eIDAS

EID SCHEMES AND THE EIDAS REGULATION

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Outline

- Introduction to eIDAS

- eID schemes and eIDAS

- Introduction to eIDAS 2.0

  - Roadmap

  - ARF v.1.0

  - Large Scale Pilots

- Q&A

eIDAS regulation

eIDAS Regulation

- Regulation (EU) No 910/2014
  - European Parliament and the Council of 23 July 2014
- Introduces one single framework for
  - eID
  - Trust services
- Interoperability across the 27 (28) EU countries

eID and trust services solutions:

eID — eID

eS — eSignature

eSe — eSeal

eT — eTimestamp

QWAC — Qualified Web Authentication Certificate

ERDS — Electronic Registered Delivery Service

Trust services

- Electronic signature (eSignature)
  - Qualified eSignatures have the same legal effect as hand written signatures.
- Electronic seal (eSeal)
  - an electronic equivalent of a stamp that is applied on a document to guarantee its origin and integrity.
- Electronic Timestamp (eTimestamp)
  - proves that a document existed at a point-in-time.
- Electronic Registered Delivery Service (eDelivery)
  - a service that permits the electronic transfer of data between businesses, public administrations and citizens. It provides proof of sending and receiving the data and protects against the risk of loss, theft, damage or unauthorised alterations.
- Website Authentication Certificates (WACs)
  - electronic certificates that are issued to prove to users (e.g. citizens and SMEs) that a natural or legal person owns a website.

Trusted lists per country

Trusted Lists

Austria Issue date **2023-04-19**	**Belgium** Issue date **2023-04-27**	**Bulgaria** Issue date **2023-03-23**
Croatia Issue date **2023-03-02**	**Cyprus** Issue date **2023-02-22**	**Czech Republic** Issue date **2023-06-01**
Denmark Issue date **2023-01-11**	**Estonia** Issue date **2023-05-08**	**Finland** Issue date **2023-04-24**
France Issue date **2023-06-05**	**Germany** Issue date **2023-05-15**	**Greece** Issue date **2023-05-02**
Hungary Issue date **2023-04-20**	**Iceland** Issue date **2023-03-30**	**Ireland** Issue date **2023-04-11**
Italy Issue date **2023-06-06**	**Latvia** Issue date **2023-03-15**	**Liechtenstein** Issue date **2023-04-04**
Lithuania Issue date **2023-06-02**	**Luxembourg** Issue date **2023-05-05**	**Malta** Issue date **2023-03-13**
Netherlands Issue date **2023-03-07**	**Norway** Issue date **2023-04-21**	**Poland** Issue date **2023-06-01**
Portugal Issue date **2023-01-20**	**Romania** Issue date **2023-02-20**	**Slovakia** Issue date **2023-06-06**
Slovenia Issue date **2023-06-09**	**Spain** Issue date **2023-05-22**	**Sweden** Issue date **2023-06-02**

European Union Issue date **2023-06-05**		

Greek Trusted list

eIDAS regulation

eIDAS Regulation

eID and trust services solutions:

eID — **eID**

eS — **eSignature**

eSe — **eSeal**

eT — **eTimestamp**

QWAC — **Qualified Web Authentication Certificate**

ERDS — **Electronic Registered Delivery Service**

The Tallin Declaration (October 2017)

Photo: Mikkor / EU2017EE

- EU to implement electronic ID for residents to accelarate adoption of e-government services
- The EU has strongly endorsed it and vote to:
  - Speed up the implementation of the eIDAS regulation, including the notification of electronic identity schemes
  - Making digital public services secure and identifiable by using the eIDAS framework for qualified electronic trust services

Electronic identification (eID)

- **Objective:** allow citizens of one European country to use their national eIDs to securely access online services provided in other European countries.
- An opportunity for the private sector
  - a way for businesses and consumers to:
    - identify who they are (identification process)
    - prove that they are who they say they are (authentication process)
- Cross-border eID interoperability is a complex and multi-disciplinary issue:
  - legal,
  - operational,
  - semantic
  - technical aspects.

Electronic identification (eID)

- Cross-border eID interoperability evolved, reaching maturity, through a number of Large Scale Pilots
  - STORK
  - STORK 2.0
  - e-SENS (Electronic Simple European Networked Services)

- Currently supported by Digital Europe Programme (DIGITAL)
  - EU funding instrument
  - development of a package of services:
    - open-source software components,
    - documentation,
    - training and support.

eID – MS Notification

- By 29 September 2018:
  - All may notify a eID system
  - Notification form under Article 9(5)
    - COMM (EU) 2015/1984
  - Mandatory for all EU MS to recognize notified eID systems from MS
  - Optional to notify

eIDAS Attributes

- Mandatory
  - Current Family Name
  - Current First Names
  - Date of Birth
  - Unique Identifier
- Optional
  - Family Name at Birth
  - First Names at Birth
  - Place of Birth
  - Current Address
  - Gender

eIDAS Levels of Assurance (LoA)

The three levels of assurance are:

- Low

- Substantial

- High

Taking into consideration:

- The process of obtaining the eID scheme

- How the eID means is managed

- How authentication is performed

eID scheme notification

Cooperation Network of MS experts

1. ## Pre-notification
   - Transmission of the notification documents to the European Commission and to the other EU Member States
2. ## Peer Review
   - Optional review of the eID system (maximum three months)
3. ## Notification
   - at the earliest six months after pre-notification
4. ## Publication of the notification by the Commission
   - at the latest two months after Notification
5. ## Mandatory recognition of notified eID schemes by EU MS
   - at the latest 12 months after publication

eID – MS Obligations

- MS are responsible for:
  - eIDAS-Node implementation
  - connection of online public services

- Public administrations are obliged to comply.
  - Online public services requiring electronic identification assurance level of '**substantial**' or '**high**' levels must be able to accept the notified eID schemes
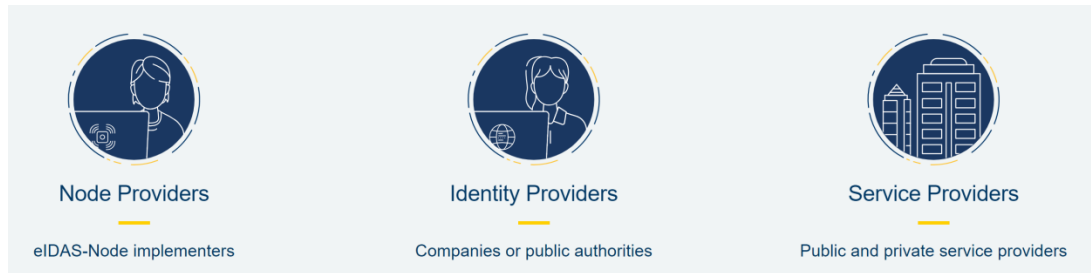
eID – MS Obligations

MS are liable for damage caused to any natural or legal person, resulting from a failure to ensure:

- That the electronic **identification means**
  - attributed, in accordance with the technical specifications, standards and procedures for the relevant assurance level
- That the person **identification data**
  - attributed in accordance with the technical specifications, standards and procedures for the relevant assurance level.
- The **availability of authentication online**

eIDAS Network

Actors

Node Providers	Identity Providers	Service Providers
eIDAS-Node implementers	Companies or public authorities	Public and private service providers

➢**Setting up the eIDAS network**

  ✓ eIDAS-Node implementers and operators

  ✓ Single Points of Contact (per MS)
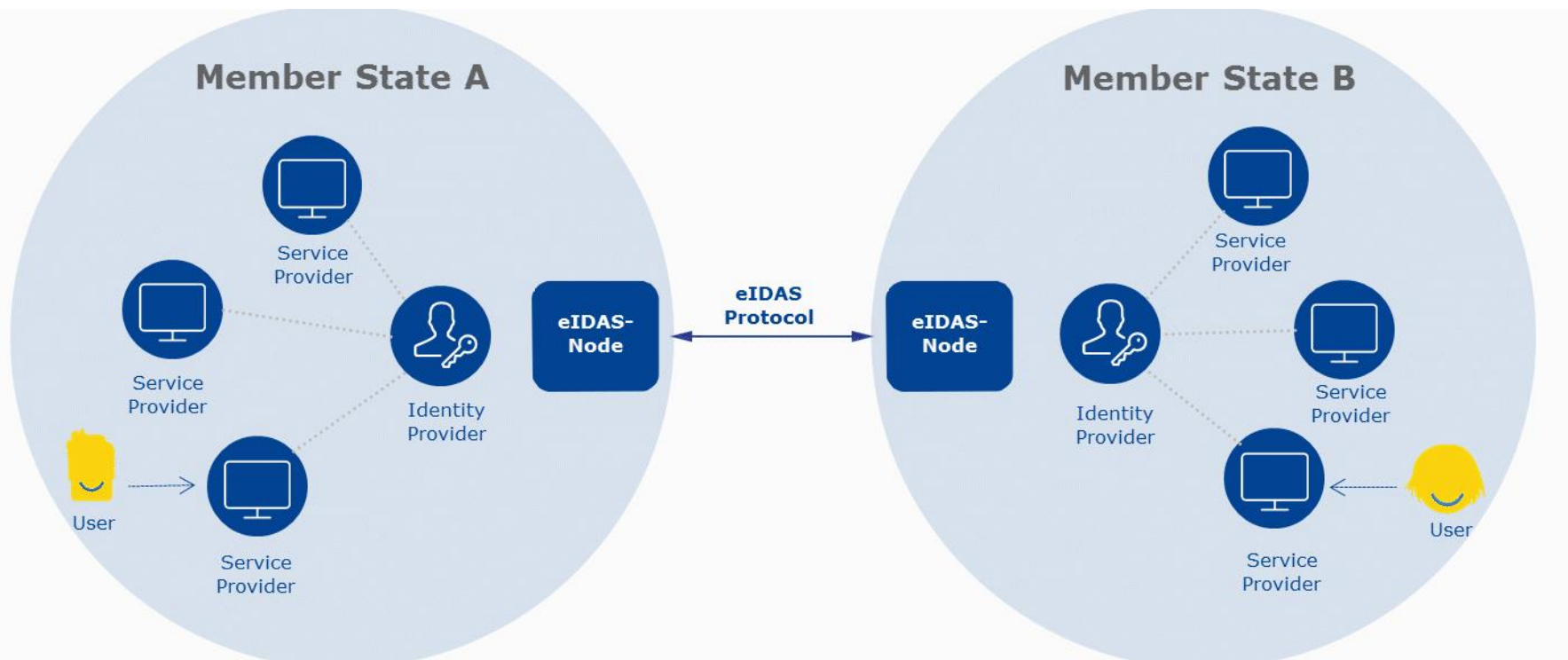
  ✓ Identity Providers

  ✓ Attribute Providers

➢**Using eIDAS eID**

  ✓ Public Service Providers

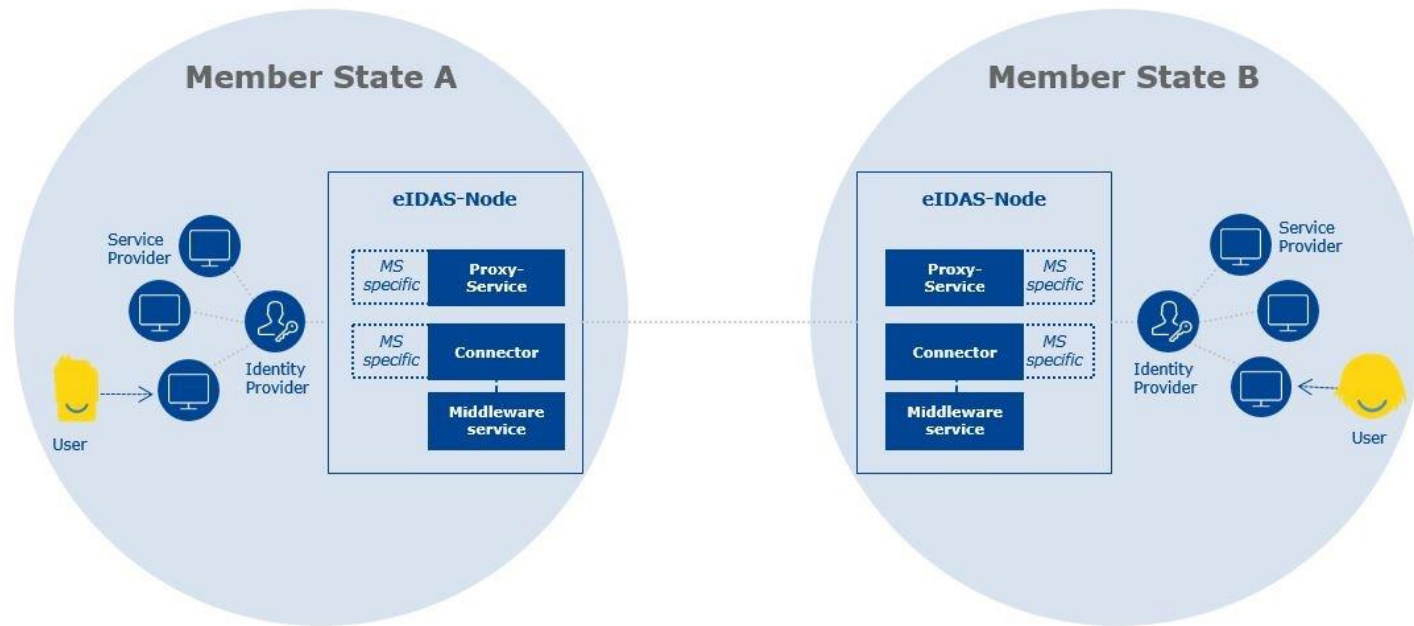 ✓ Private Service Providers
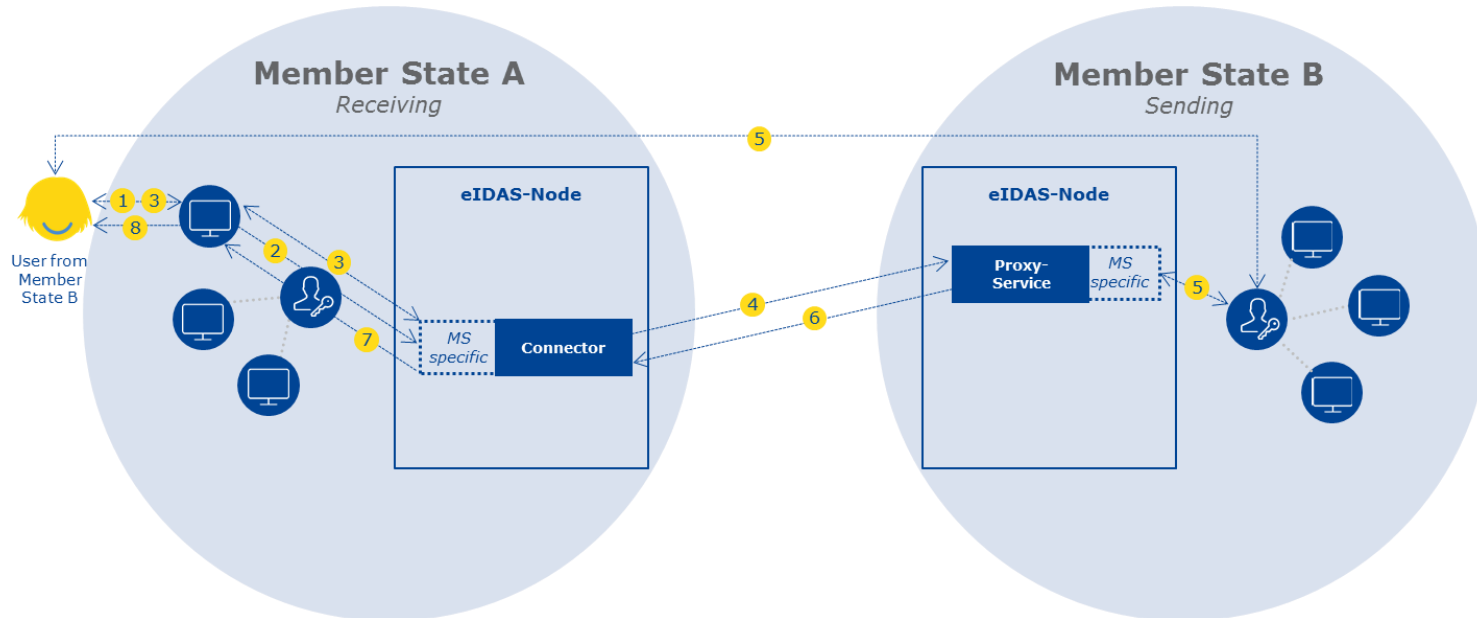
  ✓ EU citizens

eIDAS Network
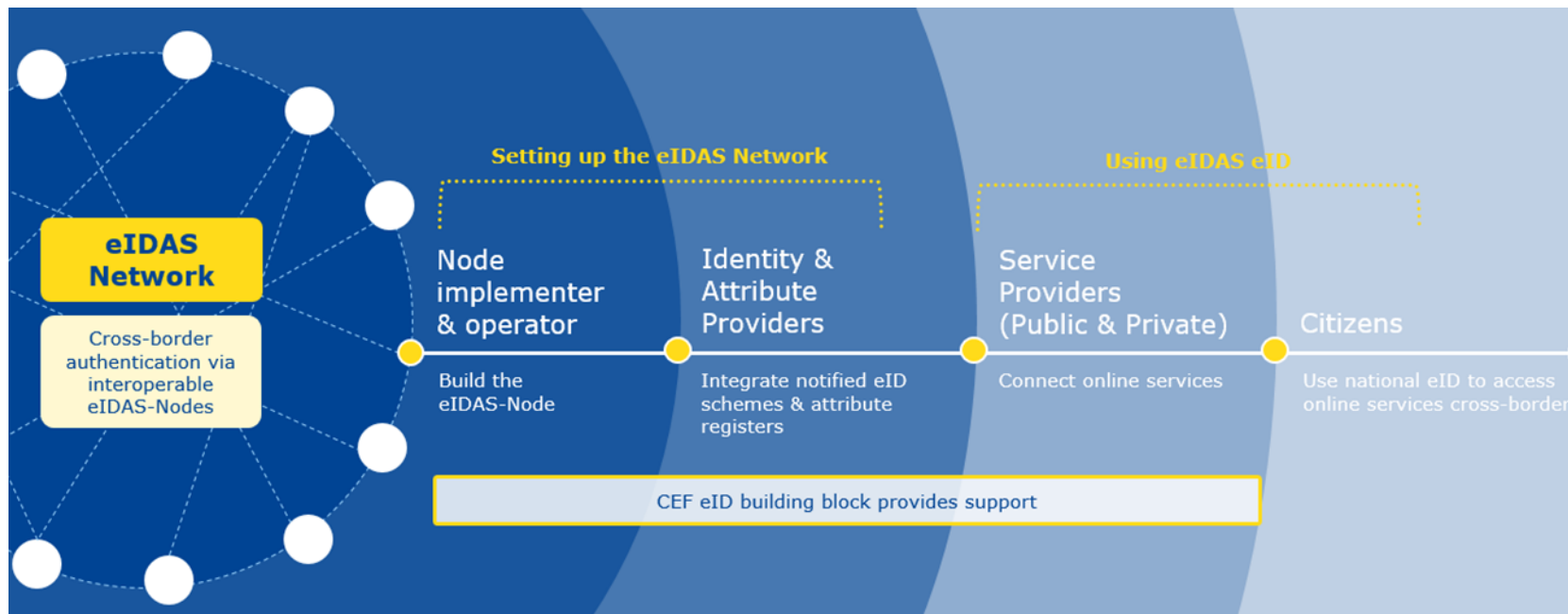
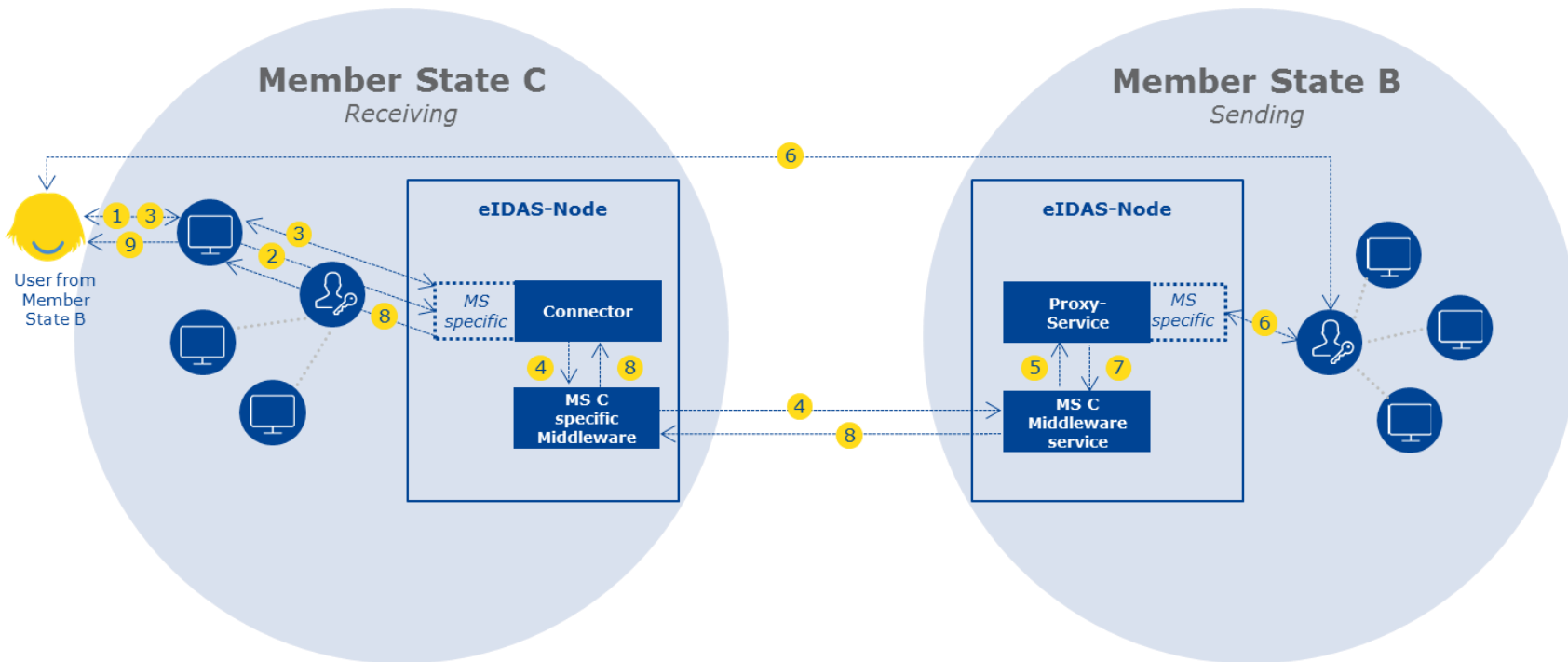# eIDAS interoperability Architecture

eIDAS interoperability Architecture

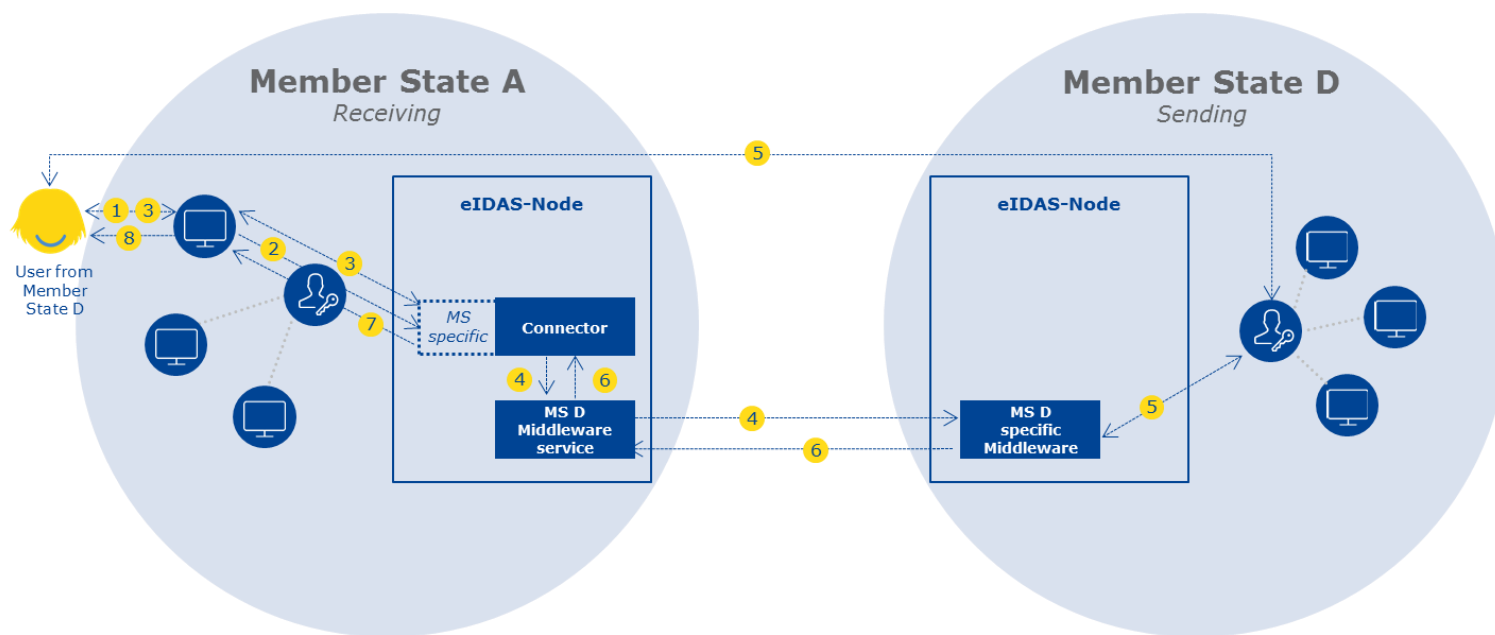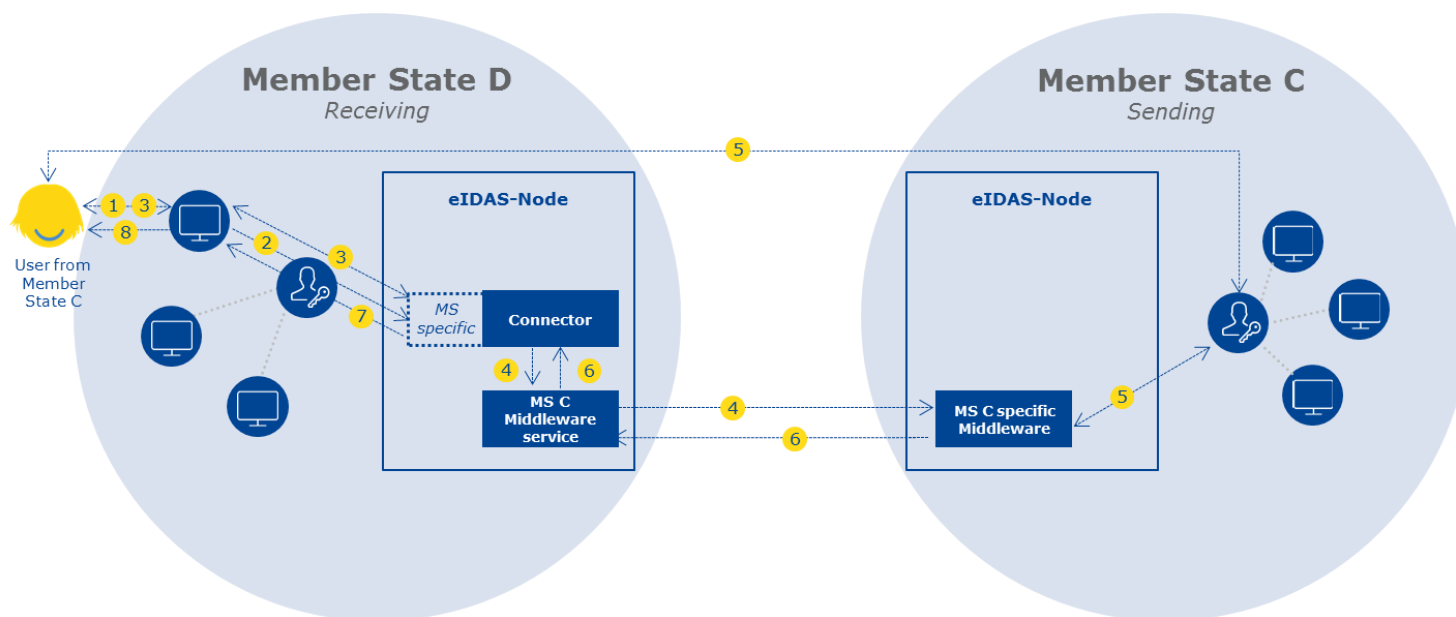# Proxy to Proxy

Proxy to Middleware

Middleware to Proxy

Middleware to Middleware

eIDAS node Status

- All 27 MS and 4 associated members (Norway, Iceland, UK, Liechtenstein) have an operational eIDAS node
- The vast majority reuse the DIGITAL sample implementation software
- Only 5 have their own implementations:
    - Denmark
    - Germany
    - Hungary
    - Sweden
    - United Kingdom

eID schemes notification status

- Among the 27 MS
  - **21** have notified or pre-notified at least one eID scheme.
  - **6** haven't initiated the notification process
    - Finland
    - Greece
    - Cyprus
    - Ireland
    - Hungary
    - Romania
- Almost all notified countries have at least one eID scheme that offer **High Level** of assurance
- The vast majority of the schemes are building on the national identification card.

Authentication Standards

- SAML (Security Assertion Markup Language 2.0)
- OIDC (OpenID Connect)
- FIDO (Fast Identity Online)

Authentication Mechanisms

- LoA Low
  - The subject controls an authenticator registered to the service
  - Single-factor authentication.
  - "Login with Password" as the authentication method
  - "Login with QR code" as an alternative to password-based authentication

Authentication Mechanisms

- LoA Substantial
  - Two factor authentication
  - Several approaches:
    - **PWD + SMS**
    - PWD + SW
    - PWD + MAT
    - PWD + HW
    - PWD + QR code
    - PWD + PN
    - PWD + SK
    - QR

Authentication Mechanisms

- LoA High
  - Two factor authentication (again)
  - Proof of possession of a cryptographic authenticator
  - Main approaches:
    - Hardware Authenticator (HW Auth)
      - Smart Card
      - SIM (crypt sim)
      - Security Key
    - Software Authenticator (SW Auth)

Overview of Authentication Mechanisms

- December 2022[1]
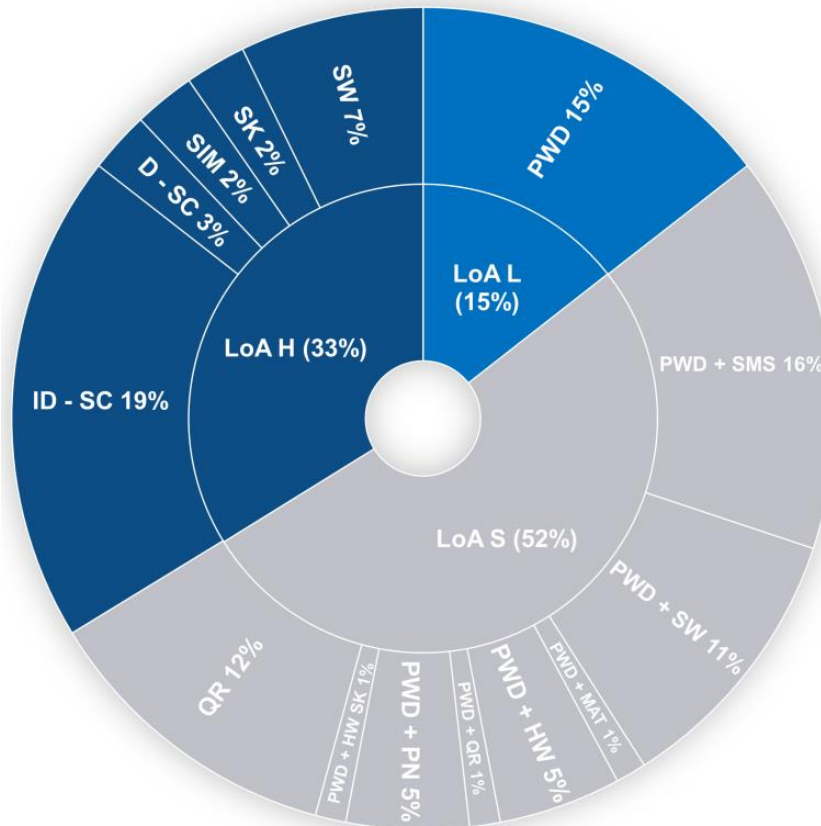
1. Applied Sciences | Free Full-Text | The eIDAS Regulation: A Survey of Technological Trends for European Electronic Identity Schemes (mdpi.com)

eID - Governance

- European Commission
  - The Directorate-General for Informatics (<u>DIGIT</u>)
    - responsible for the technical management of the DIGITAL eID building block.
  - The Directorate-General for Communications Networks, Content and Technology (<u>DG CNECT</u>)
    - responsible for the implementation of the EU policy directly related to eID and Trust Services.
  - The Innovation and Networks Executive Agency (<u>INEA</u>)
    - responsible for the implementation of the DIGITAL Telecom programme grants in cooperation with the Commission.

- Member State representation groups
  - Cooperation Network
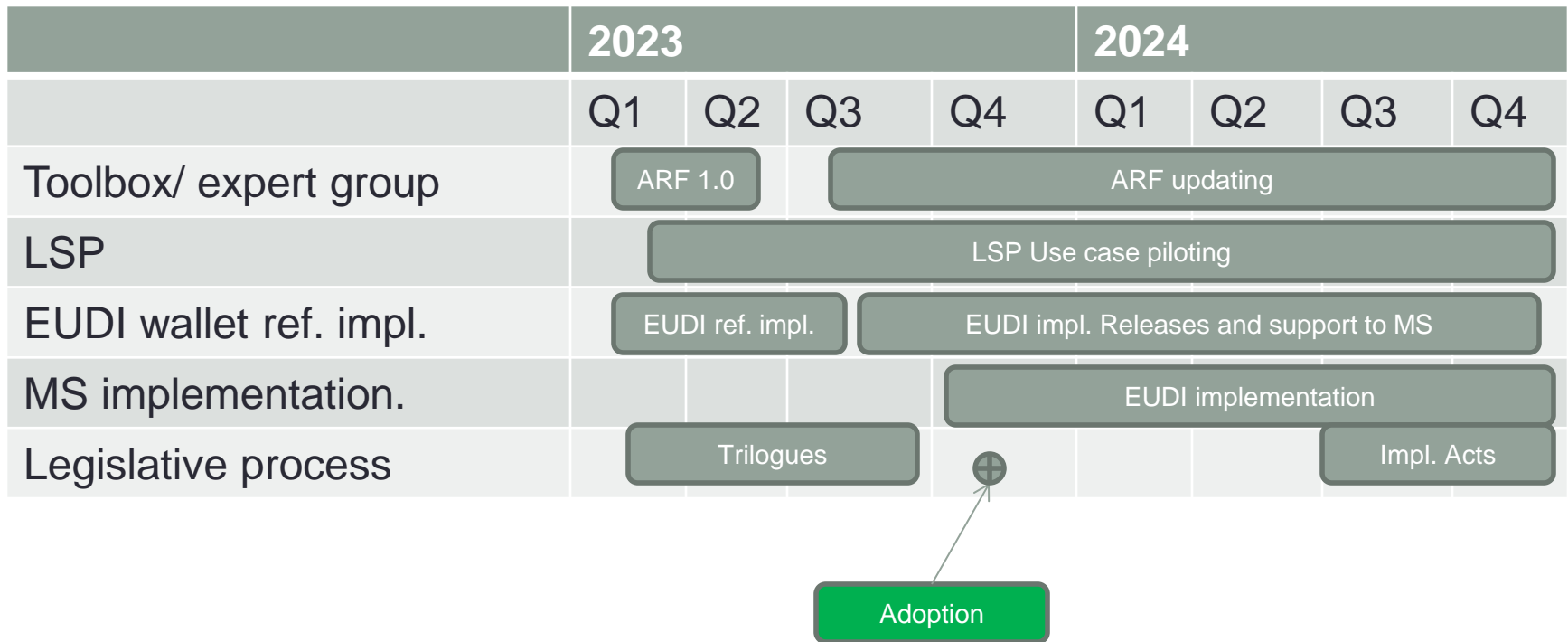 - eIDAS Expert Group
  - eIDAS Technical Sub-group

EIDAS 2.0

Introduction to eIDAS 2.0

- COM/2021/281:
    - Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EU) No 910/2014 as regards establishing a framework for a European Digital Identity

- The proposal's specific objectives are to:
    - provide access to trusted and secure digital identity solutions that can be used across borders, **meeting user expectations and market demand;**
    - ensure that **public and private services** can rely on trusted and secure digital identity solutions across borders;
    - provide **citizens with full control of their personal data** and ensure their security when using digital identity solutions;
    - ensure equal conditions for the provision of qualified trust services in the EU and their acceptance

eIDAS 2.0 roadmap

	2023				2024			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Toolbox/ expert group	ARF 1.0		ARF updating					
LSP		LSP Use case piloting						
EUDI wallet ref. impl.	EUDI ref. impl.		EUDI impl. Releases and support to MS					
MS implementation.				EUDI implementation				
Legislative process	Trilogues		⊕				Impl. Acts	

Adoption

Wallet Prototype

Development of a **reference application** of the European Digital Identity Wallet based on the technical standards

LSPs pilot the Wallet Prototype and provide feedback for the Wallet Prototype

Toolbox provides the specifications for the Wallet Prototype

Wallet Prototype is delivered to LSPs for re-use

Wallet Prototype implements the Toolbox and provides feedback for the Toolbox

Large Scale Pilots

Large-scale pilots around use-cases for the European Digital Identity Wallet including mobile driver licences, ePayments, eHealth and educational /professional qualifications

Toolbox (ARF)

Establishing a **common toolbox** consisting of an **architecture and reference framework**, common standards and specifications and guidelines and best practices

Toolbox provides the specifications for the LSPs

LSPs pilot the Toolbox Specifications and provide feedback for the Toolbox

SOURCE EUROPEAN COMMISSION

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Architecture Reference Framework (ARF) v1.0

- January 2023 (published 10/2/2023)
- Living document (still a lot of things need to be clarified)
  - Enable LSPs
  - Basis for Reference Implementation
- Ongoing legislative negotiations and standardization efforts
- 8 chapters
  - Introduction, definitions, development process (1,2 3,8)
  - Ecosystem (4)
  - PID+EAD requirements (5)
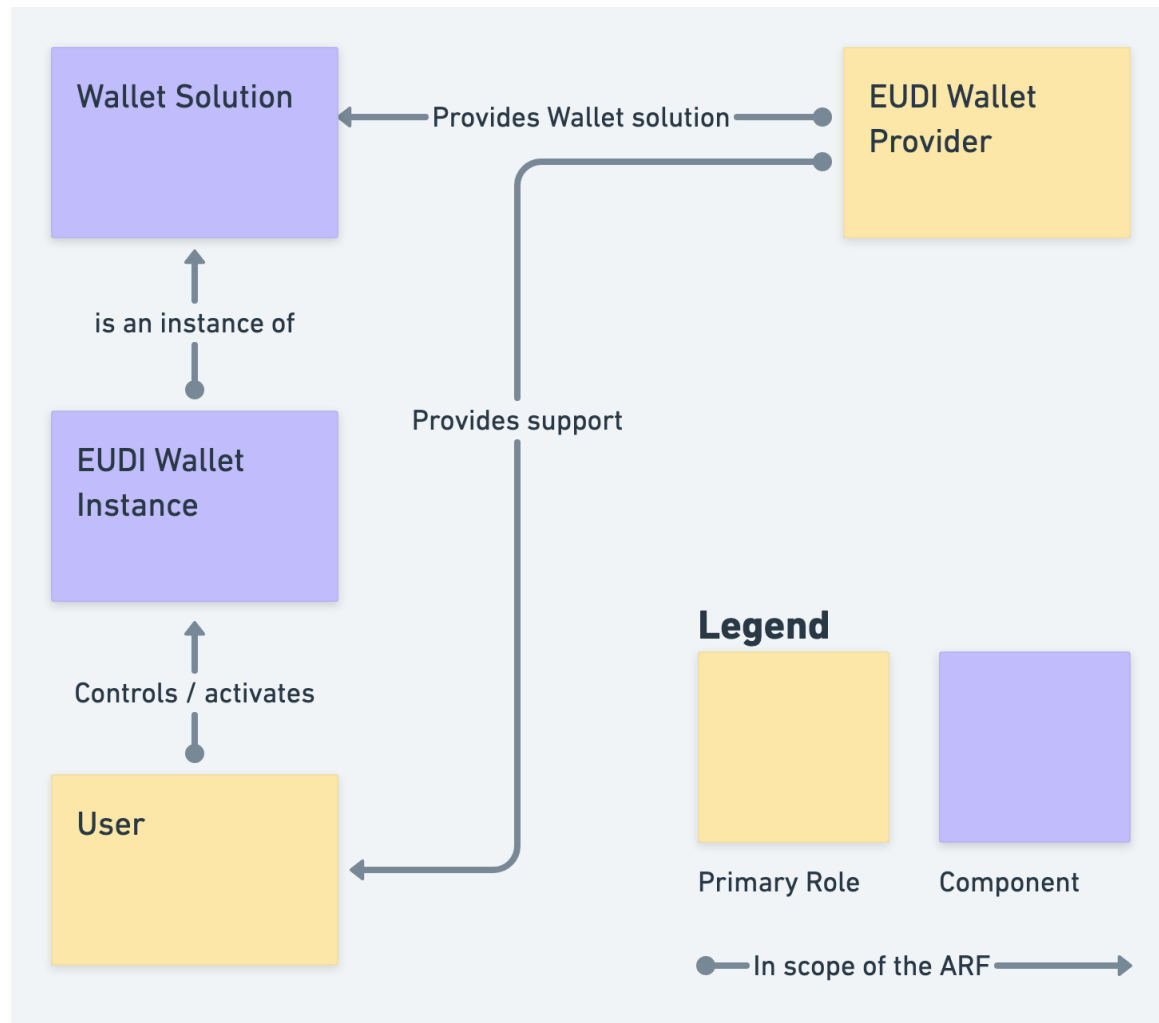 - Architecture (6)
  - Certification process (7)

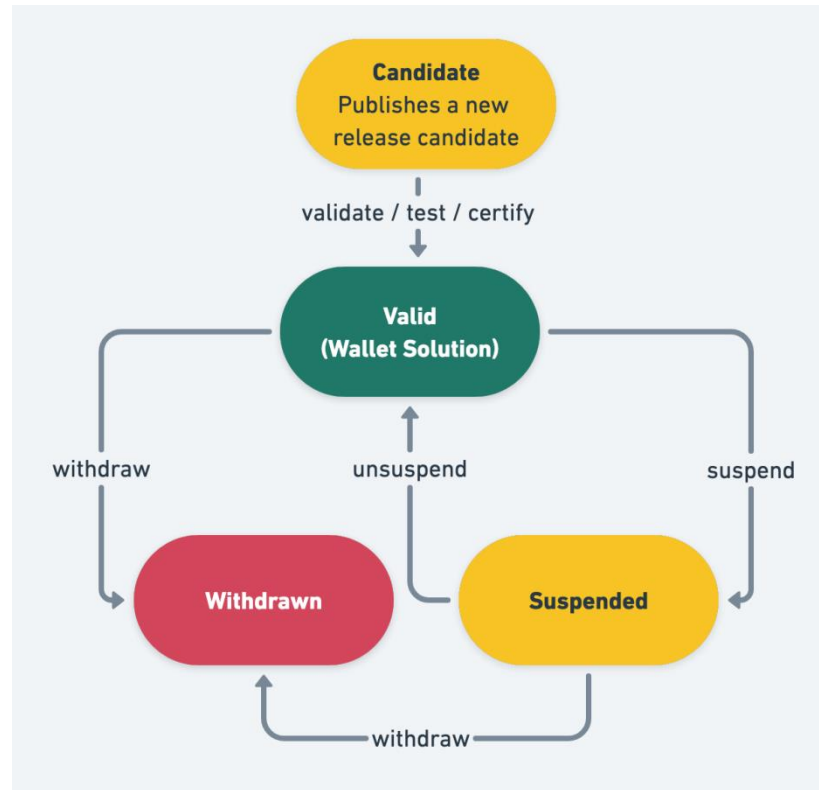# Roles in the Ecosystem
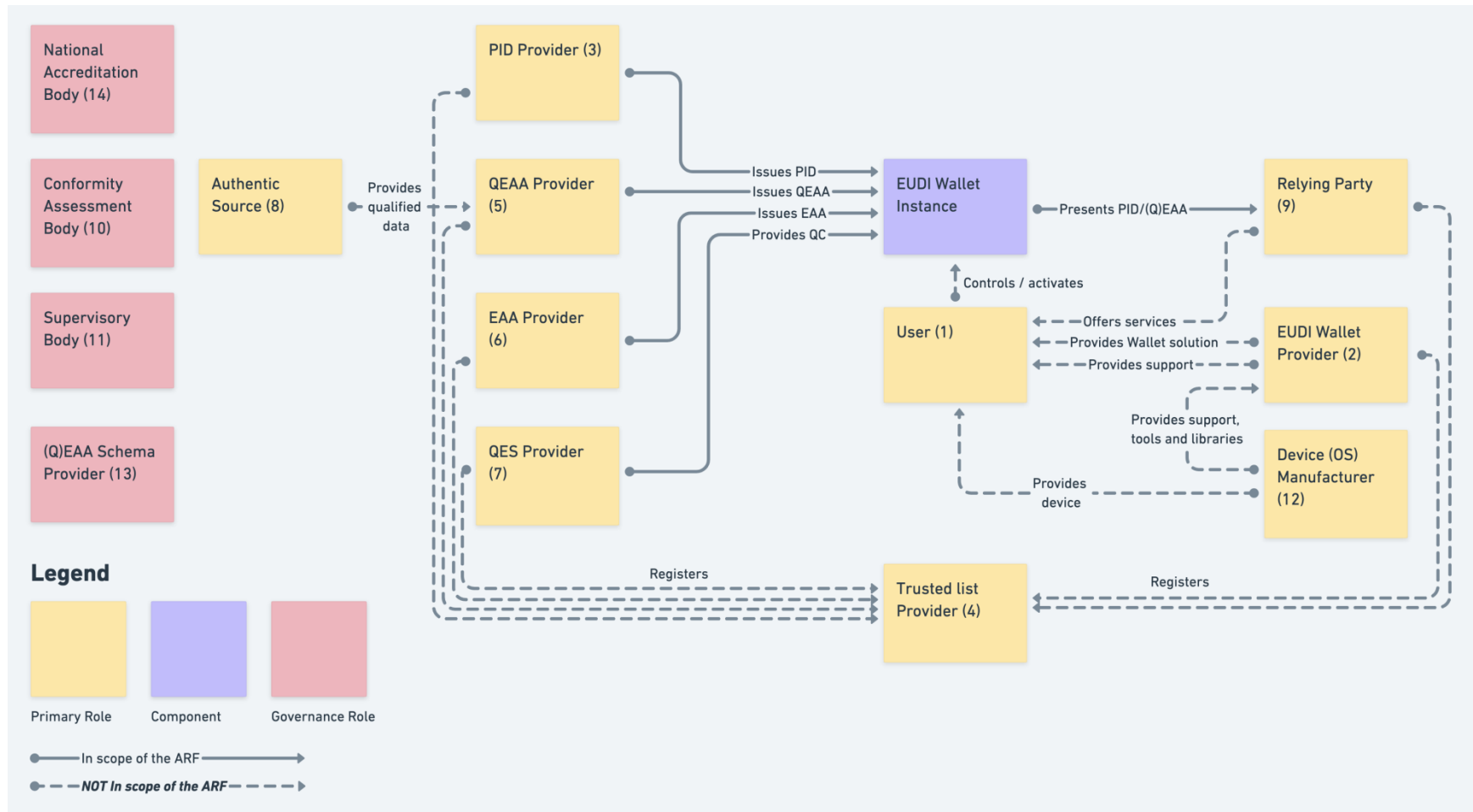
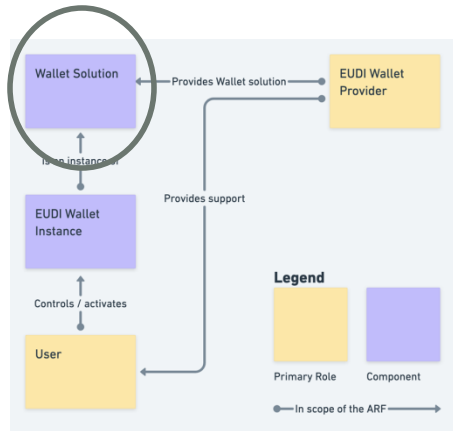# Architecture Reference Framework (ARF)
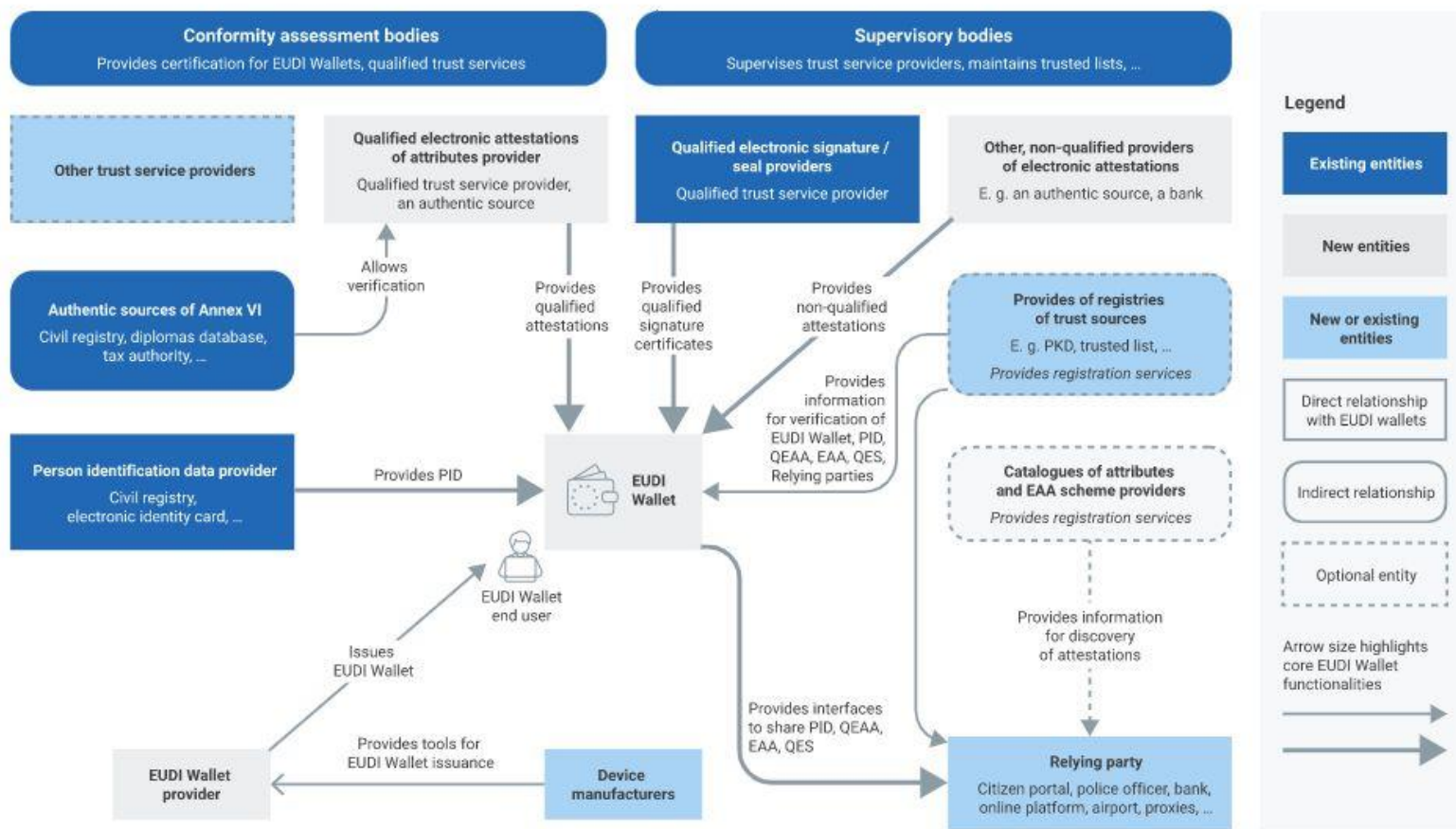
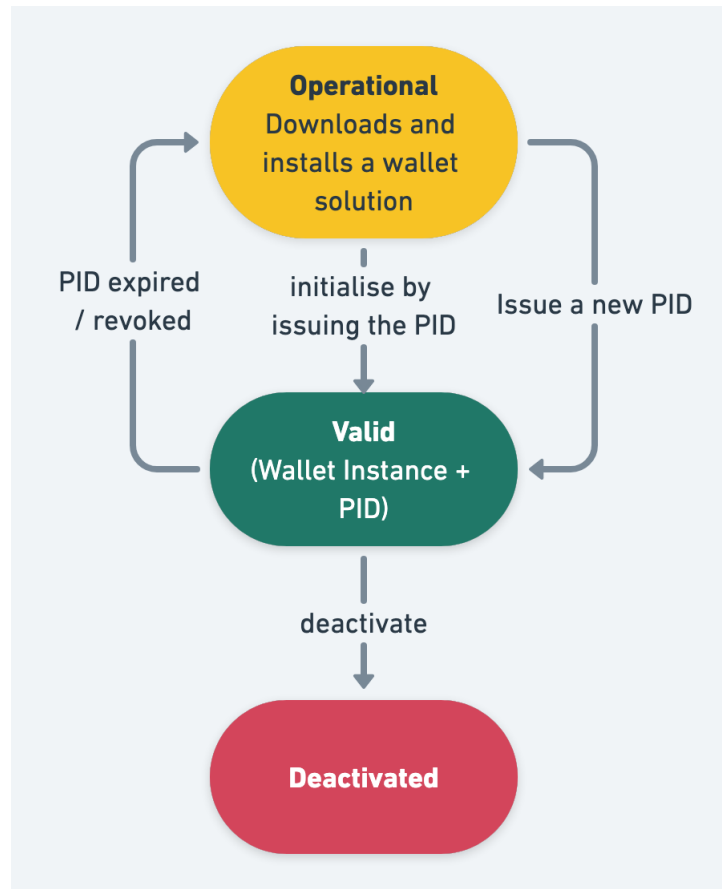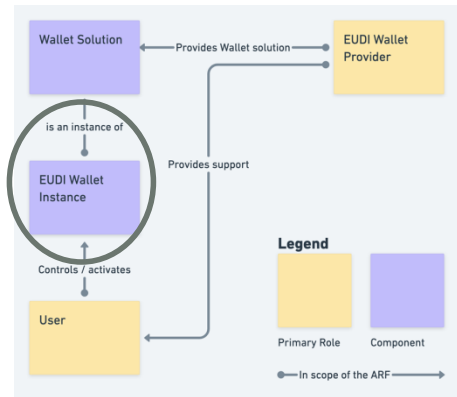# Simplified EUDI Wallet Object Model

State-chart of Wallet Solution
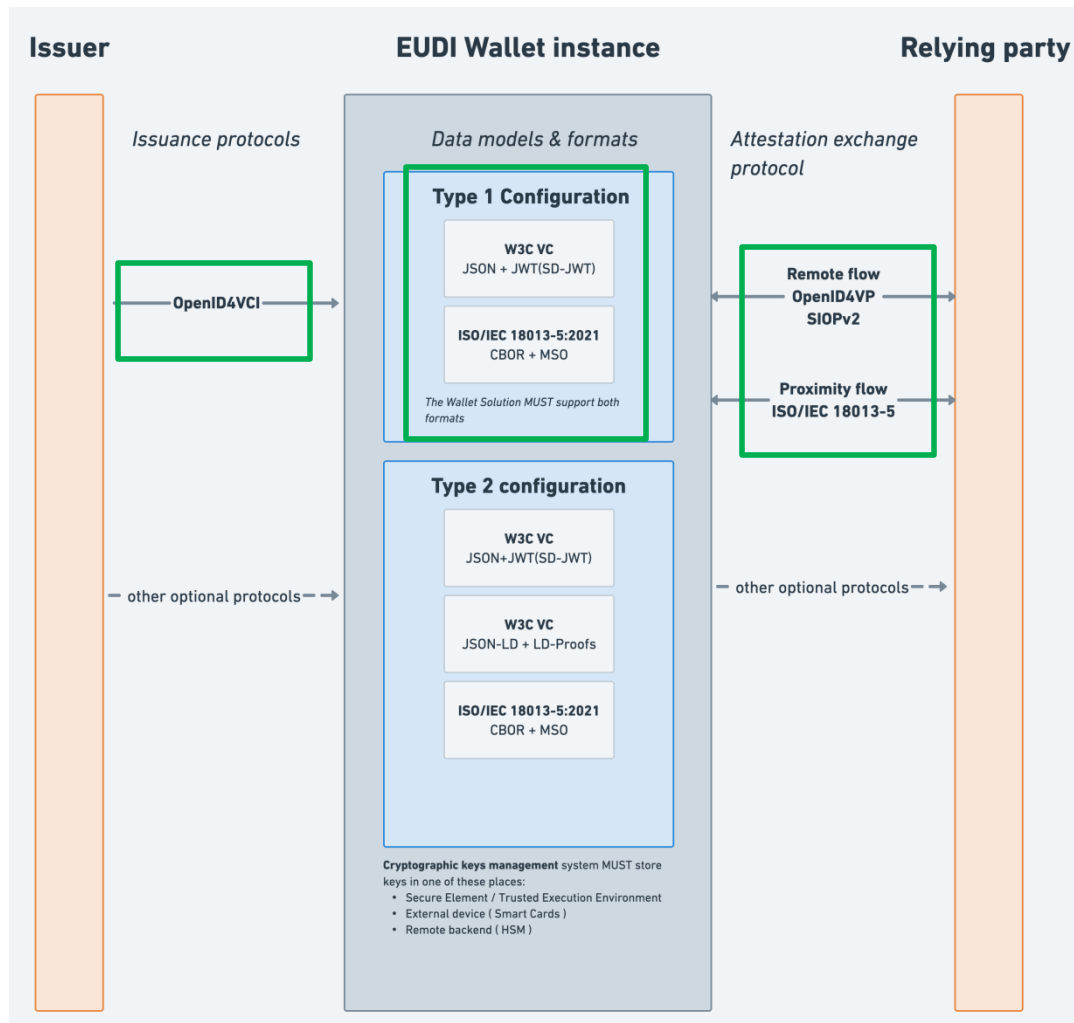
State-chart of Wallet Instance

EUDI Wallet

- Must be certified

- Must be listed

- PID providers must be included in a Trusted List

- Two wallet Instance states

  - Operational

  - Valid

- Two initial Wallet configurations (so far)

- Selective disclosure

EUDI Wallet configurations

MUST

PID dataset

Mandatory eIDAS Attributes	Optional eIDAS Attributes	Possible additional optional attributes
Current Family Name	Family Name at Birth	Nationality/Citizenship
Current First Names	First Names at Birth	Optional attributes used at national level, e.g., tax number, social security number etc.
Date of Birth	Place of Birth	
Unique Identifier	Current Address	
	Gender	

Table 2 - Mandatory and optional PID attributes for natural persons

Large Scale Pilots (LSP)

- Potential European Consortiums for Digital Identity (POTENTIAL)
  - https://www.digital-identity-wallet.eu/
- NOBID
  - https://www.nobidconsortium.com/
- Digital Credential for Europe (DC4EU) Consortium
  - https://www.dc4eu.eu/
- EU Digital Identity Wallet Consortium (EUWC)
  - https://eudiwalletconsortium.org/

eIDAS: EU Digital Identity

NOBID CONSORTIUM

DC4EU

EWC

POTENTIAL
European Consortium for Digital Identity

4 Large Scale Pilots started
Test the European digital Identity (EUDI) Wallet

LSPs

	EUDI Wallet Consortium (EWC)	**NOBID**	**POTENTIAL**	**DC4EU**
Use cases	Mobile Travel Payments Organizational Digital Identity (ODI)	Payments issuance and acceptance	SIM eRegistration Account opening eDriving license eGov services ePrescription eSignature	Educational Credentials and Professional Qualifications Social Security
Countries	All EU countries, Norway, UK, Ukraine	Denmark, Germany, Iceland, Italy, Latvia, Norway	19 EU countries, Ukraine	22 EU countries, Ukraine
Participants	Over 60, private and public sector	Private and public sector	Private and public sector	Private and public sector
Coordinators	Swedish and Finnish government authorities	Norway government authority	German and France government authorities	Spain – Ministry of Economic Affairs and Digital Transformation
website	https://eudiwalletconsortium.org/	https://www.nobidconsortium.com/	https://www.digital-identity-wallet.eu/	https://www.dc4eu.eu/

Use Cases

1. **Mobile Driving Licence:** The storage and presentation of the mobile driving licence in both online and physical interactions such a driver providing their licence on the side of the road.
2. **Accessing government services**: Secure access to digital public services, such as applying for a passport or driver's licence, filing taxes, or accessing social security information.
3. **SIM Registration:** Proof of identity for the purpose of pre- and post-paid SIM card contracts (registration and activation), reducing fraud and costs for mobile network operators.
4. **Signing contracts:** Creating secure digital signatures for signing contracts online, eliminating the need for paper documents and physical signatures.
5. **Claiming Prescriptions:** Providing details of prescription to pharmacies and initiating the dispensation of medical products.
6. **Opening a bank account:** Verification of a user's identity when opening an online bank account, eliminating the need for the user to repeatedly provide their personal information
7. **Payments:** Verification of a user's identity when initiating a payment online
8. **Travelling:** Presenting information from travel documents (e.g. the user's passport, visa, and other), allowing for quick and easy access when going through airport security and customs.
9. **Education certification:** Proof of possession for educational credentials, such as diplomas, degrees, and certificates making it easier to apply for jobs or further education
10. **Accessing Social Security benefits:** An EUDI Wallet can be used to securely access a user's social security information and benefits, such as retirement or disability benefits. It can also be used to facilitate freedom of movement by storing documents such as the European Health Insurance Card.
11. **The development of the common EU toolbox:** Developing a common EU toolbox to implement the European Digital Identity Wallet, including the technical architecture, standards, and best practice guidelines

SUM UP

- Today eID notification is optional, but it will be mandatory
- The vast majority of MS have notified at least one scheme
- We expect a paradigm shift from the eIDAS-nodes to EUDI wallets.
- eIDAS 2.0 will still let the MS to choose their own eID schemes (LoA high).
- By 2030 **at least 80%** of citizens should use an eID system (2020 strategy on shaping Europe's digital future)

References

1. eID documentation (DIGITAL): https://ec.europa.eu/digital-building-blocks/wikis/display/DIGITAL/eID

2. Applied Sciences | Free Full-Text | The eIDAS Regulation: A Survey of Technological Trends for European Electronic Identity Schemes (mdpi.com)

3. Architecture Reference Framework v1.0, https://ec.europa.eu/newsroom/dae/redirection/document/93678