



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

eduTAP

ECCA Conference 2024 – Milan - 2024-05-16
Panel discussion on
**„Campus Card requirements and
interoperable solutions for all HEIs“**

Alexander Loechel
Referent IT-Projekte



Transition of credentials into the Smartphone Wallets



transition



providing services on-site → card / smart device as a medium

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

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!



Interoperability ?

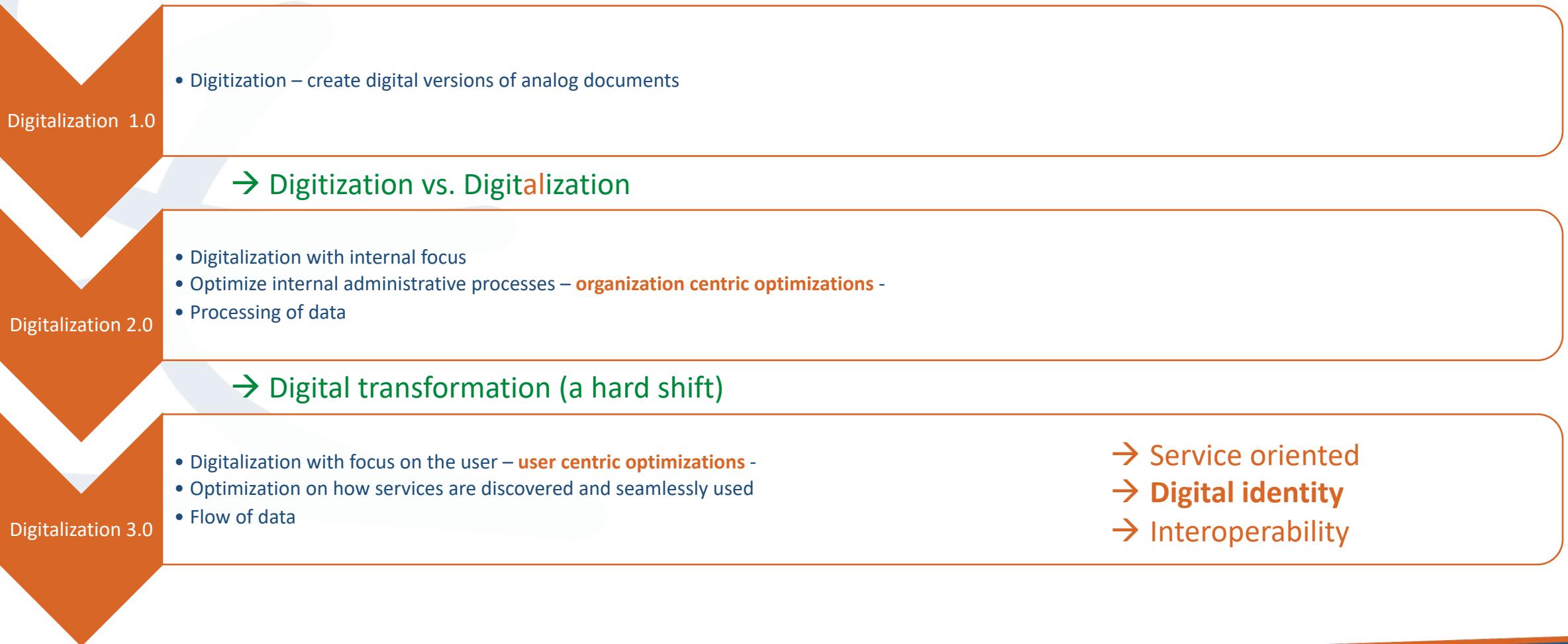
to access on and off-campus services?

→ a hologram does not provide interoperability

security, privacy, ... ?

Digitizing cards vs. leveraging the possibilities of smart devices

→ Stages of Digitalization – Period of Digital transformation



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 - Electronic Signature (of legal documents)

- Electronic Payment / cashless campus
- Canteen & cafeterias
 - vending machines
 - Printing / scanning (secure & fast)
 - Ticketing (secure & fast)

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

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

- Transport
- On campus services (university shuttle service)
 - “Proof of entitlement”
 - sport tickets
 - etc.

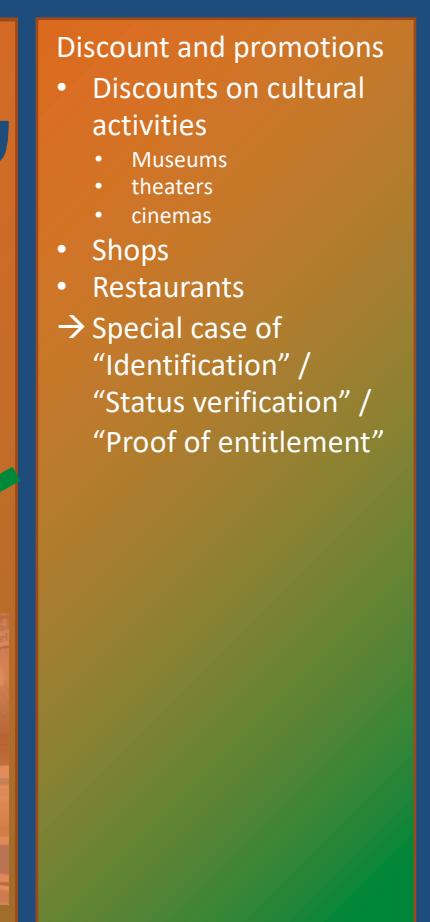
- Discount and promotions
- Discounts on cultural activities
 - Museums
 - theaters
 - cinemas
 - Shops
 - Restaurants
- Special case of “Identification” / “Status verification” / “Proof of entitlement”

separate service passes

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

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

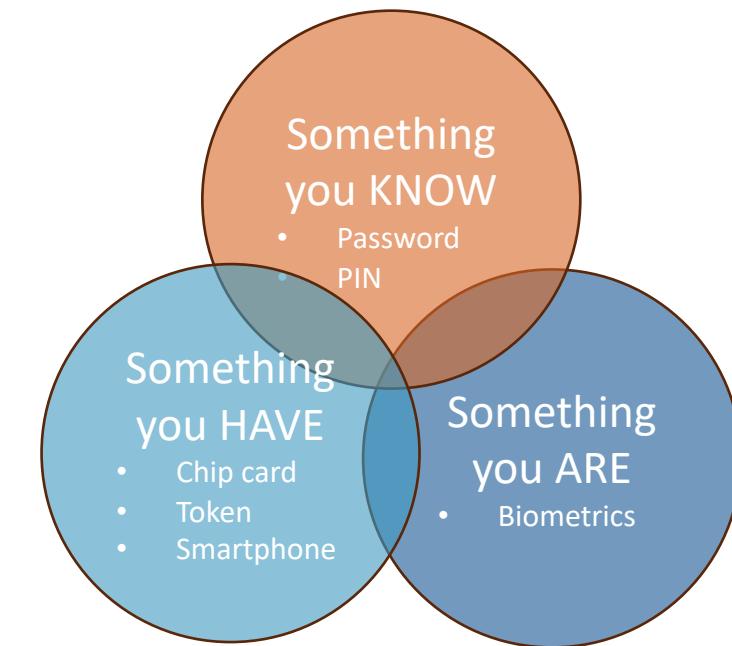
providing service → create benefits



Key to all Services → 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

Authentication Factors



The common Authentication method in the educational sector

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



LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

**DEUTSCHES FORSCHUNGSGESELLSCHAFT FÜR
AUTENTIFIZIERUNGS- UND AUTORIZIERUNGS-INFRASTRUKTUR**

LOGIN

English version

Ludwig-Maximilians-Universität München

— Anmelden bei LMU Zoom —

Benutzername:

Passwort:

Anmeldung nicht speichern

Übermittelte Daten anzeigen

Anmeldung

Bitte verwenden Sie zur Anmeldung

- Ihren LMU-Benutzernamen (= Campus-Kennung, mit oder ohne Domain @lmu.de, @campus.lmu.de oder @med.lmu.de) oder
- Ihr im LMU-Portal ersichtliche LRZ-Kennung.

Diese Single-Sign-On-Lösung **Shibboleth** erlaubt Ihnen den einheitlichen Zugang zu diversen Webanwendungen der LMU und anderen Universitäten innerhalb des **Deutschen Forschungnetzes (DFN)**.

Bei der erstmaligen Anmeldung, oder wenn Sie die Checkbox Übermittelte Daten anzeigen auswählen, erhalten Sie eine Übersicht Ihrer personenbezogenen Daten, bevor diese an die Webanwendung übertragen werden.

Nach dem Login haben Sie so lange ohne erneute Anmeldung Zugang zu allen Shibboleth-fähigen Webanwendungen, bis Sie den Browser schließen. Zum Logout müssen Sie daher den Browser komplett beenden.

[Impressum](#) | [Datenschutzerklärung](#) | [Kontakt und FAQ](#)



Informationsweitergabe an 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	
Zugehörigkeit	student member staff employee
Vertrauensgrad	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/IAP/medium https://refeds.org/assurance/profile/cappuccino
Berechtigung	urn:mace:dir:entitlement:common-lib-terms
Personliche ID	@lmu.de
Zugehörigkeit	staff@lmu.de member@lmu.de student@lmu.de employee@lmu.de
eduPersonTargetedID	HV6nox/OsxEhyzklI4z+vLGND80=
eduPersonUniqueId	7b719738eca7b120b6383786b47fe98@lmu.de
Vorname	Simon
E-Mail	@campus.lmu.de
o	uni-muenchen
schacHomeOrganization	lmu.de
schacPersonalUniqueId	urn:schac:personal:uniqueCode:intes:lmu.de:
Nachname	

Datenschutzinformationen dieses Dienstes

Die 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.
— Ich stimme zu, dass meine Informationen dieses Mal an den Dienst weitergegeben werden.

Erneut fragen, wenn sich die Informationen ändern, welche an den Dienst 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

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Attribute Release Test Service Provider

This page is intended for Identity Provider operators, who want to test the attribute release of their Identity Provider towards the MyAcademicID service.

Attribute Release Status for Students

Please find below a list of the attribute releases for the MyAcademicID service, marking any problems found with the attribute values that were received.

Attribute	Value(s)
urn:oid:1.3.6.1.4.1.5902.1.1.1.19	urn:lmu:OsuhyzklI4z+vLGND80=
urn:oid:1.3.6.1.4.1.5902.1.1.1.13	7b719738eca7b120b6383786b47fe98@lmu.de
urn:oid:1.3.6.1.4.1.5902.1.1.1.14	
urn:oid:1.3.6.1.4.1.5902.1.1.1.21	
urn:oid:2.1.2.5.4.42	
urn:oid:0.9.2342.35200300.100.1.3	@campus.lmu.de
urn:oid:2.1.2.5.4.4	
urn:oid:1.3.6.1.4.1.5902.1.1.1.9	staff@lmu.de member@lmu.de student@lmu.de employee@lmu.de
urn:oid:1.3.6.1.4.1.5902.1.1.1.13	student member staff employee
urn:oid:1.3.6.1.4.1.5902.1.1.1.14	
urn:oid:1.3.6.1.4.1.5902.1.1.1.16	
urn:oid:1.3.6.1.4.1.5902.1.1.1.7	
urn:oid:1.3.6.1.4.1.5902.1.1.1.11	http://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/IAP/medium https://refeds.org/assurance/profile/cappuccino http://refeds.org/categories/research-and-education http://refeds.org/categories/learning-and-teaching http://refeds.org/categories/infrastructure http://refeds.org/categories/people-and-roles
urn:oid:1.3.6.1.4.1.5918.1.2.14	urn:schac:personal:uniqueCode:intes:lmu.de
urn:oid:1.3.6.1.4.1.5918.1.2.9	@lmu.de

SAML Subject

NameID	Format
urn:oid:0.9.2342.35200300.100.2.0.nameid-format.persistent	urn:oasis:names:tc:SAML:2.0:nameid-format:persistent

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

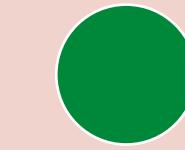
substantial / medium

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

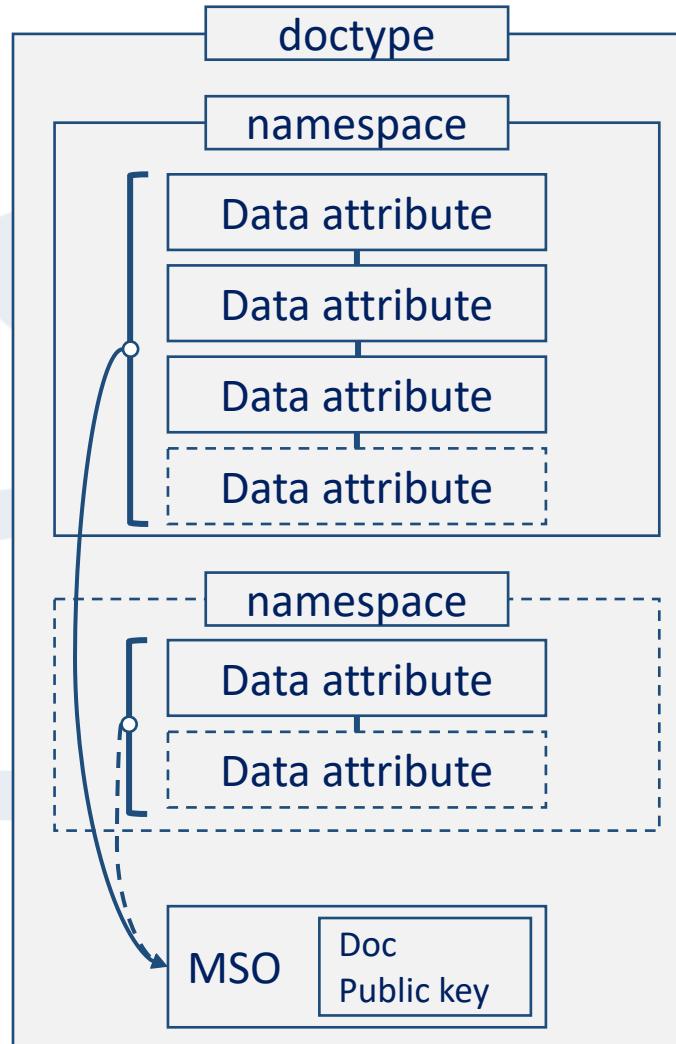
Identity proofing:

- 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):



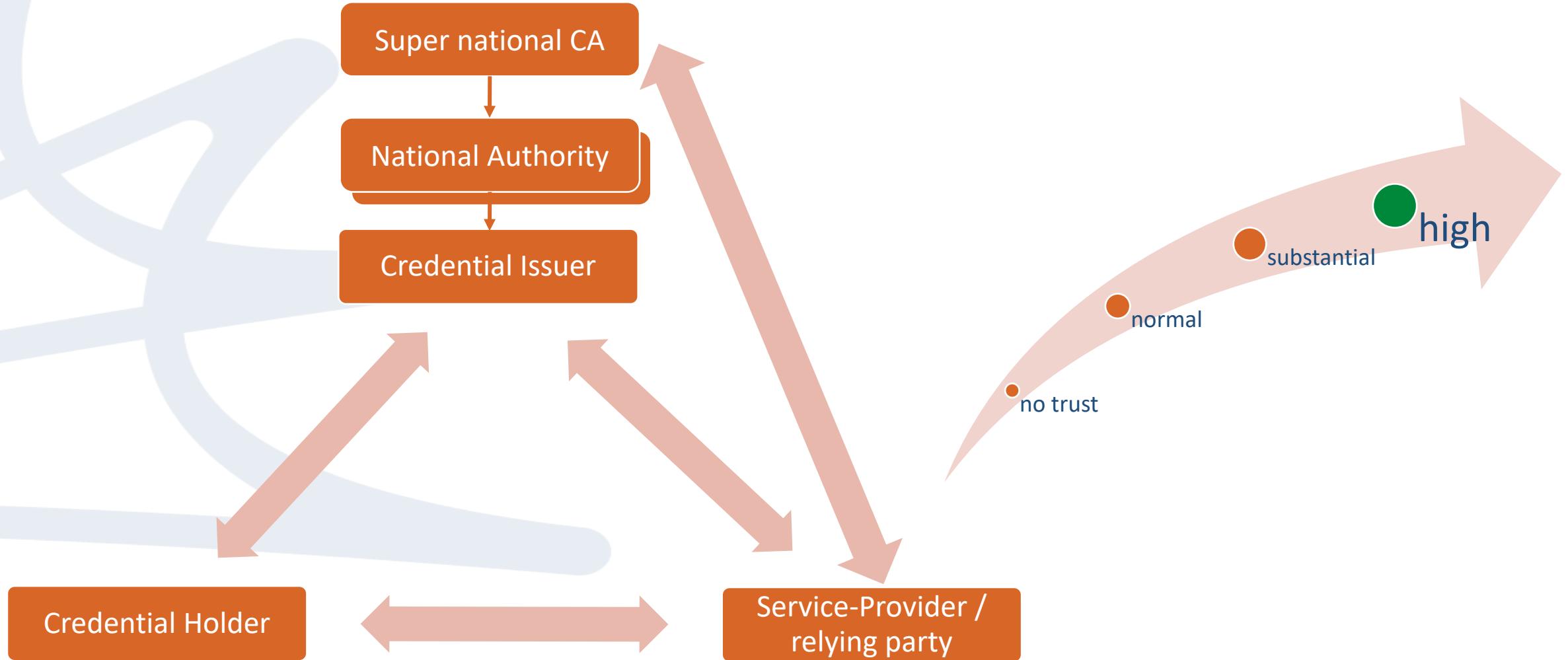
- portrait (photo, *mandatory for identification documents*)
- givenNames
- sn (surname)
- email
- eduPersonAffiliation / eduPersonScopedAffiliation
- eduPersonEntitlement
- eduPersonAssurance
- schacHomeOrganization
- schacPersonalUniqueCode → European Student Identifier (ESI) - MyAcademicID
- schacDateOfBirth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



Shibboleth.

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

Chain of Trust & Trust level



providing services on-site → card / smart device as a medium

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Physical Access Control

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Discount and promotions

- Discounts on cultural activities
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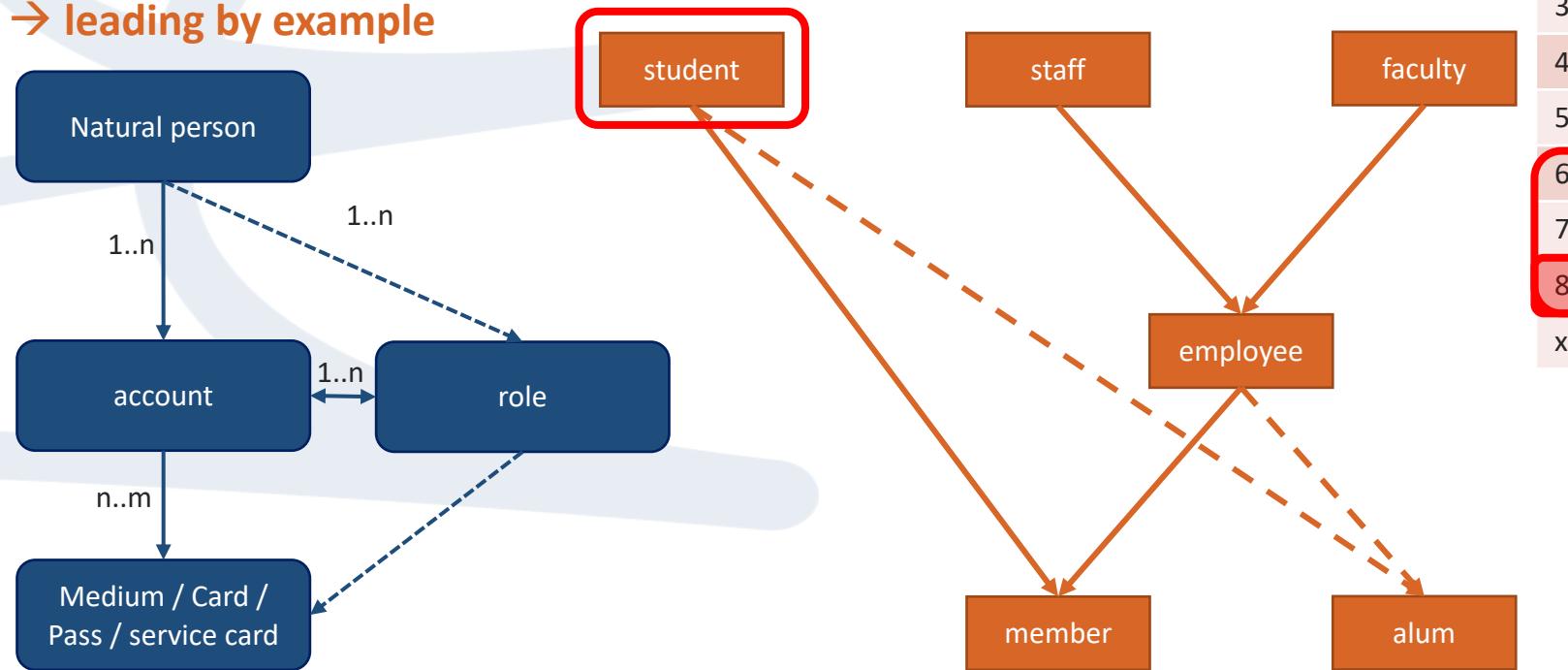
on- & off-campus → on-site usage
online services



providing service → create benefits

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**

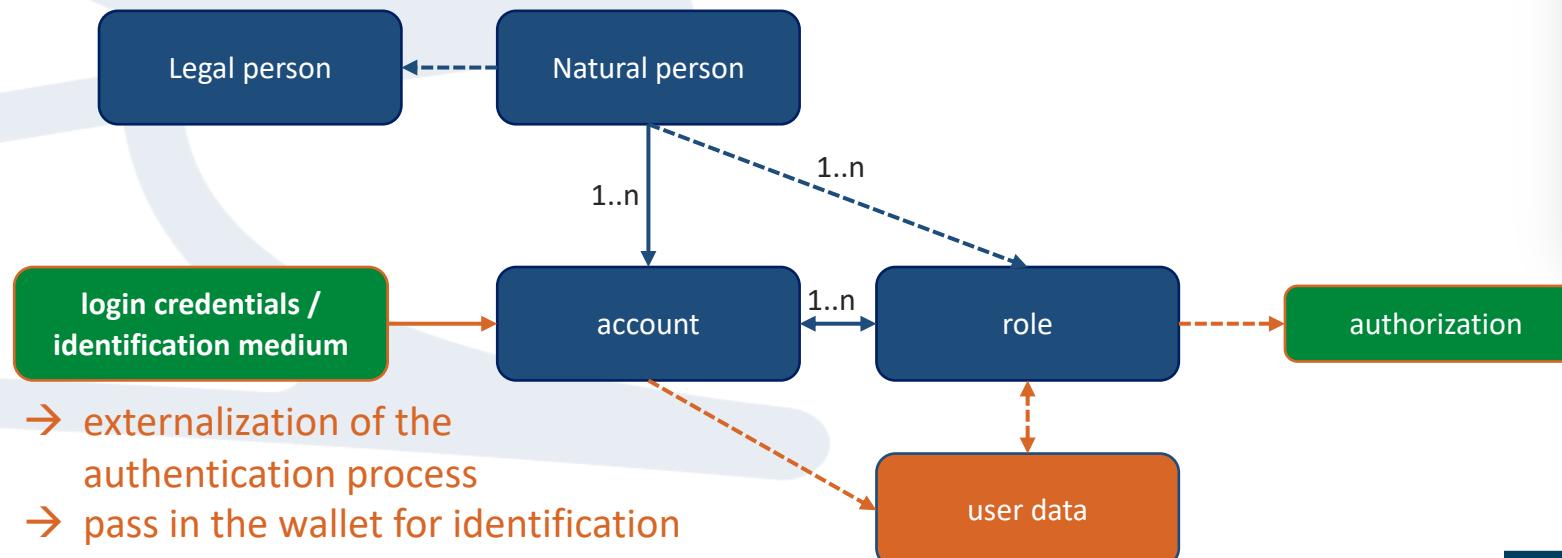


ISCED:2011 Level

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

Identity: from online (eduGAIN) to on-site (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



MyAcademicID

Login with

Examples: University of Bologna, name@aut

Search the extended list of Identity Providers

or

Login with eIDAS

Login with Google

Federation A

Federation B

Federation C

MDS Metadata Service

eduGAIN

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.

MyAcademicID Support Helpdesk | eduTEAMS by GÉANT | Privacy Policy

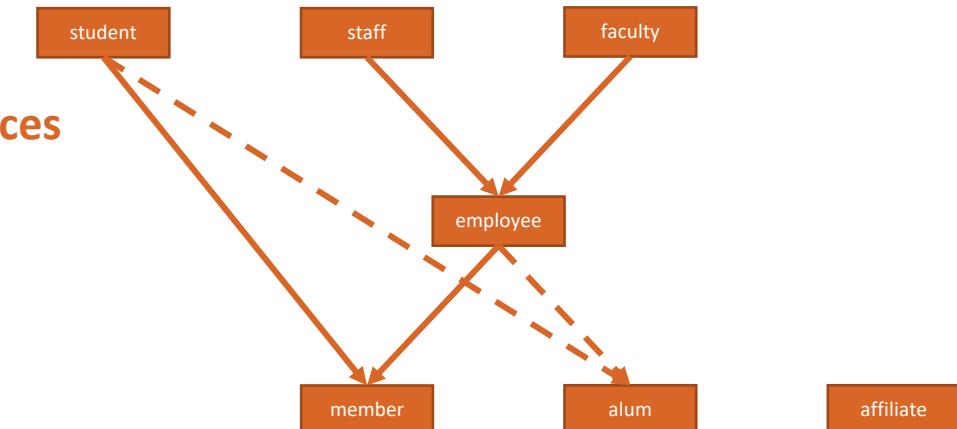
From eduGAIN & eduroam to eduTAP

- eduGAIN is an inter-federation of identity-federations in Higher Education
 - Each Member of a Higher Education Institution (HEI) should have a user-account that allows him to access online-services
 - eduGAIN uses Shibboleth (federated SAML2 or OIDC) and is an “Authentication and Authorization Infrastructure” (AAI)
 - All HEIs Identity Management Systems uses the same common set of LDAP-Schema (eduPerson & SCHAC + SAML)
→ shared set of Attributes and understanding of those Attributes
- eduroam (educational roaming) gives all HEI members access to a WLAN service with SSID eduroam
 - WPA2/3-Enterprise with a Radius Authentication Service (based on the eduGAIN user-account - login)
 - A common WLAN at almost all HEIs world-wide and public spots

→ It is all about accessing services

→ eduTAP

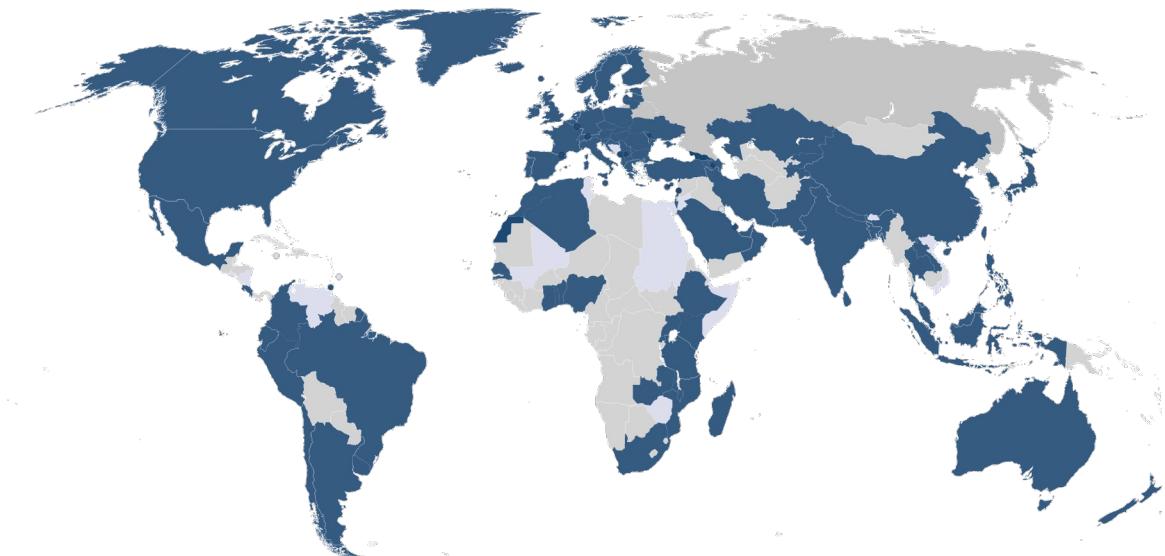
- identification / authentication / authorization to access services on-site
- uses eduGAIN and legacy system attributes for service access



eduGAIN & eduroam Member Countries

→ eduGAIN Federation Members

→ eduroam Service Providers



→ eduTAP fits perfectly into GÉANT Trust & Identity Services and
compliments eduGAIN for offline on-site identity use cases

→ can reach the same adoption world-wide

GÉANT – The IT provider for Higher Education in Europe

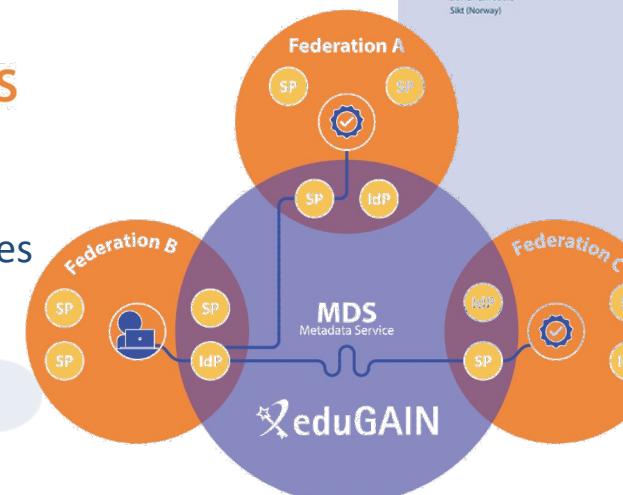
The GÉANT Association is the collaboration of European National Research and Education Networks (NRENs)

- Non-Profit Organization
 - Service-Provider for IT / e-infrastructure services for the European Higher Education Sector

 - Key Services:
 - GÉANT Trust & Identity Services
- 



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



→ eduTAP fits perfectly into GÉANT Trust & Identity Services and complements eduGAIN for offline on-site identity use cases

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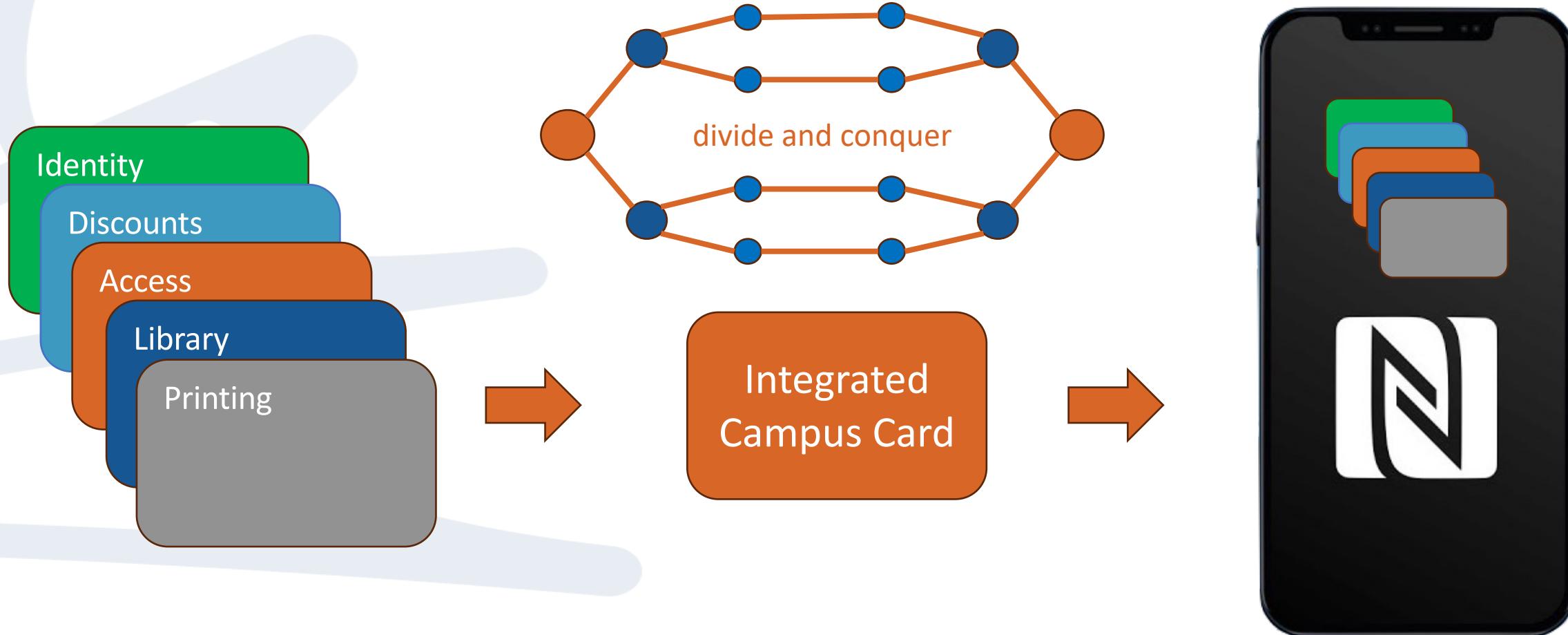
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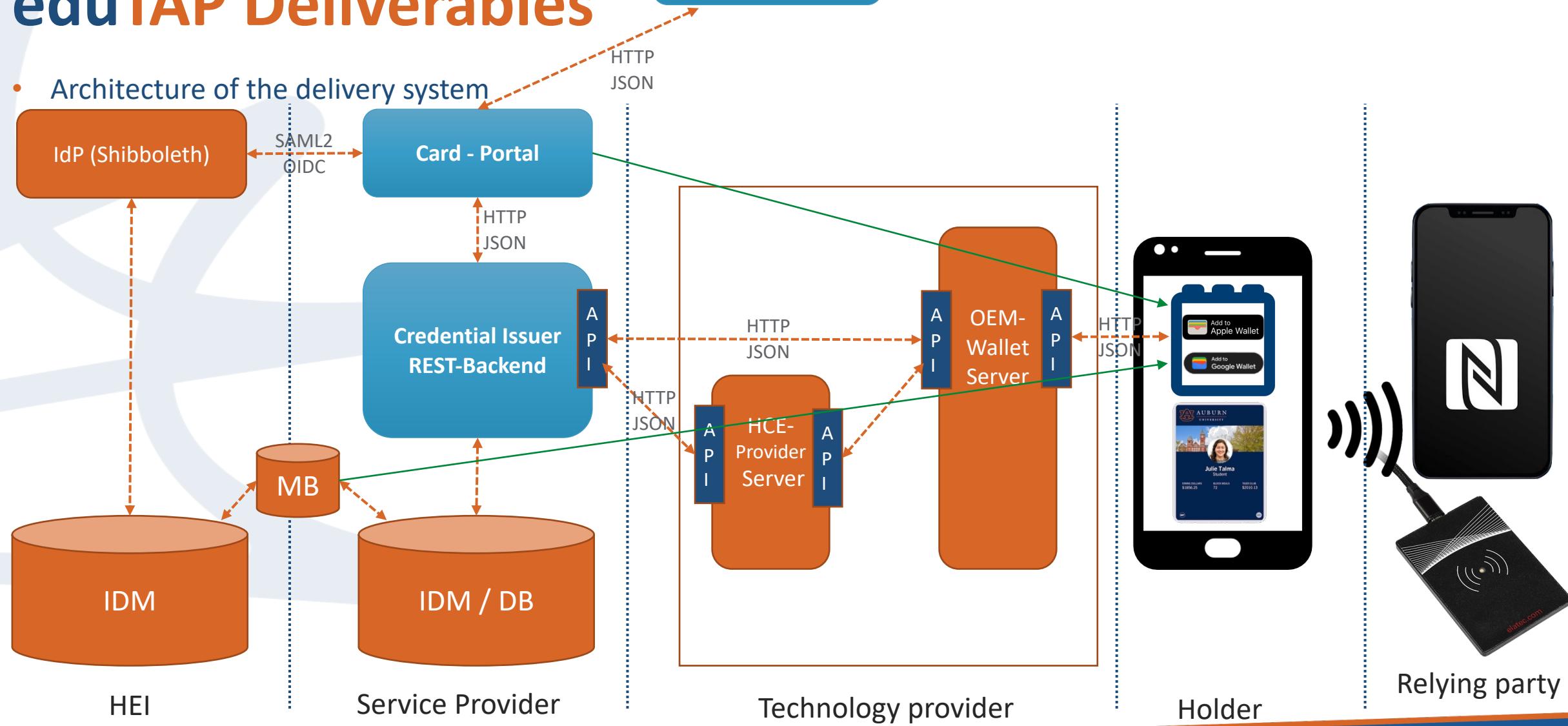
providing service → create benefits

Path to an interoperable campus card

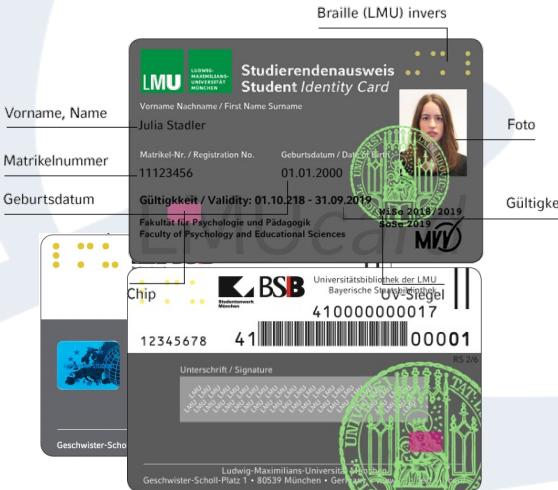


eduTAP Deliverables

- Architecture of the delivery system



Transition of credentials into the Smartphone Wallets



Informationsweitergabean MyAcademicID IAM Service

Beschreibung des Diensts: The MyAcademicID IAM Service provides Identity and Federated access management for the University of Munich. It allows users to log in to various services using their university credentials.

An den Dienst zu übermittelnde Informationen:

Zugangsdaten	student staff researcher
Vertrauensglied	https://redidea.org/acs-service https://redidea.org/acs-service/resource/IAM/acs https://redidea.org/acs-service/resource/IAM/acs https://redidea.org/acs-service/resource/IAM/acs unique no transient https://redidea.org/acs-service/ATP/acs https://redidea.org/acs-service/ATP/acs https://redidea.org/acs-service/profile/capacities https://redidea.org/acs-service/profile/permissions
Berechtigung	Personliche ID Zugangsdaten
eduPersonTotpKeyID	student@lmu.de member@lmu.de employee@lmu.de https://redidea.org/acs-service/ATP/acs 7b19578ccae7d1206c3837906cfef8@lmu.de Steuern julias@campus.lmu.de uni-muenchen berlin@uni-muenchen.de schwach@schwach.de schwach@schwach@lmu.de facharz
eduPersonEntitlement	informations
Vorname	Julia
E-Mail	Julia.Stadler@lmu.de
Universitätsorganisation	schwach@schwach@lmu.de
schwach@schwach@lmu.de	schwach@schwach@lmu.de

Dieses Dokument enthält Informationen dieses Diensts:

Die oben aufgeführten Informationen werden an den Dienst weitergegeben. Ich gebe hiermit:

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

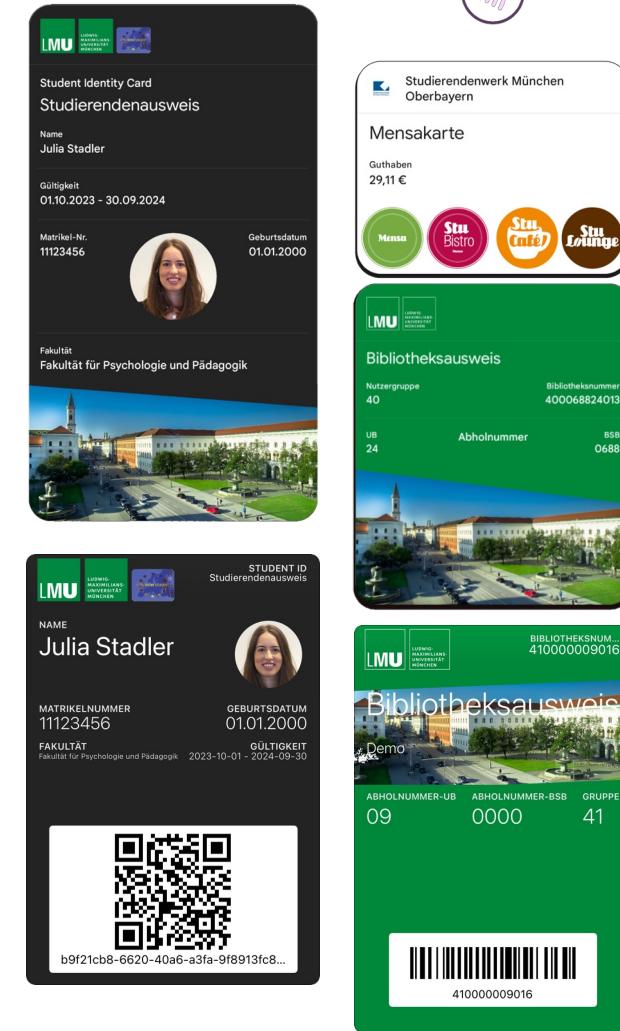
- Bei nächster Anmeldung derseits im System
- Ich erlaub, dass meine Informationen dieses Profil an den Dienst weitergegeben werden.
- Ich erlaub, wenn ich die Informationen ändern, welche an den Dienst weitergegeben werden.
- Ich erlaub, dass meine Informationen in Zukunft automatisch an diesen Dienst weitergegeben werden.

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

Ablisten Akzeptieren

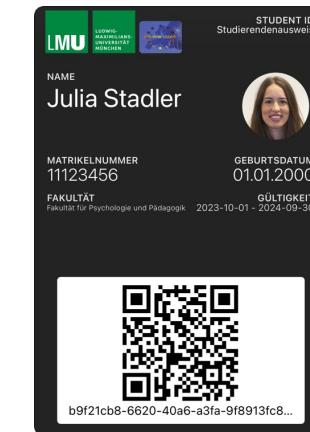
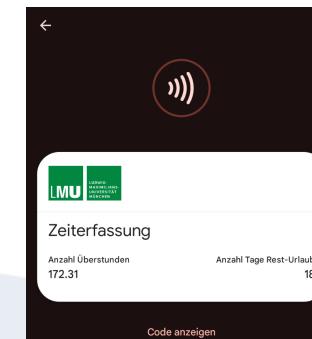
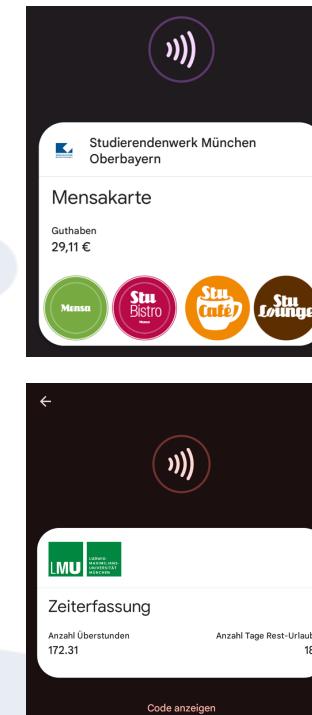
Impressum | Datenschutzerklärung | Kontakt und FAQ

transition



Transition of credentials into the Smartphone Wallets

Examples: potential IDs for LMU Munich



→ all NFC enabled



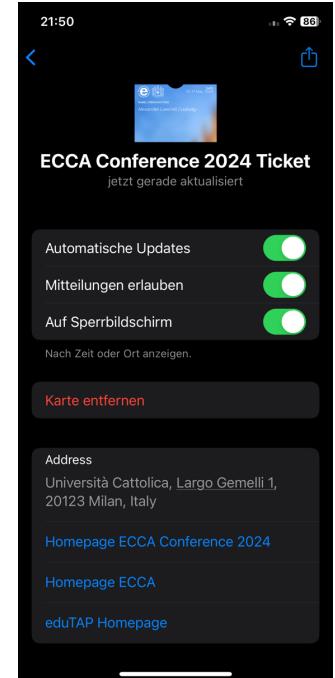
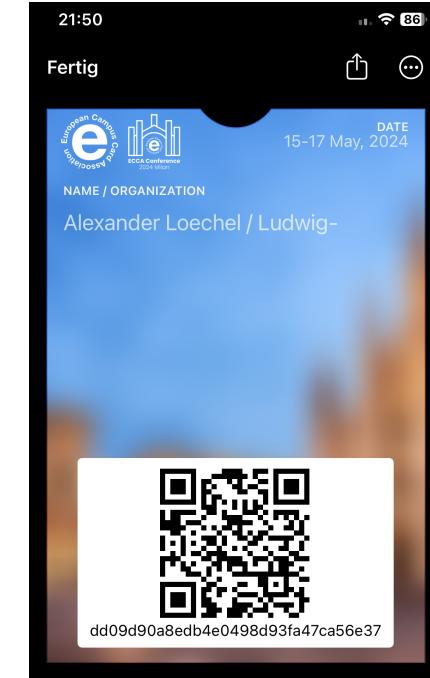
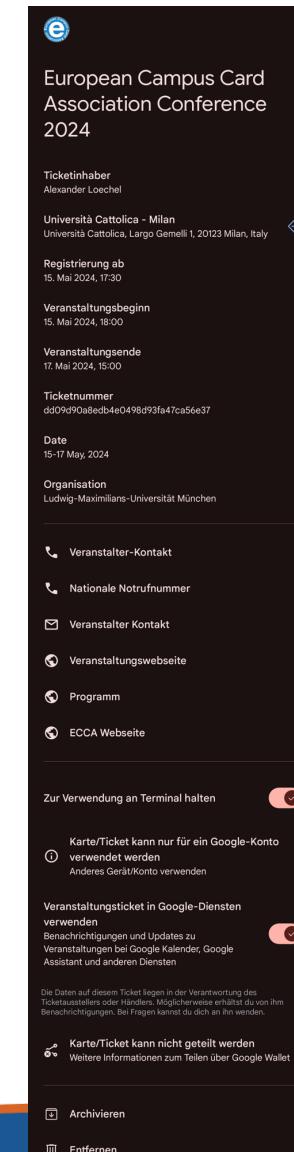
Transition of credentials into the Smartphone Wallets

Examples: Event Tickets

EUGLOH Annual Summit 2023 in Lund

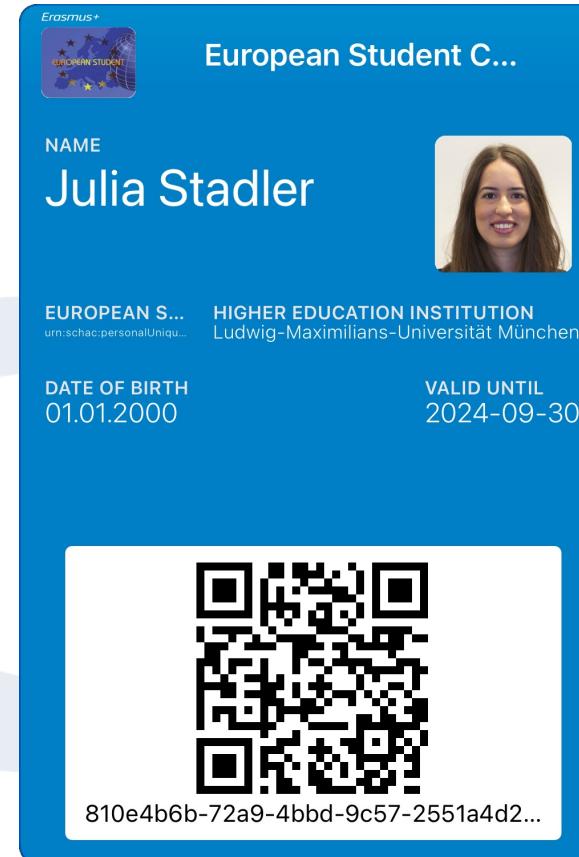
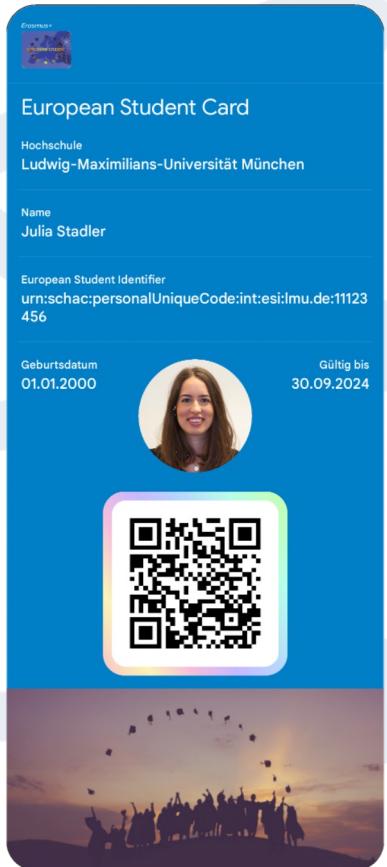


ECCA 2024



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

Demo → Download an eduTAP created pass



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



Add to Google Wallet



Add to Apple Wallet



European University Alliance for Global Health

eduTAP

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



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

www.eugloh.eu

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



eduTAP Deliverables

- eduTAP core → generic libraries and tools; everything to create and issue passes in the wallets
- eduTAP libs → generic libraries and tools; everything to read 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

- 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>

We'd love to hear from you!

Get in touch:

EUGLOH Work Package – Campus Life /
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- José Filipe Alves (UPorto)
- Morgan Persson (LU)
- Pierre Gabrielle (Université Paris-Saclay)

Follow us on social media:

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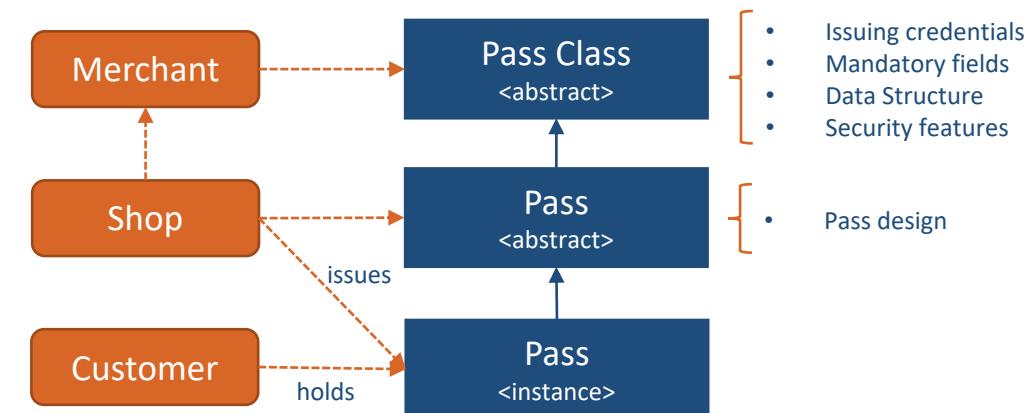


Technical details and features of Wallets / Passes

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

Passes provide the following features:

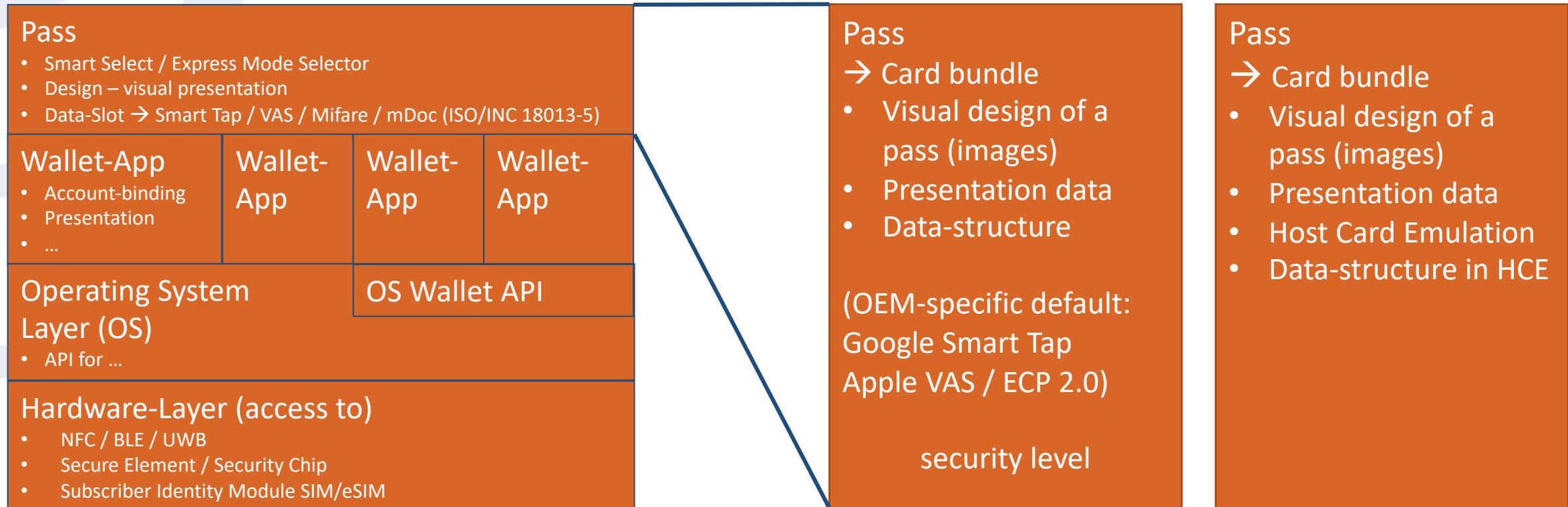
- Smart / Quick Select option (Express-Mode)** ← reader selects the specific pass to read (if available)
- Battery reserve** (important for keys, transit tickets, and payment)
- Authentication requirements** ← **security features**
- Groupable**
- Validity dates**
- Remote updateable / revokable**
- Offline usable** (→ non traceable)
- Host Card Emulation possible*



Technical details and features of Wallets / Passes

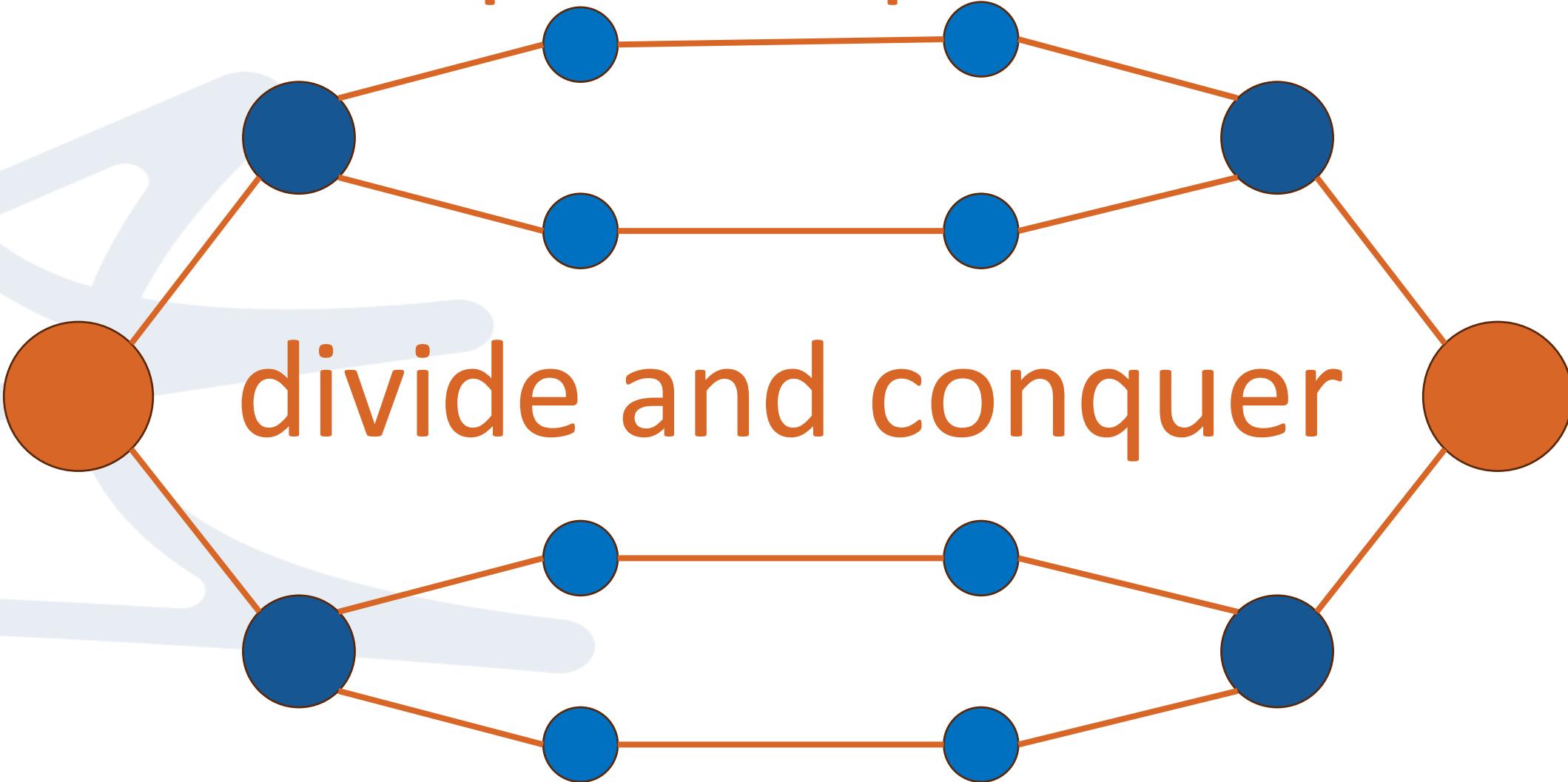
- ✓ Technical details and features of Wallets / Passes → Path to an **interoperable** campus card
- ✓ if each pass (technology) can be individually selected and leveraged, and the Pass in the Wallet can be selected by the reader (**Smart Select**)

→ one pass per service



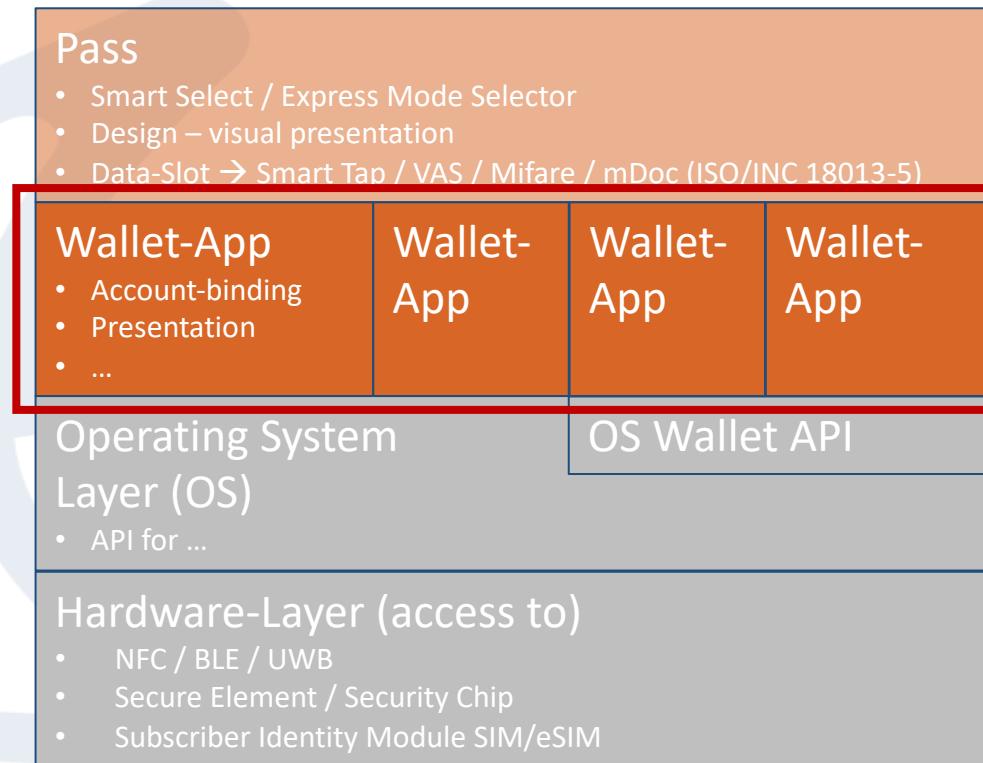
Path to an interoperable campus card

divide and conquer



Technical details and features of Wallets / Passes

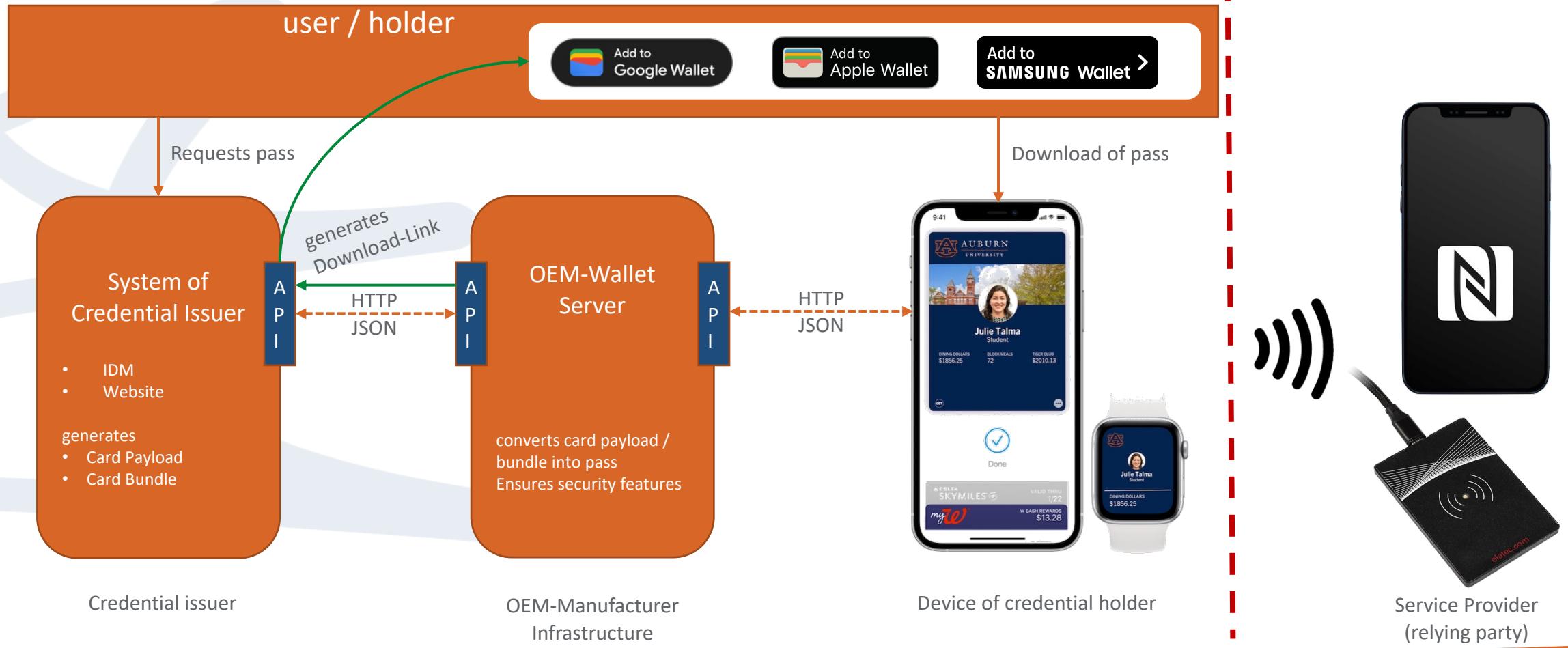
Detail view on the Wallet



- 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

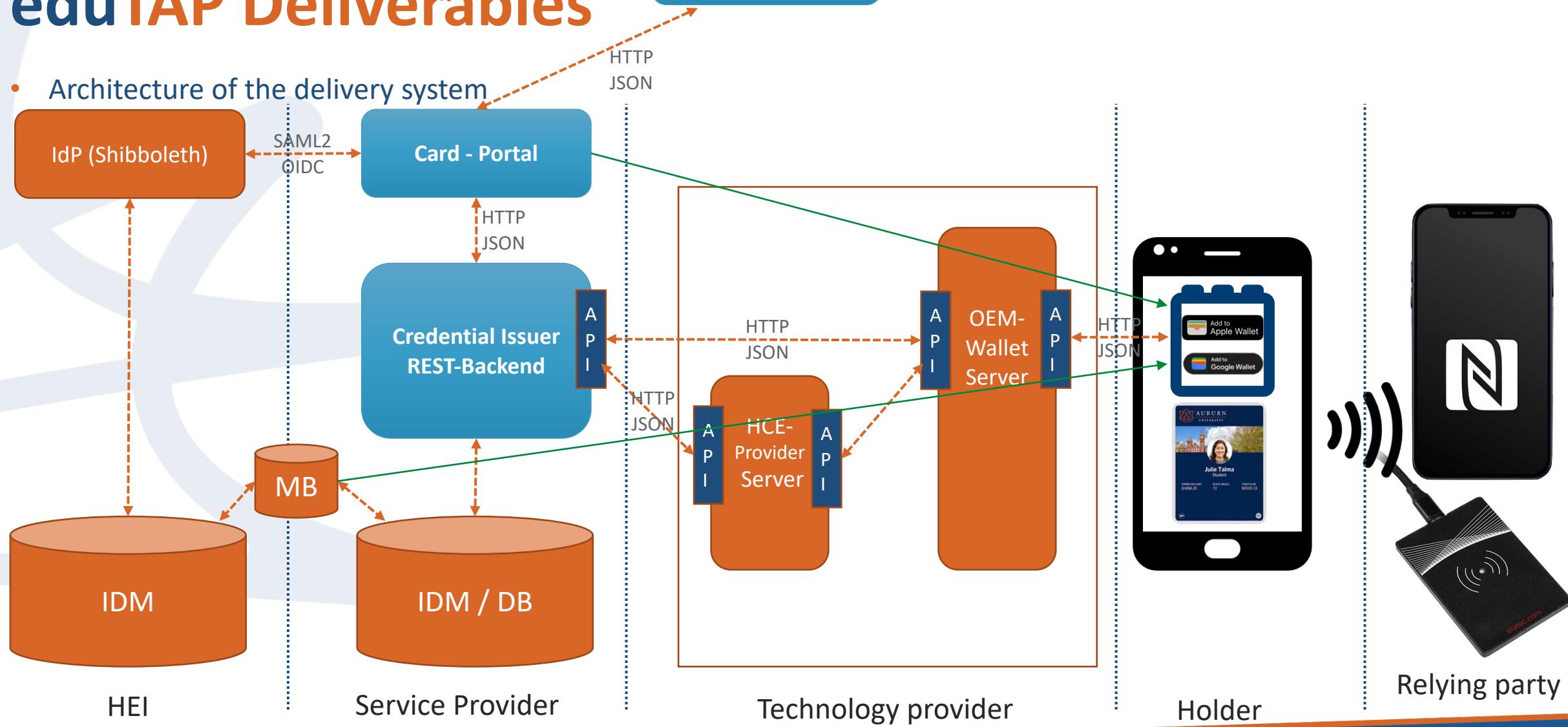
Issuing process of wallet passes

→ importance for the users – always the same process



eduTAP Deliverables

- Architecture of the delivery system





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EUGLOH 2.0 Consortium Partners



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



338,500
Students

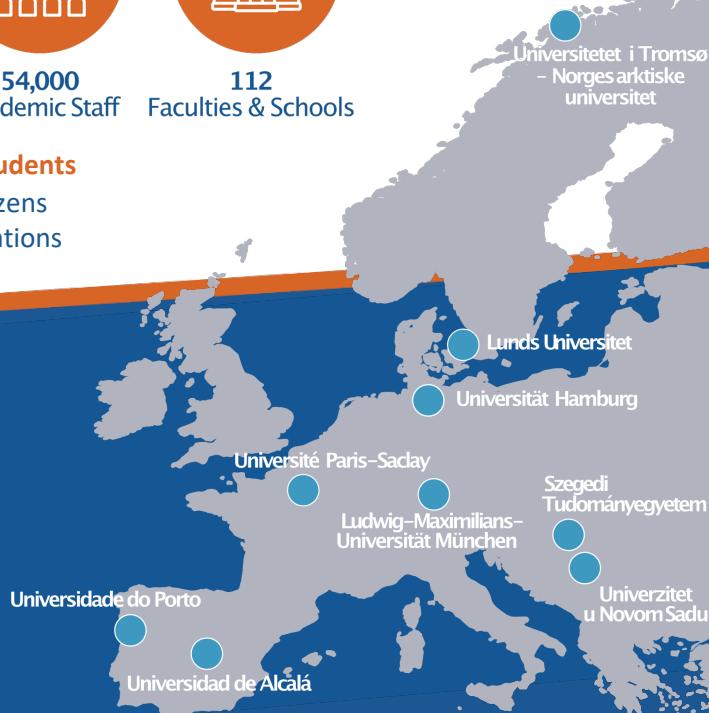


54,000
Academic Staff



112
Faculties & Schools

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





European University Alliance for Global Health

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



EUGLOH 2.0 Consortium Partners



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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**



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