



European
Commission



Diploma use case & Hungary

Online – 22/03/2022

Agenda

eSSIF

The foundation

Educational challenges

Diploma UC

Early adopters programme

Q&A



01

eSSIF: the foundation

Programme update and Demo days



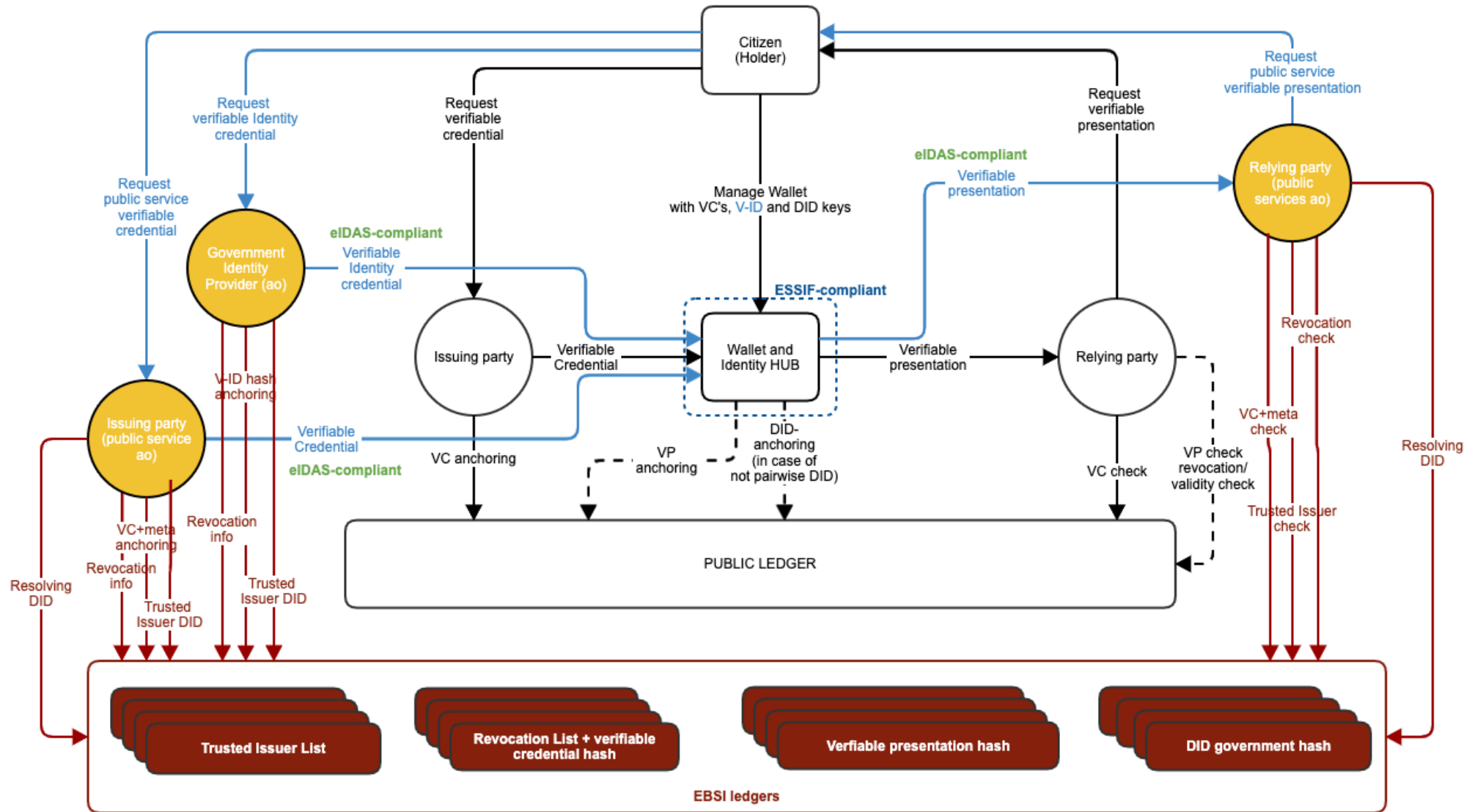


'Self-Sovereign Identity
[decentralized identity] is the next step beyond user-centric identity and that means it begins at the same place: the user must be central to the administration of identity.'

— **Christopher Allen**

ESSIF Framework

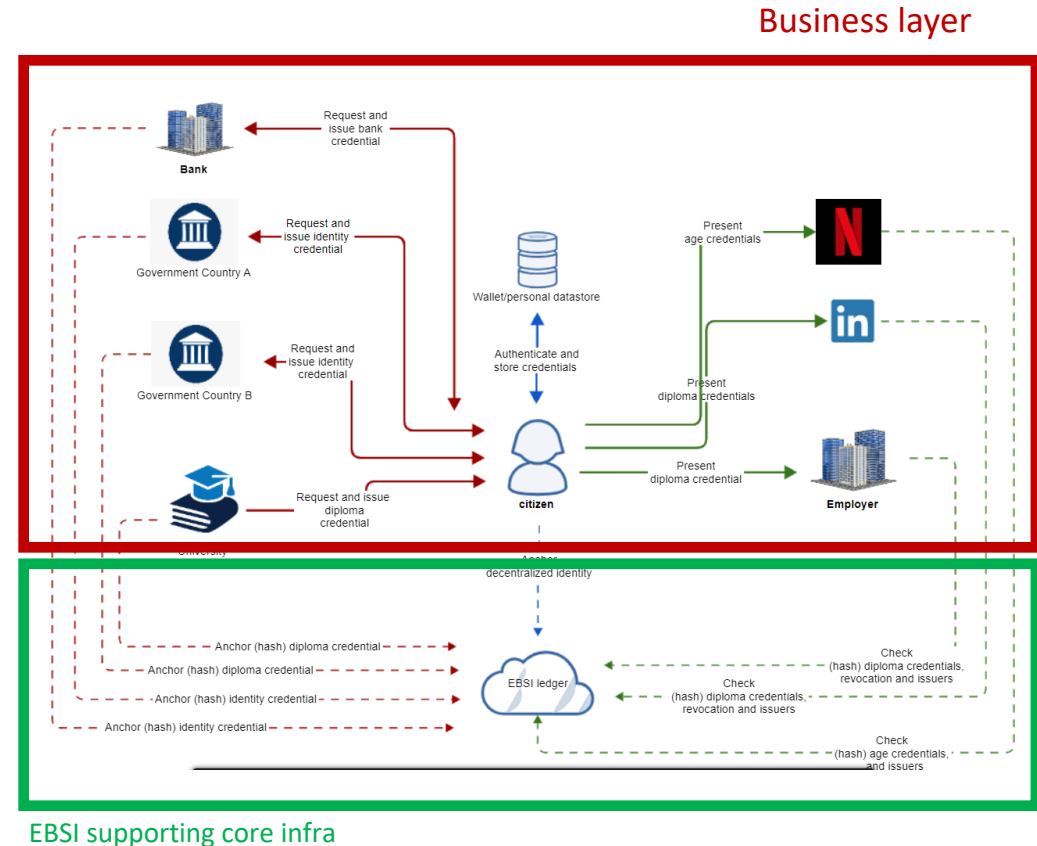
● SSI Components
 ● ESSIF Specification
 ● eIDAS compliant
 ● Public Services
 ● ESSIF Components



ESSIFv2 Conceptual/Logical Overview

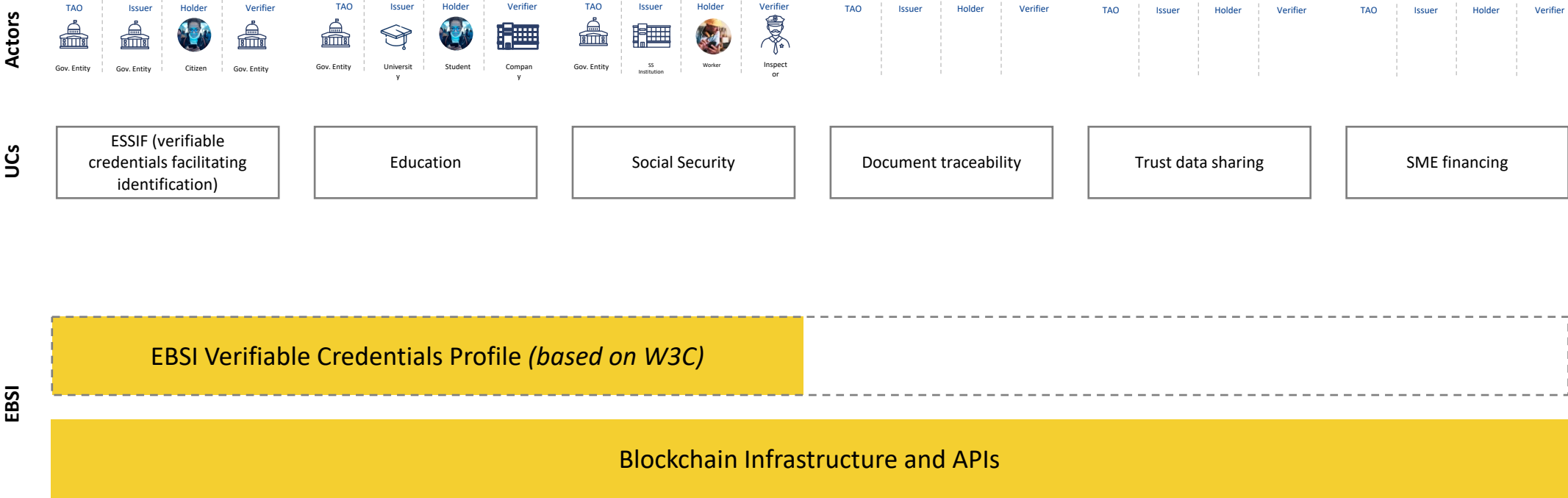
Key take-aways:

- Exchanges go direct between actors
- The EBSI-ledger is used to enable the following Primary Trust Anchors:
 - * Trusted Registries
 - * DID-LE & VC-status-Registry
- The registries provide trust anchors for ESSIF. Parties receiving VCs (because they are presented to them) can validate not only the eSeal on the VC, but also validate it was issued by a Trusted Issuer, whether that TI is authorized, whether the DID-of the subject was not revoked, ...
- Actors can off course “anchor” more then only ESSIF-info. They can eg “notarize” something.



What is EBSI today?

EBSI is user centric, decentralised and reusable in multiple contexts and use cases. It is governed by public authorities. It is based on open standards to stimulate interoperability and the creation of cross-border public services

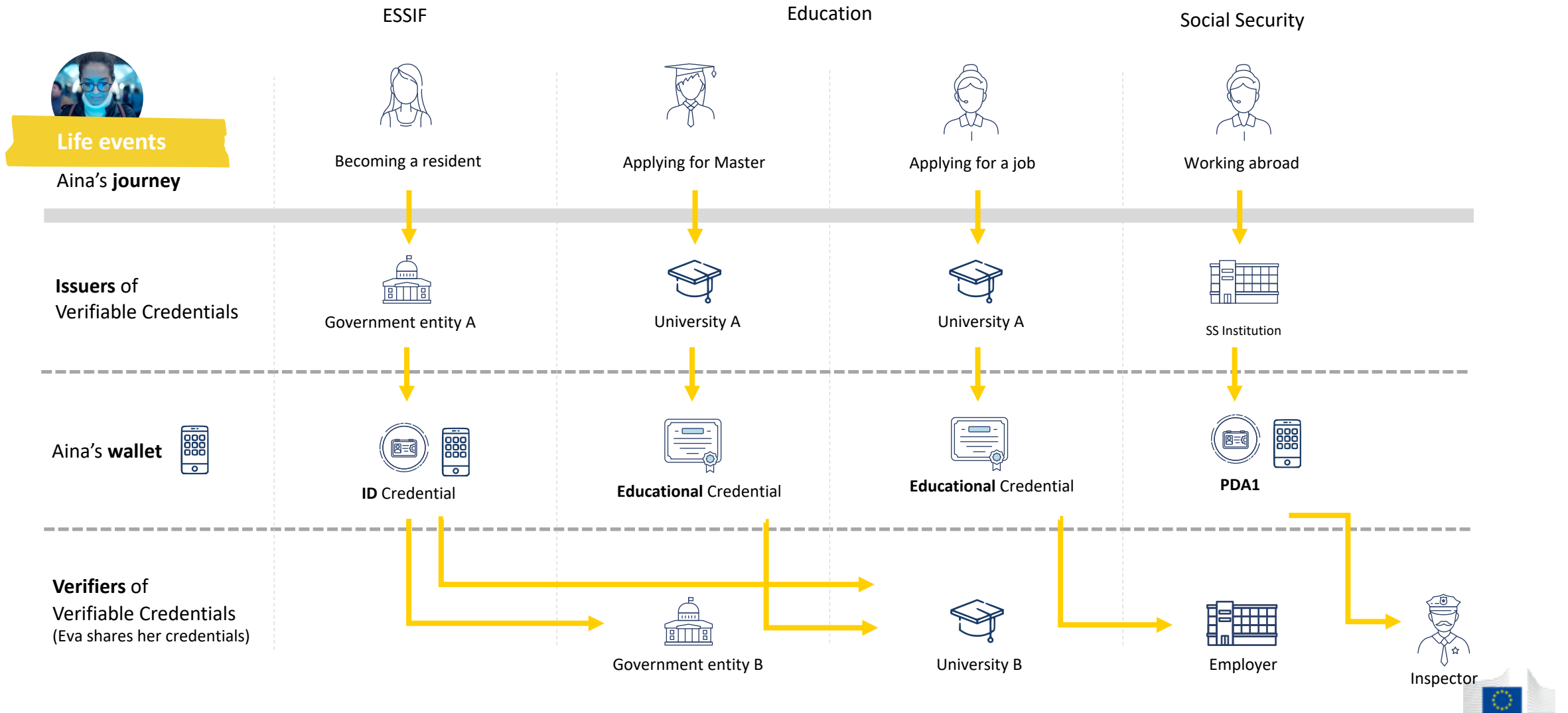


EBSI has now more than **40 nodes** in more than **20 countries**



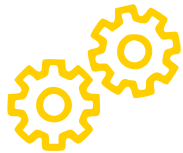
The exchange of VCs applied to several use cases

Let's look at the exchange of Verifiable Credentials applied to some of our use cases



Roadmap

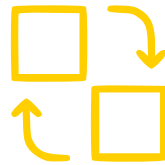
2020



**First development (EBSI V1)
and preparing engagement**

Basic blockchain infrastructure and a user web wallet - First approach and guidance to users for future exploitation of EBSI

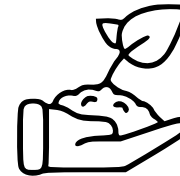
From Q2 2021



**EBSI V2
Pre-production**

EBSI v2 capabilities deployed to the pre-production environment. Early Adopters on EBSI v2 pre-production

from mid
2022



**EBSI V2
Production**

EBSI capabilities and first use cases will in production environment.

2023 +



**EBSI V3+
Multiple environments (from
test to production)**

New capabilities will be deployed to enhance and reinforce the infrastructure and implement new use cases

New EDIC governance (tbc)

02

Educational challenges



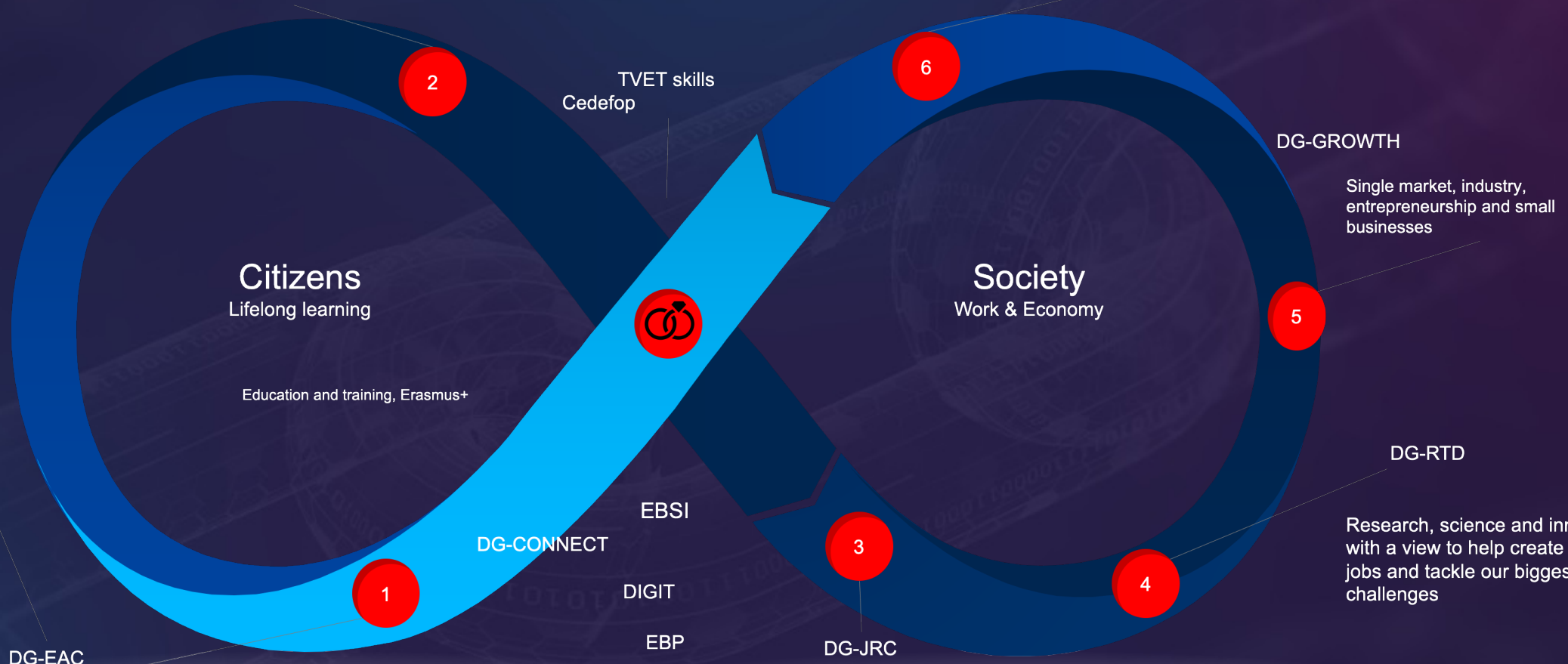
Digital Economy

Employment, social affairs, skills,
labour mobility, Europass, ESCO

DG-EMPL

Economic growth, higher
employment

DG-ECFIN



TVET skills
Cedefop

Citizens
Lifelong learning

Education and training, Erasmus+

Society
Work & Economy

Single market, industry,
entrepreneurship and small
businesses

+ENIC-NARIC

UNESCO

DG-EAC

EBSI

DIGIT

EBP

DG-CONNECT

DG-JRC

Science and knowledge, DigComp

DG-RTD

Research, science and innovation,
with a view to help create growth and
jobs and tackle our biggest societal
challenges

EU Blockchain Observatory Forum



The urgent need for a more flexible education ecosystem

- **A citizen-centric system by design**
- **To facilitate Lifelong Learning (LLL)**
- **To facilitate Personal Learning pathways (PLP)**
- **With common data models and ontologies**
- **Supporting existing educational governance**
- **To support and empower public and private issuers**
- **To support citizen as data provider**
- **To support entire educational credentials lifecycle**

03

Diploma Use Case



MS agreement on ESSIF

- On September'19 MS agreed to re-use the ESSIF framework as the underlying capabilities to enable a new paradigm for education
- Previous commercial scenarios were reviewed to obtain the full potential of the new paradigm, and new opportunities, new scenarios, enabled by it, were identified
- From that moment on, ESSIF went from being a vertical use case to being a transversal enabling capacity where, in addition to the identity use case itself, it could be instantiated in other business domains (e.g., European Social Security Pass led by Italy and DG-EMPL)
- From an educational institution perspective:
 - ESSIF fully empowers citizens/students gaining real control over their identity(es) and data
 - Verifiable credentials are the “containers” for the educational credentials (just like the containers did for the shipping sector in early 60s)
 - Most of us will be moving to a more just-in-time skilled education where stacking credentials will be the normal, enabling new educational paradigms for real (Lifelong Learning & Personal Learning Pathways)

Purpose and desired outcomes of the use case

Purpose

- To provide reusable specifications and services to **manage educational credentials across borders.**
- **Give control back to citizens**

Desired Outcome

- **A common underlying building block to:** issue, manage and verify diplomas using the highest levels of security and privacy by leveraging EBSI blockchain technologies

Scope of the Diploma Use Case is all levels of Lifelong Learning

EBSI Diploma Use Case

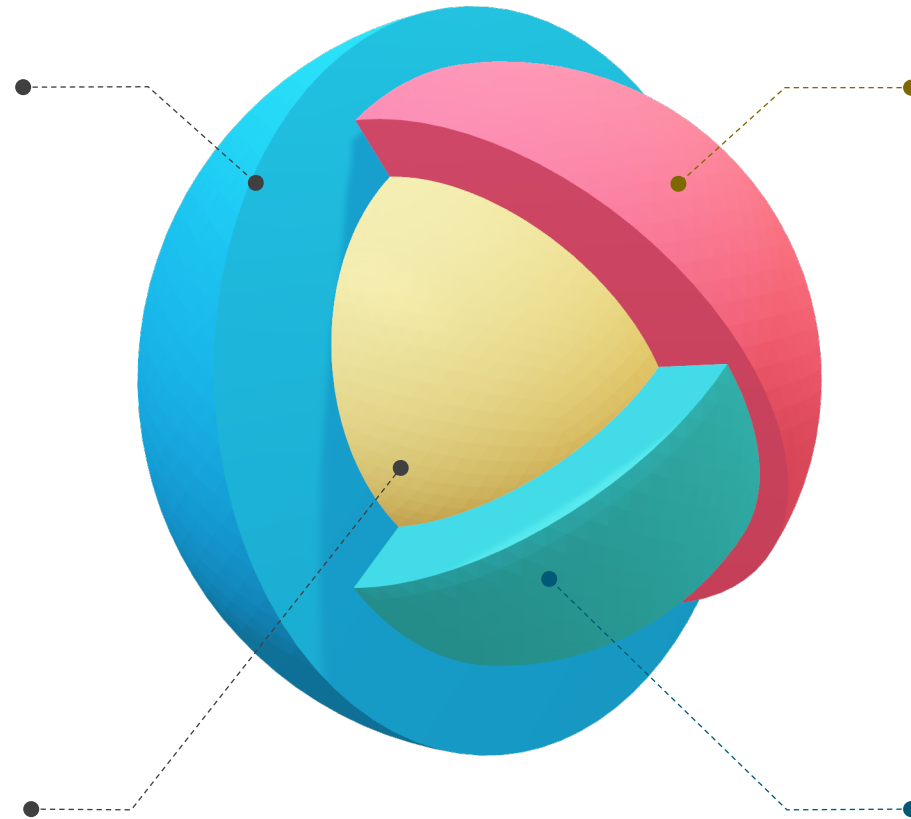
Interoperability (a key element): Dimensions

Organizational

Legal

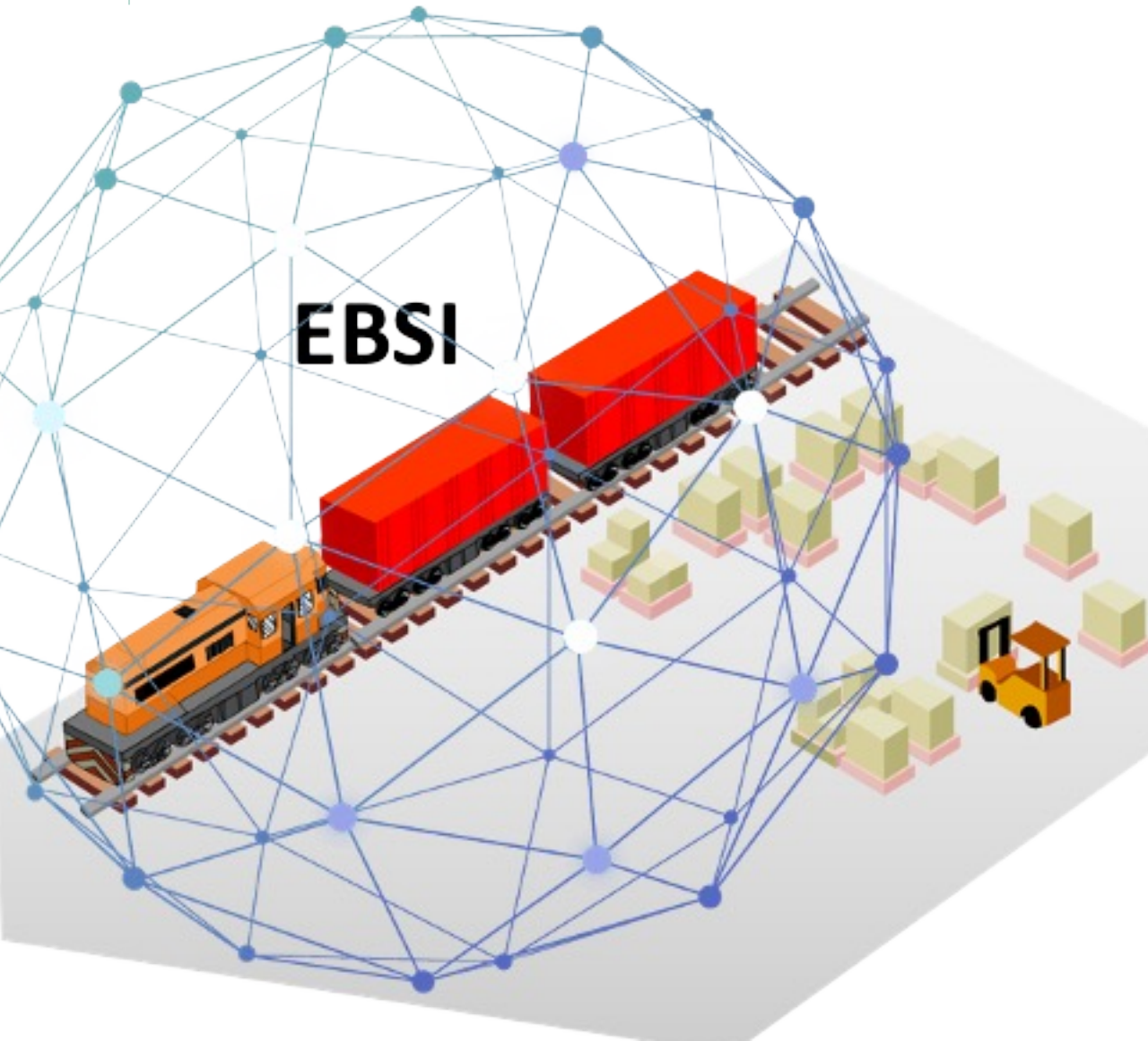
Semantics

Technical

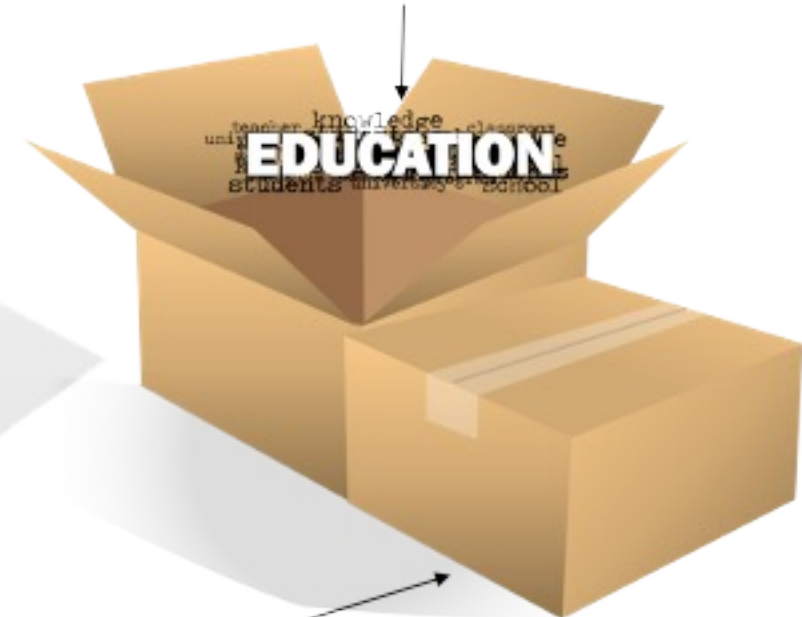


EBSI Diploma Use Case

Key benefit of EBSI Diploma: Interoperability (Technical)



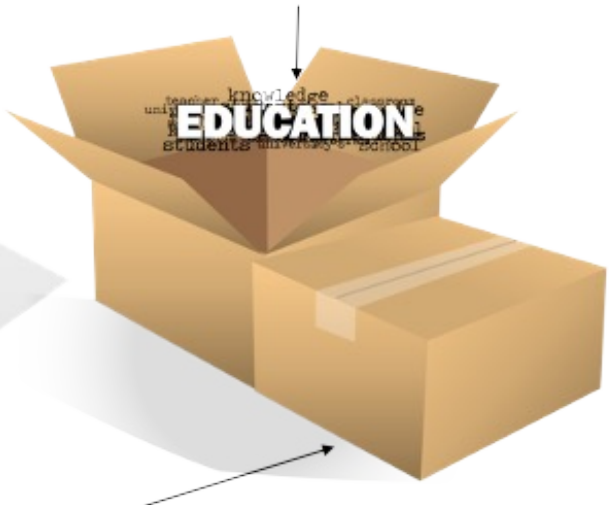
Common Data Model
The common way to describe educational credentials (contents)



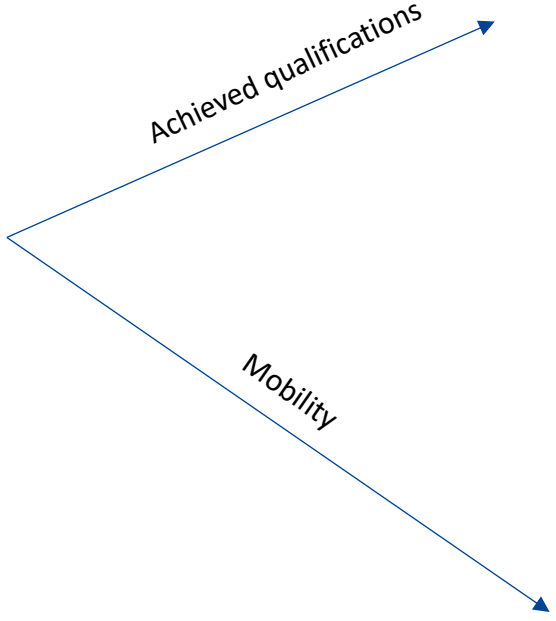
Verifiable Credentials
The common way to package information (content)

Interoperability: technical and semantic dimensions

Common Data Model
The common way to describe educational credentials (contents)



The common way to package information (content)



MS agreement on European Learning Model (ELM), ELMO and MyAcademicID/European Student Identifier

- On June'19 MS agreed to
 - reuse the European Learning Model for achieved learning outcomes (formal qualifications)
 - Cooperation agreement in place between DG-CNECT (EBSI) and DG-EMPL to evolve European Learning Model serialization in both, XML and JSON
- Early Adopters (MS) requested real live scenarios for HEIs. MS were interested on student's international mobility:
 - identity (adding substantial level of assurance to previous scenarios)
 - data (adding the transcript to previous scenarios)
- On October'21 in the context of the MUP, MS agreed to
 - reuse the ELMO data model for the transcript in alignment with international mobility projects (EWP, OLA, EDSSI, Knowledge HUB, etc.)
 - reuse the European Student eID data model in alignment with international mobility projects (MyAcademicID, eduGAIN)

Interoperability: legal dimension



Identity

The eIDAS trust framework: the common language for cross-border

Current eIDAS only defines “levels of assurance” for Verifiable IDs: Only IDs with substantial or high LoA must be accepted by Member States

but ... IDs with low LoA may also be accepted on a voluntary basis, according to the corresponding national legislation applicable to e-Government processes

Data

Data typically embody juridical acts, such as certifying acts by public authorities and other authoritative sources (including private sector bodies with respect to data they’re authoritative for).

Therefore, in the logic of eIDAS, they constitute **legally binding electronic documents, that should be authenticated according to the national legislation (so national legislation/rules applies for cross-border mobility data)**

Interoperability: governance dimension



MANAGE
MECHANISM
SYSTEM
LAW
PARTICIPANTS
MS Governance
GOVERNANCE
EU Governnace
DECISION
INTEGRITY
CONTROL
Market
DIRECTION

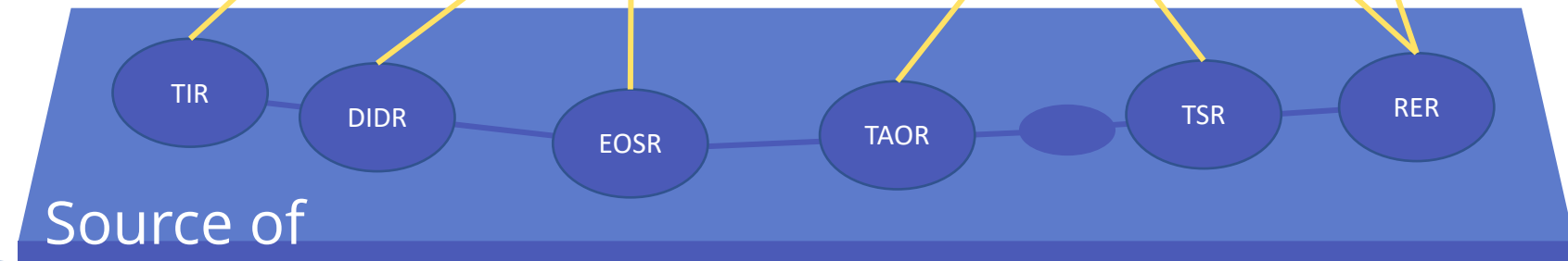
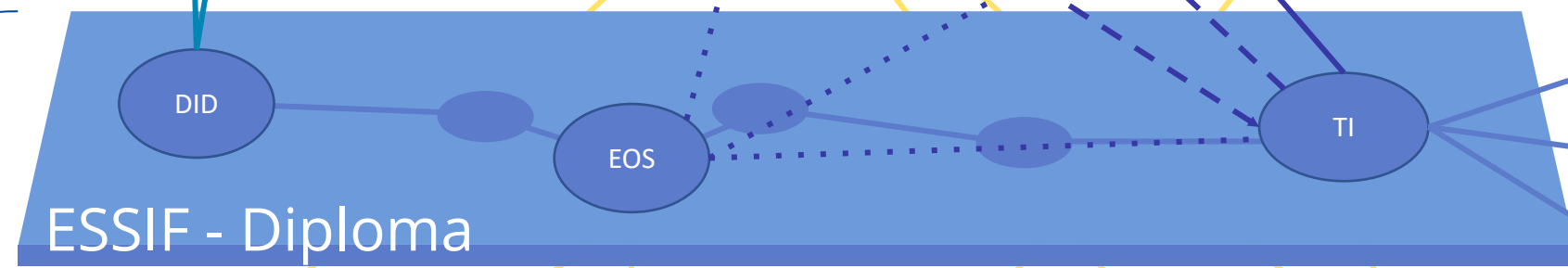
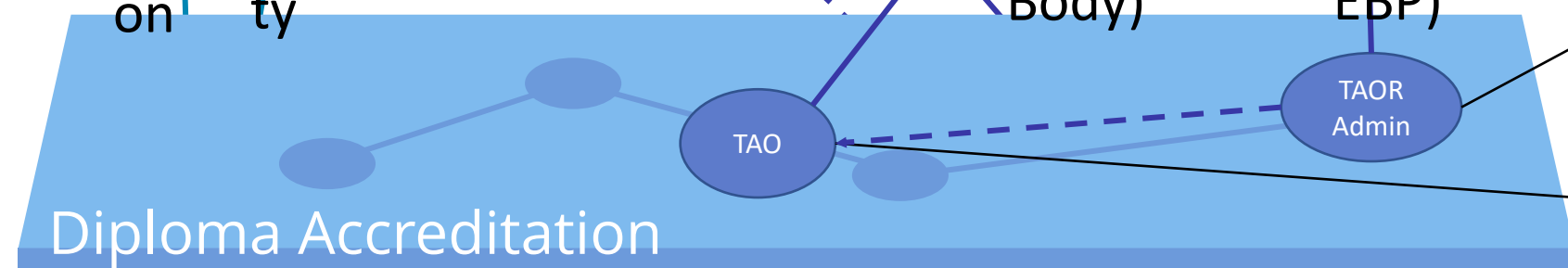
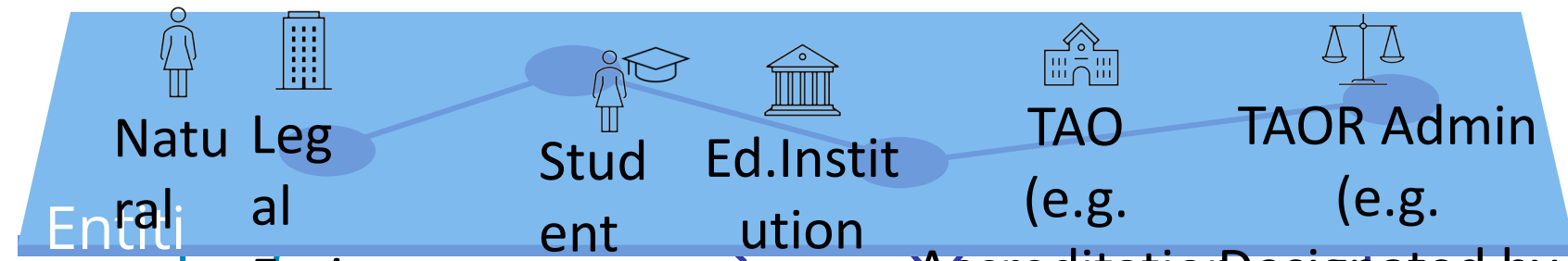
Diploma UC

Entities: Natural Persons and Legal Entity

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

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

Ledger



TAOR offline check to verify Legal Entity entitlement to become TAO

MS' TAO will do an offline check to verify Educational Institution entitlement to become TI

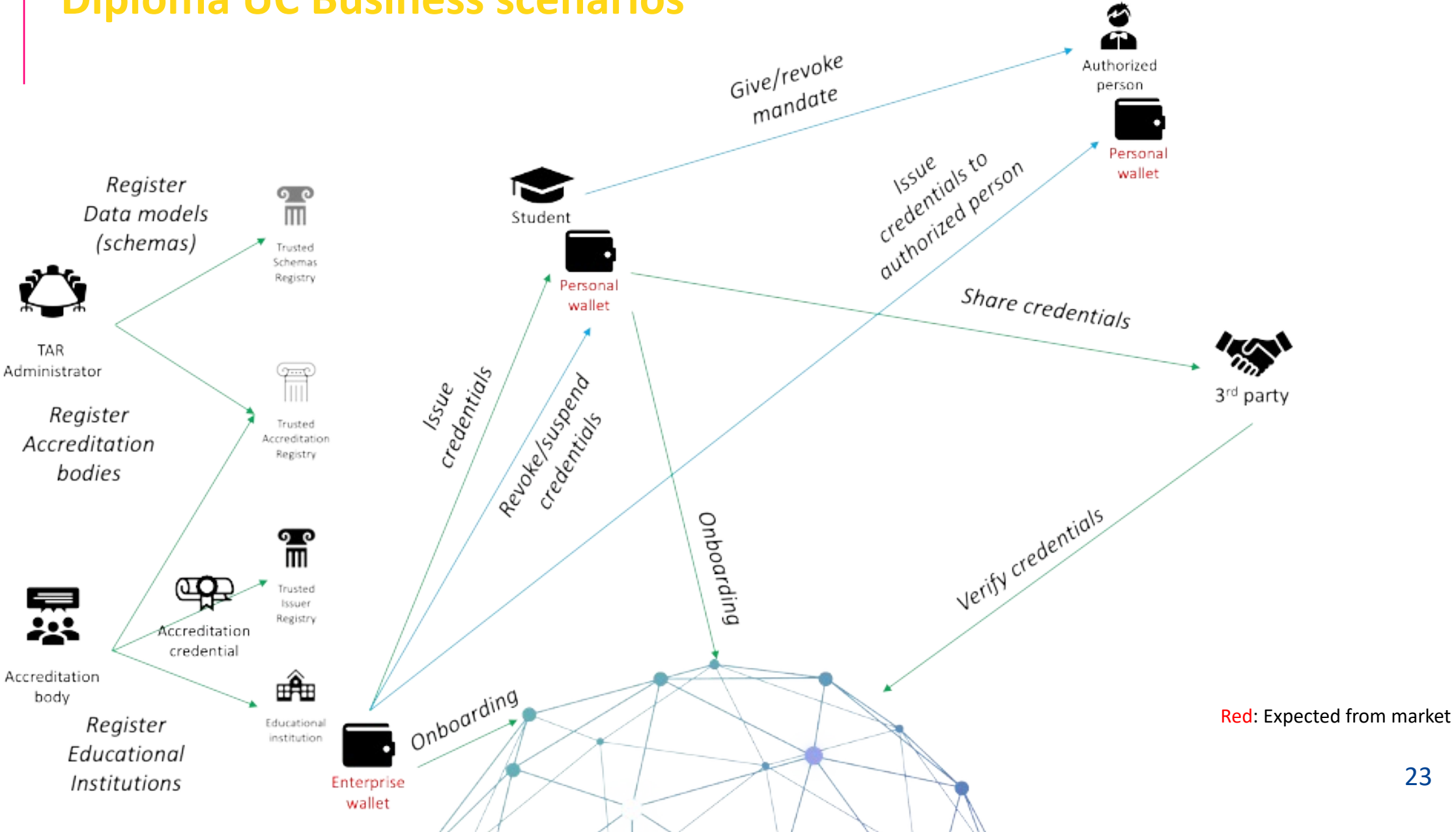
High LoA (eID)

Substantial LoA (MyAcademicID)

Low LoA (other means)

- "Can act as"
- "Is"
- - - - -> "Accredits"
- "Owns"
- "Responsible"

Diploma UC Business scenarios



Diploma Use Case Business Scenarios

Set 1

Enable the Use Case

- Register a Schema
- Registration in the trusted accreditation registry (TAR)
- Authorize an educational organization - registration in the Trusted Issuers Registry (TIR)

Onboard

- Student Onboards on ESSIF with national eID
- Educational institution Onboards on ESSIF

Diploma Use Case Business Scenarios

Set 2

Issue

- Request of an accredited credential
- Request of a non-accredited credential
- Student Requests, an Educational Institution issues and the student accepts & stores a recognition statement

Share

- Share a Credentials

Diploma Use Case Business Scenarios

Set 3

Revoke/suspend

- Educational Institution Revokes a Credential
- Educational Institution Suspends a Credential
- Revocation Authority Revokes an Accreditation
- A QAA is removed from the trusted

Consent/mandates

- Student Enrolls in Institution, and agrees to accept any credentials the institution issues while they are a student
- Student gives mandate to a natural person to request a credential on their behalf
- A natural person (e.g. student) revokes a mandate previously given to an authorized third party

Diploma UC of EBSI is based on the new paradigm (Self Sovereign Identity + Verifiable Credentials + Blockchain)

Focusing on citizen, breaking educational SILOs, enabling LLL, PLP & stacking credentials

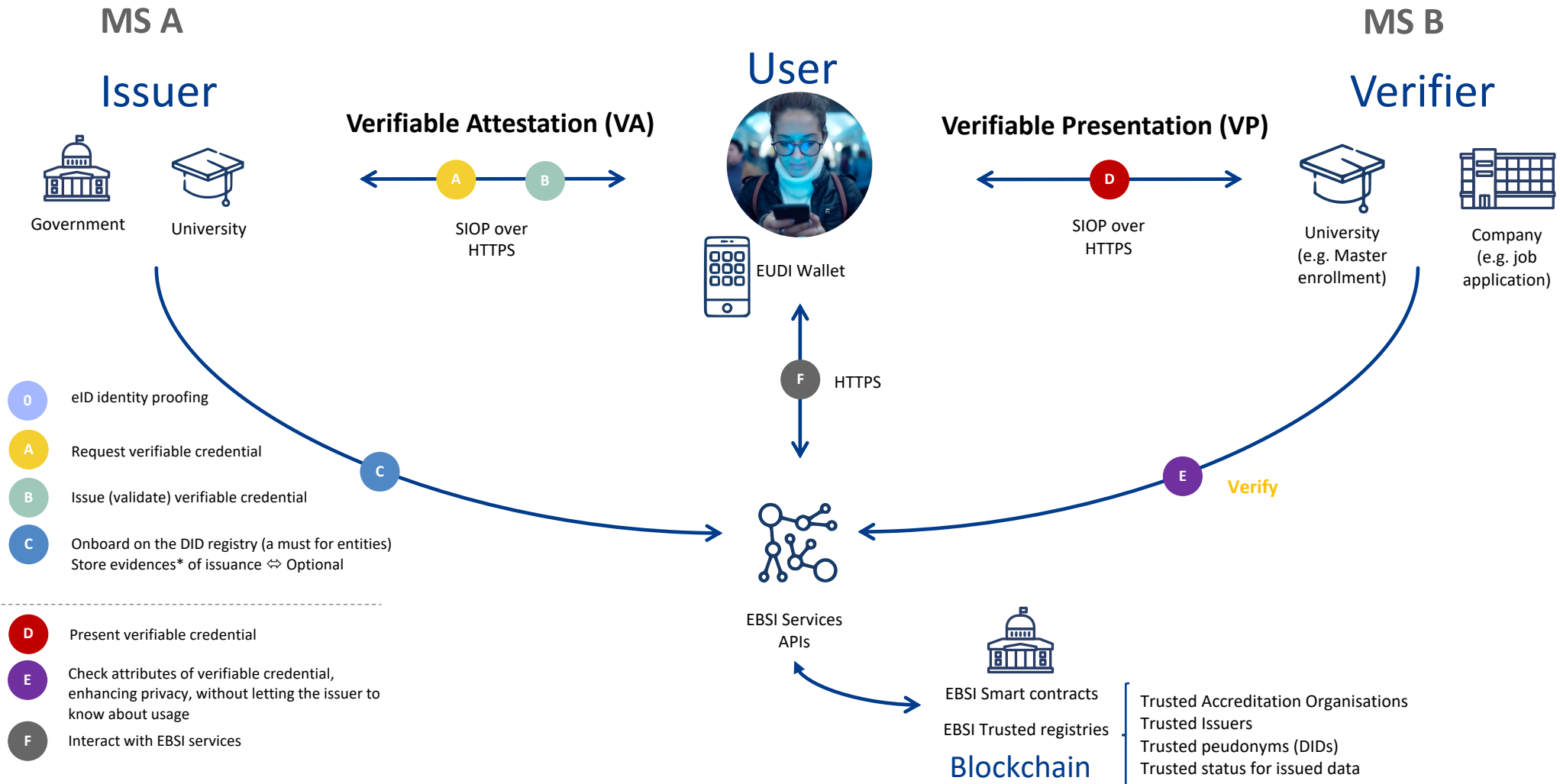


- Student mobility for both, identity and records, will be a reality (through Student's Mobile wallet)
- Lifelong Learning will be a reality: credentials are owned, managed and controlled by the citizen
- Personal Learning Pathways: even easier thanks to the stacking credentials feature (as for micro-credentials)

Aligned to:

- EU Digital Strategy
- EU Data Strategy
- EU digital credentials action plan
- EU Digital action plan
- Europass decision
- Europass Digital Credentials
- European education area
- European research area
- European universities initiative
- European skills agenda
- eIDAS trust framework
- GDPR
- Once only principle (enabling the citizens perspective)
- State of the Union address (091620) and European Council Conclusions (100220) for both, identity and data
- European Declaration on Digital Rights and Principles for the Digital Decade

The whole picture



The urgent need for a more flexible education ecosystem

Citizen-centric system by design

- Learners/citizens as the focus of any action/interaction
- Unify citizens' experience of data management (for both identity and educational credentials)

Facilitates Lifelong Learning (LLL)

- Formal, non-formal, informal education

Facilitates Personal Learning pathways (PLP)

- Stacking of verifiable credentials
- Including micro-credentials

Common data models and ontologies

- European Learning Model
- MyAcademicID data model

Supports governance

- eIDs governance
- Educational governance

Empowers public and private issuers

- Educational credentials
- European Student eID credentials (SLoA)

Support citizen as data provider

- Provide selective disclosure information from their Personal Learning Record (owned and controlled by them)
- Mandates must be supported

Supports entire educational credentials lifecycle

- Issue, share, verify, revoke, suspend, expire

Diploma UC is
making bridges
and collaborating
with major global
and European
entities,
standardization
bodies, ed.
Consortia, etc.

- W3C (VC,VC-EDU)
- DIF
- ISO
- ETSI

- MIT, Digital Credentials Consortium
- IEEE ILR
- **EMREX**
- Education 3.0

- DG-CNECT
- DIGIT
- DG-EMPL
- DG-EAC
- GEANT
- EQAR

- INATBA
- ESSIF-LABS

- GAIA-X
- ..

- Many others asking for collaboration

04

Early Adopters Programme



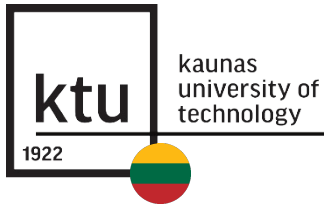
Early Adopters Programme. Imagining what EBSI can do for European citizens. ✨

An incubator to help Early Adopters and their partners imagine, build and launch their blockchain pilot project(s).



EAs are designing the MU Pilot in picture

2 European universities alliances, +18 universities from +15 countries, +EQAR



The timeline of the MU Pilot

What did they achieve so far?

21 INDIVIDUAL PROJECTS

5 CROSS-BORDER PROJECTS

Discover



Kick-off the MU pilot with Early Adopters

JUL 2021



Explore of **EBSI specifications** and define pilot scope

AUG 2021



Design pilot scenario and create **clusters** at **Design Workshop**

SEP 2021



Select of **cross-border scenarios** design integration plan

NOV 2021



Finalise **integration in pre-prod and WCT**

MAR 2022

We are here



Demo Days - Showcase the MU Pilot

Q2 2022

Narratives / Scenarios

How EBSI and education credentials can help citizens study, lives, find a job and constantly grow, across border?



Studying abroad



Scenario 1 - Get a diploma with a list of course units validated from Erasmus Transcript of Records Credential

Eva, as a Spanish citizen, she engages with the Royal Spanish Mint website to obtain a Verifiable-ID credential that it is used to get her Bachelor Degree from the University of Rovira y Virgili (1). Eva takes a Master degree at KU Leuven University (2). In that context, she goes in Erasmus for a period of 6 months at the University of Bologna in Italy (3). In order to get her diploma, she needs to accreditate the list of course taken in Italy that is verified and recognized by the KU Leuven University (4).



Scenario 2 - Apply for complementary Master with a Master from a foreign country Master Diploma Credential

Anca is a Romanian student from the Politehnica University of Timisoara (1). She took her Master Diploma at University of Athens in Greece (2) and wants to apply for a complementary Master at the University of Lille in France (3).

Living abroad



Scenario 3 - Get/receive access to local discounts using municipality credential based on European student ID Credential Municipality / European Student ID Credential

Tim is a Dutch student. He completed his Bachelor degree at Saxion University (1). Tim is going to Rovira i Virgili for his Master degree (2). During his time spent in Spain, he visits Tarragona. Thanks to his European student ID (proof of subscription) issued by the university. He presents this credentials to get access to discounts in different museums in Tarragona (using AOC) (3).

Finding a job



Scenario 4 - Apply for a job with Master Degree from a foreign country License Practice Credential

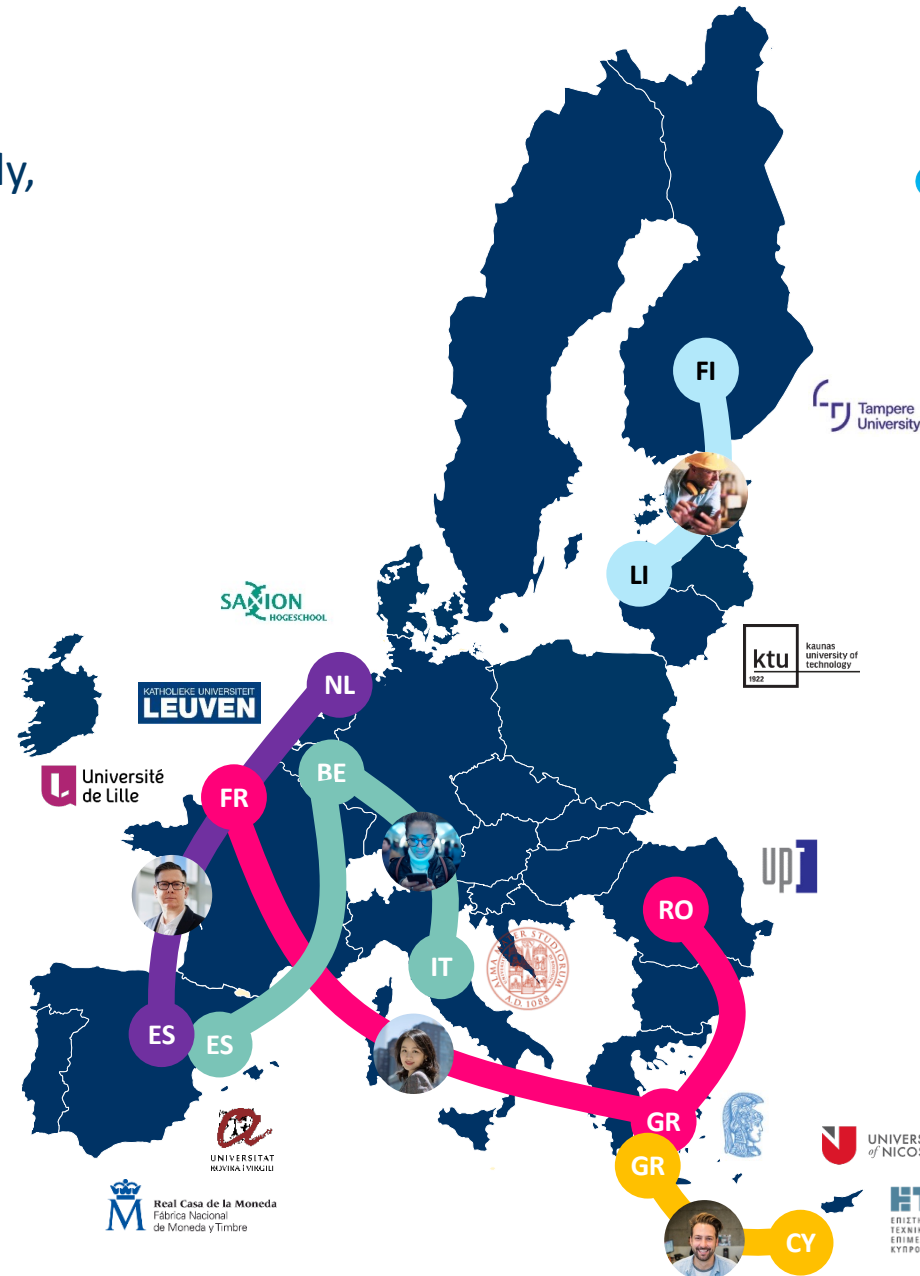
A Cypriot citizen - Nikos, is a University of Athens (Greece) graduate, who wishes to apply for an Engineering/Scientist job in Cyprus (in our scenario, a Computer Scientist vacancy). The job requires that candidates process a "Licence to practice" the specific profession according to the CY-Law; the particular "Licence" is issued by the Cyprus Scientific and Technical Chamber (ETEK) which is the statutory Technical Advisor to the State and the umbrella professional organisation for all Cypriot Engineers/Scientists. Provided Nikos possesses the required for the profession academic credentials (e.g. Computer Science Bachelor's Degree), can acquire ETEK membership and apply for his "Licence" to be issued.

Growing (personal development)



Scenario 5 - Apply for specific courses in foreign country as a young professional Micro-credentials / Workforce up-skilling

Matias is a Finnish young professional graduated from the University of Tampere (1). In the context of his job and to improve his skills he wants to take some specific courses for several weeks at the Kaunas University of Technology in Lithuania (2). His company will verify the micro-credentials received.





Stay tuned for the Demo Days

05

Q&A



06

THANK YOU!

End of the meeting

