Semantic interoperability for public administrations in Europe – challenges and solutions
SEMIC.EU - Semantic Interoperability Centre Europe

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1. Semantic challenges and solutions
2. 180 seconds – SEMIC.EU overview
3. Semantic Interoperability in European eGovernment
4. SEMIC.EU – Clearing Process and Repository
5. Next steps - SEMIC.EU Roadmap
Semantic challenges on the way to the „Semantic days“

→ Did I pick the right airport for my travel destinations? (is there only one Stavanger in Norway / worldwide?)

→ What does „BRU“, „CPH“ and „SVG“ mean?

→ How is ensured, that my luggage is transferred correctly?
Some solutions

World Airport Codes,
by International Air Transport Association (IATA)
Some solutions

Place Names Database
by Estonian Government
Semantic challenges and solutions

› Semantics are concern of various academic disciplines such as linguistics, philosophy, anthropology, etc.

› In the last decade it became obvious, that the enormous amount of data gathered on IT systems could not be handled effectively anymore. That was the day, when Semantics entered computer science

› Today, semantic technologies are used to provide an abstraction layer above existing IT technologies that enables
  › bridging and interconnection of data, content, and processes
  › meaningful data exchange
  › Information extraction
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SEMIC.EU – what is it?

- SEMIC.EU stands for **Semantic Interoperability Center Europe**
- **Open platform** as a single point of contact and information for semantic interoperability in Europe
- **Collaborative tool** permitting the sharing and reuse of semantic assets between European public administrations
- **Service Center** for European administrations and eGovernment projects
- Managed by the **IDABC programme** of the European Commission
IDABC – a European Commission programme

IDABC is a programme by the European Commission to support the delivery of cross-border public sector services to citizens and enterprises in Europe.

Current IDABC programme will end in Dec 2009 and will be followed by the ISA programme.

ISA stands for Interoperability solutions for European public administrations and will last for 6 years (Dec 2015).

Adopted by the EP the 22nd April and Final Adoption Council of Ministers on the 12th June.

Due consideration should be given to the European Interoperability Strategy and the European Interoperability Framework.

Programme should ensure the availability of common frameworks, common services and generic tools in support of cross-border and cross-sector interaction between European public administration.

Total Budget of €164.1 million.
European Commission initiatives in IDABC / ISA

ARTEFACTS & INITIATIVES

EIS

EIF

Architecture Guidelines

Services: SEMIC.EU, NIFO, ...

LIFECYCLE PROCESSES

Vision, strategy, priorities & steering

Conception

Implementation

Operation

22 May, 2009
reuse
community
interoperability
Methodology
couching
What is an (Semantic Interoperability) Asset?

→ A set of specifications and documentation, which enable meaningful data exchange (in pan European eGovernment projects) between administrations / organisations

→ A semantic interoperably asset is a container structure, which consists of
  
  → Technical specifications and documentations (both based on SEMIC.EU quality framework)
  
  → Licence informations (based on SEMIC.EU licencing framework)

→ In practical terms – data models, controlled vocabularies, codelists, taxonomies, ontologies, etc.
**SEMIC.EU - scope**

- **Services**
  Coaching, consulting and support to develop Interoperability Assets

- **Collaboration**
  Exchange with domain experts on relevant questions within pan-european data exchange

- **Online Platform**
  Communication platform and repository for interoperability assets
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Interoperability Layers

**technical interoperability**
using open interfaces, standards, and protocols so that the data can be interpreted at A and B

**semantic/syntactic interoperability**
the meaning of data is the same at both A and B; mapping should preserve meaning as much as possible

**organisational interoperability**
the work processes and administrative collaboration are compatible in order to reach the business goals
Semantic Interoperability – practical experiences

Adresse
- Strasse
- Hausnummer
- Hausnummerbuchstabe
- Zusatzziffer
- Teilnummer der Hausnummer
- Stockwerkwohnungsnummer
- Adressierungszusätze
- Postleitzahl
- Wohnort
- Zusatzangaben

Adresse
- Strasse
- Hausnummer
- Stiege
- Türnummer
- Postleitzahl
- Wohnort

adress
- County
- Street
- House number
- Village
- City

Beethovenallee 66
Vienna

Beethovenallee 66 a
1010 Vienna
GKZ 0345345

Beethovenallee
GKZ: 0345345

Beethovenallee 66
PLZ: 1010

22 May, 2009
Typical problems of semantic interoperability

- Typical syntactic problems
  - Identifier conflicts
  - Data typ conflicts
  - Conflicts due to assymetrical or missing information

- Typical semantic problems
  - Scaling conflicts
  - representation conflicts
  - Conflicts to different aggregation levels
  - incompatibility
If you start „one by one“
... you end up with ...

Total number of bilateral interfaces between 27 member states: 702

For just one administrative procedure!
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SEMIE.EU – Clearing as the Core Process

- Objectives of the Clearing Process
  - Collecting interoperability assets throughout Europe
  - Enabling reuse of interoperability assets
  - Harmonisation of assets
SEMIC.EU – Clearing as the Core Process

→ The Clearing process

→ defines process steps for community based development

→ the improvement of semantic interoperability assets

→ guides users on how to provide and improve their assets

→ Publishes the results of all process steps in the repository
Asset collection, improvement, harmonisation

- Asset development and coordination with projects
- Improvement of the registered asset
- Harmonisation with other European concepts

**Registration**
- Consistency check by Clearing Process Manager

**Maturity**
- Review and quality improvement by Clearing Process Manager and community.

**Conformance**
- Review by expert groups
Asset Clearing and Repository

Semantic assets → Clearing Process → SEMIC.EU repository

Registration → Maturity → Conformance
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Roadmap – SEMIC.EU

(1) Projects, projects, projects

(2) Launch of the SEMIC.EU services

(3) Methodology

(4) Community building

(5) Cross sector synergies

(6) Federation of Repositories

(7) Single point of contact for semantic interoperability in Europe
SEMIC.EU – Get Involved

- SEMIC.EU is constantly growing
- Publish and share your assets
- help to improve semantic interoperability in European eGovernment
- Re-using assets helps to improve quality and is an efficient and easy way of developing it further

Next Steps - Visit, Register and start collaborating through http://www.semic.eu or contact us on contact@semic.eu
Thank you for your attention

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