community dedicated to the members of the EBSI network. After registering to the testing, you will be granted access to specific documentation, be able to ask questions and share your knowledge and experience.

Register



Join the community

At first, the community is restricted to the members of the EBP but the aim is to create a large blockchain community.



Ask & Share

Ask your questions to fellow members and share your feedback and experience.



Priority access

Have access to documentation created by the European Commission together with members of the EBP.



“ You build a platform.
You cultivate an **ecosystem**.
The key differentiating element
is “care”. ”

Koen Vingerhoets - Deloitte