

Supplementary material

Scenario 1: Issuance and storage of a verifiable student identity by Unibo (IT)

Step 1: Eva opens the Una Europa student exchange website and request a Unibo verifiable student identity

Una Europa student exchange

The exchange process is digitally facilitated based on a Verifiable student identity and Verifiable transcript of records. Trustworthiness of the credentials is empowered by the **European Blockchain Service Infrastructure**.

Before exchange

- Request Unibo verifiable student identity
- Apply for exchange at KU Leuven based on SSI

After exchange

- Request KU Leuven verifiable transcript of records
- Upload verifiable transcript of records in Unibo student file

Step2: Eva is redirected to the Unibo student portal to authenticate herself as a Unibo student

Alma Mater Studiorum
University of Bologna

DSA

PREPRODUCTION environment

Enter the University institutional credentials.

eva.ebsi@unibo.it

Sign in

Having trouble logging in?

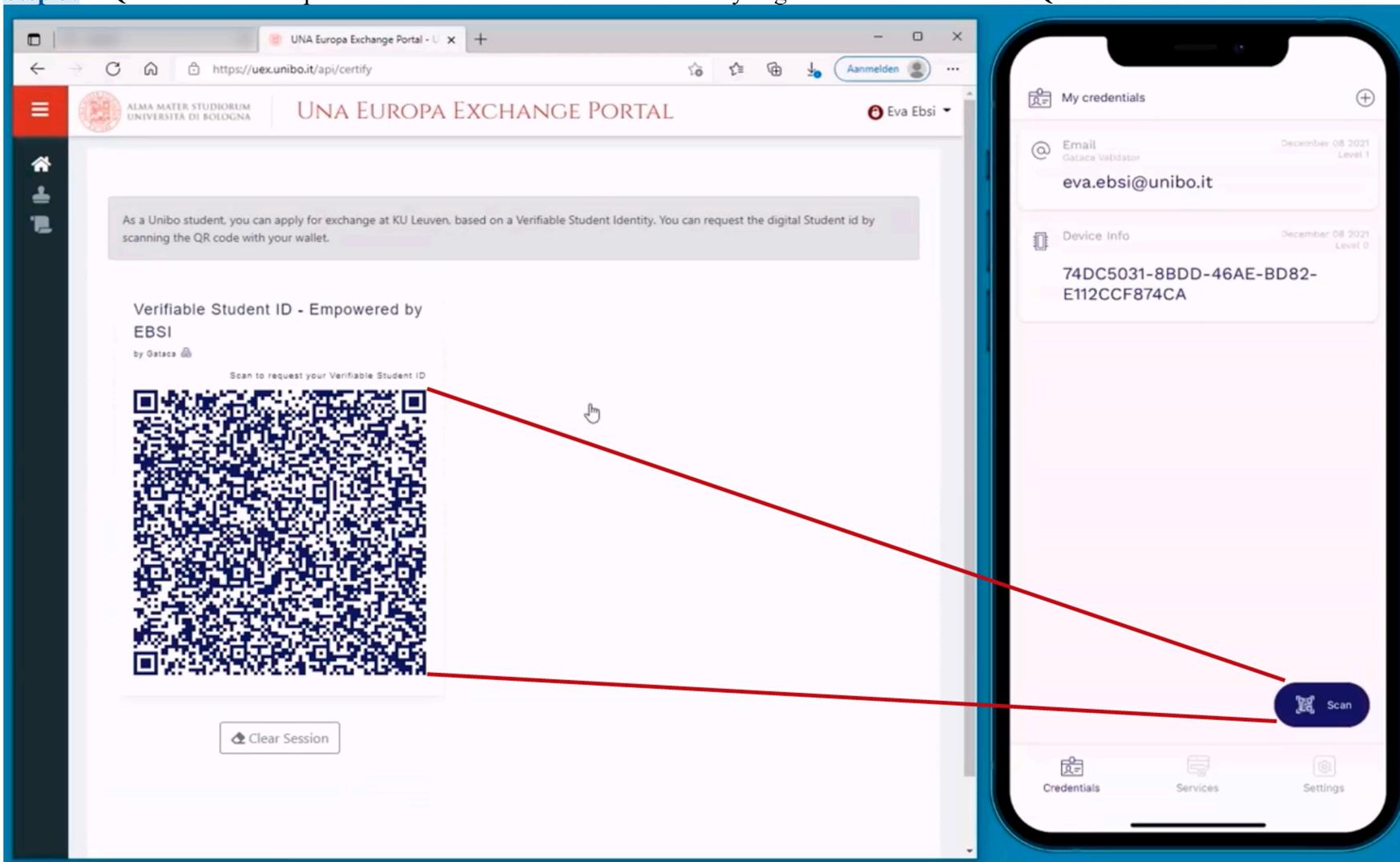
Forgot your credentials? | Do you want to change your password?

More information about credential
Choose the appropriate credential type:

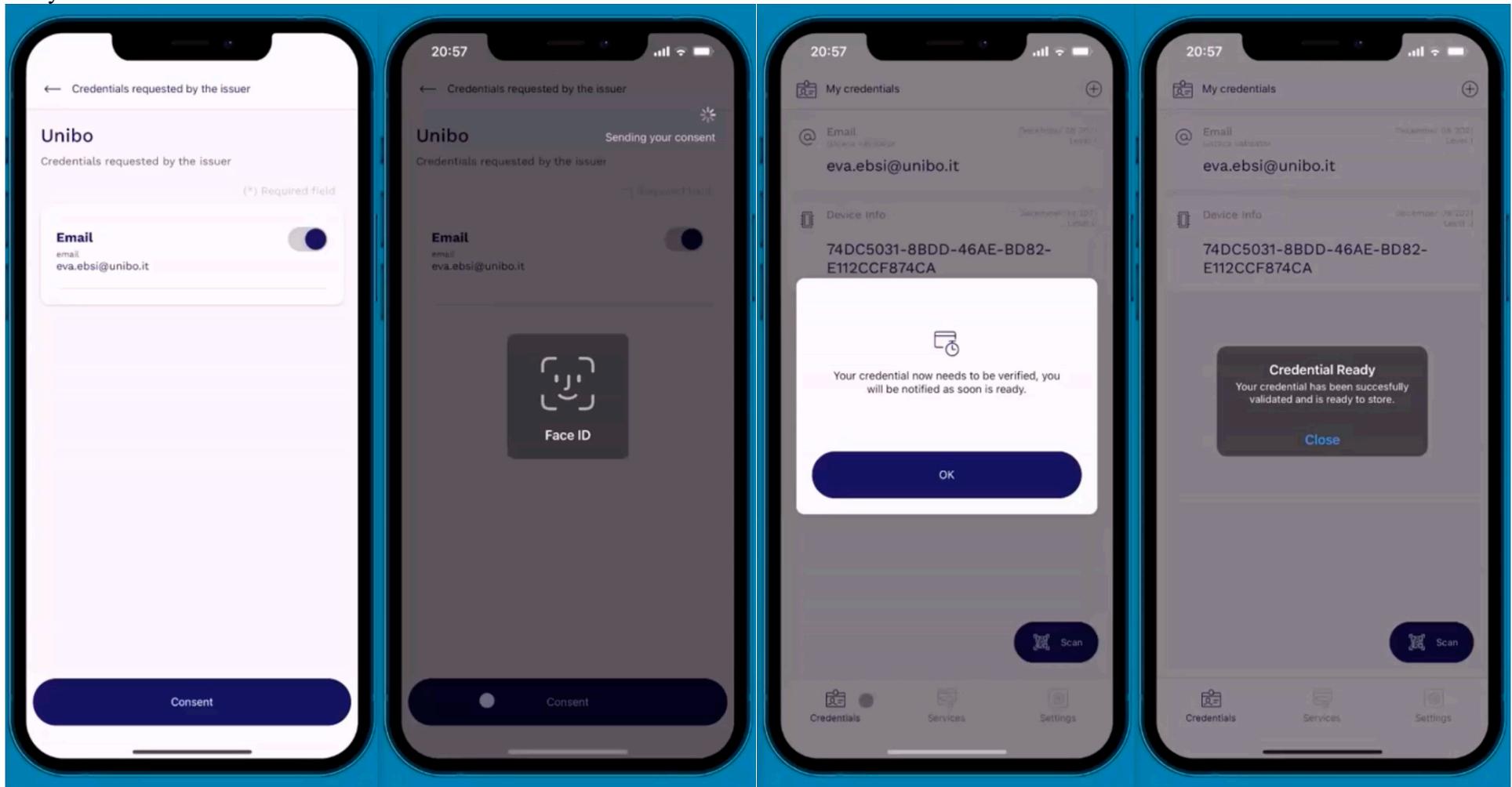
- @studio.unibo.it
- @unibo.it
- @esterni.unibo.it

Privacy policy

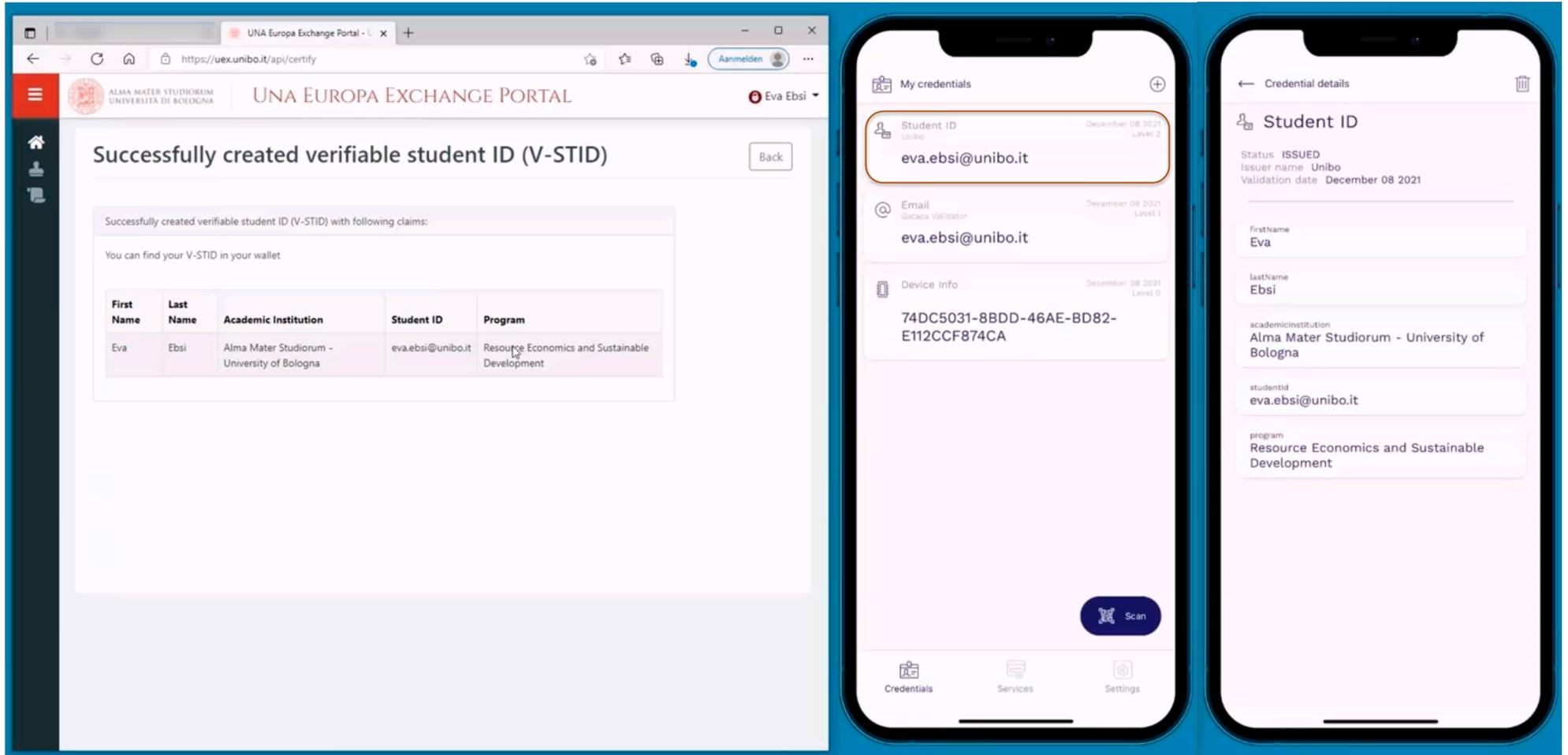
Step 3: A QR code with a request for a Unibo verifiable student identity is generated. Eva scans this QR code with her user wallet



Step 4: (1) Eva is asked to share her student email credential. (2) She gives consent, proves control over the DID and submits the request for a verifiable student identity to Unibo. (3) Eva receives a message in her wallet, saying the credential needs to be verified. She will be notified as soon as the credential is ready. (4) The request is processed by the Unibo backend system where the email credential is automatically checked against the student account. When the request is validated, a verifiable student identity is generated, assigned to the DID of Eva's wallet and signed by Unibo. (5) The student is notified that the credential is ready to be stored in the wallet.



Step 5: (1) The credential is stored in Eva's wallet. (2) Eva can open the credential on her wallet.



Scenario 2: Presentation and verification of verifiable student identity by KU Leuven (BEL)

Step 1: (1) Eva wants to apply at KU Leuven as an exchange student. She goes to the Una Europa student exchange website and requests to apply for exchange. (2) A QR code with a request to share the Unibo verifiable student identity is generated. Eva scans the code with her user wallet.

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Before exchange

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After exchange

- Request KU Leuven verifiable transcript of records
- Upload verifiable transcript of records in Unibo student file

Apply for exchange at KU Leuven with your Unibo Student identity

As a Unibo student, you can apply for exchange at KU Leuven based on your digital Unibo Student identity. Your Student identity credential is verified based on blockchain technology empowered by EBSI.

Easy login

Scan to sign in

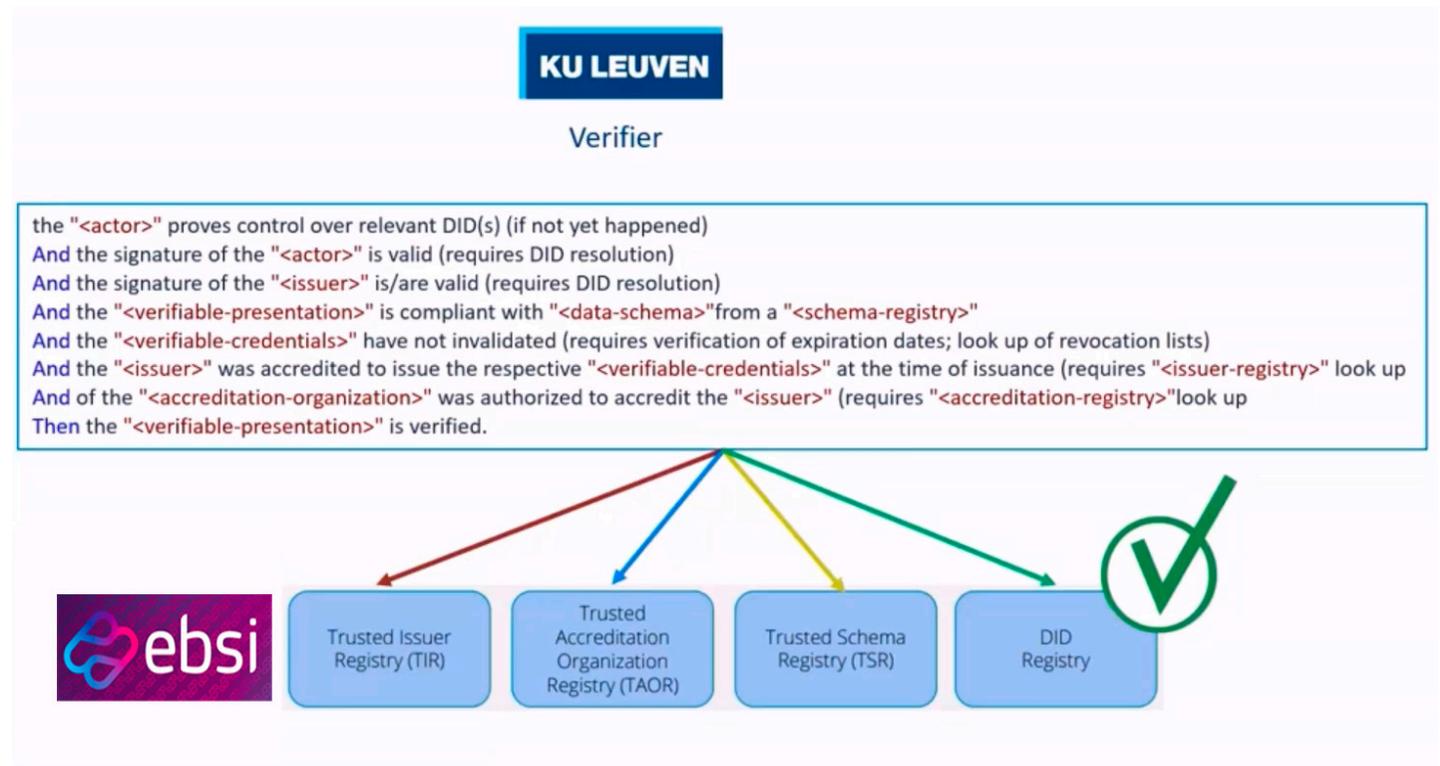
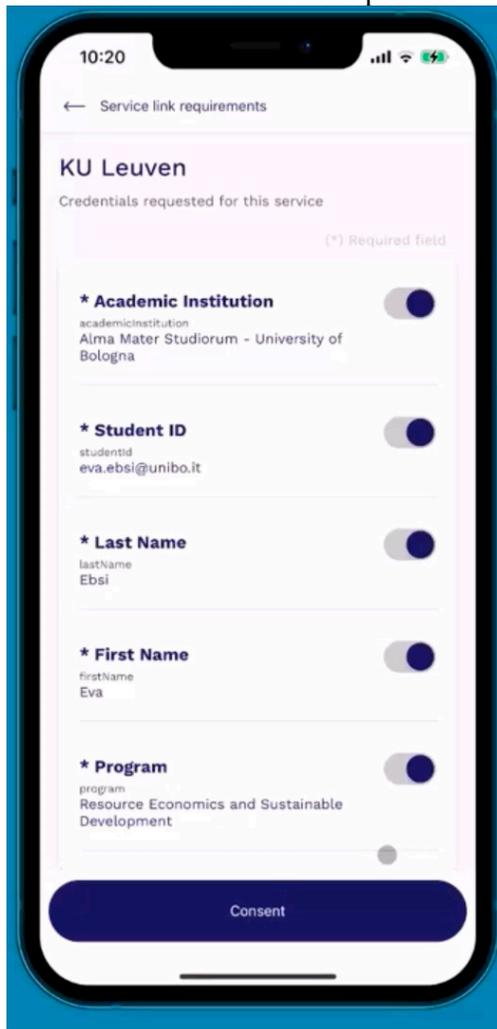
Clear Session

Scan

My credentials

- Student ID: eva.ebsi@unibo.it
- Email: eva.ebsi@unibo.it
- Device info: 74DC5031-8BDD-46AE-BD82-E112CCF874CA

Step 2: (1) Eva is asked to share (a part) of her Unibo student identity with KU Leuven. She gives consent, proves control over the DID and sends the info to KU Leuven. (2) The verifiable student identity is verified by KU Leuven. The trusted registries on the EBSI blockchain are consulted in this verification process.



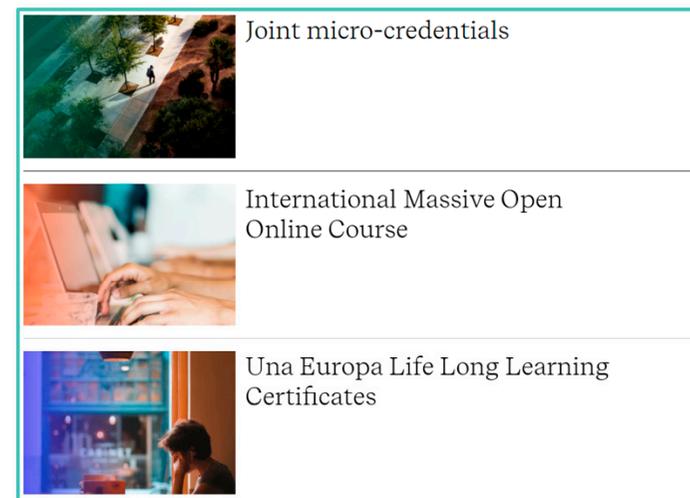
Step 3: After successful authentication based on the Unibo Student identity, the application form can be pre-filled with student info data. The Unibo student identity can also be used during her stay at KU Leuven to subscribe in / login to online courses.



An application form can be prefilled with claims shared by Eva

A screenshot of a web application form titled 'Enroll as an exchange student'. The header shows 'ASSOCIATIE KU LEUVEN' and 'Enroll as an exchange student'. Below the title, it says 'Status: Nieuw' with an information icon. The form is divided into sections, with 'PERSONAL DATA' expanded. The fields are: '*Name:' with the value 'Ebsi'; '*First name:' with the value 'Eva'; 'Call name:' with an empty field and a question mark icon; and '*Gender:' with a dropdown menu. At the bottom, there are three buttons: 'Save', 'Submit', and 'Back'.

The verifiable student id can be used to subscribe / login to online courses



Scenario 3: Issuance and storage of a verifiable transcript of Records (KU Leuven)

Step 1: (1) Eva wants to share the obtained KU Leuven credits with her home university Unibo. She goes to the Una Europa student exchange website and requests a KU Leuven verifiable transcript of records. (2) A QR code is generated with the request to issue the verifiable transcript of records based on the presented Unibo verifiable student identity. Eva scans the QR code with her user wallet.



Una Europa student exchange



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Before exchange

Request Unibo verifiable student identity

Apply for exchange at KU Leuven based on SSI

After exchange

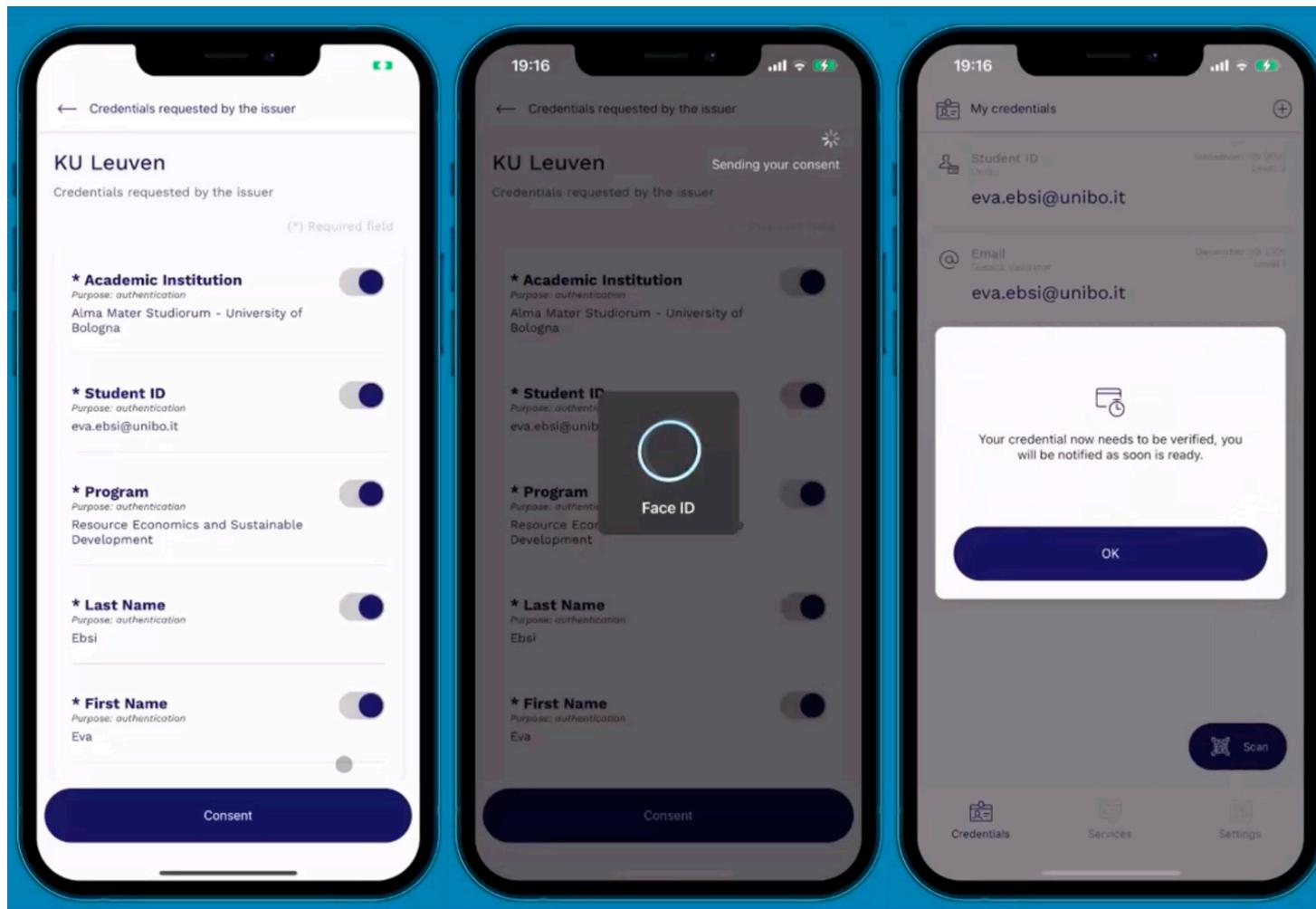
Request KU Leuven verifiable transcript of records

Upload verifiable transcript of records in Unibo student file

The screenshot shows a web browser displaying the KU Leuven website. The page title is "Request your KU Leuven Transcript of Records". Below the title, there is a QR code labeled "Verifiable Transcript of Records Empowered by EBSI". To the right of the QR code is a "Scan to sign in" button. Below the QR code is a "Clear Session" button. The browser address bar shows the URL: https://icts.kuleuven.be/fintoep/vstddid/api/certify/tor. The website header includes the Una Europa logo and navigation buttons for About, Initiatives, Stories, Calendar, and Get involved. The mobile app interface on the right shows a "My credentials" screen with fields for Student ID (eva.ebsi@unibo.it), Email (eva.ebsi@unibo.it), and Device Info (74DC5031-8BDD-46AE-BD82-E112CCF874CA). A "Scan" button is visible at the bottom of the app interface. Red lines connect the QR code on the website to the Scan button on the mobile app.

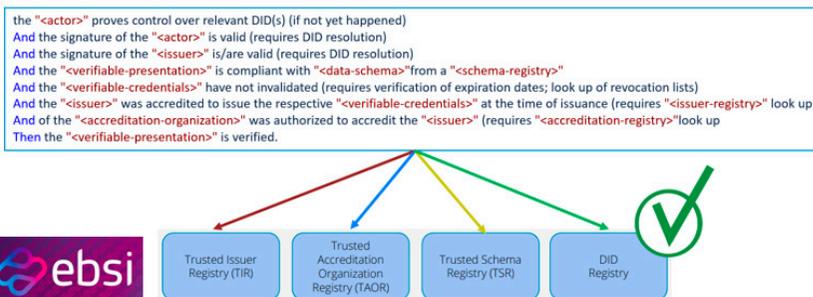
Building a

Step 2: (1) Eva is asked to authenticate herself based on (part of) the Unibo verifiable student identity. She shares her Unibo student identity with KU Leuven to authenticate herself. (2) She gives consent, proves control over the DID and submits the request for a verifiable transcript of records to KU Leuven. (3) Eva receives a message in her wallet, saying the credential needs to be verified. She will be notified as soon as the credential is ready.



Step 3: The request is processed by the KU Leuven backend system: the verifiable student identity is verified, the corresponding student file is retrieved, the obtained credits are put in the data schema of a verifiable transcript of records, the credential is signed by the KU Leuven and a notification is sent to Eva's user wallet.

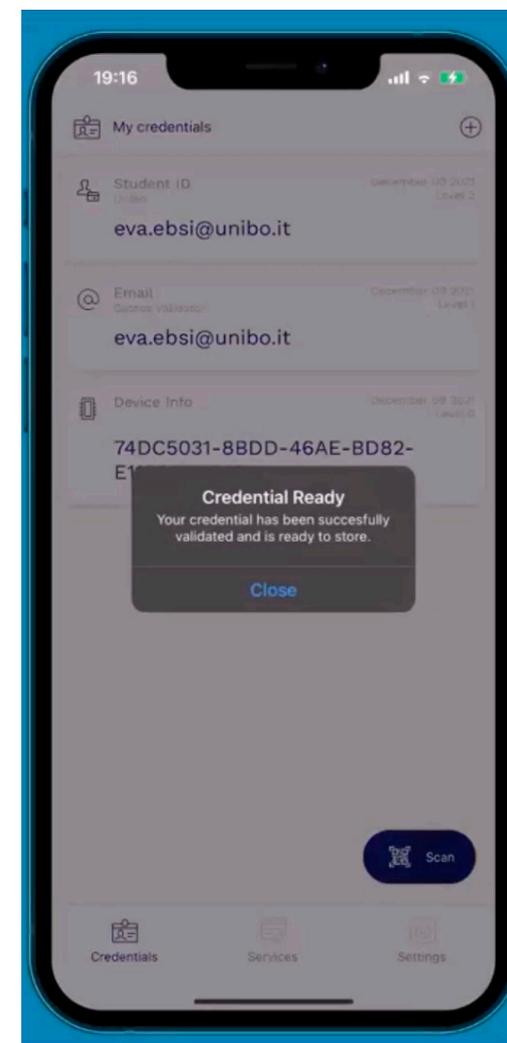
→ The shared V-STID is verified by KU Leuven



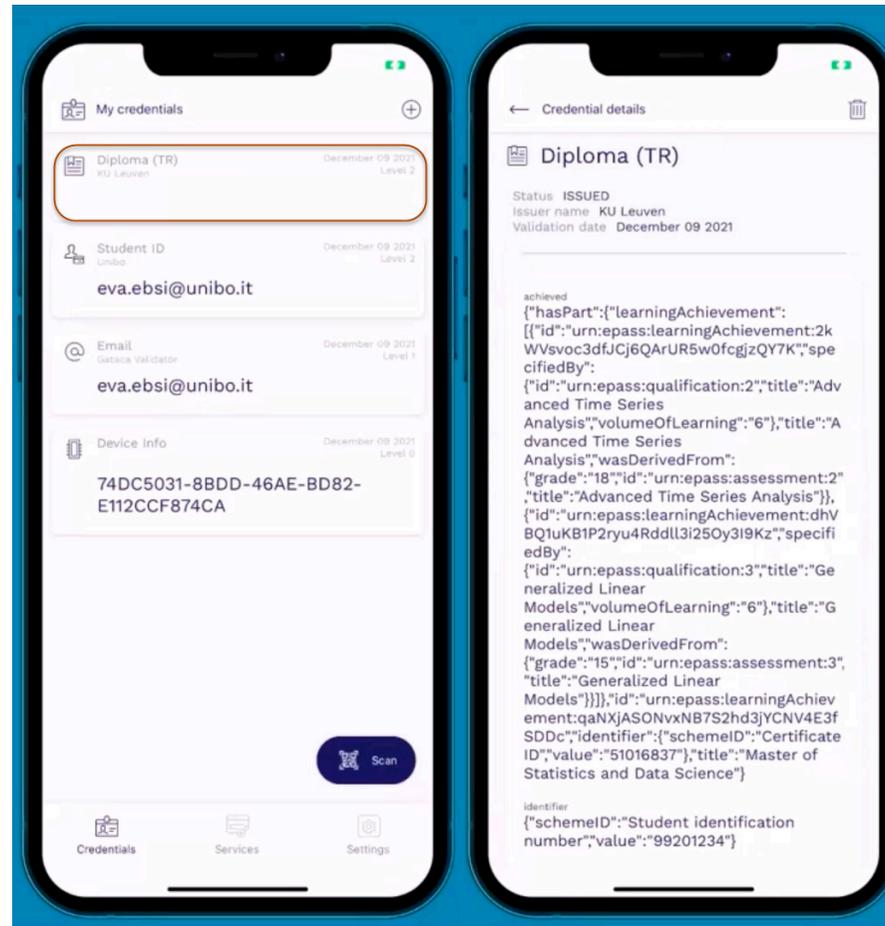
→ The obtained KU Leuven credits are retrieved from the Student Lifecycle management system



→ A Verifiable Transcript of Records is issued and sent to Eva's wallet



Step 4: (1) The credential is stored in Eva's wallet. (2) Eva can open the credential on her wallet. Since the data schema is more complex for a transcript of records, the data is for the moment displayed in json format. In the future, a user friendly representation of complex data schemes is desirable.



Scenario 4: Presentation and verification of a verifiable transcript of records by Unibo (IT)

Step 1: (1) Eva wants to share the obtained KU Leuven credits with her home university Unibo. She goes to the Una Europa student exchange website and requests to share her verifiable transcript of records with Unibo. (2) A QR code is generated with the request to share the verifiable transcript of records. Eva scans the QR code with her user wallet.



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Before exchange

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Apply for exchange at KU Leuven based on SSI

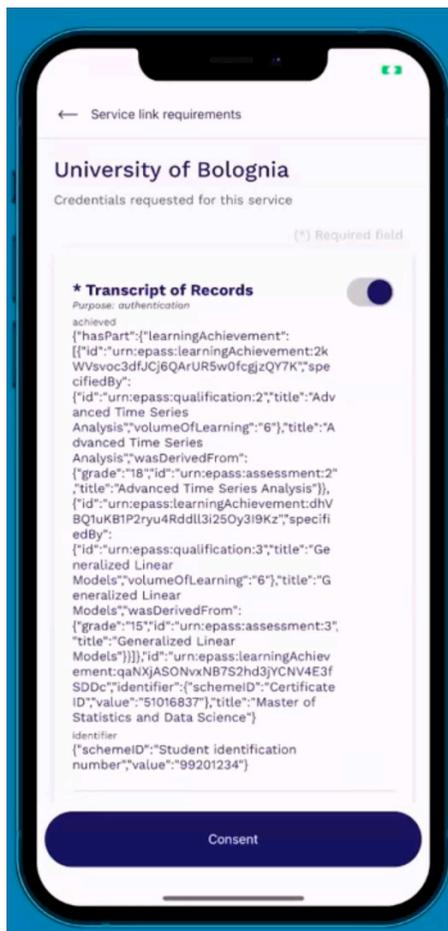
After exchange

Request KU Leuven verifiable transcript of records

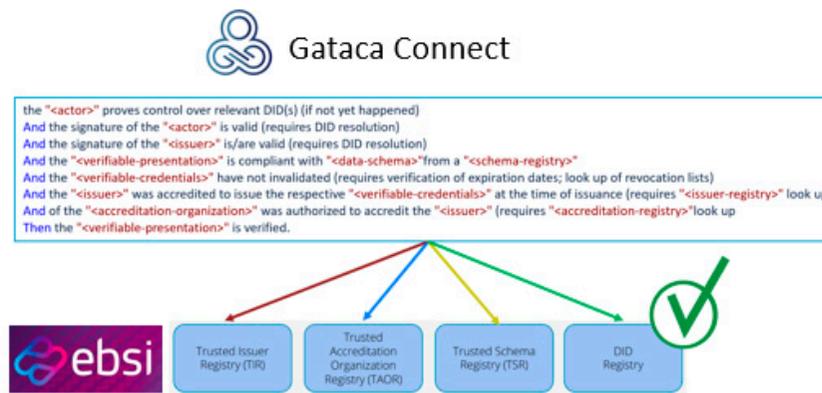
Upload verifiable transcript of records in Unibo student file

The image is a composite showing a web browser window on the left and a mobile wallet app on the right. The browser window displays the URL 'https://icts.kuleuven.be/fitoop/vstdid/api/connect/tor' and the page title 'Share your Transcript of Records with Unibo (only for exchange with KU Leuven)'. It features a QR code and a 'Scan to sign in' prompt. The mobile app, titled 'My credentials', shows fields for 'Diploma (TR)', 'Student ID', 'Email', and 'Device Info'. A red arrow points from the QR code in the browser to the 'Scan' button in the app. Another red arrow points from the 'Scan' button back to the QR code. The bottom of the browser window shows the text 'Building a University of the'.

Step 2: (1) Eva gives consent to share both her Unibo V-STID and her KU Leuven V-ToR and proves control over the DID. The shared credentials are verified by Unibo and the obtained credits are stored in the student file on the Unibo backend system.



→ The shared V-STID and V-TOR is verified by the Gataca Connect component installed at Unibo



→ The obtained KU Leuven credits are stored in the Student Lifecycle management system

