The Legal Labyrinth

Knowledge Organization Systems in the Law Domain: Benefits and Challenges

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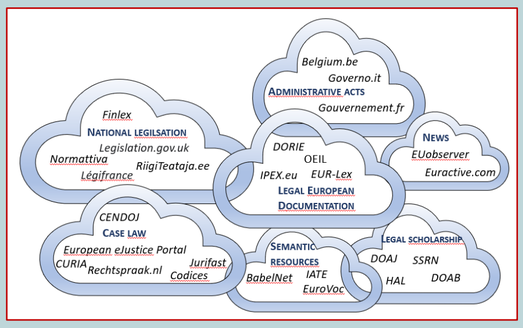
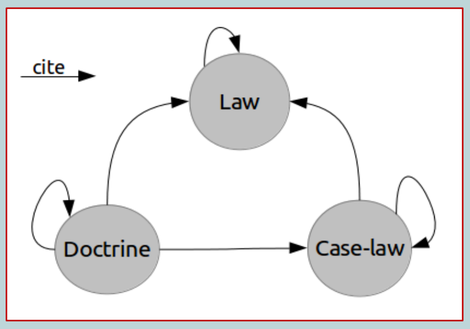
1. Introduction

Legal information presents completely unique characteristics due to its nature, diverse purposes of use, and the intrinsic need for integration among its different types, consisting of legislation, case law, and legal doctrine. These three sources of information not only serve different functions, but also have specific access-related issues. Despite the richness and diversity of the resources available, legal information is difficult to understand for non-experts (legal concepts and terms often have multiple meanings and can vary depending on the context and jurisdiction).

There is a **lack of uniformity and integration** among different resources and organized access points, often implemented through diverse criteria in different countries. Data is represented in different formats and described with varying levels of analysis, making interoperability between sources and the correlation and integration of data from different sources challenging.

2. The legal landscape





Legal researchers, practitioners, policymakers and even citizens need efficient ways to access, organize, and analyze legal information.

KOS provide a structured and organized approach to represent legal concepts, relationships, and rules. It significantly contributes to the efficiency and effectiveness of legal research, analysis, and decision-making processes.

3. KOS in legal research, retrieval, classification, reasoning, decision-making

Benefits

1. Enhancing legal research and retrieval
   - Efficient navigation of legal databases
   - Improved resource location
2. Supporting legal classification
   - Standardized vocabulary and classification schemes
   - Facilitating legal document classification
3. Improving legal reasoning and decision-making
   - Structured representation of legal concepts and relationships
   - Identifying inconsistencies, gaps and contradictions in legal arguments
   - Transparent and consistent interpretation of legal texts

State of the art

Overview of prominent legal KOS

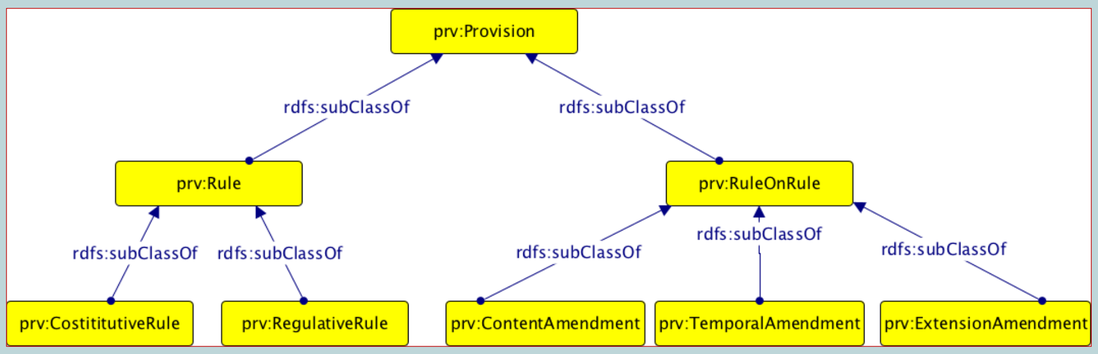
- Eurovoc Thesaurus
- European Legal Taxonomy Syllabus (LTS)
- Core Legal Ontology (CLO)
- Lexical ontologies for legal information sharing (LOIS)
- The Standards Advancement for the Legal Industry Alliance (SALI)

Functions served by these tools

- Structuring of information
- Reasoning and problem-solving
- Information retrieval
- Semantic integration

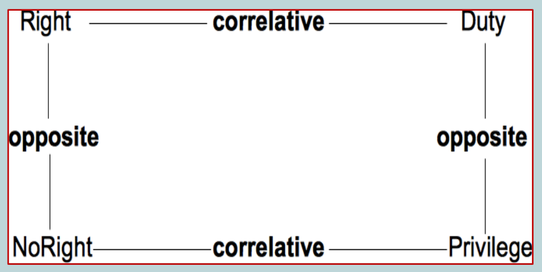
4. The model of provisions

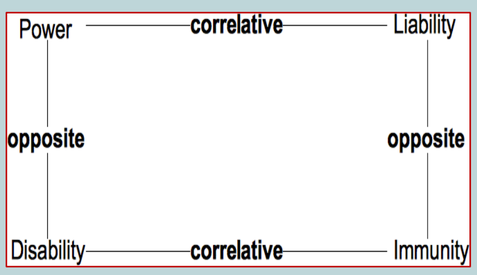
The **model of provisions** is a specific type of KOS conceived to represent fundamental legal concepts (i.e. Right, Duty, Permission, Sanction). It represents units of the regulation as structures encompassing indication of a provision type and a set of properties assuming values from vocabularies or thesauri, representing semantic content of the regulation.



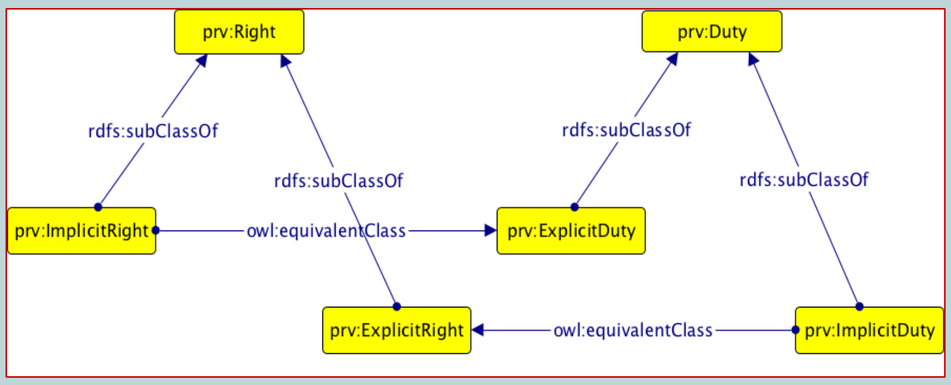
The provision model top classes

4.1. Hohfeldian squares and related provision model's axioms





The Hohfeldian relations on deontic concepts



Sub-classes and asserted equivalence relations between Duty/Right

Possible scenario: Legal Rule [R1]: "The supplier shall communicate to the consumer all the contractual terms and conditions". Thanks to the provision model semantic annotation and related model's axioms the provision R1 can be retrieved asking for either the duty of the supplier or the right of the consumer. **Retrieval system of legal rules endowed with reasoning facilities.**

5. Challenges

1. Complexity and dynamism

- Evolution of legal concepts and introduction of new laws
- Highly context-dependent domain: difficulties in developing comprehensive, adaptable KOS for common law and civil law systems

2. Lack of standardization

- Ambiguity and inconsistency in legal terminology, impacting on the accuracy and reliability of KOS

6. Conclusions

- Machine learning and natural language processing to improve the accuracy, consistency, and extraction of relevant legal information
- Development of domain-specific KOS to capture nuances of specific legal domains and enhance effectiveness and applicability of KOS

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