



ESTRELLA - 027655

European project for Standardized Transparent Representations in order to Extend Legal Accessibility Specific Targeted Research or Innovation Project

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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Executive summary

ESTRELLA brings together the leading European companies and experts in the market of legal knowledge systems, to collaborate on the development, demonstration and dissemination of an innovative, open platform enabling citizens and businesses to easily access, understand and apply complex legislation and regulations. The interests of public administration are represented in ESTRELLA by the participation of the national tax ministries of Hungary and Italy.

The main technical objectives of the ESTRELLA project are to develop a Legal Knowledge Interchange Format (LKIF), building upon emerging XML-based standards of the Semantic Web, including RDF and OWL. ESTRELLA will also design a document management system for legal sources, based on a uniform XML format, enabling search, explicating relations with other documents, drafting of new documents and version management.

To demonstrate and validate the ESTRELLA platform, European legislation and national tax legislation of two European countries will be modelled and used for pilot applications.

In the first year (reported in PAR D6.11) a first version of LKIF was specified. In this second year, LKIF was tested in actual use in three pilots and already refined. The pilot in Hungary (Ministry of Finance) resulted in an actual (small) system being built to advice on VAT. The pilot in Italy (Ministry of Finance) was directed towards supporting legislative drafters in drafting Italian legislation in accordance with EU directives. Both pilots used vendor tools from and outside of the consortium. In the third pilot we modelled an EU directive directly in LKIF and using the vendor tools. The resulting models were compared. All pilots showed that LKIF was sufficient to model the various types of legislation, that models in one format could be translated to LKIF without substantial loss of information, and again translated (back) into other formats.

A reference inference engine for LKIF was produced (named '*Carneades*'), API's were described for interacting with LKIF knowledge bases, and translators from and to the vendor formats were developed and tested.

Concerning the management of legal sources, the project has continued co-operation with the CEN/ISSS standardization activities initiated by UvA early in 2006. Furthermore, translators from/to national standards to/from MetaLex/CEN were developed for Italy and Hungary and for the previous MetaLex (v1.3.1). Also, functional requirements for an open source CMS for sources of law were specified.

Several scientific papers on ESTRELLA results were produced in the period.

Two vendors of legal knowledge based technology outside of the consortium have already stated they will conform to LKIF with their tools.

All results are publicly available through the Estrella web site.¹

¹ <http://www.estrellaproject.org/>

Appendix 1 – Plan for using and disseminating the knowledge

The LKIF format is already useful for exchanging legal knowledge between vendors as was shown during the February 2008 review. This prevents a vendor lock-in situation for the clients of those vendors that are compliant to the LKIF standard (Legal Knowledge Interchange Format). The actual use will become relevant as soon as current or future clients of these vendors would consider changing their supplier. We have started to discuss LKIF compliance with other vendors and will promote the use thereof further at international conferences such as the eJustice conference and the European Business Rules conference both to be held in June 2008. We will also promote the idea of LKIF in various publications planned in both scientific journals and conferences as well as application oriented ones. With respect to the proposals considering a new MetaLex XML-schema for describing legal sources and LMIF (Legal Meta-data Interchange Format) a new activity through the MetaLex/CEN initiative has been started. This activity is to produce an updated version of the MetaLex/CEN standard to be disseminated through CEN.

A training manual and document will be produced during the last phase of the project and this training material will be used in the classes given at the universities involved. Some components of this training material will be used in courses developed and given by the vendors. A more elaborate dissemination plan is foreseen as one of the deliverables due at the end of the Estrella project.

Section 1 - Exploitable knowledge and its Use

Exploitable Knowledge (description)	Exploitable product(s) or measure(s)	Sector(s) of application	Timetable for commercial use	Patents or other IPR protection	Owner & Other Partner(s) involved
Standard for Interchange of Legal Knowledge	LKIF	Government Law Education	2009	None	Joint ownership, ESTRELLA consortium. Proposed public standard (under open source license)
Standard XML format for Legal Sources	MetaLex/CEN	Government Law Education	2007	None	CEN Workshop. Proposed public standard
Ontology of Law (partial)	LKIF-Core	Government Law Education	2009	None	Joint ownership, ESTRELLA consortium. Proposed public standard (under open source license)
Application Programmer Interfaces to Legal Knowledge Systems	LKIF API's	Government Law Education	2009	None	Joint ownership, ESTRELLA consortium. Proposed public standard (under open source license)
Reference Inference Engine for LKIF		Government Law Education	2009	None	Joint ownership, ESTRELLA consortium. Proposed public standard (under open source license)

Overview table

² If exceptionally a contractor does not wish to disclose the text to the other contractors due to its commercial sensitivity, then they are asked to send the information directly to the Project Officer.

Section 2 – Dissemination of knowledge

Planned/ actual Dates	Type	Type of audience	Countries addressed	Size of audience	Partner responsible /involved
Continuing	Web site www.estrellaproject.org	General public	All	Unknown	UvA
27-31 January	conference	Higher education	many	50	FhG
2-22 March	Conference African Legal Sources	Governments, parlia-ments, academics	Mainly African	200	UvA
18-23 March 2007	Conference NorMAS 2007	Researchers	International	30	CIRSFID
May 14, 2007	Workshop ArgNMR at LPNMR	Researchers	International	20	LivUni
29-31 May 2007	Conference eJustice	Politicians, legal professionals	International		UvA
5-8 June 2007	Conference ICAAL	Academic	International	120	UvA/UNIBO/ FHG/LivUni
5-8 June 2007	Conference ESWC & OWLED	Academic	International	200	UvA
18-20 June 2007	Conference, 6th European Business Rules	Businesses	International		UvA
12 July 2007	Symposium at the ministry of Justice	Politicians, academics, managers	International	50	UvA/UNIBO
July 22-26	Conference AAAI, Vancouver, C	Researchers	International	200	LivUni:
3-7 Sept. 07	EGOV conference	Academics	International	100	UvA/FHG Fokus...
12-14 Sept. 2007	Conference	Legislative XML Summer School	World wide, mostly Europe and Africa	50	UvA UNIBO FHG
14 Sept. 2007	Press release (press/radio/TV)	Contribution to eStrategies through UvA	Global	Global	RuleBurst
9-11 October 2007	eGovernment Interoperability Campus	eGovernment	International	Large	UvA
26-27 October	LexUM, Montreal, Canada	Justice clerks, judges, researchers	International	200	UniBo
Oct.31-Nov.2	Conference: ECSQARU paper	Researchers	International	50	LivUni
5-6 December 2007	meeting OWL WG	Academic, industry	International	30	UvA
12-15 December 2007	Conference JURIX 2007 various papers	Academic	International	100	UvA, LivUni
December 15 2007	Workshop CEN on MetaLex	Academic, industry, public administrations	International	30	UvA, UniBo, MRIPA
December 15 2007	Standards for Legislative XML	Academic, industry, public administrations	International	30	Uva, UniBo, MRIPA

Scientific papers produced:

Rinke Hoekstra, Joost Breuker, Marcello Di Bello, and Alexander Boer. The LKIF Core ontology of basic legal concepts. In Pompeu Casanovas, Maria Angela Biasiotti, Enrico Francesconi, and Maria Teresa Sagri, editors, *Proceedings of the Workshop on Legal Ontologies and Artificial Intelligence Techniques (LOAIT 2007)*, June 2007.

UvA (Breuker, Di Bello, Boer and Hoekstra) submitted a paper entitled "LKIF Core: Principled Ontology Development for the Legal Domain" for review to a book on "Law, Ontologies and the Semantic Web" (IOS press).

UvA and UniBo (Boer, Winkels, Vitali) submitted a paper on MetaLex/CEN and LKIF entitled: "MetaLex XML and the Legal Knowledge Interchange Format" to a book that will be published by Springer on the results of various EU projects.

UvA (vd Ven, Hoekstra, Winkels, de Maat & Kollar) submitted a paper on MetaLex and its editor entitled: "MetaVex: Regulation Drafting meets the Semantic Web" to the same book.

UvA (Klarman, Bron, Hoekstra & Breuker) wrote a paper on modeling legal concepts in OWL for the Jurix 2007 Workshop on Multimedia Ontologies and Artificial Intelligence Techniques in Law, entitled: "Representing Definitional Changes in Legal Ontologies."

Adam Wyner and Trevor Bench-Capon (2007): Towards an Extensible Argumentation System In K. Mellouli (editor): ECSQARU 2007, LNAI 4724, pp. 283-294.

Adam Wyner and Trevor Bench-Capon (2007): Argument Schemes for Legal Case-based Reasoning. In A. Lodder and L. Mommers (editors): Legal Knowledge and Information Systems. [JURIX 2007: The Twentieth Annual Conference](#), pp. 139 - 149. Leiden, The Netherlands. Frontiers in Artificial Intelligence and Applications, Vol. 165. IOS Press, Amsterdam, The Netherlands.

Adam Wyner, Trevor Bench-Capon and Katie Atkinson (2007): Arguments, Values and Baseballs: Representation of Popov v. Hayashi. In A. Lodder and L. Mommers (editors): Legal Knowledge and Information Systems. [JURIX 2007: The Twentieth Annual Conference](#), pp. 151-160. Leiden, The Netherlands. Frontiers in Artificial Intelligence and Applications, Vol. 165. IOS Press, Amsterdam, The Netherlands.

Adam Wyner (2007): An Ontology in OWL for Legal Case-based Reasoning. In K. Atkinson (editor): Proceedings of JURIX 2007 Workshop on Modelling Legal Cases, Leiden, Netherlands, Dec. 12, 2007.

Adam Wyner, Trevor Bench-Capon, and Katie Atkinson. "Three Senses of 'Argument'". In G. Simari and P. Torroni (Eds.): Proceedings of Argumentation and Non-Monotonic Reasoning: An LPNMR Workshop Tempe, Arizona, US, May 14, 2007.

Adam Wyner and Trevor Bench-Capon. "Towards an Extensible Argumentation System". In K. Mellouli (Ed.): ECSQARU 2007 LNAI 4724, pp. 283-294, 2007