



European University Alliance for Global Health

eduTAP

<https://eduTAP.eu>

From local services to shared services

an eduTAP showcase

Alexander Loechel – EUGLOH WP 1.5 Workshop – 2026-04-21 – Lund University



Co-funded by the Erasmus+ Programme of the European Union

www.eugloh.eu

Services – Which Services?

- How many **services** (physical and digital) does your university **provide**?
- How many of these are actually *used*?
- How many are even *known* to students and staff?
- And: are these really “*services*” – or just “*offerings*”?

If nobody uses it, is it still a service?

What is a service?

Definitions:

Service:

*“A **service** is a means of delivering **value to customers** by facilitating **outcomes** that **customers want to achieve** without the ownership of specific **costs** and **risks**.”*

ITIL Practitioner Guidance

Customer

- Defines requirements
- Expects value
- Pays for the service

Customer ≠ Consumer
offering ≠ service

Consumer

- Actually uses the service

→ We mostly focus on the offering, not the service

→ No usage → no value → no service

Universities as service ecosystems

Core-Business of a University:

- Learning and Teaching
- Research
- Transfer

Services of a modern / smart campus
are all enabling capabilities

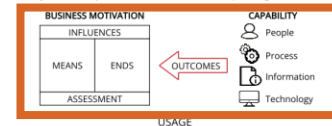
- ✓ access the course catalog
- ✓ access the Wifi (eduroam)
- ✓ access the Learning Management System or Video-Platform
- ✓ access the course material
- ✓ access to library resources
- ✓ giving access to rooms / campuses
- ✓ serving food in canteens or cafes
- ✓ copying & printing
- ✓ attendance registration
- ✓ transport

HIGHER EDUCATION BUSINESS REFERENCE MODEL



DESCRIPTION
The Higher Education Business Capability Model describes a standard set of Business Architecture elements relevant to Higher Education. It can be used as a reference for Business Stakeholders, Enterprise Architects, and Technology Strategists to engage in discussion regarding business effectiveness, needs, and challenges. Standing alongside the accompanying Business Model Canvas, the Business Capability Model elaborates the core value chains for higher education and their underlying business capabilities.

UNDERSTANDING BUSINESS CAPABILITIES
A Business Capability is a particular logical combination of People, Process, Information, and Technology necessary to deliver a discrete required outcome to achieve a specific business objective. The business capabilities support the realisation of an institution's strategies. This model supports the development of strategies by viewing an institution as a collection of business capabilities that can be adjusted in response to the demands of the operating environment.



The Business Capability Model serves as an anchor for assessing perspectives such as strategic importance, maturity, business operational pain points, capital investment, and organisational structure. It presents a view of the organisation with traceability from business objectives through to the information, technology, and other resources required to support them.

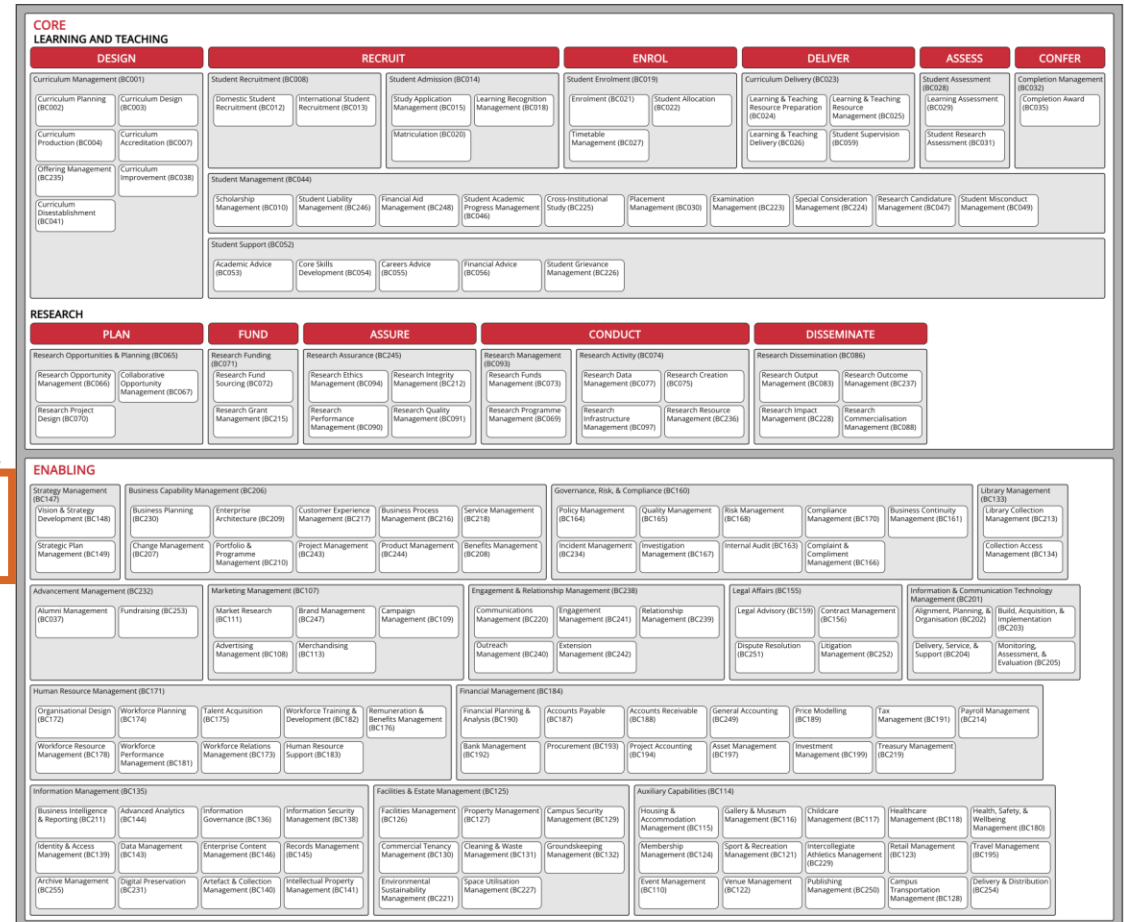
MAJOR CONCEPTS
Typically an **ORGANISATIONAL STRUCTURE** would be included to provide context for the scope of the model.

VALUE CHAINS capture how the institution generates value through Learning & Teaching and Research.

CORE business capabilities directly support the Value Chains and are organised under the relevant Value Chain Segment.

ENABLING business capabilities support the core capabilities across the value chains and keep the institution running.

FURTHER INFORMATION
Definitions of each model element are provided in the accompanying Business Reference Model Catalogue, and supporting commentary is provided in the accompanying Business Reference Model Explainer.



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What successful services have in common

Two examples:

Library

- ✓ physical + digital
- ✓ long-established
- ✓ clearly visible
- ✓ integrated in workflows

eduroam (Wifi)

- ✓ seamless access
- ✓ cross-institutional
- ✓ one account / login, many locations
- ✓ strong branding

These services succeed not because of technology, but because of:

- visibility
- simplicity
- trust
- integration into daily workflows

The hidden complexity of higher education services

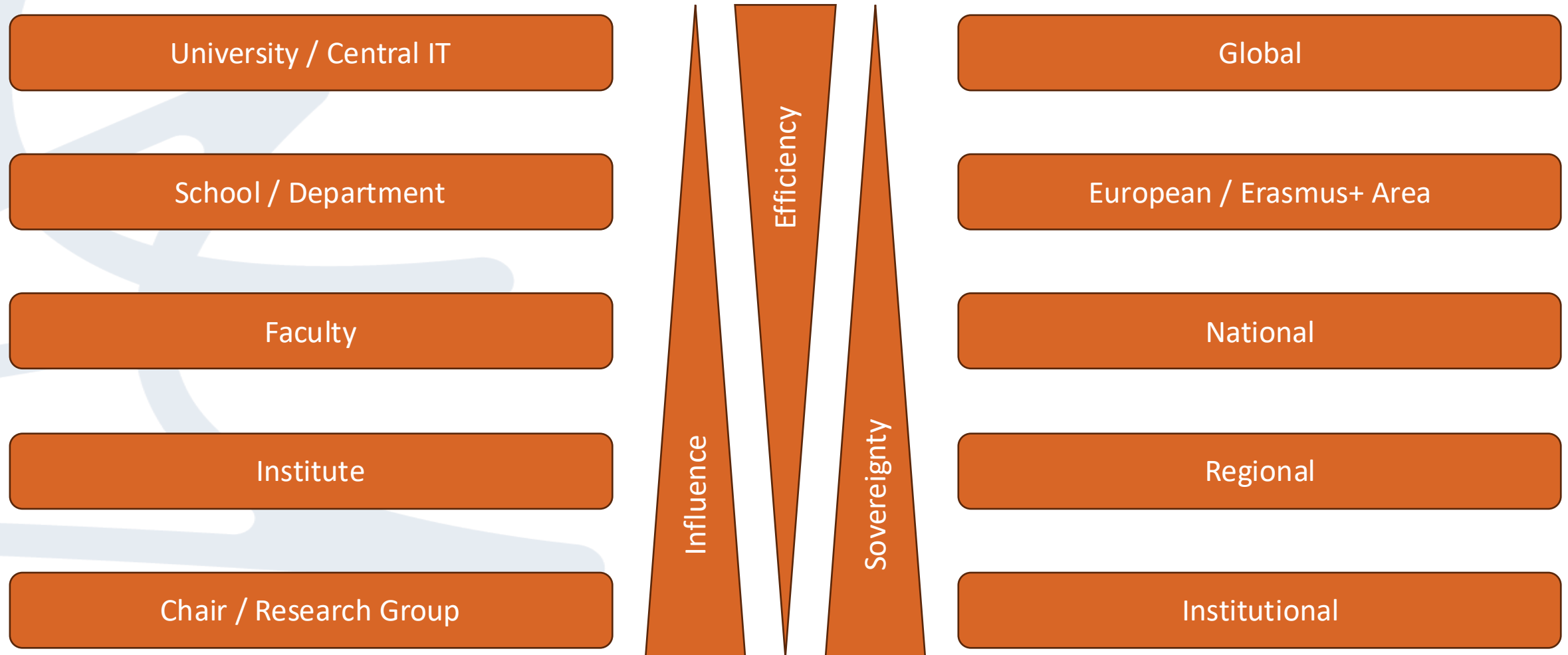
Internal view	Access layer	User Experience
• service name (often technical) • ownership unclear • distributed responsibility	• multiple accounts and logins • different authentication mechanisms • inconsistent URLs • no single-entry point	• fragmented interfaces • no overview • unclear relevance

From a user perspective, this is not a service landscape – it is a maze.

And that's for single services of one institution

→ how about shared services, within your institution, within your city, our alliance, the Erasmus+ area?

From a good service to a shared service



Stages of Digitalization – Period of Digital transformation

Digitalization 1.0

- Digitization – create digital versions of analog documents

→ Digitization vs. Digitalization (machine readable content / payload)

Digitalization 2.0

- Digitalization with internal focus
- Optimize internal administrative processes – **organization centric optimizations**
- Processing of data

→ Digital transformation (a hard shift)

Digitalization 3.0

- Digitalization with focus on the user – **user centric optimizations**
- Optimization on how services are discovered and seamlessly used
- Flow of data

→ Service-oriented
→ **Digital identity**
→ Interoperability

→ **User Experience**



EUGLOH - The European University Alliance for Global Health

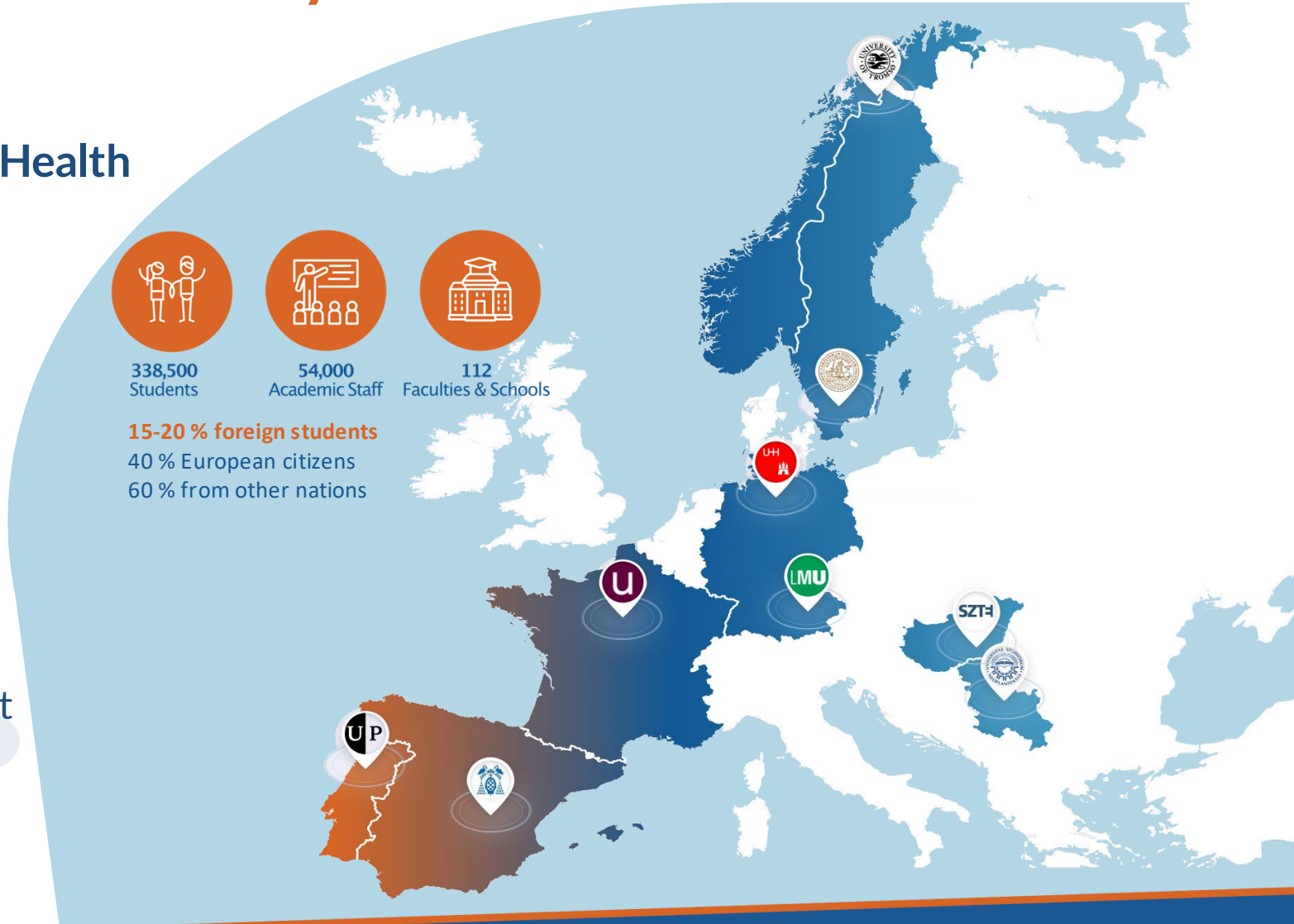
9 Universities, 1 Goal

Building Europe's Campus for Global Health

- Equipping students and staff with the skills needed to shape the future of global health
- Creating a **seamless, inclusive European campus** that enables **mobility**, joint learning opportunities, and **shared infrastructure**
- Addressing pressing health issues through interdisciplinary, co-created education, research and innovation that engages with social needs



15-20 % foreign students
40 % European citizens
60 % from other nations



Background

Vision of the European Commission: **Towards a European Education Area**

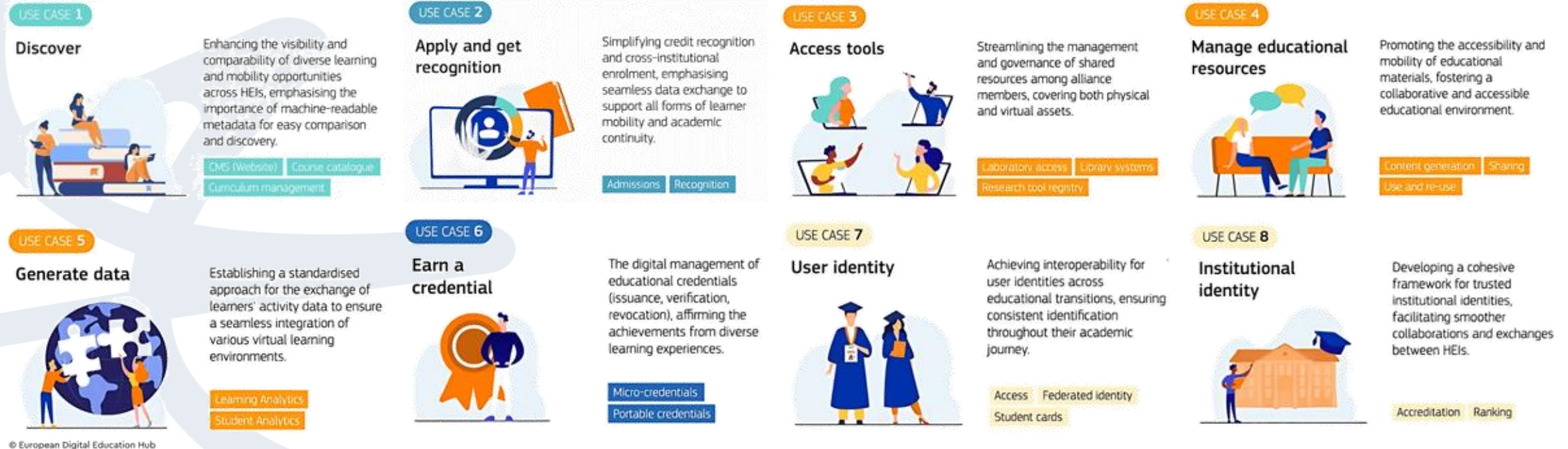
It is in the shared interest of all EU Member States to harness the full potential of education and culture as drivers for job creation, economic growth and improved social cohesion, as well as a means to experience European identity in all its diversity.

The Commission is developing initiatives to help work **towards a European Education Area**. The vision contained within this policy is that, across the EU:

- **spending time abroad to study and learn should become the norm**
- school and higher education **qualifications should be recognised across the EU**
- knowing two languages in addition to one's mother tongue should be standard
- everyone should be able to access high-quality education, irrespective of their socio-economic background
- people should have a strong sense of their **identity as a European**, of **Europe's cultural heritage** and its diversity

Source: https://ec.europa.eu/education/education-in-the-eu/european-education-area_en

The Higher Education Interoperability Framework



The European Education Area focuses on the learner's journey, across institutions

Two Use-Cases are essential for a smooth and seamless mobility:

- ✓ User Identity
- ✓ Access Tools

Digital Credentials for Higher Education

Two Digital Credential Verticals, one Wallet Environment

Long-Term Digital Credentials



European Digital Identity Wallet (EUDI-Wallet)



EU Digital Identity
Wallet



Short-Term Digital Credential



- Diplomas / Diploma Supplements
- Transcript of Records
- Micro-Credentials

- Container for Credentials
- Web-Wallet

- Student IDs
- Library-IDs
- Event-Tickets

→ Digitization of Academic Proofs of Achievement

→ Digitize, **digitalize** and simplify administrative processes

→ Digitalization of Service Access

→ DC4EU / EBSI / EDEH Interoperability Framework

→ European Student Card / **eduTAP**

Use Case 3: Access Tools

Use Case 3: Access to shared tools and resources

- It is not about building new tools,
- It is about making existing tools accessible across institutions

→ That where Use Case 7: User identity comes in → giving access to the Service

✓ Authentication

✓ Authorisation

USE CASE 3

Access tools



USE CASE 7

User identity



Key to all Services → Identification / Authentication

→ Triple-A-System
✓ (Identification)

✓ Authentication

✓ Authorization

✓ Accounting

Authentication Factors



User Experience is key – Benchmarks

Providing best of class user experience is about seamless and clear **service access**

- For Member of the Higher Education Institution
- For members of other Higher Education Institutions / Partners
- For incoming members of other Higher Education Institutions / Partners → short- & long-term Mobility

For the Person **User Experience** is key, it should be as easy and simple as possible

- Benchmark Examples



WLAN Access

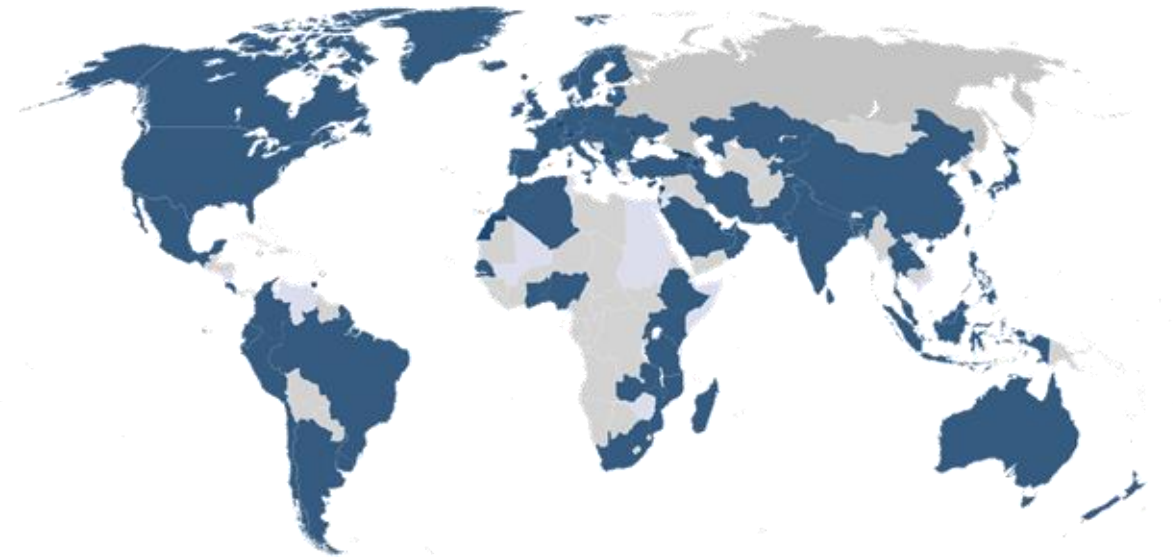
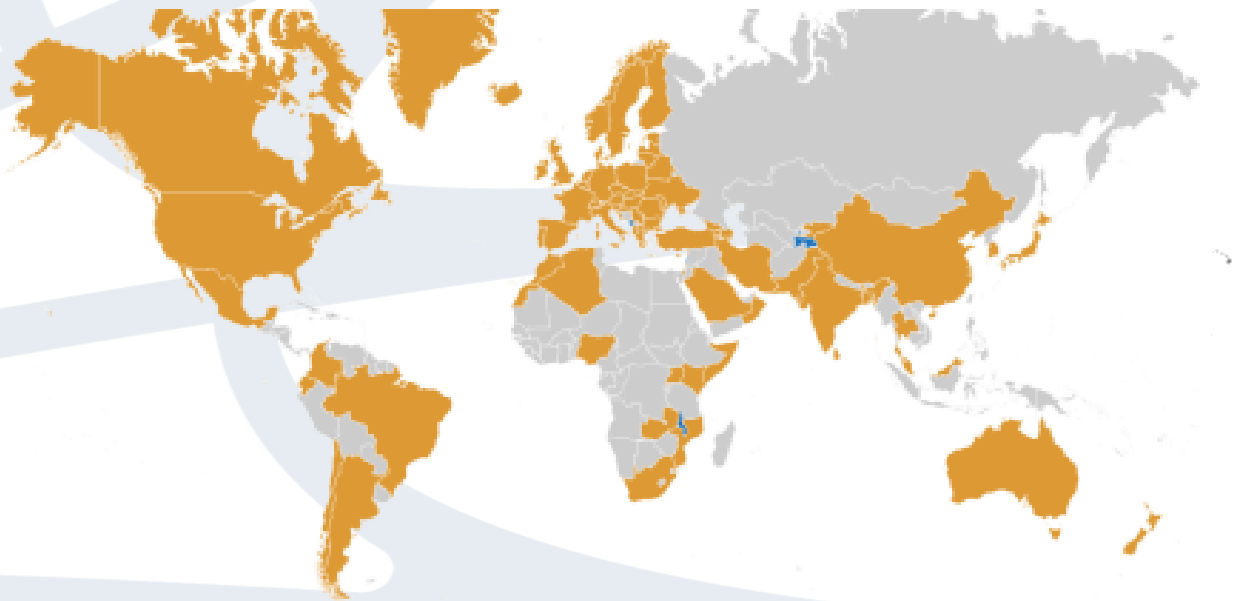


Login to Online Services

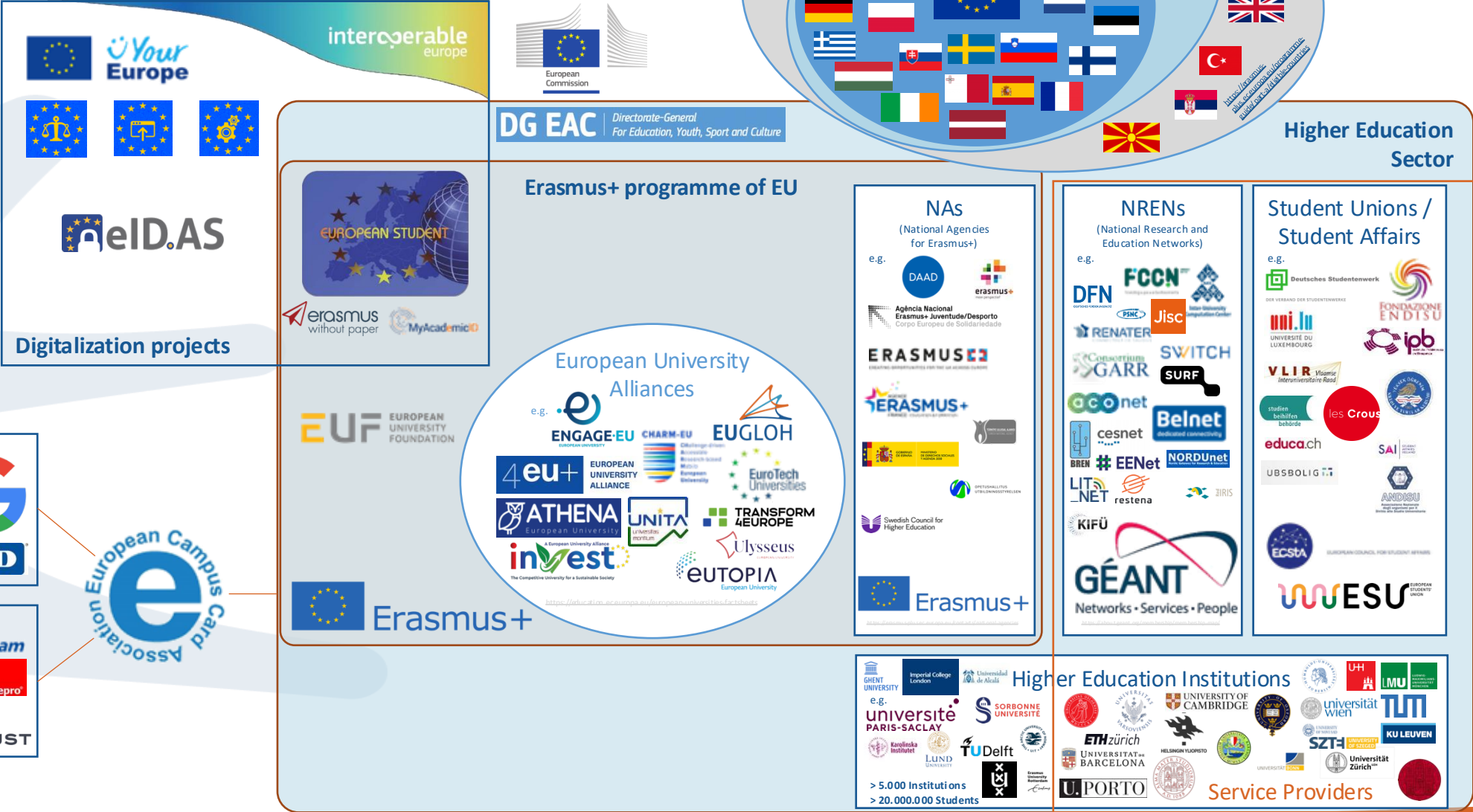
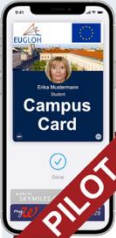
→ To access services (physical) **on site** it should be as easy as using the Wifi with eduroam

→ eduGAIN Federation Members

→ eduroam Service Providers



The Stakeholder-Landscape



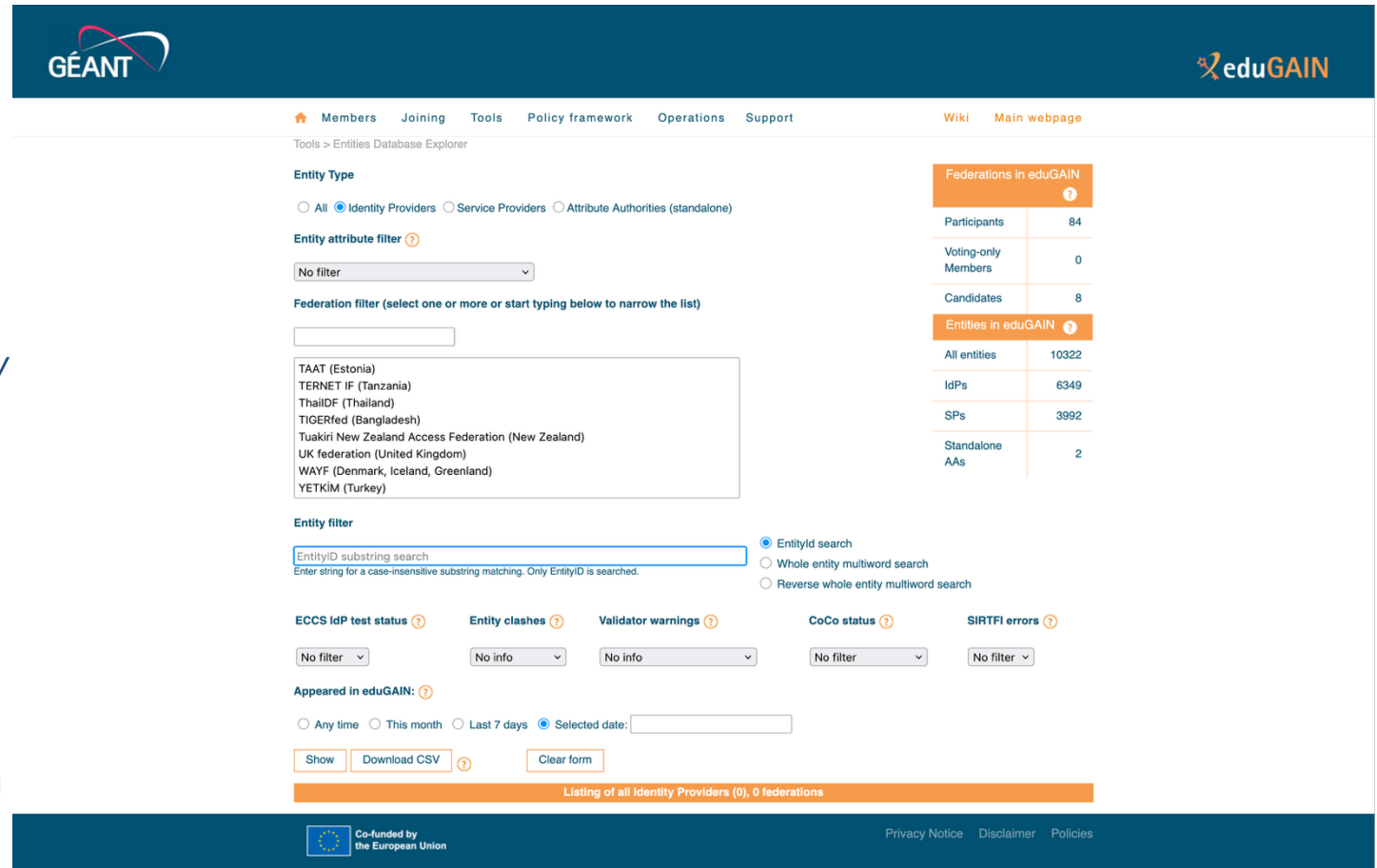
Essential Step – be an eduGAIN-Member

EUGLOH Members within eduGAIN:

- ✓ Université Paris-Saclay, *France*
- ✓ Lund University, *Sweden*
- ✓ University of Szeged, *Hungary*
- ✓ University of Porto, *Portugal*
- ✓ Ludwig-Maximilians-Universität München, *Germany*
- ✓ University of Alcalá, *Spain*
- ✓ UiT, The Arctic University of Norway, *Norway*
- ✓ University of Novi Sad, *Serbia*
- ✓ University of Hamburg, *Germany*
- ✓ University of Amsterdam, *The Nederland's*
- ✓ Stellenbosch University, *South Africa*

→ EUGLOH is connected

→ *The Infrastructure already exists*



The screenshot shows the 'Entities Database Explorer' interface. At the top, there's a navigation bar with 'GÉANT' and 'eduGAIN' logos. Below it, a menu includes 'Members', 'Joining', 'Tools', 'Policy framework', 'Operations', and 'Support'. The main content area is titled 'Tools > Entities Database Explorer'. It features several filters: 'Entity Type' (radio buttons for 'All', 'Identity Providers', 'Service Providers', 'Attribute Authorities (standalone)'); 'Entity attribute filter' (a dropdown menu set to 'No filter'); 'Federation filter' (a text input field with a list of federations below it: TAAT (Estonia), TERNET IF (Tanzania), ThailDF (Thailand), TIGERfed (Bangladesh), Tuakiri New Zealand Access Federation (New Zealand), UK federation (United Kingdom), WAYF (Denmark, Iceland, Greenland), YETKiM (Turkey)); 'Entity filter' (a text input field with a search type dropdown set to 'EntityID search'); and a row of status filters: 'ECCS IdP test status', 'Entity clashes', 'Validator warnings', 'CoCo status', and 'SIRTFI errors', each with a dropdown menu. At the bottom, there are radio buttons for 'Appeared in eduGAIN' (Any time, This month, Last 7 days, Selected date) and buttons for 'Show', 'Download CSV', and 'Clear form'. A footer bar contains the European Union logo, 'Co-funded by the European Union', and links for 'Privacy Notice', 'Disclaimer', and 'Policies'.

Source: <https://technical.edugain.org/entities>

Authentication and Authorization Infrastructure

Authentication and Authorization Infrastructure (AAI) and AAI-Federation

- eduGAIN is a key to user identity interoperability
- Interoperability depends very much on same understanding of vocabular and specifications (LDAP-Schema)
 - ✓ eduPerson
 - ✓ SCHAC (Schema for Academia)
 - ✓ SAML
 - ✓ OIDC

→ What is MyAcademicID?

MyAcademicID ≠ European Student Identifier

eduPerson & SCHAC Schema Explained

eduPerson

- 2.2.1. **eduPersonAffiliation**
- 2.2.2. eduPersonEntitlement
- 2.2.3. eduPersonNickname
- 2.2.4. eduPersonOrgDN
- 2.2.5. eduPersonOrgUnitDN
- 2.2.6. eduPersonPrimaryAffiliation
- 2.2.7. eduPersonPrimaryOrgUnitDN
- 2.2.8. eduPersonPrincipalName
- 2.2.9. eduPersonPrincipalNamePrior
- 2.2.10. **eduPersonScopedAffiliation**
- 2.2.11. eduPersonTargetedID
- 2.2.12. **eduPersonAssurance**
- 2.2.13. eduPersonUniqueid
- 2.2.14. eduPersonOrcid

Example of an eduPersonScopedAffiliation:

[student@lmu.de](#)

[student@up.pt](#)

[student@eugloh.eu](#)

SCHAC (Schema for Academia)

- Personal Characteristics
 - schacMotherTongue
 - schacDateOfBirth
 - schacYearOfBirth
 - schacPlaceOfBirth
 - schacCountryOfCitizenship
 - schacSn1
 - schacSn2
 - schacPersonalTitle
- Contact / Location Information
 - **schacHomeOrganization**
 - schacHomeOrganizationType
 - schacCountryOfResidence
 - schacUserPresenceID
- Student Information
- Employee Information
 - schacPersonalPosition
- Linkage Identifiers / Foreign Keys
 - **schacPersonalUniqueCode**
 - schacPersonalUniqueID
- Entry Metadata / Administration Information
 - schacExpiryData
- Confidentiality / Attribute Release (Visibility)
 - schacUserPrivateAttribute

Examples:

schacHomeOrganization: lmu.de

schacPersonalUniqueCode: [urn:schac:personalUniqueCode:int:esi:lmu.de:1234567890]

Base-Schemas

- givenName
- sn (surname)
- displayName
- initials
- title
- jpegPhoto
- mail
- phone
- cn
- uid
- o
- ou
- preferredLanguage
- homePostalAddress
- postalAddress
- dfnEduPersonLibraryPatronId
- dfnEduPersonLibraryUsergroup
- dfnEduPersonFinalDegree
- dfnEduPersonTypeOfStudy

→ EDEH HEIF TF 3: User Identity to clarify

From Authentication to User Data

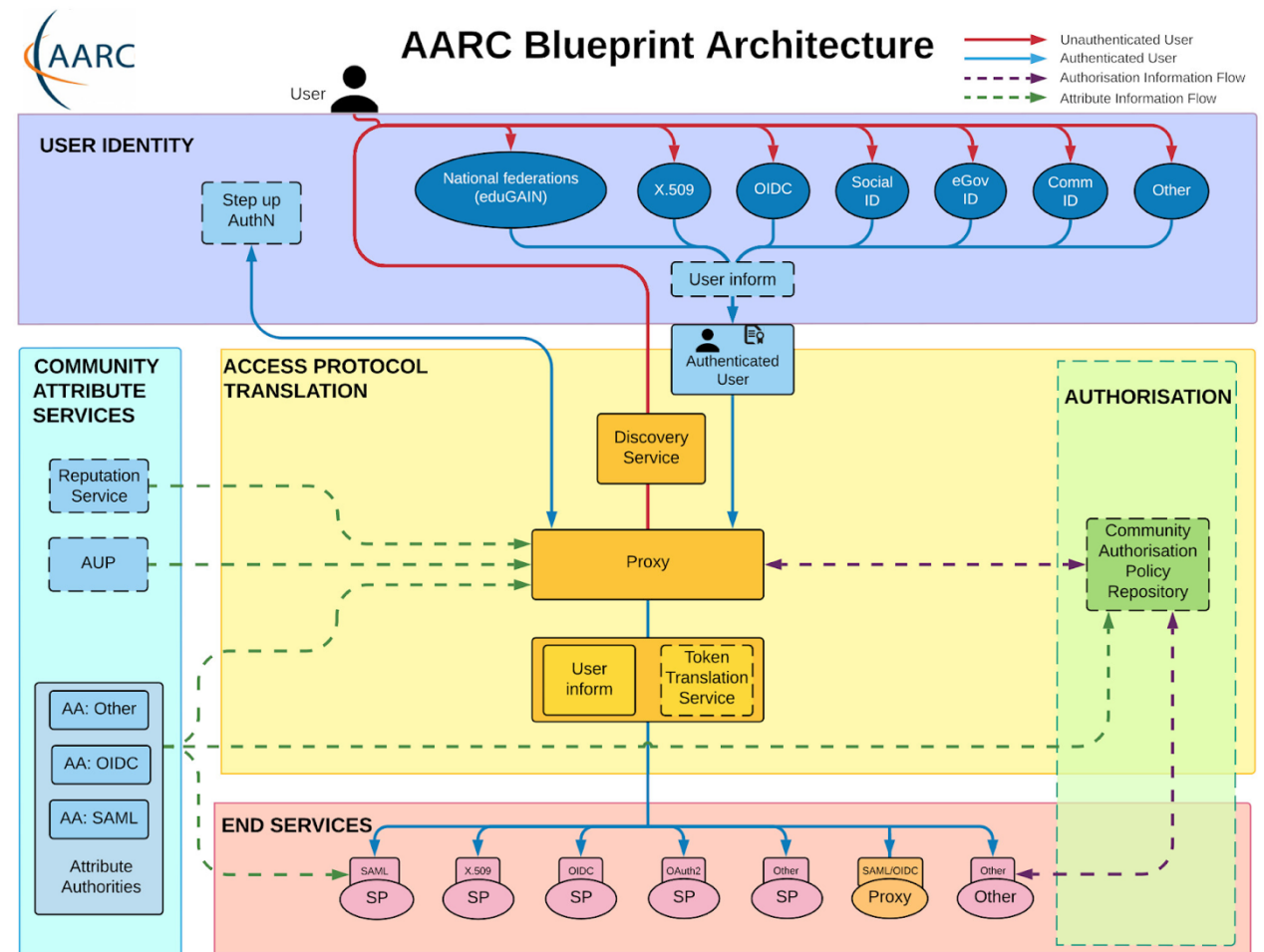
The AAI/eduGAIN Backbone: AARC Architecture

Key-Components in AAI (SAML-Names):

- Identity Provider (IdP)
- Service Provider (SP)
- Discovery Service (DS) → WAYF

Additional but uncommon elements today:

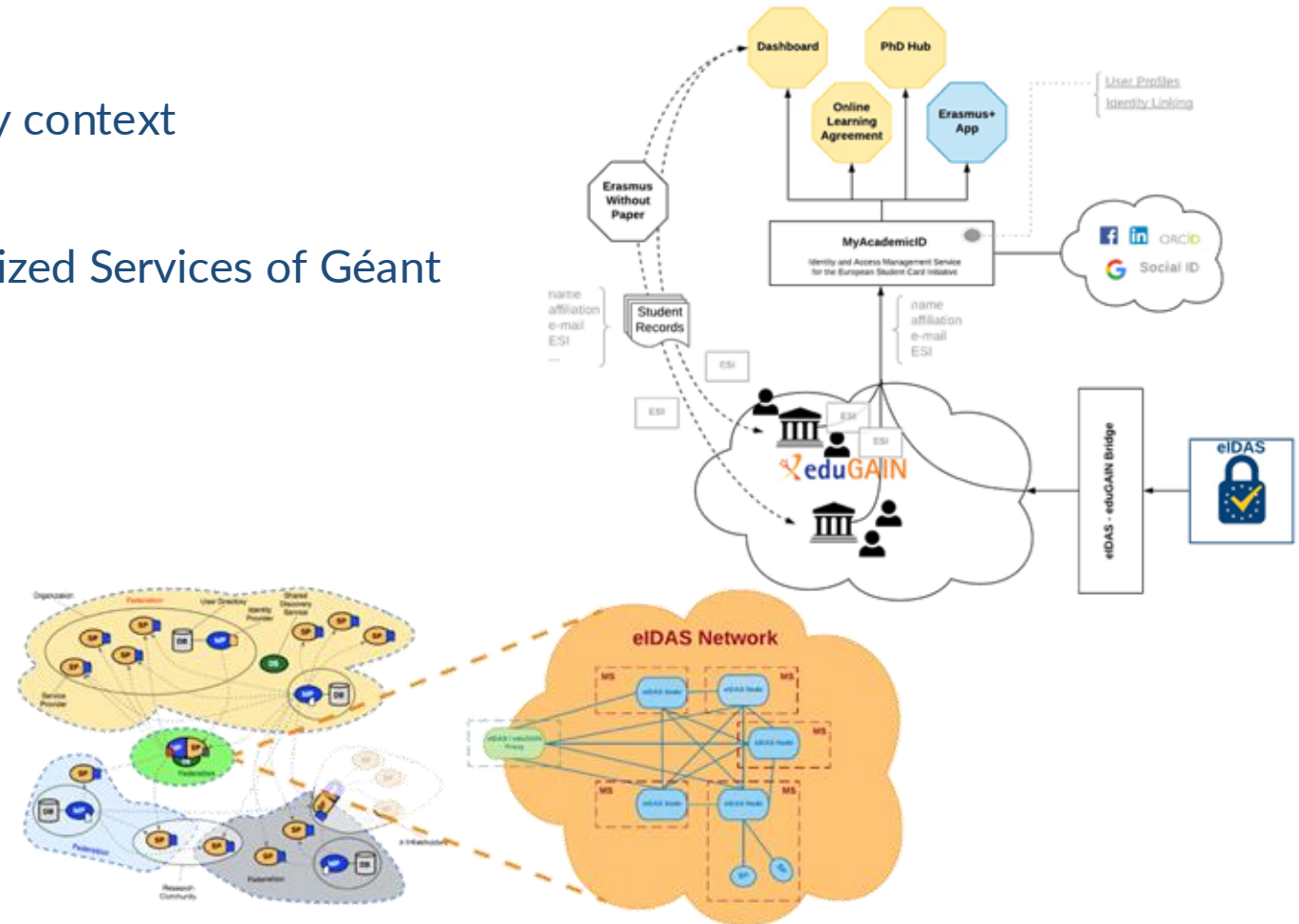
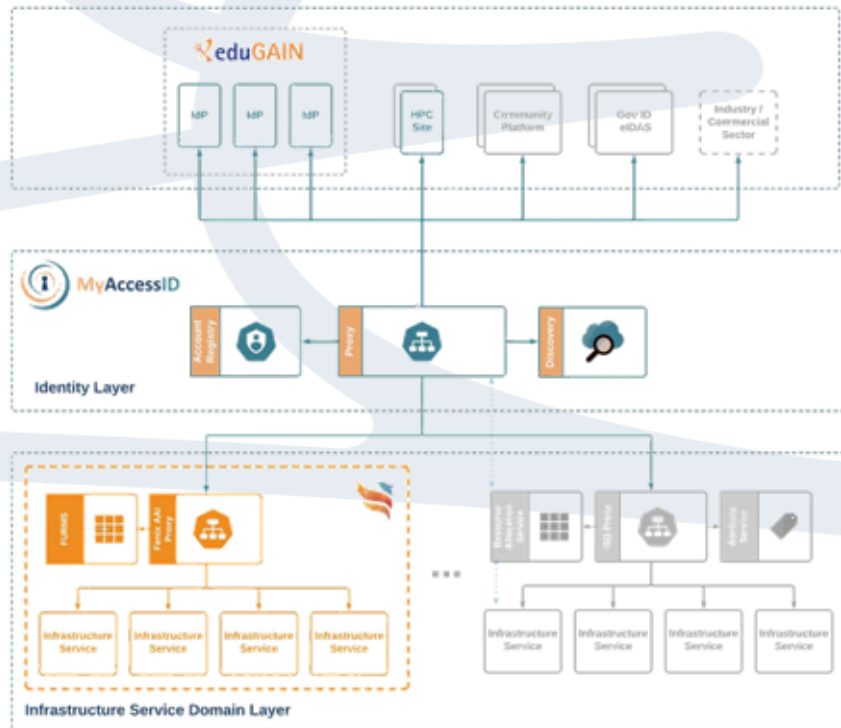
- Attribute Authorities
 - Metadata Aggregators
- MyAcademicID-Network



MyAcademicID & MyAccessID

MyAcademicID as bridge between eduGAIN (AAI for Universities) and eIDAS to the services of universities and in mobility context

MyAcademicID & MyAccessID are a centralized Services of Géant



Trust level / Assurance Level

- Very important for **IDENTIFICATION & AUTHENTICATION**
- Quality of identity (personal) data
- Type of authentication & consequences for identification medium

eduPersonAssurance:

<https://refeds.org/assurance>
<https://refeds.org/assurance/ATP/ePA-1m>
<https://refeds.org/assurance/ID/eppn-unique-no-reassign>
<https://refeds.org/assurance/IAP/low>
<https://refeds.org/assurance/IAP/medium>
<https://refeds.org/assurance/profile/cappuccino>
<https://refeds.org/assurance/ID/unique>

→

<https://refeds.org/assurance/IAP/high>

no trust

normal

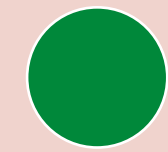
Authentication:
 • username / email + password

Identity proofing:
 → self-asserted
 → verified e-mail address

substantial / medium

Authentication
 • certificate based
 • FIDO2
 • Smart ID

Identity proofing:
 → officially confirmed
 → manual check of a government issued photo-ID



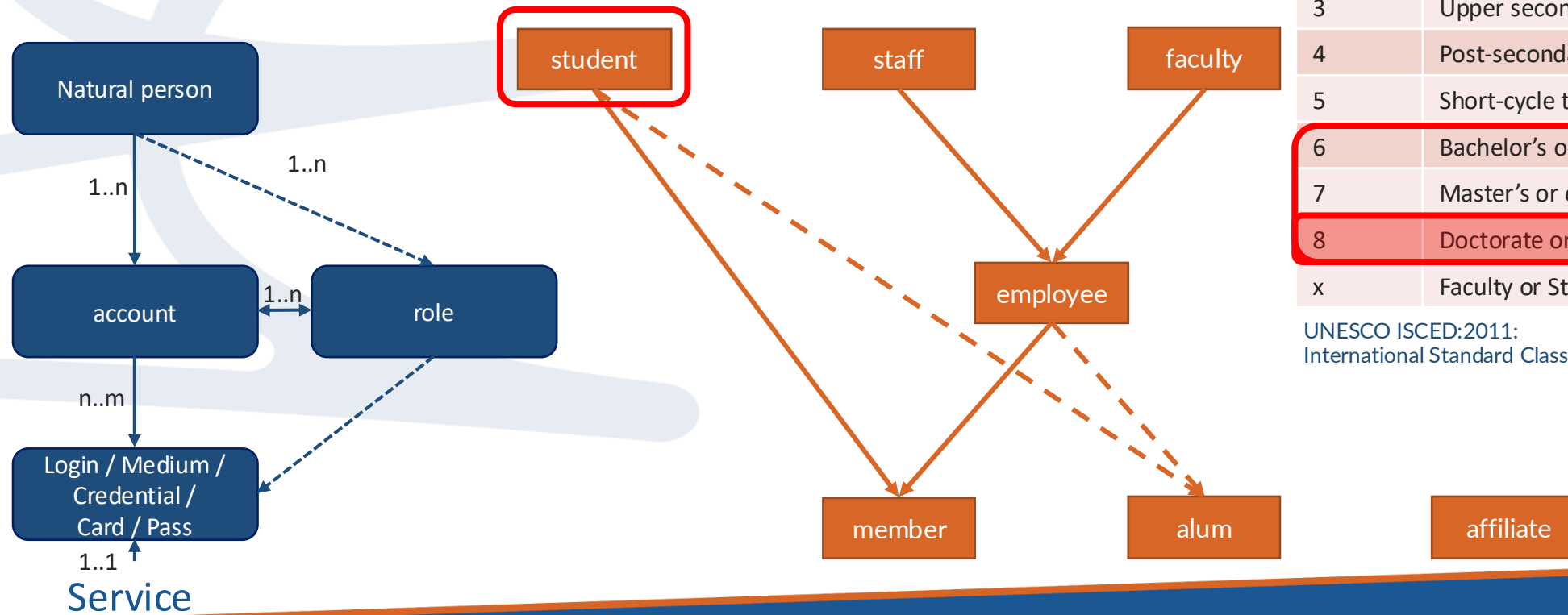
high

Authentication
 •  **eID.AS** compliant
 → eID of EU Citizen IDs
 → provided by HEI for foreign Students

Identity proofing:
 → officially confirmed
 → Identity document automated and technically checked to be genuine and represent the claimed identity

AAI-Attributes and Examples – eduPersonAffiliation

- ✓ A natural person has an account at their home institution
- ✓ All institutions apply the same ruling on Affiliation → Problem: Who is a student?
- ✓ Allow usage of services by an Authentication Methodes
 - ✓ Login via SSO → Shibboleth
 - ✓ Present a credential → EUID-Wallet / eduTAP



ISCED:2011 Level

Level	Label
0	Early childhood education
1	Primary education
2	Lower secondary education
3	Upper secondary education
4	Post-secondary non-tertiary education
5	Short-cycle tertiary education
6	Bachelor's or equivalent
7	Master's or equivalent
8	Doctorate or equivalent
x	Faculty or Staff member of HEI

UNESCO ISCED:2011:
International Standard Classification of Education

Key to all Services → Identification / Authentication

→ Triple-A-System
✓ (Identification)

✓ Authentication

✓ Authorization

✓ Accounting

Authentication Factors



Campus Cards are about Accessing Services

Identification

- **Identification**
- **Status verification**
- **Proof of entitlement**
- Single Sign On / 2FA / FIDO2
- Attendance check
 - Check-in for exams
 - attendance at courses
 - Time recording
- Electronic Signature (of legal documents)

Electronic payment / cashless campus

- Canteen & cafeterias
- Vending machines
- Printing / scanning (secure & follow me printing)
- Ticketing (events and conferences)

Physical Access Control

- Areas (campus, parking lot)
- Buildings
- Rooms
 - Classrooms
 - Labs
 - Computer rooms
 - Learning spaces
 - Offices
 - Accommodation facilities (i.e., dorms)
- Athletic facilities

Library services

- Access to / borrow
 - Physical media (book, audio and video media)
 - E-media (book, audio and video media)
- Learning spaces

Transport

- On campus services (university shuttle service)
- Public transport tickets & discounts

Discount and promotions

- **Discounts** on cultural activities
 - Museums
 - theaters
 - cinemas
- Shops
- Restaurants

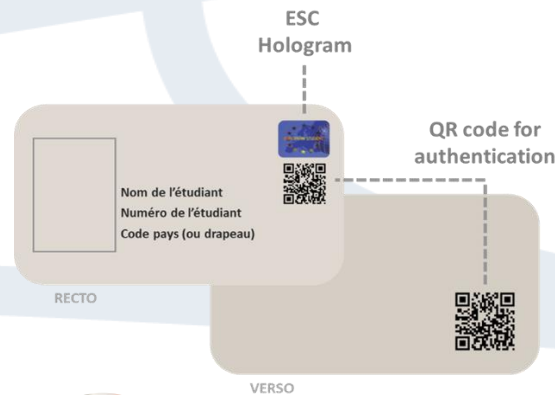
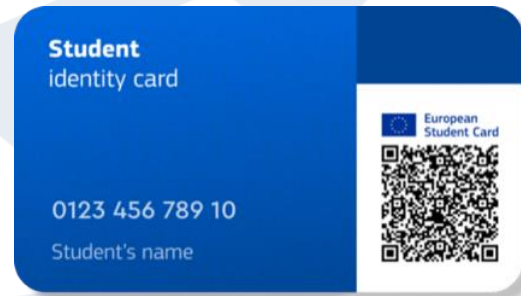
On- & Off-Campus → On-Site Usage / Proximity Use-Cases
+ Online Services



The European Student Card (ESC)

The **European Student Card** – a project to add a **European dimension** to local Student IDs

✓ Securely validate the student status



European Student Card logo

Combines the European identity (text & flag) with the QR code. It facilitates the implementation and recognition of the ESCs

ESCN - European Student Card Number

Unique card identifier that serves to link a specific card to the specific higher education institution who produced it and to identify a card

ESI - European Student Identifier

Unique identifier that allows to link a given student to a specific ESC. It is not recommended to be printed on the card.



Idea by →
Jean-Paul Roumegas
(les Crouse)

✓ A great vision

The European Student Card (ESC)

Benefits of the European Student Card Initiative

- **For students:**
 - Easy access to course materials prior to mobility, online course registration and automatic recognition of ECTS credits
 - Immediate access to services at the host university, such as libraries, transport and accommodation
 - Discounts on cultural activities throughout the EU
- **For Higher Education Institutions:**
 - Easy, online management of the entire mobility process – from student selection to the recognition of ECTS credits
 - **Online identification of students**, simplified and secure exchange of student data - including academic records - between Higher Education Institutions
 - Reduced administrative burden associated with student mobility

Source: https://ec.europa.eu/education/education-in-the-eu/european-student-card-initiative_en

→ **European Student Card Project** as implementing instance

The European Student Card (ESC) - History

2012 – 2013

- Signing of a protocol of Intent
- Bilateral Franco-Italian agreement between:
 - Fondazione ENDISU
 - ANDISU,
 - les Crous

November 2013

- Exchange between the Crous and the CPU on European Student Card

2016

- Institutional structuring at European level
→ Erasmus+ Strategic Partnership

2016 – 2018 → European Student Card Project



Base-line for technical specification

2025 - Goal

- All European / Erasmus+ Higher Education Institutions offer their students a European Student Card



European Student Card

Oct. 2024 – New ESC

- New ESC-Router
- New Design
- QR-Code Mandatory



2019 – 2020 → MyAcademidD Project

2020 – 2022

- European Digital Student Service Infrastructure Project
- ESC-Tension Project – European Student Card Extension and Adoption

December 2015

- Memorandum of Understanding
- Student Unions of 4 countries:
 - France
 - Germany
 - Ireland,
 - Italy
- Exchange within ECStA



Idea by → Jean-Paul Roumegas (les Crouse)

→ sole focus: students



Comité National de la Carte Étudiant et de ses Usages



FONDAZIONE ENDISU



Deutsches Studentenwerk

DER VERBAND DER STUDENTENWERKE

The European Student Card (ESC)

Basic concepts

The European Student Card (ESC) is a new standard created by European Higher Education Institution (HEI) to promote student mobility within Europe (EHEA zone).

→ The long-term objective is to give all European Students the same rights as a local student when travelling abroad.

So, the idea is to create a card that can be accepted anywhere within Europe. This card gives access to an unlimited number of services that students use in their daily life, such as borrowing book from university library, accessing student cafeteria with discounted prices, accessing university premises, using public transportation etc.



Short- and long-term perspectives

The first basic service to be set up is **student status authentication**. This service offers the possibility for any organization (private business, public administration, association, HEI...) to confirm whether a card holder is a student or not. **This service is a necessity because student status authentication is usually a prerequisite to give access to other services that are restricted to students.**

- Other services will **become available afterward**, such as:
 - The possibility to use the card as an **electronic wallet** for day-to-day expenses
 - The possibility to write new information on the card after it has been delivered, granting access to a wide range of new services for the student
 - The possibility of using the card as a **key** to allow **exchange of data between HEIs**, to facilitate administrative procedures during student mobility
- **Dematerialisation of the card itself**, using a smartphone

→ Interoperability

Source: ESC Handbook for institution: Users's Guide to connect to the Platform
(<http://europeanstudentcard.eu/wp-content/uploads/2017/02/ESC-User-Guide-def.pdf>)

The European Student Card (ESC)

ESCI – ECHE requirements for HEIs: „Implement the priorities of the Program:

- By undertaking the necessary steps to **implement digital mobility management** in line **with the technical standards of the European Student Card Initiative.**
- ...“

Source: https://ec.europa.eu/info/funding-tenders/opportunities/docs/cap/eplus2020/eche-fp-2020/1877638-charter-annotated-guidelines-feb2020_en.pdf

Timeline – European Student Card Initiative (ESCI)

- Erasmus Without Papers (EWP)
 - 2021 – Online Learning Agreements (OLA)
 - 2022 – Inter-Institutional Agreements (IIAs)
 - 2023 – Exchange Student Nominations, Acceptances, Transcripts of Records
- MyAcademicID
 - 2022 – European Student Identifier (ESI)
- European Student Card Project (ESC)
 - **2025 – Implement and Issue European Student Cards** ← 2020 Plan → postponed

The European Student Card (ESC)



European Student Card

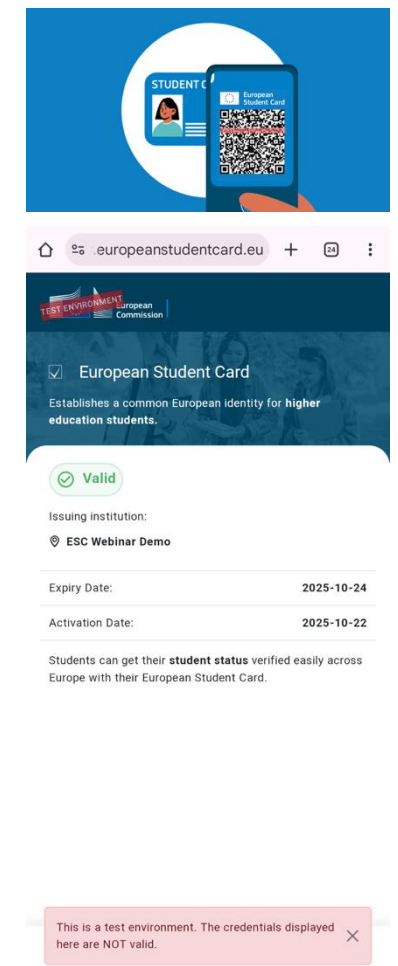


Seamless access to physical and digital services while on mobility, e.g. Library, Public Transport, Physical Access



One Credential to rule them all?
With a QR-Code or a verifiable credential?

→ not realistic



The European Student Card (ESC)

A complex system that works is invariably found to have evolved from a simple system that worked. The inverse proposition also appears to be true:

*A **complex system designed from scratch never works and cannot be made to work.** You have to start over, beginning with a working simple system.*

Source: "John Gall's law" - from "Systemantics: How Systems Really Work and How They Fail" – 1975

- The European Student Card Vision can not be solved top-down with the current technical specification and implementation
- A new approach is required, based on existing, proven technologies, and a simple working system

EUGLOH & ESC – a shared vision and ambitions

We have a shared vision: **seamless mobility & easy service access**

But an ESC QR-Code was no option for us (GDPR & IT-Security wise), the long-term perspective a digital smartphone pass looked fascinating



→ a great vision



EUGLOH **wanted to share their services** across the alliance, and beyond (as we all have more partners)



The IT-Persons from LMU, U.Porto and Lund already knew each other → we met at ECCA 2019

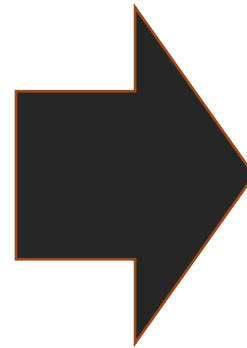
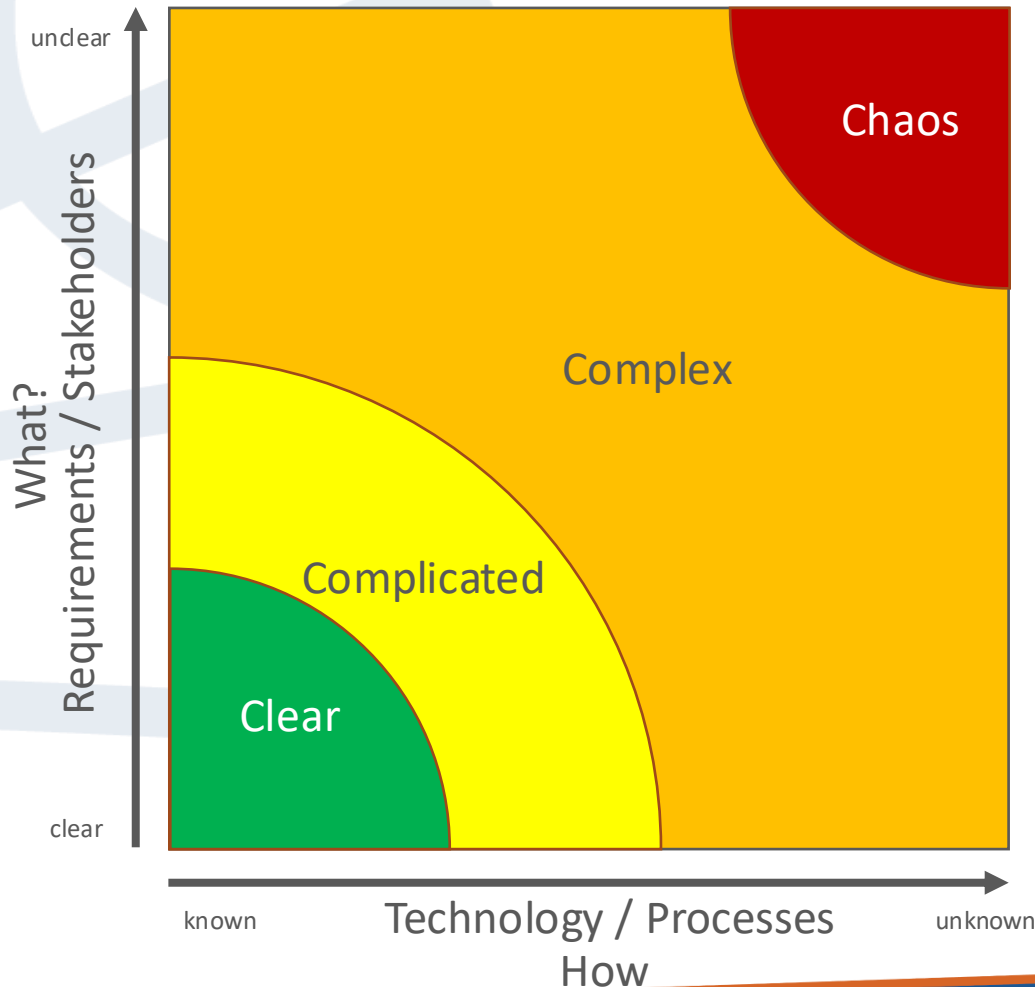
- ✓ **understand the technological possibilities,**
- ✓ **knew and understand** the topics, have access to major technology providers
- ✓ **but also, the capabilities of the ESC Project team**

→ If we want a good and **interoperable solution** in the near future, we must come up with a working proposal

→ That meets our requirements and audience (students, staff and professionals)

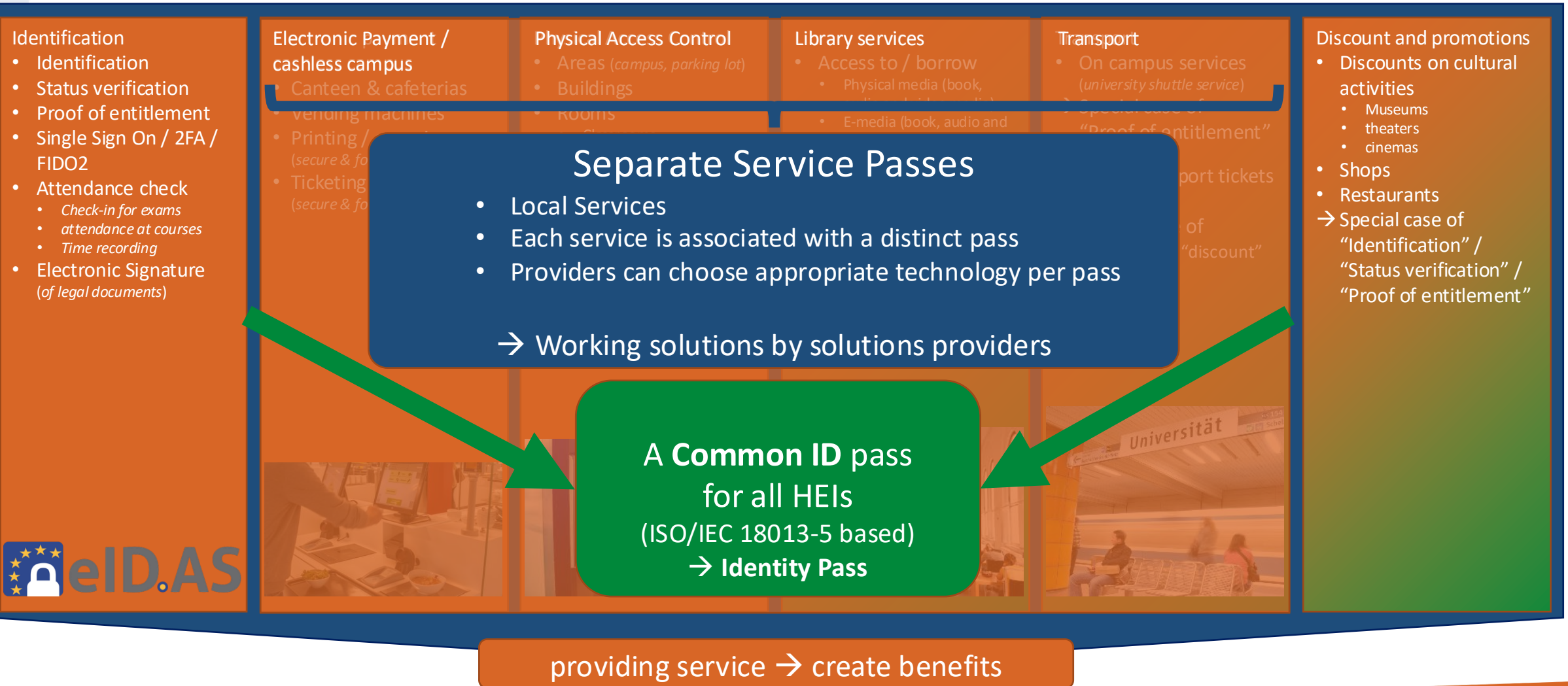
Success factors – Understand the complexity

→ Complexity management and possibilities to act – Stacey Matrix & Cynefin-Framework



How to KISS: Keep it Simple, Stupid

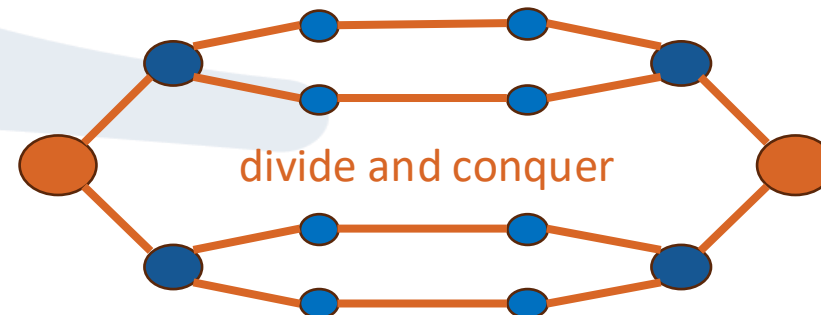
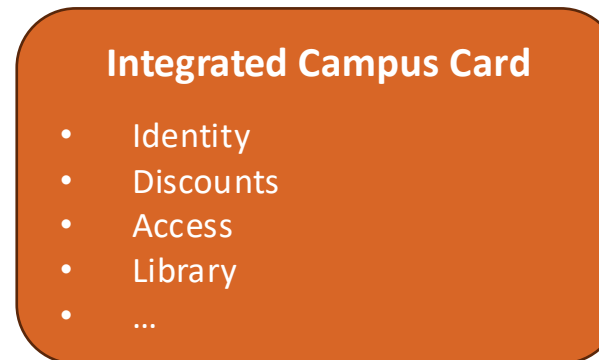
Think outside the card: Medium → Services



Campus Cards from a User Experience Point of View

User preferences for Smartphone Wallets:

- ✓ NFC / Contactless passes are better than scanning visual codes
- ✓ **One pass per service** is better
 - User control over which services to use
 - Auto-Presentation of pass needed
 - Clear contextual communication (additional information on pass specific for the service, specific branding of service)



Identification / Authentication for Service Access

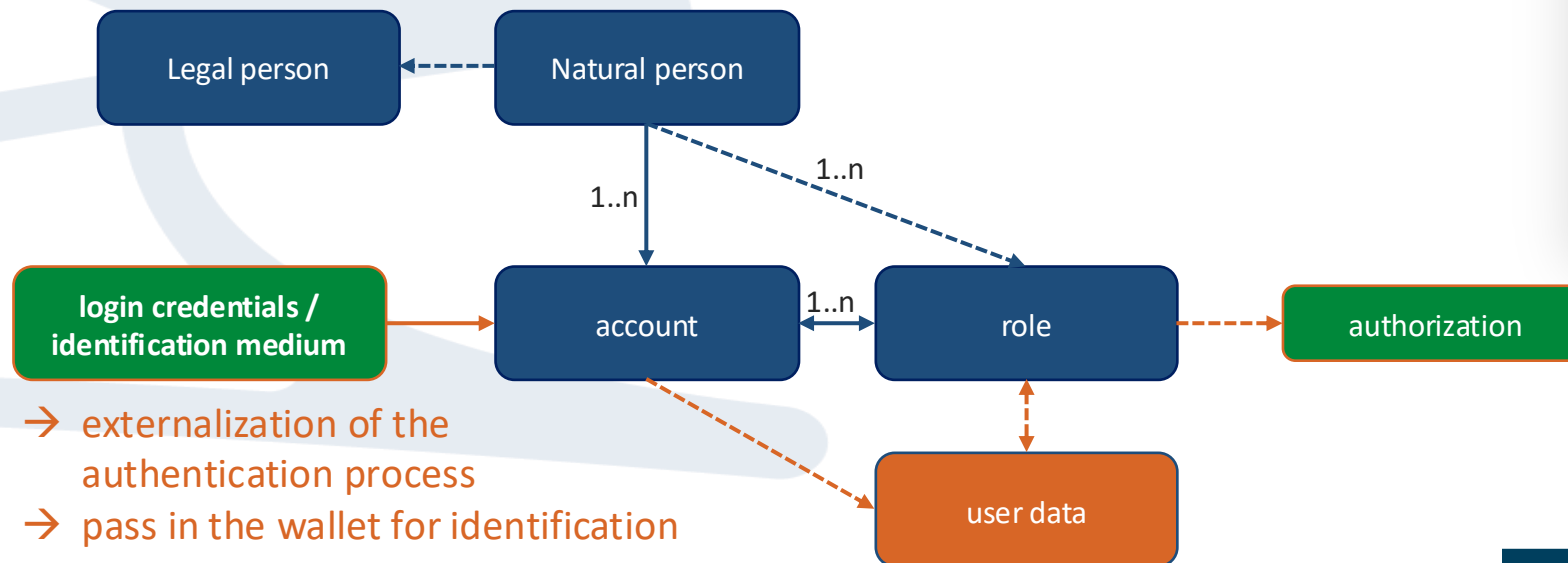
- ✓ Interoperability happens on the reader side → contactless communication protocols are better than visual codes
- ✓ Almost all readers in the market could **read more than one standard** (maybe a firmware upgrade necessary)
- ✓ QR-Codes are **not considered a secure** identification element (especially with an URL as content)

→ It is all about **User Experience**



Identity Linking → from eduGAIN to eduTAP

- Utilization of decentralized / federated Authentication and Authorization Infrastructure
 - Online - fewer individual login credentials → higher assurance levels
 - Bridging **online identity to mobile credentials** for reliable and trustworthy **on-site service access** → service-oriented + interoperability-oriented
 - Focus on Flow of data
 - The medium **Wallet Pass** as an extension of a **Digital Identity**



Co-financed by the Connecting Europe Facility of the European Union

This project has been co-funded by the European Commission. The content of the service reflects the views only of the authors and the European Commission cannot be held responsible for any use which may be made of the information contained therein.

eduTAP – educational tapping

tap to ...

- ✓ identify yourself,
- ✓ verify your status,
- ✓ proof your entitlement,
- ✓ claim a discount,

tap to access a service on-site directly:

- ✓ tap to pay (open and close loop-payments),
- ✓ tap to open a door,
- ✓ tap to lend a book,
- ✓ tap to take a campus shuttle.



no app, just tap!

<https://eduTAP.eu>

eduTAP – educational tapping – What is eduTAP?

- eduTAP the concept
 - Splitting integrated campus cards into **dedicated service passes** and a **harmonized identity pass**
 - Leveraging the full potential of digital wallets
 - **Use existing**, secure and proven contactless **standards** – do not invent new standards

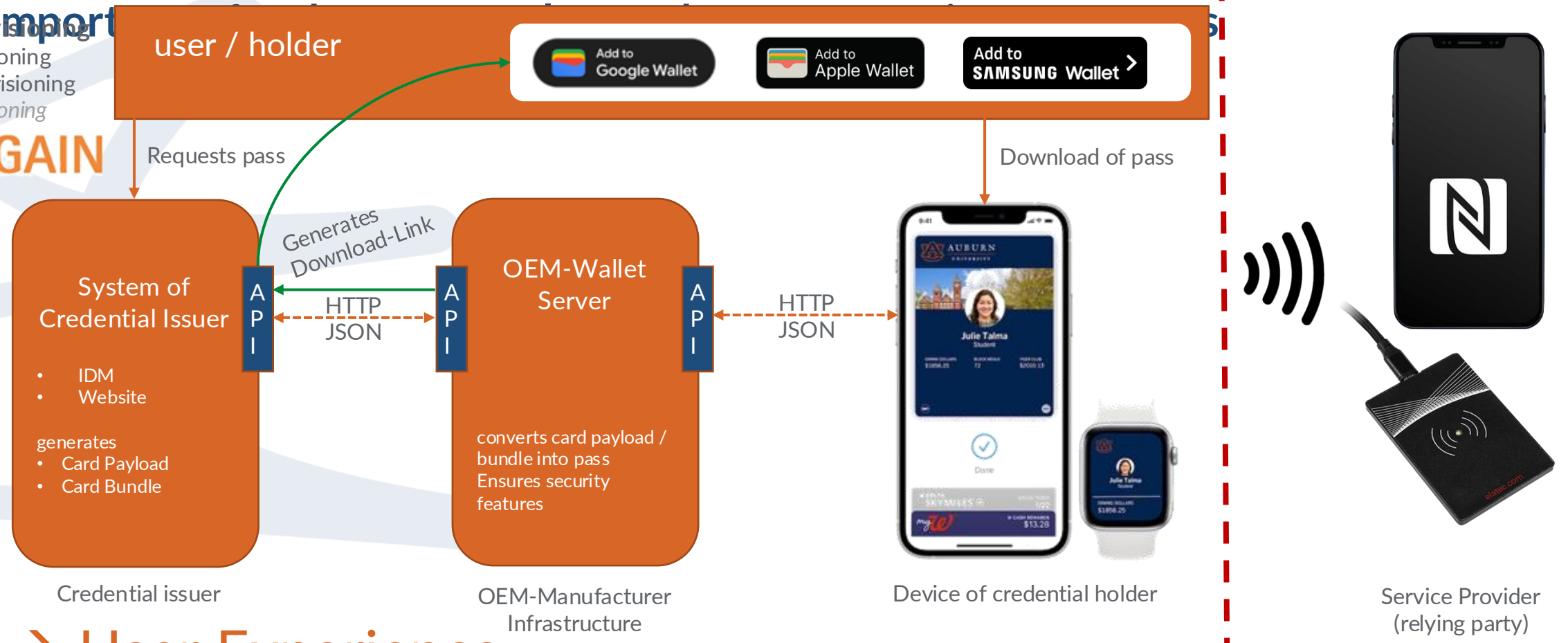
→ Focus on **User Experience** and **interoperability**

- eduTAP the software – to enable HEIs and Service Providers to:
 - create, issue, and manage passes within the smart device wallet
 - interact with wallet passes to give access to services, identify, and verify the status of students and staff members

→ eduTAP helps to fulfill the
great vision of the European Student Card
and **enables interoperability** and a **better user experience**

Issuing process of wallet passes reedeming

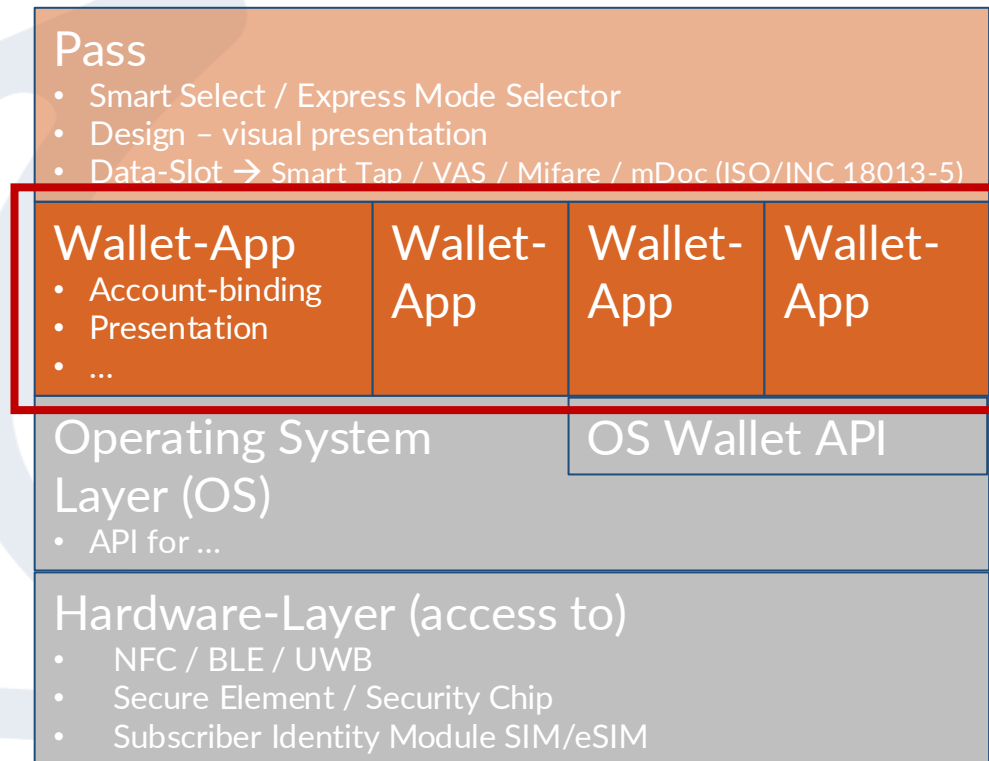
- Web-Provisioning
 - App-Provisioning
 - Wallet-Provisioning
 - Push-Provisioning
- eduGAIN



→ User Experience

Technical details and features of Wallets / Passes

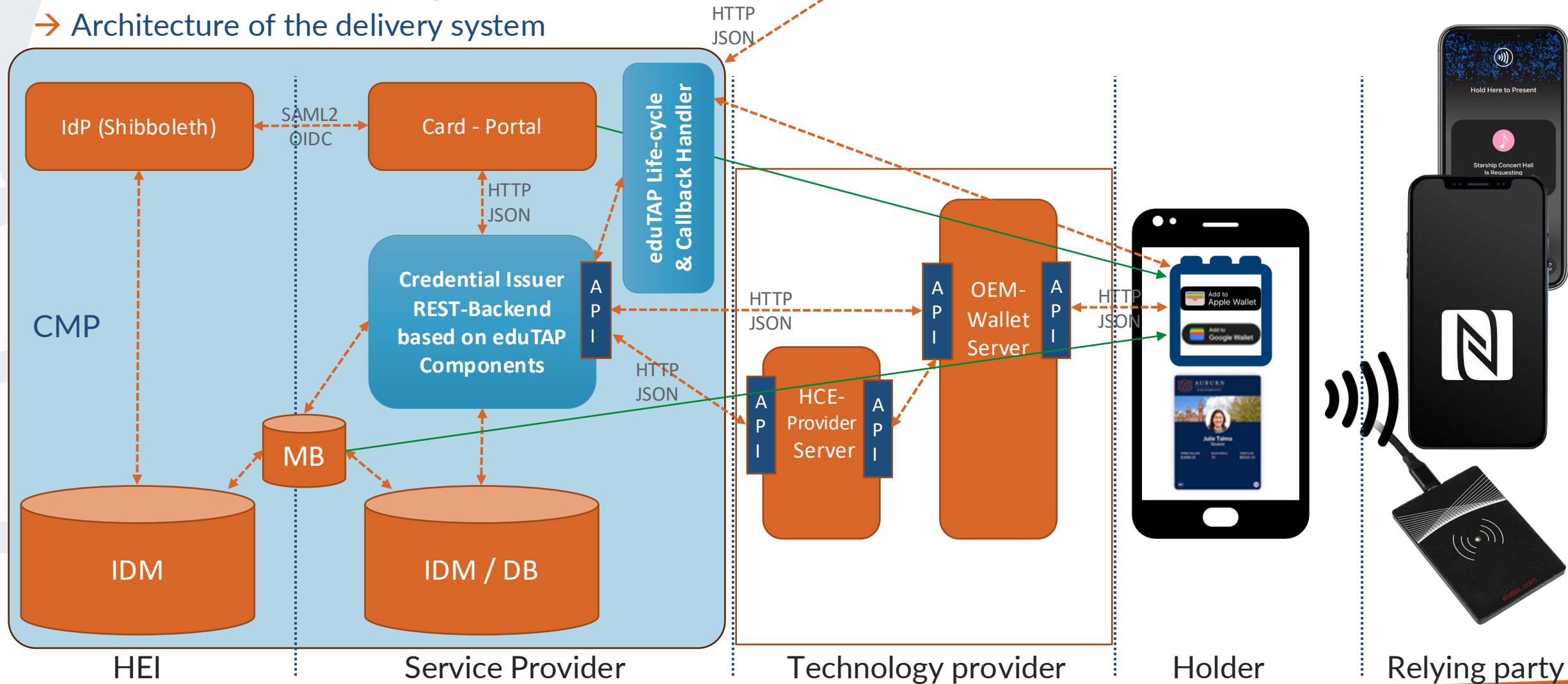
Detail view on the Wallet



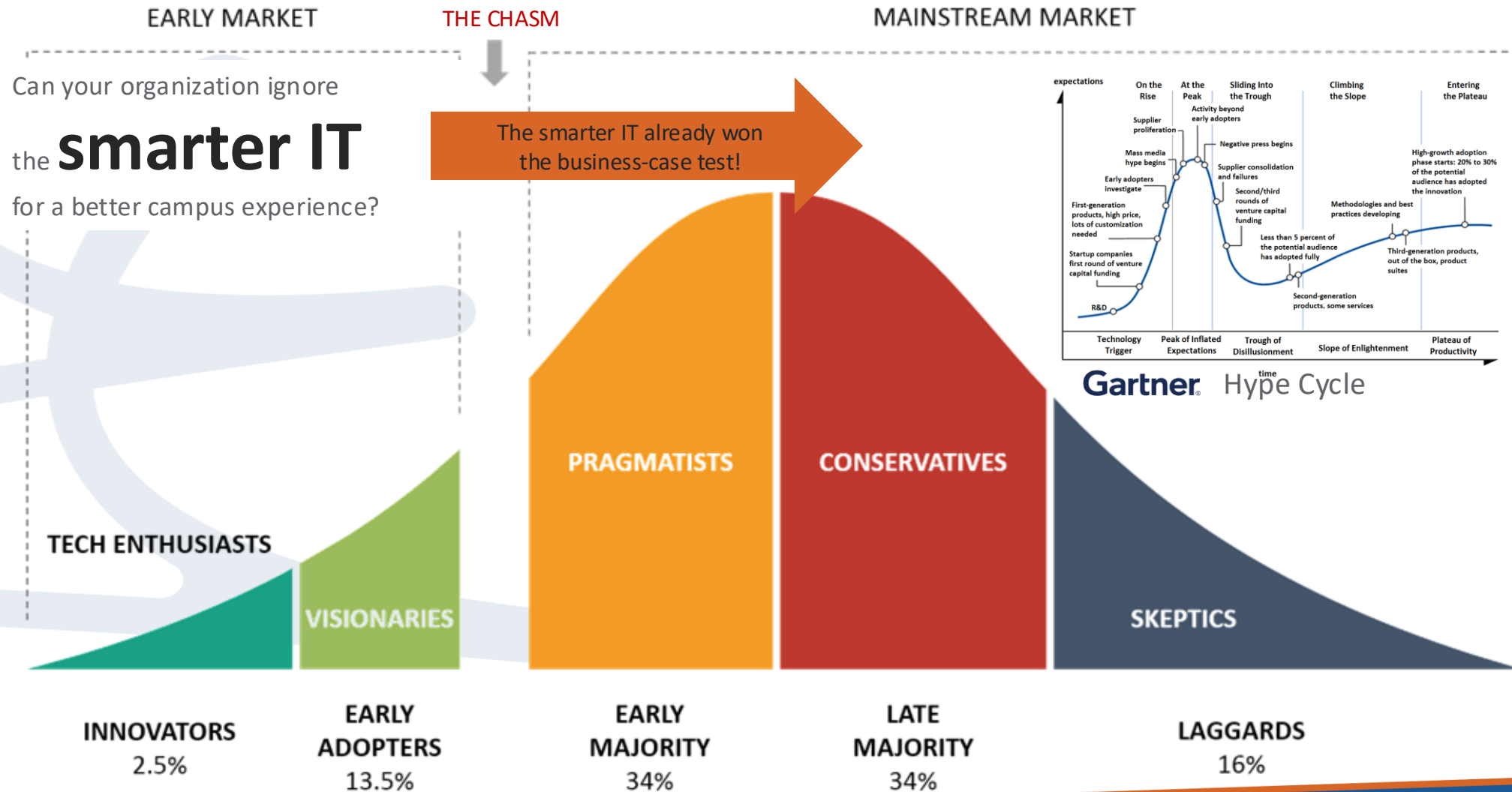
- The eduTAP solution is wallet **agnostic**, not bound to a specific wallet provider or company
- eduTAP just enables HEI and Service Providers to easily **create** and **issue** wallet passes

Credential Management Platform and eduTAP Components

→ Architecture of the delivery system



Adoption of digital credentials and mobile credentials



Recognition of eduTAP @ Conferences

ECCA Conference 2025 LMU Munich, Germany

Mikhail Strunkin · 1.
Global Physical Access Partnerships for Google Wallet at Google
1 Monat · Bearbeitet ·

That time of year again - when tech vendors and universities gather under the roof of **ECCA - European Campus Card Association** to tackle the never-ending puzzle of digitizing the European Student Card.

This year, it feels like **Alexander Loechel** might just be the one to finally crack the code!

Let's see if 2025 is finally the year we go fully digital at **Ludwig-Maximilians-Universität München** and other **EUGLOH** members.

I have some confidence, finally :)

#DigitalStudentID #ECCA2025 #eduTAP #GoogleWallet

Übersetzung anzeigen



EUNIS Conference 2025 Belfast, UK → Elite Award

EUNIS
846 Follower:innen
3 Wochen ·

Celebrating Excellence at #EUNIS25!

We are proud to announce the recipients of this year's EUNIS Awards, recognizing outstanding contributions to digital transformation in higher education across Europe:

- Best Paper Award went to **Bernd Decker** and **Denise Dittlich** (IT Center, RWTH Aachen University)
Paper: "Cost Management for the Use of Generative AI in Higher Education: A Case Study from North Rhine-Westphalia"
- Elite Award awarded to **Simon Lund** and **Alexander Loechel** (Ludwig-Maximilians-Universität München)
Paper: "eduTAP Common ID - A Standardized Digital Identity Document for HEIs"
- Special Award on lasting achievement was granted to **Ognjen Orel**, **Matija Kranjčič**, and **Mirna Imrović** (University Computing Centre, University of Zagreb)
Paper: "The Evolution of ISVU: 20+ Years of the National Student Management System in Croatia"
- Darup Award recognised the **Conservatoire National des Arts et Métiers** team for their innovative work
Paper: "When Virtual Reality Reinvents Training: The Cnam Bet with CAPVR"
- Congratulations to **Christian Cousquer**, **Mahé SYLLA**, **Rebeca Garcia**, **Sohayb Khoulani**, **Fanny Hauquier**, **Catherine Gomez**, **Vincent Caqueret**, **Marion Pomet**, and the entire team!
- Emerging Professionals Award
Awarded to **HANBIT CHOI**, **Aksel Skulderud Fossas**, **Zara Mudassar**, **Sander Garland Slinning**, **Arman Bulak Hagella**, and **Eira Bjerkeng Scherjon** (Sikt - Kunnskapssektorens tjenesteleverandør)
Paper: "Beyond the Hype: Real-World Insights on AI Integration and the Value of Alternative Solutions"

A huge congratulations to all winners for your innovation, dedication, and impact on the higher education IT landscape!

#EUNISAwards #HigherEd #DigitalInnovation #AI #VR #DigitalID #EUNISCom

Übersetzung anzeigen



User Experience is key

eduTAP ist about **Service Access** on site (on and off campus)

- For Member of the Higher Education Institution
- For incoming members of other Higher Education Institutions / Partners ← Mobility (short- and long-term)

For the Person **User Experience** is key, it should be as easy and simple as possible



WLAN Access



Login to Online Services

eduTAP

Authentication to physical
(on-site) services

→ To access services on site it should be as easy as using the WLAN with eduroam



European University Alliance for Global Health

eduTAP

<https://eduTAP.eu>

*Modern Campus ID (Student ID / Staff ID)
for universities in Europe & the world*

Concept of eduTAP



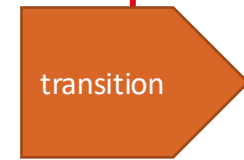
The LMU Student ID (over time)

LMU Student ID till 2019

LMUcard Student ID 2019-2025

LMU Student ID 2025+

LMU Student ID 2027+ ?



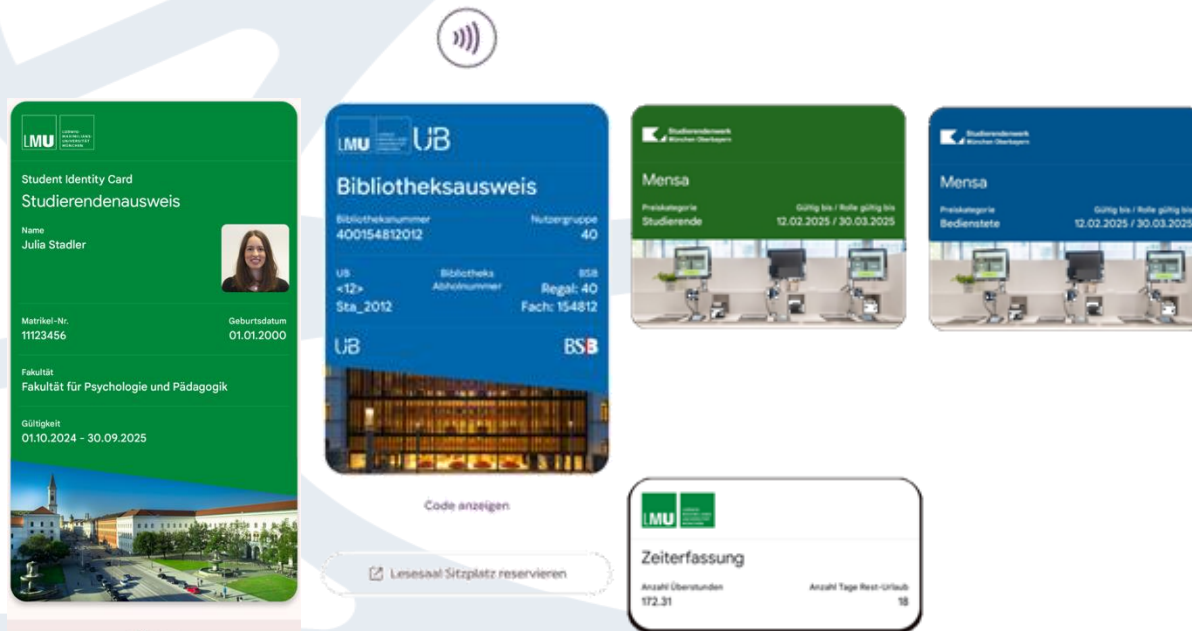
today

eduTAP & eduTAP@LMU

Transition of credentials into the Smartphone Wallets

Examples: Active and potential IDs for LMU Munich

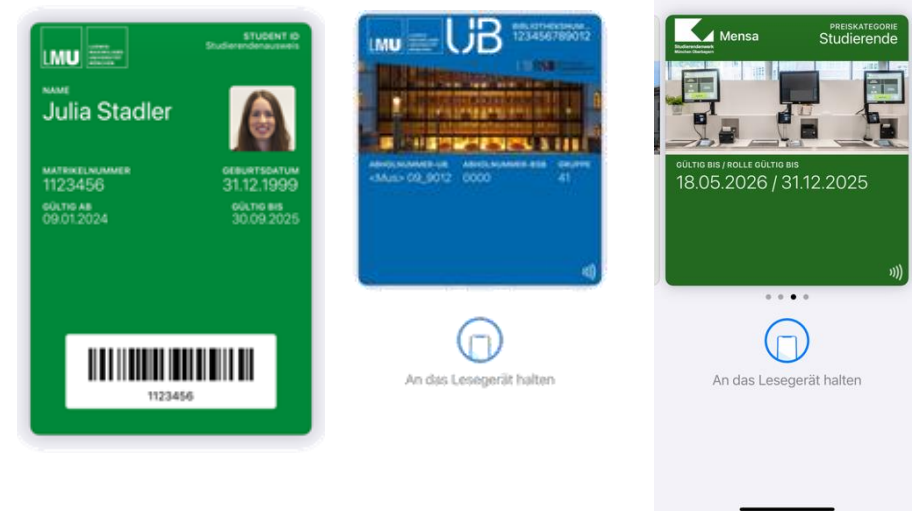
Google Wallet



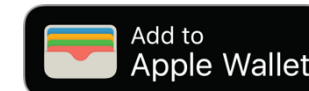
→ all **NFC enabled**



Apple Wallet

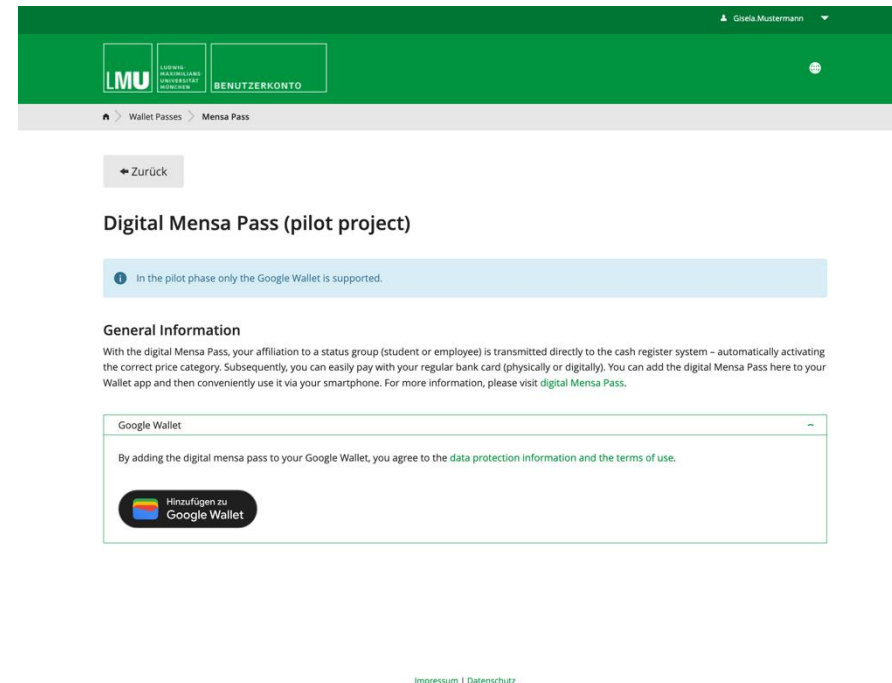
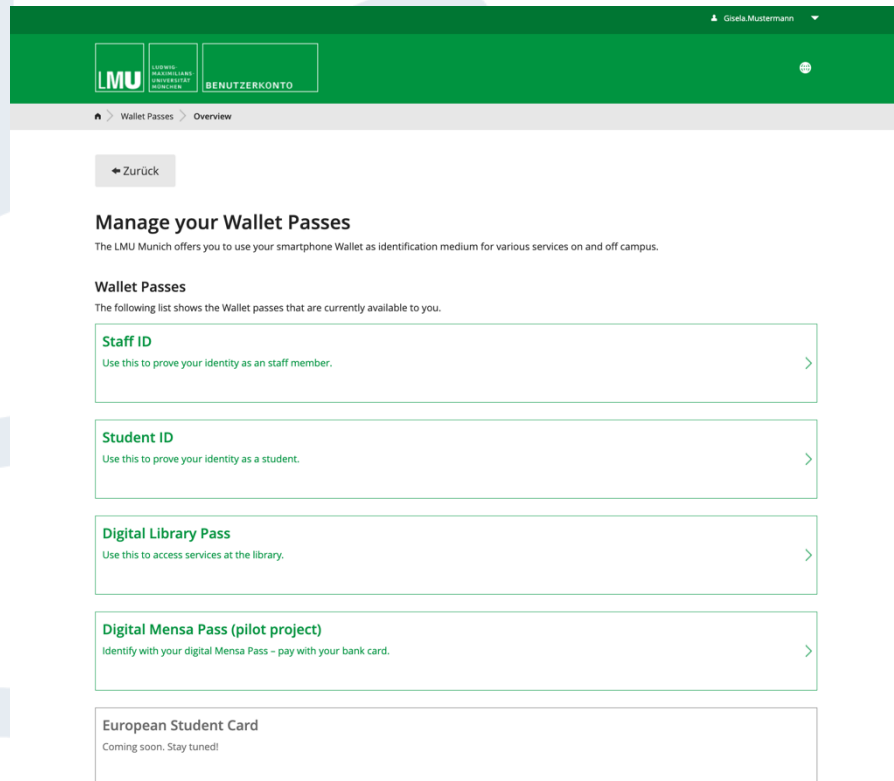


→ **NFC enabled** where possible

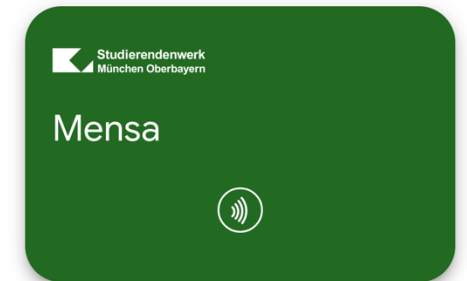


Transition of credentials into the Smartphone Wallets

Examples: LMU Munich Benutzerkonto – Central Pass Portal for HEI member



Add loyalty card



After adding your loyalty card to Wallet, you'll see your point balance and loyalty benefits in places like Maps, Shopping, and more. You can turn this off in [Google Wallet passes data](#) or on an individual pass in the Google Wallet app.

Pass providers can automatically add related passes, promotions, offers and more to your existing passes which can be controlled on your device in Wallet settings.

[Terms and Privacy Policy](#)

Add

→ Plan to have all pass types online at LMU in the summer semester 2026 mostly design questions and information on the back are discussed

Transition of credentials into the Smartphone Wallets

LMU Student ID

The new **LMU Student ID** in the Wallet

- ✓ will come operational in summer semester 2025 (optional to LMUcard)
- ✓ for summer semester 2027 either physical LMUcard or wallet ID



Google



Apple

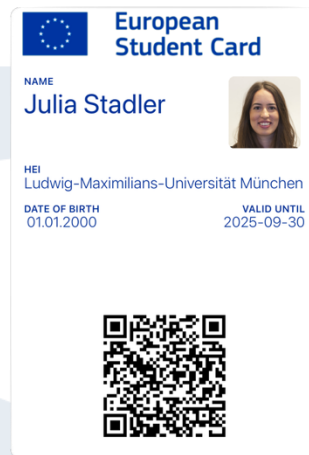
more wallets to come

Transition of credentials into the Smartphone Wallets The European Student Card

The European Student Card (v1.1 new ESC Design)

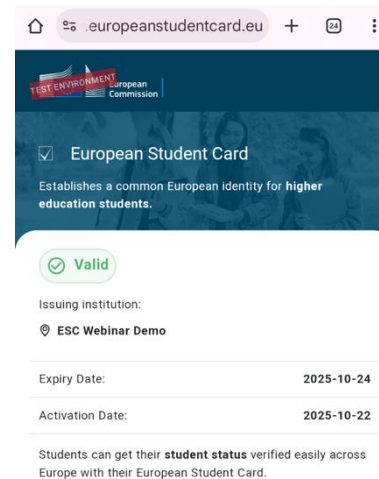


Google

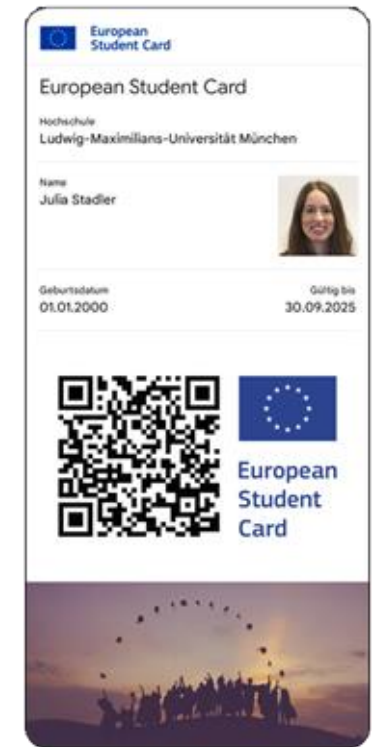


Apple

- ✓ Discounts off-campus
- ✓ European dimension → Erasmus+ marketing
- ✓ Online status verification



(v1.5)



Google

Discount-Pass for Mensa Studierendenwerk München Oberbayern

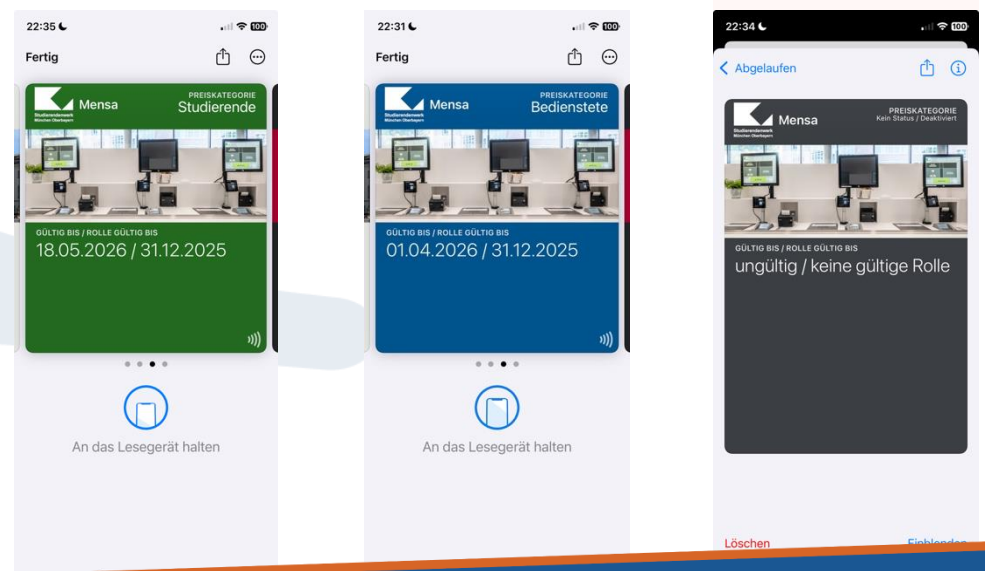


Eligibility verification for discounts with the Apple / Google Wallet via NFC, payment with an Open-Loop Bank / Credit-Card

Google Wallet
Since Feb. 2025



Apple Wallet



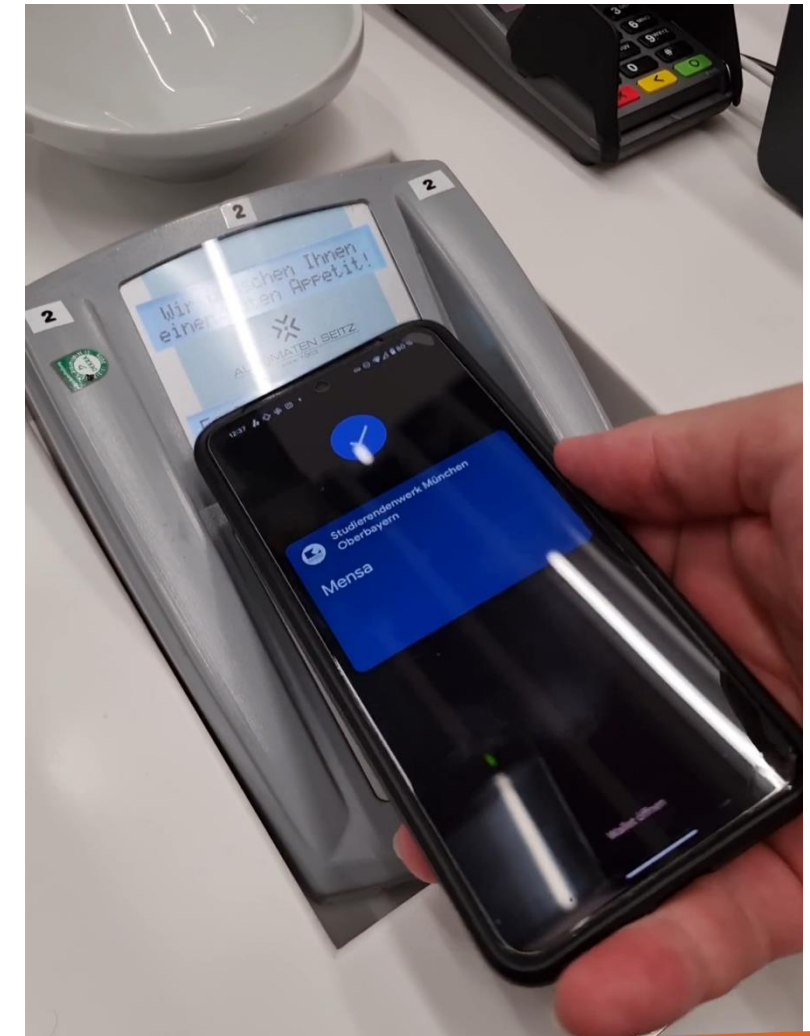
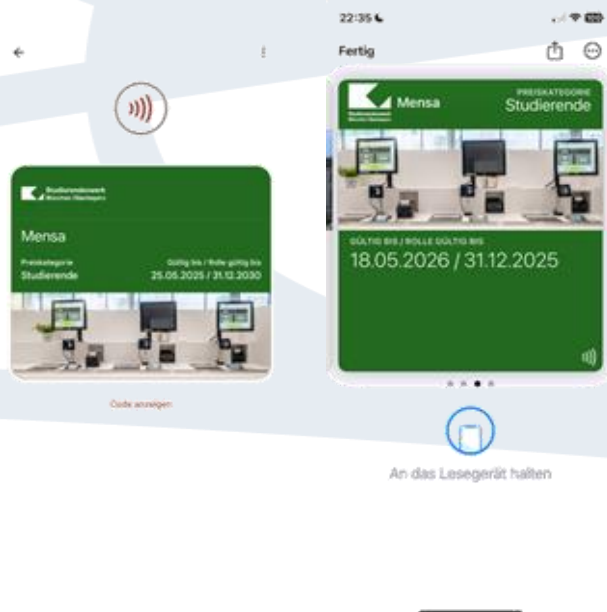
Discount-Pass for Mensa Studierendenwerk München Oberbayern



Payment Process in the Mensa

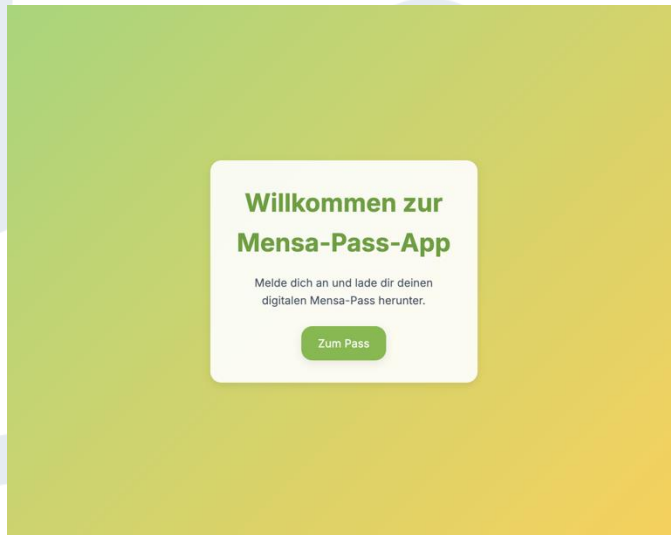
Double Tap:

1. Eligibility verification of status group (Student, Employee, Guest)
→ Discount will be applied
2. Pay with an Open-Loop Bank / Credit-Card



Transition of credentials into the Smartphone Wallets

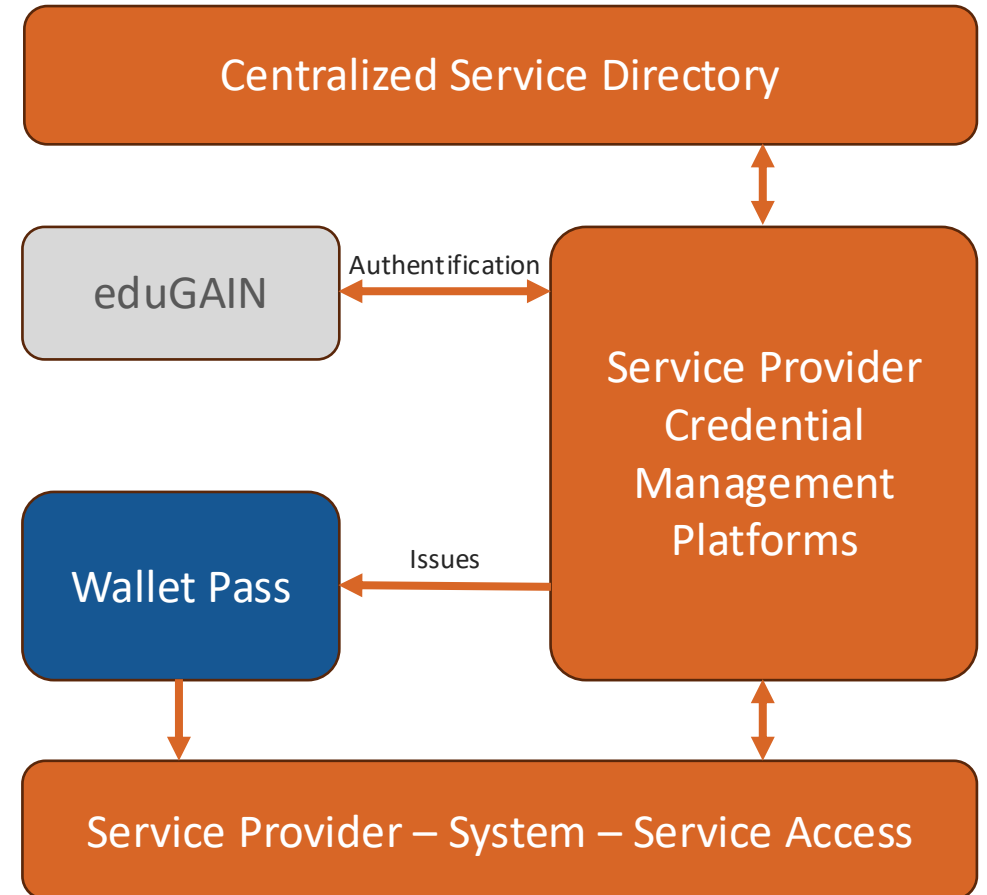
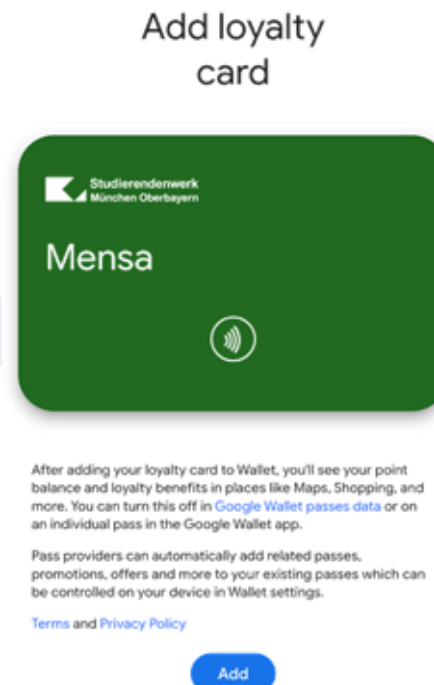
Dedicated Pass Portals for login via eduGAIN



<https://mensapass.stwm.de/>

*Currently only open to Munich HEIs,
as guests don't get discounts,
but can pay directly via
Open-Loop-Payment*

*→ Discounts for Alliance Members are
politically discussed and in preparation*



Transition of credentials into the Smartphone Wallets Library ID

NFC enabled by default



Code anzeigen

Google

© Lesend Stuttgart reservieren



An das Lesegerät halten

Apple



Transition of credentials into the Smartphone Wallets

Use Case: Physical Access Control (Access to learning spaces)

Physical access to the learning spaces (provided by the library)

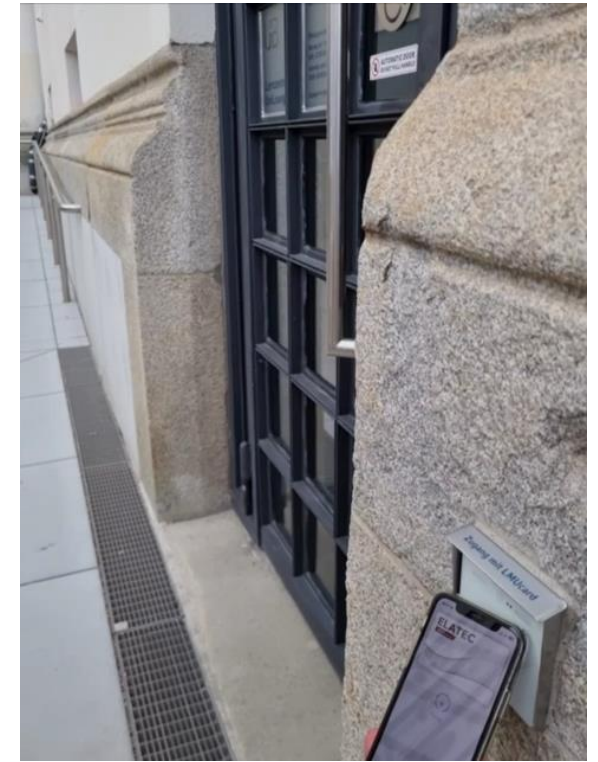


LMUcard

Access



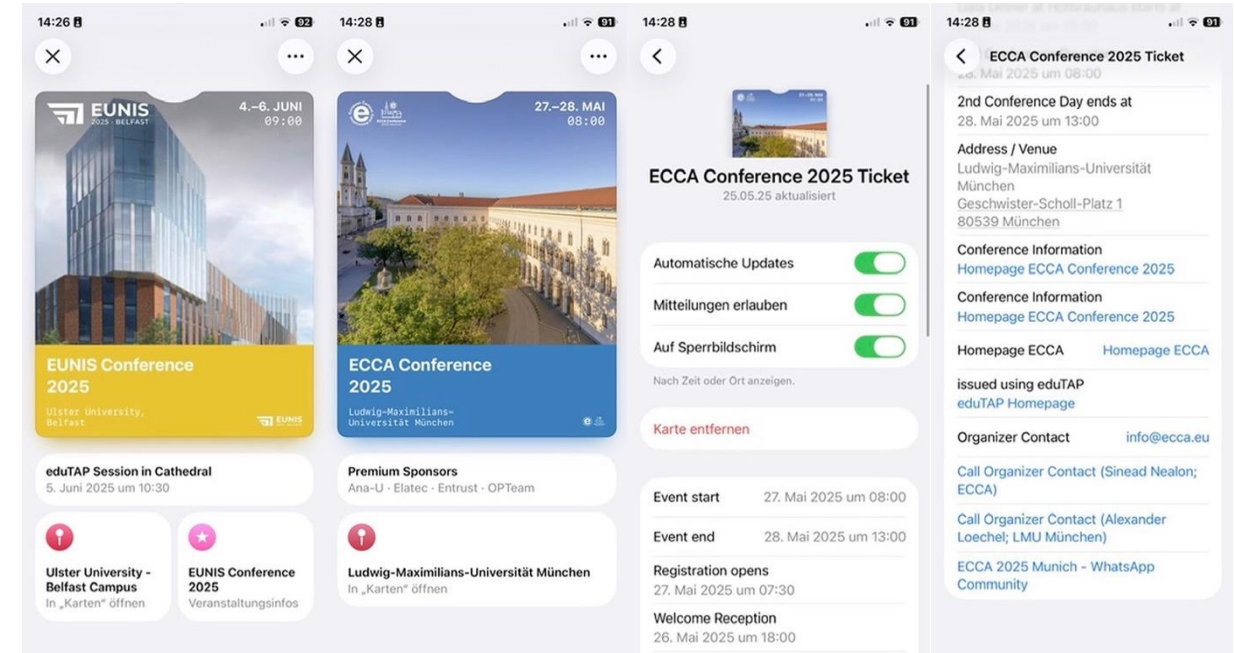
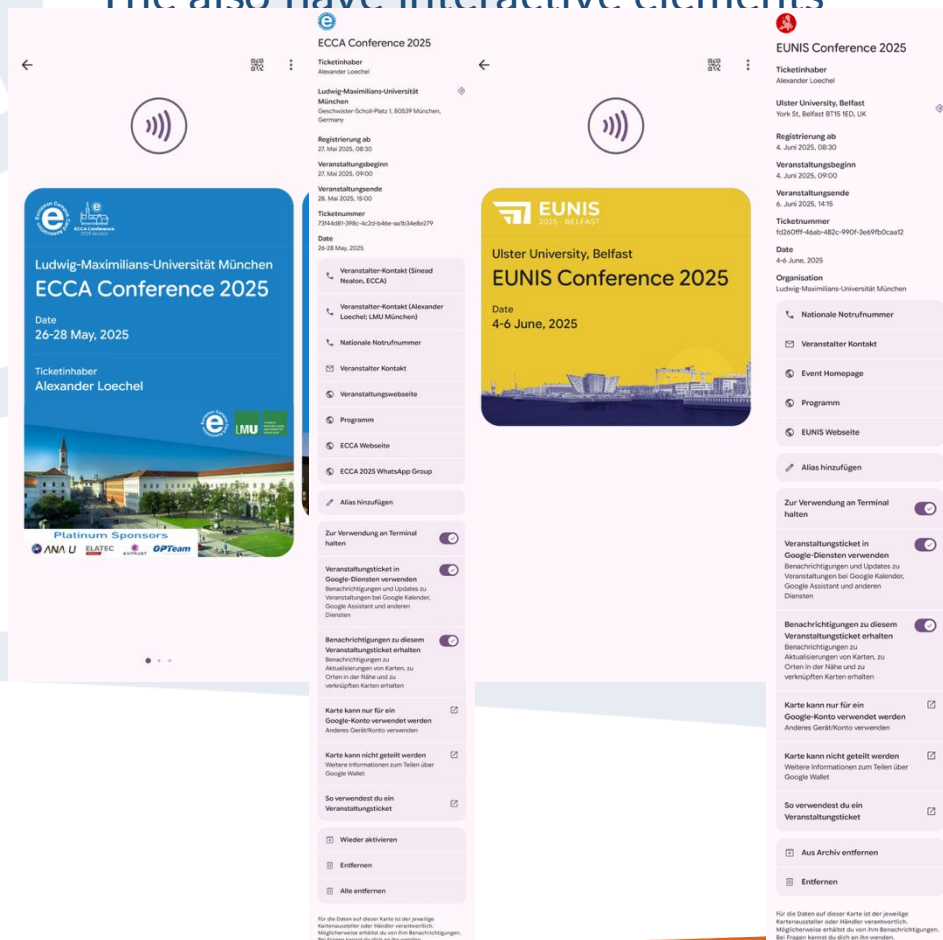
Google Smart Tap



Apple

Mobile Identity → Credentials Communicate with holders

- Wallet passes are updateable, revokable, and have communication channels
- They also have interactive elements



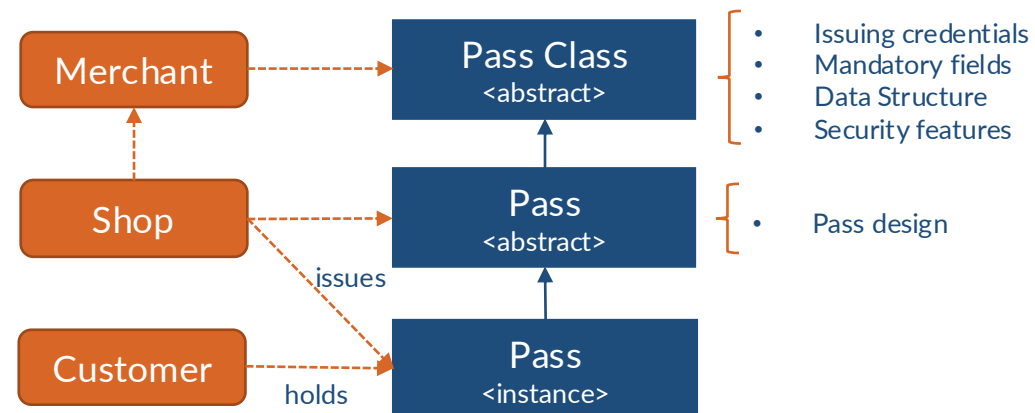
- Ability to send messages to a pass
- Pop-Up on time- or location bases events
- Geo-fencing of passes

Technical details and features of Wallets / Passes

The wallet is a **container for multiple passes**

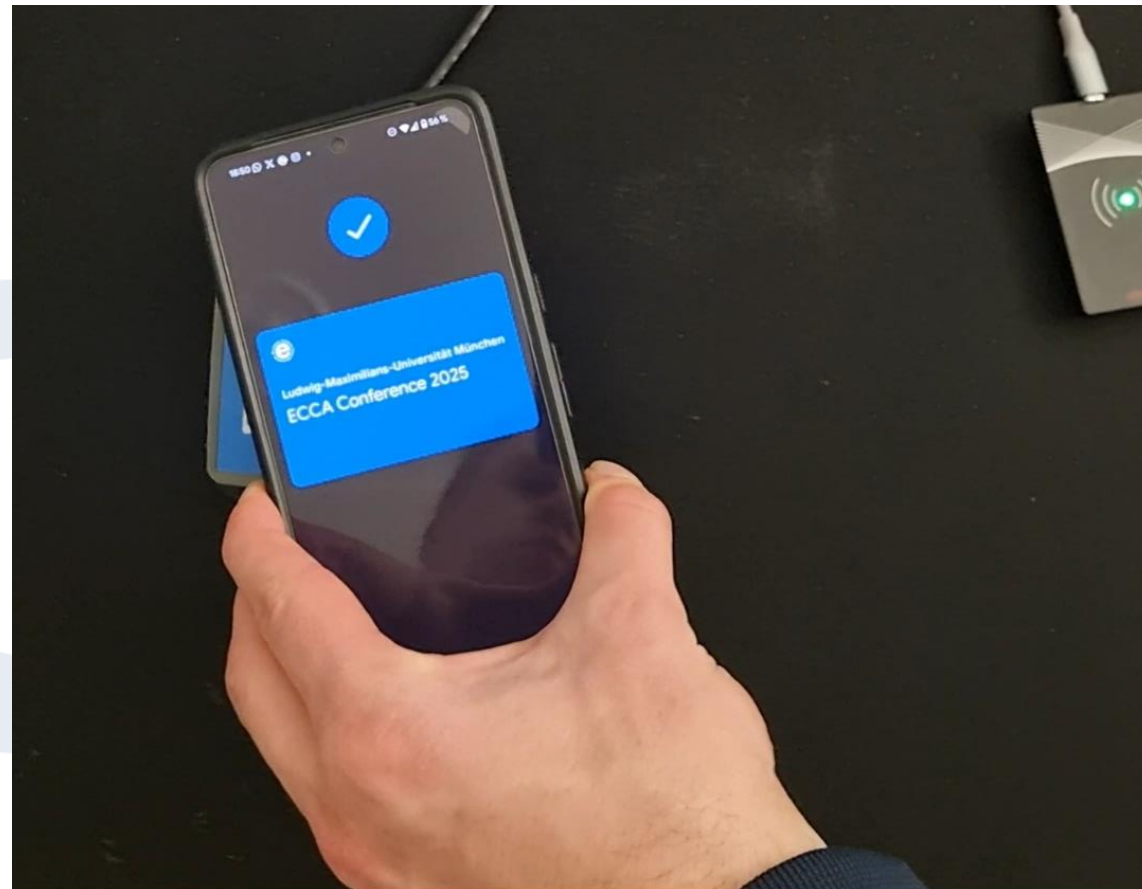
Technical features:

- **Auto-Presentment / Smart Select** ← reader selects the specific pass to interact with (if available)
- Selectable Authentication requirements ← **security features**
- Express-mode (Apple)
- **Battery reserve** (pass is still usable if phone has powered off; important for keys, transit tickets, payment)
- Groupable
- Validity dates
- Remote updateable / revokable
- **Offline usable** (→ non traceable)
- *Host Card Emulation possible*



Technical details and features of Wallets / Passes

Auto-Presentment / Smart Select of an NFC enabled Pass in the Wallet



Technical details and features of Wallets / Passes

Battery Reserve Mode – Use the Wallet even if it's powered of

- for Keys (Dorm-Rooms, Class-Rooms, Building Access, Cars)
- for Payment
- for Transport Tickets

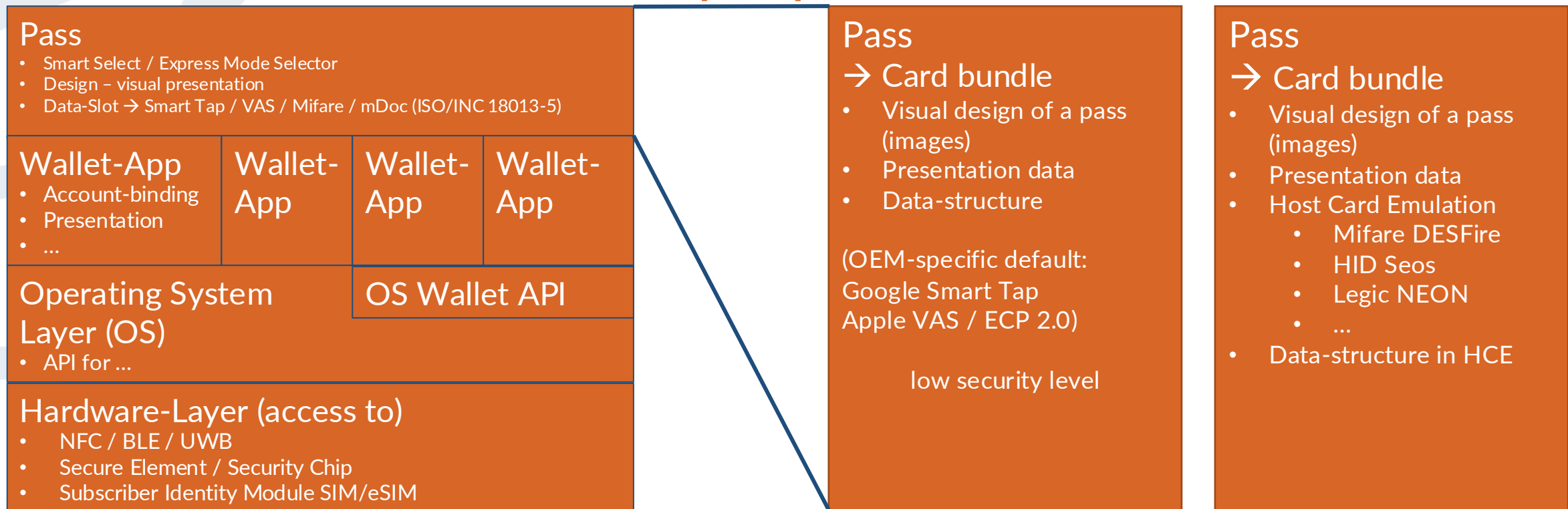


Up to 7 Days after shutdown of the smartphone



Technical details and features of Wallets / Passes

- ✓ Technical details and features of wallets / passes → Path to an **interoperable** campus card
- ✓ If each pass (technology) can be individually selected and leveraged, and the pass in the wallet can be selected by the reader (**Smart Select / Auto-Presentment**)
→ **One pass per service**



Technical details and features of Wallets / Passes

- For contact less communication is NFC the protocol
- Communication via ISO 14443
- Data Formats (File System access)
 - Google Smart Tap
 - Apple VAS (Value Added Services)
 - NFC ECP 2.0 (Enhanced Contactless Polling)
 - Host Card Emulation (HCE: of proprietary Protocols)
 - Mifare DESfire (via Mifare2GO / NXP secure element)
 - Legic NEON / Advant (via Legic Connect)
 - HID Seos
 - Internal the Secure Module acts as a JCOP smart card
- ISO 18013-5 Personal Identification
 - NFC handover to BLE or WiFi
 - Core functionality in Android and iOS OS API*
- Security consideration required by use case



Security Level
Chip / Smartcard

Security Level
Smartphone

high

high

Legic NEON
Legic Advant
Mifare DESfire
HID Seos

ISO 18013-5

ECP 2.0

Smart Tap
VAS

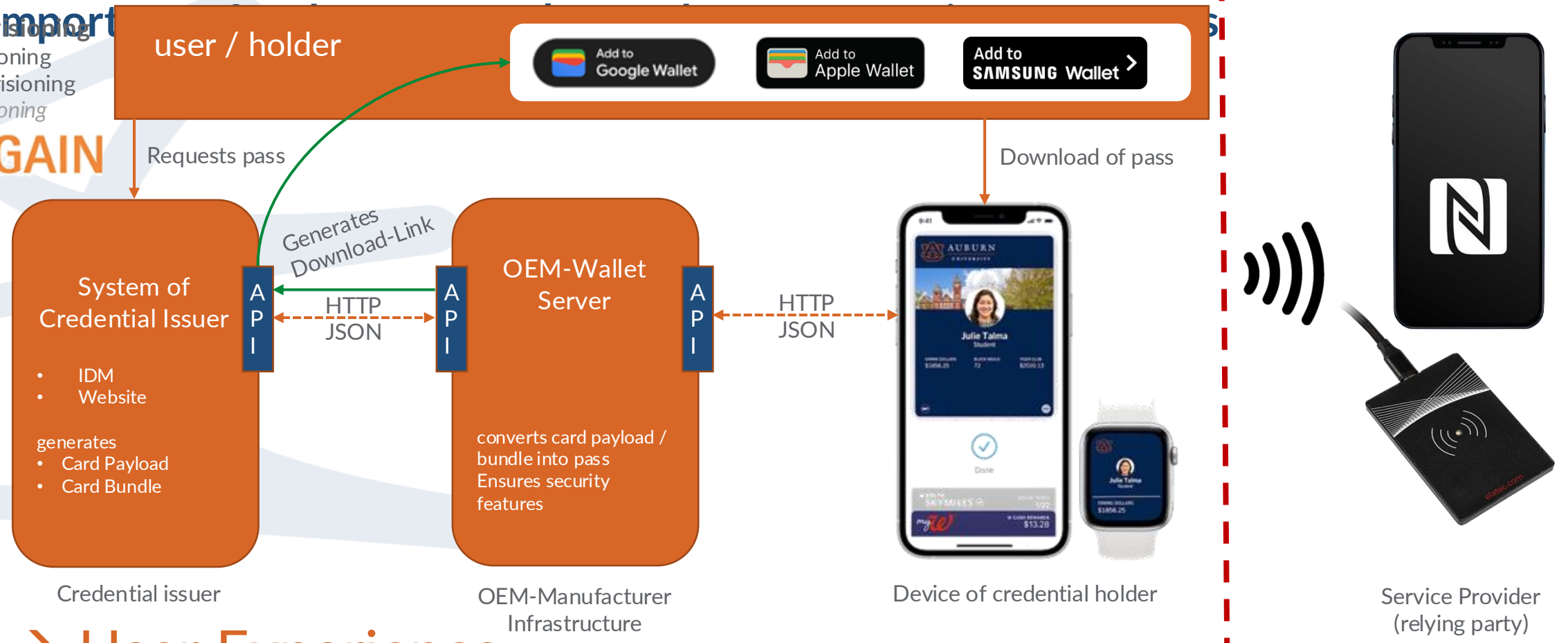
low

Mifare Classic /
Card UID

low

Issuing process of wallet passes reedeming

- Web-Provisioning
 - App-Provisioning
 - Wallet-Provisioning
 - Push-Provisioning
- eduGAIN



→ User Experience



European University Alliance for Global Health

eduTAP

A *sneak peek* into the future of Student IDs

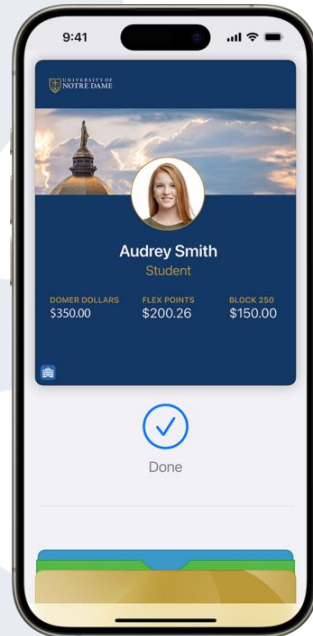
→ More interoperability and less passes by Verifiable Credentials

eduTAP Common ID



eduTAP and the current Apple / Google Student IDs

How about the native, current **Student IDs** in Apple Wallet & Google Wallet (Mifare or HID based)?



- ✓ Fantastic integrated cards (**one card** for all services, perfect for **corporate**)
- ✓ *Should be used for all university services* (Apple's intention)



- University / organisation-centric optimization
- Does not support the “seamless mobility” requirement
- Shared services, how about other users than own students?
- **LESS secure** (if following the ESC data zone approach)
- Not the required User Experience, and does not meet the legal requirements

This is a **dead-end solution**, it will not help or bring benefit, it actually provides a **WORSE User Experience**

It does **NOT** support **Selective Disclosure** and **Zero Knowledge Proof**

Apple and Google is aware of this and working on it!

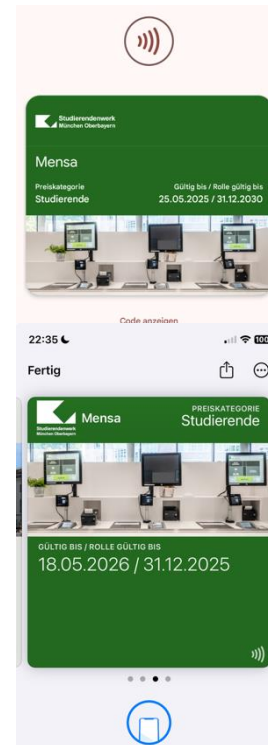
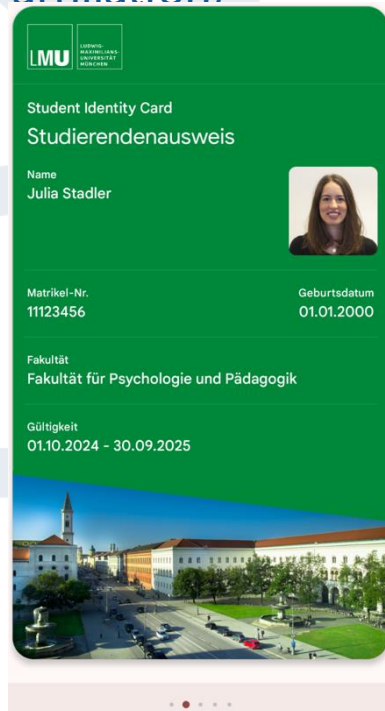
Apple and Google Access Platform are good for PAC and Payment passes

- **NOT** for Student or Staff IDs
- **GOOD** dedicated service passes

Wallet Passes are about a great User Experience

A **great User Experience** is key to adoption and usage

- ✓ Non-NFC Passes are **NO GOOD** User Experience
- ✓ Unnecessary passes should be avoided ← NO dedicated pass for simple eligibility verification (status, institution affiliation)

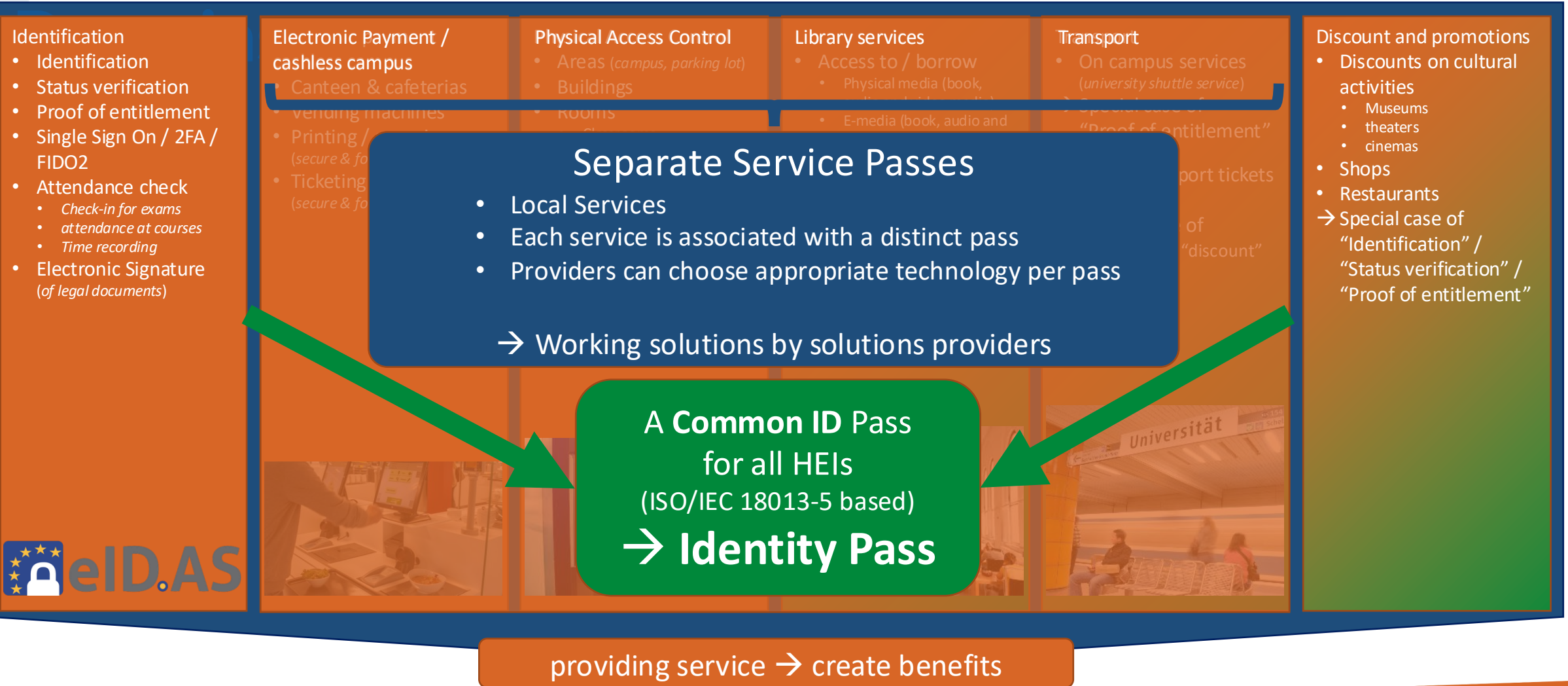


transition



- ✓ Verifiable Credentials
- ✓ Selective Disclosure
- ✓ Zero Knowledge Proofs

Think outside the card: Medium → Services



Service Domains: Identity and Discount

From a legal point of view, Identity Documents of public universities are **official state photo IDs**

- ✓ Legal requirements
 - ✓ Security considerations
 - ✓ High assurance level
- **International standards** for HEI Identities → eduGAIN (incl. eduPerson, SCHAC)
 e.g. European Student Identifier → routable information for course participation at other institutions (during mobility programmes)

Identity Documents (Student ID, Staff ID and Affiliate IDs) are used

On-Site (proximity use-cases)

Online

On-Campus

Off-Campus

- ✓ Attendance at courses
- ✓ Check-in for exams
- ✓ Time recording
- ✓ Discounts in canteen & cafeterias
- ✓ Identification for university authorities (Student legal office and examination offices, campus security)

- ✓ Identification for public authorities (e.g., police)
- ✓ Identification for third party (e.g., checkin at hostels)
- ✓ Eligibility verification for discounts and access (e.g., role-based, age-based, institution related)

- ✓ As authentication factor

Verifiable Credential for HEIs (Prototypes)

European Student Card as Verifiable Credential



DC4EU non-foundational Ids

Table with available schemes for non-foundational IDs

Scope	Data model name	Brief explanation	Status/ Detailed explanation	Schema URL	Registry URL
Non-foundational identity	EducationalID	Identifies the natural person in the context of an educational organisation, including national extensions	Available	Schema	Verifiable Data Registry
Non-foundational identity	AllianceID	Identifies a student or staff member as affiliated with a European university alliance	Available	Schema	Verifiable Data Registry
Non-foundational identity	EuropeanStudentCard	European Student Card for student mobility, based on DG-EAC's service	Available	Schema	Verifiable Data Registry
Non-foundational identity	MyAcademicID	Identity credential for student mobility, based on MyAcademicID and eduGAIN infrastructure	Available	Schema	Verifiable Data Registry
Non-foundational identity	ProfessionalID	Identity credential for , based on	Available	Schema	Verifiable Data Registry
Non-foundational identity	DoctorID	Identity credential for , based on	Available	Schema	Verifiable Data Registry
Non-foundational identity	EngineerID	Identity credential for , based on	Available	Schema	Verifiable Data Registry

<https://github.com/dc4eu/educational-pilot/tree/main/sectorial-eaa-catalogue>

Mobile Identity → Digital Identity

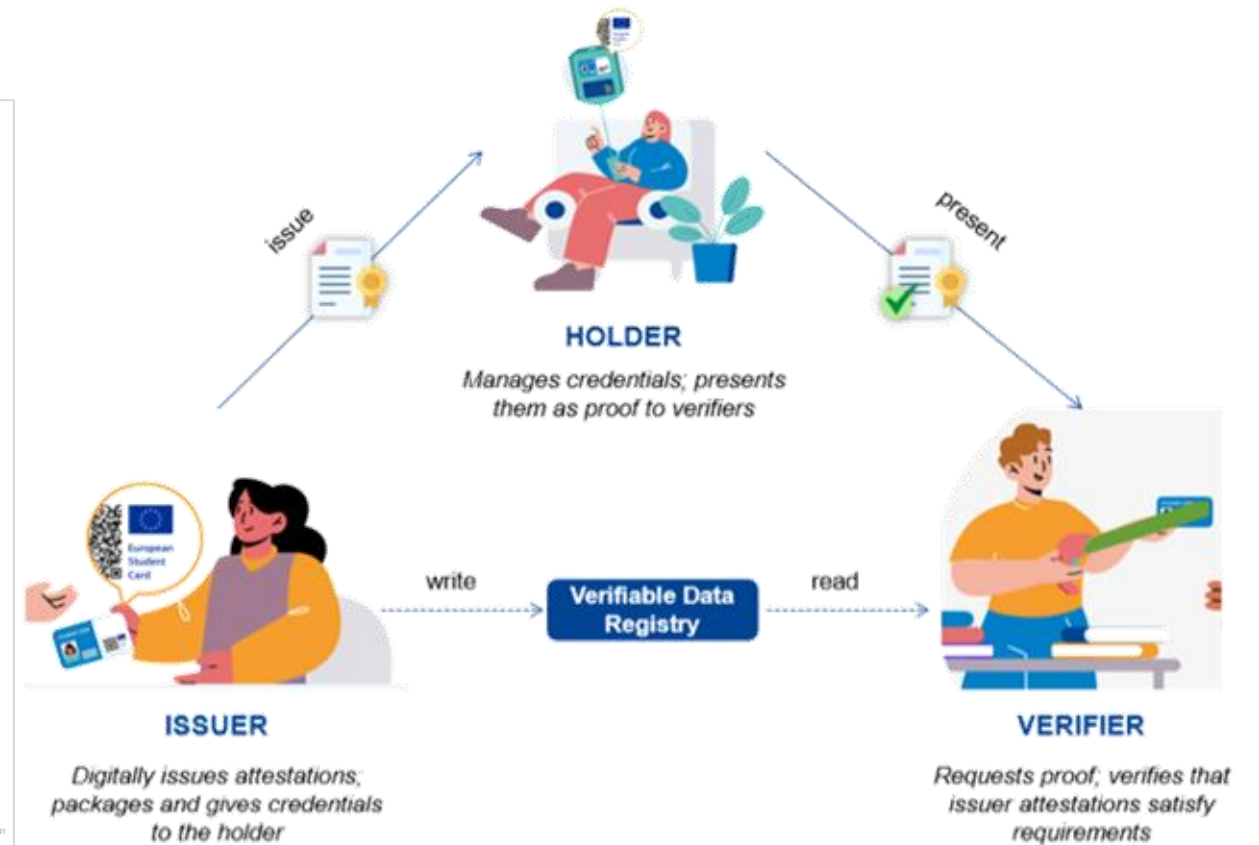
European Student Card Verifiable Credential Pilot Report

- W3C Verifiable Credential Data Model v1
- ELM (European Learning Model) Based Data Model – Attribute Structure
- Revocation / Update Process required



ANNEX I: Participating organisations

Participating organisations	
Organisation	Country
Aegean University	Greece
Aristotle University of Thessaloniki	Greece
Freie Universität Berlin (Una Europa alliance)	Germany
Katholieke Universiteit Leuven (Una Europa alliance)	Belgium
Ludwig-Maximilians-Universität München	Germany
National and Kapodistrian University of Athens	Greece
Politecnico di Milano	Italy
Sikt	Norway
Universidade de Beira Interior	Portugal
Università di Bologna (Una Europa alliance)	Italy
Università di Pavia	Italy
Universitat de Barcelona	Spain
Université de Strasbourg	France



Digital Identity in the Wallet

Common Verifiable Credential Formats / Protocols for Digital Identities

- SD JWT (EU)
- ISO/IEC 18013-5 (mDL & mDoc)
- W3C Verifiable Credential Data Model

Issuing and Redemption Protocols

- OID4VC (OID4VCI and OID4VP)
- ISO/IEC 18013-5

For **proximity** use-cases NFC / BLE transmission is crucial

→ Our choice ISO/IEC 18013-5 (mDoc) for Wallet credentials
JWT



DC4EU → SD

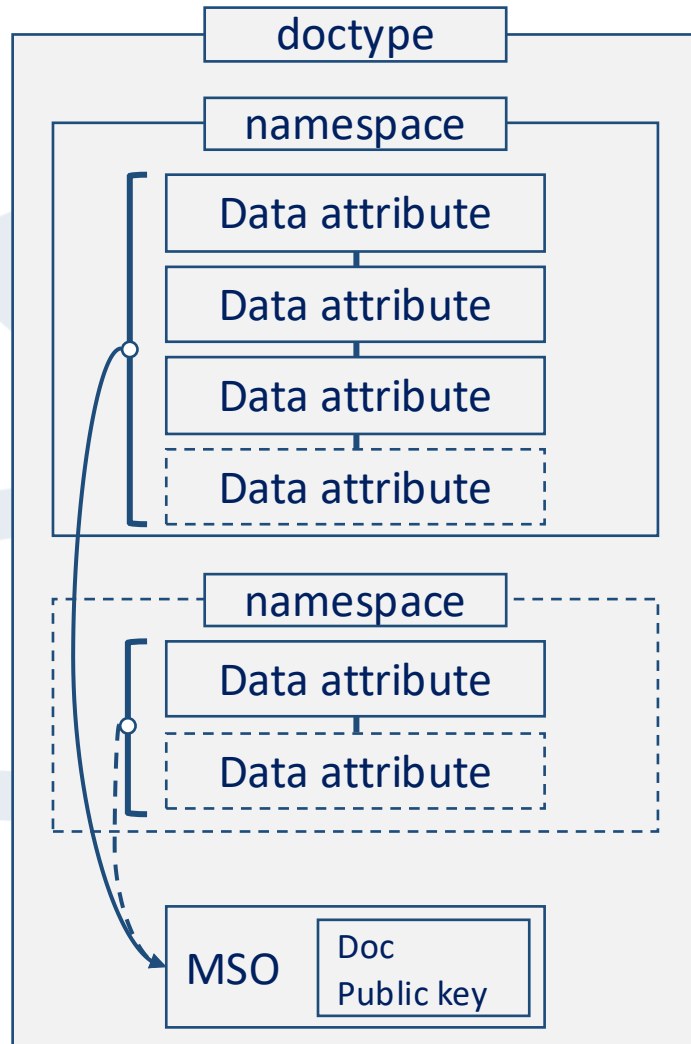
A Common Identity Pass using the ISO/IEC 18013-5 model

- The “ISO/IEC 18013-5 Personal Identification” model is designed to support
 - A protocol for two devices to establish a **secure wireless communication** channel and exchange structured request and response message
 - **Identification** of the credential holder (**user binding**)
 - **Selective release of data elements** by the credential holder (**data minimization / consent**)
 - **Pre-consent** mechanism for frequently repeated processes (e.g., discount payment at Student Affairs Unions)
 - A protocol to retrieve credential data directly from the mobile device of the holder, **purely offline**, facilitating **availability** and **non-traceability**
 - An **optional** protocol to **retrieve additional data** from the issuing authority
 - A mechanism to establish **integrity** and **authenticity** of the credential data
 - A mechanism to confirm **device binding** (signing at transaction time)
 - Multi-document and **multi namespace aware** ← extendable for other use cases
- **Established governmental credential format that is already in use** ← Following the **ARF of EUDI-Wallet**
→ mobile driving licence / eu.europa.ec.eudiw.pid.1 (prototype of national eIDs in Europa)
- **Already supported** by the OEM-Smartphone-Manufactures (Apple and Google)
→ see: <https://android-developers.googleblog.com/2020/11/privacy-preserving-features-in-mobile.html>



**EU Digital
Identity Wallet**

Identity Pass: ISO/IEC 18013-5 Data model



Reuse of directory data (common eduGAIN attributes)



- portrait (photo, *mandatory for identification documents*)
- givenNames
- sn (surname)
- email
- eduPersonAffiliation / eduPersonScopedAffiliation
- eduPersonEntitlement
- eduPersonAssurance
- schacHomeOrganization
- schacPersonalUniqueCode → European Student Identifier (ESI) - MyAcademicID
- schacDateOfBirth
- schacYearOfBirth
- schacPlaceOfBirth
- schacExpiryDate
- ...



*works like a Shibboleth authentication
on-site → trained processes*

see also DC4EU education ID

(<https://code.europa.eu/ebsi/json-schema/-/tree/main/schemas/vcdm1.1/education/verifiable-education-id>)

- ✓ Shibboleth – local or in federation (national or multi-national) → eduGAIN-AAI → SAML2 or OIDC



Informationsweitergabean MyAcademicID IAM Service

Beschreibung des Dienstes: The MyAcademicID IAM Service provides Identity and Federated access management for the services of the European Student Card Initiative and the services directly supporting the digitisation of Erasmus+. The MyAcademicID IAM Service is provided by GEANT using the eduTEAMS service.

Zusätzliche Informationen über diesen Dienst:
<https://wiki.geant.org/display/SM/MyAcademicID+Identity+and+Access+Management+Service>

An den Dienst zu übermittelnde Informationen	
Anzeigename	
Zugehörigkeit	student member staff employee
Vertrauensgrad	https://refeds.org/assurance https://refeds.org/assurance/IAP/low https://refeds.org/assurance/ATP/ePA-1m https://refeds.org/assurance/ID/eppn-unique-no-reassign https://refeds.org/assurance/ID/unique https://refeds.org/assurance/ATP/ePA-1d https://refeds.org/assurance/IAP/middleware https://refeds.org/assurance/profile/cappuccino
Berechtigung	urn:maced:dir:entitlement:common-lib:terms
Personliche ID	@lmu.de
Zugehörigkeit	staff@lmu.de member@lmu.de student@lmu.de employee@lmu.de
eduPersonTargetedID	HV6nox/0SxEhyzk14z+vGnD8D=
eduPersonUniqueid	7b719738eca7b120b6383786b47fe98@lmu.de
Vorname	Simon
E-Mail	@campus.lmu.de
o	uni-muenchen
schacHomeOrganization	lmu.de
schacPersonalUniqueCode	urn:schac:personalUniqueCode:int:esi:lmu.de
Nachname	

Datenschutzinformationen dieses Dienstes

Sie oben aufgeführten Informationen werden an den Dienst weitergegeben, falls Sie fortfahren.

Wählen Sie die Dauer, für die Ihre Entscheidung zur Informationsweitergabe gültig sein soll:

☐ Bei nächster Anmeldung erneut fragen.

☒ Erneut fragen, wenn sich die Informationen ändern, welche an den Dienste weitergegeben werden.

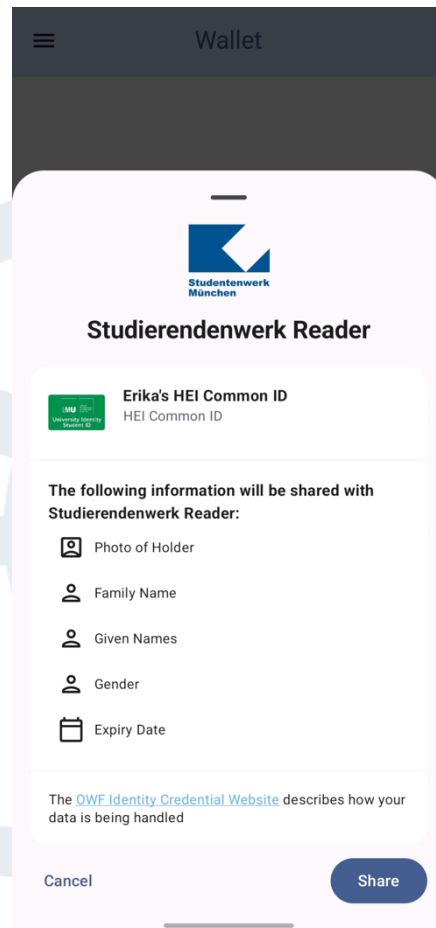
☐ Ich bin einverstanden, dass dieselben Informationen in Zukunft automatisch an diesen Dienst weitergegeben werden.

Diese Einstellung kann jederzeit mit der Checkbox auf der Anmeldeseite widerrufen werden.

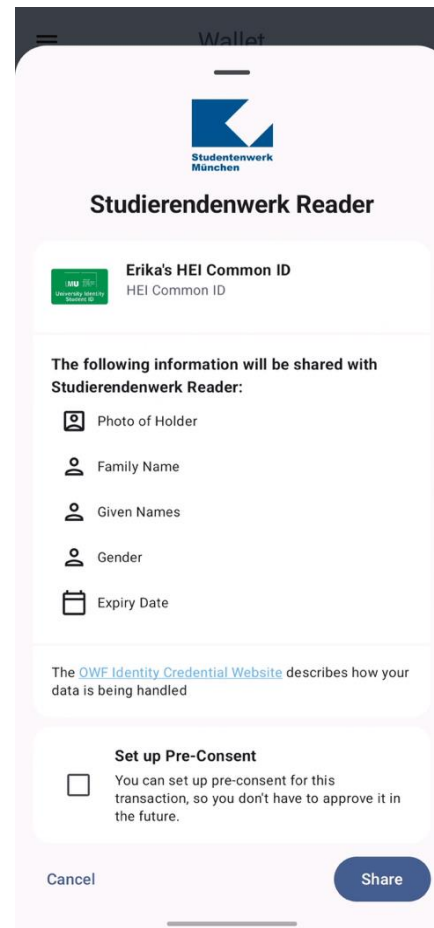
Ablehnen

Akzeptieren

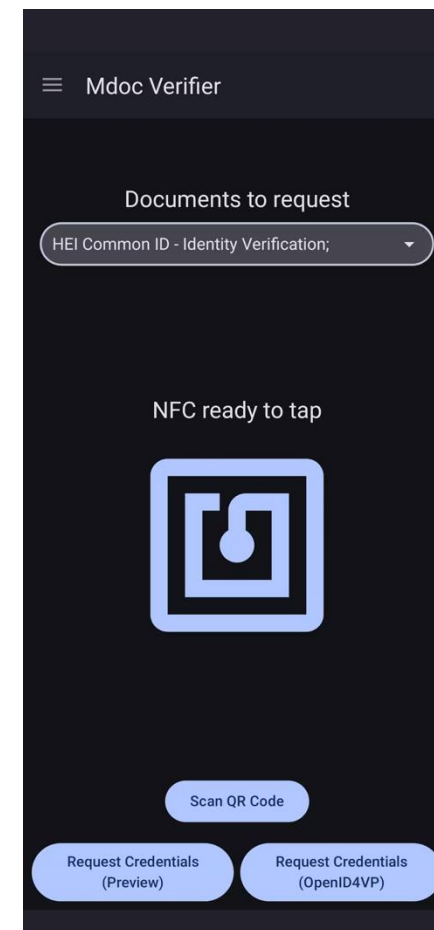
Identity Pass: Path to the best User Experience and Interoperability



Informed Consent



Informed Consent
+ Pre-Consent



Verifier App

A question of scale: Student IDs

European Union

- ~ 5,000 Higher Education Institutions (HEIs)
- ~ 18,800,000+ tertiary students (2022)

Erasmus+ Countries

- Includes EU + Iceland, Liechtenstein, Norway, North Macedonia, Serbia, Turkey
- Significantly expands the European higher education landscape → ~ 20,000,000+ tertiary students

Worldwide

- ~ 18,000 recognized HEIs across 180+ countries
- ~ 200,000,000+ tertiary students globally

→ Organized in
National Research and Education Networks (NRENs)



→ It should work everywhere: seamless mobility & easy service access
→ a GLOBAL Student ID ←



GÉANT – The IT provider for Higher Education in Europe

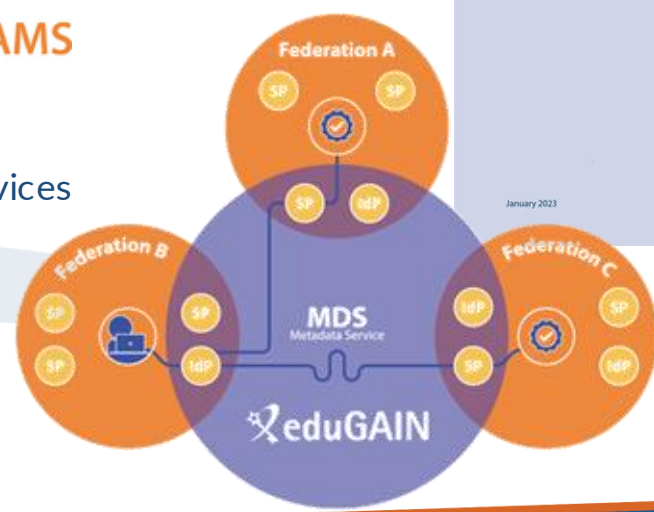
The GÉANT Association is the collaboration of European National Research and Education Networks (NRENs)

- Non-Profit Organization
- Service-Provider for IT / e-Infrastructure services for the European Higher Education Sector
- Pan European – Non EU members
- Key Services:

- GÉANT Trust & Identity Services



- GÉANT Network and Connectivity Services
- GÉANT Security Services
- GÉANT Cloud Services
- Procurement Agency for EU-HEIs



→ eduTAP is a perfect fit for GÉANT Trust & Identity Services

Mobile Identity → Digital Identity

Kano-Model – Systematic for User Experience & User Satisfaction

Adoption of a Technology depends on

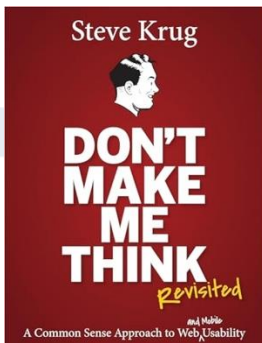
- Does it solve the users / customers needs
- Is the User Experience good enough

Every company gets about three innovation tokens.

Source: Dan McKinley, "Choose Boring Technology"
<http://mcfunley.com/choose-boring-technology>

"Boring" is a good thing - "Boring" let you get things done

Same is true for people, if you **need to think** to get something done it costs effort, and energy for other more important things

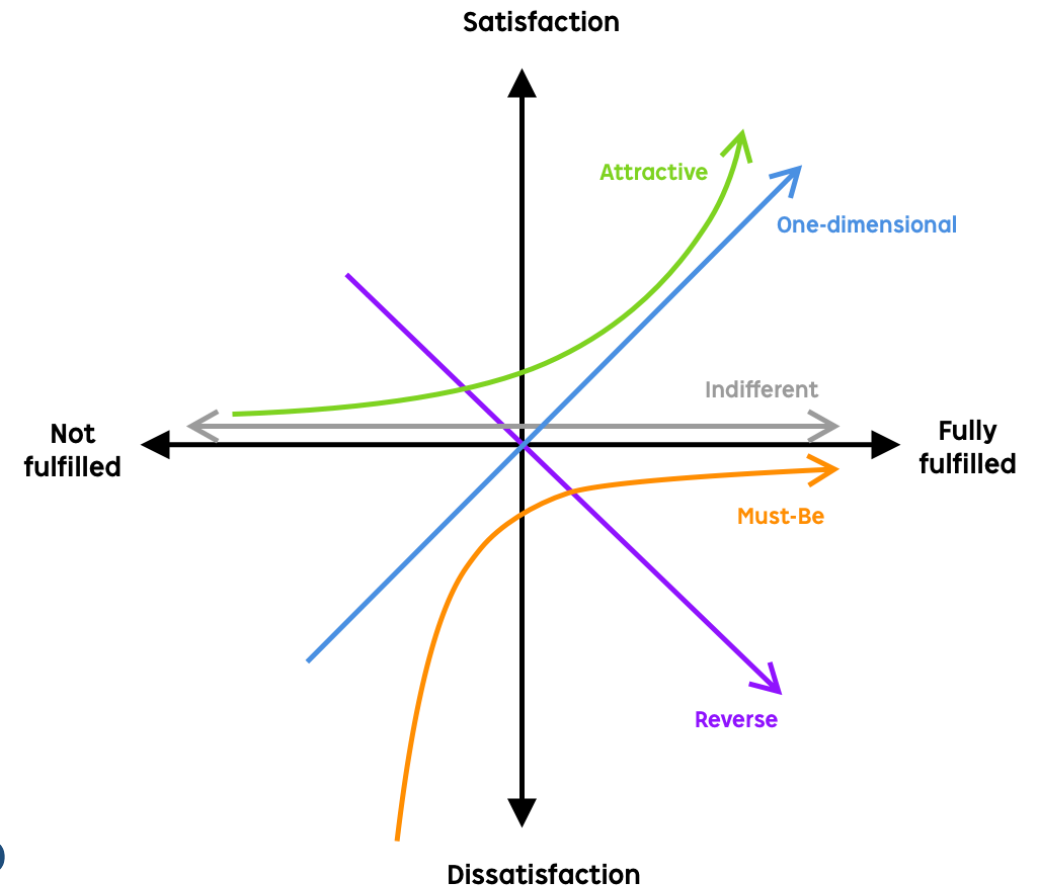


Don't make me Think

→ User Experience is important

You should **NOT** need to care about "boring" and "un-important" stuff

You should be able to focus on the important things
(studying, learning, researching, teaching,...)



Some first conclusion

Services don't fail on technology,
they fail on **missing communication**

Some first conclusion

EUGLOH has a very strong starting position

Looking into the Future of EUGLOH and eduTAP

- EUGLOH 2+ Work-Actions: adoption of eduTAP in all EUGLOH Universities
→ Onboarding of more Universities
- Extension of EUGLOH to new Partners → University of Amsterdam
- Next Erasmus+ Period 2027-2034 → new mandatory digitalization actions
- eduTAP actions
 - Adoption within EUGLOH
 - Dissemination to other Universities und University Alliances
 - → ESC v1 in the ESC-R

Benefits of EUGLOH for Digitalization

We have partners with very strong backbones networks

→ use our



Partner with local NREN (National Research and Education Networks)



eduTAP Links and Documentation

Websites:

- <https://eduTAP.eu/> Project Homepage
- <https://eduTAP.eu/presentations> Presentations about eduTAP
- <https://docs.eduTAP.eu/> Documentation for eduTAP
- <https://github.com/edutap-eu> GitHub Organization with Core Libraries
- <https://github.com/edutap-collective> GitHub Organization for non-Core Packages of eduTAP Components – Examples and Templates

Papers:

- <https://easychair.org/publications/paper/Lvsf> - eduTAP – a Concept and System of Digital Identities for Proximity On-Site Service Access
- <https://easychair.org/publications/paper/ZpCzX> - eduTAP Common ID - A Standardized Digital Identity Document for HEIs

Standards:

- <https://www.iso.org/standard/69084.html> ISO/IEC 18013-5
- <https://www.iso.org/standard/76927.html> ISO/IEC 14443-4:2018
- <https://eudi.dev/2.5.0/architecture-and-reference-framework-main/> Architecture and Reference Framework – EUDI-Wallet

We'd love to hear from you!

Get in touch:

eduTAP Project (<https://eduTAP.eu/>)

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- José Filipe Alves (U.Porto)
- Morgan Persson (Lunds universitet)

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MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN

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