



# A linguistic-ontological support for multilingual legislative drafting: the DALOS Project

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# Overview

- EU eParticipation framework;
- ITTIG-CNR involvement in eParticipation
  - DALOS and SEAL projects;
- DALOS service as support for multilingual legislative drafting;
- DALOS ontological approach;
- Conclusions.



# eParticipation

- **European Commission call (2006):**
  - Improving the quality of the legislative process;
  - Enhancing accessibility and alignment of legislation at European level;
  - Promoting awareness and democratic participation of citizens to the legislative process;
- **ITTIG-CNR is involved into two projects:**
  - DALOS (Drafting Legislation with Ontology-based Support)  
Coordinated by: ITTIG – CNR (Florence)
  - SEAL (Smart Environment for Assisting the drafting and debating of Legislation)  
Coordinated by: Leibniz Center for Law – Univ. Amsterdam  
(ITTIG-CNR is one of the partners)



# DALOS

- From January 2007 (18 months)
- Partners:
  - Academic/technical
    - ITTIG-CNR, ILC-CNR
    - European University Institute (EUI)
    - The Leibniz Center for Law – University of Amsterdam (UvA)
    - Leiden University
    - Institute of Law and Technology, Univ. Barcelona
    - Department of Computer Science - University of Sheffield
    - CELI (NLP company)
  - Institutions
    - Italian Parliament (“Chamber of Deputies” and the “Senate”);
    - Italian Authority for Information Technology in PAs (CNIPA);
    - Dutch and Spanish Institutions



# DALOS

- **The purposes**
  - improving the quality and the readability of legislative texts;
  - improving the accessibility of legislative texts for legal experts, decision-makers as well as citizens, thus promoting a democratic participation in the legislative process.
- **The service**
  - a multi-lingual linguistic-ontological resource to be used in the phase of legislative drafting.



# Contribution to EU policies and institutions

- The DALOS service can be used
  - To facilitate the transfer European Directives into national laws;
  - To facilitate the alignment of concepts and terminology in national legislations;
  - As a source for coherent EU legal documents indexing.
- With respect to IATE and Eurovoc, DALOS lexicon will be enriched with
  - hierarchical and synonymy relations;
  - (near) equivalence and “part-of” relations;
  - other WordNet semantic relations.



# Ontological Approach

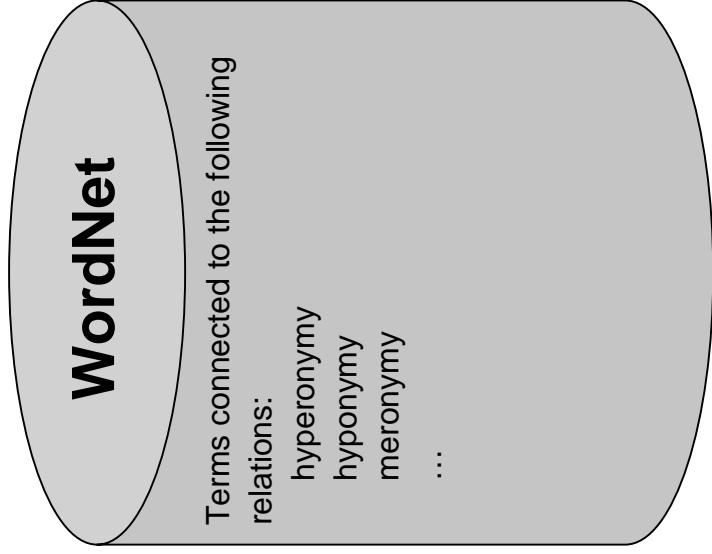
- Ontological characterisation of legal language;
- Which kind of knowledge?
  - Based on LOIS project experience;
  - Different scenarios:
    - LOIS addresses multilingual legal information retrieval
    - DALOS is expected to support legislative drafting
- The aim is to avoid “epistemological promiscuity” (Breuker and Hoekstra, 2004)
  - *Epistemological concepts* (knowledge about a process, as the concept of “norm” which pertains to a type of reasoning);
  - *Domain ontology* (as knowledge about the problem domain).



# Knowledge Organization System (KOS) Specification

- KOS specifications are expected to be released;
- It is part of the Macro Design:
  - Definition of the standard to be used;
  - KOS (Knowledge Organization System);
  - Application architecture design
    - specification of communication interfaces between application components and external systems;

# Example of KOS for WordNet



## RDF/OWL WordNet Data Model

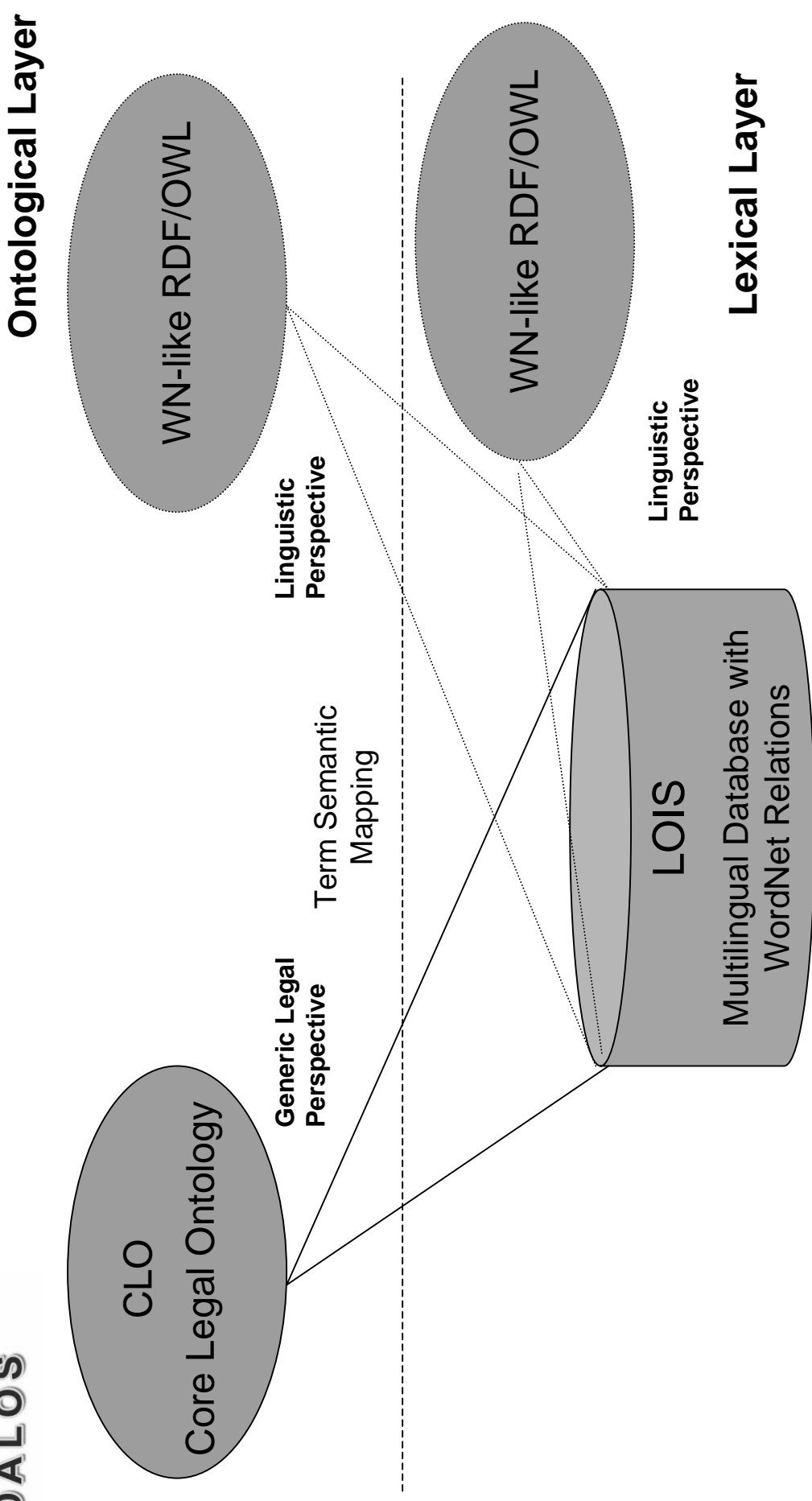


## CNR-ITTIG past activity

(vanAssem, Gangemi, Schreiber (W3C, 2006))

- WordNet RDF/OWL representation contains classes and relations of the linguistic domain

# Analysis of the LOIS linguistic and ontological resources





# Analysis of the LOIS linguistic and ontological resources

- CLO
  - Generic Legal Perspective (it contains legal concepts)
  - Support for legal reasoning rather than for drafting
- WN-Like RDF/OWL representation
  - Linguistic Perspective
  - Support for natural language analysis or for searching rather than for drafting

# DALOS Ontology: domain vs. epistemological knowledge

- DALOS addresses legislative drafting
  - (1) norm creation on (2) specific domains;

## *(1) Epistemological knowledge*

- knowledge on the process of drafting;
- example of epistemological knowledge on legislative drafting process is the

*Model of Provisions (C. Biagioli (ITTIG-CNR))*

- rules (definition, obligation, prohibition, sanction, etc.)
- amendments (insertion, repeal, substitution)

## *(2) Domain knowledge (DALOS purpose)*

- knowledge on a domain of interest



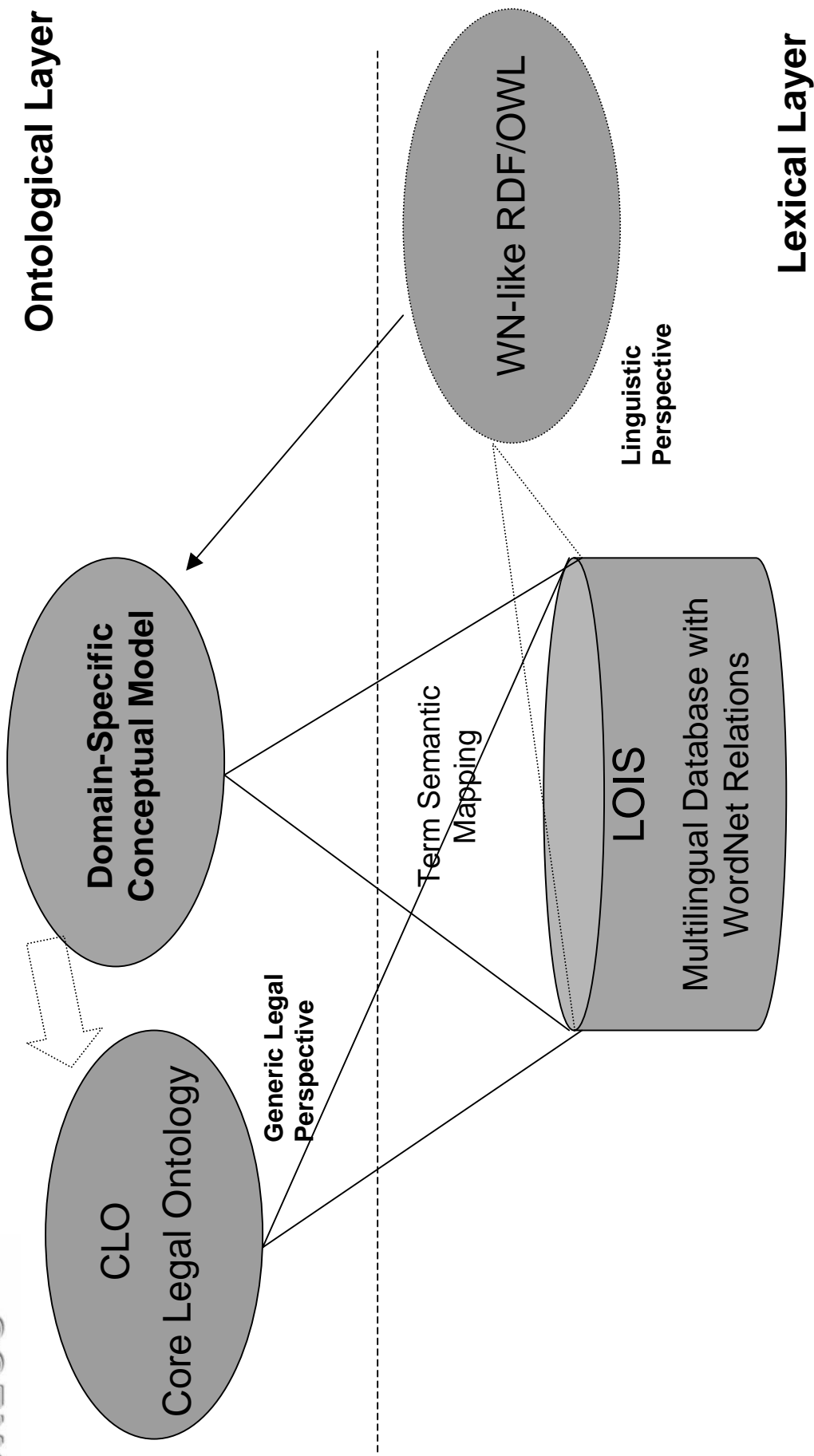
# DALOS resource properties: knowledge on a problem domain

- As legal drafting support, DALOS needs:
  - A specific conceptual description of a domain to be regulated
    - Concepts and their lexical manifestations in different languages
- in specific domains *before* they are regulated  
(*domain knowledge*: “consumer protection” for the pilot case);
- Such description should not contain concepts according to a normative perspective (what is obliged, allowed, sanctioned, etc.)  
(*epistemological knowledge*);
- A domain normative perspective will be the result of a legal drafting over a domain of interest



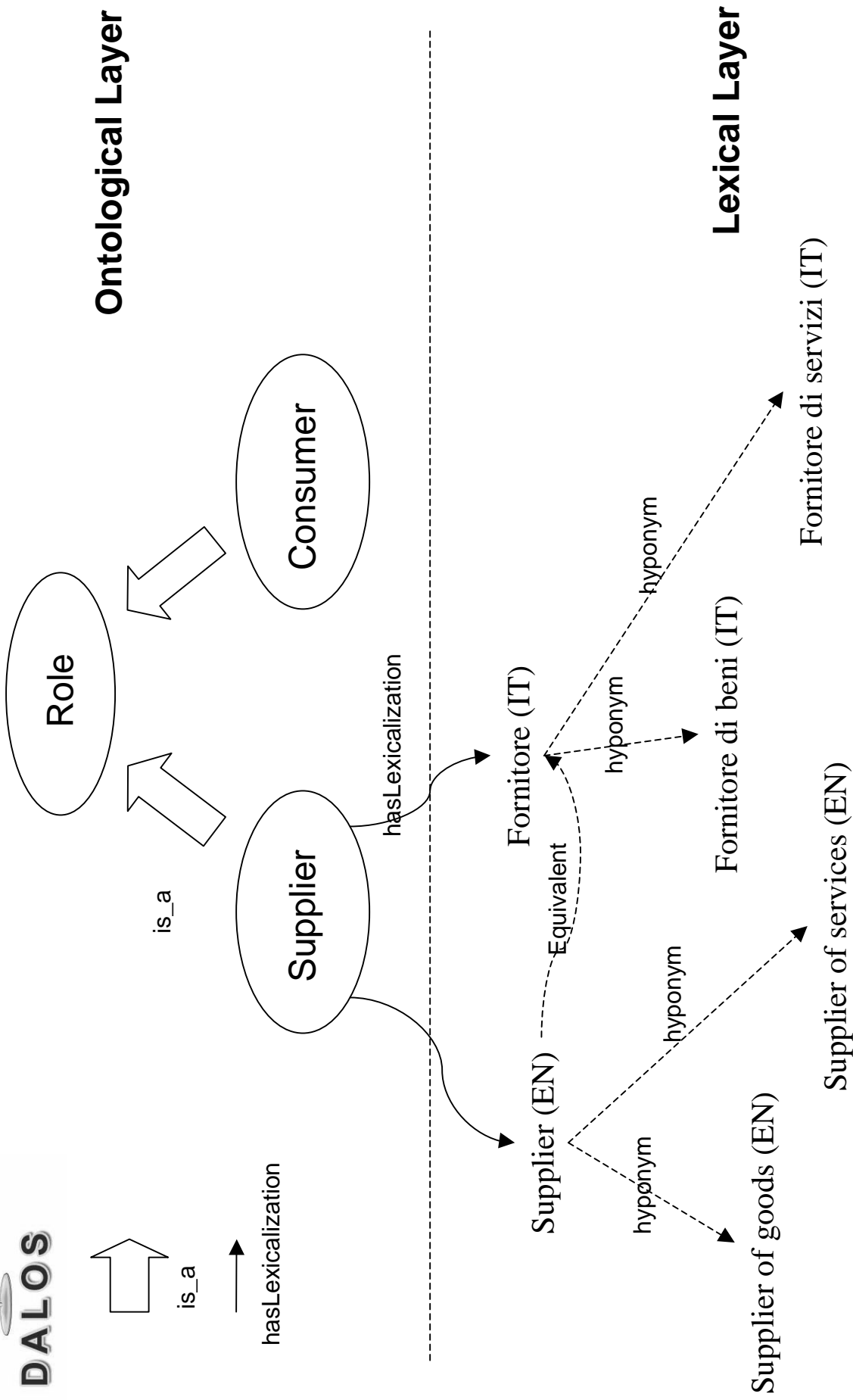
# WP2 Objectives

## DALOS linguistic and ontological resources





# KOS Proposal





# How to build the DALOS Knowledge

1. Using LOIS collaborative editor to update the LOIS linguistic resources (Lexical layer)
2. Construction of a Domain Ontology of the Consumer Law (Ontological layer)
3. Semi-automatic connection between LOIS and Domain Ontology (`hasLexicalization` property implementation) (Lexical layer <--> Ontological layer)

# 1. Lexical layer implementation

- NLP tools
  - T2K (Text-to-Knowledge) addressed to process Italian texts (ILC-CNR)
  - GATE addressed to process English and other EU language texts (Univ. Of Sheffield)

## **2. Ontological layer implementation**

- Intellectual activity which aims at describing the scenario to be regulated (“consumer protection”);
- Layer of concept alignment at EU level;
- OWL description of classes and relations;

### **3. Connection between ontological and lexical layer**

- Legal concept alignment on the basis of their lexical manifestations in a multilingual environment;
- A tool to support such semi-automatic mapping is expected to be implemented;

# Conclusions

- DALOS Project:
  - Linguistic-ontological resource for legislative drafting;
- Properties and Knowledge Organization System (KOS) of the DALOS resources;
- Such resource will be included within xmlLegesEditor, the xml editor for legislative drafting developed by ITTIG-CNR.