eduTAP

Bridging online identity to mobile credentials for reliable and trustworthy on-site service access (in the educational sector)

www.eugloh.eu

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

- Benchmark Examples

WLAN Access   Login to Online Services

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

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.

no app, just tap!

TAP TO PAY

eduTAP – mission:

- **digitizing cards** → passes in the smart device **wallet**s
- 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

Access Services → a question of interoperability

Identification	Electronic payment / cashless campus	Physical Access Control	Library services	Transport	Discount and promotions

• 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*)
	• Canteen & cafeterias
	• Vending machines
	• Printing / scanning
	(*secure & follow me printing*)
	• Ticketing
	(*secure & follow me printing*)
		• Areas (*campus, parking lot*)
		• Buildings
		• Rooms
		  • Classrooms
		  • Labs
		  • Computer rooms
		  • Learning spaces
		  • Offices
		  • Accommodation facilities (*i.e., dorms*)
		• Sports facilities
			• Access to / borrow
			  • Physical media (book, audio and video media)
			  • E-media (book, audio and video media)
			• Learning spaces
				• On campus services (*university shuttle service*)
				• Public transport tickets & discounts
					• Discounts on cultural activities
					  • Museums
					  • theaters
					  • cinemas
					• Shops
					• Restaurants

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

providing service → create benefits

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

A great vision!

European University Alliance for Global Health

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

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

EUGLOH 2.0 Consortium Partners

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

338,500 Students

54,000 Academic Staff

112 Faculties & Schools

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

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

Universitetet i Tromsø – Norges arktiske universitet

Lunds Universitet

Universität Hamburg

Université Paris–Saclay

Ludwig–Maximilians–Universität München

Szegedi Tudományegyetem

Universidade do Porto

Univerzitet u Novom Sadu

Universidad de Alcalá

EUGLOH campus cards
current state and connected services

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

Status of four core members (IT wise)

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

Université Paris-Saclay
- NXP Mifare DESfire Cards
- Payment (izly – les Crous)
- Library
- Physical Access Control

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

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

Not compatible technologies

Path to an interoperable campus card

eduTAP

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

transition

Trust-Level: NO-TRUST

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 → edu**TAP 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
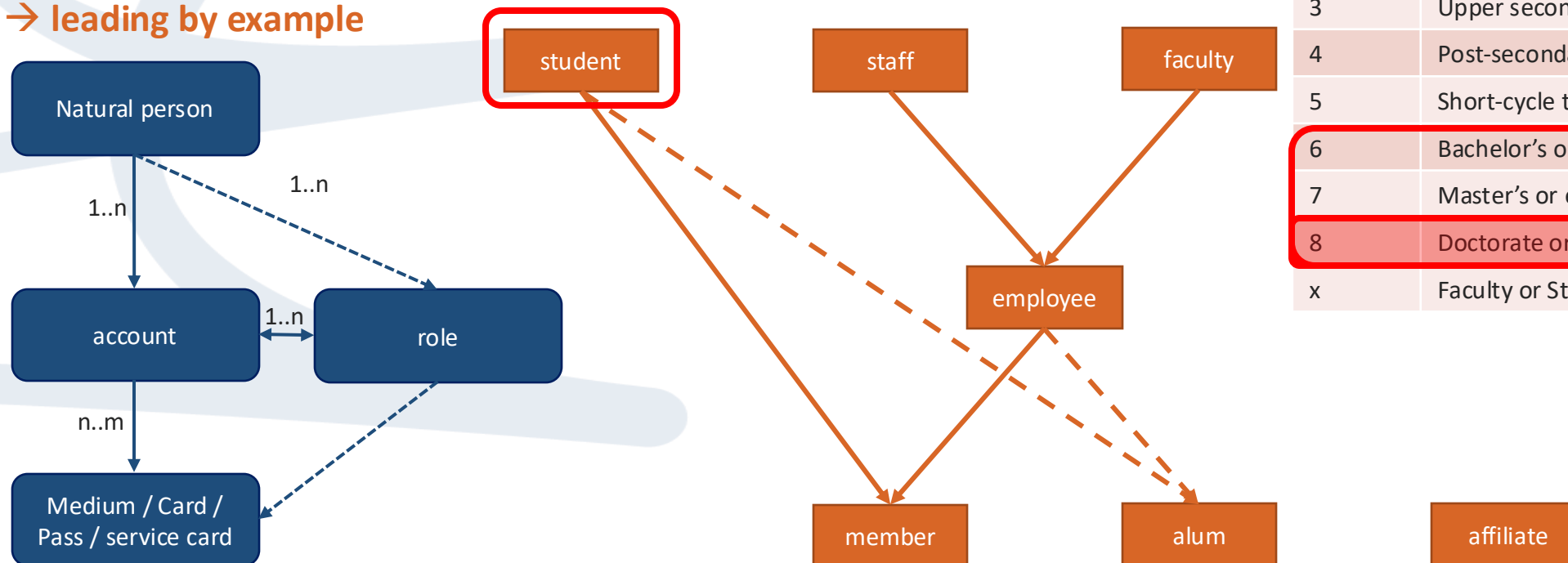
Access Services → a question of interoperability

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

Path to an interoperable campus card → HEIDI

Identity
Discounts
Access
Library
Printing

divide and conquer

Integrated Campus Card
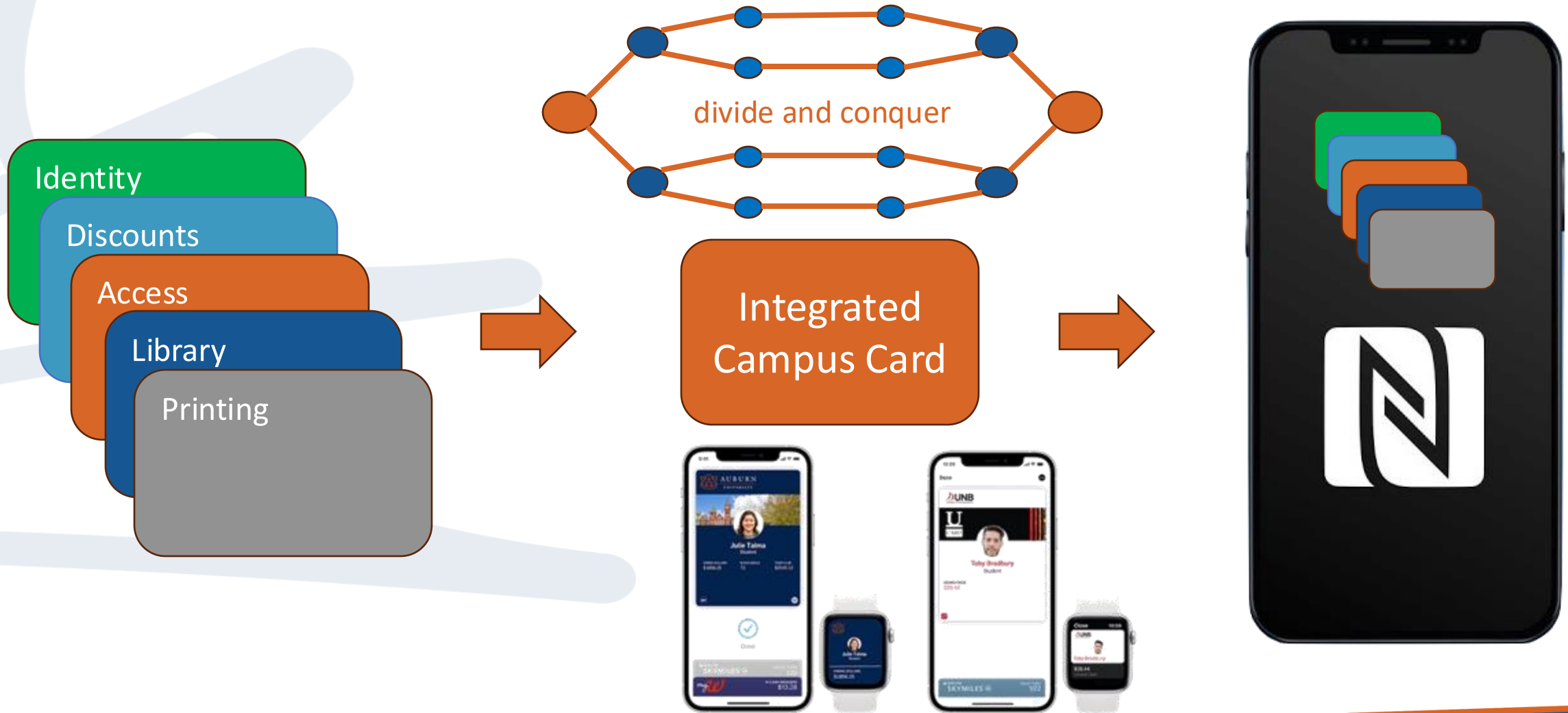
Medium → Services

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...)*
- Ticketing *(secure & for...)*

Physical Access Control
- Areas *(campus, parking lot)*
- Buildings
- Rooms
- Classrooms

Library services
- Access to / borrow
  - Physical media (book, ...)
  - E-media (book, audio and ...)

Transport
- On campus services *(university shuttle service)*
- Special case of "Proof of entitlement"
- ...sport tickets
- ...s
- ...e of / "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)

eID.AS
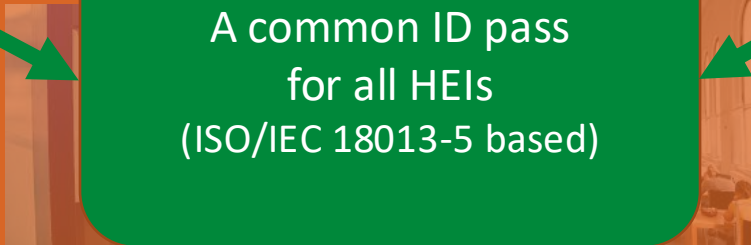
providing service → create benefits

Technical details and features of Wallets / Passes

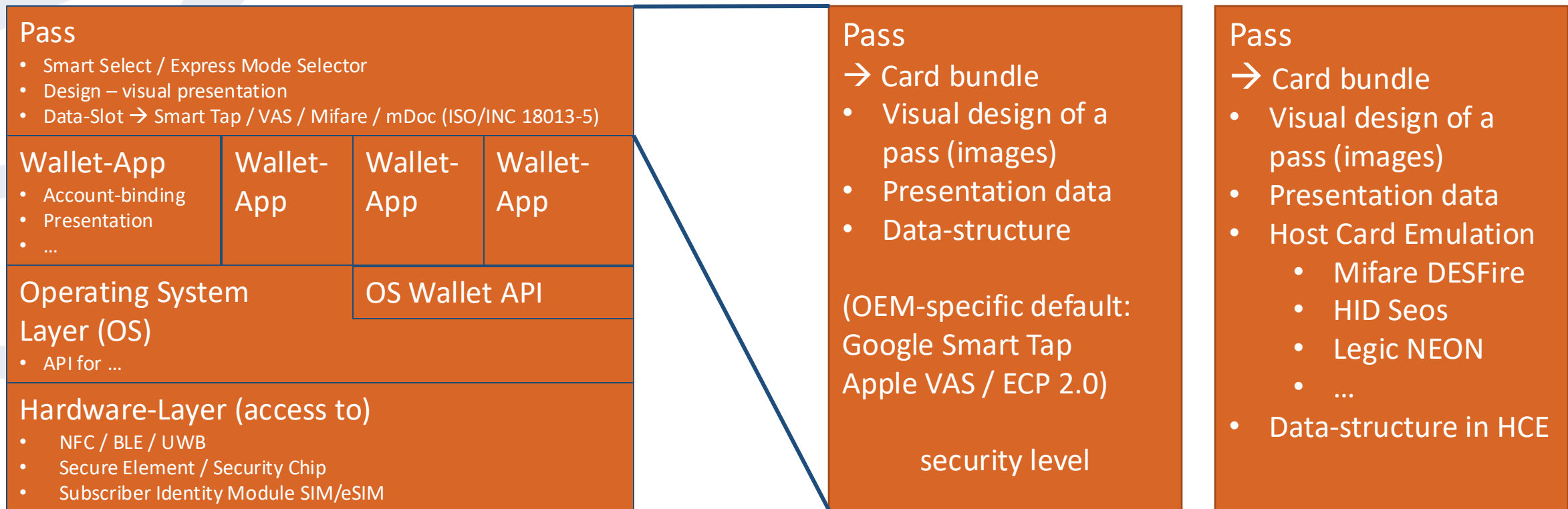The wallet is a **container for multiple passes**

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*
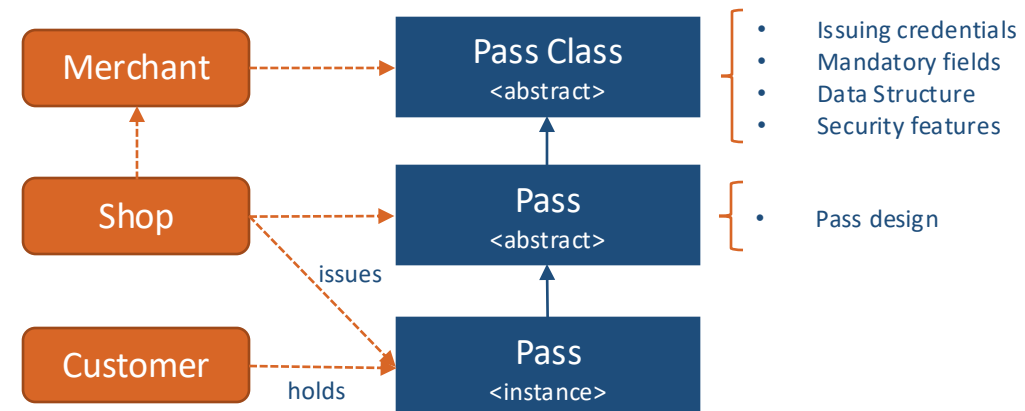
Technical details and features of Wallets / Passes

✓ 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-Presentment**)

→ **one pass per service**

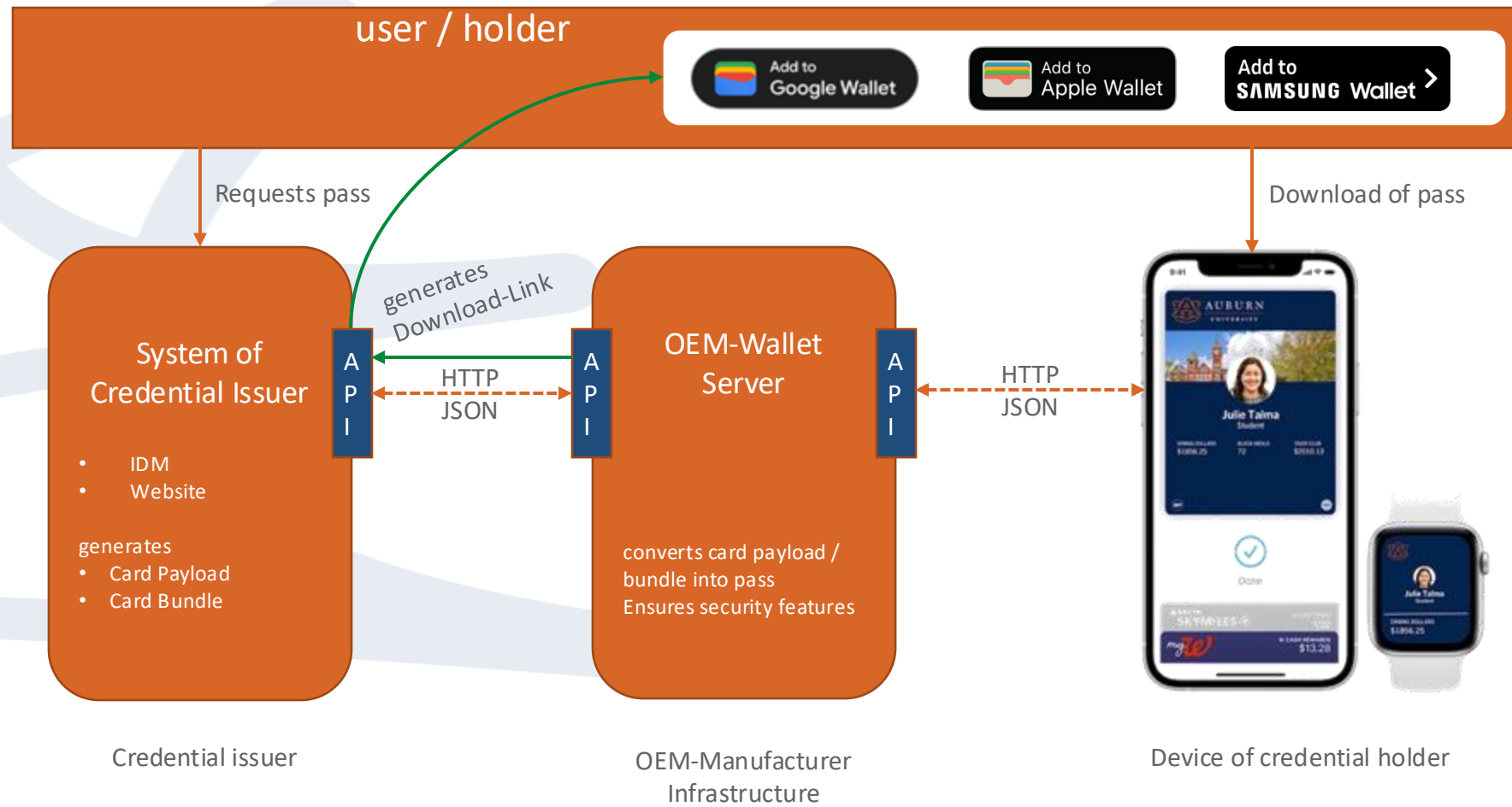| Pass					Pass	Pass
• Smart Select / Express Mode Selector • Design – visual presentation • Data-Slot → Smart Tap / VAS / Mifare / mDoc (ISO/INC 18013-5)					→ Card bundle • Visual design of a pass (images) • Presentation data • Data-structure	→ Card bundle • Visual design of a pass (images) • Presentation data • Host Card Emulation
Wallet-App • Account-binding • Presentation • …	Wallet-App	Wallet-App	Wallet-App			• Mifare DESFire • HID Seos • Legic NEON • …
Operating System Layer (OS) • API for …		OS Wallet API			(OEM-specific default: Google Smart Tap Apple VAS / ECP 2.0)	• Data-structure in HCE
Hardware-Layer (access to) • NFC / BLE / UWB • Secure Element / Security Chip • Subscriber Identity Module SIM/eSIM					security level	

Technical details and features of Wallets / Passes

Detail view on the Wallet

Pass
- Smart Select / Express Mode Selector
- Design – visual presentation
- Data-Slot → Smart Tap / VAS / Mifare / mDoc (ISO/INC 18013-5)

Wallet-App	Wallet-App	Wallet-App	Wallet-App
• Account-binding • Presentation • …			

Operating System Layer (OS) • API for …	OS Wallet API

Hardware-Layer (access to)
- NFC / BLE / UWB
- Secure Element / Security Chip
- Subscriber Identity Module SIM/eSIM

EU Digital Identity Wallet

EWC

OpenWallet FOUNDATION

Necessary to issue passes to **all relevant wallets**

→ 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

user / holder

Add to Google Wallet · Add to Apple Wallet · Add to SAMSUNG Wallet

Requests pass

Download of pass

generates Download-Link

System of Credential Issuer

API

HTTP JSON

API

OEM-Wallet Server

API

HTTP JSON

- IDM
- Website

generates
- Card Payload
- Card Bundle

converts card payload / bundle into pass
Ensures security features

AUBURN UNIVERSITY

Julie Talma
Student

Credential issuer

OEM-Manufacturer Infrastructure

Device of credential holder

Service Provider (relying party)

Transition of credentials into the Smartphone Wallets
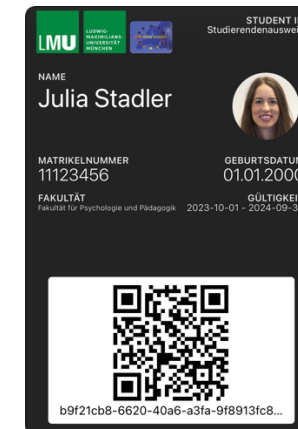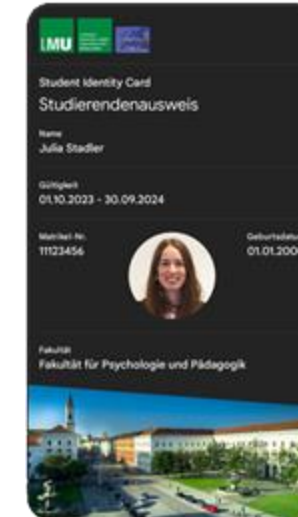
transition

Transition of credentials into the Smartphone Wallets Examples: LMU Munich Benutzerkonto – Pass Portal
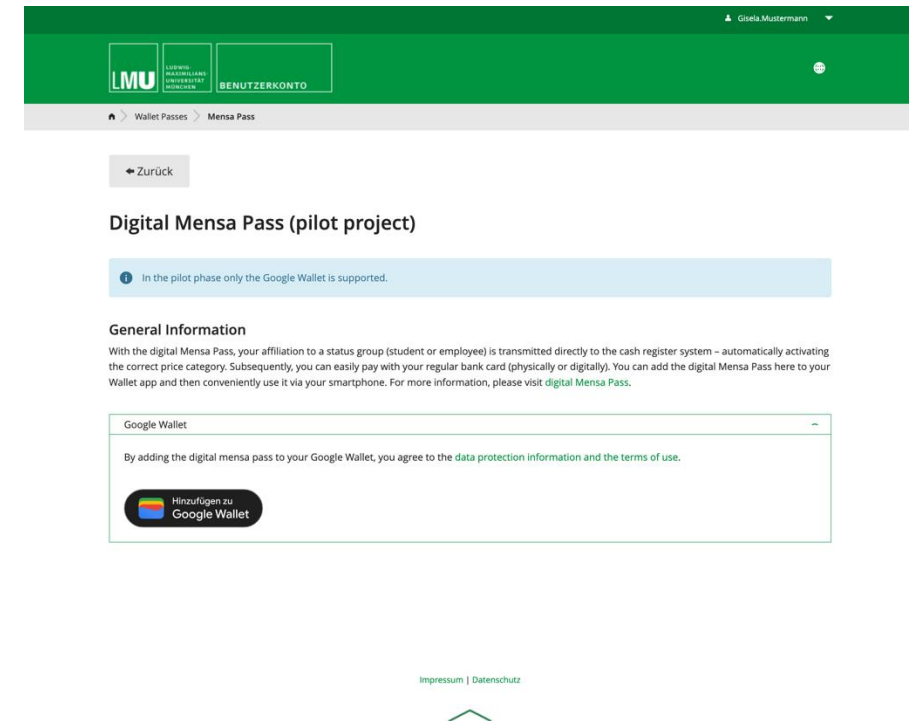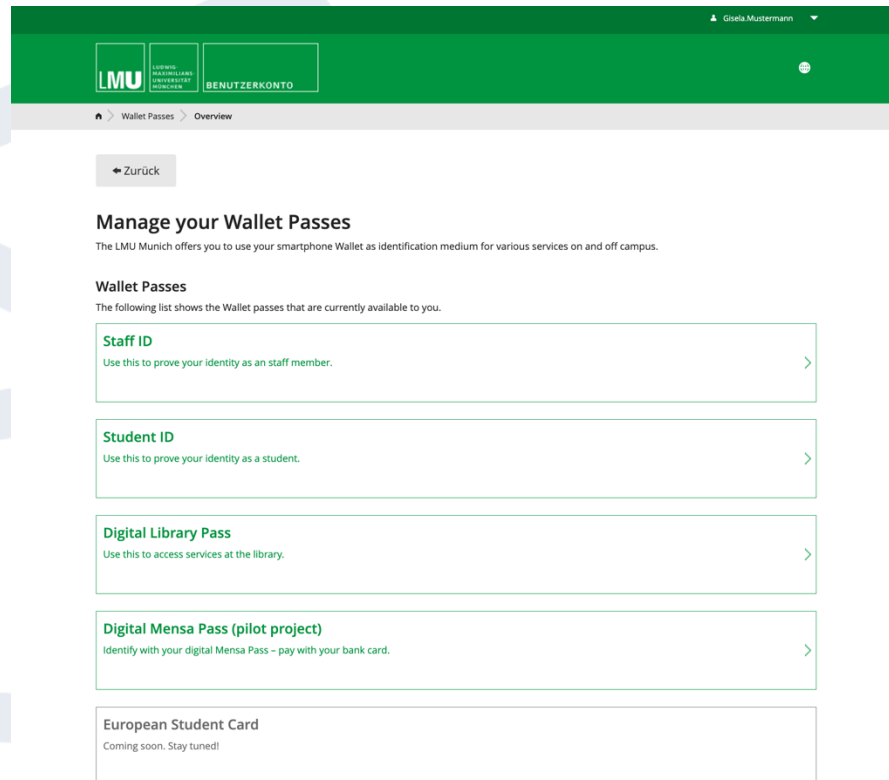
Transition of credentials into the Smartphone Wallets
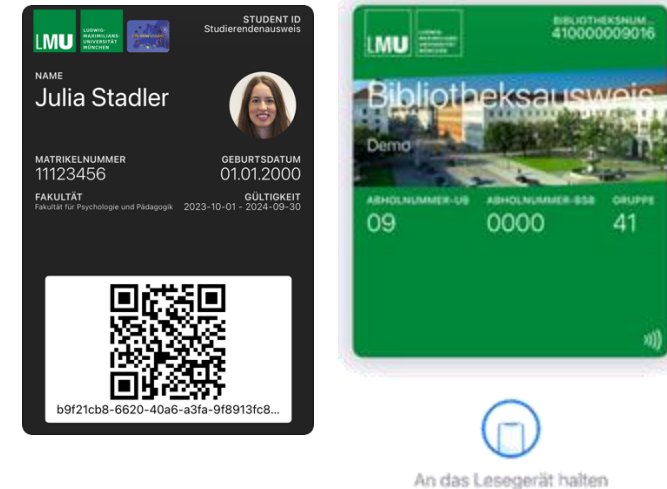# Examples: Active and potential IDs for LMU Munich

Google Wallet
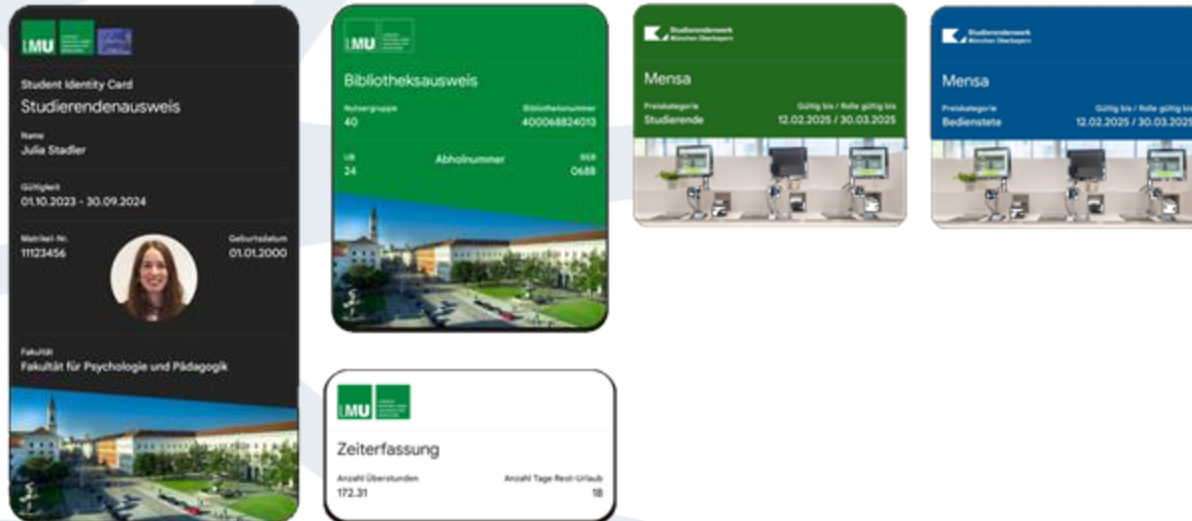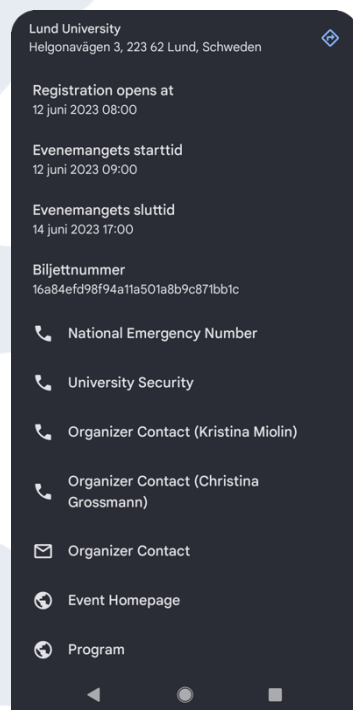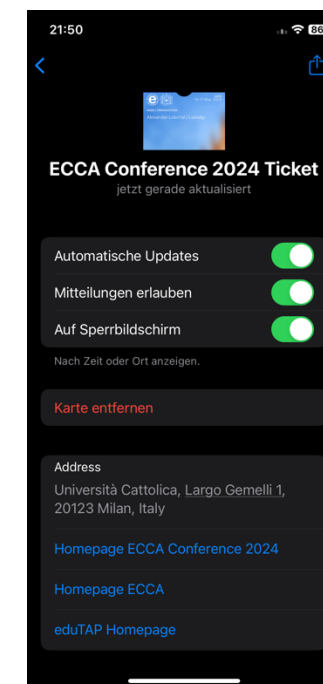
Apple Wallet

→ all **NFC enabled**
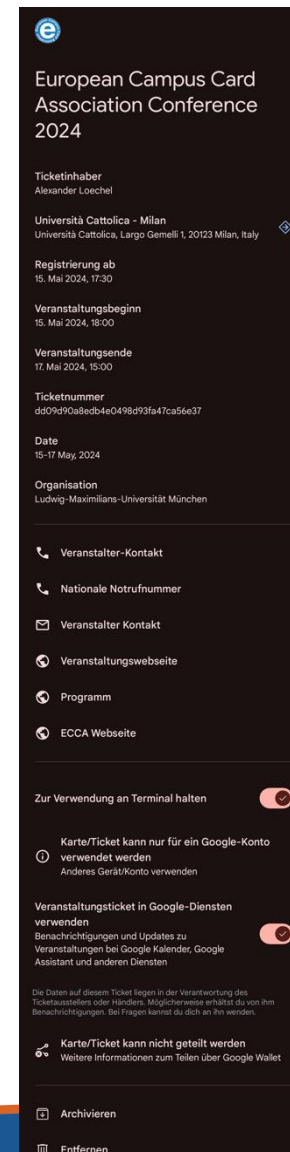
→ **NFC possible**

Transition of credentials into the Smartphone Wallets
Examples: **Event Tickets**
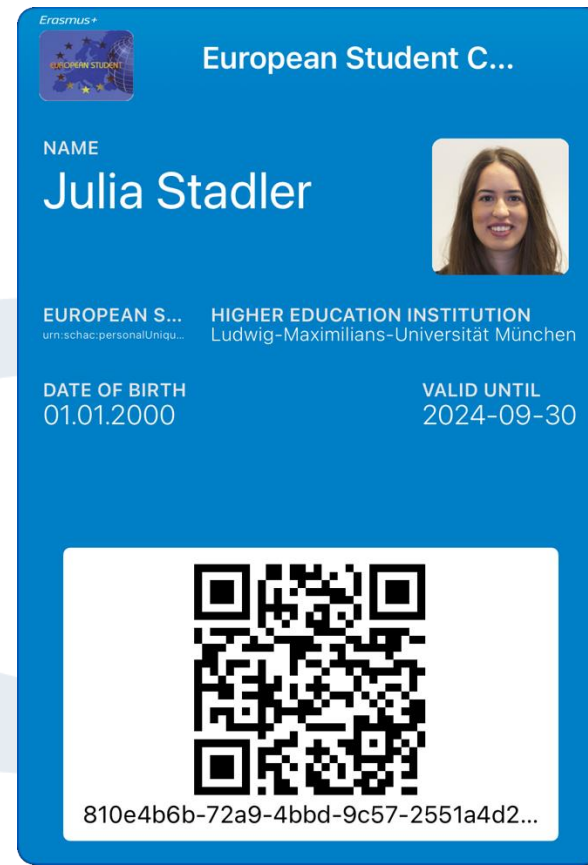
EUGLOH Annual Summit 2023 in Lund

ECCA 2024
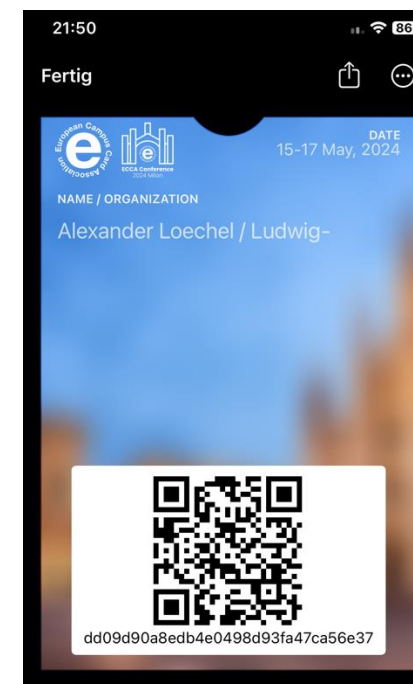
Transition of credentials into the Smartphone Wallets
Examples: European Student Card in the Wallet

- Discount off-campus

- For usage at HEIs that accept the ESC

- No NFC or additional data

- Old Design → Will be updated to new Design of new ESC Router

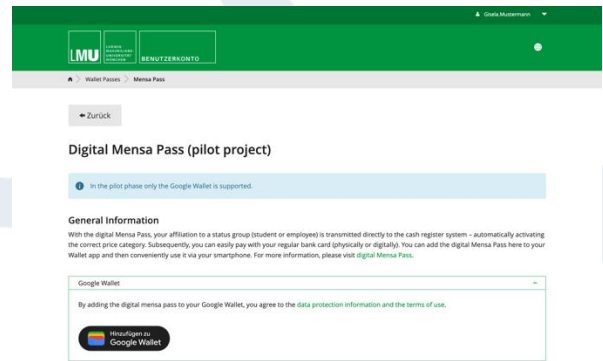# Transition of credentials into the Smartphone Wallets
Examples: LMU Munich – Mensa Discount & Payment

Mensa Discount Passes in Google Wallet for Status Verification

Pass Samples

Self-Service Portal to obtain a Mensa Discount Pass

Payment Process

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

Demo → Download an eduTAP created pass

eduTAP

https://demo.edutap.eu/

Add to Google Wallet

Add to Apple Wallet

eduTAP – educational tapping

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