LEX Summer School 2009
Managing Legal Resources in the Semantic Web
European University Institute, Florence

Giovanni Sartor

Law department, European University Institute, Florence
Cirsfid, University of Bologna
giovanni.sartor@eui.eu

7 settembre 2009

Outline

1. The LEX summer school 2009

2. Legislation and other sources

3. Predicaments of legislation

4. Legislation in the information age

5. Web-based standards for the law

6. Semantic web and the law

The location: Villa Schifanoia

- Sala Cappella (for the lectures);
- Computer lab (for the practicals);
- Mensa;
- The Badia Fiesolana (Library)

Managing Legal Resources in the Semantic Web

- Drafting methods, to improve the language and the structure of legislative texts;
- Legal XML standards, to improve the accessibility and interoperability of legal resources;
- Legal ontologies, to capture legal metadata and legal semantics;
- Formal representation of legal contents, to support legal reasoning and argumentation;
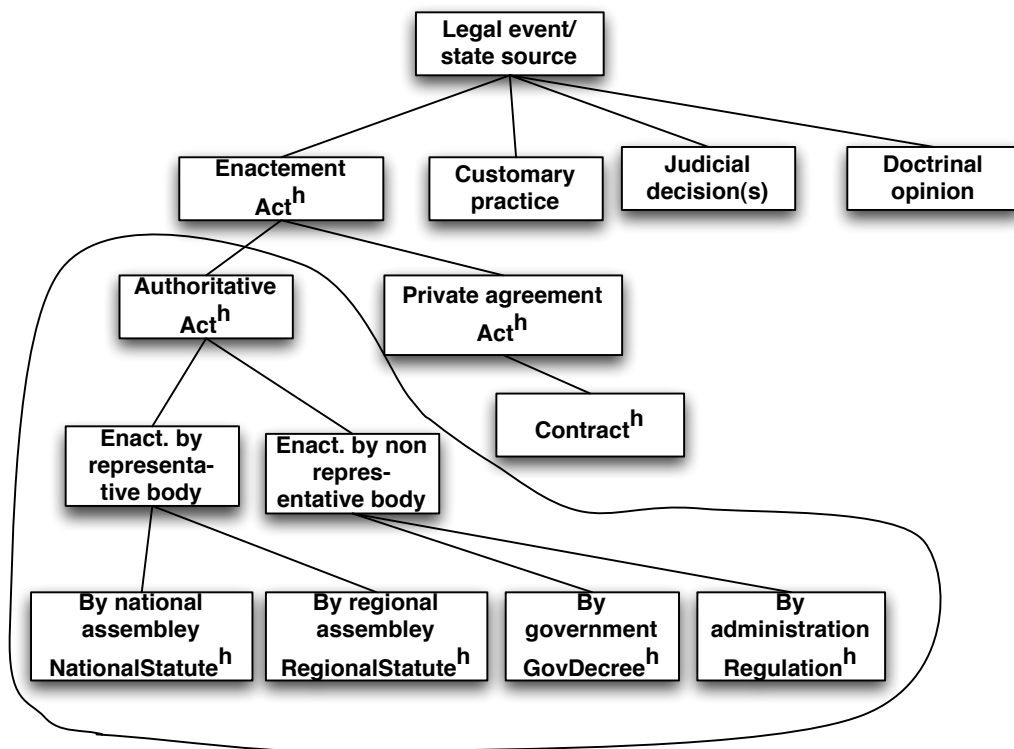- Workflow models, to cope with the lifecycle of legal documents.

The Institutes

- European University Institute, Law Department;
- Cirsfid, University of Bologna;
- ITTIG, Florence;
- Leibniz Center, Amsterdam;
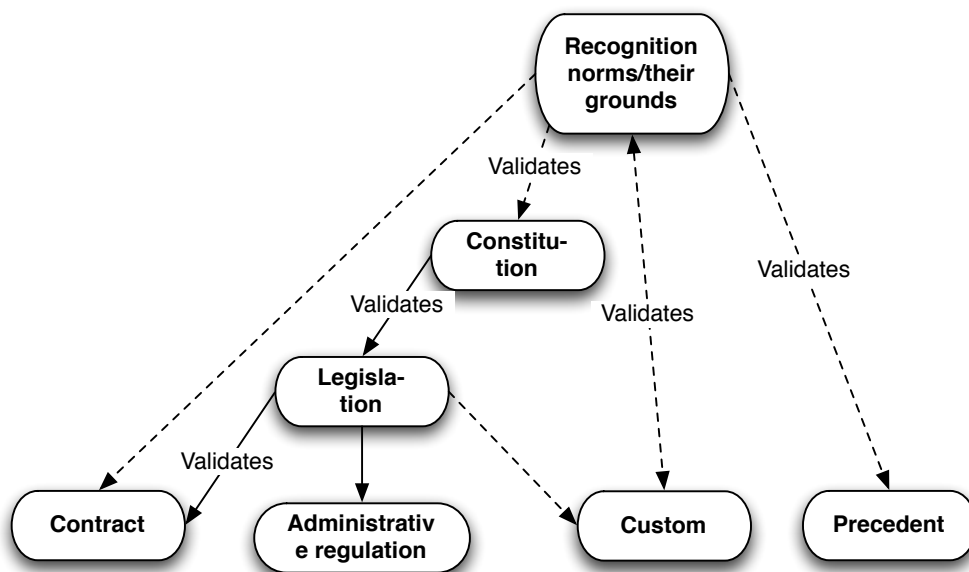- Institute of Law and Technology, Barcelona.

The Speakers

- Tommaso Agnoloni (agnoloni@ittig.cnr.it)
- Mariangela Biasiotti (biasiotti@ittig.cnr.it)
- Enrico Francesconi (francesconi@ittig.cnr.it)
- Aldo Gangemi (aldo.gangemi@cnr.it)
- Simonetta Montemagni (simonetta.montemagni@ilc.cnr.it)
- Monica Palmirani (monica.palmirani@unibo.it)
- Henry Prakken (henry@cs.uu.nl)
- Giovanni Sartor (giovanni.sartor@unibo.it)
- Guenther Schefbeck
  (Guenther.Schefbeck@parlament.gv.at)
- Pierluigi Spinosa (spinosa@ittig.cnr.it)
- Daniela Tiscornia (tiscornia@ittig.cnr.it)
- Tom Van Engers (vanEngers@uva.nl)
- Fabio Vitali (fabio@cs.unibo.it)
- Adam Wyner (adam@wyner.info)

Legislation as a source of the law

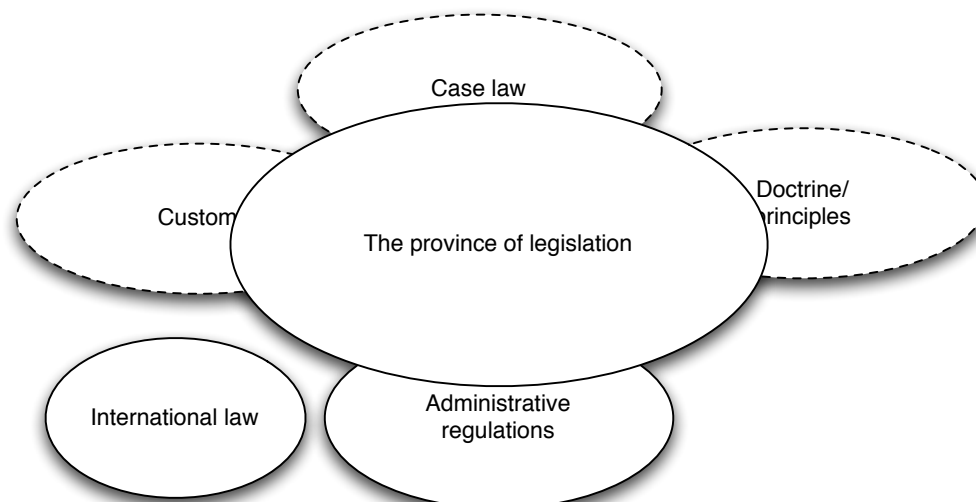# The chain of authorisation/validation

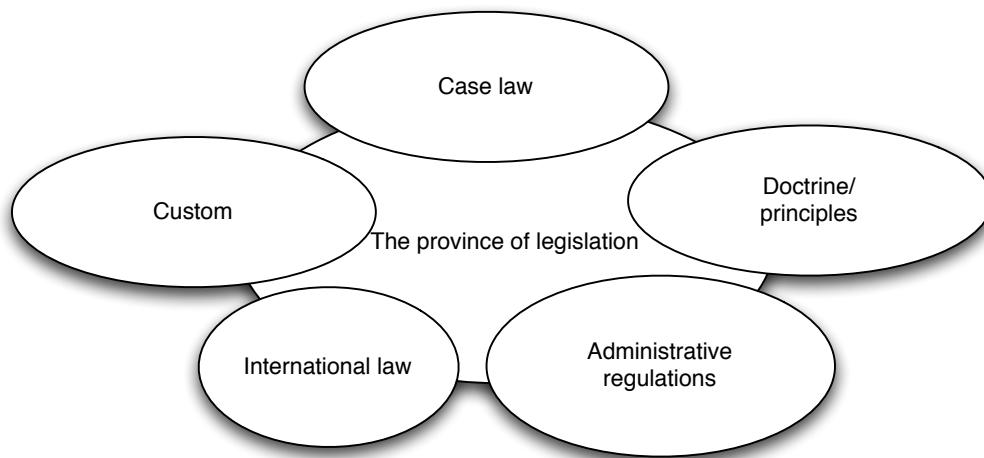# Is there a crisis of legislation in the information society?

The end of the age of legislation (from legislation to *jurisdiction* or to *custom* or to *computer code*)

- legislative authorities are national; economic and social networks are global
- legislation is slow; current problems require quick solutions
- elective assemblies are political bodies; complex problem require technical, economical and legal competence
- legislation is static; accelerated economical and technical progress requires continuous adjustments

The traditional province of legislation

The current province of legislation

Case law

Custom

Doctrine/
principles

The province of legislation

International law

Administrative
regulations

The law after three information revolutions

- legal rules expressed though language;
- legal rules expressed in writing;
- legal rules processed though information technology

Some values for legislation in the information age

- EFFECTIVENESS: Legislation should solve the problems it addresses, according to the best available knowledge.
- DELIBERATION: Legislation should emerge out of a debate taking into account all interests at stake, pros and cons, possible alternatives.
- RESPONSIVENESS: Legislation should reflect the reasoned needs and preferences of citizens.
- PROGRESS: Legislation should adapt the legal framework to new needs, also through broad reforms.
- CERTAINTY: Legislation should provide precise normative guidance, preventing the exercise of arbitrary power.
- CITIZEN'S RIGHTS: Legislation should specify citizens' rights, as well as ways of implementing them.
- COORDINATION: Legislation should be coordinated with other legal sources

Some tasks for ICT

- EFFECTIVENESS: Provide appropriate information and so contribute to knowledge and evidence-based legislation.
- DELIBERATION: Support communication and reasoned debate within the legislative process.
- RESPONSIVENESS: Support communication between Parliaments and civil society.
- PROGRESS: Enable legislator deal with legal change, by providing information, simulations, and drafting support.
- CERTAINTY: Provide everybody with tailored and updated information about law in force and its application.
- CITIZEN'S RIGHTS: Provides citizens' with knowledge of their rights, and support for their implementation.
- COORDINATION: Support integration of national legislation with other sources (national, foreign, international).

The context: Two developments

- COMPUTER-BASED INFORMATION SYSTEMS: Parliamentary information systems. Three aspects:
  - supporting all parliamentary activities,
  - providing society with information on parliament's activities and outputs, as well as opportunities to participate in parliamentary activities
  - supporting international cooperation between Parliaments
- SEMANTIC WEB: Standard-based legislation (computer processable information inside legal documents). Three aspects:
  - supporting legislative procedures and drafting
  - supporting the provision and distribution of legislative information
  - supporting the exchange of legislative information between Parliaments

ICT and the predicament of legislation

ICT as part of the problem:
- ICT as the infrastructure of globalisation: it enables economic and social networks transcending borders
- ICT as the engine of economical and social development: it increases the speed of change
- ICT as the enzyme of complexity: by increasing knowledge and possibilities available to individual actors it increases the complexity of their interaction

ICT as part of the solution?
- ICT as the infrastructure of legislative networks: by enabling a network of legislative bodies it favours shared (or coordinated) replies to global issues
- ICT as the support of dynamic drafting: it enables us to make legal dynamics treatable
- ICT as the information system of legislation: it enables legislators to model and respond to social complexity
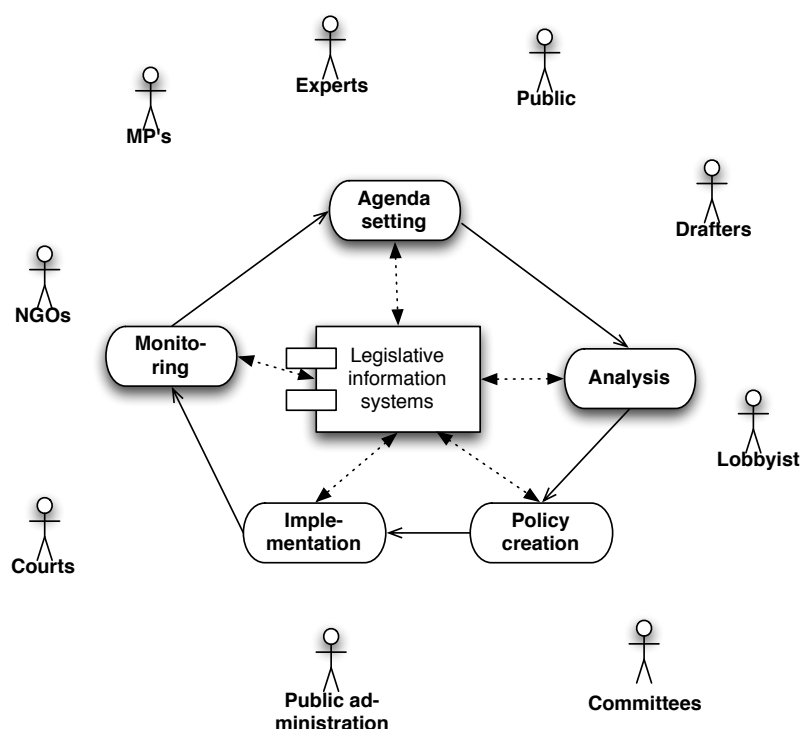
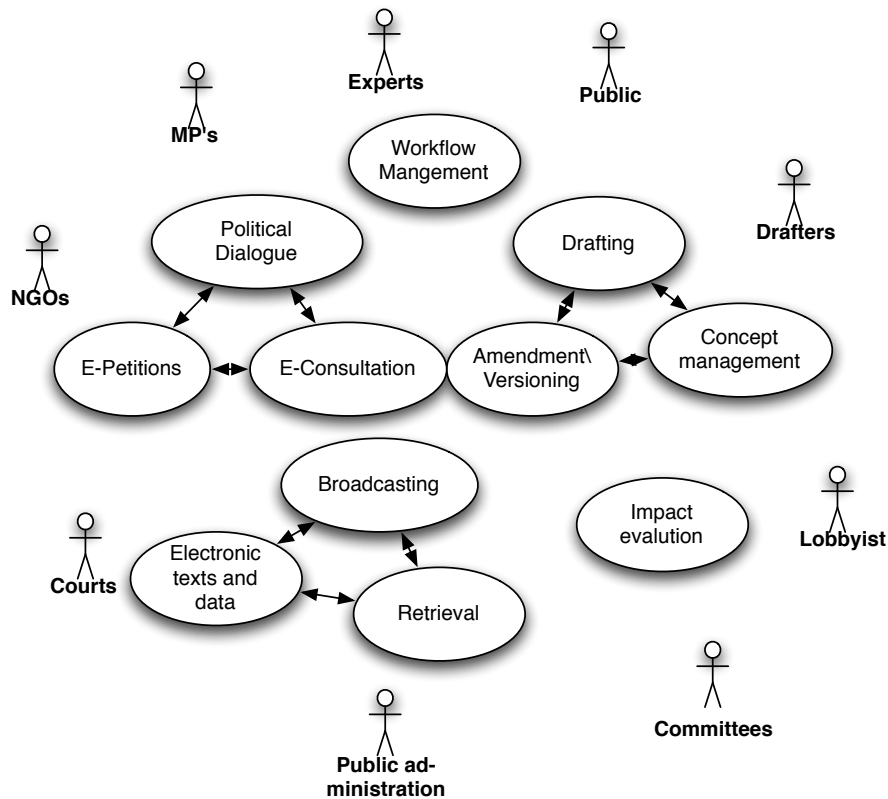# Some tasks for a parliamentary information systems

Computer support for

- PREPARING DOCUMENTS (drafting tools, linguistic tools, amendments management, etc.)
- ACCESSING INFORMATION (information retrieval, legal and factual databases)
- SIMULATION ("What if analyses") of legal and social impacts
- WORKFLOW MANAGEMENT (lifecycle, security, timely involvement of relevant individuals)
- CITIZENS' ACCESS to the law (multi-channel publication, on paper, web, and through third parties, law in force)
- POLITICAL DIALOGUE (e-petition, e-consultation, discussion fora)
- INSTITUTIONAL DIALOGUE (interaction with courts, administration, other parliaments)

Not only MPs are interested: ICT enables openness to all

Parliamentary information systems

Functions of Parliamentary IS

Standard-based documents

- add to documents information that computers can understand and process so that they can help us in
  - finding documents
  - producing documents
  - using the information inside documents
- use agreed-upon formats for expressing that information, so that we can
  - make document accessible through the web
  - exchange document with everybody
  - use documents with all software programs and systems
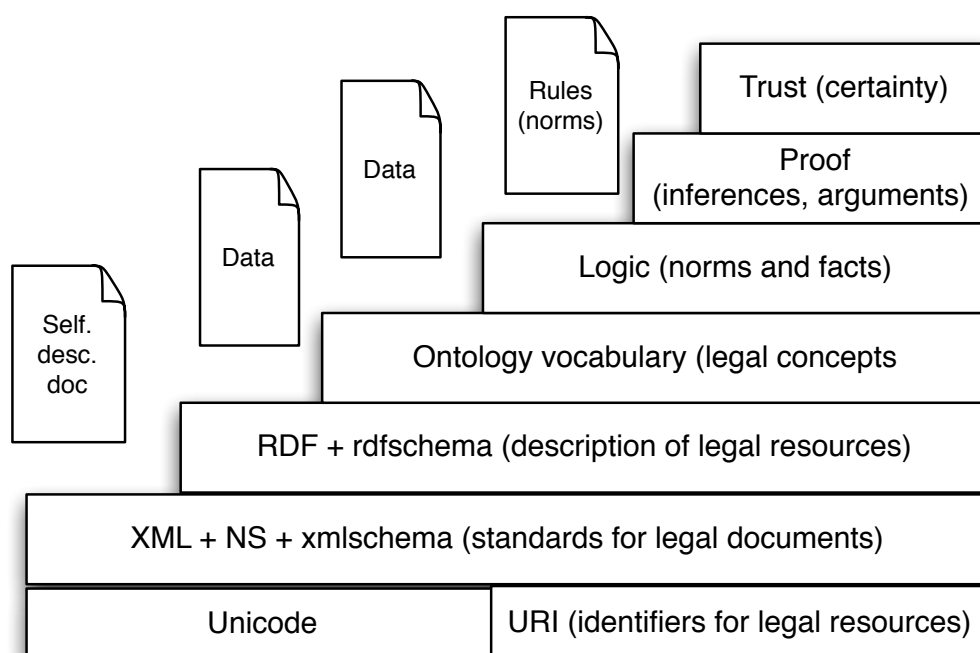 - pool resources for building common solutions

Standard-based legislative documents

Legal texts enriched with machine processable information, which are:

- produced during the legislative process
- containing information which contributes to direct the workflow
- preserved to record the workflow
- transformed into new documents as the workflow proceed (transferring both the text and metainformation about it)
- made accessible to everybody (without additional processing)
- open to everybody for inspection
- distributed on a non-discriminatory basis
- usable with common tools

NB: We need an incremental approach: each level is a precondition of the other, but no need to go beyond what is required and feasible.

Semantic web and the law

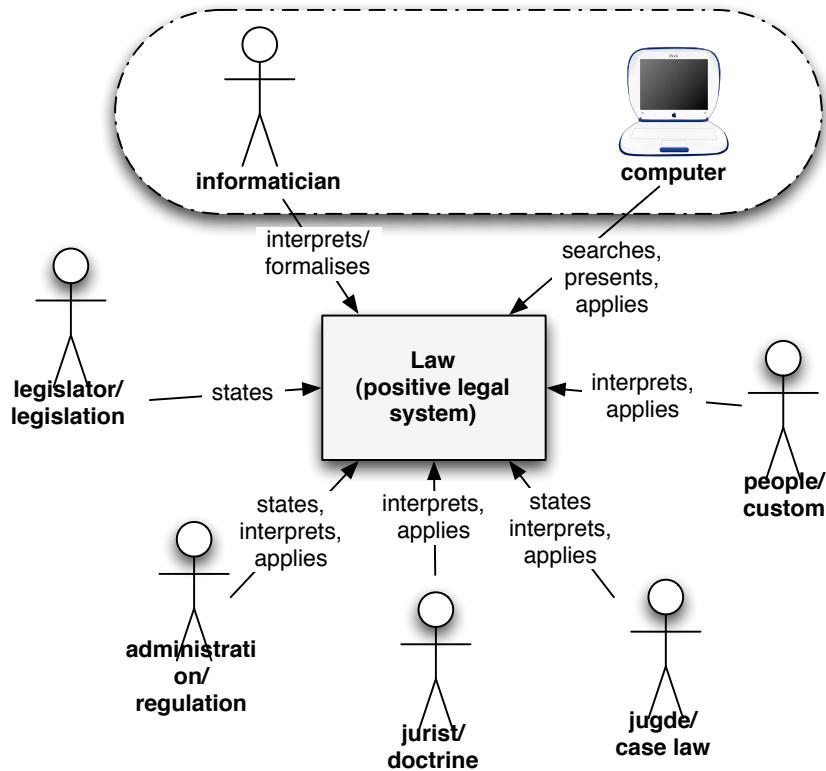# What standard-based machine-processable information?

- structures of legal texts
- references between legal texts
- the life-cycle of legal texts
- modifications of legal texts
- semantic of legal terms (thesauri, computational lexicons, light ontologies)
- legal concepts and their definitions (formal ontologies)
- semantical structures of normative language (semantic annotation of legal texts)
- norms (logical formalisation of normative contents)
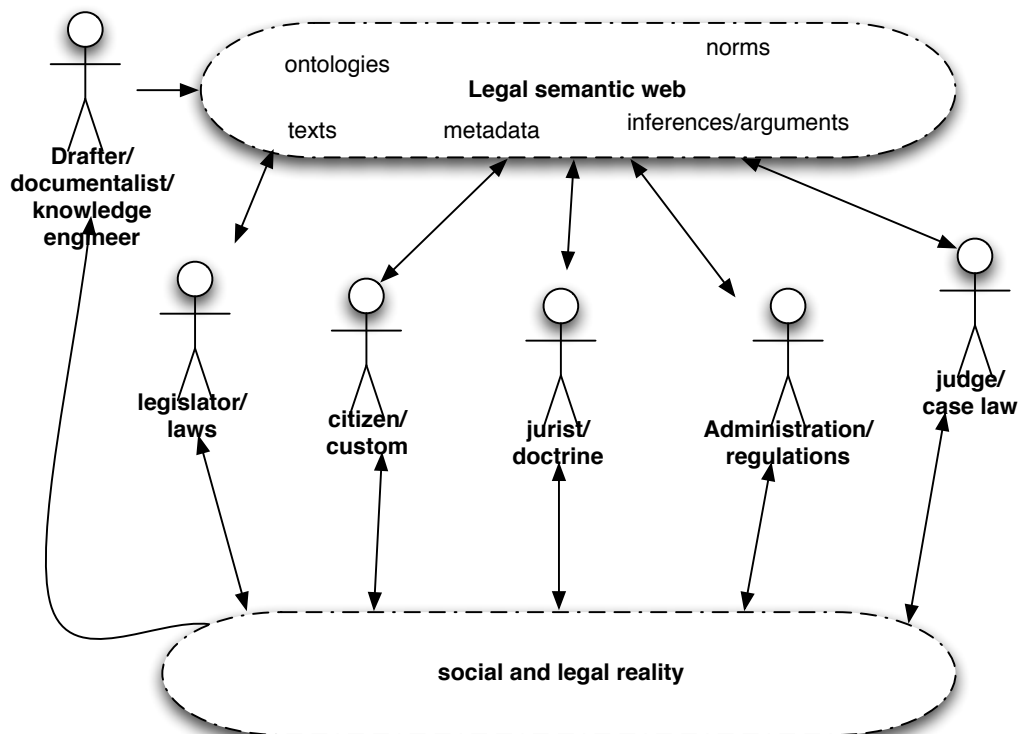
The law in the *semantic web* II

Computable forms of legal reasoning:

- text retrieval
- determination of law in force
- terminological inference (subsumption)
- normative inferences (application of rules)
- legal arguments (conflicts resolution, extracting arguments form cases, analogy, a fortiori reasoning, dialectics, probabilistic inference, etc.)

Two new agents (forming forces) of the law

The law as a web resource

Why standards

By putting the law on the web we should:

- provide all with accessible legal information, tailored to their needs
- support the production and the application of the law
- support communication between government and citizens
- support political and legal discussion.

For this purpose the legal information on the web must:

- be accessible to everybody
- be usable through all systems and devices
- empower everybody as a producer of legal information

For this purpose it must comply with a shared standard.

Internet values and the semantic web

Do not ask what the Internet learn from you, ask what you can learn from the Internet!

- Openness (universal accessibility)
- Universal entitlement (everybody may make proposal, everybody may evaluate others' proposals, though there is no right to be taken seriously)
- Deliberation (alternative proposals are not evaluated only according to private interests, but also according to technical merit and correspondence to shared needs)
- Consent (it is up to community to accept proposals (*rough consensus*)
- Control through practice (*running code*)
- Authority of competence (one's authority depends on the merit of one's contributions, as recognised by the community)

Semantic web and legislation

The semantic web represents an opportunity for the legislation

- maintenance of legal sources
- improvement of legal del drafting
- legislation based upon knowledge and dialogue
- publicity of procedures and information
- dialogue between sub-national, national, and international institutions

Compliance with (reasonable and) shared standards is a precondition for this opportunity to be realised.

What kind of standards?

Standards based on XML (eXtended Markup language), including:

- Markup: computer-processable information added to a text: `<title>Privacyact</title>`
- URI: universal resource identifiers: `Egypt:Act:1997-07-16;254@2000-12-03`
- Metadata: information about the document, which is include in the document (e.g. the lifeycle)

All of these element must be provided according to an open and non-proprietary model

Standards about what?

We need to specify in a precise way, understandable to a machine, and shared by all users, the following elements:

- the identification of a legal source
- the organisation of its content (structure)
- links to other sources
- textual modifications
- information about the source
- concepts
- norms

NB: Each addition of machine processable information adds to what can be done with the text, to the support we can get from ICT tools.

Why standards?

Because they enable

- preservation
- communication
- processing
- openness
- enrichment
- control
- decentralisation
- subsidiarity
- investment
- sharing
- competition
- cooperation
- neutrality
- progress

Two international initiatives

- Akoma-Ntoso. An integrated approach to legislation.
  - DRAFTING GUIDELINES, to improve the quality of legal documents, and so make it easier to understand their contents, their structure, their links, their changes
  - AKOMA-NTOSO STANDARD, to embed machine-readable information inside legal documents, and so enable computer to help us in accessing and using legislative information
- CEN Metalex. A shared interchange format for legal sources
  - basic structures and metadata for legal documents, mappable into different standards

Thanks for your attention

Giovanni Sartor

`giovanni.sartor@eui.eu`