TOOP Architecture
Topics to cover

1. Cross-border evidence exchange: Conceptual view
2. Specifications and standards: Technical view
3. TOOP Reference Architecture
1. CROSS-BORDER EVIDENCE EXCHANGE: CONCEPTUAL VIEW
Actors and Roles

- **Data Consumer (DC)**: Provides a cross-border eGovernment procedure in Country A
- **User from Country B accessing procedure in Country A**
- **Data Provider (DP)**: Stores evidences issued by Country B

Evidence exchange
High-Level Flow

DC
- Identify User
- Build Evidence Request
- Request Evidence

Core OOP Services

Cross Border Authentication

DP
- Build Evidence Response
- Provide Evidence
Building Blocks

MS Services
- eIDAS Node
- SMP
- CEF EDELIVERY

Core Services
- Semantic Repository
- Criteria & Evidence Type Rule Base
- Data Services Directory
- Registry of Authorities
- CEF BDXL

MS Services
- eIDAS Node
- SMP
- CEF EDELIVERY

TOOP EDM

TOOP EDM

TOOP EDM
Detailed Flow (DC-> DP)

**DC**
- Identify User
- Extract Procedure Requirements
- Identify Required Evidence
- Discover Data Provider(s)
- Fetch Routing Metadata of DP
- Obtain Explicit Request from User
- Create and Send Evidence Request

**DP**
- Verify User (Record Matching)
- Verify Data Consumer
- Parse Evidence Request
- Receive Evidence Request

**Central Services**
- TOOP EDM
- CEF EDELIVERY
- SMP & BDXL
- Registry of Authorities
- Criteria & Evidence Type Rule Base
- Data Services Directory
- eIDAS
Detailed Flow (DP -> DC)

- **DC**
  - Integrate Response into procedure
  - Provide User Preview and obtain Acceptance
  - Parse Evidence Response
  - Receive Evidence Response

- **DP**
  - User Exists
  - Extract Evidence from Registry
  - Fetch Routing Metadata of DC
  - Create and Send Evidence Response

- **Central Services**
  - eIDAS
  - Registry of Authorities
  - Criteria & Evidence Type Rule Base
  - Data Services Directory
  - SMP & BDXL
  - TOOP EDM
  - CEF EDELIVERY
2. SPECIFICATIONS AND STANDARDS: TECHNICAL VIEW
Technical Specifications

1. Authenticate User
   - eIDAS Node
   - eIDAS SAML Profile

2. Identify Proper Evidence
   - REST API / CCCEV

3. Data Provider Query
   - RegRep v4 / BREG-DCAT-AP

4. DP Routing Information
   - REST API / OASIS BDXR

5. DC Message Submission

6. Evidence Query Request Submission
   - CEF eDelivery AS4

7. DP Message Reception

8. Verify Data Consumer
   - RegRep v4 / CPSV-AP

9. DC Routing Information
   - REST API / OASIS BDXR

10. DP Message Submission

11. Evidence Query Response Submission
   - CEF eDelivery AS4

12. DC Message Reception
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Semantic Interoperability

CERB (eCertis)

CCCEV

Data Services Directory

Breg-DCAT-AP

Semantic Repository

DCAT-AP

TOOP EDM

Evidence Request

Data Provider Metadata

Data Subject, Data Consumer

ISA² Core Vocabularies Agent, Person, Location
CCCEV: Requirements, Criteria and Evidences

Central concept is ‘Requirement’.
- A condition or prerequisite that someone requests and someone else has to meet.

- **Information Requirement** is to be seen as a request for data that proves one or more facts of the real world, or that leads to the source of such a proof. They can be understood as ‘requests for evidences’.

- **Criterion** is to be seen as a condition that will be evaluated, generally for selection purposes.

- **Constraint** is a limitation imposed on any type of requirement or on an element defined inside a requirement.
Evidence Equivalence

SDG Procedure

Pr Req. A

Pr. Req. B

Pr. Req. C

CCCEV / CERB

Criterion

Information Requirement

Constraint
EDM Overview

• The EDM is a **standards-based** model supporting the exchange of Evidences

• It defines
  – The messages exchanged
  – The information entities contained in each message
  – The transactional details

  - **Type of Query**
    - Request for Data
    - Request for Metadata
  
  - **Type of Requested Data**
    - Documents
    - Data
EDM Messages

Query Request

- A message containing the required information of a query

Information Requirements

- Data Subject
  - Legal Person, Natural Person
  - Core Person and Core Business

- Data Consumer
  - Core Agent Vocabulary

- Procedure

- Requirement
  - Core Criterion Core Evidence Vocabulary

- Type of Query
  - Data Request
  - Document Request
  - Document Reference Request

- Query information on Data
  - DCAT, CCCEV

- OASIS RegRep v4 Syntax Binding
EDM Messages
Query Response

Query Response
- A message containing the response information to a query

Information Requirements
- Data Provider
  - Core Agent Vocabulary
- Response Type
  - Contained Response
  - Referenced Response
- Response Metadata
  - DCAT, CCCEV
- OASIS RegRep v4 Syntax Binding
Find out more

• TOOP Solution Architecture
3. TOOP REFERENCE ARCHITECTURE
TOOP-RA Overview

• Architecture Drivers
  – Requirements and Stakeholders

• Business Architecture
  – A representation of business concerns through:
    ❖ capabilities,
    ❖ end-to-end value delivery,
    ❖ information
    ❖ organizational structure
    ❖ relationships among these business elements.

• IS Architecture
  – how the Business Architecture is realized by the Information Systems.

• Technology Architecture
  – Deployment Topologies of Components
  – Network and Communications

• Cross-Cutting Concerns
  – Security Architecture
  – Trust Establishment
Operational Process

1. Identify / Authenticate User
2. Identify required evidence
3. Find Data Provider(s)
4. Check feasibility of request
5. Get consent form
6. User to retrieve Evidence
7. Retrieve Evidence
8. Process Evidence
9. Provide Evidence
   - Check Legitimacy of Evidence Request
   - Authorize User to Access Evidence
   - Extract Data of User
   - Issue Evidence to Requesting CA

Public Service

User

Data Provider(s)

Data Provider

Data Service

Public Organisation

Data Consumer
Certificate Based 
End to end Trust Establishment

Data Consumer
- Data Consumer System
  - Seal the TOOP Data Request
- Data Consumer's Certificate
  - used for sealing

Data Provider
- Data Provider System
  - Verify seal of the TOOP Data Request
Brokered Trust Establishment Using AS4 Gateways (ERDS)
Questions?