



Interoperability Solutions for European Public Administrations - ISA

European Commission ISA Actions Trusted information exchange

Improving semantic interoperability in European eGovernment systems



Promoting semantic interoperability amongst the European Union Member States

When is this action of interest to you?

You work in the area of government metadata management and want to check upon and possibly reuse semantic assets (metadata and/or reference data), understand semantic interoperability requirements, approaches, tools, lessons learnt and case studies. You want to share your own semantic assets.

Which solutions can ISA offer to you?

Since its launch, the SEMIC action has produced a number of solutions.

The Asset Description Metadata Schema (ADMS) is a simple specification used to describe interoperability solutions, making it possible for everyone to search and discover them. ADMS allows:

- **Solution providers**, such as standardisation organisations and public administrations, to describe their interoperability solutions using the standardised descriptive metadata terms of ADMS, while keeping their own system for documenting and storing them;
- **Content aggregators**, such as Joinup, to aggregate such descriptions into a single point of access;
- **ICT developers** to more easily explore, find, identify, select and obtain interoperability solutions from a single point of access.

W3C has published the ADMS specification as a Working Group Note.

Some of the known implementations of ADMS are:

- **Joinup**: a single-access point to more than 4000 interoperability solutions included in the collections of more than 40 standardisation bodies, public administrations and open source software repositories. The interoperability solutions are described using ADMS, and all import, export, content management and search features are also based on ADMS. The owner of Joinup is the European Commission.
- **Metadata Registry (MDR)**: supports an ADMS-compliant RDF export for MDR Named Authority Lists. It is owned by the Publications Office of the EU.
- **XRepository**: a semantic asset repository owned by KOSIT, the German federal IT standards coordination office, which has implemented an ADMS export feature.

Core vocabularies are simplified, re-usable, and extensible data models that capture the fundamental characteristics of an entity in a context-neutral fashion.

Public administrations can use and extend the Core Vocabularies in the following contexts:

- **Development of new systems**: the Core Vocabularies can be used as a default starting point for designing the conceptual and logical data models in newly developed information systems.
- **Information exchange between systems**: the Core Vocabularies can become the basis of a context-specific data model used to exchange data among existing information systems.

- **Data integration:** the Core Vocabularies can be used to integrate data that comes from disparate data sources and create a data mesh-up.
- **Open data publishing:** the Core Vocabularies can be used as the foundation of a common export format for data in base registries like cadastres, business registers and service portals.

The following four **Core Vocabularies** have been developed under ISA action 1.1 in an open and inclusive process so far:

- **Core Person:** captures the fundamental characteristics of a person, e.g. the name, the gender, the date of birth, the location.
- **Registered organisation:** captures the fundamental characteristics of a legal entity (e.g. its identifier, activities) which is created through a formal registration process, typically in a national or regional register.
- **Core Location:** captures the fundamental characteristics of a location, represented as an address, a geographic name or geometry.
- **Core Public service:** captures the fundamental characteristics of a service offered by public administration.

The Core Business Vocabulary has been formally published on the W3C standards track. It has been revised and renamed as the Registered Organisation Vocabulary (RegOrg).

Five pilots were carried out in collaboration with public administrations in several EU Member States. The pilots were intended as a proof-of-concept to demonstrate the applicability of the Core Vocabularies.

Known implementations include:

- **OSLO project:** The standards of the Flemish Open Standards for Local Administrations in Flanders (OSLO) project are local extensions of the Registered Organisation, Core Person, Core Location and Core Public Service vocabularies created at European level.
- **Flemish Government:** The Flemish Government is piloting the Core Public Service Vocabulary (the OSLO vocabulary) to publish its intergovernmental product and service catalogue as Linked Data.
- **e-CODEX:** The Core Person Vocabulary is partly used in the e-Document formats that implement the European Payment Order procedure developed by the e-Justice Communication via the Online Data Exchange (e-CODEX) large-scale pilot.
- **OpenCorporates.com:** A Registered Organisation Vocabulary-compliant RDF description is given of all

The **DCAT Application Profile for data portals (DCAT-AP)** provides a common specification for describing public sector datasets in Europe to enable the exchange of descriptions of datasets among data portals.

The DCAT-AP makes the following possible:

- Data catalogues can describe their dataset collections using a standardised description, while keeping their own system for documenting and storing them.
- Content aggregators, such as the pan-European data portal, can aggregate such descriptions into a single point of access.
- Data consumers can more easily find datasets from a single point of access.

W3C published the DCAT specification as a recommendation.

What is this action about?

The environment in which data exchange takes place amongst Member States is very complex, creating many barriers and challenges to the exchange of data during the execution of European Public Services. These barriers include divergent interpretations of the data, lack of commonly agreed and widely used metadata, absence of universal reference data (e.g. code lists, taxonomies), the multilingual challenge, etc. Due to these pressures, semantic interoperability becomes an important element in many eGovernment and interoperability national agendas and interesting experience and lessons-learned can already be shared at a European level. The Action tries to reduce the consequences of semantic interoperability conflicts.

The action relies on Joinup (funded by ISA) as a platform to support the collaborative development of Core Concepts and Vocabularies, the search and re-use of interoperability assets with the use of enhanced indexing and browsing functionalities, and its promotional activities.

What are the objectives?

The main objectives include:

- Documenting what is available in each Member State with regards to metadata policies and the management of semantic interoperability assets and raising awareness on the importance of metadata management;
- Identifying opportunities for alignment on semantic definitions, metadata and reference data sources with special focus on identification and definitions of Core Concepts/ Vocabularies;
- Promoting, share and reuse of semantic assets, experiences and tools and facilitating agreements in key areas;
- Promoting the Asset Description Metadata Schema (ADMS) as a common specifications for enabling federation of repositories storing semantic assets and OSS.

What are the benefits?

- Access to a European repository of reusable semantic interoperability assets (via the Joinup platform).
- Forum to identify opportunities for alignment at European level.
- Reduced development costs due to reuse during the initial development phase and due to less interoperability conflicts while integrating systems or providing cross-agency/domain/country services.
- A platform and central point of reference for collecting, organizing, storing and making available semantic interoperability assets which have been created by various EU entities.
- An infrastructure that allows the Member States and the Commission services to identify conflicts, overlaps, duplication of work and possibilities for metadata and semantic assets.

Case Study - What do our users say ?

The Finnish Interoperability Portal

In autumn 2011 the Finnish Ministry of Finance launched Yhteentoimivuu.fi (Finnish for interoperability) – a new portal for sharing interoperability assets among public administrations in Finland. The portal reuses the open-source software from the former SEMIC.EU platform, which has been made publicly available by the former OSOR.EU. In the meantime both platforms have merged to Joinup.

What are the benefits?

- Yhteentoimivuu.fi enables the Finnish public administrations to share and reuse already existing semantic interoperability assets instead of re-inventing new ones.
- By reusing the technology from SEMIC.EU it was possible to reduce the development costs and risks compared to building a repository from scratch.

Which challenges did you face during the implementation phase?

The main challenge is to ensure that Yhteentoimivuu.fi has an impact on interoperability of electronic public services in Finland. Besides technical implementation challenges, decisions needed to be made on the nature of assets, their lifecycle and processes and the format in which the assets would be made available on the platform.

Have you reused existing software/tools/building blocks?

We used the SEMIC.EU platform available on the former OSOR.EU platform (in the meantime both platforms have merged under the new name Joinup). A key feature of SEMIC.EU is an ebXML Registry/ Repository for managing so called 'Semantic Interoperability Assets'. SEMIC.EU also contains a forum to enable operating a community network for eGovernment projects and initiatives.

Do you have any recommendations for other public administrations that would like to implement your measure?

Any national or regional government should be aware that the architecture models, data models, taxonomies, code lists, software, etc. that it uses are of considerable value and should therefore be managed as interoperability assets. Consequently, governments should encourage public administrations to share and reuse these assets of interoperability at a level that surpasses the individual public administration.

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