

Java Forum Stuttgart 2026

Wie eIDAS 2.0 und EUDI Wallets die Architektur moderner
Anwendungen verändern

Von OAuth zu Verifiable Credentials

Agenda

1

Identity Architectures

From OAuth
to Self-Sovereign
Identities

2

The Vision

eIDAS 2.0 & EU
Wallets

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Technical Background

Architecture,
Specifications & Live
Demos

4

Summary & Next Steps

Opportunities &
Challenges



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ABOUT ME



WAS MICH ANTREIBT



SOFTWARE-ARCHITEKTUR

Ich entwerfe skalierbare, wartbare und zukunftssichere Softwaresysteme.



IDENTITY ACCESS MANAGEMENT

Sichere Identitäten. Richtiger Zugriff. Zur richtigen Zeit.



CYBERSECURITY

Bedrohungen verstehen. Risiken reduzieren. Systeme und Menschen schützen.



PRIVAT



Meine zwei treuen Begleiter an meiner Seite



E-Gitarre spielen in einer Band – Kreativität, Teamwork, Energie



COMMUNITY & ENGAGEMENT



IETF

Mitwirken an offenen Standards für das Internet von morgen



OpenID Foundation

Förderung sicherer, interoperabler Identität für alle



OWASP

Engagement für sichere Software und eine starke Security-Community



Profil und Unternehmensziel



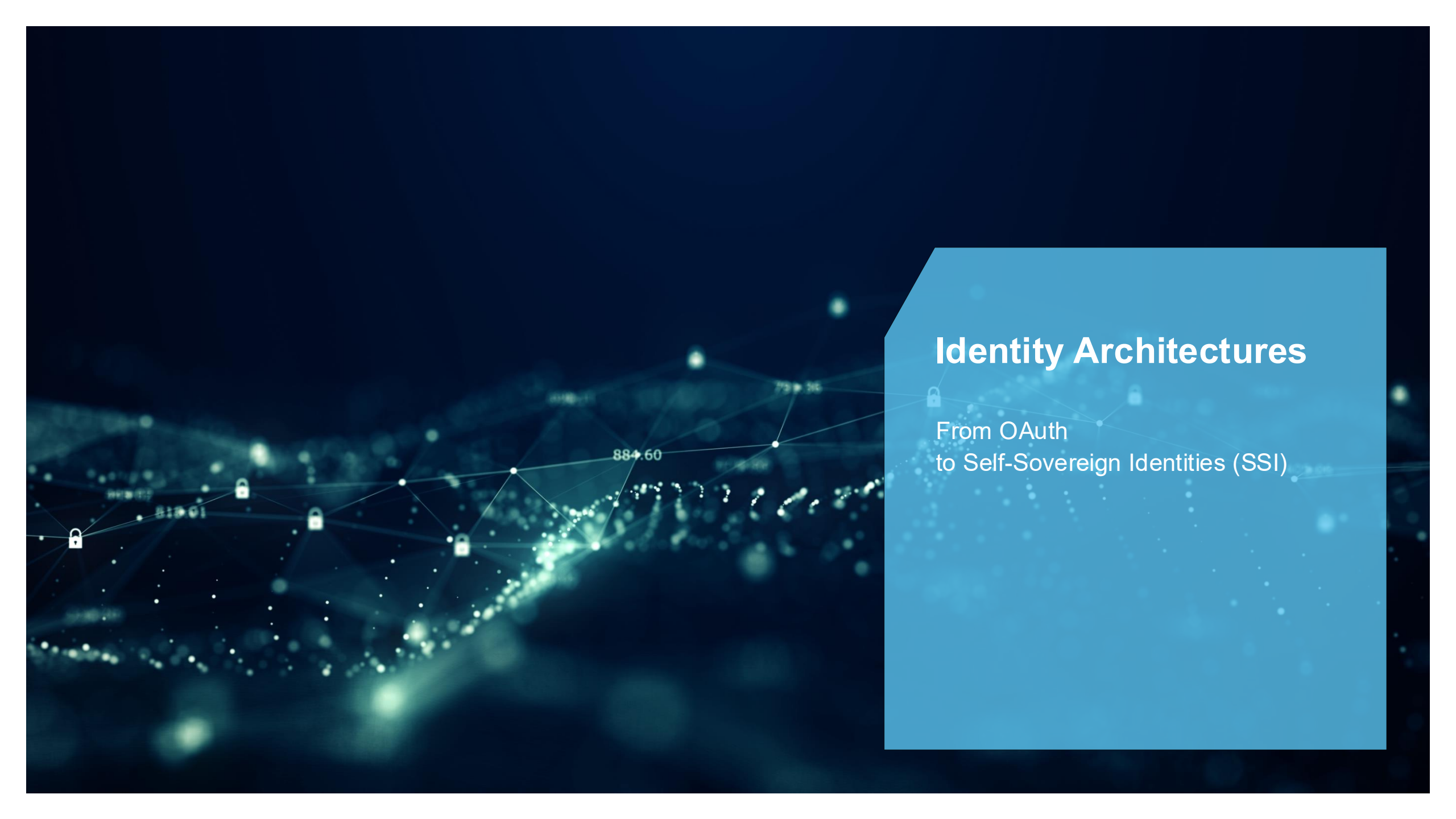
Größter **inhabergeführter**
System-Integrator Deutschlands

Starkes Wachstum mit mehr
als **3.800 Mitarbeitern**
in Deutschland

Unsere Kunden begleiten
wir **langfristig** in allen
Prozessschritten.



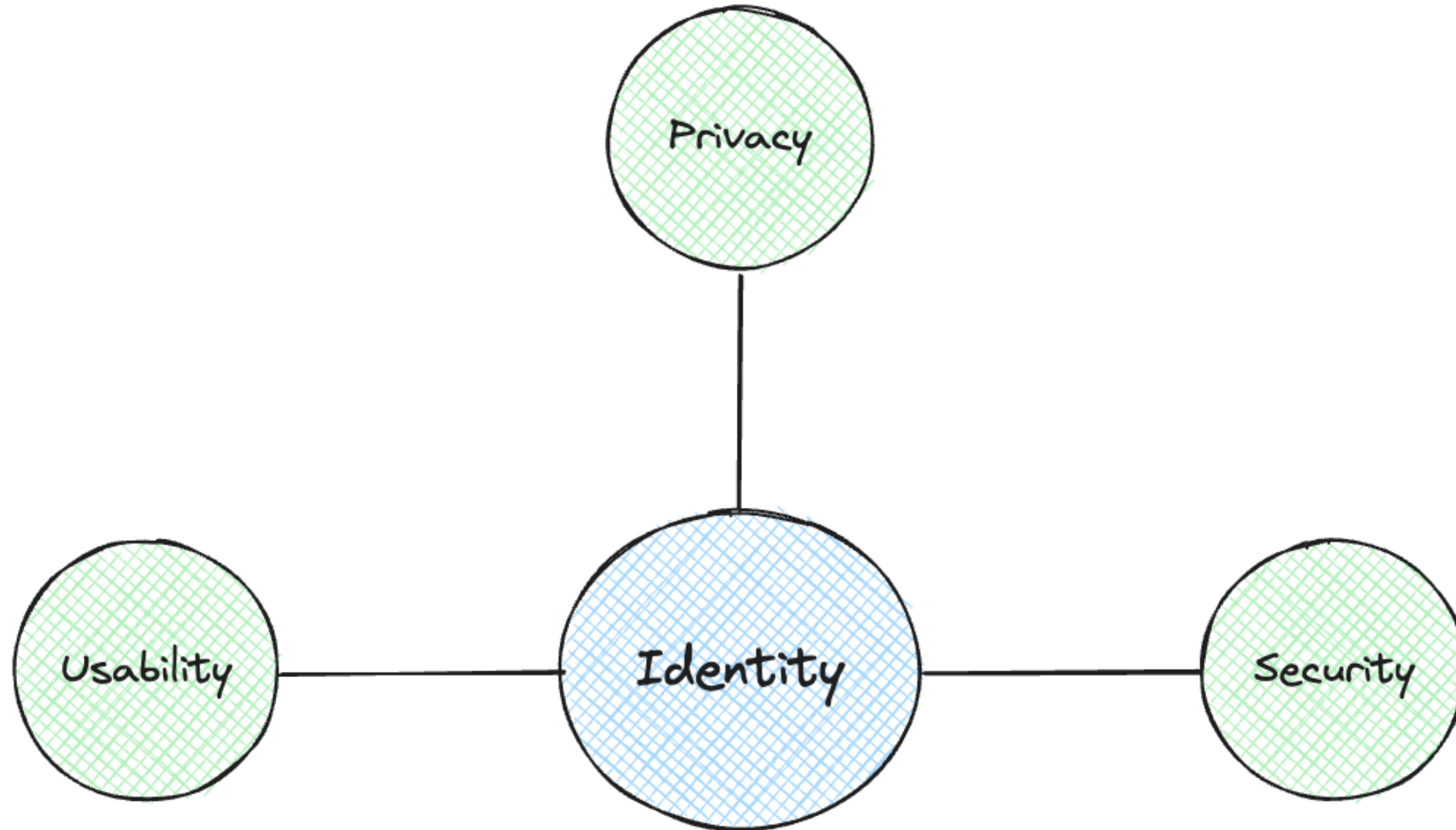
Unternehmerische
Ziele



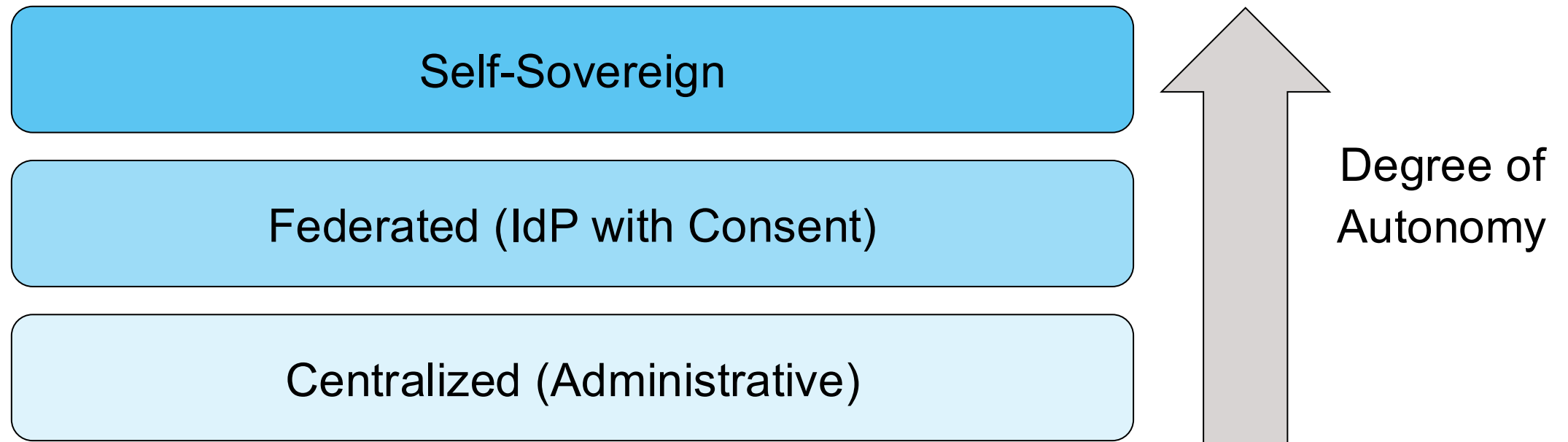
Identity Architectures

From OAuth
to Self-Sovereign Identities (SSI)

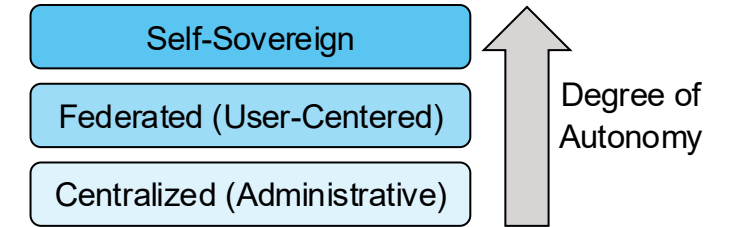
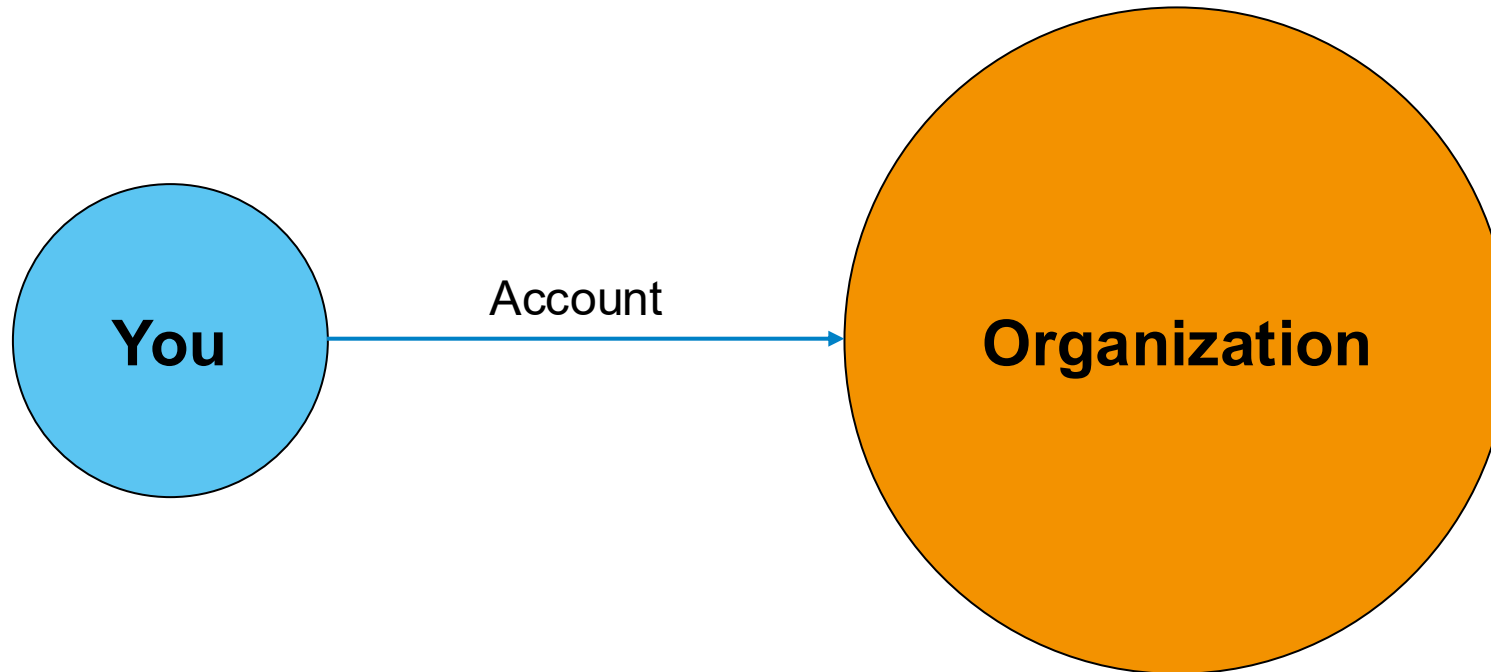
Challenges of Digital Identities



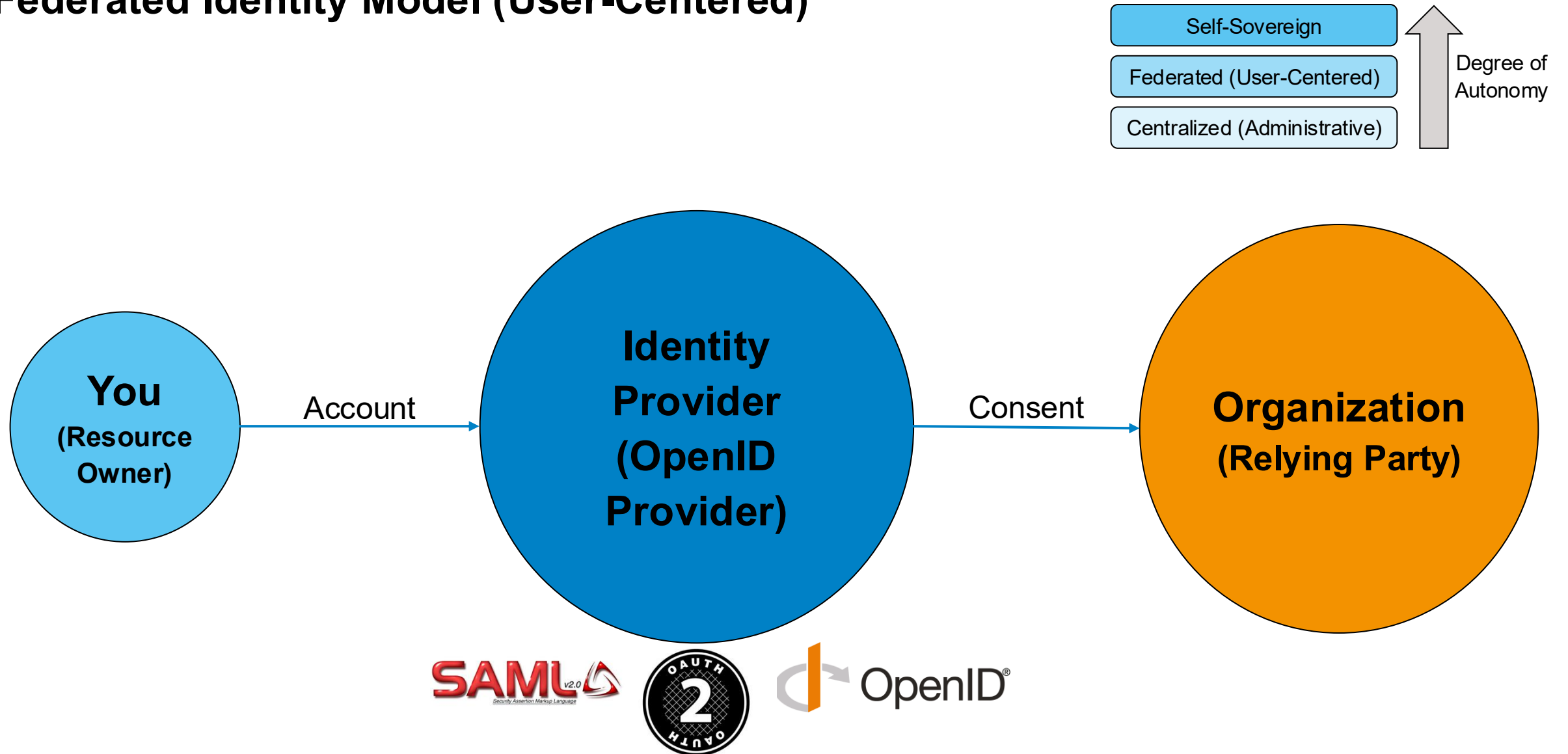
Identity Architectures



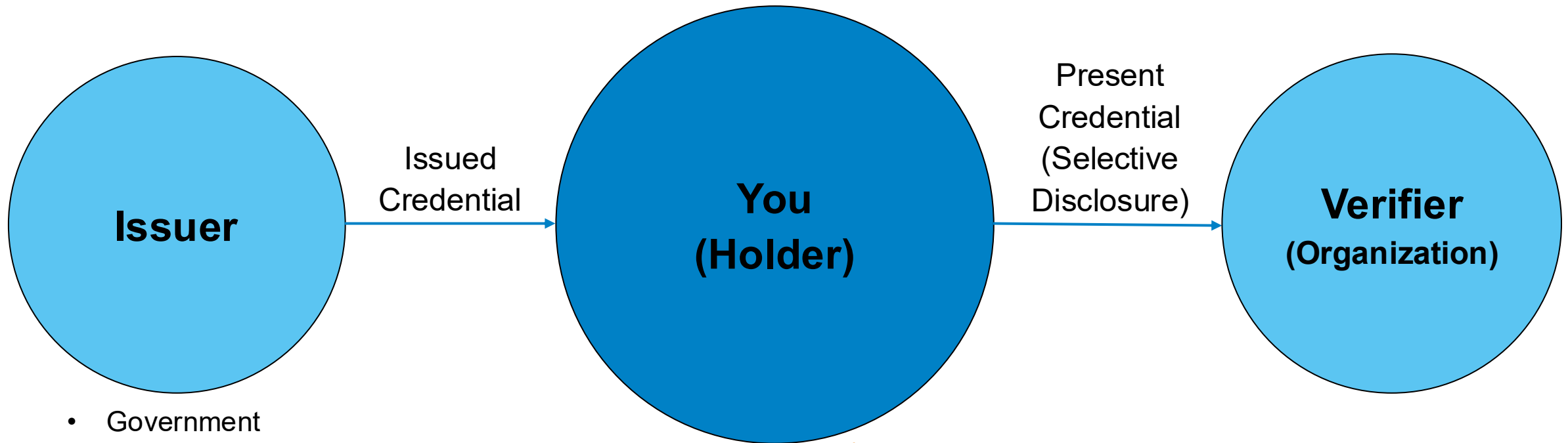
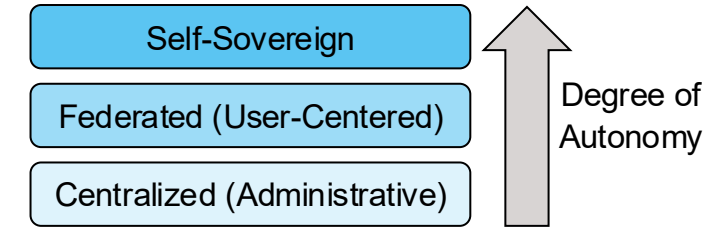
Centralized Identity Model (Administrative)



Federated Identity Model (User-Centered)



Self-Sovereign Identities (Decentralized)



- Government
- Academia
- ...



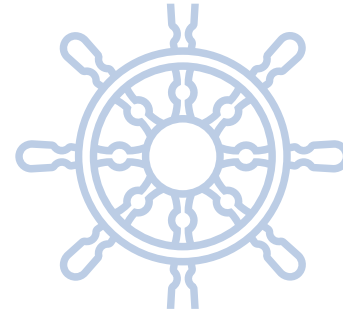
Self-Sovereign Identity Principles



Security



Privacy



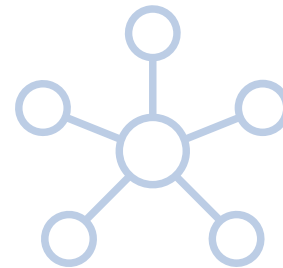
**User
Sovereignty**



Trust



**Inter-
operability**



Resilience



The Vision

 eIDAS 2.0 & EU Wallets

The Road to eIDAS 2



2014

Adoption of the **eIDAS regulation** (910/2014)
National electronic identification schemes (eIDs)

2024

Adoption of **eIDAS 2 revision** (2024/1183)
European Digital Identity Framework

2024-2025

EUDI Wallets Implementing Acts
Certification, Protocols and interfaces, Personal identification data

2026-2027

Wallets widely available in all member states
Each member state must offer at least one wallet.

2027-...

Public and Private Services must accept the EU Digital Identity Wallet for Authentication

eIDAS 2.0 Use Cases



Banking & Payments



Education Certification



Access Public Services



Health & Social Security



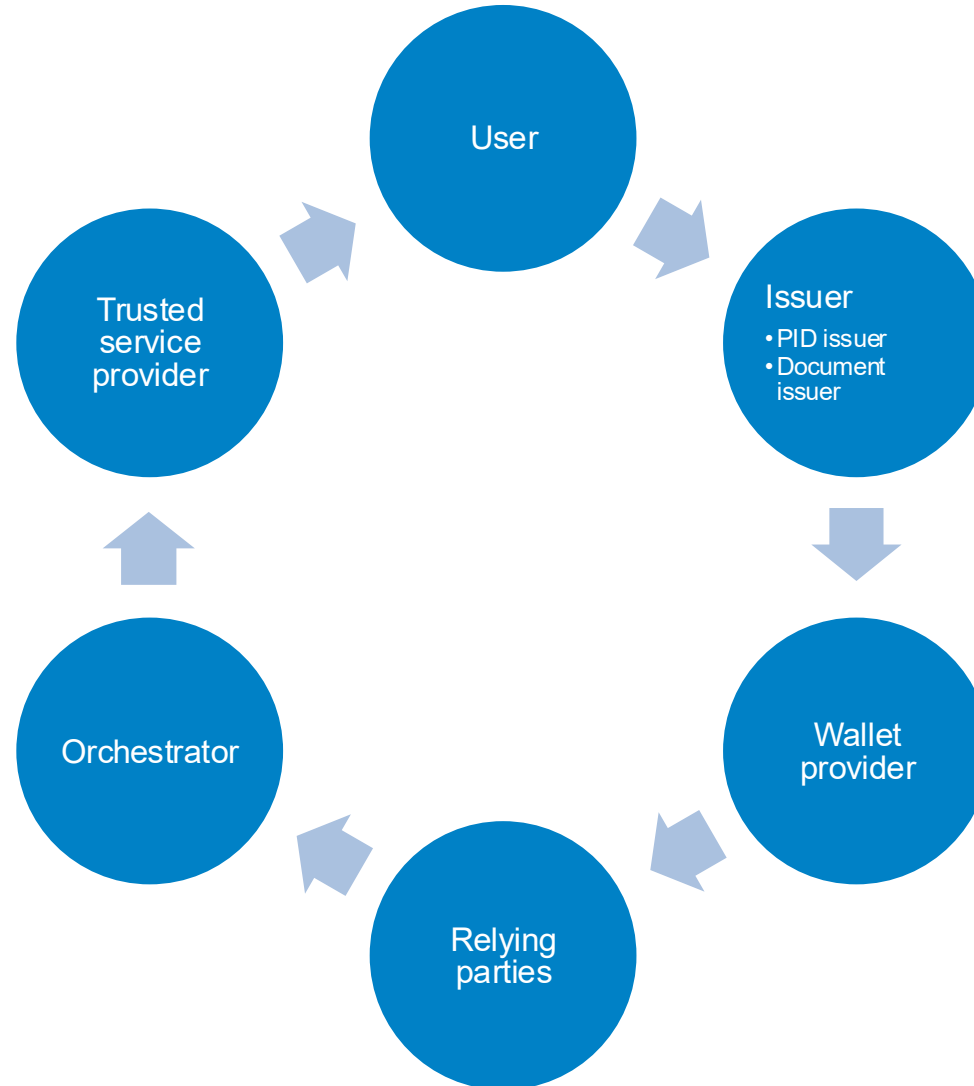
Travel & Telecom



Sign Contracts

Use Cases of the EUDI Wallet
Business Wallets

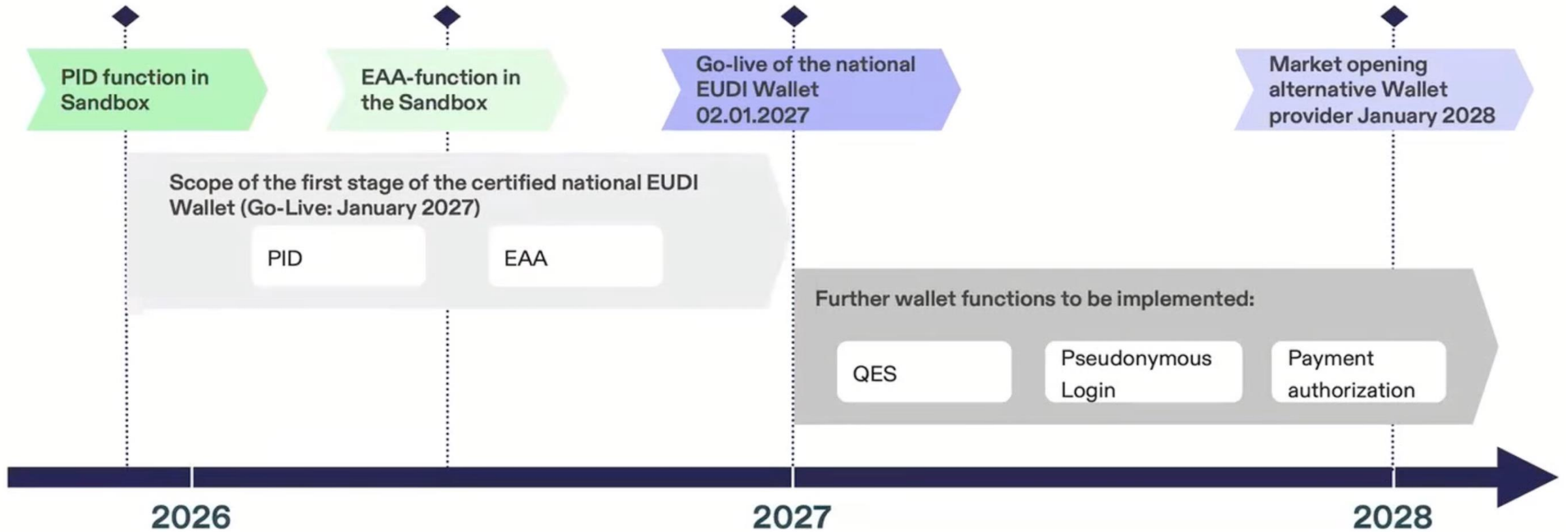
EUDI-Wallet Ecosystem Roles



SPRIN-D Funke EUDI-Wallet Prototypes

LSP POTENTIAL Use-Case	Team		German Relying Parties
Use Case 1: eGov Services	wwWallet		Ministerium für Wirtschaft, Industrie, Klimaschutz und Energie des Landes Nordrhein-Westfalen
Use Case 2: Bank Account Opening	Lissi	Animo	
Use Case 3: SIM Card Registration	Ubique	Animo	
Use Case 4: Mobile Driving License	Animo		
Use Case 5: Qualified eSignature	wwWallet, Lissi, Animo, Ubique		
Use Case 6: ePrescription	Ubique	Animo	

EUDI-Wallet: From Sandbox to Go-Live



Join the sandbox community:

<https://eudi-wallet.gov.de/en/ecosystem-knowledge-center>

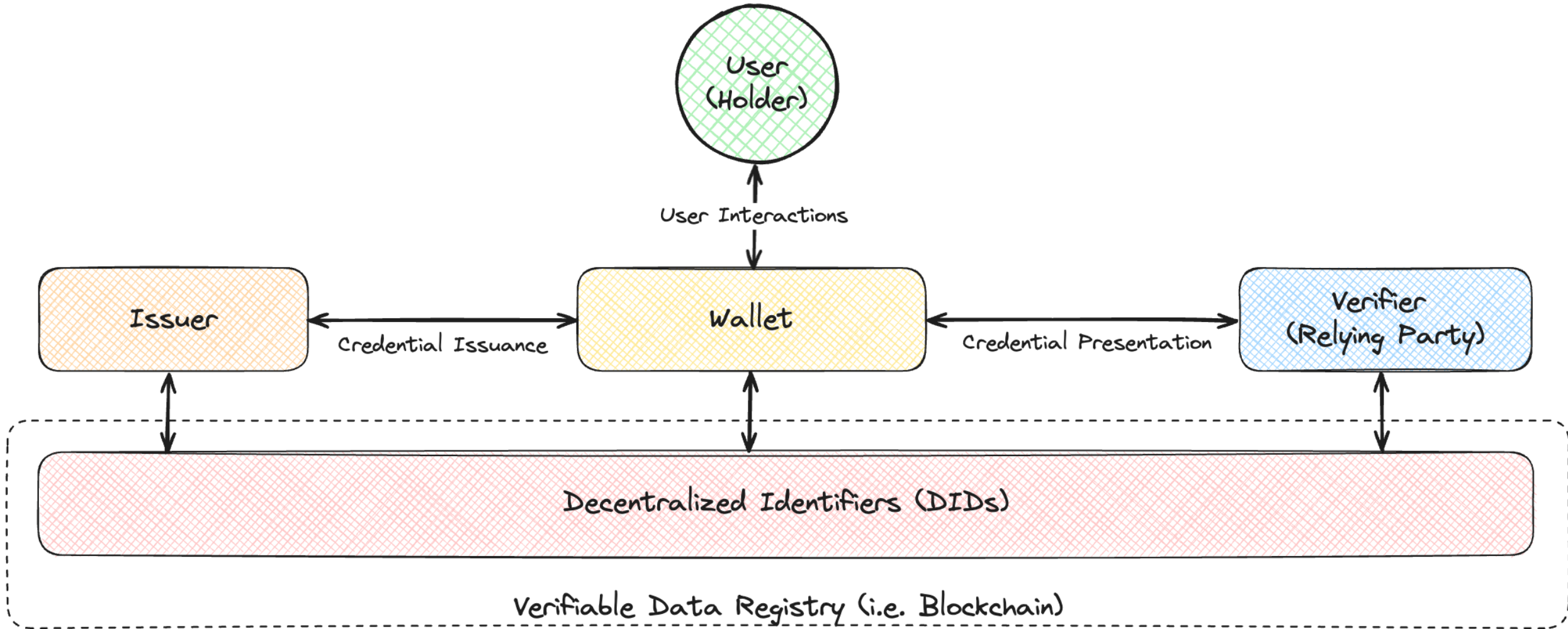
SVA System Vertrieb Alexander GmbH



Technical Background

Architecture, Specifications & Live
Demos

Decentralized Identities (Issuer/Holder/Verifier Model)



Funke EUDI Wallet prototypes (SPRIN-D)

German National EUDI Wallet: Architecture Documentation

Blueprint for the EUDI Wallet Ecosystem in Germany



EU Digital Identity
Wallet(s) in Germany

EUDI Wallet Reference Implementation

EU Standards and Technical Specifications (STS) & Implementing Acts (IA)

European Digital Identity Framework Regulations (910/2014 & 2024/1183)



EU Architecture and
Reference Framework

OpenID4VC High Assurance Interoperability Profile

OpenID for Verifiable Credential Issuance
(OID4VCI)

OpenID for Verifiable Presentations
(OID4VCP)

SD-JWT-based Verifiable Credentials (SD-JWT VC)

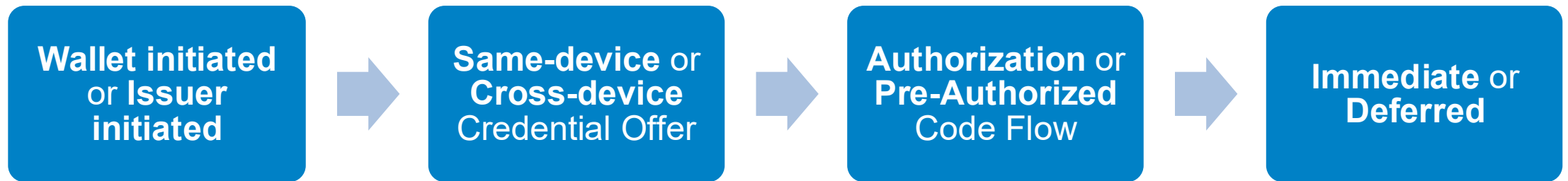
RFC 9901 - Selective Disclosure for JWTs (SD-JWT)

Verifiable Credentials Data Model v2.0 (W3C)

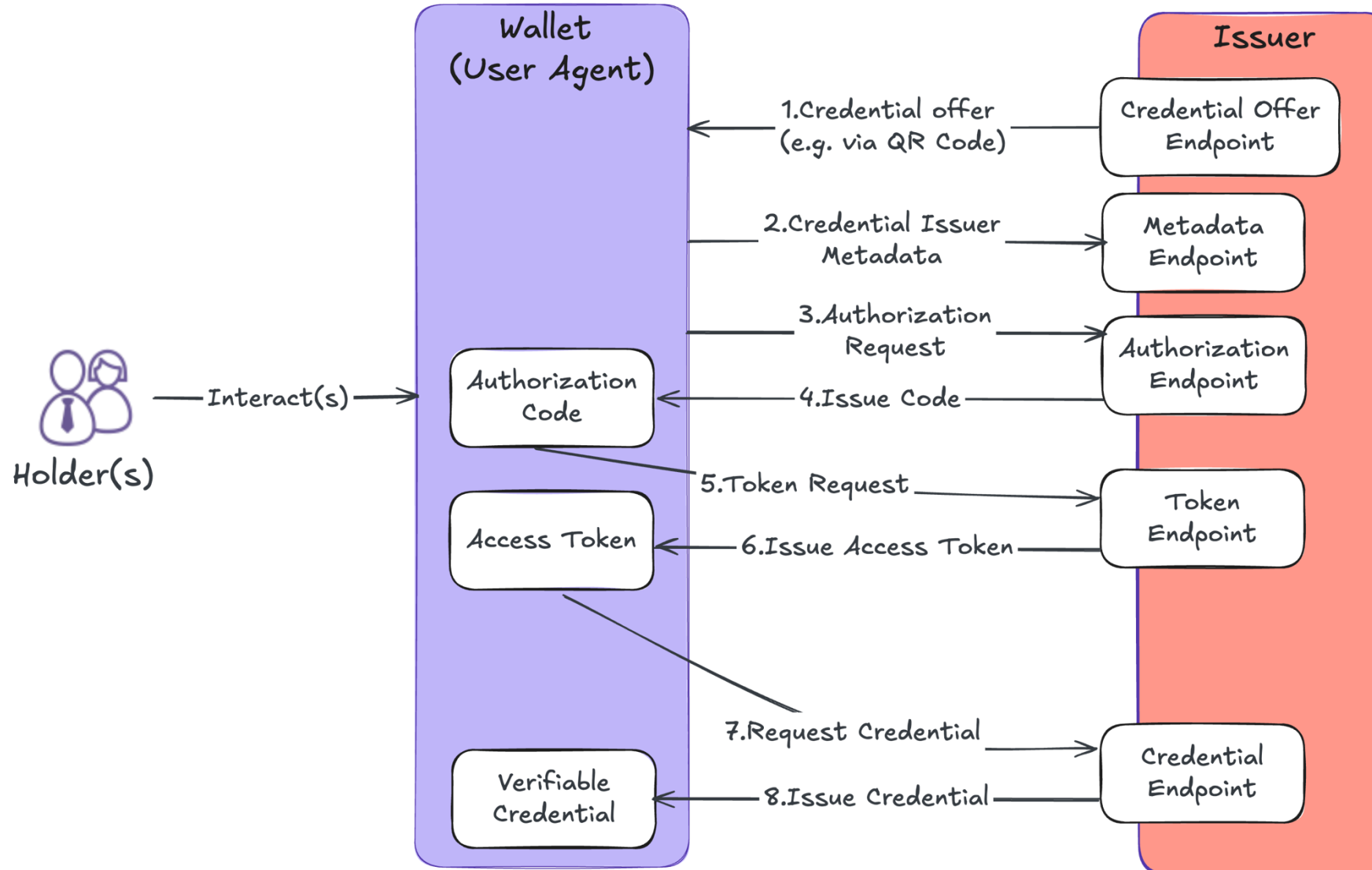


Specifications &
Standards

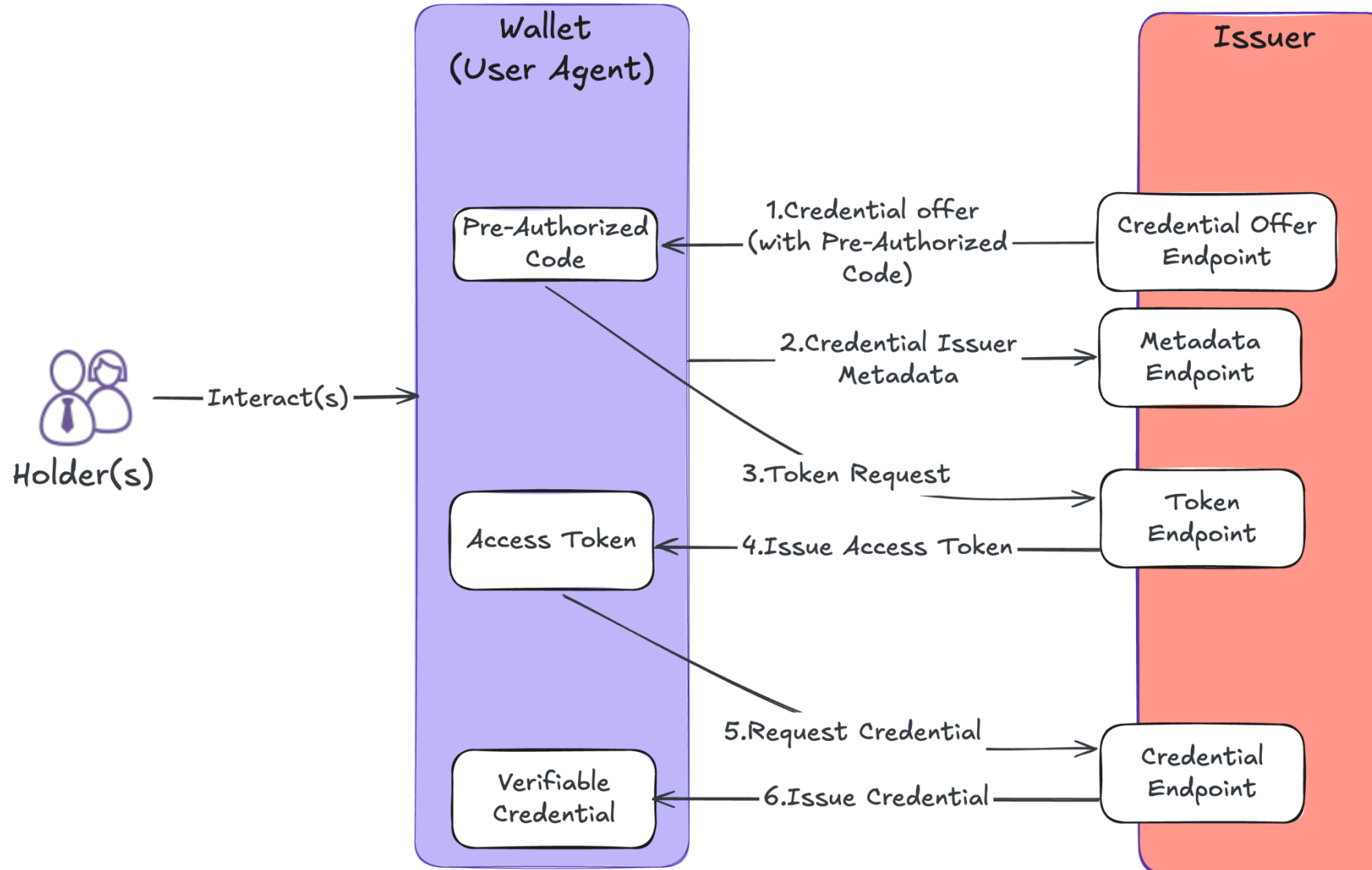
OpenID for Verifiable Credential Issuance (OID4VCI): Flow Variants



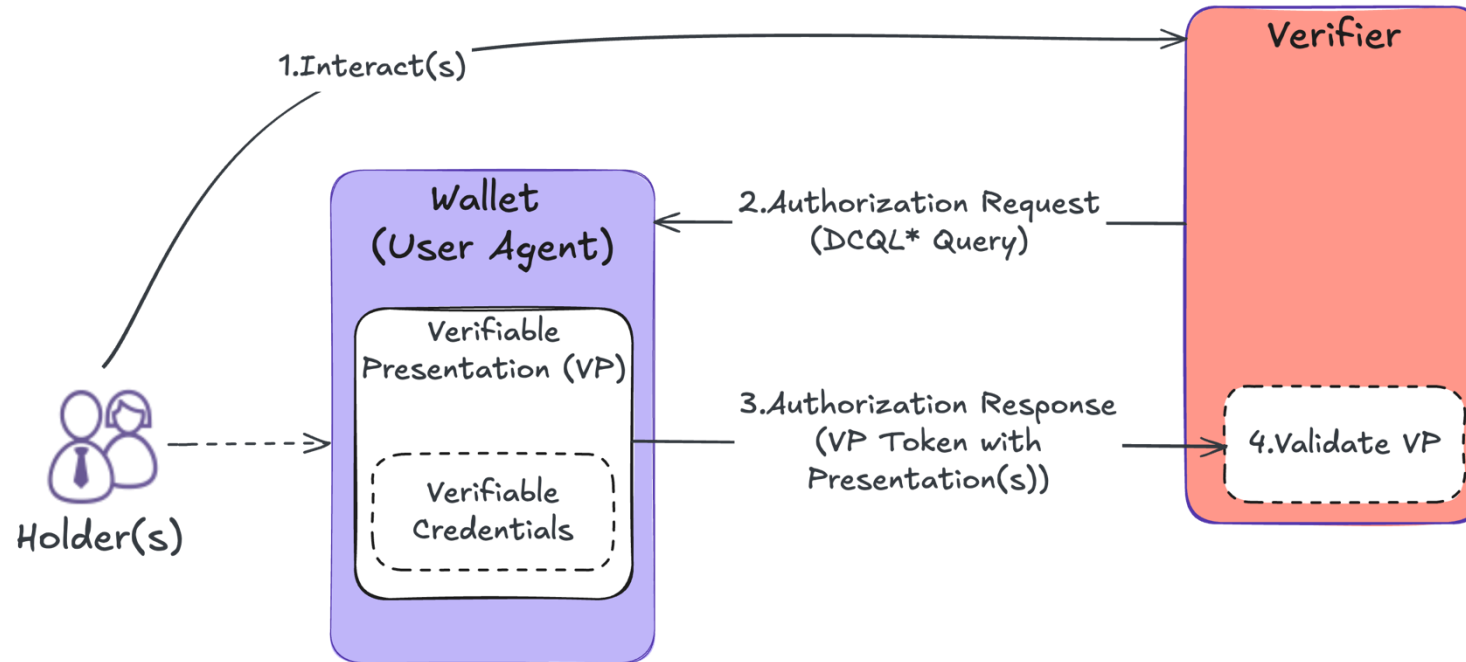
OID4VCI: Authorization Code Flow



OID4VCI: Pre-Authorized Code Flow



OpenID for Verifiable Presentations (OID4VP)

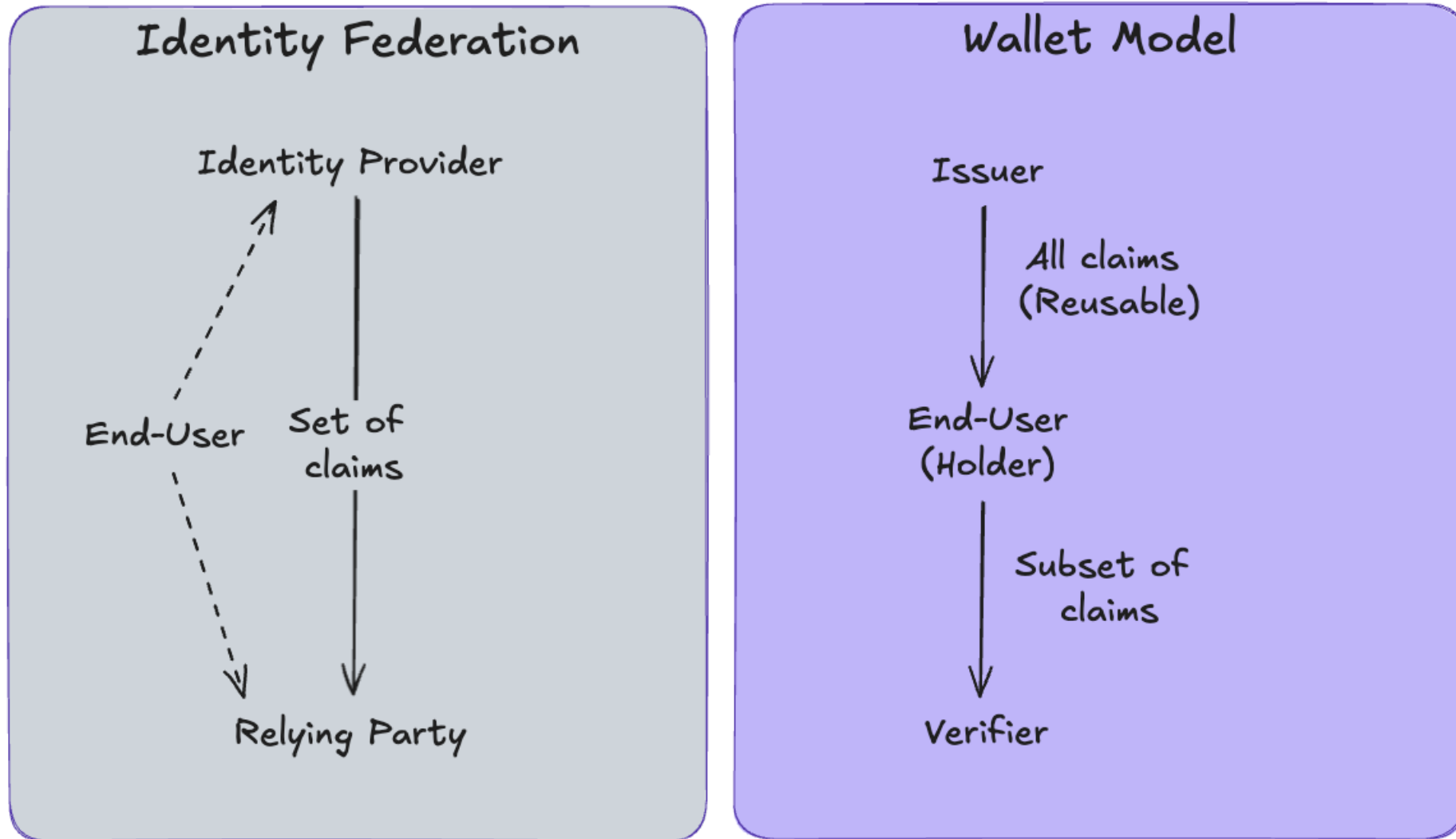


*) Digital Credentials Query Language (DCQL)

Sample DCQL

```
{
  "credentials": [
    {
      "id": "my_credential",
      "format": "mso_mdoc",
      "meta": {
        "doctype_value": "org.iso.7367.1.mVRC"
      },
      "claims": [
        {
          "path": ["org.iso.7367.1", "vehicle_holder"]
        },
        {
          "path": ["org.iso.18013.5.1", "first_name"]
        }
      ]
    }
  ]
}
```

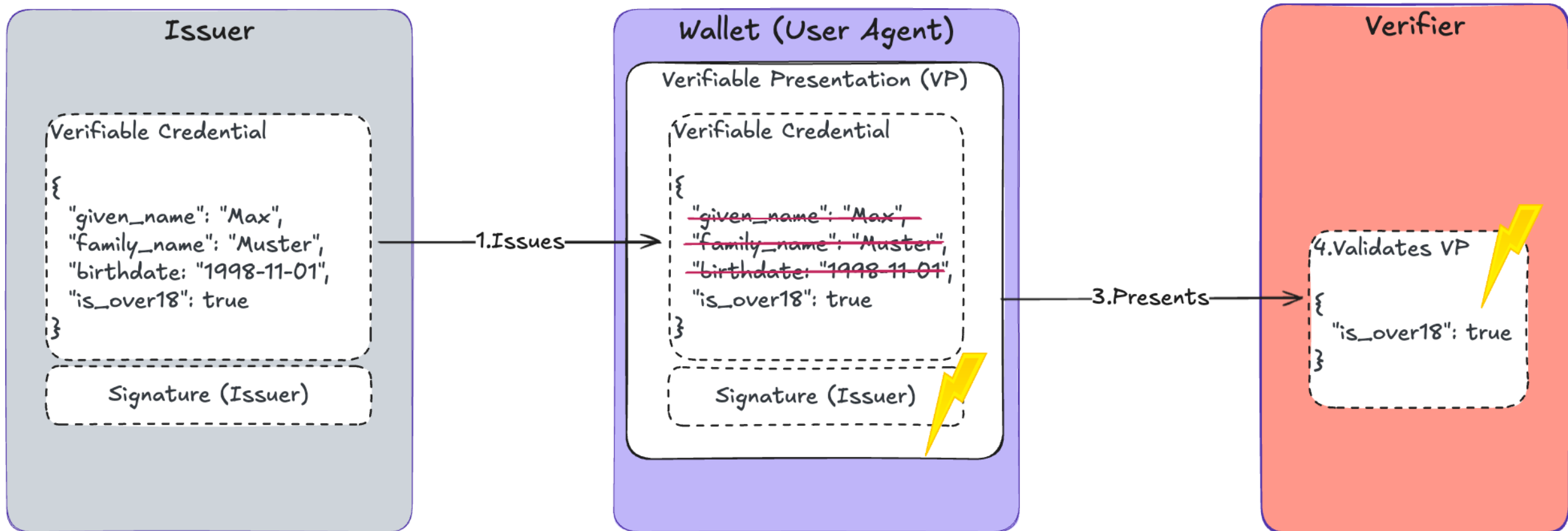
Selective Disclosure (Federation vs. Wallet Model)



Credential Formats With Selective Disclosure Support

Aspect	<u>mDoc (ISO 18013-5)</u>	<u>SD-JWT VC (IETF)</u>	<u>W3C VC</u>
Encoding	CBOR (RFC 8949)	JSON + Base64URL	JSON / JSON-LD
Claim Structure	Namespace Paths	Flat Paths	Nested JSON Paths
Type Identifier	doctype_value	vct_values	type_values
Selective Disclosure	Native namespace selection	Disclosure strings (~)	Format-dependent
Holder Binding	DeviceAuth signature	Key Binding (KB) JWT	Proof mechanisms vary
Issuer Signature	IssuerAuth (COSE)	JWT Signature	Proof objects or JWT

Selective Disclosure with JWTs

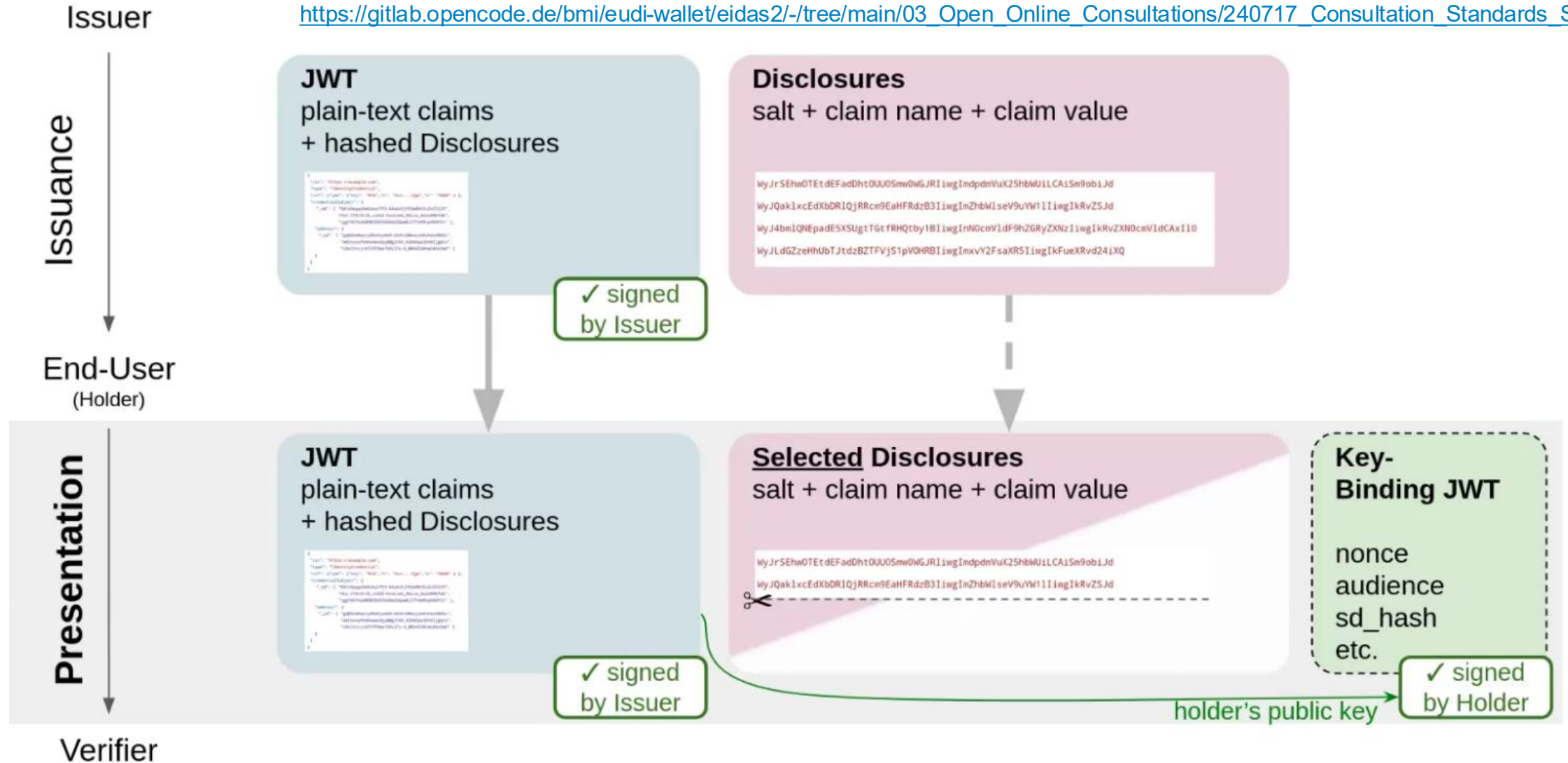


<https://datatracker.ietf.org/doc/draft-ietf-oauth-sd-jwt-vc>

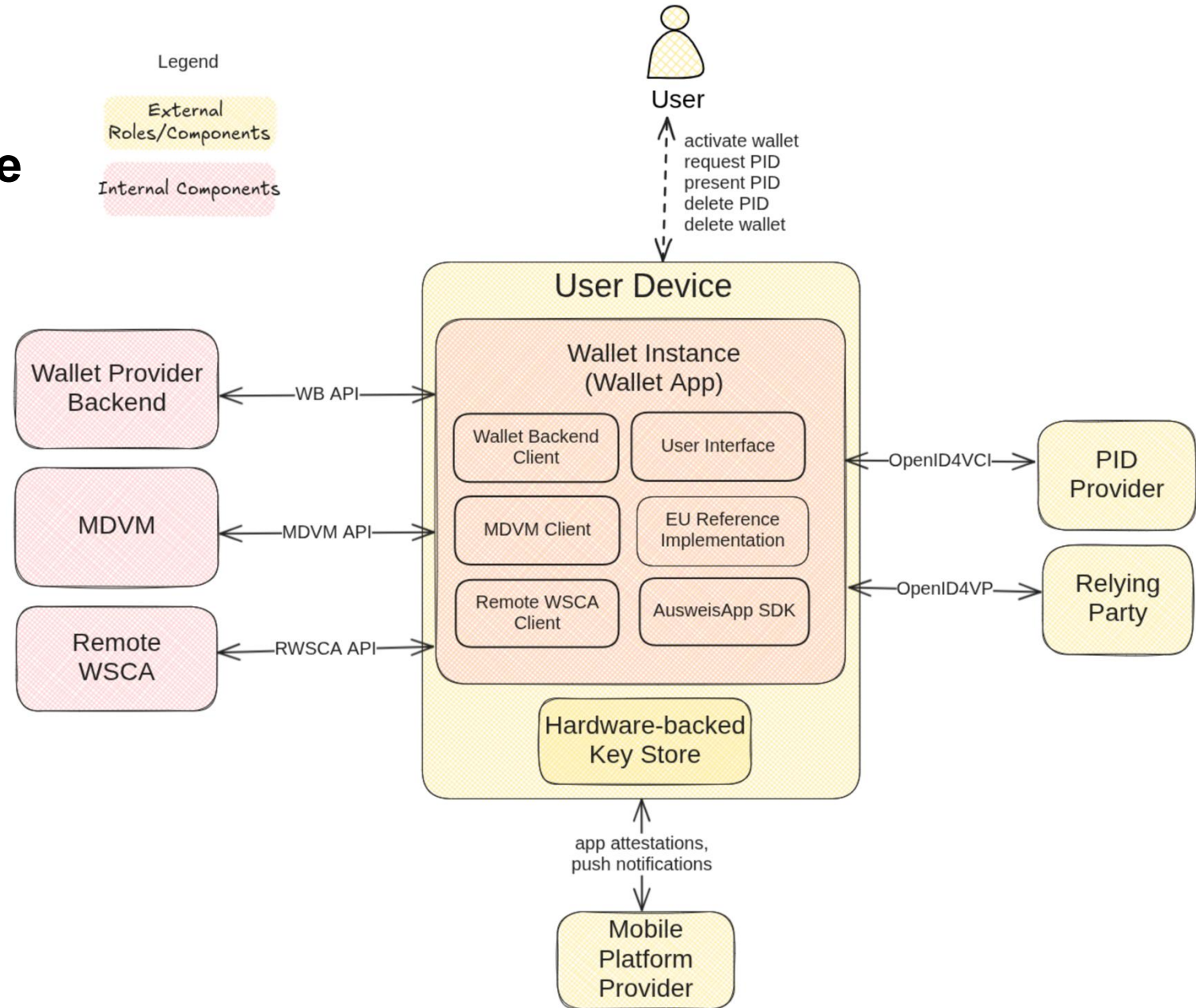
<https://www.rfc-editor.org/rfc/rfc9901.html>

Issuance & Presentation with SD-JWT (RFC 9901) & SD-JWT-VC

https://gitlab.opencode.de/bmi/eudi-wallet/eidas2/-/tree/main/03_Open_Online_Consultations/240717_Consultation_Standards_SD-JWT



German National EUDI-Wallet Architecture



Verifiable Credentials & Selective Disclosure



Full Credential (Issued)

University of Example

Name	Alice Johnson
Degree	Bachelor of Science
Date of Birth	1995-04-12
Student ID	S12345678
Issued	2024-05-10

Selective Disclosure Proof (Presented)

Proof Verified ✓

Revealed Claims

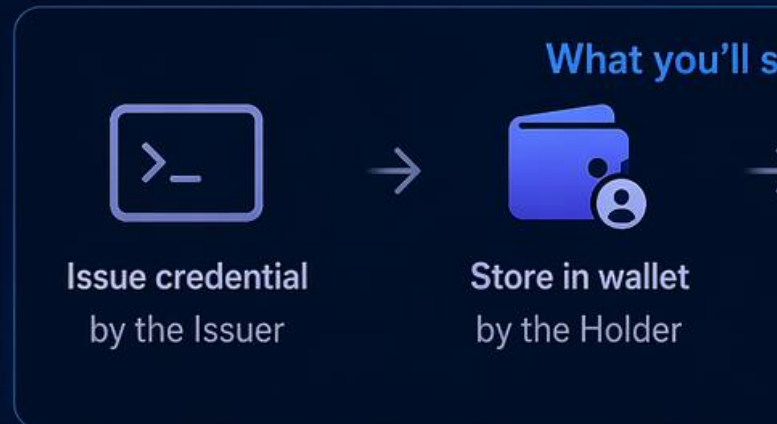
✓ Degree	Bachelor of Science
✓ Issued	2024-05-10

Other claims are hidden

Live Demo

<https://github.com/andifalk/verifiable-credentials-demos>
<https://github.com/andifalk/verifiable-credentials-demos>

What you'll see in this demo



Live Demo

Create selective disclosure proof by the Holder

proof verifier

CONFERENCE

Privacy by design. Share only what's needed.



Summary & Next Steps

Opportunities & Challenges

Shaping Digital Identity in Europe

“Technology is neither good nor bad; nor is it neutral”
([Melvin Kranzberg's six laws of technology](#))



Benefits

- Digital sovereignty
- Privacy by design
- Censorship resistance
- European interoperability



Challenges

- Trust & governance
- Technical complexity
- Balance Security & Liberty
- Acceptance & UX



Next steps

- Pilot projects
- Integration into real-world processes
- Zero Knowledge Proof
- Open interfaces/source
- Help shape the future

Insight for Architects & Developers

“Architects design trust – Developers bring it to life”



Best Practices

- Privacy by design
- Reference Architecture
- Use of established libraries
- Automated security & compliance tests



Challenges

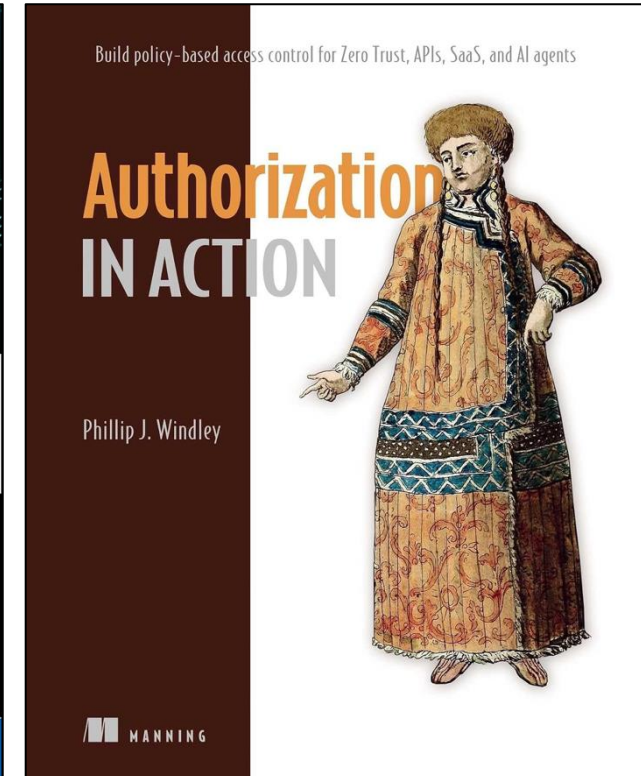
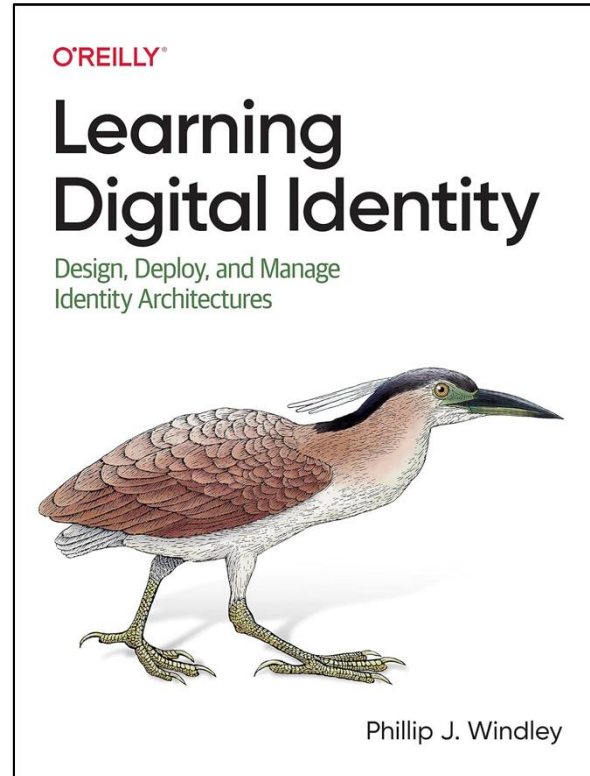
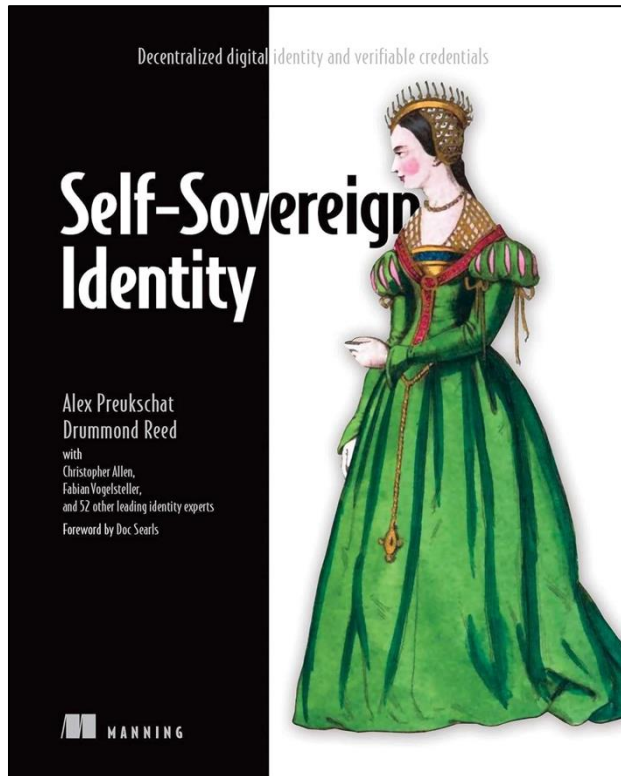
- Integration of EUDI
- Trust models & Cryptography
- Interoperability & Compliance
- UX & Security



Next steps

- PoC's with EUDI Wallet SDKs
- Security reviews & Threat Modeling
- Training & Knowledge transfer

Books

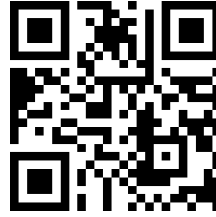


Online References

- [EU Digital Identity Wallet \(Main Page\)](#)
- [Human-Centric Digital Identity Whitepaper \(OpenID Foundation\)](#)
- [Elizabeth Garber: Identity and a Changed United States \(EIC 2026\)](#)
- [Architecture Documentation for the German National EUDI Wallet](#)
- [Blueprint for the EUDI Wallet Ecosystem in Germany](#)
- [EU Architecture and Reference Framework](#)
- [OpenID for Verifiable Credential Issuance 1.0](#)
- [OpenID for Verifiable Presentations 1.0](#)
- [Vittorio Bertocci - Verifiable Credentials for the Modern Identity Practitioner](#)
- [RFC 9901 Selective Disclosure for JSON Web Tokens](#)
- [SD-JWT-based Verifiable Credentials \(SD-JWT VC\)](#)
- [W3C Verifiable Credentials Data Model v2.0](#)
- [Standards erklärt: SD-JWT \(eIDAS2 Open Consultations\)](#)
- <https://eudi-wallet.gov.de/en/ecosystem-knowledge-center>

Developer References

- [EUDI Wallet Reference Implementation](#)
- [Recordings of EUDI ON 2026 Conference in Berlin \(June 25th 2026\)](#)
- [Sphereon OID4VC](#)
- [OpenID for Verifiable Credentials - TypeScript \(OpenWallet\)](#)
- [Developer toolkit for OpenID4VC](#)
- [Java Library for SD-JWT \(Authlete\)](#)
- [SD-JWT Implementation in JavaScript \(TypeScript\)](#)
- [SD-JWT Debugger](#)
- [Keycloak as a Verifiable Credential Issuer \(Experimental\)](#)
- [OpenID for Verifiable Presentations Keycloak Extension](#)
- [Microsoft Entra Wallet Library for iOS](#)
- [Lissi EUDI Wallet](#)
- [WaltID Identity Open Source Identity & Wallet Toolkit](#)



<https://github.com/andifalk/verifiable-credentials-demos>

Thank You! Any Questions?



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