



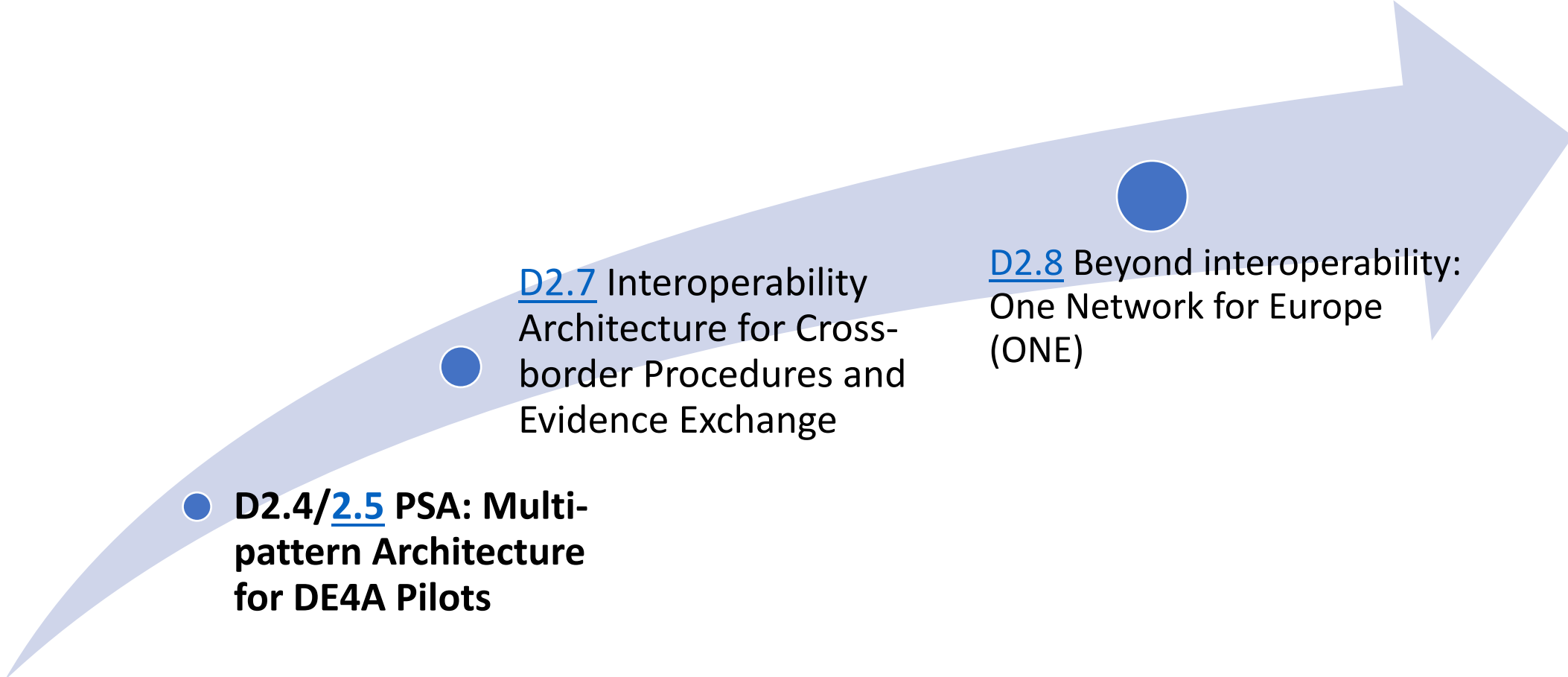
Multi-pattern Interoperability Architecture

Alexander Bielowski, NL/MinBZK/ICTU
Final Event, April 12, 2023 (online)

DE4A has received funding from the European Union's Horizon 2020 research and innovation programme under GA. No. 870635



Contents



● **D2.4/2.5 PSA: Multi-pattern Architecture for DE4A Pilots**

● **D2.7 Interoperability Architecture for Cross-border Procedures and Evidence Exchange**

● **D2.8 Beyond interoperability: One Network for Europe (ONE)**



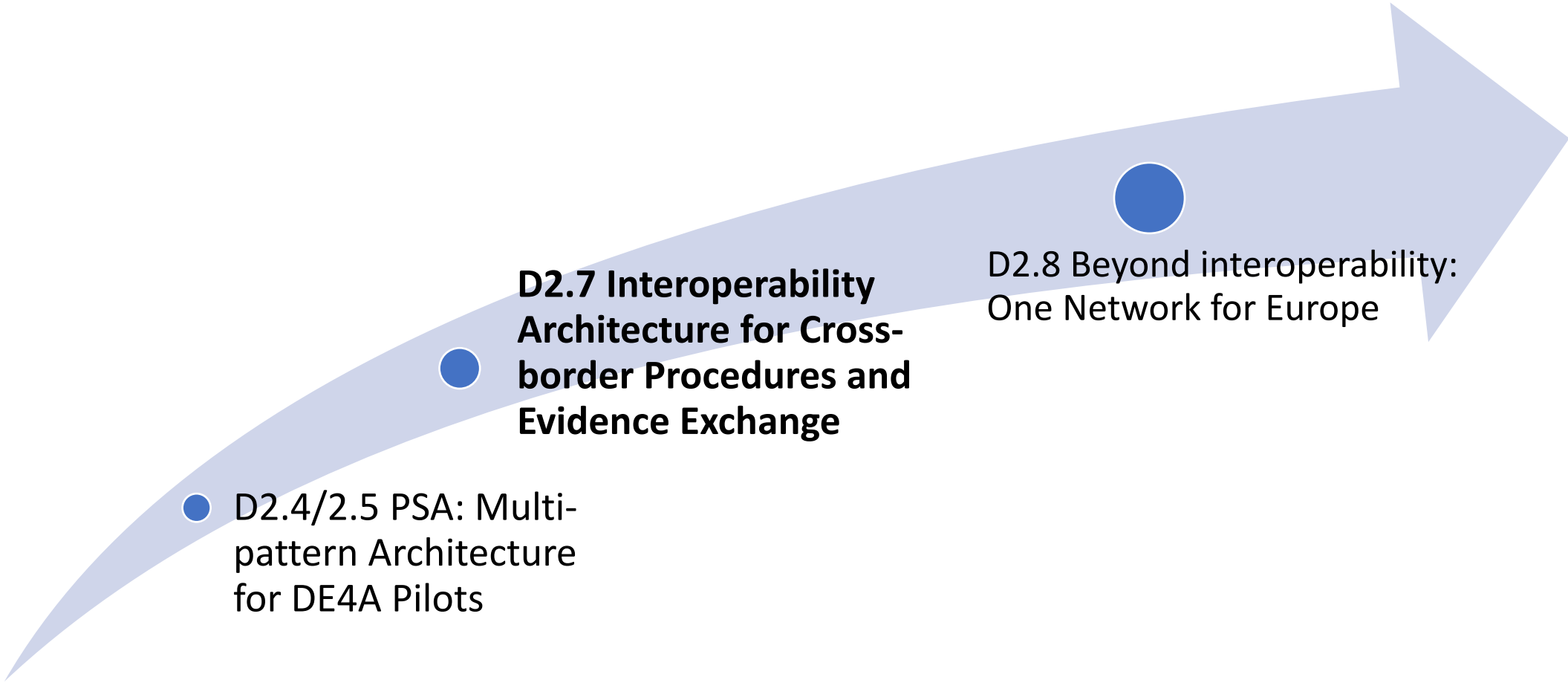
PSA: Detailed Reference Architecture

5 Interaction Pattern

- Charcoal sketches matched to use-case requirements
 1. Intermediation Pattern (DBA)
 2. User-Supported Intermediation Pattern (MA & SA)
 3. Verifiable Credential Pattern (SA)
 4. Subscription and Notification Pattern (DBA)
 5. Lookup Pattern (DBA)
- Detailed Reference Architecture, based on Pilot requirements (D2.4/[2.5](#))
- Collaborative development of Pilot Solution Architecture ([D2.6/Wiki](#))



Contents



● D2.4/2.5 PSA: Multi-pattern Architecture for DE4A Pilots

● **D2.7 Interoperability Architecture for Cross-border Procedures and Evidence Exchange**

● D2.8 Beyond interoperability: One Network for Europe



5 Key Interoperability Activities



Explicit Request



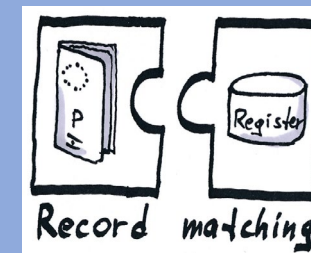
Preview and Approval



Routing
(What from Where?)



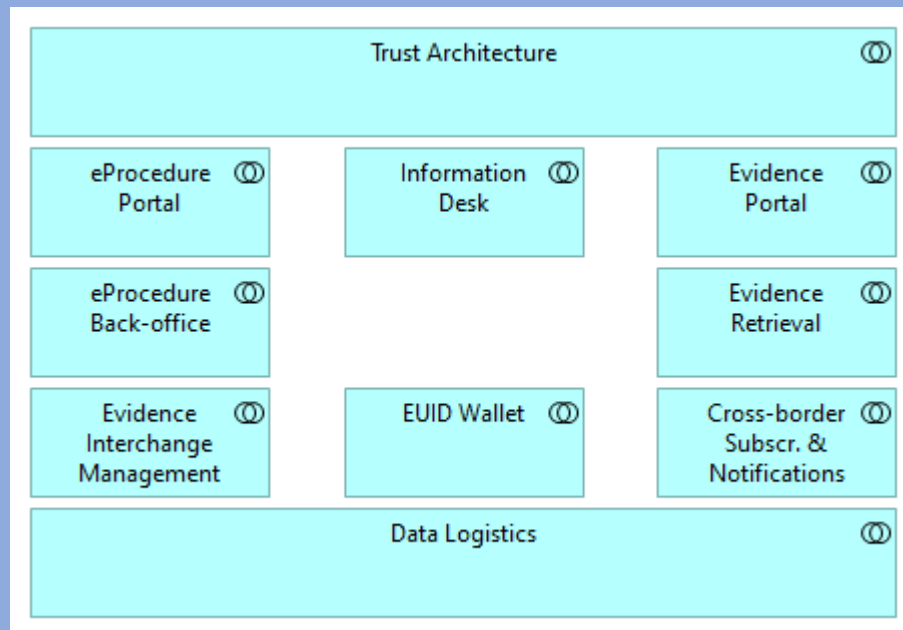
Electronic
Authentication
(eID Authentication
or EUDI-Wallet
Identification)



Record Matching

Flexible Components support Multiple Patterns

Main Applications Collaborations



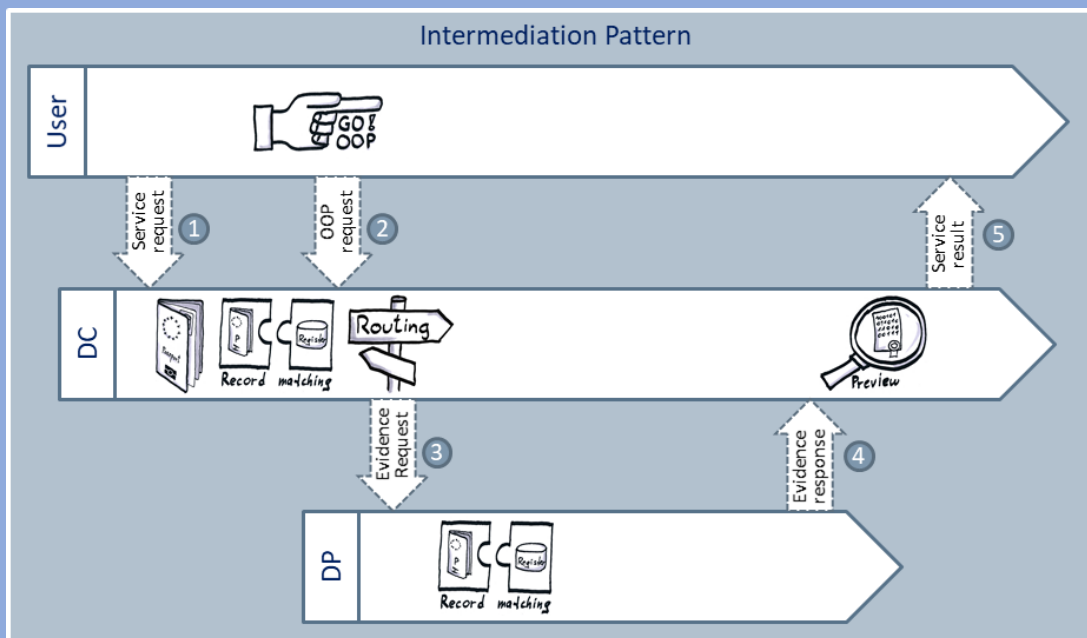
Application Collaborations are aggregations of Application components, Data objects and Interfaces.

A total of 10 Application Collaborations have been elaborated, together implementing all 6 Interaction Patterns.

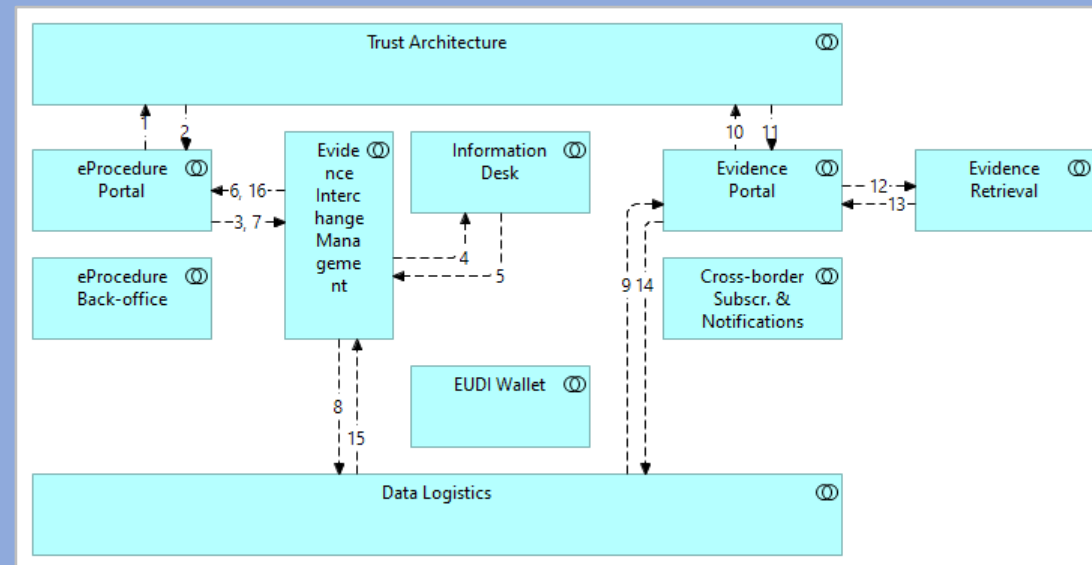


Intermediation Pattern

Business Architecture

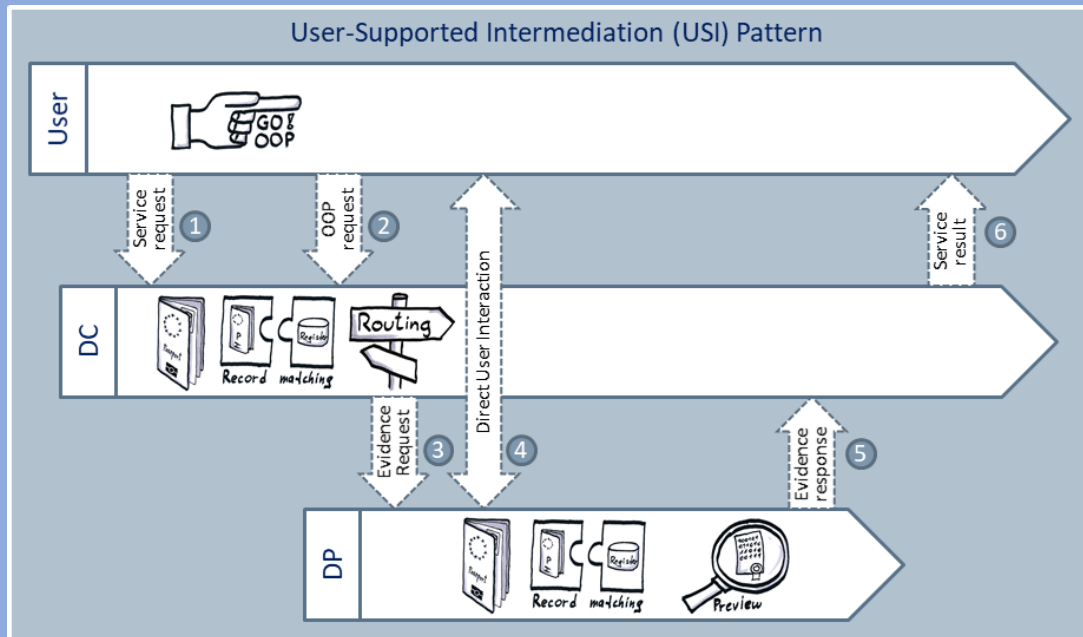


Application Architecture

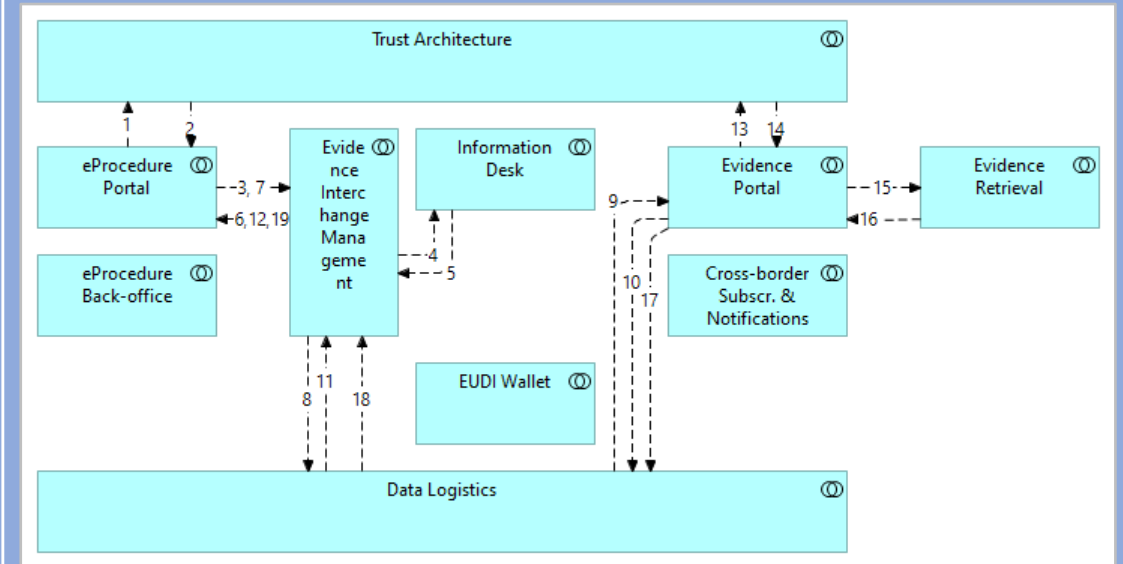


User-Supported Intermediation Pattern

Business Architecture

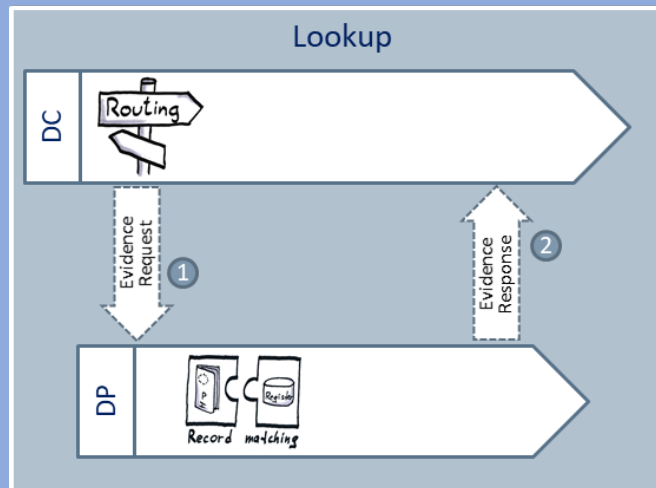


Application Architecture

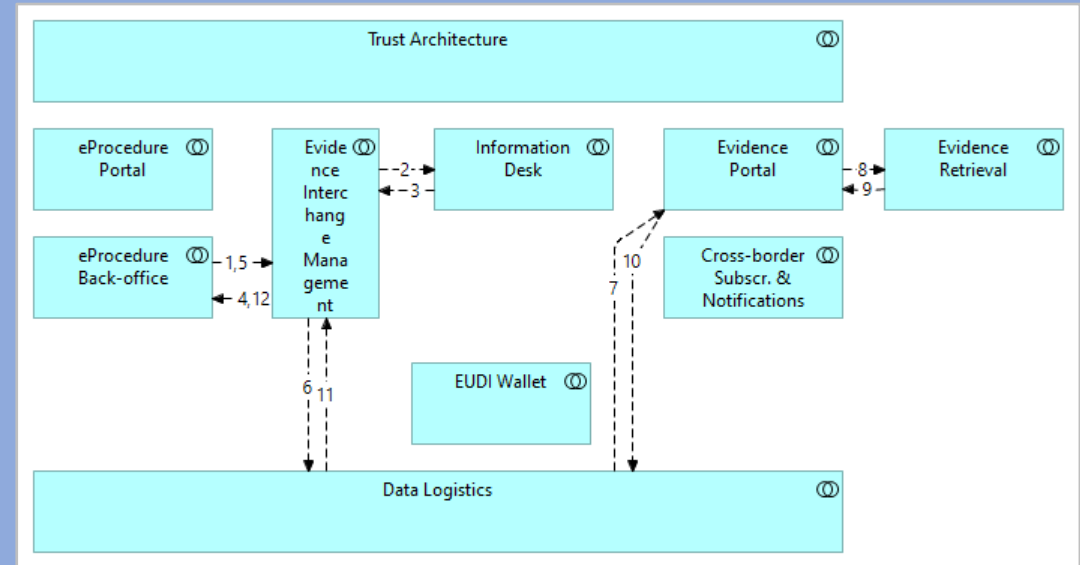


Lookup

Business Architecture

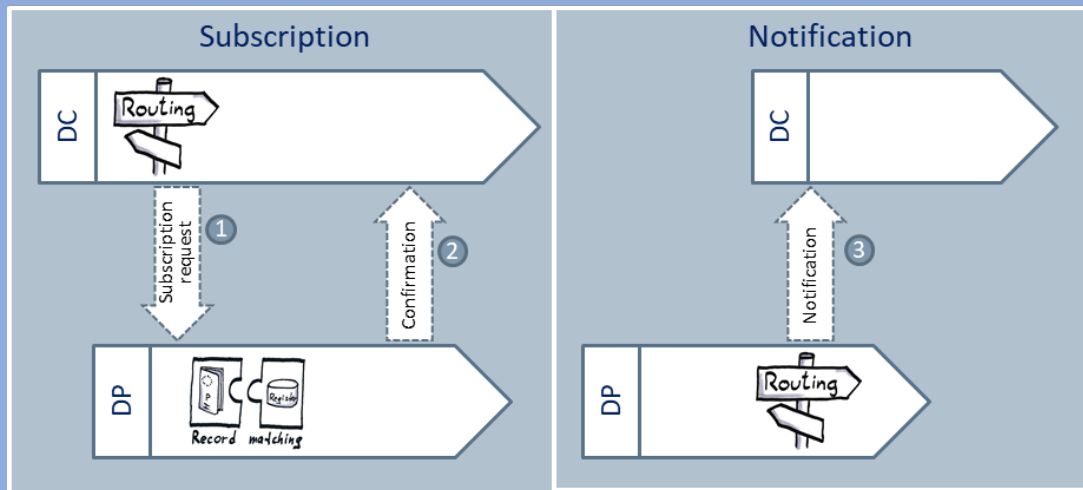


Application Architecture

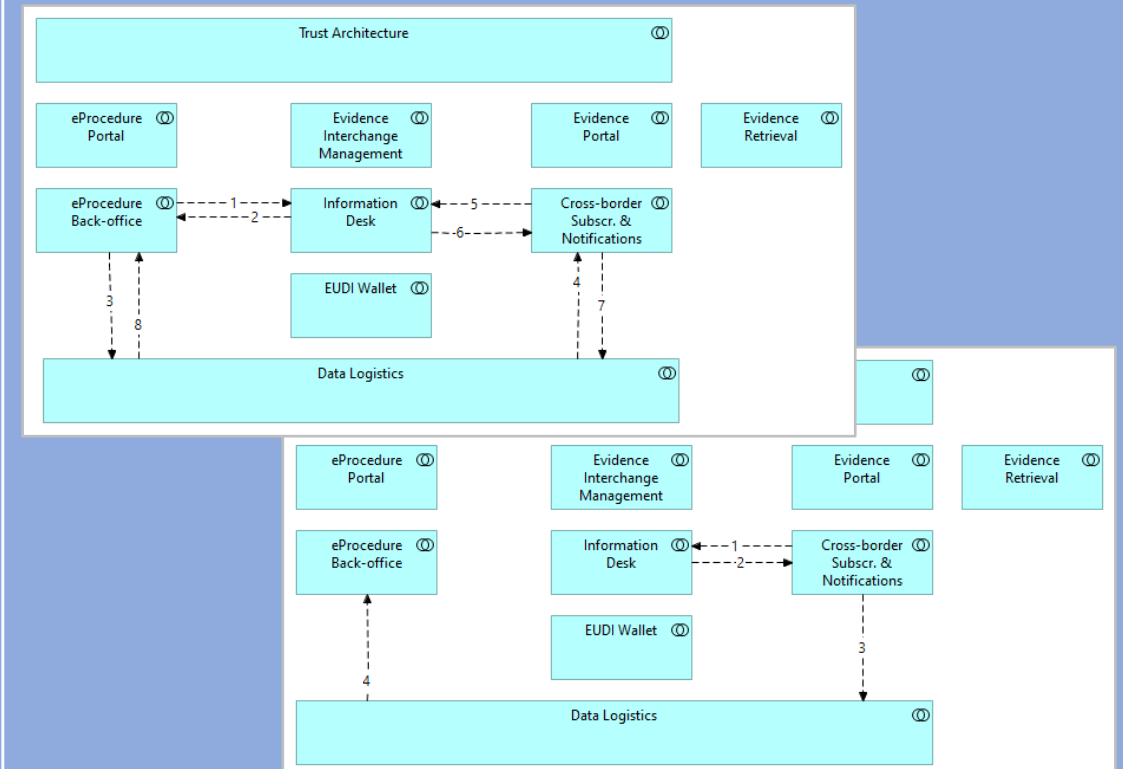


Subscription and Notification

Business Architecture

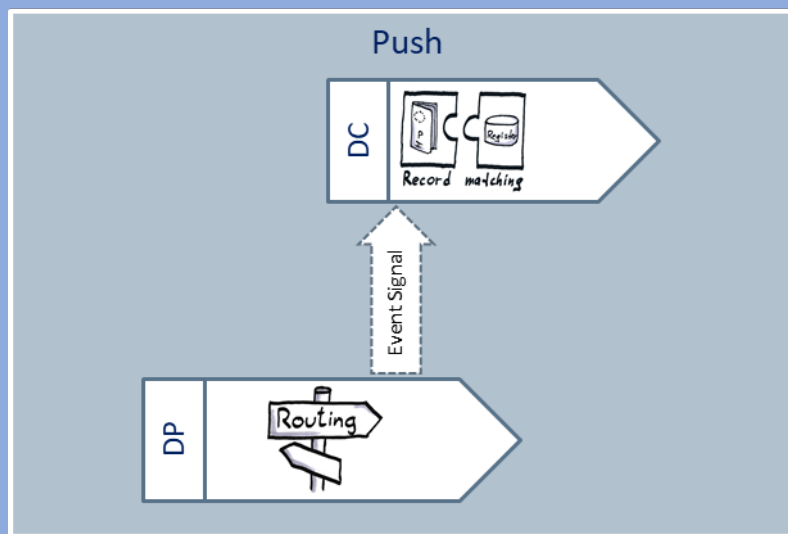


Application Architecture

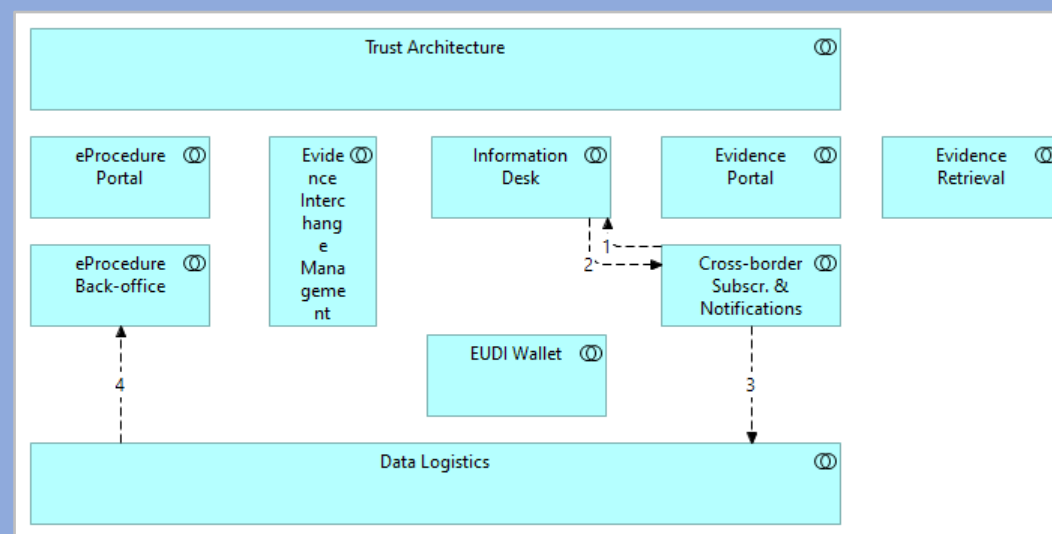


Push

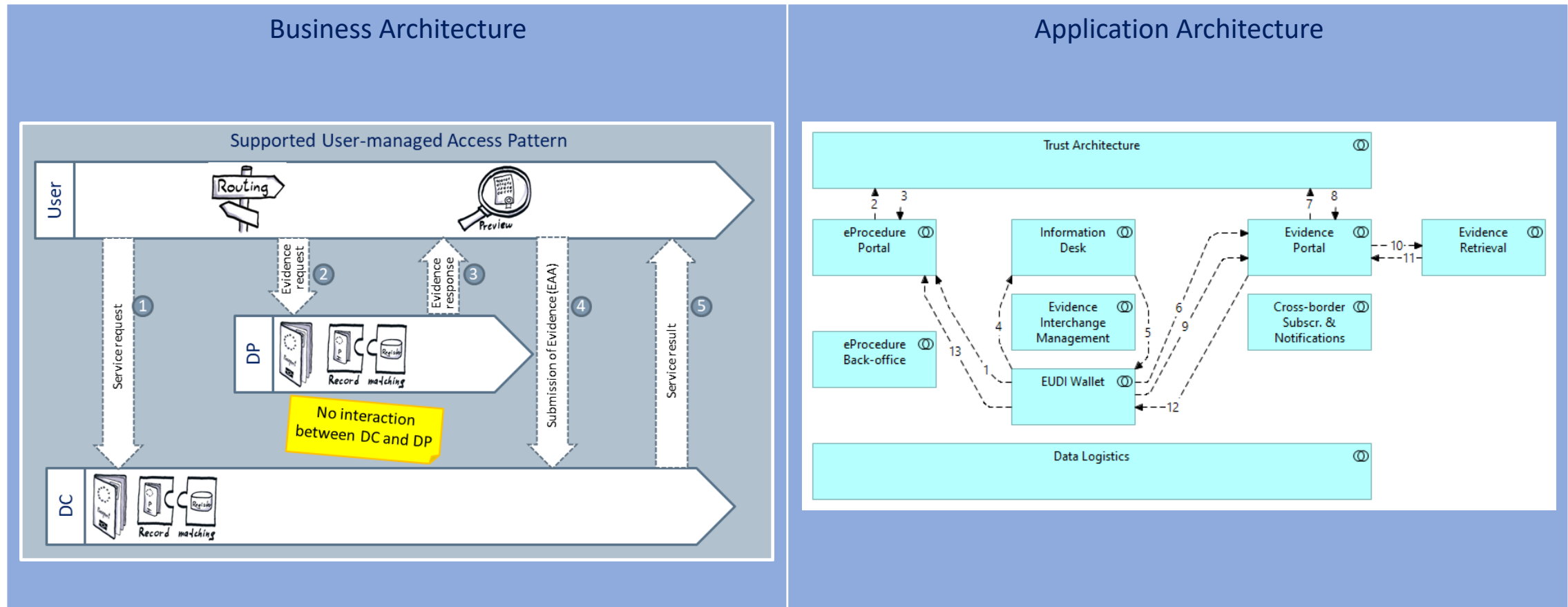
Business Architecture



Application Architecture



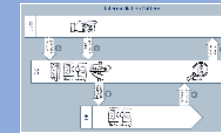
Supported User-managed Access Pattern



D2.7 Derived a Multi-Pattern Architecture from Member State Requirements

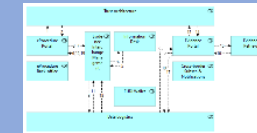
Intermediation Pattern

(~ TOOP)



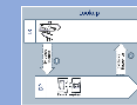
User-supported Intermediation Pattern

(~ OOTS v1)



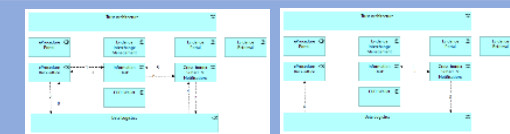
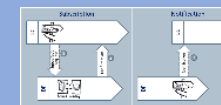
Lookup Pattern

(Request-Response between CA without user-involvement)



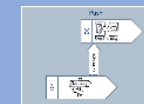
Subscription and Notification Pattern

(Updates on business-/life-events of subject)



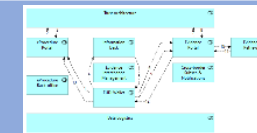
Push Pattern

(Pro-active notification, e.g. de-registration)



Supported User-managed Access Pattern

(~ EUDI Wallet)

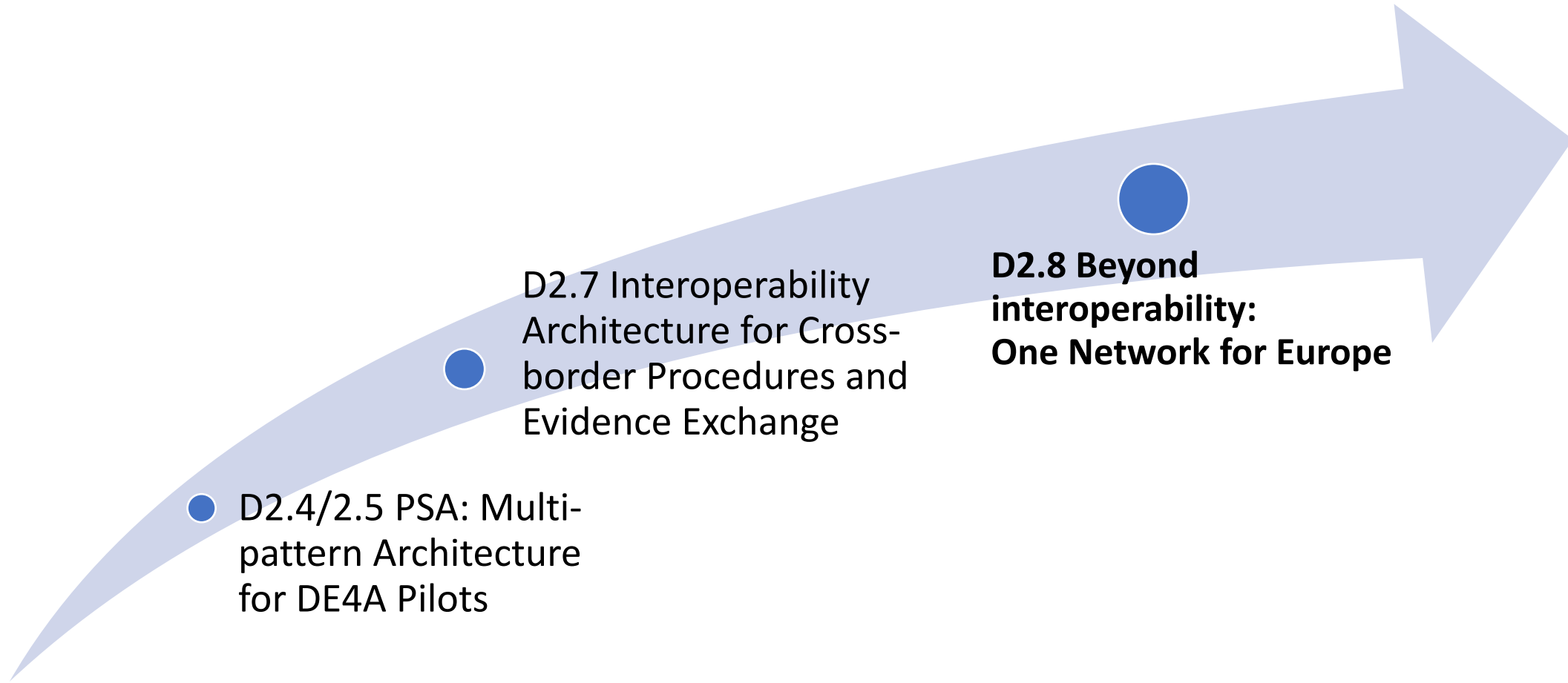


Conclusions

- The infrastructure of the Once Only Technical System, together with the EUDI-Wallet providing a solid basis for a multi-pattern interoperability architecture
- Synergies in future development
 - Semantic harmonization
 - Service discovery (cf. OOTS DSD)
 - Authorisation check (cf. depreciated OOTS Registry of Authorities, EUDI Wallet Relying Party registration)
- Remaining Challenges
 - Record Matching
 - Powers of Representation (PoR)
- Prerequisites for multi-pattern architecture
 - Cross-sectoral European governance (cf. Interoperable Europe Act)
 - Use-case specific, legal basis for cross-border exchange without direct user involvement



Contents



D2.8 Beyond interoperability: One Network for Europe (ONE)

- Long-term EU Policy Perspective on the Digital Single Market and European Interoperability
- Analysis of Interview Results
- Elements of ONE Digital Single Market Ecosystem

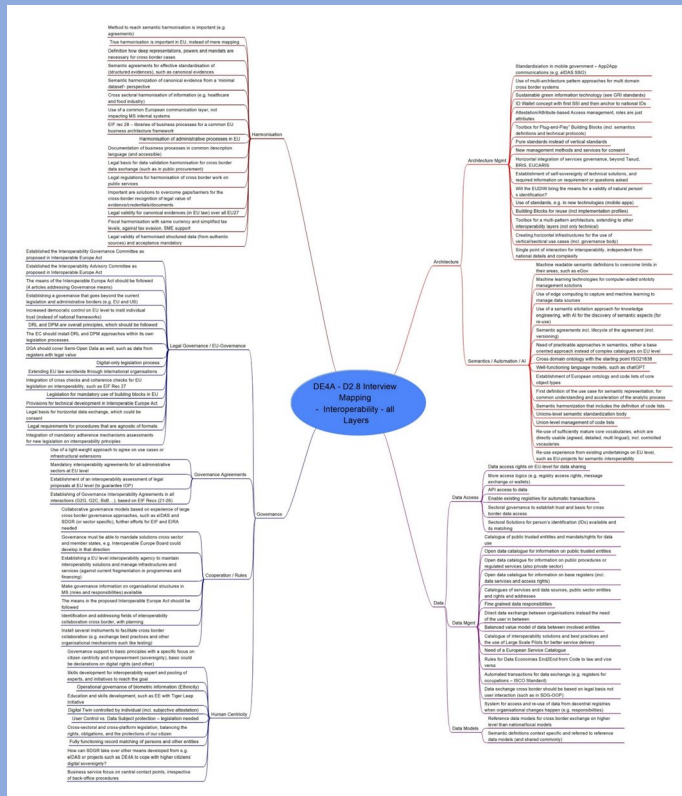


Long-term EU Policy Perspective on the Digital Single Market and European Interoperability

- Overcoming the Boundaries Between Public, Private and Third Sector
- European Ecosystem Instead of Interconnecting National Silos
- People-centricity and Sovereignty
- Inclusion
- Free Flow of Data
- Secure and Trusted Environment
- Role of the government
Regulator, executive function, stewardship of the DSM infrastructure, provider of digital key services, government as trusted party, co-investor in digital innovation, government as community leader
- Cross-sectoral Governance on European Level



Analysis of Interview Results



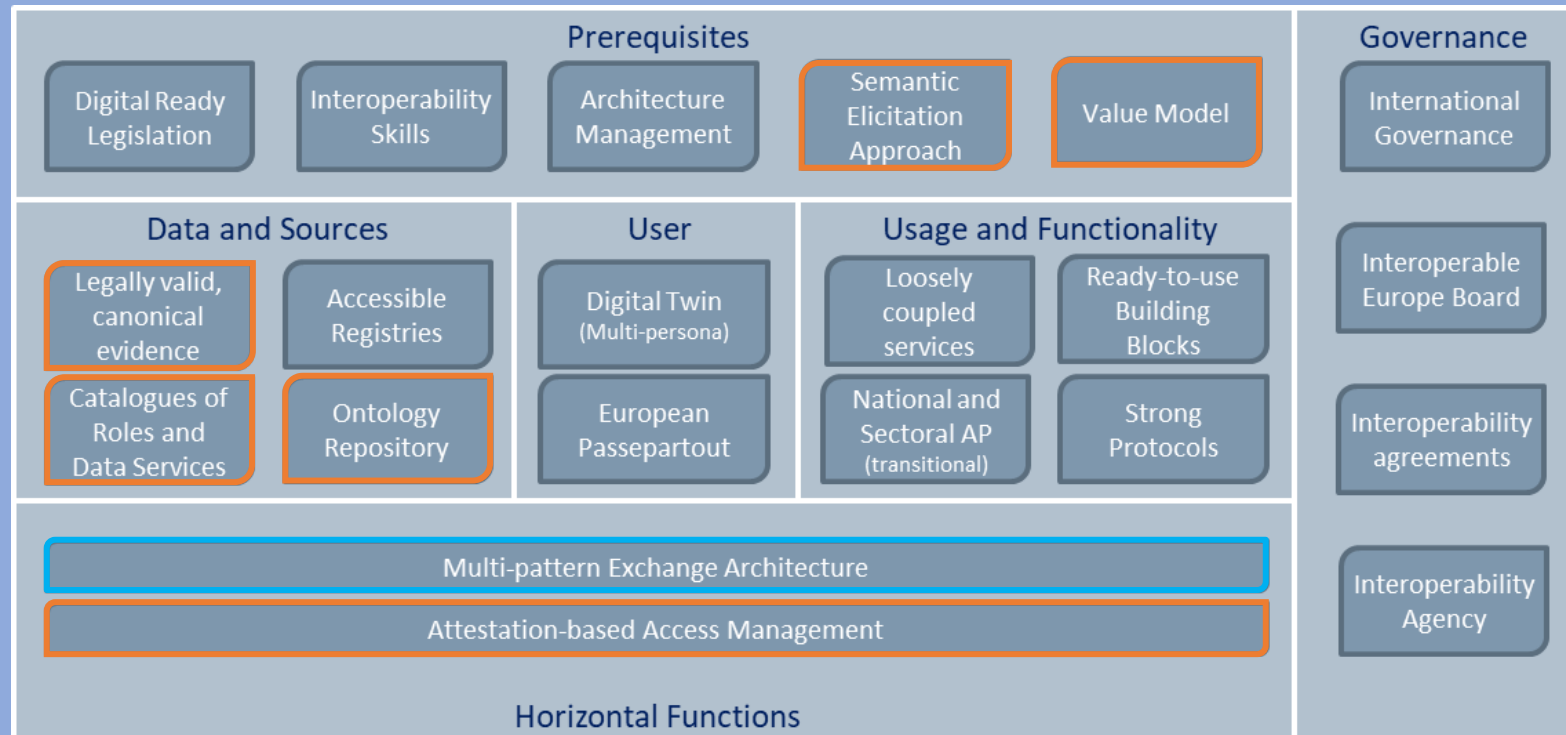
Interview question:

What is needed to create a European digital ecosystem that will maximize the growth potential of our European Digital Economy, provide an optimal breeding ground for digital start-ups and at the same time be people-centric and preserve our privacy and sovereignty as EU citizens? What solution elements must be put in place in the long-term, until and beyond 2030?

- Individual views from eight European experts, from the areas of eGovernment, Interoperability, European law and SSI
- The interviews have been conducted along the five EIF IOP layers – Legal, Technical, Semantical, Organisational and Governance
- Results are stepwise condensed and summarized in 4 main categories: harmonization, governance, architecture and data.



Elements of ONE Digital Single Market Ecosystem



Selected Key Points:

- Canonical evidence
- Management of semantics as a European endeavor
- Attestation-based Access Management, using (existing) catalogues of roles and professions
- DSM Value Model



Concluding Remarks

- Current developments, such as the OOTS, the EUDIW as well as regulatory measures such as the Interoperable Europe Act are moving Europe towards the ONE vision.
- Attaining the ONE-vision of a seamless Digital Single Market Ecosystem does depend more on conceptual and governance challenges than the lack of technological capability.



Thank you for your attention

Questions are Welcome

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