

# 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)

**Airports starting with : B - Mozilla Firefox**

http://www.world-airport-codes.com/alphabetical/airport-name/b.html

Trådlös Sone | **Airports starting with : B** | Tere tulemast EKI kohanimeandmebaasi

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A - B - C - D - E - F - G - H - I - J - K - L - M - N - O - P - Q - R - S - T - U - V - W - X - Y - Z

Airport name	Airport Code	Country Name	Country Abbrev.	World Area Code
Ba	BFJ	Fiji	FJ	821
Babelegi Heliport	HBL	South Africa	ZA	562
Babelthuap/Koror	ROR	Palau	PW	5
Babimost	IEG	Poland	PL	467
Babo	BXB	Indonesia	ID	832
Babolsar	BBL	Iran	IR	632
Babullah	TTE	Indonesia	ID	832

Suchen: brus | Abwärts | Aufwärts | Hervorheben | Groß-/Kleinschreibung

**Brussels Airport (BRU) Details - Belgium - Mozilla Firefox**


http://www.world-airport-codes.com/belgium/brussels-airport-1072.html

**Brussels Airport (BRU) Belgium** User's Rating ★★★★★

**Longitude** : 4° 29' 9" E (?)  
**Latitude** : 50° 54' 8" N (?)  
**World Area Code** : 409 (?)  
**GMT Offset** : +2.0 (?)  
**Telephone** : +32 (0) 900 7 0000 (?)  
**Fax** : Unknown (add)  
**Email** : info@brusselairport.be (?)  
**Website** : Visit Website (?)

**Fly Czech airlines**  
 Bestill billige billetter hos oss. Alltid lave priser!  
[www.supersaver.no](http://www.supersaver.no)

Ads by Google



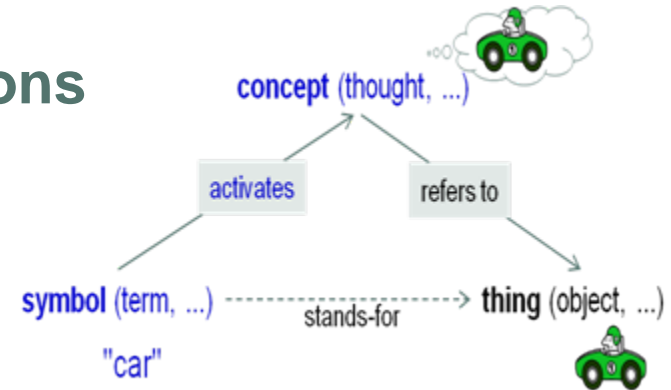
Karte | Satellit | Hybrid

Kartendaten © 2009 Esri, DeLorme, GeoEye, ...



## 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?

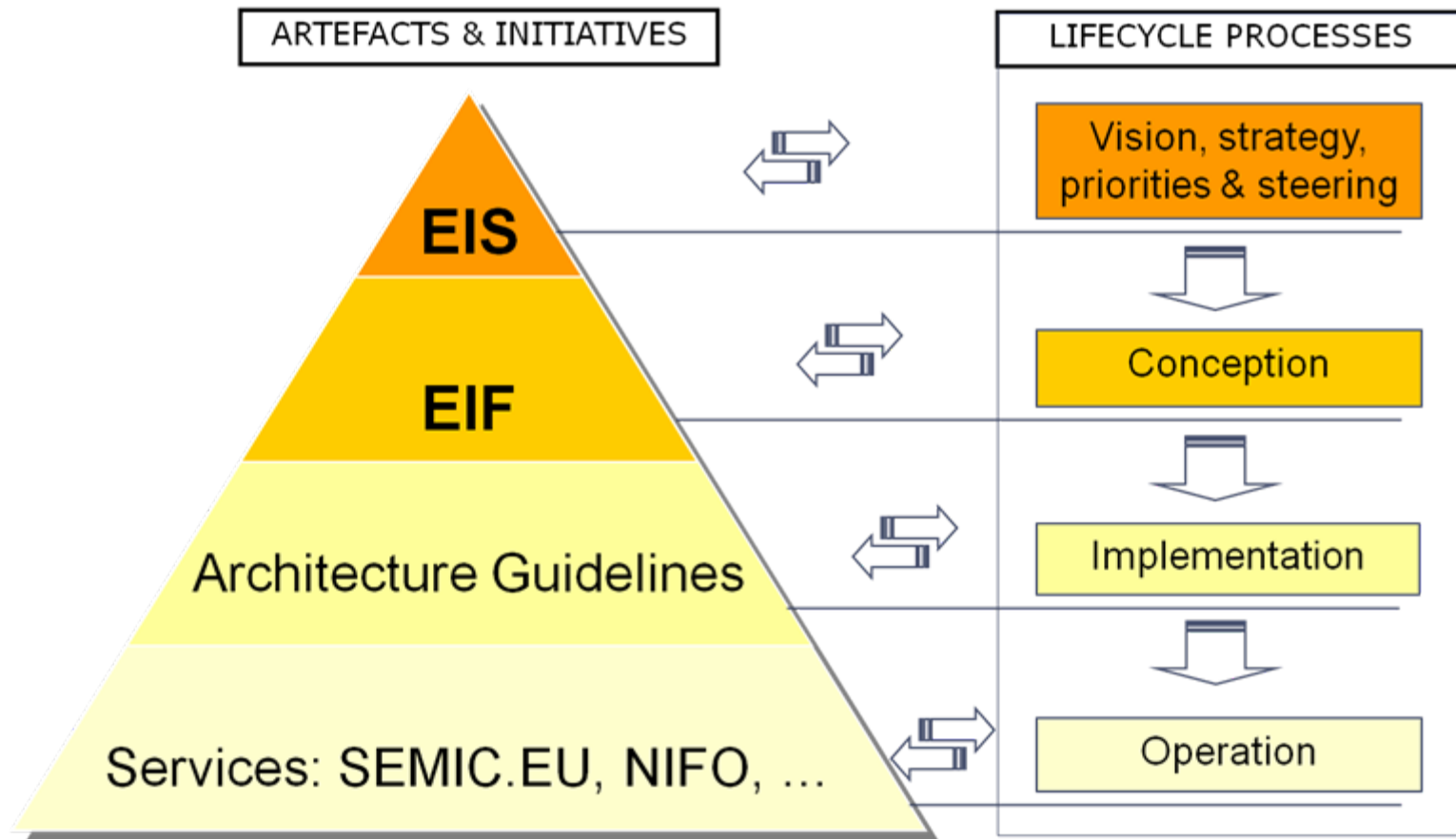
- SEMIC.EU stands for **Semantic Interoperability Center Europe**
- **Open platform** as a single point of contact and information for semantic interoperability in Europe
- **Collaborative tool** permitting the sharing and reuse of semantic assets between European public administrations
- **Service Center** 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 22<sup>nd</sup> April and Final Adoption Council of Ministers on the 12<sup>th</sup> 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



## Back to SEMIC.EU

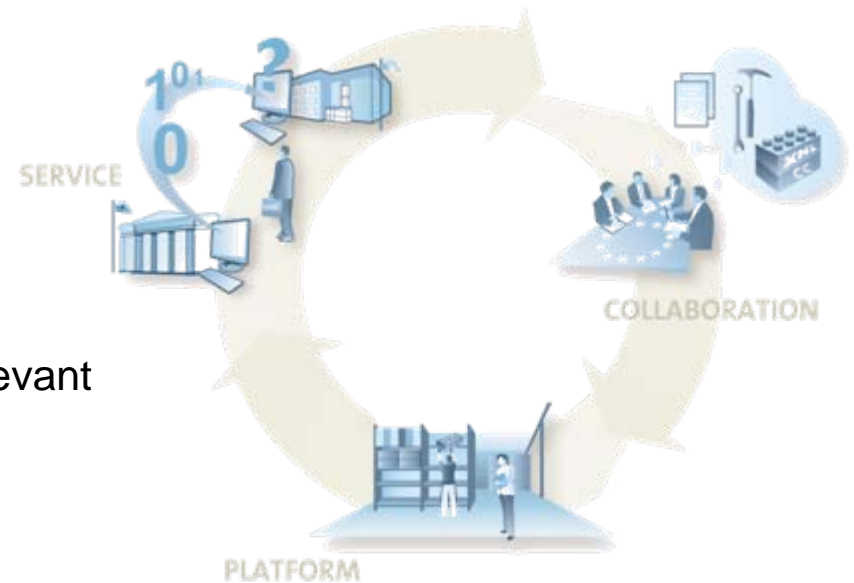


## What is an (Semantic Interoperability) Asset?

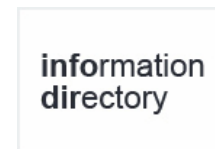
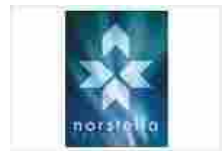
- A set of specifications and documentation, which enable meaningful data exchange (in pan European eGovernment projects) between administrations / organisations
- A semantic interoperability asset is a container structure, which consists of
  - Technical specifications and documentations (both based 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

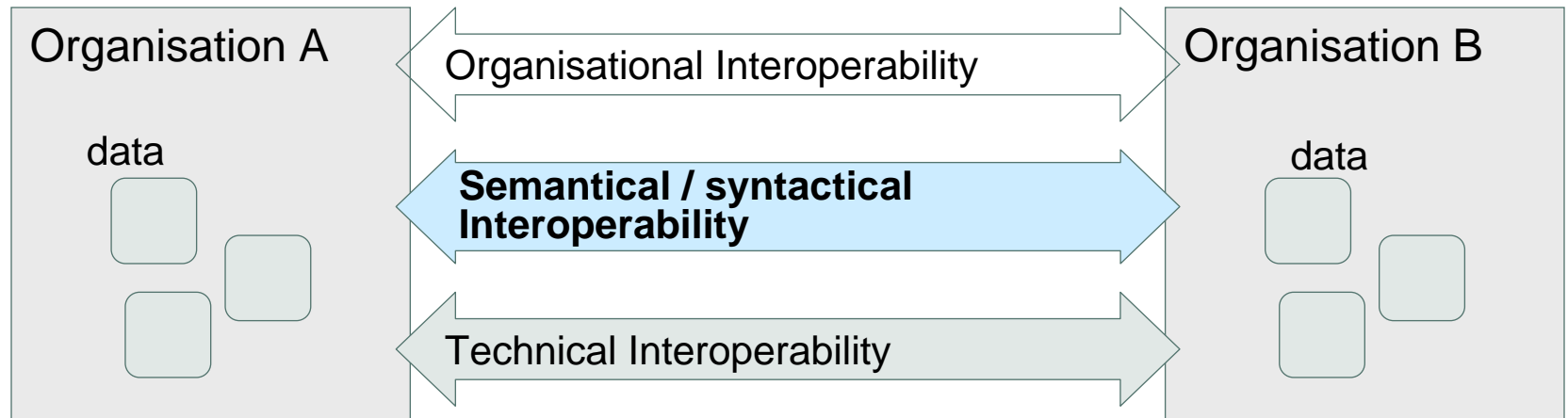


## SEMIC.EU network



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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



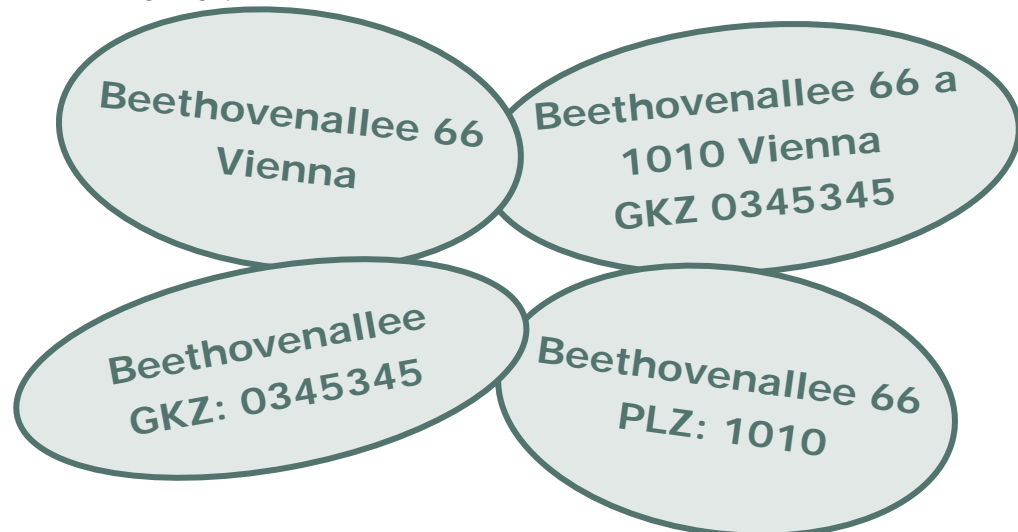
### Adresse

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



### adress

- County
- Street
- House number
- Village
- City



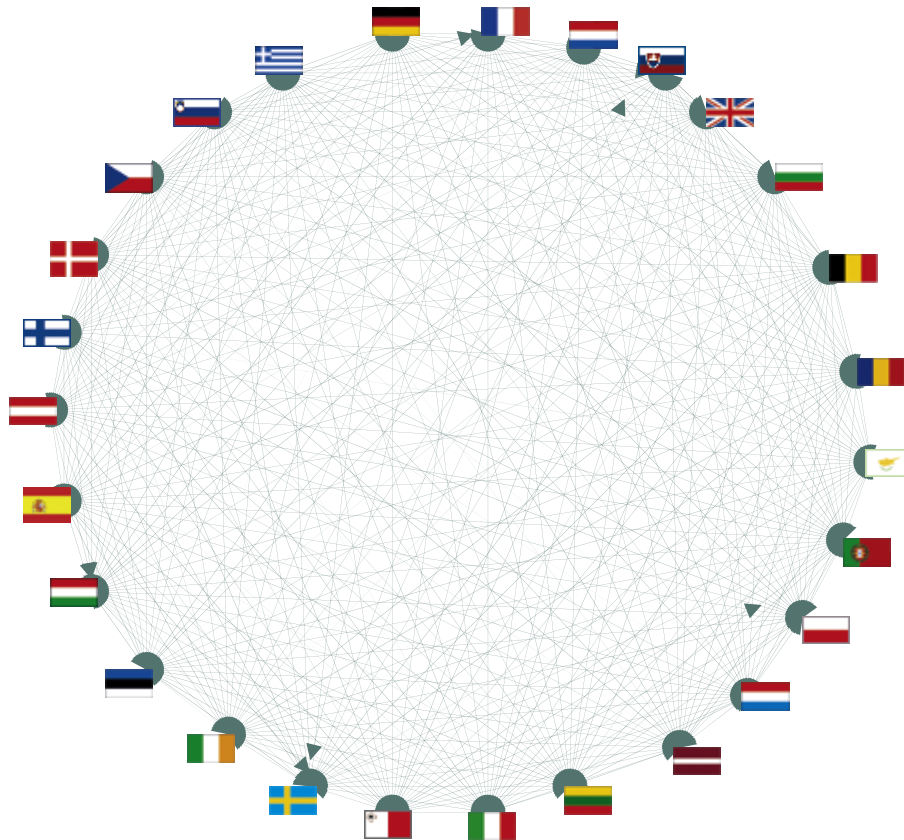
## Typical problems of semantic interoperability

- 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 ...



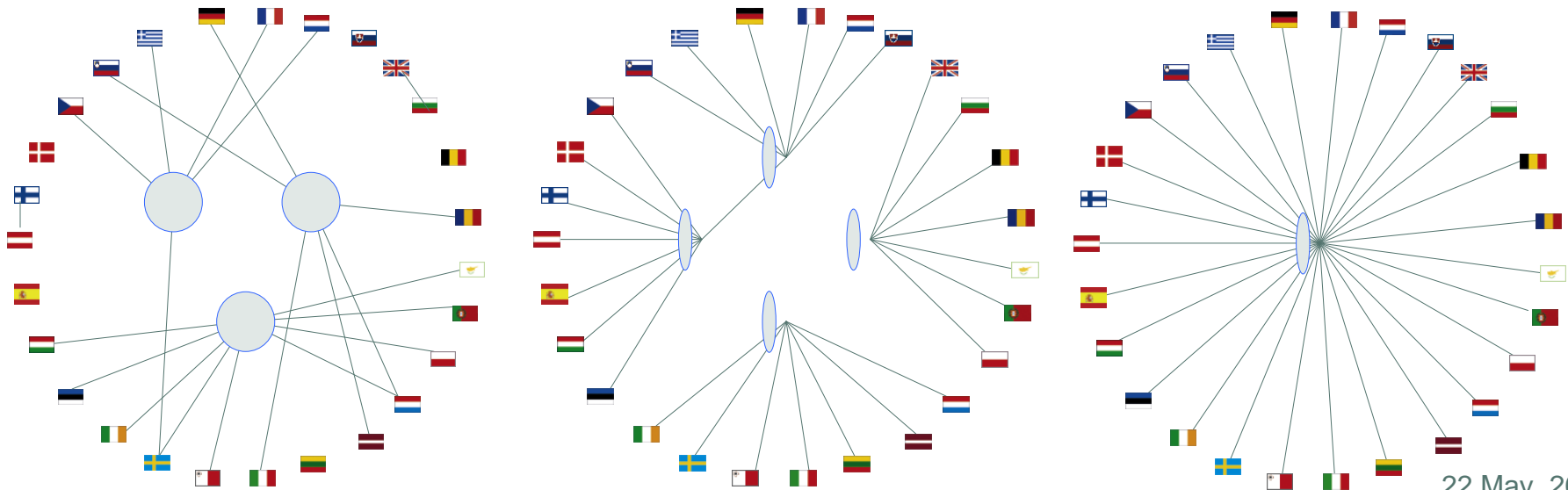
**Total number of bilateral interfaces between 27 member states: 702**

**For just one administrative procedure!**

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## SEMIC.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

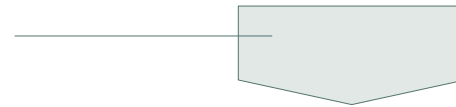
Asset development and coordination with projects



**Registration**

consistency check by Clearing Process Manager

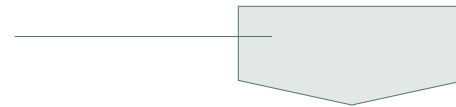
Improvement of the registered asset



**Maturity**

Review and quality improvement by Clearing Process Manager and community.

harmonisation with other European concepts



**Conformance**

Review by expert groups

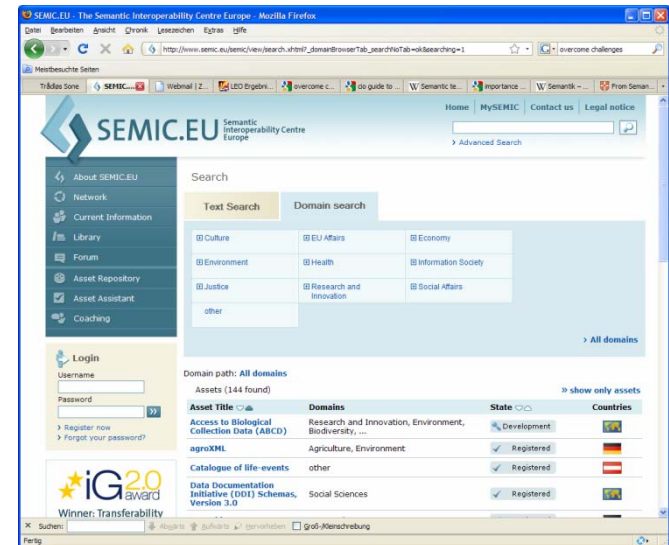
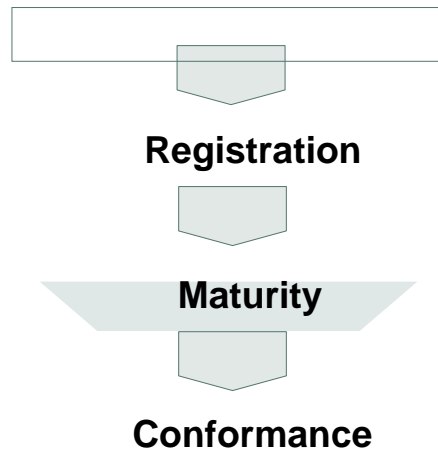
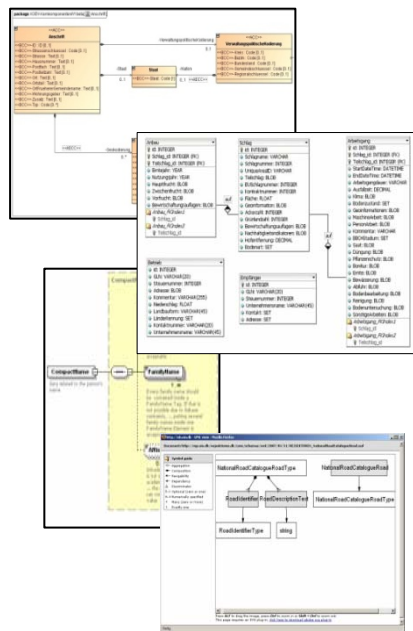


# Asset Clearing and Repository

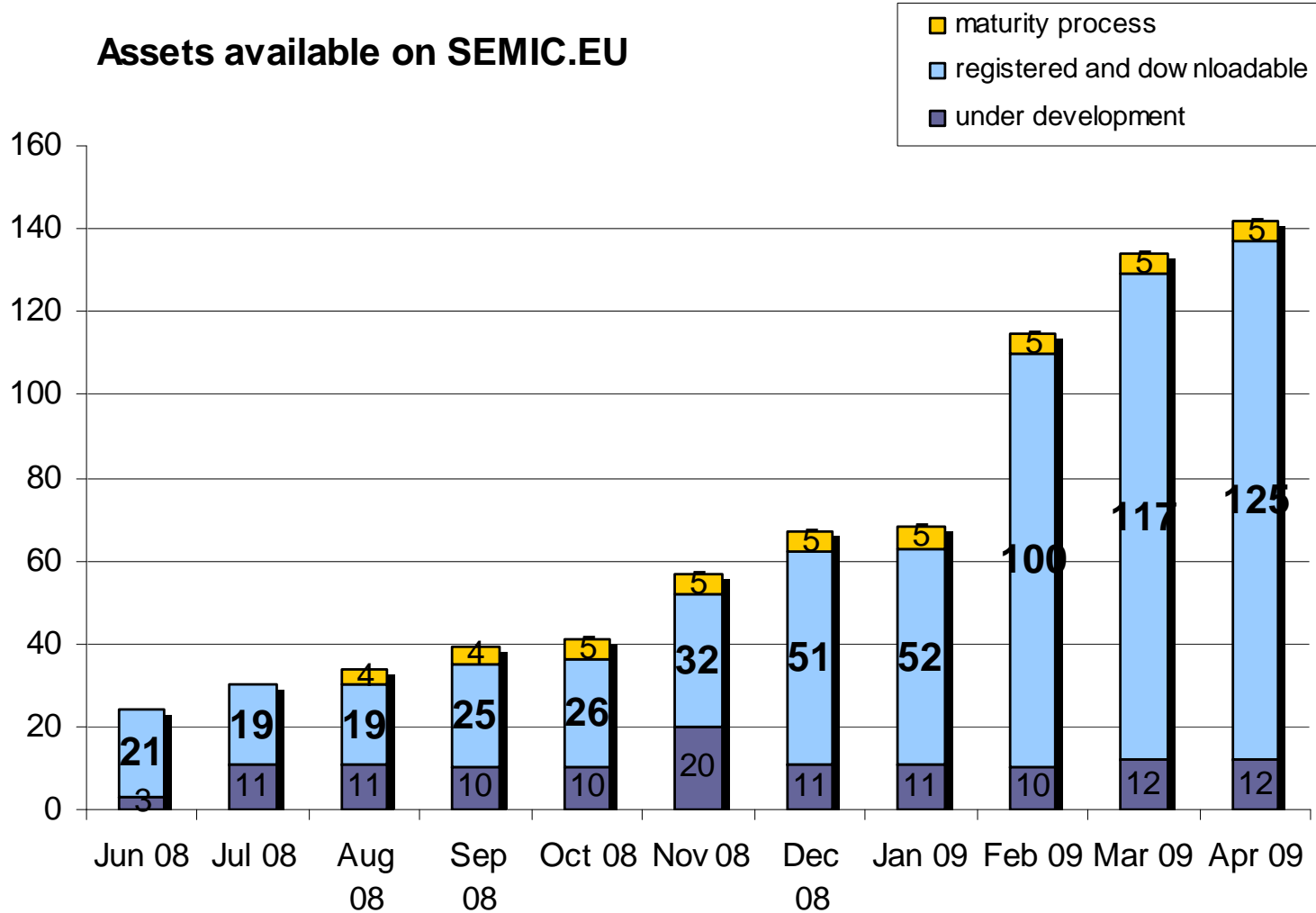
Semantic assets

Clearing Process

SEMIC.EU repository

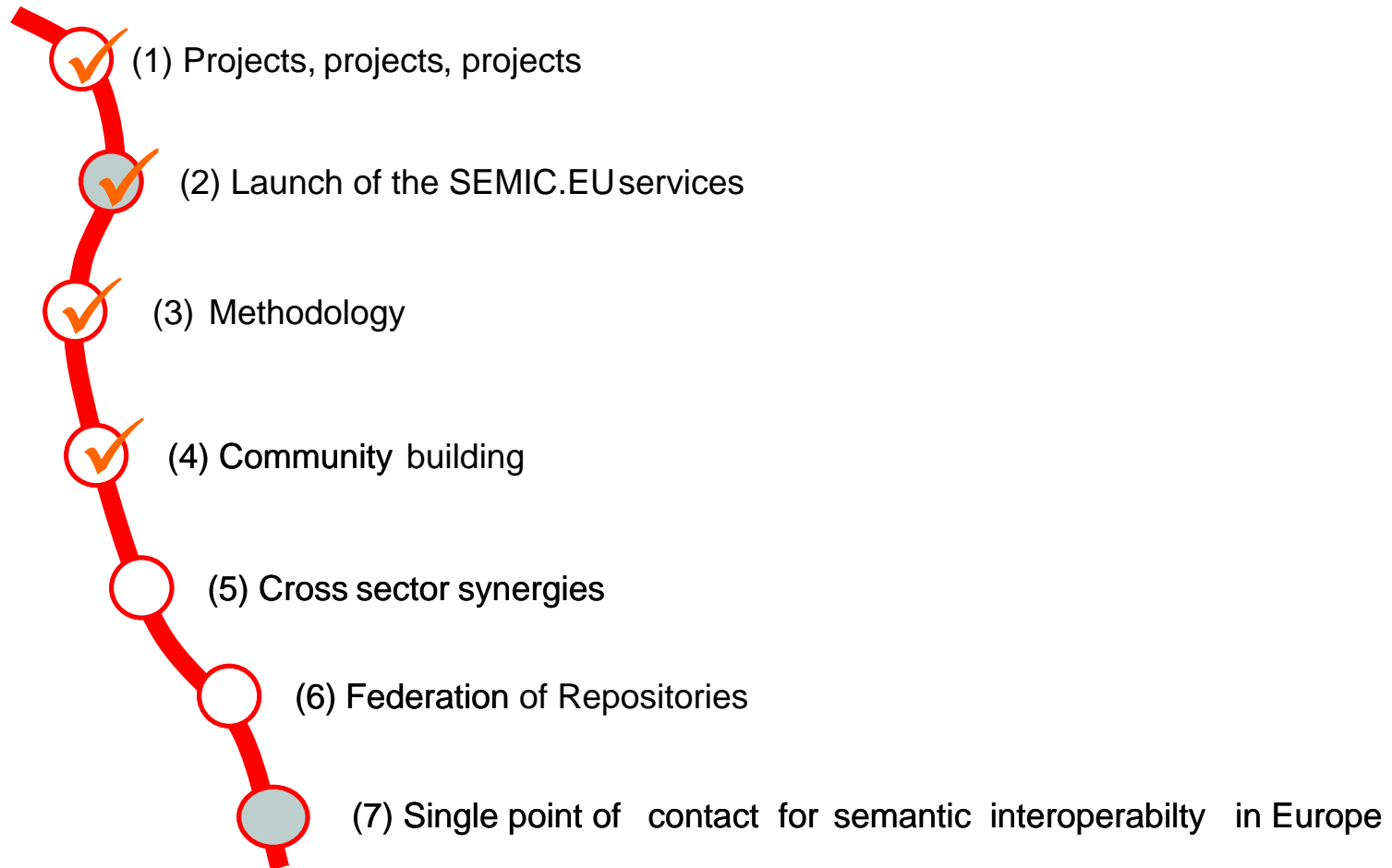


## Assets available on SEMIC.EU



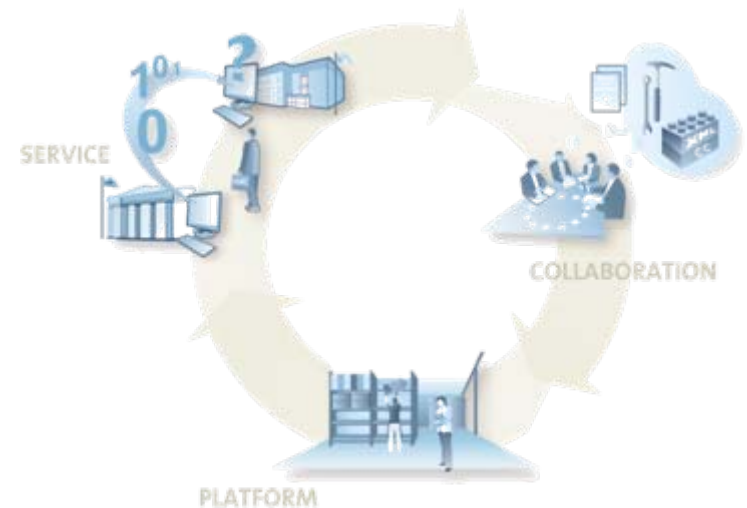
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## Roadmap – SEMIC.EU



## 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](mailto:contact@semic.eu)



Thank you for your attention



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]init[ AG für digitale Kommunikation