

JURIX 2007

Workshop on Legislative XML

**How to link (external) models
or interpretations of the
meaning of sources of law to
the original sources.**

Carlo Biagioli

*Presented by
Enrico Francesconi and Friedrich Lachmayer*

15th December 2007

Legal Source

internal additional informations

Legal Source

Internal
**Legistic
knowledge**
authentic Formal
Annotations

Internal
Domain knowledge
authentic
Semantical
Annotations

Internal vs external models

This amounts to a need for internal models, intermediate between legislative sources and external models.

Internal models are formal models able to capture meaningful contents of legislative sources. Metadata can be based on them, to inform on the meaning of law texts fragments, as currently done by partitions titles, but widely and precisely. These models can produce formal abstracts of texts partitions and can be seen as as a systematization and formalization of the legistic titling practice, by means of authentic metadata.

documentation
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Internal models have to be wider than external models.

External models must describe only rules relevant for the decision process.

Internal models must take into account any kind of rule in legislative sources.

External models have to be deeper than internal models.

While external models represent, formalize and reproduce source knowledge, internal models locate, describe and index source knowledge. External models need to capture the whole meaning of relevant rules and represent this knowledge in a computable form, to make it possible reasoning on it.

Internal models consider only the contents meaningful according to the legislative processes, as the texts drafting guided by metadata, the texts semantic mark up and their diffusion (conceptual information retrieval). They synthesize and index meaningful knowledge, without represent it integrally.

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Legislative XML Community

While strong effort has been made to standardize the surface of legislative sources, it seems to me that as far as sources knowledge is concerned, the exclusive orientation inside the Legislative XML community is the ex post.

There is not a strong concern for the laws quality and intelligibility. The main interest seems to be the extraction of knowledge from sources, regarded as black boxes, and having cases solving in mind. There is an excessive pessimism towards availability and ability of the legislator.

*Instead I believe that **Legislator can be convinced to gradually adopt techniques of rationalization of drafting process, to get self explaining legislative sources.***

Legislative systems evolution could reach the official texts online, followed by the law in force, while the third step could be self explaining texts (through authentic explanatory and systematic metadata).

Thus the knowledge contained in sources and translated into authentic metadata, could be used like anchorage that connects the external models to the **sources.**

Proposal

- *Let's take into adequate consideration both ex ante and ex post positions.*
- *Let's take into adequate consideration both, internal and external models.*
- ***Doing this jointly, in a standardization perspective, supporting converging solutions.***
- *Let's identify the common basic elements and features, internal and external models all ought to share. In this perspective internal models would play a bridge role between legislative sources and external models, as Required.*

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Ex ante vs ex post perspective

Internal models belongs to an ex ante perspective, while external models belongs to an ex post one.

(see F. Lachmayer, H. Hoffmann)

Ex ante perspective regards the creation of rules.

Ex ante perspective means to be interested on and to **care about the legislation process**. Relevant activities of this process are the drafting of new laws and their authentic semantic mark up. Their purposes are to produce and explain them and support their diffusion.

Internal models are ex ante logistic models, to apply **authentic metadata to legislative sources**.

Standards for Legislative XML - 2007

Ex post perspective regards the use of rules.

Ex post perspective means to be interested on and to care about the **application of legislation to real cases** (decision process).

Ex post perspective means to be interested on semantic mark up of laws, afterwards, far from the time of creation and far from its authors.

Semantic mark up to add new information to the sources, suitable for their decision oriented applications.

Model based applications

Those (formal) models are centered on the notion of norm.

Applications **ex ante**, to support **legislative process** (i.e. model driven texts drafting and authentic semantic mark up for conceptual searching), **require suitable internal models**

Those models are centered on the notion of rule/disposition.

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Model based applications

Tools working on contents need appropriates deep formal models.

Applications ex post, to support decisional legal reasoning, require suitable external models (see Estrella Project).

Metadata, authentic or not, have to be based on formal models, to avoid confused and incoherent information.

External models are not suitable to explain the legislative sources contents, as always repeated by their authors.

Legistic formal model, more or less deep and explanatory, is therefore needed.

Legistic vs domain knowledge

In building formal internal models, is profitable to distinguish the domain knowledge from the legistic knowledge.

I intend as domain knowledge the concepts the law speaks about.

I intend as legistic knowledge the traditional technique used by legislator to build and express rules, i.e. how methodically the law speaks about its objects.

Legistic models are formal models of legislative sources deep organization.

Basically they consist in formal descriptions of rules classifications, their elements and their relations.

Domain models are basically domain ontologies.

Concepts relevant according to the formal models of rules, are or have to be described in domain ontologies. Any kind of domain dictionaries are somehow usable.

The suggested double modelling is in tune with the Breuker - Hoekstra statement “an ontology is in the first place a set of terminological definitions built around a taxonomic back-bone, while a framework is a an assembly of concepts or types of knowledge that reflect recurrent patterns of use” .

As they remarked, “Legal Knowledge Engineering suffers from epistemological promiscuity, or indiscriminately mixing epistemological knowledge and domain knowledge in ontologies” .

References

Breuker, J., Hoekstra, R., 2004: Epistemology and ontology in core ontologies: FOLaw and LRI-Core, two core ontologies for law. In: Proceedings of EKAW Workshop on Core ontologies, Whittlebury Hall (2004)

Nienke den Haan, Joost Breuker , Constructing normative rules, Legal Knowledge Based Systems , JURIX'96 , Foundations of legal knowledge systems;

Haan, N. den, J.A. Breuker and R.G.F. Winkels (1996). *Automated legislative drafting. In: Proceedings of the NAIC 1996, 1996.*

Carlo Biagioli, Amedeo Cappelli, Enrico Francesconi, Fabrizio Turchi, Law Making Environment Perspectives, in: Proceedings of "V

Legislative XML Workshop" (European University Institute, Fiesole, 14-16 June 2006), *Firenze, European Press Academic Publishing, 2007;*

C. Biagioli, S. Pietropaoli, Towards self explaining texts, Workshop on Legislative XML, Amalfi, April 6-8, 2005, Quaderni CNIPA, 2005.

Friedrich Lachmayer, Harald Hoffmann, From Legal Categories Towards Legal Ontologies, LOAIT Workshop Legal Ontologies and Artificial Intelligence Techniques, Bologna, 2005.

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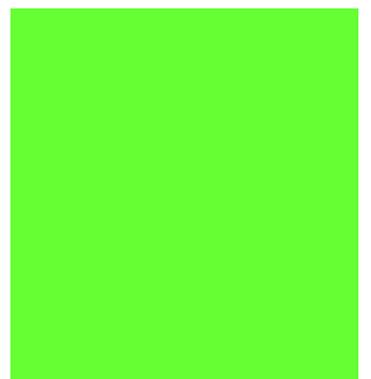
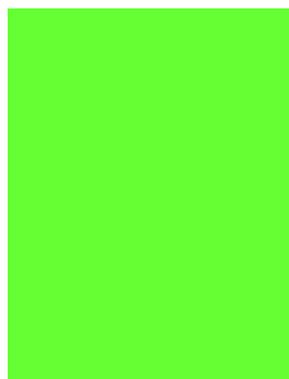
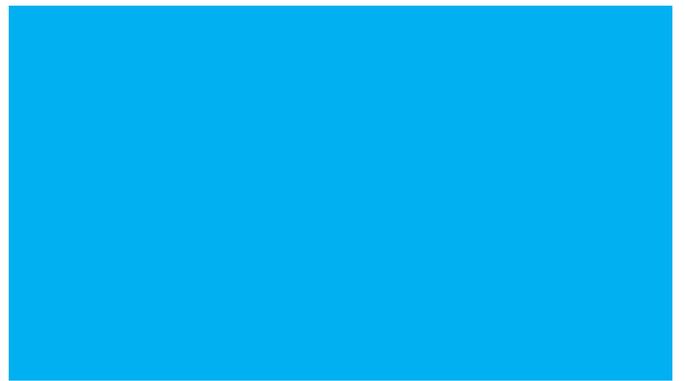
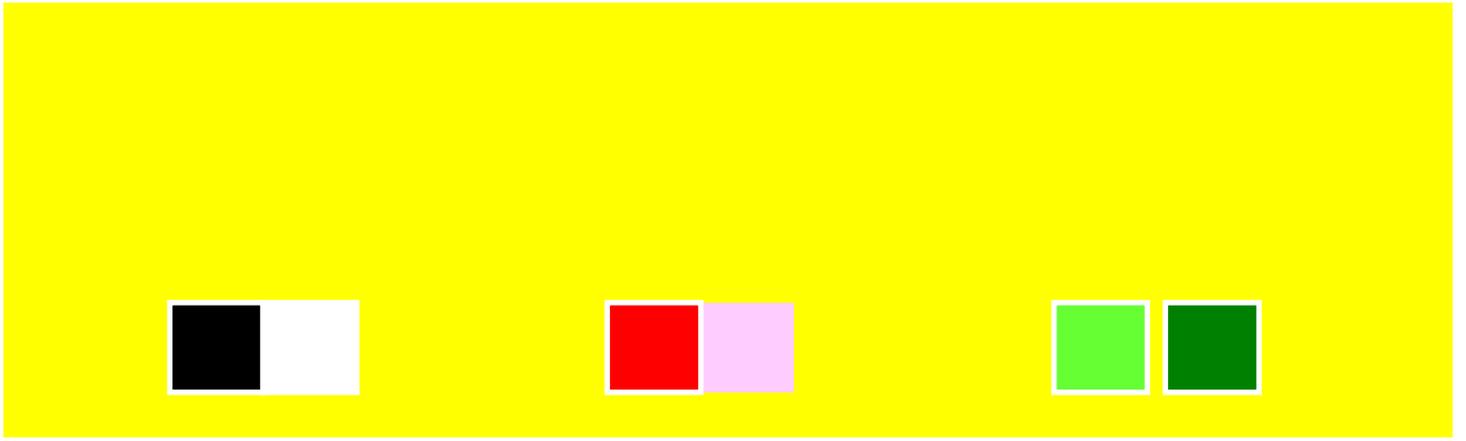
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**Thank you very much
for your attention!**

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