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# **Process Ontologies Facilitating Interoperability in eGovernment**

## **A methodological framework**

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# Agenda

- The project BRITE and its objectives
- Status quo of BRs in the EU
- Barriers to interoperability
- High Level Domain Ontology
- (Business) Process Ontology
  
- Discussion

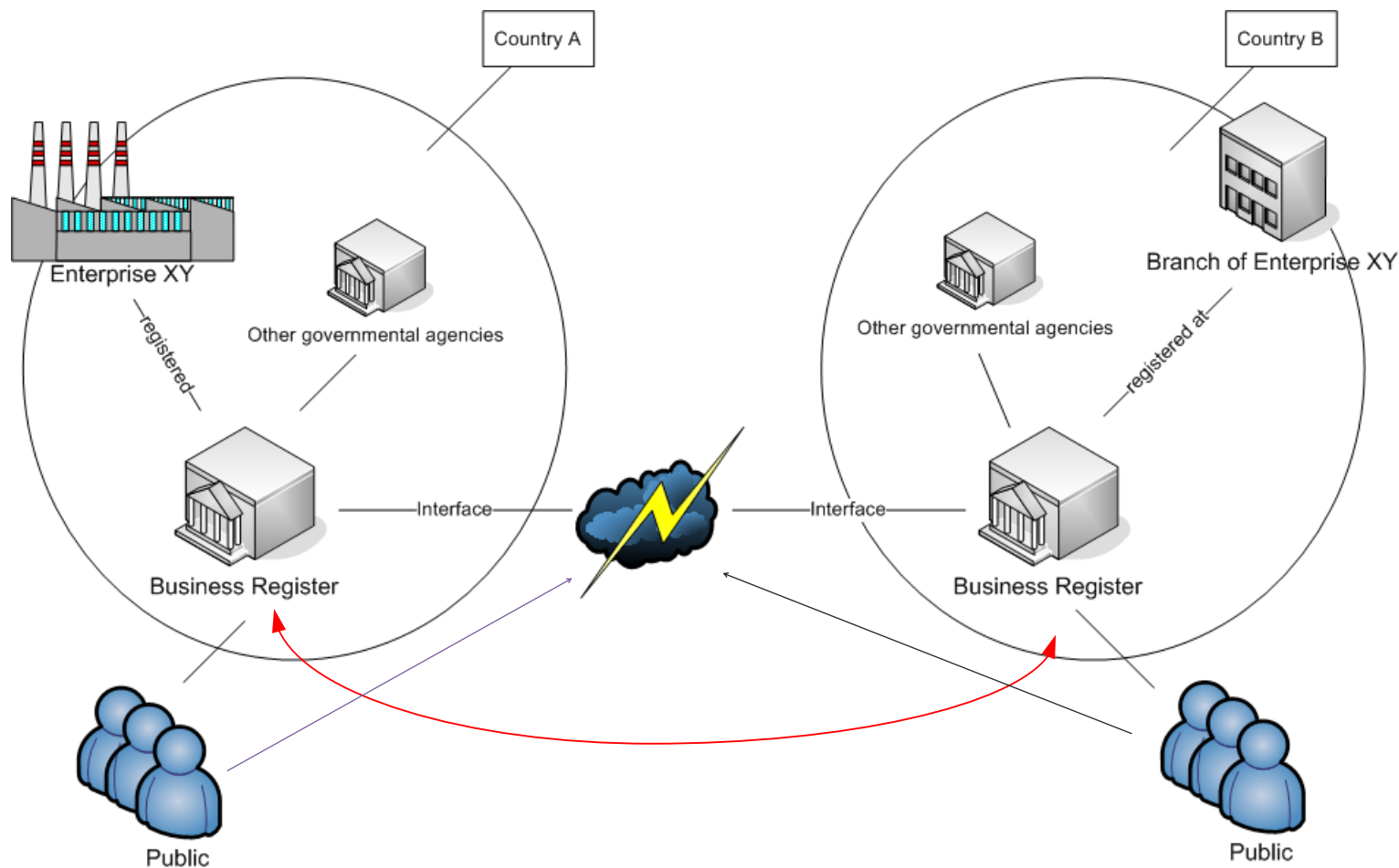


## The project **Brite** and its objectives

- Enabling the 11th and 14th EU company law directive, saying:
  - Enabling free movement of enterprises
  - Preventing financial crime, money laundering
  - Creating cross-boarder interoperability between the Business Registers and other (governmental) institutions
    - e.g. registries, financial institutions, assurances, 3rd parties
- Enabling easy adaption to EU legislation
- Adding transparency to the EU market
- Encouraging EU wide cooperation

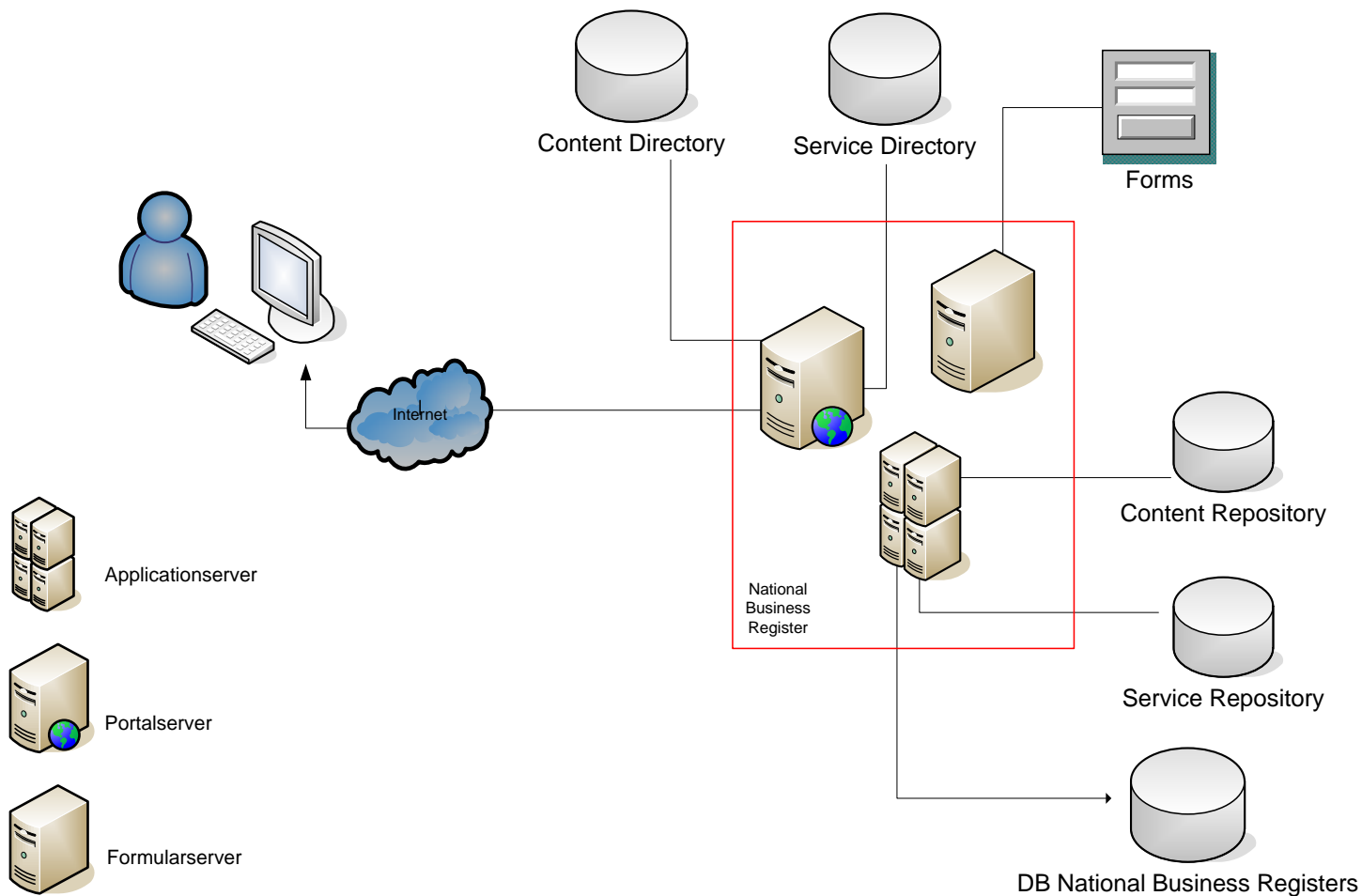


# Status quo – BR in EUROPE





# Exemplary: A National Business Register





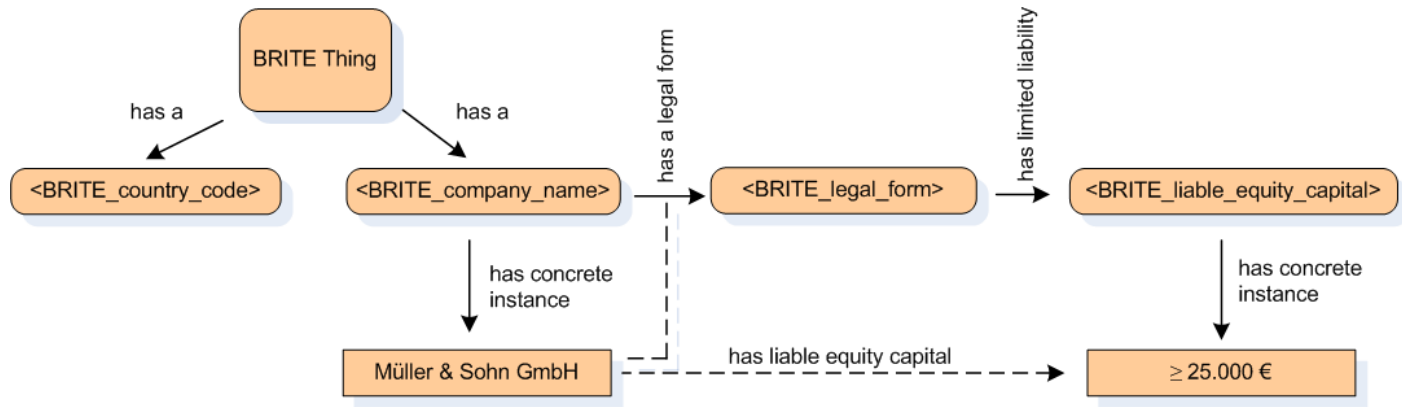
## Barriers to interoperability

- Communication mainly based on document exchange (in different formats, also paper based!)
- Restricted by
  - organisational
  - legal
  - linguistic and
  - political influences
- Different concepts of registration



# Short example

- Business registers have their own ontologies
- One could say „vocabulary“
- Semantics help to bridge the gap





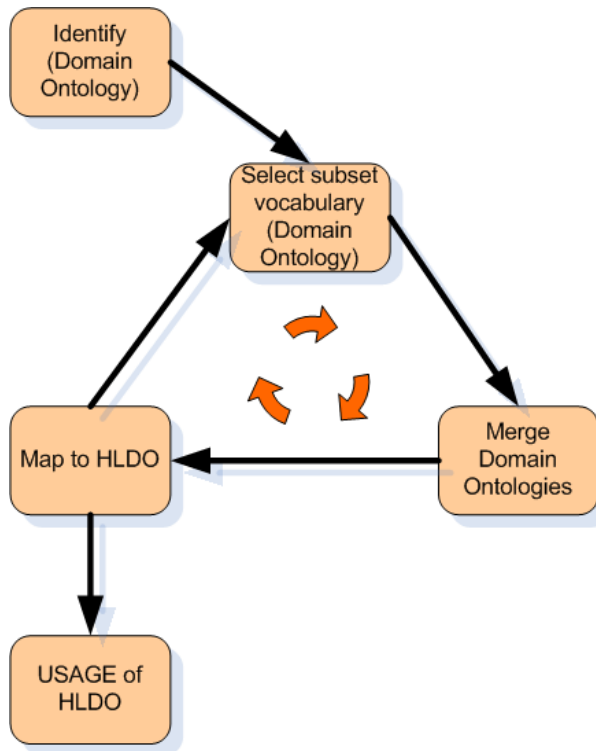
## Process Ontologies in BRITE

- Extracting process ontologies out of „real life“ BR processes
- In BRITE, four service cases are considered
  - winding up a new company
  - establishing a branch of a registered company
  - transfer of seat of a reg' company
  - eProcurement
- Defining a process ontology
- Storing in a process ontology repository



# Ontology development: the BRITE approach

- Defining an upper ontology for European Business Register  
Starting point based on existing Ontology (here SUMO)



1. Identifying Domain Ontology (making it explicit)
2. Select subset of vocabulary (along the service cases)
3. Merge the new Domain Ontology with the existing one
4. Map the merged one to the HLDO
5. Use the HLDO in practice

Holsapple, C. W. & Joshi, K. D. (2002). A collaborative approach to ontology design. *Communications of the ACM* 45(2): 42-47.



## Function of the HLDO

„The HLDO is an aggregation of at least two Domain Ontologies based on similar semantic backgrounds“

1. Using the HLDO at every Business Register
2. Using as Interoperability layer

Methods can be combined.

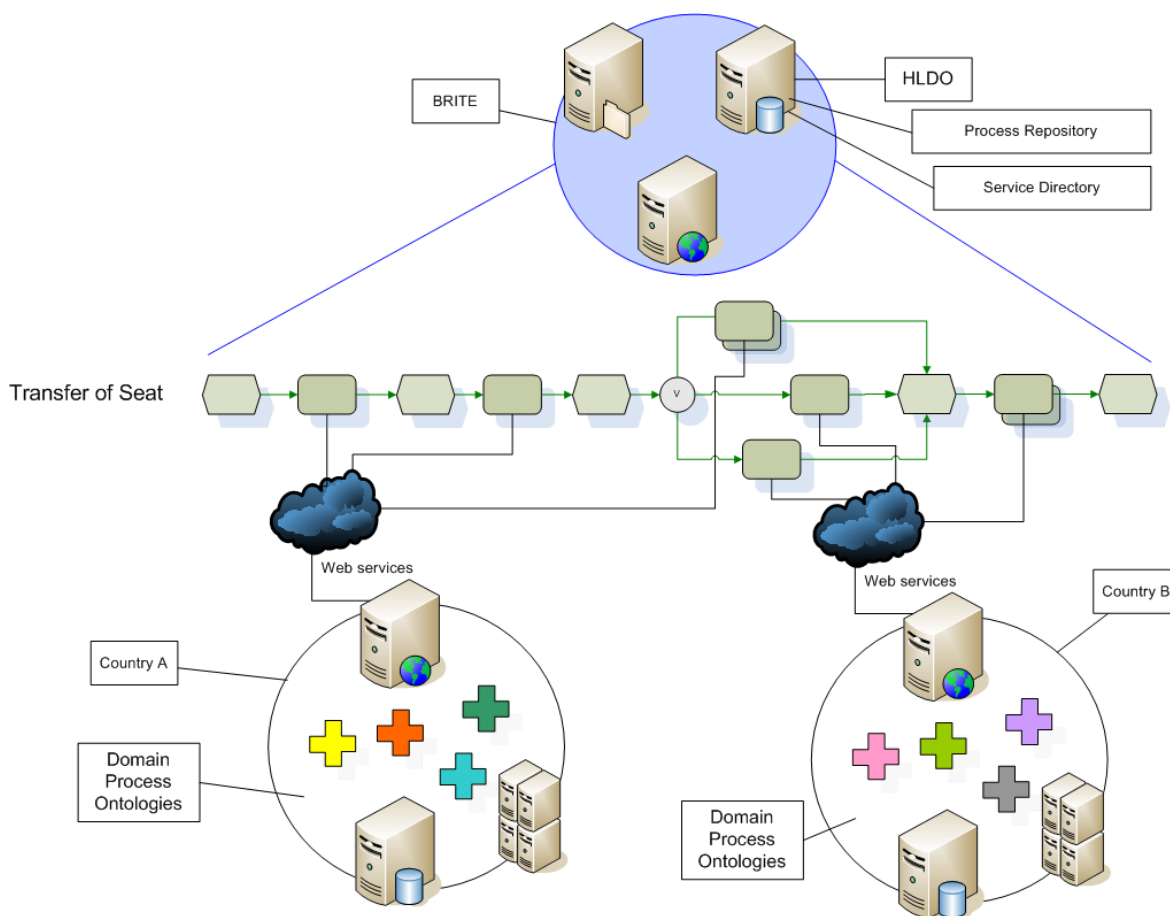


## BRITE – process ontology repository

- Information stored in the Process Ontology
  - Information location (URI)
  - Access regulations
  - Processes to be performed
  - Particularities are to be considered
  - Laws (EU and national)



# Vertical mapping of BRITE ontologies





## Conclusions

- The HLDO is the basis for the message format (OWL-S, RDFS)
- All process ontologies are based on the HLDO
- Web services are used to interact with the legacy systems, service directories/ repositories and [national] databases
- BRITE ontology concept as the basis for interoperability
  - allows economic and effective one to many mapping

No peer to peer agreement needed



# Thanks for your valuable attention!

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