

TEMALED



European University Alliance for Global Health

eduTAP

*A Sneak Peek into the Future of Campus Cards & Student IDs*

*ENEI 2025 - Porto*



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

[www.eugloh.eu](http://www.eugloh.eu)

# Boring Stuff

## Student IDs and Campus Cards

# Boring Stuff can be important!

Opportunities

Freedom

Democracy

Wealthy  
Future



# Universities are old – have a history

Universities are old

- ✓ The survived countries
- ✓ They build states and societies
- ✓ Need to stay independent
- ✓ Science and research cross even closed borders





# “Boring” is a good thing

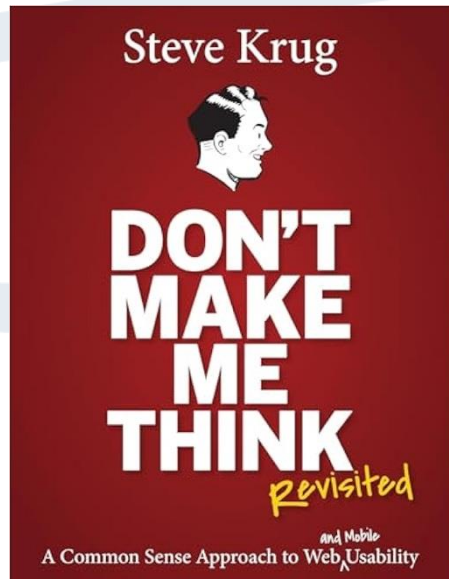
Every company gets about three innovation tokens.

Source: Dan McKinley, "Choose Boring Technology"

<http://mcfunley.com/choose-boring-technology>

## “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

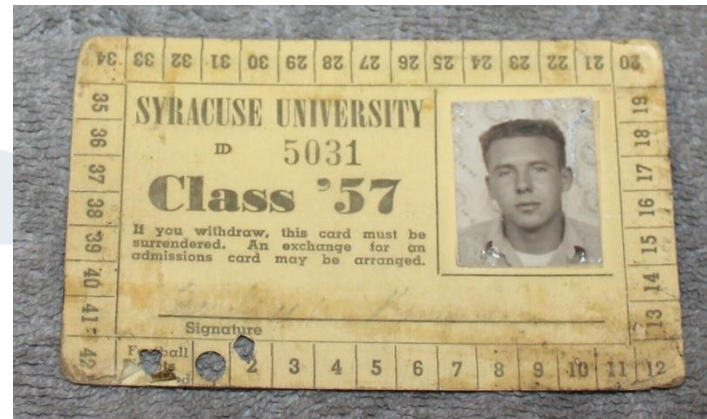
→ User Experience is important

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, ...)



## Universities have operated for many years with paper student IDs

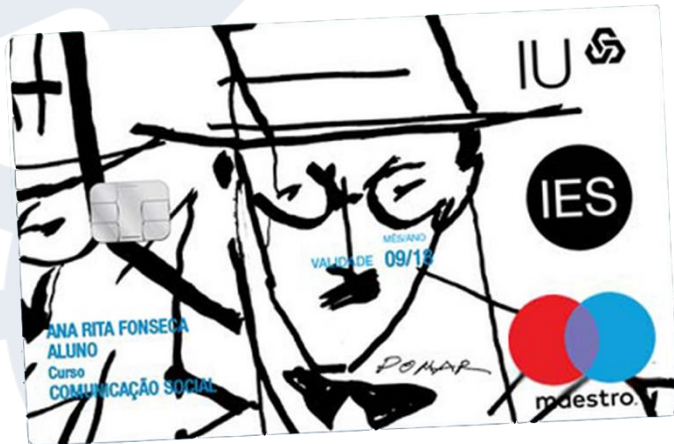




# Student IDs / Campus Cards Today

If we look at campus cards today, how does they look?

What features and services does they support?



# Student IDs / 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 (secure & follow me printing)



## Physical Access Control

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

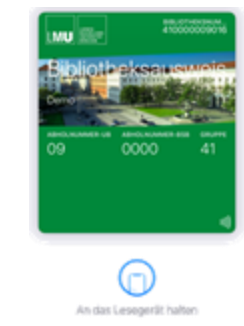
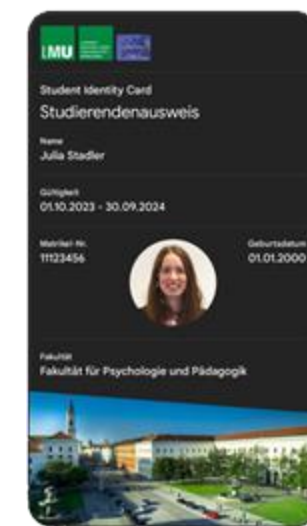
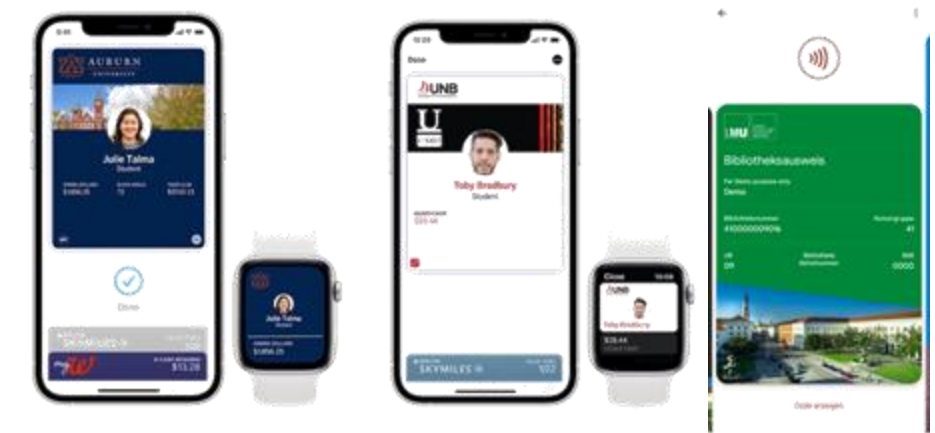
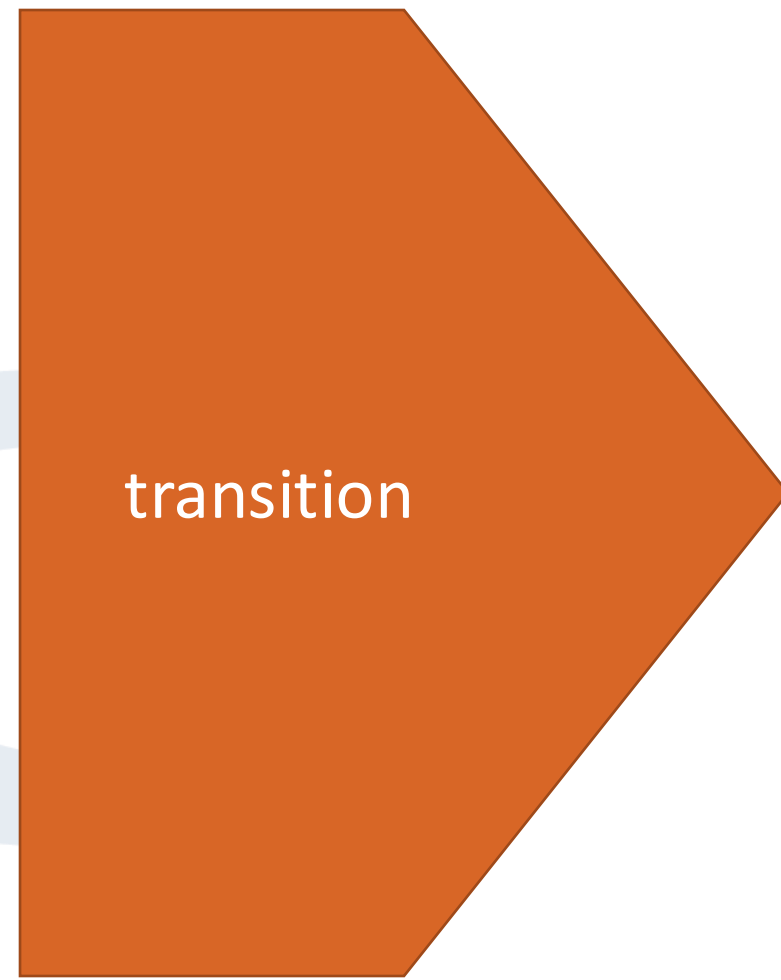
on- & off-campus → on-site usage  
online services



providing service → create benefits



# Student IDs / Campus Cards in the near Future



NFC everywhere

### 9 Universities, 1 Goal: Building Europe's Campus for Global Health



### EUGLOH 2.0 Consortium Partners



LUND UNIVERSITY



UNIVERSITY OF SZEGED



LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN



Universidad de Alcalá



UiT The Arctic University of Norway



Universität Hamburg  
DER FORSCHUNG | DER LEHRE | DER BILDUNG



338,500  
Students



54,000  
Academic Staff



112  
Faculties & Schools

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

→ UNS & UiT are from non-member states of the European Union

### Key Goals

- Interdisciplinary Global Health programmes across universities – striving towards a joint European degree.
- A vibrant, multicultural and inclusive inter-university campus.
- Seamless mobility for students, staff and professionals – physical and virtual.
- Strong links between higher education, research and local socio-economic ecosystems to prepare young people for the jobs of tomorrow.
- Empowering future generations to find solutions for Global Health challenges.

Interoperable services and  
identification

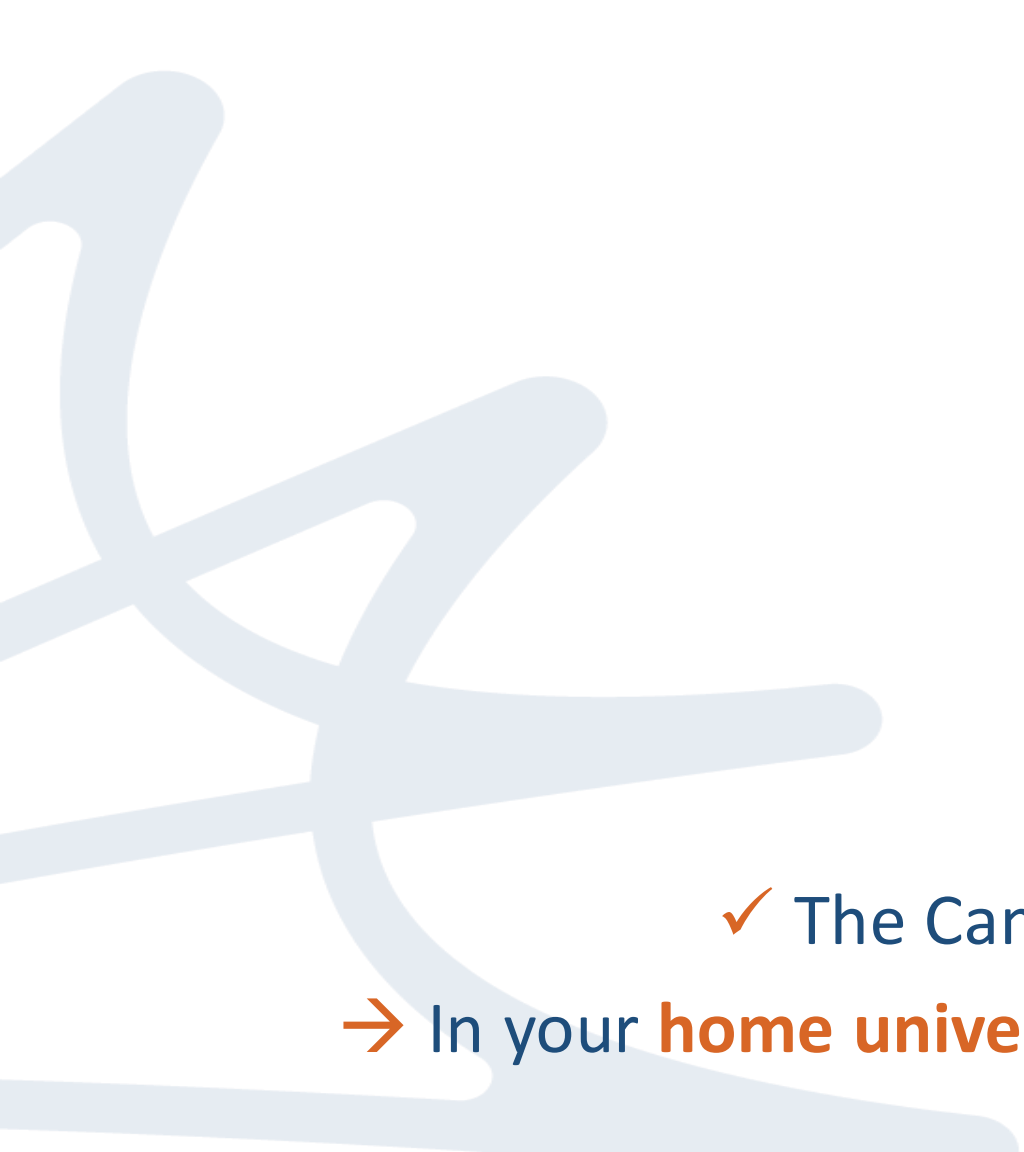


So why does a boring thing as a  
Student ID / Campus Card matters?

- You should be able to **focus on the important things**
  - Studying, learning, growing



- ✓ The Campus Card should be **available on the first day** of being a Student
  - ✓ The Campus Card should **give you access to services**
  - ✓ The Campus Card should be **secure**
  - ✓ The Campus Card should **just work**
  - ✓ Do not need you to think how to use it

- 
- ✓ The Campus Card should **just work**
    - In your **home university** and **abroad** in your **host university**

# Mobility matters

**Mobility used to be a privilege.**

Only a few students **could afford** to study abroad or attend international conferences.

But the world is **too big** — and **too important** — to stay in one place.

## Today, we want all students to have the chance

to experience different cultures, perspectives, and ideas.

## Because you are the future.

You shape our **democracy**, our values, and our **prosperity**.

👉 And we are here to give you the **best tools** and **opportunities** to do so.

→ Erasmus+ Student Mobility



# Mobility Matters – Erasmus+ – Mobility for Students



**Erasmus+**  
Enriching lives, opening minds.

Higher education

Erasmus+

# Mobility Matters – Erasmus+ – Mobility for Students



- ✓ Enjoy mobility
- ✓ Learn about other cultures
- ✓ Enjoy Student life



# Mobility Matters – User Experience is key

**eduTAP** is 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

- Benchmark Examples



WLAN Access



Login to Online Services

- To access services on site it should be as **easy** as using the WLAN with eduroam
- **Immediate** access *on arrival*



# Mobility Matters – Interoperability Mind Game

Imagine you are a EUGLOH student from Paris-Saclay on a **two-week** blended learning mobility to U.Porto

- you have a Student ID for Paris-Saclay, with the European Student Card (old style) hologram and QR-Code
- 
- You are not enrolled in U.Porto, as it is just a short-term mobility program
  - Paris-Saclay is a EUGLOH Partner, well known in U.Porto, so the card is trusted
- Want to use the **Library**, to use the recommended literature on the course
  - Want to **print** the script and copy some articles for a book
  - Want to go with the other student to the **canteen**
  - Want to **access the classrooms** and **register for attendance**
- I believe in the European Student Card promises and believe that I just can use my own card from Paris
- What will happen?

# ISIC – The international Student Identity Card

- The international Student ID as the standard for collecting discounts of campus - worldwide

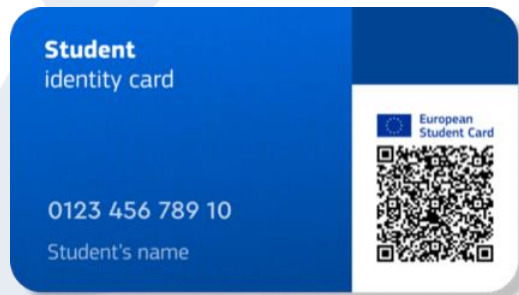


# ESC – The European Student Card

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

→ Securely **validate** the **student status**

**New logo**



Physical version



Digital version

## European Student Card logo

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

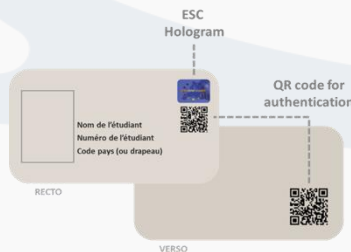
## ESCN - European Student Card Number

*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.*

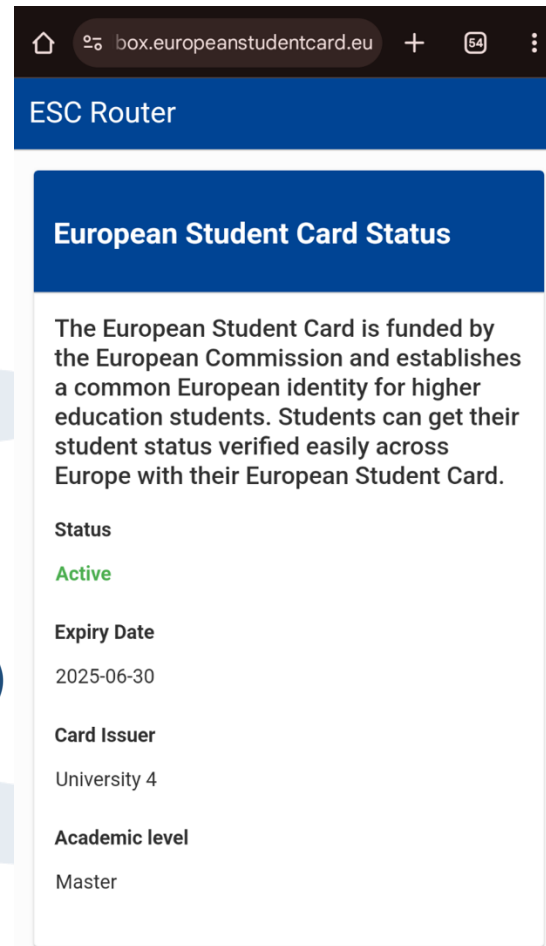
**Previous logo**  
(accepted until December 2027)



# QR-Code and online Verification

If you have an centralized Online Verification System

- Centralized data store with personal data
- For easy direct access of verification results  
→ no authentication
- Logging of all verifications
  - Including ESCN in URL-Path
  - IP of Verifier (Service Provider & Location)
- Original ESC Router: Name, ESI and Photo in verification results included  
→ Public on the Web



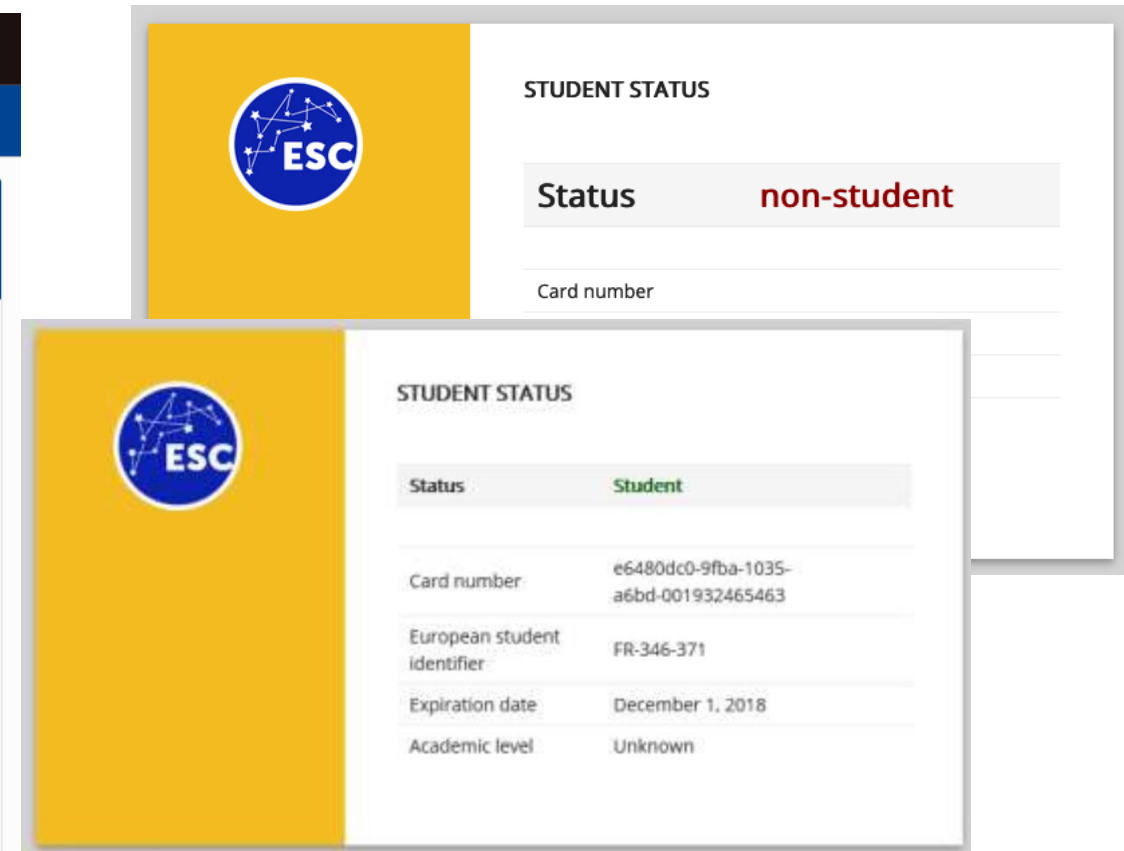
box.europeanstudentcard.eu

ESC Router

### European Student Card Status

The European Student Card is funded by the European Commission and establishes a common European identity for higher education students. Students can get their student status verified easily across Europe with their European Student Card.

Status	Active
Expiry Date	2025-06-30
Card Issuer	University 4
Academic level	Master



### STUDENT STATUS

Status	non-student
Card number	

### STUDENT STATUS

Status	Student
Card number	e6480dc0-9fba-1035-a6bd-001932465463
European student identifier	FR-346-371
Expiration date	December 1, 2018
Academic level	Unknown



# QR-Codes and IT-Security

QR-Codes can contain multiple calls to action

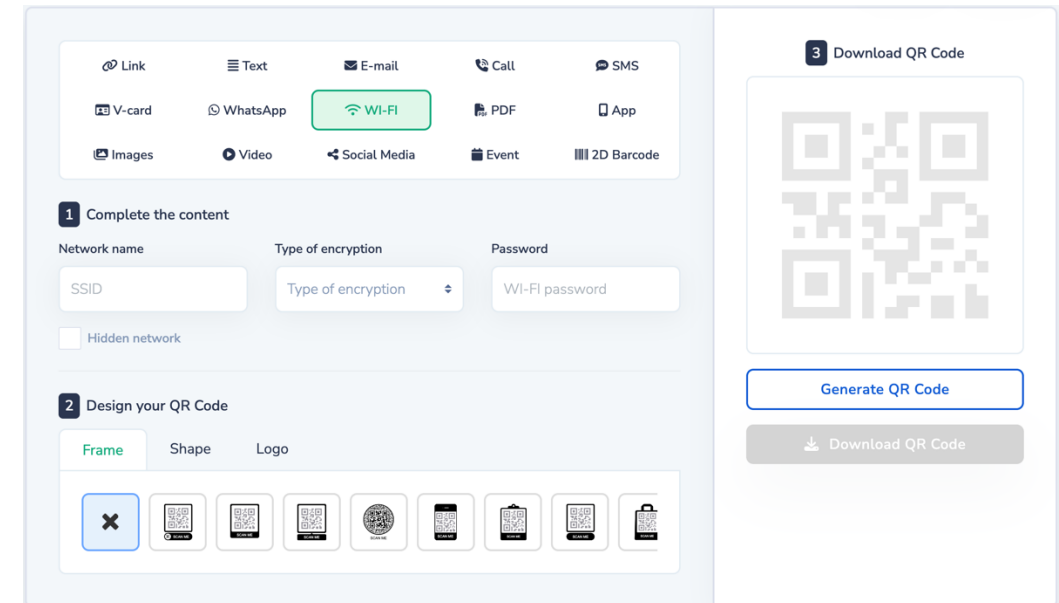
- URLs
- Text
- Call
- WiFi
- Money Transfer
- ...

QR-Codes where **not designed for humans**, they were for machines

As humans used them, **Cybercriminals** started to **weaponized QR-Codes**

- ✓ QR-Code Phishing (Quishing)
- ✓ QR-Code bases Malware Attacks
- ✓ QR-Code Invoice and Payment Scams

→ You **only use QR-Codes and scan them**, when you are in charge and control of creating them → **trust**



The screenshot shows a web-based QR code generator interface. At the top, there's a grid of content options: Link, Text, E-mail, Call, SMS, V-card, WhatsApp, **Wi-Fi** (highlighted in green), PDF, App, Images, Video, Social Media, Event, and 2D Barcode. Below this, the interface is divided into three main sections:

- 1 Complete the content:** This section includes fields for 'Network name' (containing 'SSID'), 'Type of encryption' (a dropdown menu), and 'Password' (containing 'Wi-Fi password'). There is also a checkbox for 'Hidden network'.
- 2 Design your QR Code:** This section has three tabs: 'Frame' (selected), 'Shape', and 'Logo'. Under the 'Frame' tab, there are several icons representing different QR code styles, including a standard black and white square, a circular one, and others with different patterns.
- 3 Download QR Code:** This section on the right shows a large QR code and two buttons: 'Generate QR Code' and 'Download QR Code'.

# ESC – The European Student Card

- ✓ Vision of the European Commission: Towards a European Education Area
- ✓ The **European Student Card Initiative** (ESCI)
  - Students can get their **status verified** easily across Europe
  - **Access to on- and off-campus services**
  - **easier** access to student services at host universities on a **mobility** programme
- ✓ European Charter for Higher Education (ECHE) of the Erasmus+ Program



European  
Student Card



# A great vision!

## Status of four core members (IT wise)

- Legic CTC Cards (Legic Advant + Prime)
- Payment (Studierendenwerk München)
- Cloud-Printing and Scanning (Secure-Printing and Payment)
- Library
- Ticket for Public Transport System

- NXP Mifare DESfire Cards
- Payment (izly – les Crous)
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- Physical Access Control

- NXP Mifare Classic Cards
- Physical Access Control (online and offline)
- Login at copiers (for copy/print/scan)
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- Several other services, but not any payment services

- NXP Mifare Classic Cards / Java Cards with Mifare Classic emulation
- Library
- Physical Access Control
- Canteen & cafeterias
- Printing Service
- Attendance

*All university members should be able to use services of host university while on visit*



# Not compatible technologies

# Student IDs / Campus Cards – A question of Scale

## European Union

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

## Erasmus+ Countries

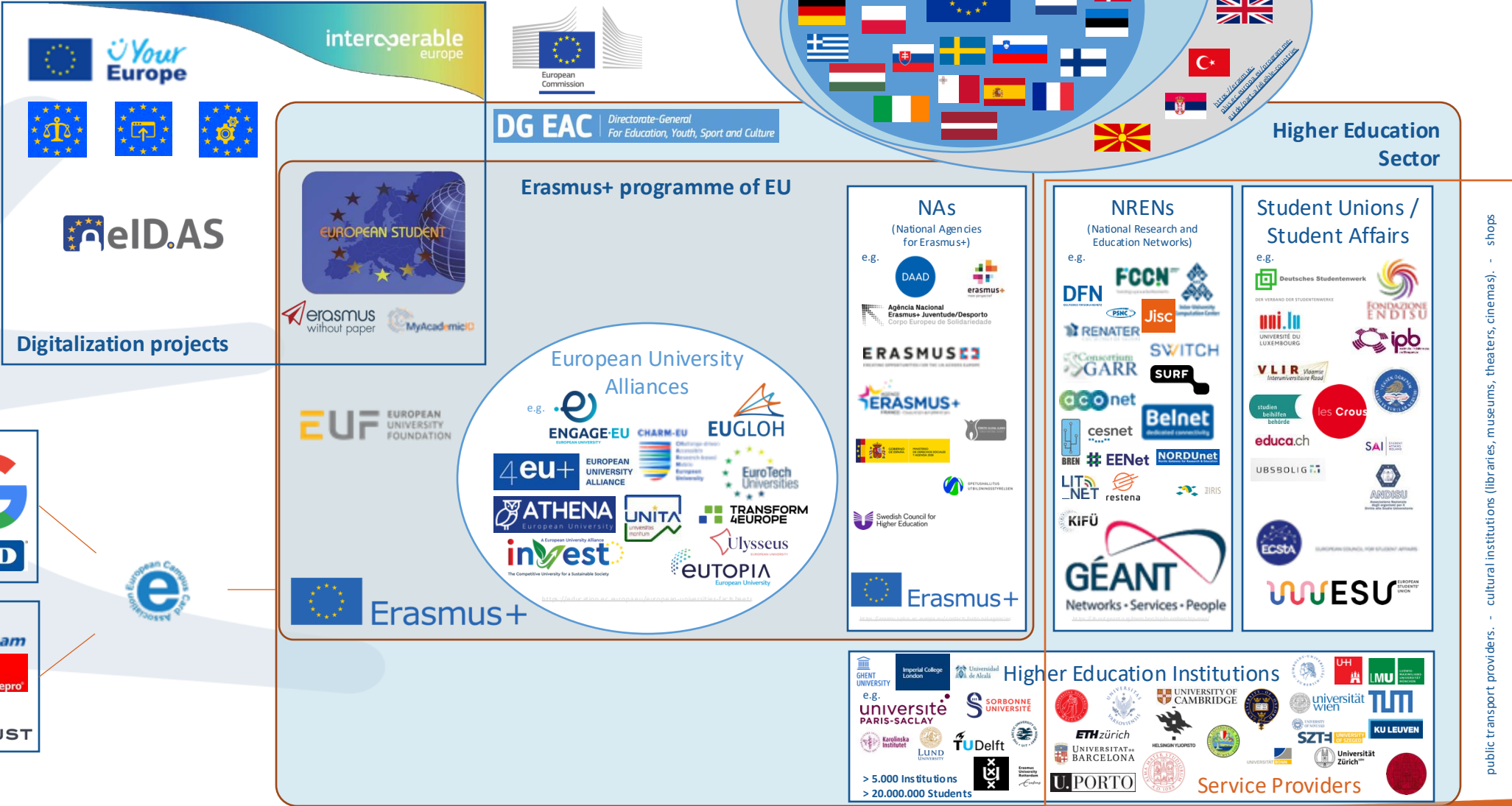
- Includes EU + Iceland, Liechtenstein, Norway, North Macedonia, Serbia, Turkey
- Significantly expands the European higher education landscape

## Worldwide

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



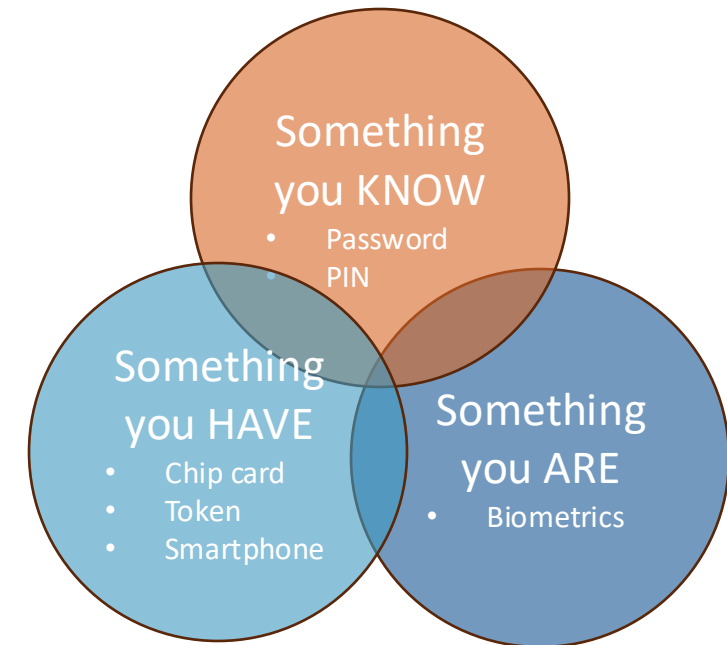
# The Stakeholder-Landscape



# Key to all Services → Identification / Authentication

- Triple-A-System
  - (Identification)
  - **Authentication**
  - **Authorization**
  - **Accounting**
- **On-site services access** is about proving your entitlements and identity
- “*something we know*” as an authentication method for on-site service access is not very **efficient**, best a combination of “*something we have*” + “*something we are*”  
→ Smartphone Wallet passes + authentication via biometrics
- We already have a powerful IDM System for **online-services** → Shibboleth → eduGAIN-AAI

## Authentication Factors

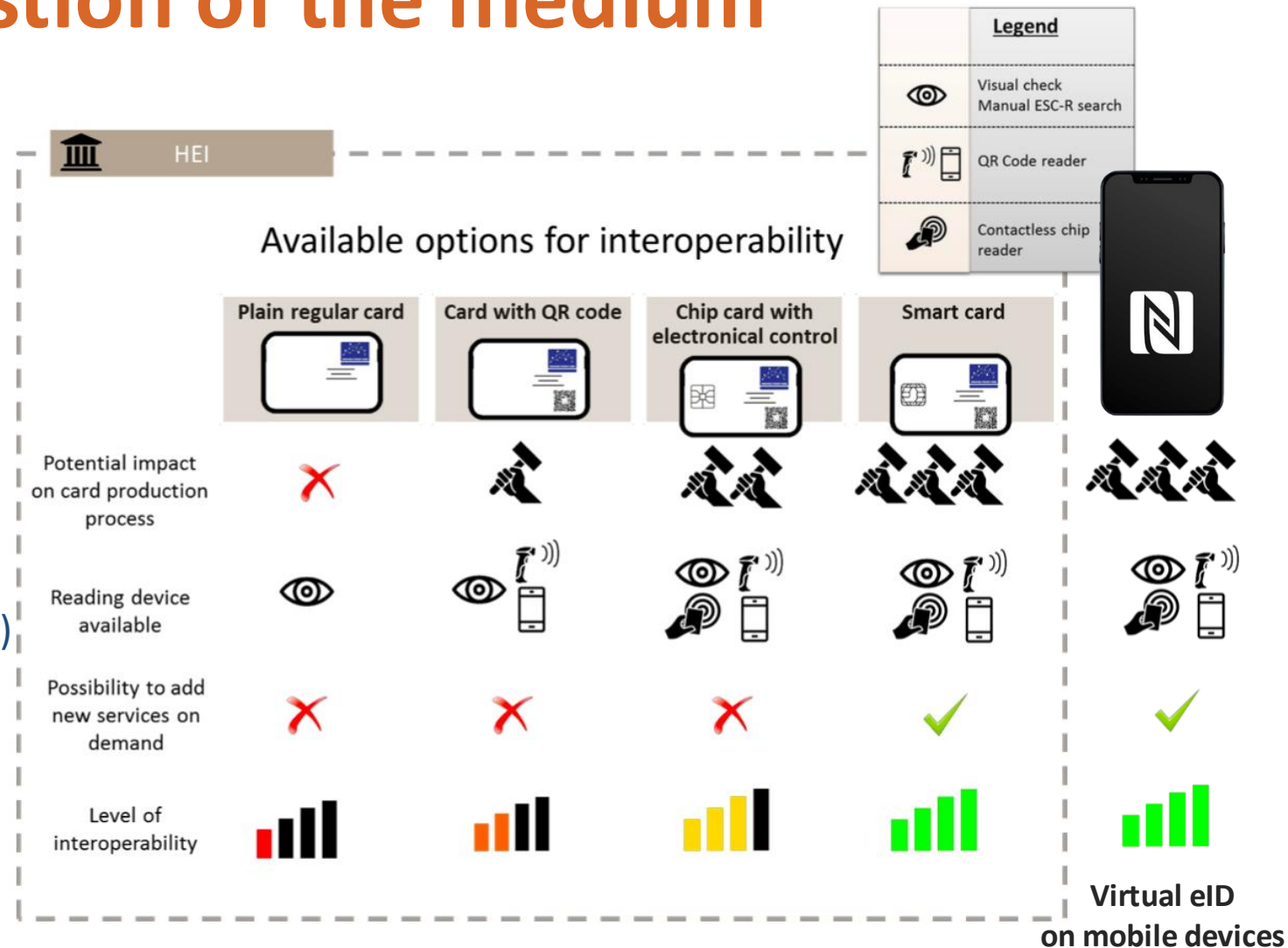


# Interoperability: Question of the medium

*Baselined on the ESC specification*

Possible technological implementations:

1. Plain Card with Hologram
2. Plain Card with **Hologram + QR-Code**
3. **Chip card** (with Hologram + QR-Code)
  1. Chip card technology neutral
  2. Mifare DESfire chip card with App
  3. Multi-technology chip card with App
4. **Smart card** (with Hologram + QR-Code + App)
5. **Virtual eID** (Smartphone)



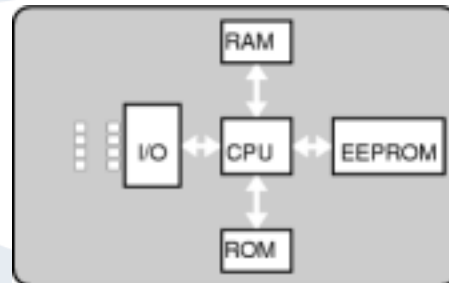
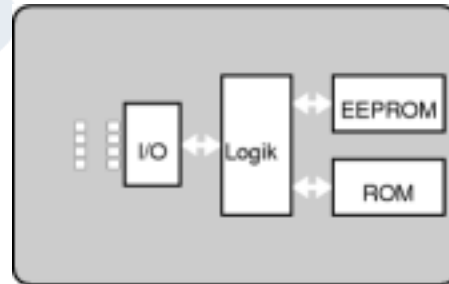
# Interoperability: Physical card side?

Chip cards → bind to one certain technology or combi cards

- NXP Mifare DESfire
- Legic Advant
- HID iClass
- ...

Smartcards → expensive

- JCOP



→ Plastic cards are not the solution, so...

- ✓ Sustainability
  - ✓ Interoperability
- } Responsibility



## Interoperability: Cards – Communication Protokolls and Data / File Systems

### Different standards of Transponder technologies – “standards” – NOT Compatible to each other

MIFARE Classic  
MIFARE DESFire EV1/EV2  
HID iCLASS  
HID Prox  
Indala  
ioProx  
AWID  
Keri  
CASI-RUSCO

MIFARE Classic  
MIFARE DESFire EV1/EV2  
HID Prox  
EM4102

ISO 14443A  
ISO 14443B  
ISO 15693  
ISO 18000  
ISO 18092

ECM-340  
ECMA-352  
ISO 11784  
ISO 11785  
NFC Tag Types 1-5

MIFARE Classic  
MIFARE DESFire EV1/EV2  
LEGIC  
Calypso  
Moneo  
Oyster  
HID Prox  
EM4102

LEGIC  
MIFARE Classic  
MIFARE DESFire EV1/EV2  
SONY Felica  
TIRIS  
CEPAS  
Octopus  
EM4102

LEGIC  
MIFARE Classic  
MIFARE DESFire EV1/EV2  
EM4102

MIFARE Classic  
MIFARE DESFire EV1/EV2  
HITAG  
HID Prox

- **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)



## eduTAP – mission:

- **digitizing cards** → passes in the smart device **wallets**
- leveraging the possibilities of smart devices for **interoperability**
- enable **easy service access on-site**

chip card / smart card

enable  
transition



- 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
- enable students and staff members to access services on-site, easy and consistent

# eduTAP – educational tapping

tap to ...

- ✓ tap to identify yourself,
- ✓ tap to verify your status,
- ✓ tap to proof your entitlement,
- ✓ tap to 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.

TAP TO PAY



<https://eduTAP.eu>

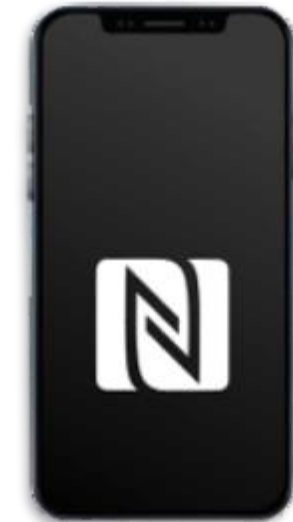
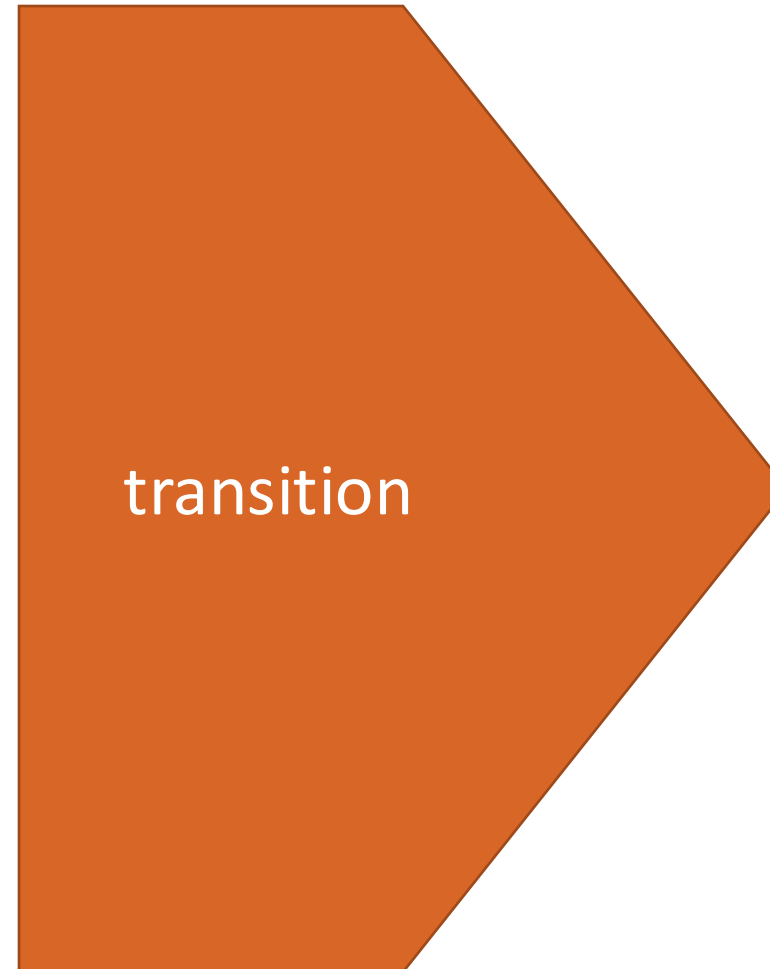
*no app, just tap!*



# Path to an interoperable campus card



Trust-Level: NO-TRUST



eduTAP

- ✓ state-of-art technology,
- ✓ secure and trustworthy,
- ✓ compliant to **GDPR**
- ✓ ensures interoperability

# Access Services → a question of interoperability

## 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 (secure & follow me printing)



## Physical Access Control

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



providing service → create benefits

# Digitizing cards vs. leveraging the possibilities of smart devices

## → Stages of Digitalization – Period of Digital transformation

### Digitalization 1.0

- Digitization – create digital versions of analog documents

### → Digitization vs. Digitalization

### 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



# Digitizing cards vs. leveraging the possibilities of smart devices

chip card / smart card

Front

Back

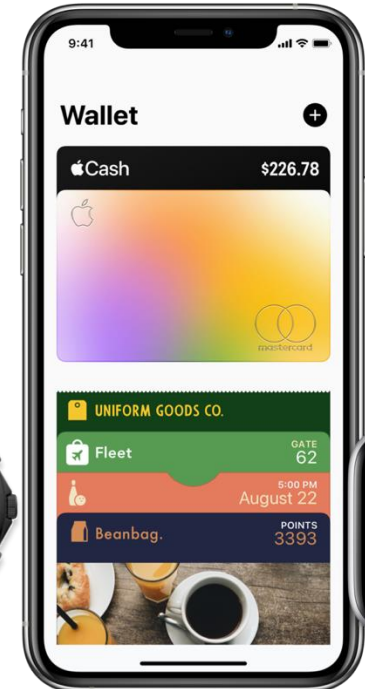
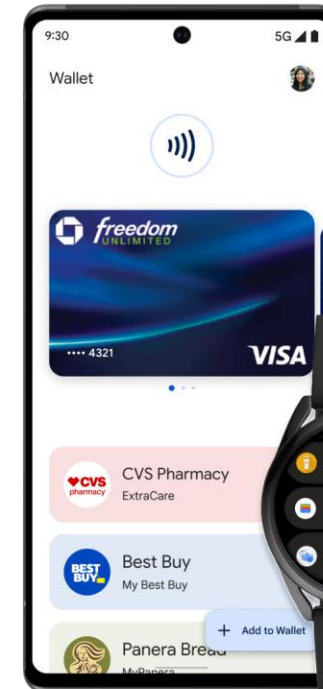
We are still thinking in cards terms

→ campus cards / corporate cards  
(Student IDs / employee badge)

- Card as an integrated element  
→ multiple applications in one card
- Front & Back of a CR80 / ID-1 card
- Limited amount of visual space
- Card as branding space (Corporate Design)

→ Passes in smart device wallets are  
a disruptive technology,

→ Let's think in terms of this technology



# Digitizing cards vs. leveraging the possibilities of smart devices

## → Users Expectations

- Don't stick to old technology if your user expects something modern
  - Integration and **Interoperability**
  - The **Smartphone** is the essential working tool for younger generations
  - Higher Education Institutions should provide credentials in modern ways
  - **Student IDs / Campus IDs should be recognized and accepted anywhere** just as plastic Student IDs
- 
- ✓ Be compliant
  - ✓ Be Secure → implement IT-Security best practices
  - ✓ Respect privacy
  - ✓ Respect self-sovereignty and decisions of users

→ Think from a **user perspective** (*user-centric-optimization*)

### Student and mobile payment 2023 Statistics

- 93 % use digital payment
- 88 % want ease of use
- 86 % require it to be secure
- 69 % prefer **native wallet** – no app

Source: touchnet – Student Financial Experience Report 2023





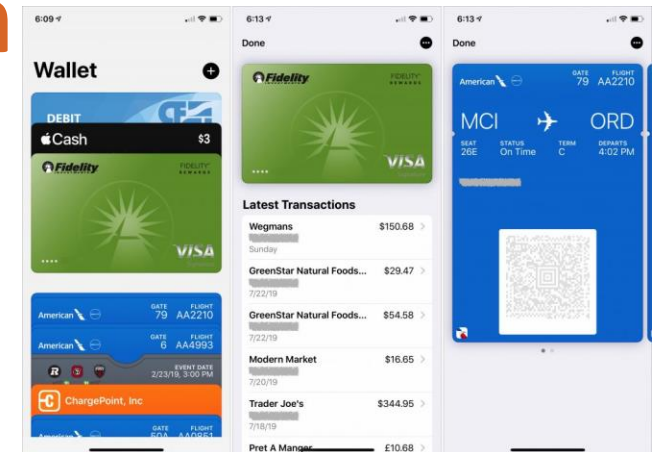
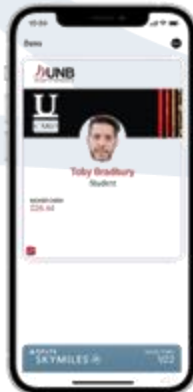
# Digitizing cards vs. leveraging the possibilities of smart devices Reinvent the wheel vs. evolution of the wheel



## and disruptive innovation

Wallet as a container for multiple “cards”

- ✓ each pass has its own design
- ✓ additional information for the users
- ✓ User can select which service they want to use  
→ digital self-sovereign identity (SSI)



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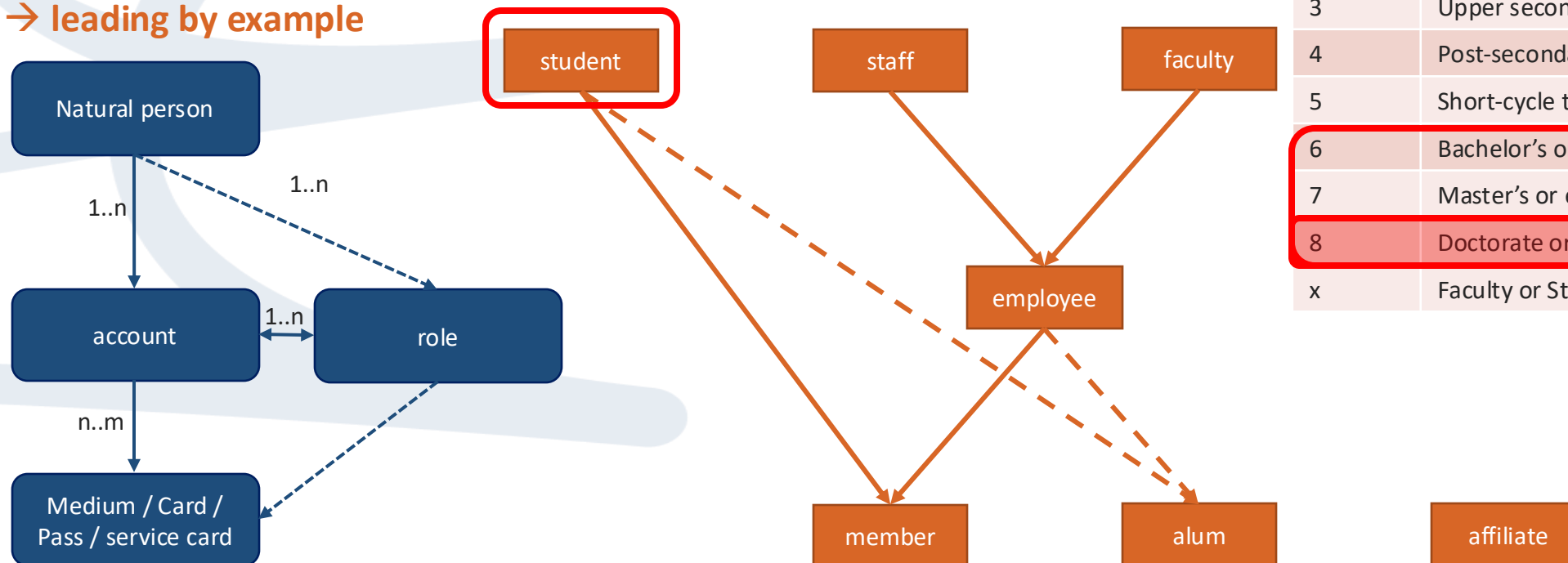
# Not compatible technologies

# European Student Card → Services and Service Consumers

- Why focus on students and ISCED:2011 Level 6/7/8 for ESC?
- It is about **providing services** → **eduTAP is for anyone**
  - For users of the (home or host) institution
  - User incoming for a short-term or long-term mobility
- Staff / faculty members are more likely on short-term mobility than students  
→ **leading by example**

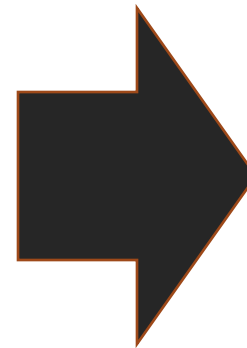
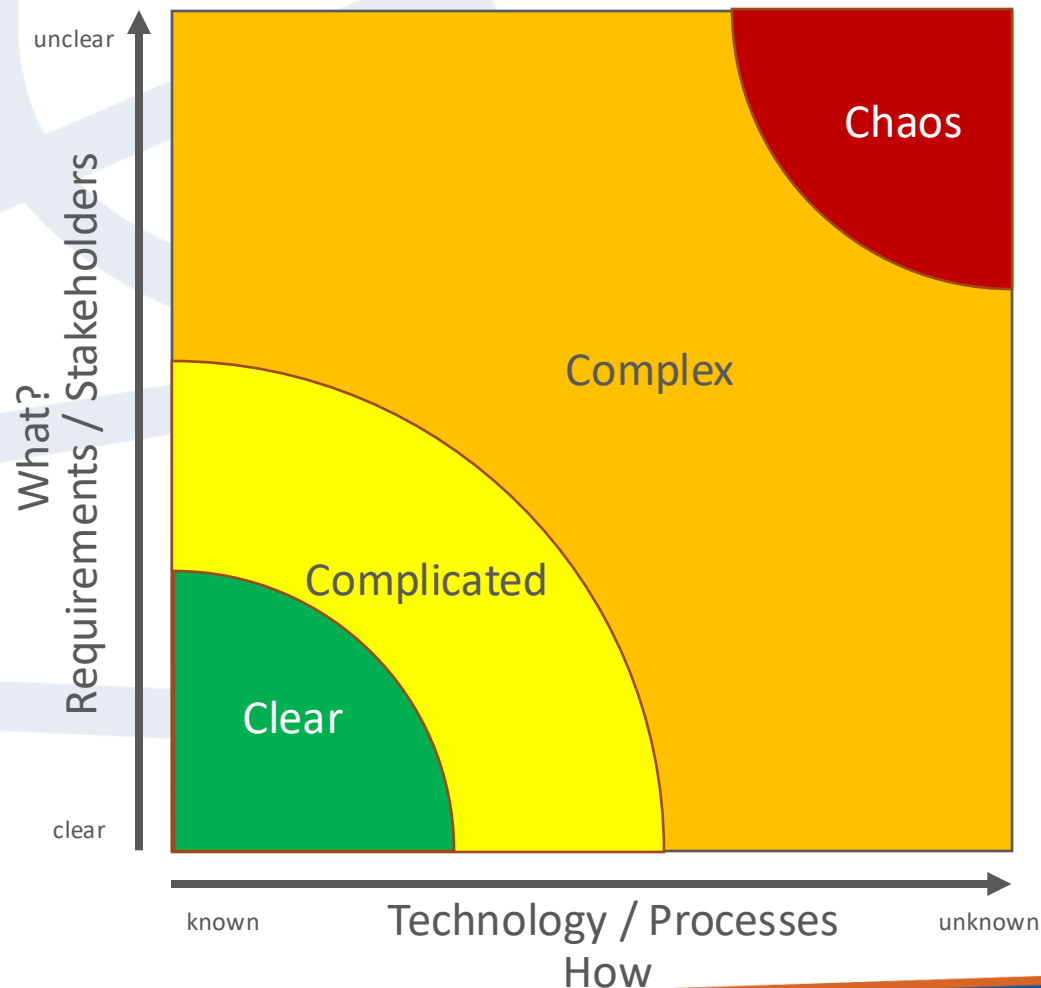
## ISCED:2011 Level

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



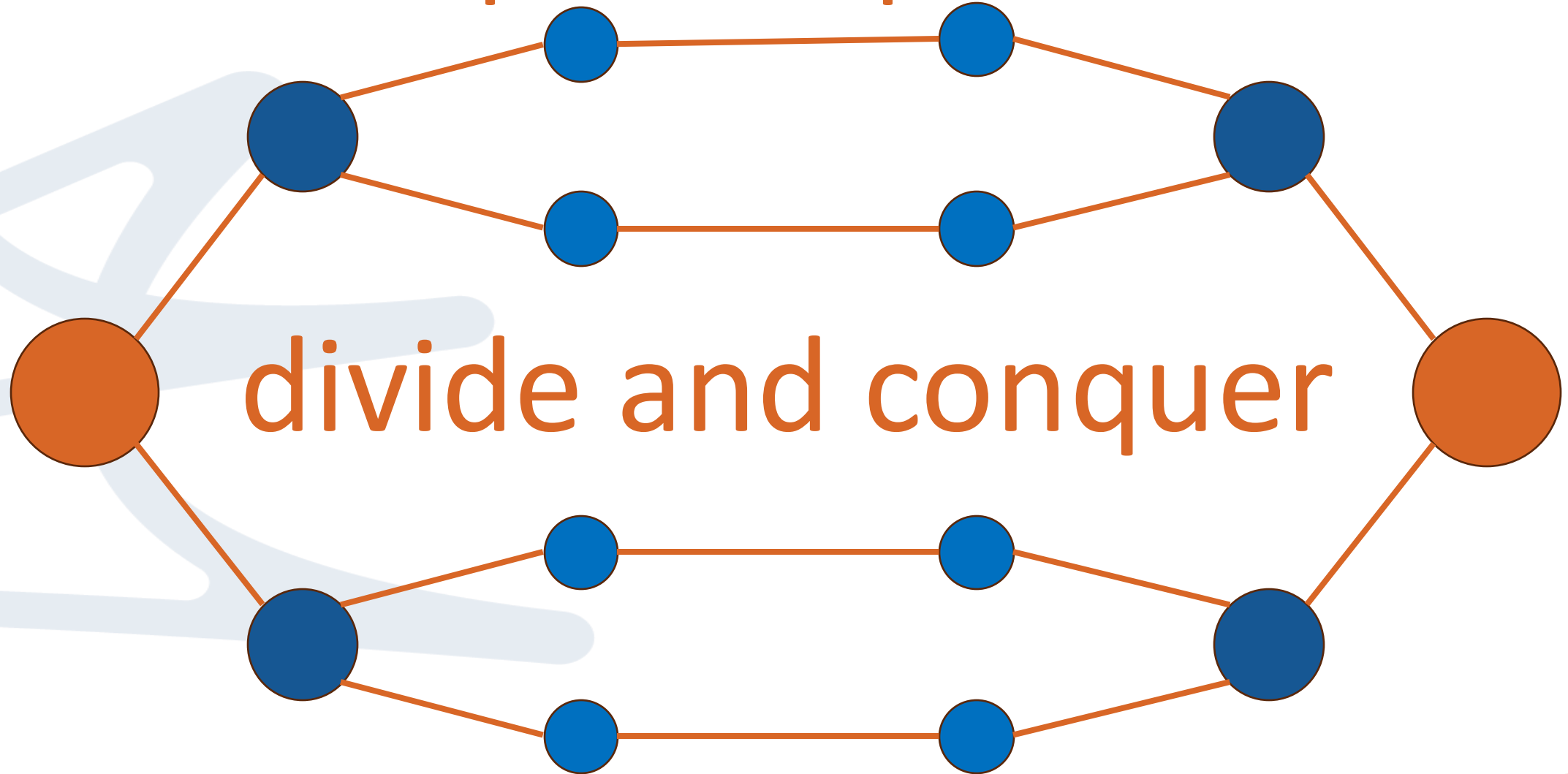
# Success factors – Understand the complexity

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

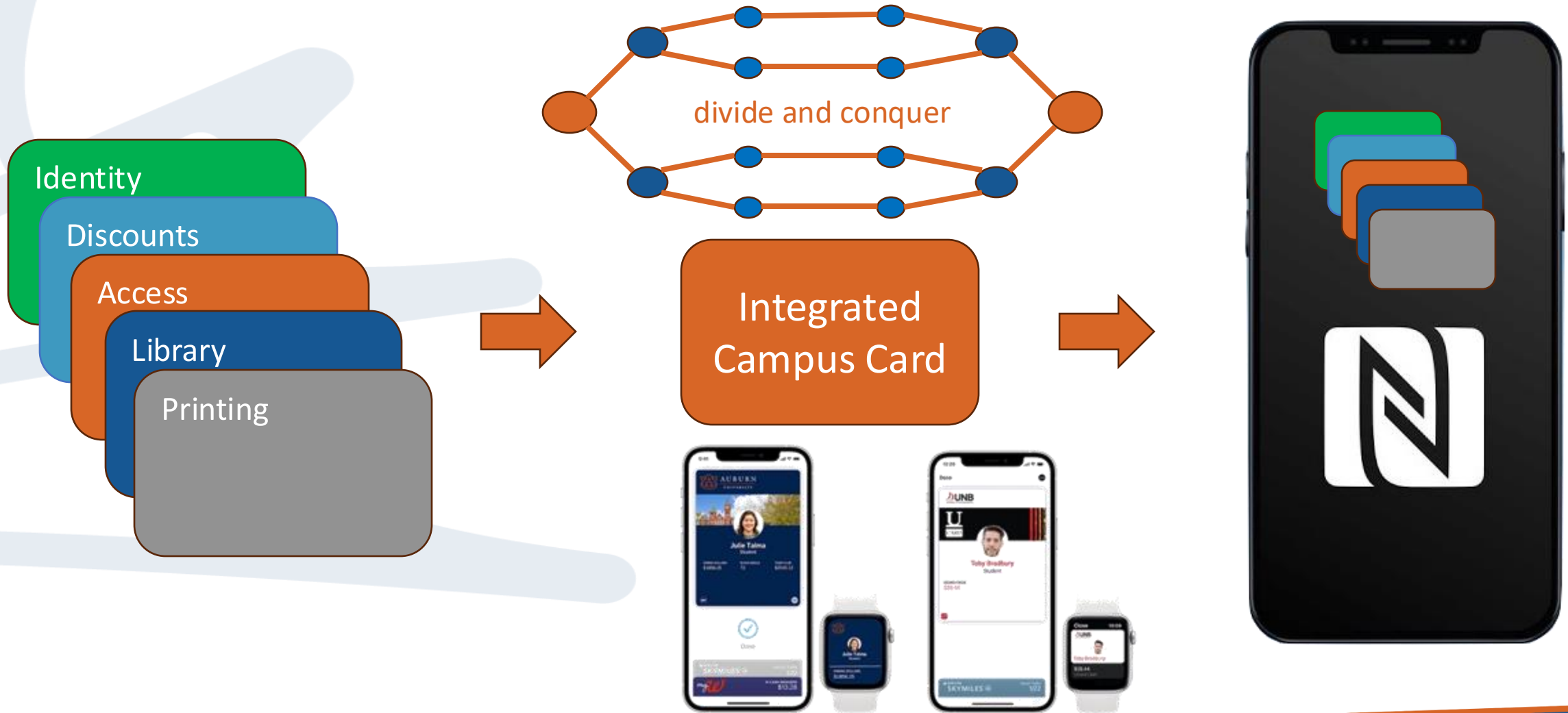




## Path to an interoperable campus card



# Path to an interoperable campus card



# Medium → 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 & for payment)
- Ticketing (secure & for payment)

## Physical Access Control

- Areas (campus, parking lot)
- Buildings
- Rooms
- Classrooms

## Library services

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

## Transport

- On campus services (university shuttle service)
- Special case of "Proof of entitlement" / "discount"
- Transport tickets
- Special case of "Proof of entitlement" / "discount"

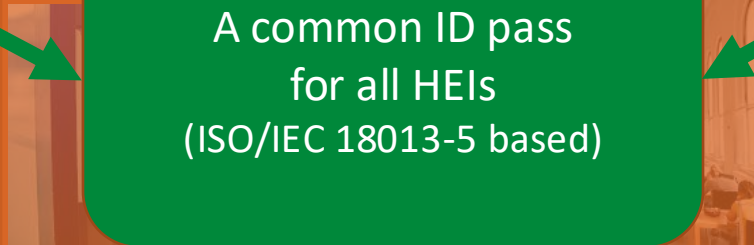
## Discount and promotions

- Discounts on cultural activities
  - Museums
  - theaters
  - cinemas
- Shops
- Restaurants
- Special case of "Identification" / "Status verification" / "Proof of entitlement"

separate service passes

(can chose appropriate technology)  
→ Working solutions by solutions providers

A common ID pass  
for all HEIs  
(ISO/IEC 18013-5 based)

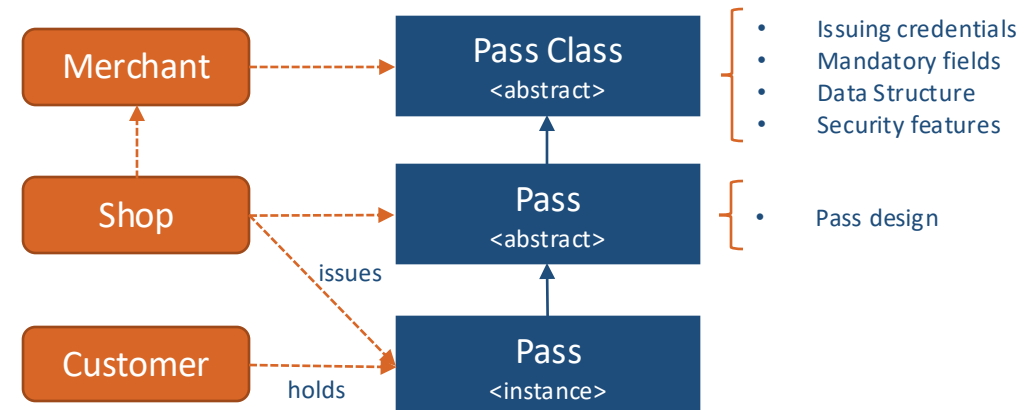


# Technical details and features of Wallets / Passes

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

## Technical features:

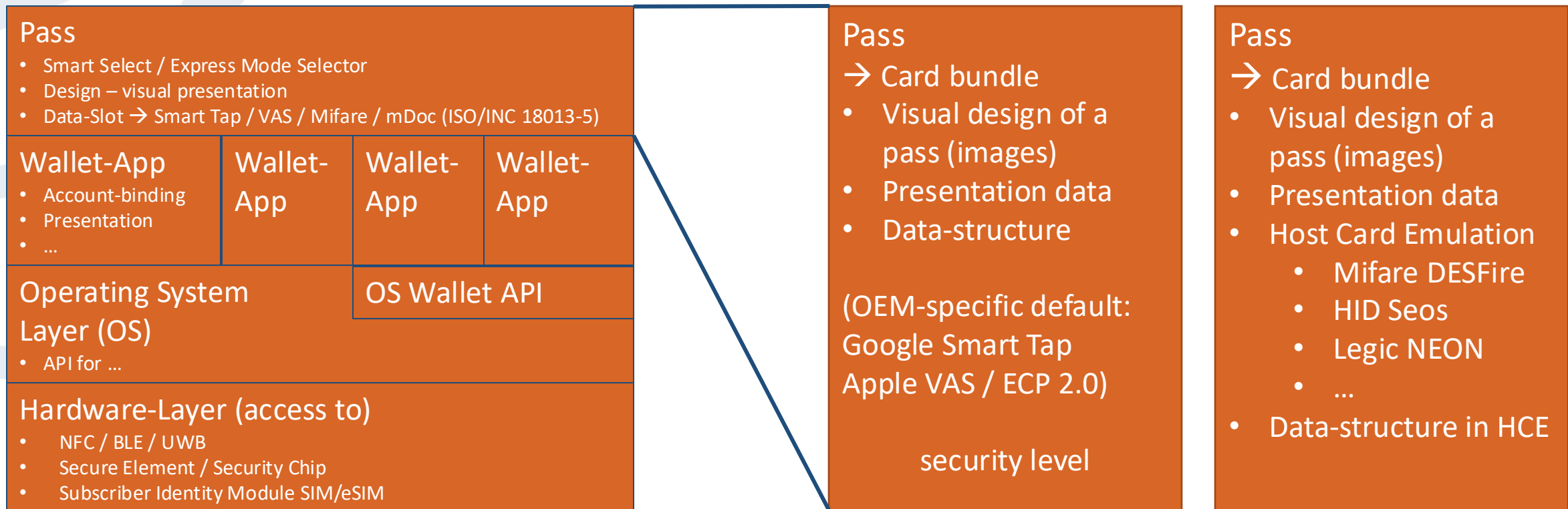
- **Auto-Presentment / Smart Select** ← reader selects the specific pass to interact with (if available)
- Selectable Authentication requirements ← **security features**
- Expressmode (Apple)
- **Battery reserve** (pass is still usable if phone has powered off; important for keys, transit tickets, payment)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



# Technical details and features of Wallets / Passes

- ✓ 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-Presentation**)

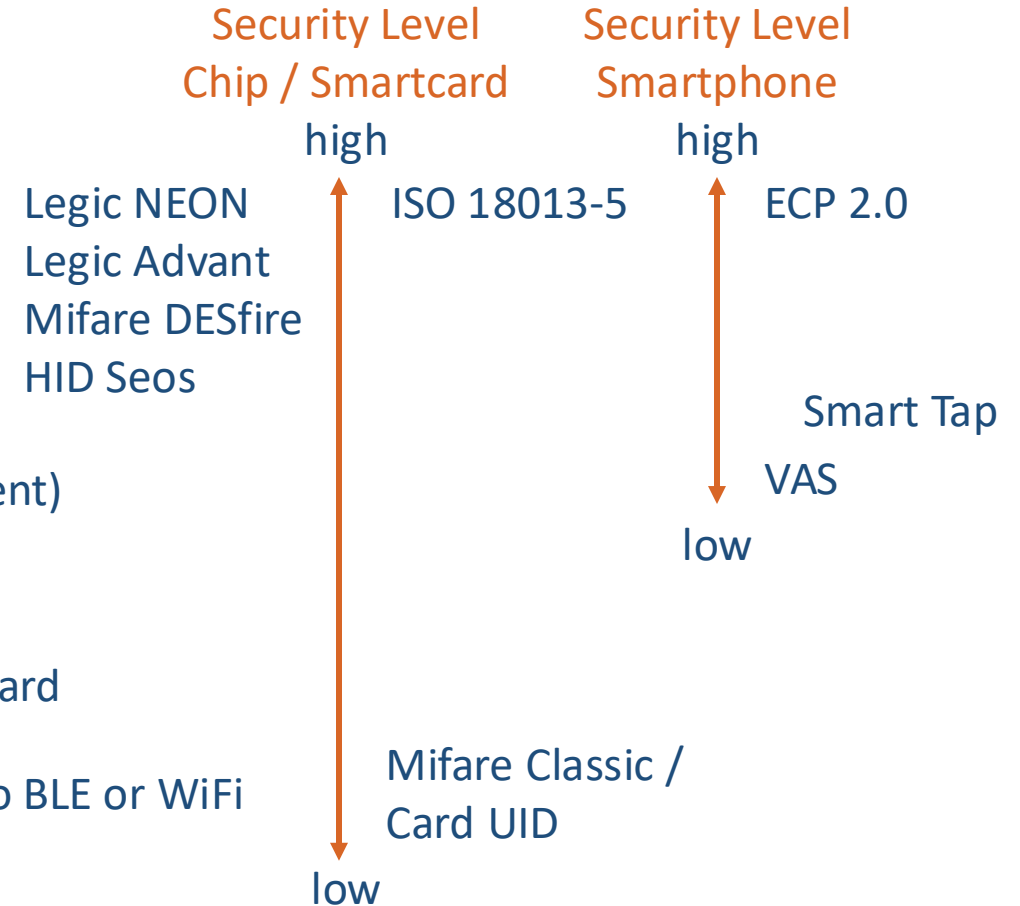
→ one pass per service





# 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



# Technical details and features of Wallets / Passes

Apple and Google have good ideas, but

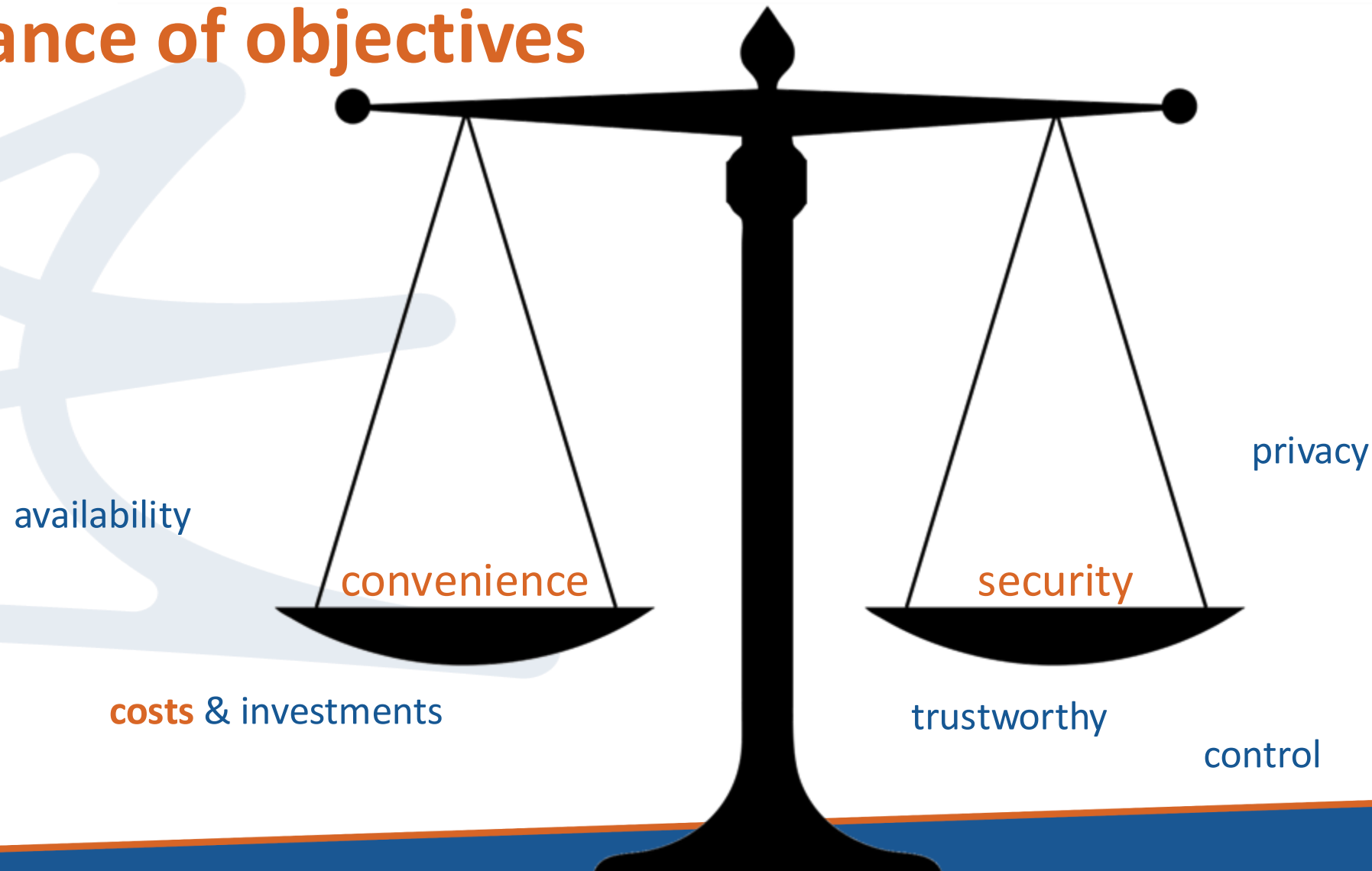


ONE SIZE DOES  
NOT FIT ALL



# Technical details and features of Wallets / Passes

## balance of objectives



Risk assessment  
must be done by  
service providers

# Technical details and features of Wallets / Passes

## Detail view on the Wallet

<b>Pass</b> <ul style="list-style-type: none"><li>• Smart Select / Express Mode Selector</li><li>• Design – visual presentation</li><li>• Data-Slot → Smart Tap / VAS / Mifare / mDoc (ISO/INC 18013-5)</li></ul>			
<b>Wallet-App</b> <ul style="list-style-type: none"><li>• Account-binding</li><li>• Presentation</li><li>• ...</li></ul>	<b>Wallet-App</b>	<b>Wallet-App</b>	<b>Wallet-App</b>
<b>Operating System Layer (OS)</b> <ul style="list-style-type: none"><li>• API for ...</li></ul>		<b>OS Wallet API</b>	
<b>Hardware-Layer (access to)</b> <ul style="list-style-type: none"><li>• NFC / BLE / UWB</li><li>• Secure Element / Security Chip</li><li>• Subscriber Identity Module SIM/eSIM</li></ul>			

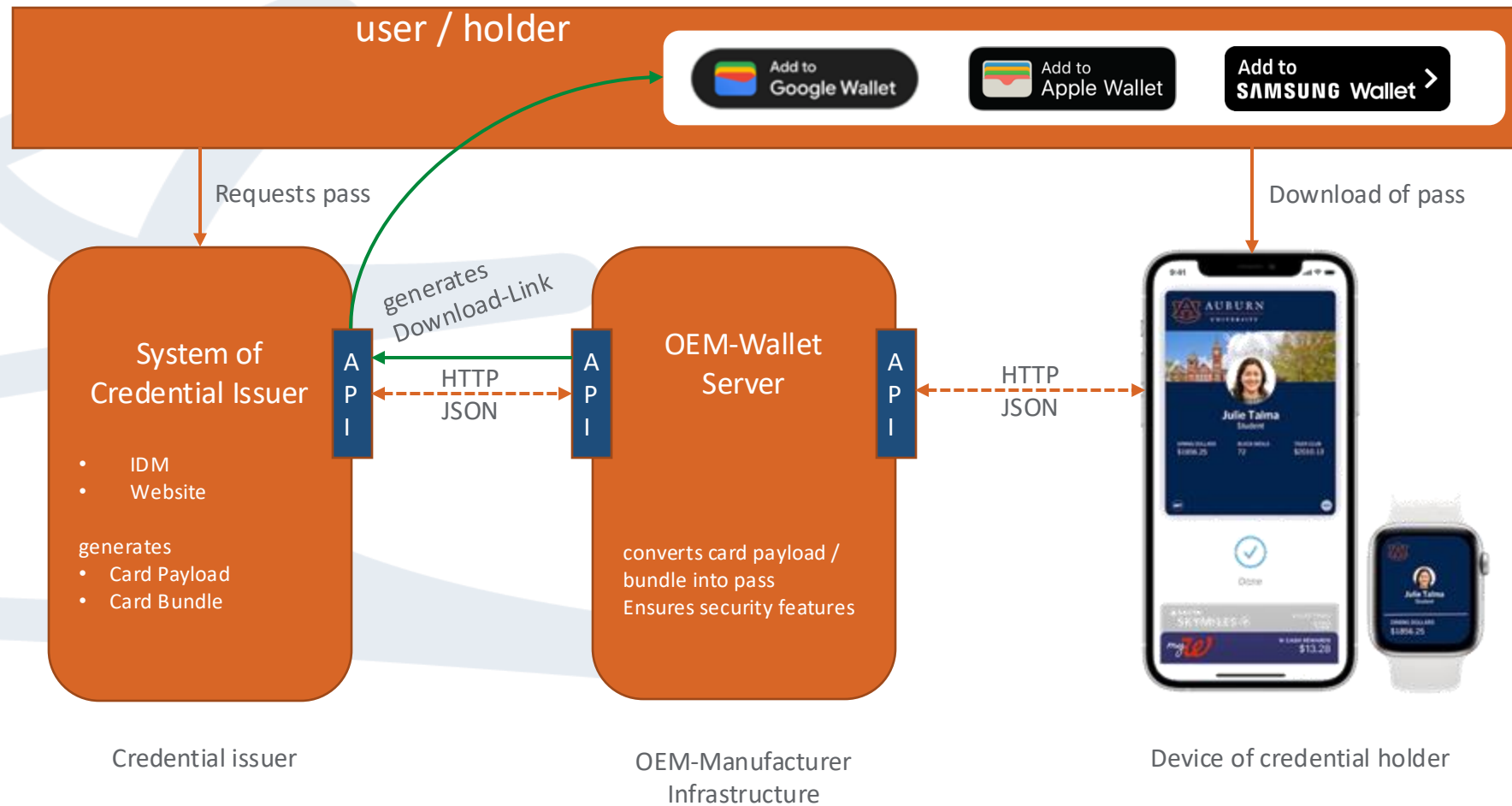


→ The eduTAP solution is wallet **agnostic**, not bound to a specific Wallet provider or company

→ eduTAP just enables HEI and Service Providers to easily **create** and **issue** wallet passes

# Issuing process of wallet passes

→ importance for the users – always the same process



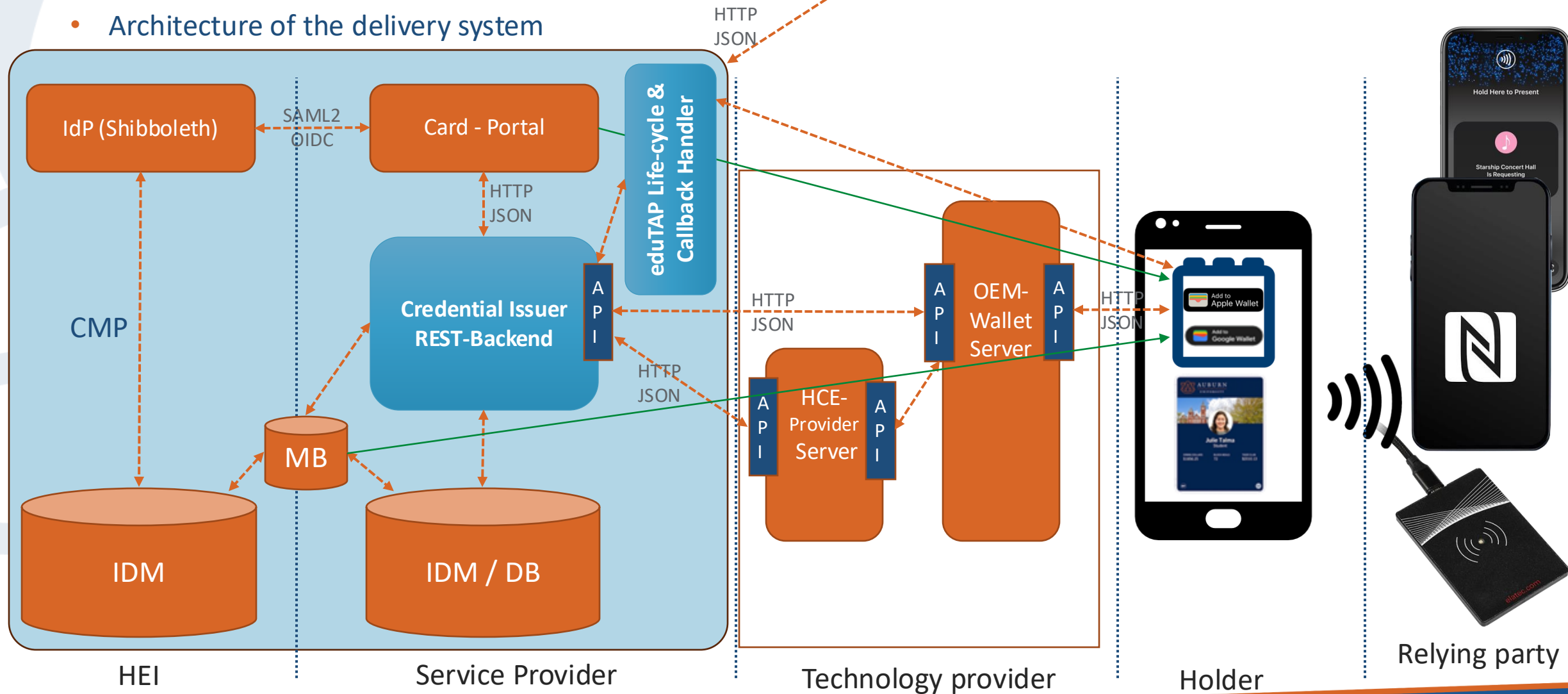
# redeming





# Credential Management Platform and eduTAP Components

- Architecture of the delivery system





European University Alliance for Global Health

# eduTAP

*A **Sneak Peek** into the Future of Campus Cards & Student Ids*

*→ more interoperability and how they will look*



# Transition of credentials into the Smartphone Wallets



LMU LOGIN

Informationsweitergabe MyKademid ID IAM Service

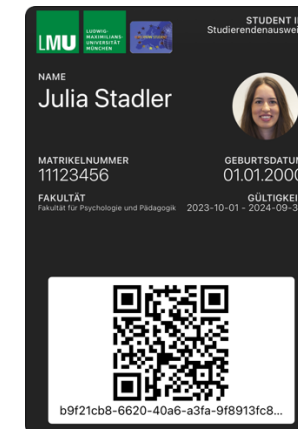
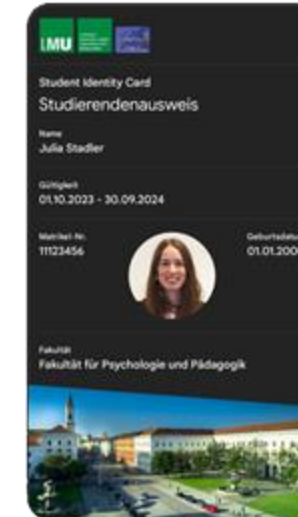
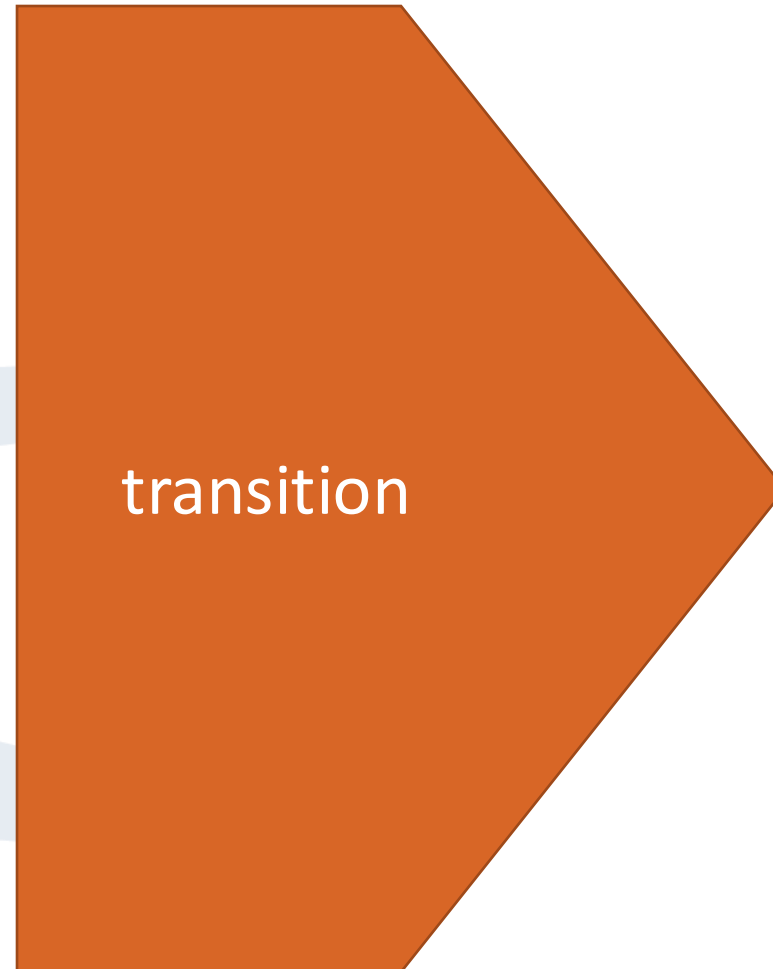
Wählen Sie die Dauer, für die Ihre Entscheidung zur Informationsweitergabe gültig sein soll:

☐ Bei nächster Anmeldung erneut fragen.

☒ Einmal fragen, wenn sich die Informationen ändern, welche an den Dienst weitergegeben werden.

☐ Einmal fragen, wenn sich die Informationen ändern, welche an den Dienst weitergegeben werden.

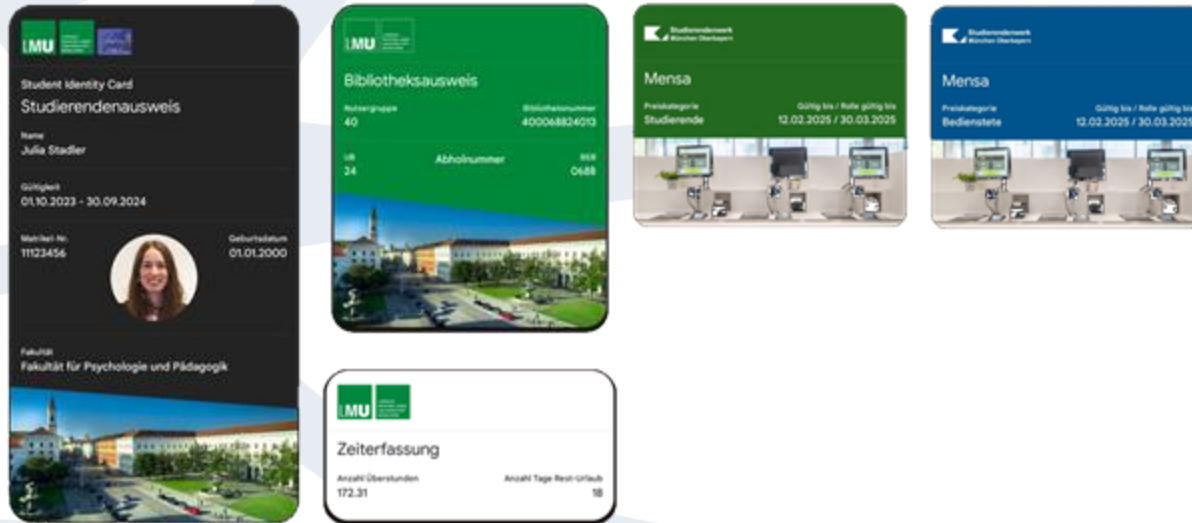
Die Einstellung kann jederzeit mit der Checkbox auf der Anmeldeleiste widerrufen werden.



# Transition of credentials into the Smartphone Wallets

## Examples: Active and potential IDs for LMU Munich

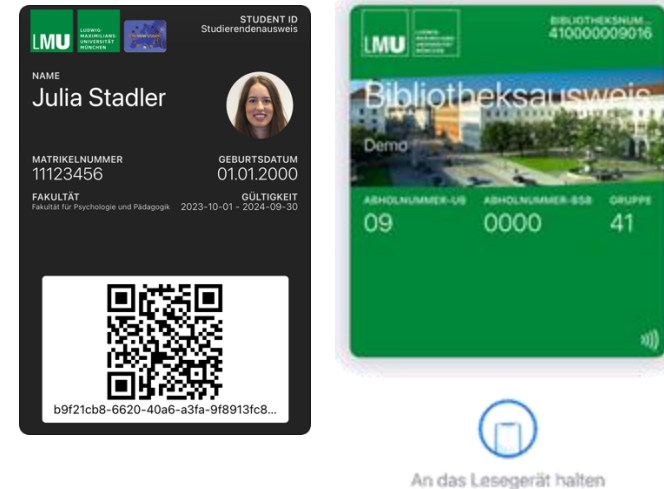
Google Wallet



→ all **NFC enabled**



Apple Wallet

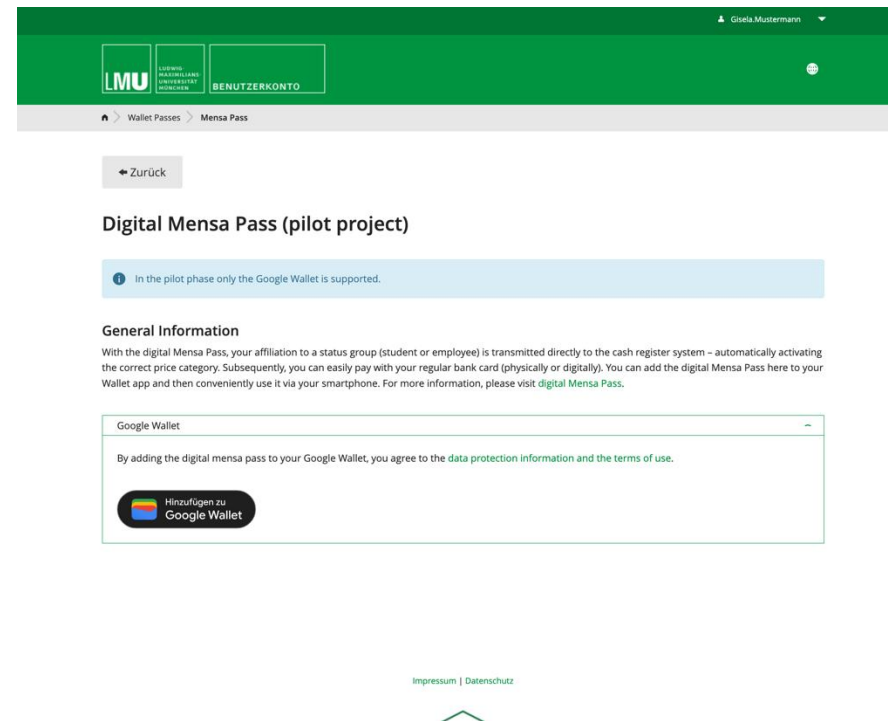
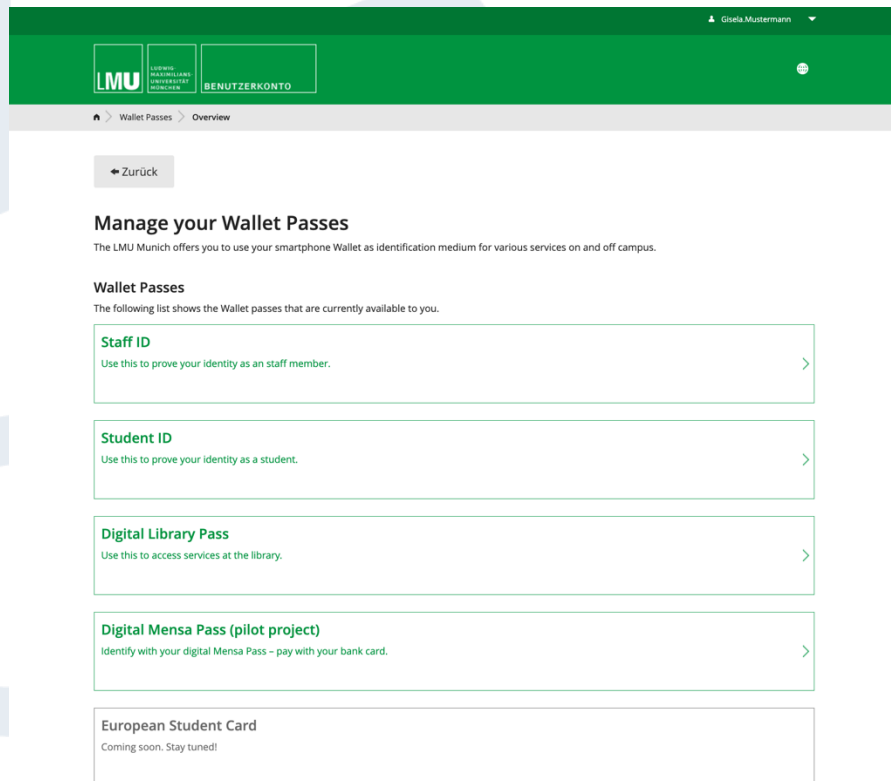


→ **NFC possible**

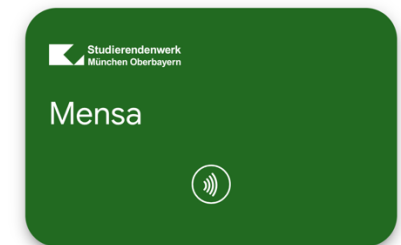


# Transition of credentials into the Smartphone Wallets

## Examples: LMU Munich Benutzerkonto – Pass Portal



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 by end of May 2025



# Transition of credentials into the Smartphone Wallets

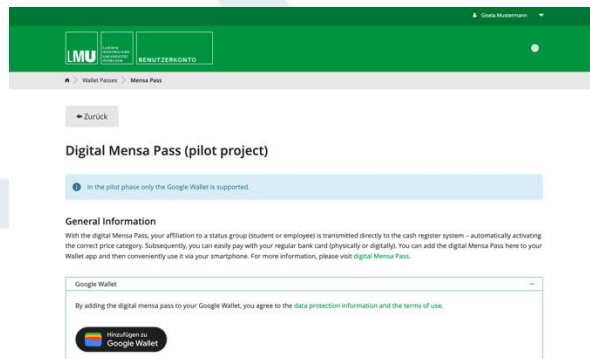
## Examples: LMU Munich – Mensa Discount & Payment

Mensa Discount Passes in Google Wallet for S

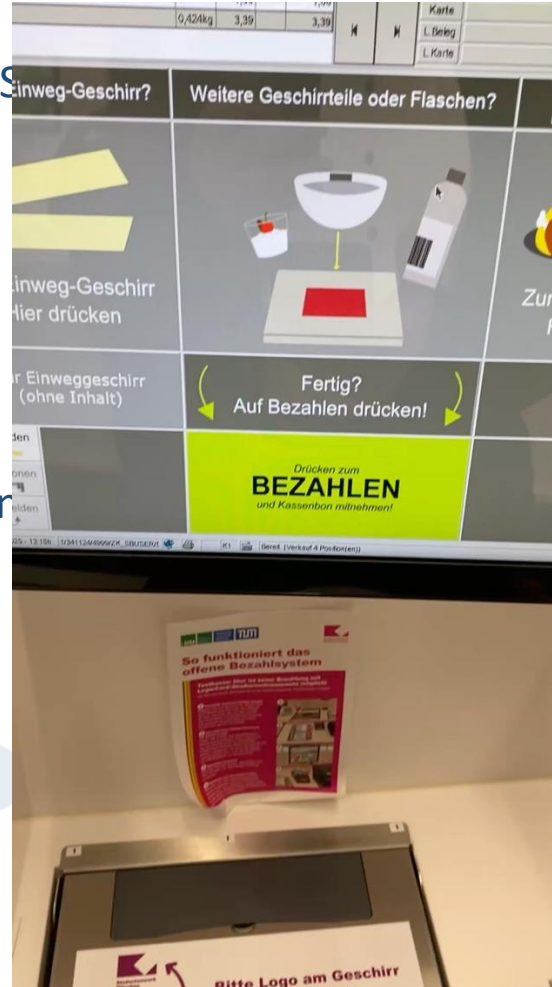
Pass Samples



Self-Service Portal to obtain a Mensa Discount



Impressum | Datenschutz

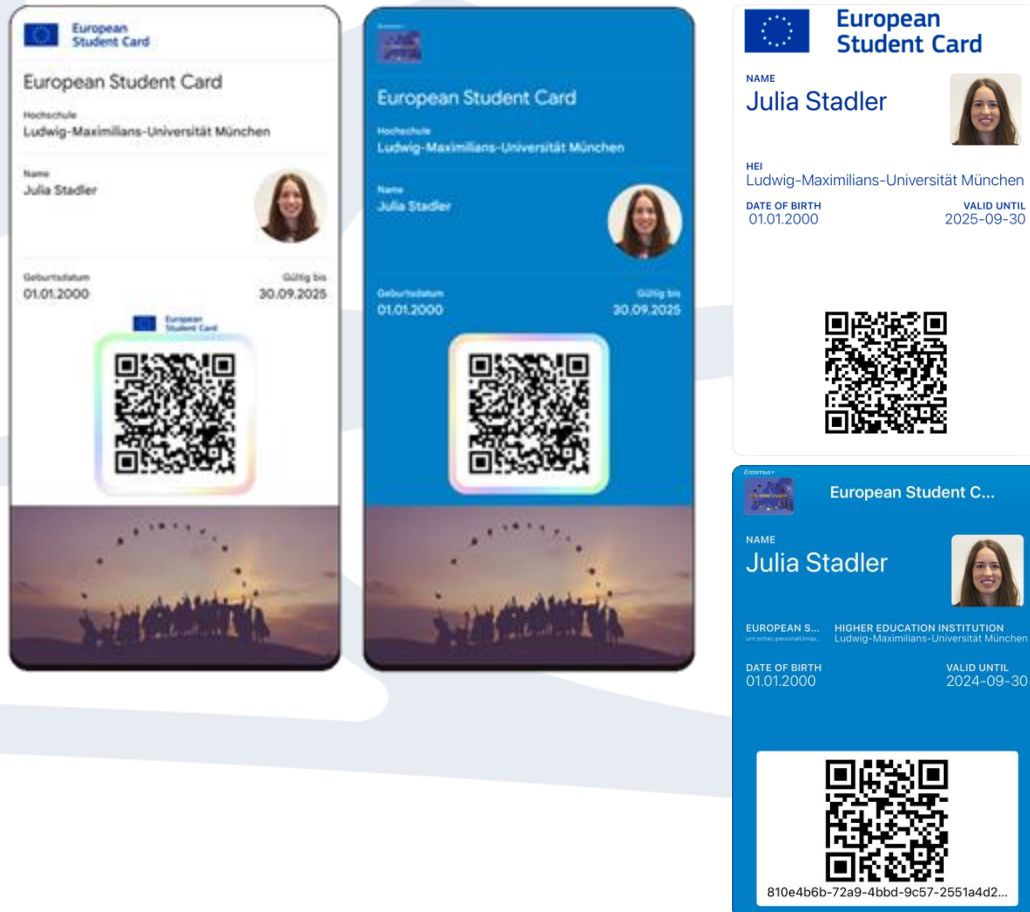


ment Process

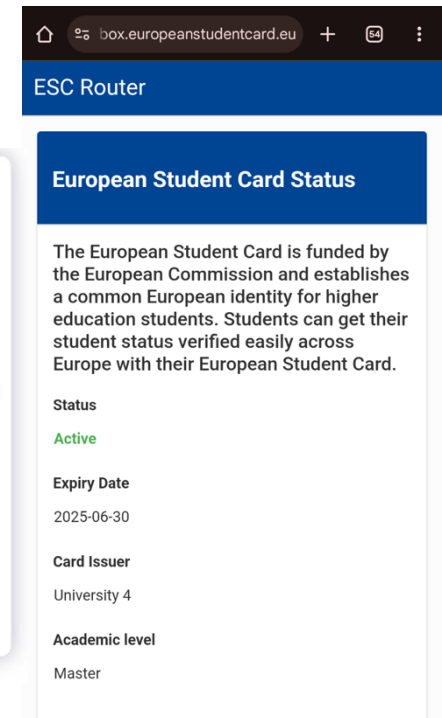
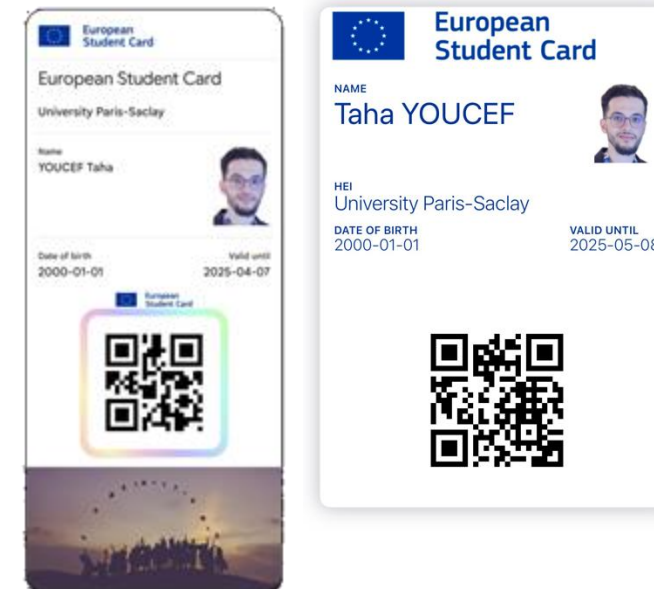


# Transition of credentials into the Smartphone Wallets

## Examples: European Student Card v1.1 in the Wallet



- Discount off-campus
- For usage at HEIs that accept the ESC
- No NFC or additional data





European University Alliance for Global Health

# eduTAP

*A **Sneak Peek** into the Future of Campus Cards & Student Ids*

*→ More secure, more privacy, more interoperability*





The background of the slide features a futuristic, high-tech environment. Two men, dressed in dark blue uniforms, are shown from the waist up. The man in the foreground is pointing his right index finger towards the upper right, while the man behind him has his hands outstretched. They are surrounded by a complex network of glowing blue and green lines, resembling a neural network or a data visualization. Several translucent spheres, some containing internal structures, are floating around them. The overall color palette is dominated by deep blues and vibrant greens, creating a sense of advanced technology and exploration.

*The best way to predict the future is to **create it***

Peter F. Drucker

# Medium → 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

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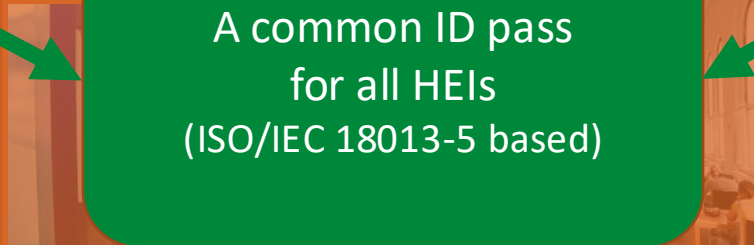
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- Discounts on cultural activities
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- Restaurants
- Special case of "Identification" / "Status verification" / "Proof of entitlement"

separate service passes

(can chose appropriate technology)  
→ Working solutions by solutions providers

A common ID pass  
for all HEIs  
(ISO/IEC 18013-5 based)





# Trust level / Assurance Level

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

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
  - check of a government issued photo-ID

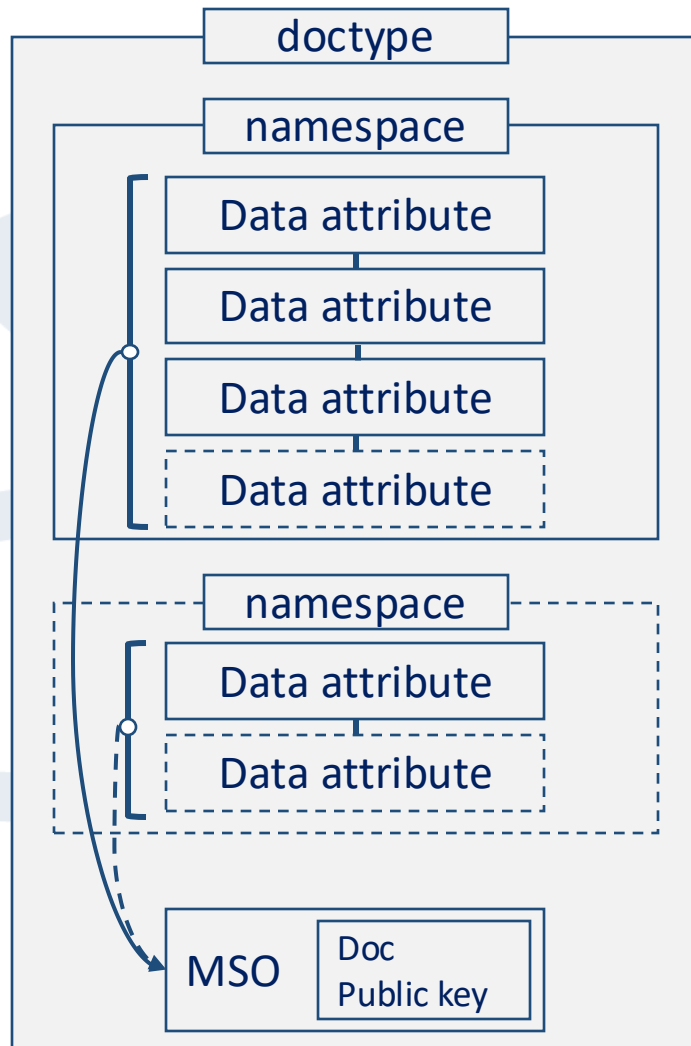
high

- Authentication
- **eID.AS** compliant
    - In eID of EU Citizen IDs
    - Provided by HEI for foreign Students
- Identity proofing:
- Officially confirmed
  - Identity document checked to be genuine and represent the claimed identity
- **Qualified signature**

# Common Identification pass using 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 → mobile driving licence / eu.europa.ec.eudiw.pid.1
- Already supported by the OEM-Smartphone-Manufactures (Apple and Google)  
→ see: <https://android-developers.googleblog.com/2020/11/privacy-preserving-features-in-mobile.html>
- No additional infrastructure costs

# 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
- ...

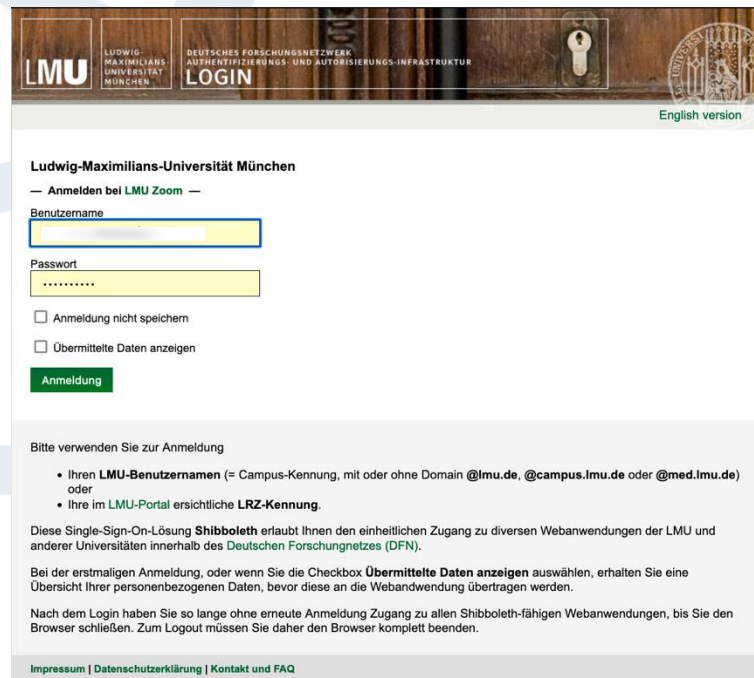
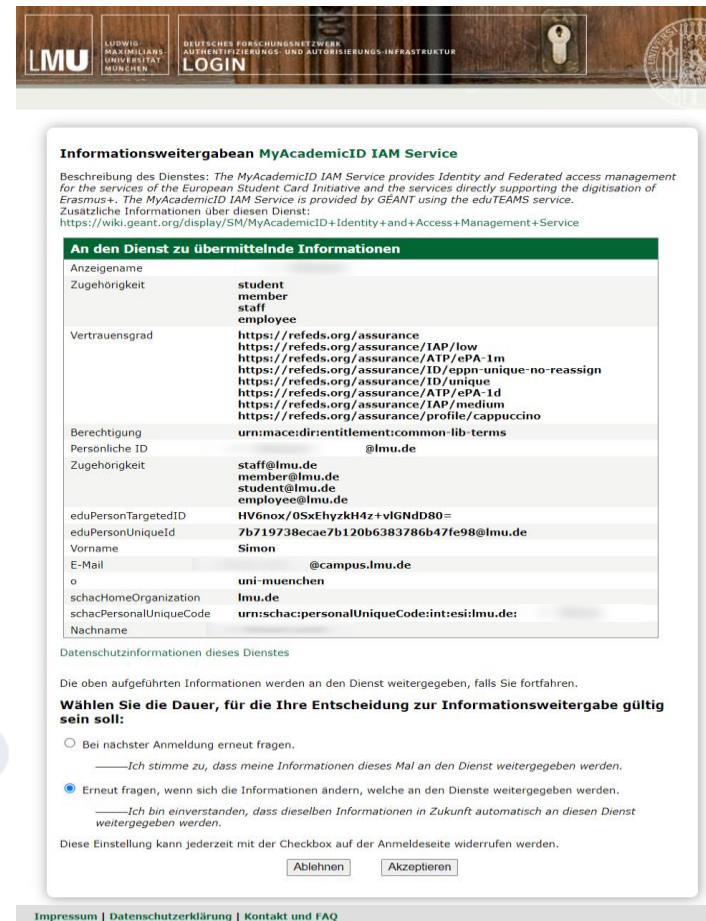
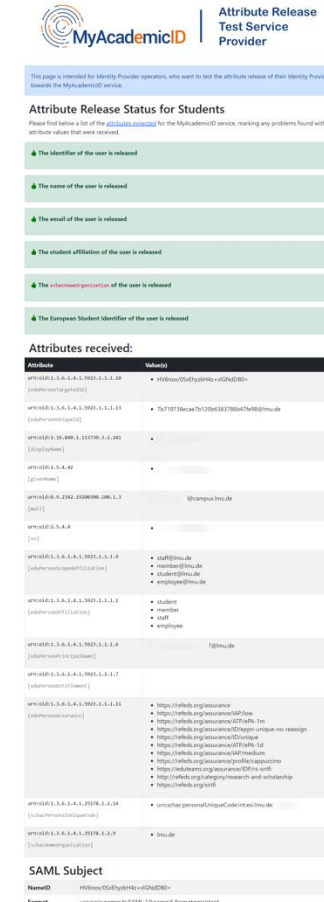


**Shibboleth**

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

# The common Authentication method in the educational sector

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

# eduTAP proposal for an ESC v3

The promise of the European Student Card fulfilled

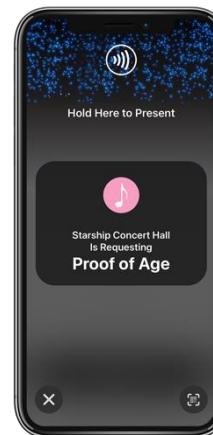
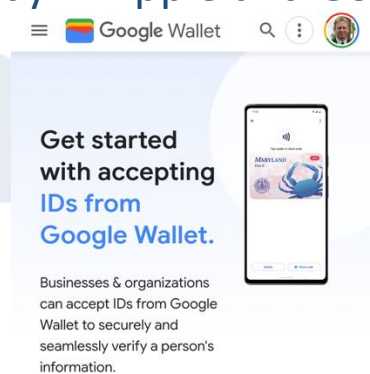
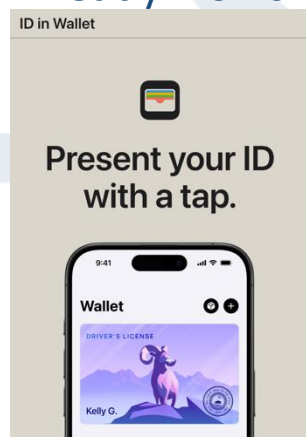
- A **Verifiable Credential** (mDoc – ISO/IEC 18013-5)
- Works offline and non traceable
- All relevant data for identification and status verification
- **Interoperable** for Identification and simple service access
- A global solution
- Already works today in Apple and Google Wallet



From  
QR-Code (v1)  
via JWTs (v2)  
to VC (v3)



→ ARF for European Digital Identity Wallet (EUDI-Wallet)





# eduTAP – educational tapping – What is eduTAP?

- eduTAP the concept
    - of splitting integrated campus cards into separate service passes and
    - a harmonized identity pass
  - 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
- The eduTAP concept helps to fulfill the great vision of the European Student Card and **enable interoperability**

# eduTAP Deliverables

The eduTAP project and community implements

- **eduTAP core** → generic libraries and tools; everything to create, issue and manage passes in the wallets
- **eduTAP libs** → generic libraries and tools; everything to interact with and process data from a wallet pass
- **eduTAP docs** → Information about eduTAP and Wallets
- **Central Service Directory** → find service and obtain a service pass if necessary
- **Infrastructure and Deployment helpers**

HEIs and Service Providers that want to adopt and use eduTAP needs to implement or configure

- **Mandant Specific Applications (MasA)** → eduTAP@institution implementation

## eduTAP is community open source

More Information's → <https://eduTAP.eu> • <https://docs.eduTAP.eu> & <https://github.com/edutap-eu> • <https://github.com/edutap-collective>

# eduTAP - Challenge

- I challenge you to provide a **better User Experience** next year
- Issue enei Conference passes for all Attendees to check into sessions



To create a Google and an Apple Event Ticket for it, it took me less than 30 Minutes

# Demo → Download an eduTAP created pass



<https://demo.edutap.eu/>



Add to Google Wallet



Add to Apple Wallet

# eduTAP – educational tapping

tap to ...

- ✓ tap to identify yourself,
- ✓ tap to verify your status,
- ✓ tap to proof your entitlement,
- ✓ tap to 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.

TAP TO PAY



<https://eduTAP.eu>

*no app, just tap!*





We do the hard work to get stuff **boring** and reliable **working**  
So that YOU can **focus** on your **studies** and **enjoy student life**

and reach for the stars



# My 3 Key Points for you!

Boring is a good thing

## Student Mobility is important

Interoperability is difficult but manageable,  
the user experience is important



→ The future is coming