



## **SSI framework & VC pattern piloted**

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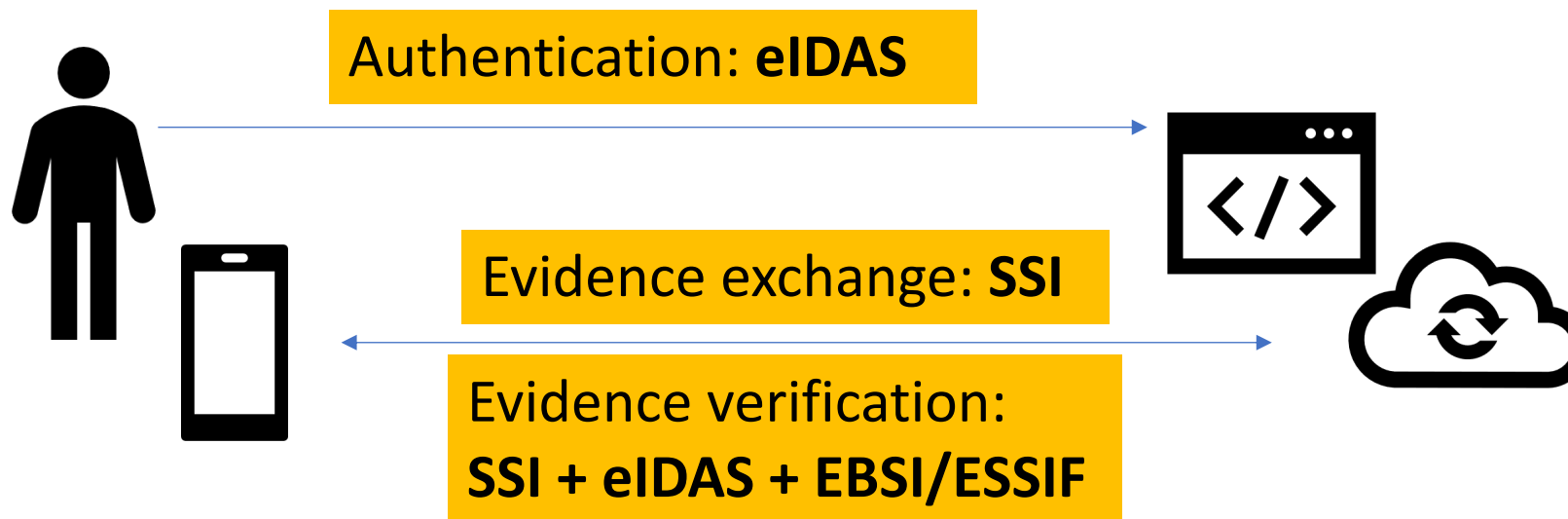
DE4A has received funding from the European Union's Horizon 2020 research and innovation programme under GA. No. 870635



# DE4A – EBSI Integration

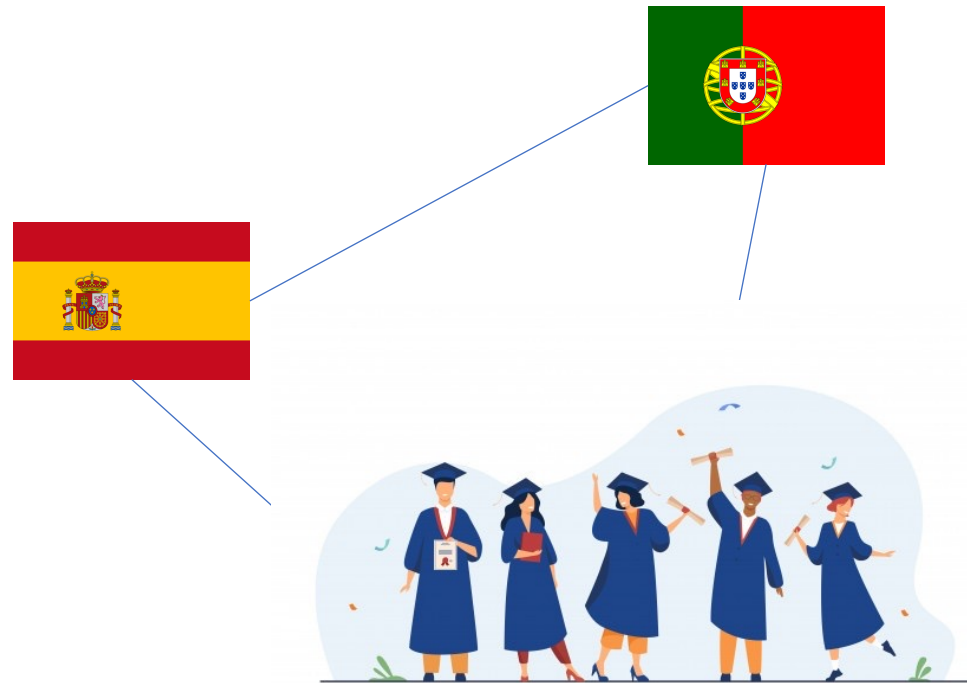
## Study Abroad Pilot: Diploma recognition (UC#3)

- DE4A uses eIDAS to facilitate the **authentication** process at **DP and DC**
- DE4A uses SSI approach to facilitate the **user-centric evidence management and exchange as VCs**
- SSI + eIDAS + [EBSI/ESSIF](#) for the **evidence verification**



# Authority agent = Enterprise wallet

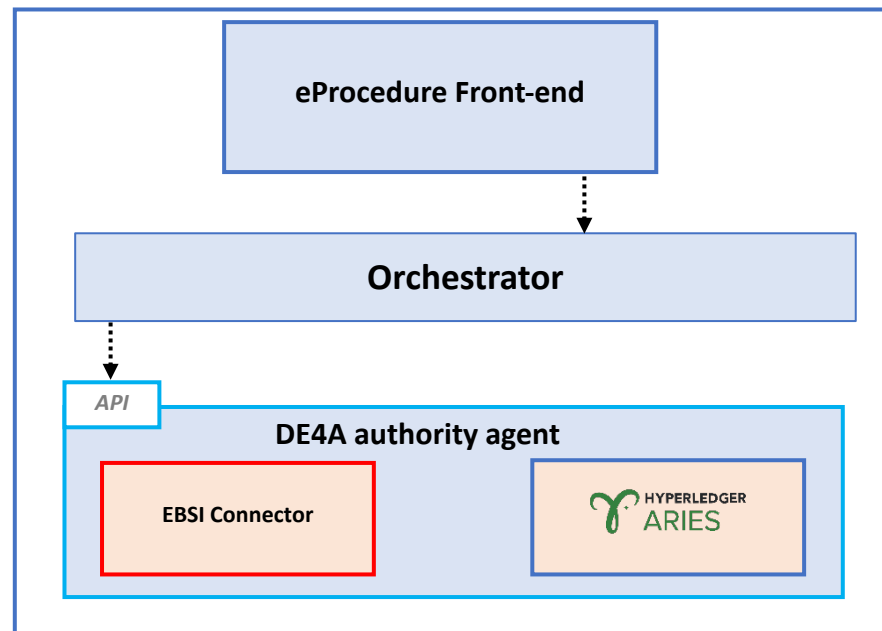
- The Enterprise wallet had to be used by our Public institutions (Trusted Issuers)
  - ISSUERS | VERIFIERS
    - Ministry of education of Slovenia
    - SGAD (Spain)
    - University of Lisbon (Portugal)



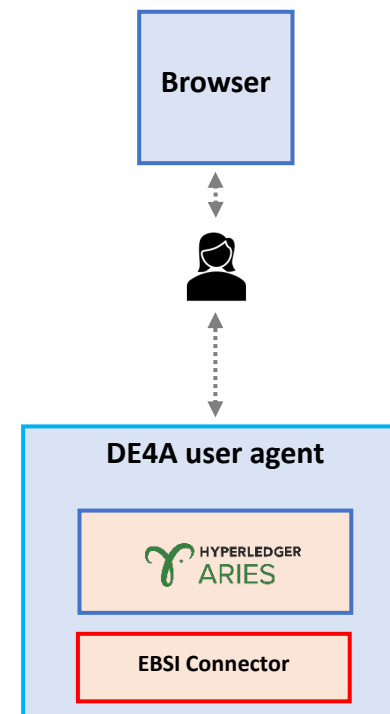
# Authority agent = Enterprise wallet

- Core technical components of DE4A, including the Enterprise wallet (left side)

## Data Producer / Provider

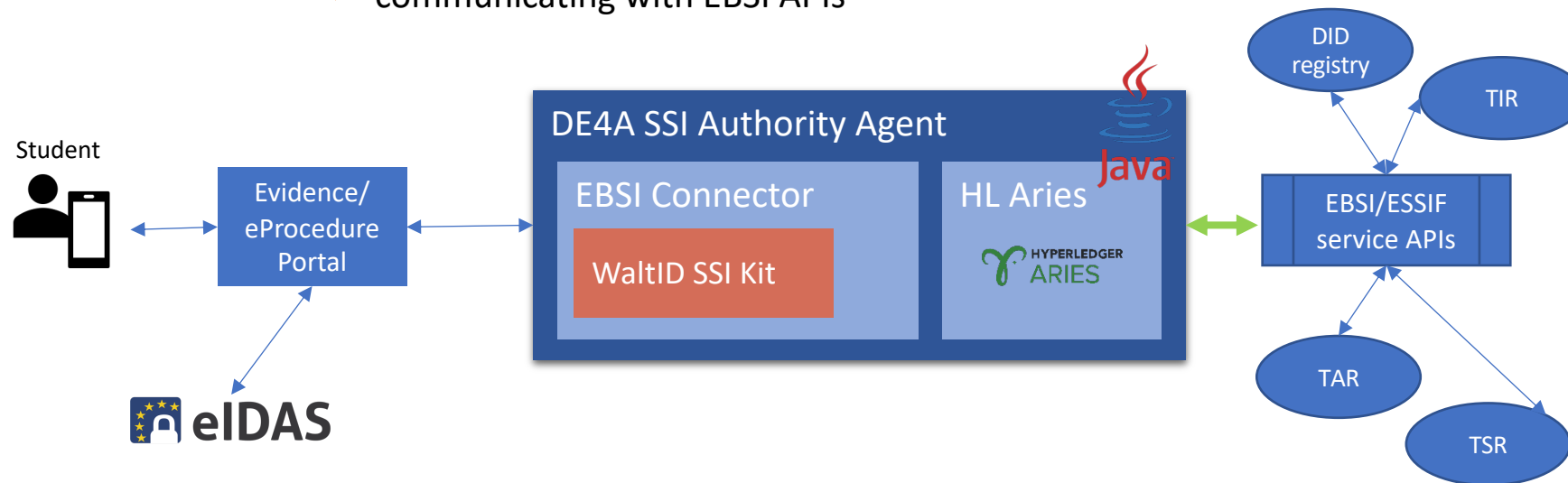


## User



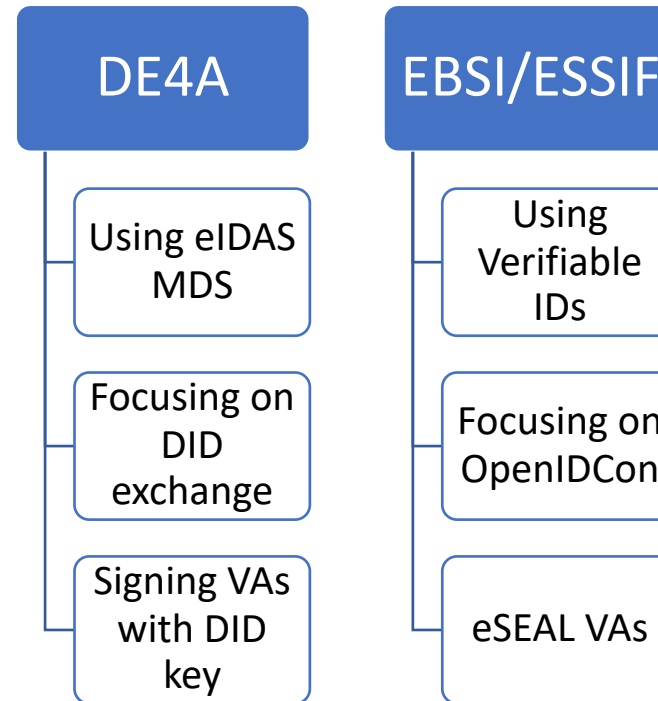
# Authority agent = Enterprise wallet

- **SSI Authority Agent** – Server-side java-powered high-level REST API for managing DID connections and support the VC issuance (DP side) and VP submission (DC side)
  - ↳ **EBSI Connector** – A component responsible for generating and anchoring DID:EBSI
  - ↳ **Walt.ID SSI Kit** – separate component responsible for communicating with EBSI APIs



# Authority agent = Enterprise wallet

- General discrepancies between DE4A and EBSI/ESSIF
  - We had to use eID and eIDAS for identification and authorization
  - We wanted to support SSI as much as possible



# Authority agent = Enterprise wallet

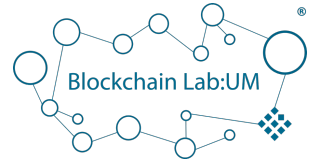
- Adapting the current infrastructure
  - FRONTEND
  - BACKEND

The screenshot shows the 'Enrolment application for study' website. The header includes the title 'Enrolment application for study' and the logo 'eVŠ Visoko šolstvo v Sloveniji'. Navigation links for 'CALLS FOR ENROLMENT', 'INSTRUCTIONS FOR COMPLETING THE APPLICATION', and 'FAQ' are present, along with language options 'SLO | ENG'. A sidebar menu on the left contains links for 'How do I apply?', 'Digital certificates', and 'What will happen to my application?'. A prominent button reads 'Continue to login with SI-PASS', and a large QR code is displayed in the center of the page.

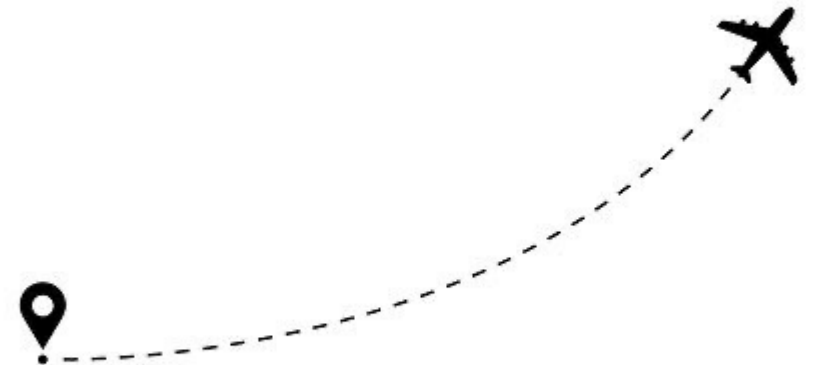


# PILOTING within DE4A

- **Real-life piloting, MS-driven & MS-oriented**
- **Real users, real data, integrated with MS infrastructure**
- **Validated multi-pattern architecture and (general & domain specific) solutions to facilitate MS integration with OOTS**
- **Solutions beyond OOTS anticipate further evolution**
  - VC supported on DLT infrastructure => synergies with revised eIDAS Regulation (EUDI Wallets)



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# Lesson learnt - BENEFITS

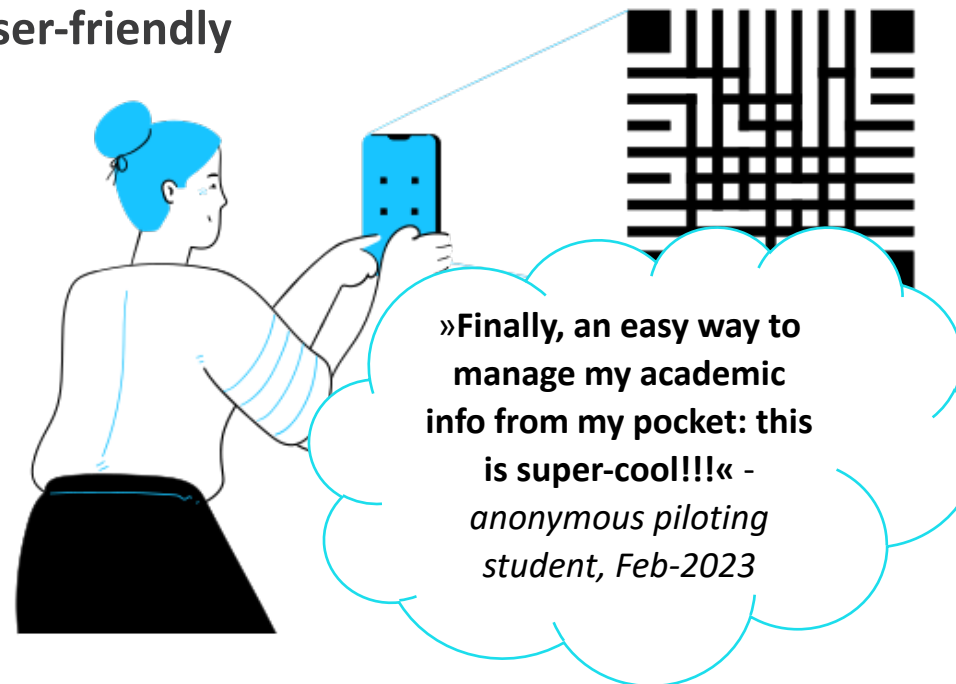
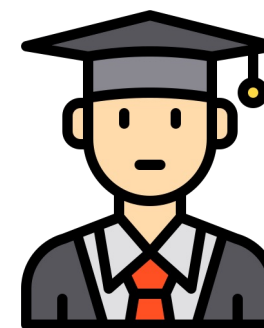
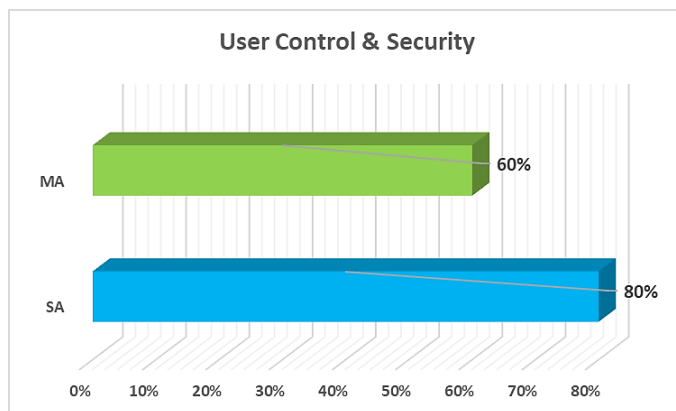
- **From public institutions perspective**
  - **Experience with Verifiable Credentials** aligned with Europass-EDCI data models for **student-centric evidence provision**
  - **Efficiency gains and reduction of administrative burden, costs and barriers** in cross-border public services => **High quality delivery of cross border public services**
  - **Trustworthiness and quality of data** key for adoption and error reduction in processing
  - **Administrative burden reduction:** from days to 20-30 minutes in SA per end-user at DEs when all data are available (15 min saved per end-user at DOs; hundreds of person-hours per year and per DE (DBA))
  - **High satisfaction with procedure duration**
    - Few minutes (2-5 minutes most cases), Slightly faster for VC pattern (60 seconds) at each endpoint



# Lesson learnt – BENEFITS

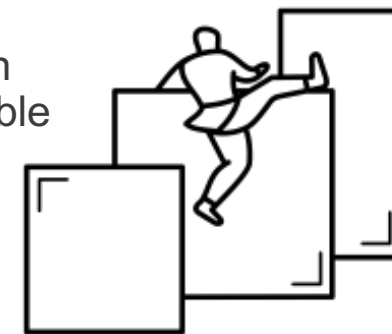
- **From students perspective**

- Experience with modern tech (VC, digital wallets etc.)
- Gathers evidences and builds a portofolio
- **Saves a lot of time**, since the moment the student has acquired the evidence (e.g., diploma) **once**
- Are **more organized**
- **Full control of her data** (even if cross broder)
- **Mobile-first approach** is naturally more **user-friendly**
- Enables selective disclosure



# Lessons learnt - CHALLENGES

- Challenges and lessons learnt 1/2
  - **Integrating into existing IT infrastructure and services**
  - Understanding the reasons **WHY**
  - **Understanding new concepts** (DIDs, VCs, DID:Comm)
    - In-depth technical expertise (eIDAS, EBSI)
  - **Deploying and kickstarting**
    - Security assessments
    - **Connectathons** helped
  - Could take up to 3-6 months for a Hello World
    - Collaboration between multiple technical teams during the critical phases of pilot customization, integration and testing addressing issues
      - use of instant messaging channels e.g. Slack
    - Consideration of MS decision-making procedures with varying internal requirements (e.g. security and audits)
    - Use of reference implementations of common components and common testing environment ('Playground' in DE4A) has proven extremely valuable



# Lessons learnt - CHALLENGES

- Challenges and lessons learnt 2/2
  - **Continuous changes of the standards**
  - Need to consider national (jurisdictional) barriers that may arise in certain procedures
  - Semantic data models are key for interoperability and record matching procedures are key to avoid errors in issuance but also in presentation of evidence
  - The Enterprise wallet takes Canonical evidence in XML and transforms it into VC



# Digital wallet options

