

# **IMOLA II TENDER**

**For the conclusion of a service contract concerning the semantic and technical realization of the IMOLA II project**

**The IMOLA II project is subsidized by the EC Civil Justice Program  
JUST AG-2016-05/Grant Agreement n° 764350**

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## 1. BACKGROUND INFORMATION

### 1.1. Contracting Authority: ELRA

ELRA (European Land Registry Association) is an international association without lucrative purpose (AISBL: *Association internationale sans but lucratif*). The mission and primary purpose of the European Land Registry Association may be described as: “the development and understanding of the role of land registration in real property and capital markets”. Equally, ELRA is fully committed to work on behalf of Land Registries in Europe in cooperating with the EU institutions.

ELRA integrates 32 organizations representing the land registries of 25 European Countries. It aims to underline the significance of Land Registries in Europe as juridical institutions and the scope of the effects of registration pronouncements as a fundamental tool for progress and change in the rule of law in the field of property and rights on immovables.

It is known that the rules governing the Land Registration Systems are very closely related to those laws governing the property and real estate rights in every country. However, at the present moment in the evolution of European Community Law, the European role of the Land Registration Systems cannot be ignored, and so Land Registries are a fundamental tool for the good functioning of basic community freedoms, such as the free movement of people and capital and the freedom of establishment.

Land Registries are an essential instrument to secure property rights and other real rights and they can provide help to judicial cooperation in the EU providing a secure playing field in this matter when immovables are involved. Also, the Land Registry institutions play a significant part in the creation of a real European mortgage market.

In this context, ELRA wants to promote the mutual knowledge of the different Land Registry Systems throughout Europe as well as to lay the conditions for a profitable cooperation with the European institutions. This collaboration with the EU by ELRA as the official representative body of the Land Registries in the European Union has been the main achievement of the Association to date.

ELRA conducts its business in the English language.

## **1.2. Current situation of Land Registry Information.**

The increased demand for Land Registers information (LRI) to registration of foreign documents and judicial decisions, establishing local equivalents for foreign legal rights, in order to get an efficient implementation of EU Regulations on civil and commercial matters, makes new demands on registrars, judges, academics, solicitors, notaries, lawyers, and citizens. They will need to have improved knowledge of foreign property rights, registration systems and legislation and to provide understandable information through e-Justice portal.

This new ELRA's project, IMOLA II, arises from the need to promote and get an effective model of reference information integrated on e-Justice Portal and shared by most Member States, as a mean to facilitate the creation of a semantic common area of justice in civil and commercial matters.

The current scenario can be considered to be very inadequate as to get access, to obtain, to reuse and to understand Land Registry information and more specifically, to take advantage of the implicit knowledge encoded in the different registries. Possible solutions should imply the creation of a real collaborative environment, supported by European Land Registers Net -ELRN- where tools and data can be exchanged, information and knowledge shared, providing a permanent and effective platform for training. Moreover to develop and to keep

updated a Land Registry semantic model hosted on specific Knowledge Repositories, what at present moment it is hard when not impossible to reach without the support of semantic web technologies.

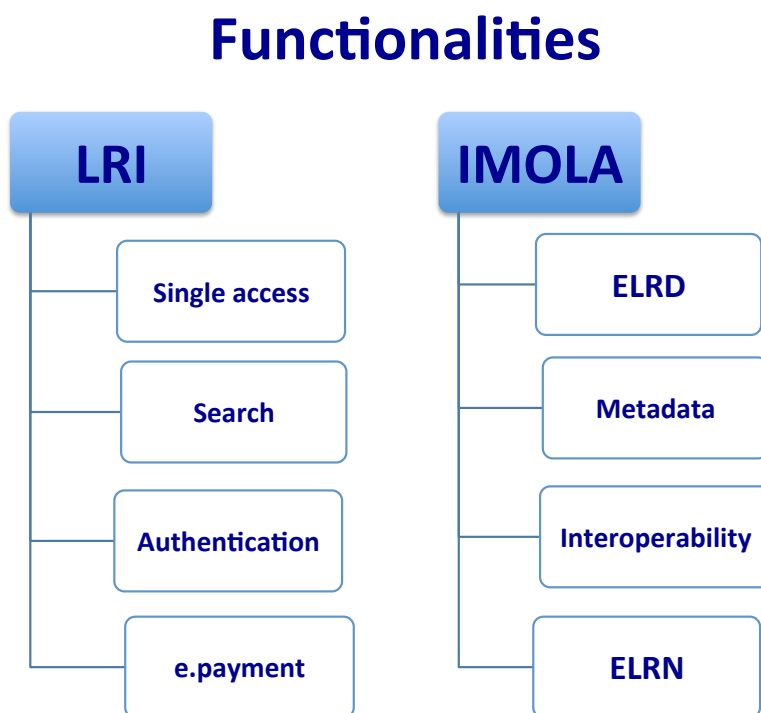
### **1.3. Related programs**

IMOLA II, as has been detailed, should be considered as IMOLA I follow up project. But there is also a very strong relationship of complementarity with the large scale project, developed by the European Commission: Land Register Interconnection, -LRI-, which is a part of the program promoting the interoperability of juridical registers in the Member States.

IMOLA II is an approach conceived to deploy its effects within the scope of LRI project and as such to be integrated on e-Justice Portal, which furthermore would support the effectiveness of Judicial Cooperation Network on civil and commercials matters, which opens possibilities to EU citizens or residents and in general terms to any Land Registry customers asking for information on property rights.

As well LRI as IMOLA aim to open new horizons to cross border transactions, developing a single access point to Land Registers information, based on a common template -ELRD- and semantic model, making the land registry information understandable.

**Figure 1: LRI/IMOLA functionalities**



#### **1.4. Partners**

IMOLA II is a project developed by ELRA, which is supported (20%) by Colegio de Registradores de la Propiedad, Mercantiles y Bienes Muebles de España. - CORPME-, whom has accumulated an extensive experience by its participation in other European project such as CROBECO, IMOLA I, and BRIS.

## **2. OBJECTIVES, PURPOSE AND EXPECTED RESULTS**

### **2.1. Overall objective and relevance**

IMOLA II is a very innovative project based on semantic web architecture and technology, with as objective an increasingly improvement of level of

understanding and interoperability of existing web information. It is to be designed to fit within the scope of the LRI project, through a common and shared data model, (graphs), and underlying semantics based on different logic formalisms (Thesauri and Ontologies).

With IMOLA II, ELRA aims to develop a real and complete Land Registry Information semantic model, as controlled vocabulary, in order to get the interoperability of metadata related to the juridical information supplied by ELRD, what is crucial to make property rights information more accessible and understandable within the scope of LRI project.

## **2.2. Purpose**

The European Land Registry Association, (ELRA), has developed the IMOLA I project aiming to produce a model for standardized land registry output, connected to explanatory material in different languages, and to provide training to improve understanding of the different legal systems involved. ELRA has also worked closely with other associations and networks working in this area. It uses the resources of ELRA's European Land Registry Network (ELRN).

IMOLA II is an ELRA's follow up project which, as Semantic Web initiative, pursues the creation of public specifications (data shapes) to exchange information generated on the framework of Land Registers Information Systems, based on the ELRD common structure by applying the principles of the Linked Data initiative and Knowledge Organization Systems (KOS).

It is aimed to describe the data managed by the system (metadata), using concepts or keywords as starting point for achieving a semantic shared knowledge Repository, developed as thesaurus of terms/concepts.

## **2.3. Results to be achieved by the Contractor**



According to it the results expected by the Contractor are:

- A Knowledge Repository integrated on e-Justice portal as controlled vocabulary (Thesaurus).
- To achieve the semantic interoperability among the Land Registers Information, to facilitate the implementation of the ELRD as standardized common output document.
- Use controlled vocabularies as part of the descriptive metadata to characterize the content of the information objects of the Land Registries.
- Support and training works for Land Registries Experts.

### **3. ASSUMPTIONS AND RISKS**

#### **3.1. Assumptions underlying the project.**

One of the main principles reflected on IMOLA approach is the absolute respect to legal and national diversity across Europe. Practices and legislations in this matter, intrinsically related to Property Rights, are truly different, legal diversity is huge. It always has been the intention of ELRA to find consensus, with respect for the own legal identity of each Member State. As to the IMOLA II project it is important to point out that this, as one of the main goals of the project, is considered to be almost achieved.

#### **3.2. Risks**

IMOLA II presents different risks:

- It is an innovative project.
- Different actors must be coordinated: CCPP as Land Registry experts and semantic technicians.
- Integration on LRI scheme and e-Justice

Actions scheduled to prevent these hazards:

- Detailed identification on the different activities to be accomplished by Contractor and Land Registry Experts.
- Reinforcing training measures.
- The complexity of dealing with property rights on immovable assets has been partially solved by ELRD template, but it is necessary to go deeper inside using the new semantic proposed measure: Knowledge Repository.
- The participation of ELRN (a network of legal professional experts in the field of property rights and registration law in the different MS will facilitate the task).
- Detailed management infrastructure on the Governance Plan in order to enhance and coordinate the activities of different work streams.

## **4. SCOPE OF THE WORK AND TECHNICAL CONDITIONS**

### **4.1. General**

IMOLA II arises from the need to promote and get an effective model of reference information integrated on e-Justice Portal and shared by most Member States, as a mean to facilitate the creation of a common area of justice in civil and commercial matters.

IMOLA I has created a standard Land Registry output document in order to share information, ELRD, but the next step to deal with is to improve and disseminate it within the scope of the LRI project and the judicial cooperation framework, defining and developing a Knowledge Repository as controlled vocabulary, (metadata), necessary to solve the interoperability and

understanding problems between different Land Registry Systems in a more efficient way.

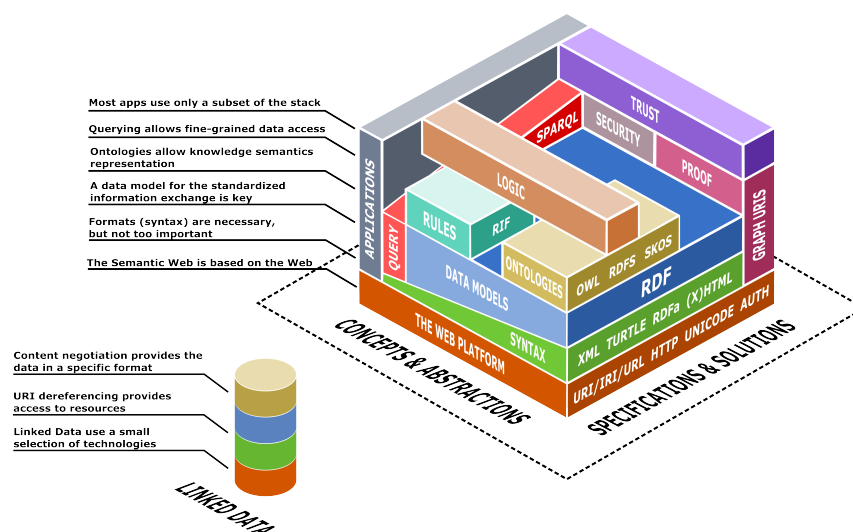
## 4.2. Specific work: technical conditions

### 4.2.1. Introduction

IMOLA II is a Semantic Web initiative, which pursues the creation of public specifications (data shapes) to exchange any information generated on the LRI field, by applying the principles of the Linked Data initiative and Knowledge Organization Systems (KOS). More specifically, the use of the Resource Description Framework (RDF) and SKOS (Simple Knowledge Organization System), as an input/output interface to share and exchange resources among services and people, is considered to be a key aspect onwards the standardization and collaboration of information/knowledge-related systems.

**Figure 2: overview semantic web architecture**

## Architecture of the Semantic Web



#### 4.2.2. Methodology

This project is fundamentally a juridical and semantic approach, but IT aspects are also crucial as well, since it is conceived to be a turn-key project to the integration of Land Registry information on the e-Justice Portal, although its effects also spreads to the judicial cooperation framework in the field of civil justice. The methodology proposed to develop IMOLA Knowledge Organization System (I-KOS), is summarized on the following schema:

1. **Identify the domain and purpose:** In this stage of the methodology needed in IMOLA, the domain must be studied and the risks and requirements must be specified and fulfilled.
2. **Identify the language syntax and semantics:** It is important to control the Natural Language Processing (NLP) techniques for the diverse languages to be used in the context of this EU project. Several countries are involved and diverse languages must be included in the I-KOS.
3. **Extract knowledge:** Techniques must be specified in order to accomplish the correct indexing of knowledge based on the previous NLP rules.
4. **Create the I-KOS: Conceptualization,** semantic relationships and formalizations must be identified, indexed and implemented in the I-KOS.
5. **Evaluate the results:** Quality analysis of results must be done after the construction of the I-KOS. It implies validation and verification of requirements, quality check of semantic content in the I-KOS and extraction of content based on test cases.
6. **Development of tools:** Following the methodology for the project means construction of tools for supporting the whole processes for NLP techniques, semantic indexing and retrieval, multilingual tools, semantic repositories with high quality of results based on retrieval parameters and the quality check to be performed.

#### **4.2.3. Milestones**

The main goal to be followed for the development of this new approach of IMOLA II consists of an incremental construction of the I.KOS. The Project aims to improve the interoperability among Land Registries around EU Members States within 24 months.

The milestones of project are summarized hereafter:

- A Knowledge Repository storing the I-KOS formal model in a permanent storage of the Glossaries and Thesaurus, customized to ELRD structure and XSD/XML standard validation rules and format.
- An integrated Web Service for interconnecting other systems and persons with IMOLA II Semantic Knowledge Repository (SKOS).
- The ELRN input system to create, maintain and update the knowledge Repository.
- Support and training works for Land Registries Experts.

To get a more detailed view on the activities to be deployed and outputs to be produced by the contractor, the objectives of the project have been divided in two Work Packages.

#### **4.2.4. Work Package 1: creation of the IMOLA KOS**

##### **4.2.4.1. Knowledge analysis, modeling and representation, (thesaurus and control vocabularies)**

This activity comprises the following tasks:

##### **4.2.4.1.A. Detailed analysis and technical design, including detailed definition of the focus of the semantic repository to be created.** The

functional and technical requirements must be analyzed and elucidated in detail for all the technical systems to be developed. Architectural decision and components to be used will be selected in detail using this input.

**4.2.4.1.B. Development of the input system for the Land Registry experts, in order to insert the information in the repository and transformation of the data generated by these experts to the system used to maintain the formal model stored in the Knowledge repository.**

This task shall include:

- A web system as entry point for the information. LR Experts must insert the information in the system and it will be stored in the KB as permanent data in the following task.
- Permanent relationship and support to LR Experts.
- Development of a template for the input of the information related to the Land Registry of the Member State. Each Land register will have access to this system in order to insert the concepts, description, relationships and all the needed information for the general and specific formal models represented in SKOS at low level.
- To allow common structure with common agreement and after that a specific language definition could be added in order:
  - o Supported by a multilingual repository.
  - o Supported by an I-KOS semantic repository.
  - o Supported by a well-tested in diverse domains NLP techniques.

**4.2.4.1.C. Ontological construction by semantic experts:**

This task shall include:

- **Relationships and formal representation of the Land registry information extended in its semantic meaning** (Controlled vocabulary and Thesaurus enriched).
- **Development of the Concept Schemes structure in the SKOS.** The concepts of the placeholder Glossary and national glossaries would be represented as SKOS concepts grouped into different concept schemes. A committee of semantic experts should identify and define the concepts of placeholder glossary. National agencies should identify and define the concepts of national glossaries. The semantic web experts will develop the structure of SKOS collections and concept schemes.
- **Concept Labeling.** The concepts must be labeled with preferred and alternative (synonyms) terms. A committee of experts should identify and define the terminology of placeholder glossary. National agencies should identify and define the terminology of national glossaries. The semantic web experts will develop the correct labeling of the concept.
- **Concept Definitions.** The concepts must be defined in English (placeholder glossary) and National Language (national glossaries). A committee of experts should define the concepts of placeholder glossary. National agencies should define the concepts of national glossaries. The semantic web experts will develop the correct annotation of concept definitions.
- **Semantic relations.** The semantic web experts in collaboration with the committee of experts will develop the enrichment of semantic structure with hierarchical and associative relations between concepts.
- **Vocabularies alignment.** From the concept scheme corresponding to the placeholder and from each of the national concepts schemes mutual equivalence would be defined using the corresponding mapping

properties. The definition of equivalence from the national glossaries to the placeholder glossary should be done in a coordinated manner by the committee of experts. The semantic web experts develop the mapping between concepts.

- **Maintenance tasks.** Each national concept scheme should be maintained by the corresponding national agencies. For each concept the system will store the subsequent editorial changes and the appropriate metadata schemes for versioning, modification dates, licenses, etc., would be used for both the datasets and elements of the glossaries.
- **Linked Open Data platform.** The datasets of glossaries must be published on a platform that implements the principles of Linked Open Data in order to improve the interoperability of the SKOS glossaries. For this purpose, the functionalities of the platform should consider both, browse the glossary by people as the exploitation through web services or API to access and reuse data by RDF applications. The semantic web experts will define the functionalities of the Linked Data Platform.
- In order to enrich the semantic of the common and specific formal model represented in the KB and SKOS, a set of axioms, rules, and enriched semantic relationships must be included in the model. It means the Controlled vocabulary and the Thesauri must be enriched with semantic relationships.
- The repository must support this kind of enrichment and also the rest of the systems developed for introducing data and also for retrieving data. It means axioms and rules must be supported as well in the I-KOS in case of needed:
  - Supported by a multilingual repository.
  - Supported by an I-KOS semantic repository.
  - Supported by a well-tested in diverse domains NLP techniques.



#### 4.2.4.2. Validating results and check quality

This activity comprises the following tasks:

**4.2.4.2.A.** During the Project **several integration and functional tests** must be done. This process is iterative and must be done whenever necessary

**4.2.4.2.B.** Also, the installation of customized software for maintaining purposes, (licensing for 30 users in several countries, if necessary), is included in this activity.

#### 4.2.4.3. Training

This activity comprises the following tasks:

**4.2.4.3.A. Detect the needs of the Land Registers Experts for the training sessions.** A set of interesting topics must be selected with the experts in order to prepare the training in the most productive way for both parties.

**4.2.4.3.B. Prepare all the material for the training sessions.** The training session must be prepared with slides and other material to be useful for the experts.

**4.2.4.3.C. Training session of seven days (face-to-face).** The training days will be face-to-face sessions. It will include an introduction of the work expected to be done by the LR Experts and how they should do it in order to be useful for the project. LR Experts will be trained how to introduce concepts, and relationships among concepts (if any). A theoretical notion of Controlled Vocabulary, Thesauri and Semantic relationships are part of the objectives of the training. The costs of travelling to these face-to-face training sessions should be taken into account by the bidder in the financial offer. The trainings

seminars must be distributed during 2018/2019 according to the Governance Plan.

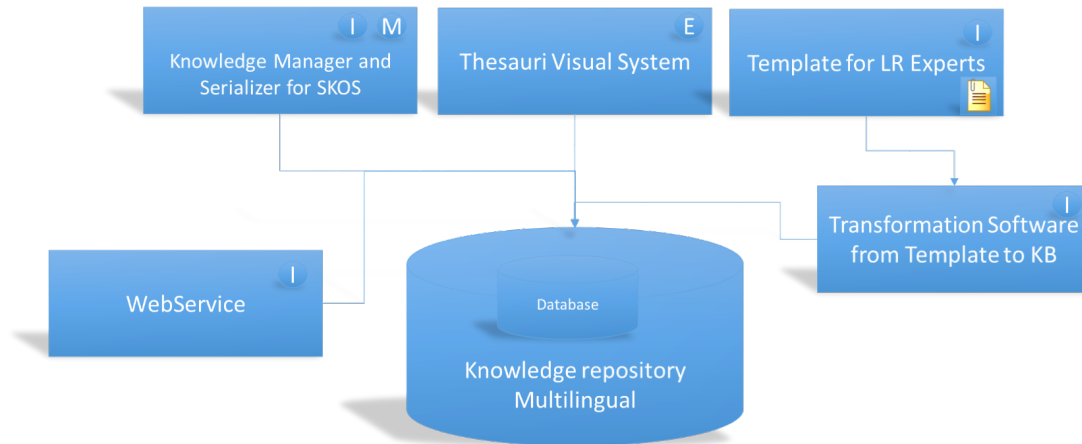
The venue of seminars will be decided and communicated in advance to contractor by ELRA's Board of Directors.

**4.2.4.3.D. Training session via internet as needed.** These training sessions will be accomplished using the web technologies available in case of audience with several geographic locations, and should be performed at any time, insofar as it is needed for having trained experts in order to achieve a successful result of the project.

The development of the Controlled vocabulary and the Thesauri is incremental and a substantial support is important to guide and help the LR Experts in the journey. These sessions are the minimum quantity of sessions all together, but also particular support will be given to all the partners, the journey will be simple and easier with a proper support all through the project.

**4.2.4.3.E. A web-based solution including the most frequently asked questions (FAQ) and best practices for creating knowledge in the project focused on Land registry domain.** In this task, a web-based system will be developed in order to distribute know-how of frequently asked questions and best practices suggested for this domain. The system must have a user oriented appearance and must support the LR experts during the project.

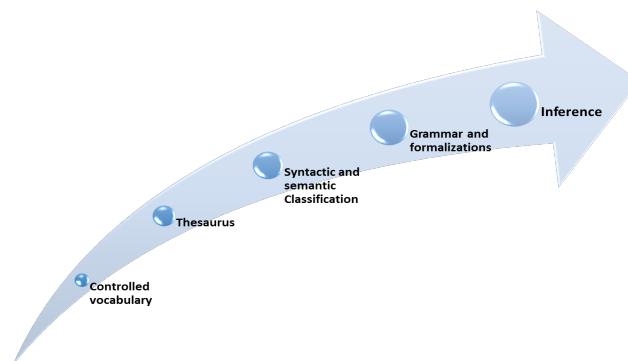
**Figure 3: ELRN input system**



The architecture diagram is based on internal, external and maintenance roles. The resulting deliverables of the activities associated to the methodology steps of work proposed are linked to this architecture where I-KOS is the core. The I-KOS provides a semantic repository where Ontologies and Thesauri are crucial. As shown in the next picture, the incremental semantic viewpoint to be used in the project is presented.

**Figure 4: IMOLA II ontologies**

## IMOLA Ontologies



#### **4.2.5. Work package 2: technical development of the needed software**

##### **4.2.5.1. Develop a system for the formal model retrieval: development of indexing and retrieval systems for KOS based systems.**

This activity comprises the following tasks:

**4.2.5.1.A. Development of the Web Service for inserting, updating and retrieval of information from the graph based model (SKOS).** In this task, the **algorithms and systems (software)** needed to interoperate with the rest of the systems involved in IMOLA must be developed.

The interface must be defined and developed according to the following requirements and specifications of interconnection technology, used on e-Justice, in order to assure interoperability among them:

- **Information exchanging protocol: SOAP.**  
<https://www.w3.org/TR/soap/>
- **Transport security should be enforced using TLS 1.2.**  
<https://tools.ietf.org/html/rfc5246>
- **EU Login can be used for authenticating web service calls.**

**4.2.5.1.B. Customization of the knowledge management system for the formal model.** In this task, the software that keeps alive the knowledge repository supporting the semantic repository lifecycle is customized for the project and the LR domain.

**4.2.5.2.- Visualization of the semantic structure. Development of a system that allows Land Registry experts and interested audience in the field to check the Semantic structure generated (Thesauri).**

This activity comprises the following tasks:

**4.2.5.2.A. Development of the web-based system for visualizing the Thesauri and navigate in the relationships among concepts.**

**4.2.5.2.B. Development of a system/interface for showing the Thesauri as concepts with its general description, synonyms, related concepts and specific information for each country of the EU.**

In order to assure the interoperability of IMOLA interface with e-Justice and Land Registers Interconnection -LRI- a prototype of it should be delivered before of 30<sup>th</sup> April 2019 to be tested and validated.

**4.2.5.3. Validate the software and systems developed in Work Packages.**

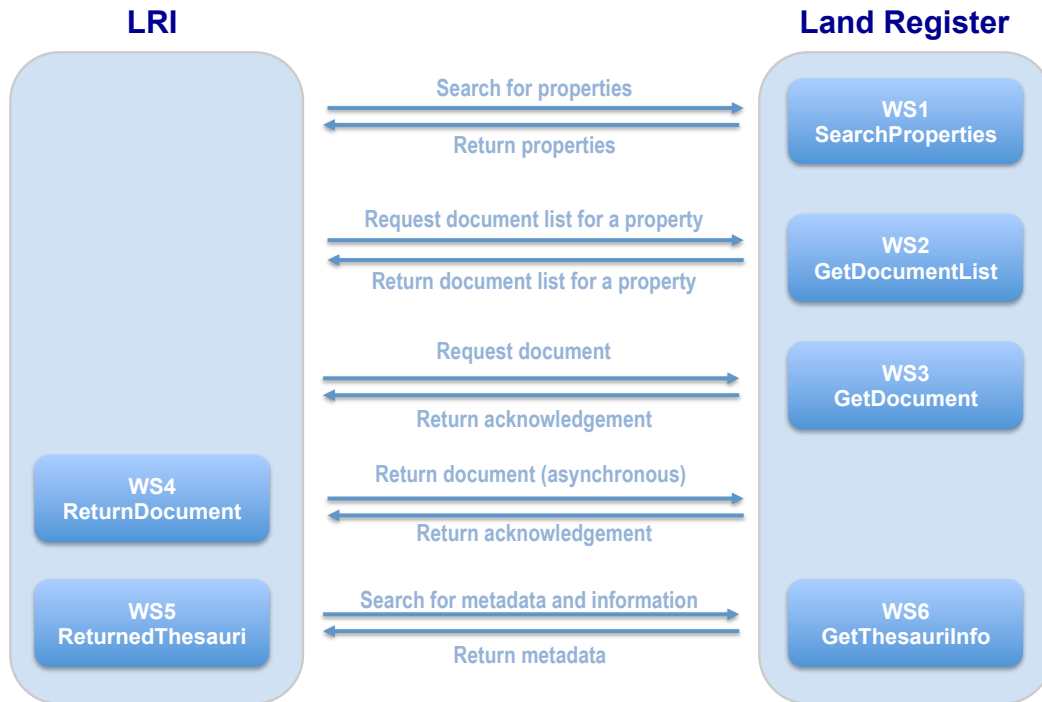
This activity comprises the following tasks:

**4.2.5.3.A. Set of tests to be run during development of the project.**

- During the Project diverse integration and functional test must be done.
- This process is iterative and must be done all the times needed.

**Figure 5: IMOLA II web service**

## IMOLA integrated web service



### **4.3. Deliverables**

#### **4.3.1. Work Package 1: list of deliverables:**

**4.3.1.A. Document with the requirements of KOS model and the whole technical system. (report).**

**4.3.1.B. Conceptual definition of KOS system, integrated with e-Justice and ELRD. (report).**

**4.3.1.C. Input system for experts, (Template for LR Experts and a Transformation Software from Template to KB). (Demonstrator)**

This deliverable will be developed as a webpage. It will check the logic defined by the Transformation rules (4.3.1.D). In this case, the webpage will help Land Registers Experts to create the Knowledge System in an easy manner. At this stage, the transformation rules must be defined and implemented for storing the Concepts of the domain in the KB. Also, a set of already identified concepts must be loaded in a semiautomatic way. It must include at the end of the project a search engine integrated for natural language or SPARQL.

**4.3.1.D. Transformation system for input data (Corpus) to the knowledge system, KB. (Demonstrator)**

This deliverable will include all the logic for the transformation system, the view is managed by (4.3.1.C) webpage. And the business logic is managed in this deliverable. The rules for transforming and the concepts provided by LR Experts following the ELRD model must be defined and implemented here.

**4.3.1.E. Serialized KOS vocabularies of the glossaries into RDF formal/serialization.** It is a system that stores in a permanent manner the formal model and transforms it as KOS interoperable structure for the Controlled vocabulary and the Thesauri (***Multilingual repository***). The Knowledge Repository Tool must be customized to this project. It must have the

complete software for knowledge management with RDF import/export capabilities. Also, it must provide the required services for the knowledge based repository, and supports OSLC, SKOS, OWL and diverse ISO standard formats. It can be used, if necessary, a Tool provided in the market but it must be for 30 users/licenses. **(Demonstrator)**

**4.3.1.F. Document with the requirements for the detailed modeling of the KOS, vocabularies, and Use Cases of the Linked Open Data platform. (report).**

**4.3.1.G. Set of tests done during the development of the project. (Demonstrator)**

**4.3.1.H. Material for training sessions. (Report)**

**4.3.1.I. Web based solution for sharing a FAQ among Land Registers Experts. (Web sites)**

**4.3.2. Work Package 2: list of deliverables**

**4.3.2.A. Development of system for formal model retrieval: (demonstrator)**

- **Algorithm for the WebService development.**
- **WebService developed for dealing with the semantic content (WebService)**
- **Knowledge management system**

**4.3.2.B. Web-based system (webpage) that allows users (Land registers and audience interested) to navigate among concepts and its semantic representation (*Thesauri Visual System*). (Demonstrator)**

The queries to be performed can be done using Natural Language and/or SPARQL.



**4.3.2.C. Validating results and activity check. Set of test done during development of the project. (Demonstrator)**

**Time scheduled to deliver: 31/07/2019, with the following exceptions, which will have to be completed within the period of two months after the contract has been signed, with ultimate deadline 31/03/2018:**

- **4.3.1.C.- Input system demonstrator for experts, (Template for LR Experts and a Transformation Software from Template to KB),**
- **4.3.1.H.- Material for training sessions. (Report.)**
- **4.3.1.I.- Web based solution for sharing a FAQ among Land Registers Experts. (web sites)**
- **4.2.5.2.B.- In order to assure the interoperability of IMOLA interface with e-Justice and Land Registers Interconnection -LRI- a prototype of it should be delivered before of 30<sup>th</sup> April 2019 to be tested and validated.**

**4.4. Project management**

**4.4.1. Responsible body**

Person and body responsible for managing the contract:

**ELRA Secretariat**

[secretariat@elra.eu](mailto:secretariat@elra.eu)

**Jesus Camy**

*IMOLA II Project Manager*

[secretariat@elra.eu](mailto:secretariat@elra.eu)

**4.4.2. Management structure**

According to IMOLA II Governance Plan the management structure of the contracting authority is made up of:

- Sponsor/ Coordinator of project: ELRA by means of its President
- Project Manager: Jesus Camy
- Steering Committee
- Executive Committee
- Works Stream Coordinators

#### **4.4.3. Facilities to be provided by ELRA**

- Controlled vocabularies- glossaries-
- Support of LR experts -ELRN-
- The venue for face-to-face training sessions
- ELRD XSD/XML schema attached as Annex I to this tender.

## **5. LOGISTIC AND TIMING**

### **5.1. Location**

The project will be managed and coordinated by ELRA, whose domicile is held at Brussels, and conducted in English.

Venues to hold face-to face training sessions -anywhere in EU- will be decided by ELRA Board and communicated to the contractor at least three months in advance.

### **5.2. Start date & period of implementation**

The aim of the tender is the conclusion of a service contract for the technical realization of the IMOLA II project. **The contract will be concluded for a**

**period of eighteen months, from 31th of January 2018 up to 31th of July 2019.**

General deadline to hand over the deliverables is on the 31th of July 2019, except for those with specifically shorter deliver timing specified under 4.3.

## **6. REQUIREMENTS**

### **6.1. General**

In order to enable an effective evaluation of the submitted offers, the following requirements will be applicable:

- The offer should be released in the period from 30 October 2017 until 4 December 2017 (17h). A prior announcement will be made at ELRA web site on 2 October.
- The offer will specify which means are used, (architecture, software, number of technical experts, possible risk repositories etc.), to accomplish semantic and technical conditions, aligned with the content of paragraphs related to methodology, activities to be deployed and deliverables to be produced, (4.2.2; 4.2.4; 4.2.5; 4.3.1; 4.3.2).
- The offer indicates whether the mentioned prices will be recurring or non-recurring. All mentioned prices include VAT and are indicated in Euro.
- The offer consists of a cover letter including the name of the applying legal person, which is signed by a legally entitled representative of that legal person. It will be accompanied by a hard copy of the offer, **with the maximum extension determined for each of the blocks** and annexes, **references and CVs**. The complete offer must be submitted to ELRA Secretariat by mean of delivery certificate system before the 17.00 hours of deadline.

- Next to a hard copy a digital cover letter including a digital example of the offer in PDF may be submitted by electronic mail.
- The applicant will provide the necessary references and CV's to deliver proof of its financial solvency. He will prove his technical experience and skills and give a summary of the staff and resources he will provide, necessary to hand over the required deliveries, within time limit, with a professional degree of quality
- Previous experience in a legal context will be taken into consideration.

## 6.2. Contact Persons:

### Applicant

ELRA will communicate with the contact person, assigned by the applying company. Please indicate in your offer the contact person's:

First and last name

Address

Phone number

E-mail

For urgent matters, in which the selected contact person cannot be reached, please indicate a second contact person together with their personal information as enumerated above.

### ELRA

Jesus Camy

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## 6.3. Reservation and General Provisions.

By submitting the application, the applicant accepts the following provisions:

- The applicant accepts the content of the tender.
- Terms and conditions included by the applicant will not be taken into consideration and be regarded as non existent.
- If the applicant bases his application on assumptions, which later appear to be incorrect, he and he alone will be entirely responsible for the consequences.
- The responsibility for submitting the application in time and in accordance with the requirements outlined in this tender, rests with the applicant.
- The application will contain a fixed price and a fixed processing time.
- If, on the basis of the submitted applications, ELRA concludes that more in-depth information is necessary, they may ask applicants additional questions. These questions will be sent to all parties who submitted an application.
- If the applicant is of the opinion that the tender or the relevant documents contain contradictions, mistakes, or uncertainties, or if the applicants have other objections, the applicants have to consult ELRA's contact person as soon as possible, anyway before the indicated deadline for submitting the questions has passed. After this point in time, the applicant cannot appeal against contradictions, mistakes, uncertainties, or bring forward objections anymore.
- All outcomes, deliverables and products including program source code and library that result from this tender will be exclusively owned by ELRA.
- Applicants are not entitled to compensation of any costs made for the preparing the application itself.
- ELRA will treat the information contained in the offer confidentially, except if a legal obligation or a judicial decision otherwise requires.
- The contractor will have to work very close with Project Manager and WS Coordinators. Particularly must be highlighted the importance of the role to be deployed on training activities to Land Registers Experts.

- In case of late completion contract, penalties may be imposed and/or price may be reduced according to paragraph 8.
- Subcontracting is carried out solely under ELRA liability as referred on Grant Agreement. Therefore the Commission won't be party of contract derived of this tender, what is especially accepted by applicant.

#### **6.4. Questions**

ELRA invites applicants to submit questions in case of uncertainty. Questions should indicate the name of this tender and shall be submitted via e-mail to ELRA's contact person before November the 15<sup>th</sup> 2017.

Questions will be answered anonymously and only be published on the ELRA website. These questions and answers will be treated as being part of the tender.

#### **6.5. Staff and key experts**

Key experts have a crucial role in implementing the contract. These terms of reference contain the required key experts' profiles. The tender shall submit as Annexes CVs and Statements of Availability at least for the following key experts:

- Tender project manager
- Analyst
- Designer
- Semantic web experts
- Graphic Designer
- Programmer
- Tester

#### **6.6. Price**

The maximum budget is 141.494,00 Euros, (hundred forty one thousand four hundred ninety four), amount which includes all costs necessary to accomplish all activities detailed in paragraph 4, **included** travel expenses that the contractor considers necessary for the realization of the expected project results outlined in this tender or licensed system if necessary.

**The bid has to include not only the global amount offered, but also the unitary prices, properly detailed and justified, which have been used to get the final bidding price.**

The contractor may be requested, when necessary, to attend some of the work streams sessions, regarding technical issues, for which travel expenses will not be paid separately.

Payment will be divided in two installments such as detailed hereafter:

**First installment 50% of the price, after reception of following deliverables. They will be delivered within a period of two months after the contract has been signed and ultimately on 31/03/2018:**

- 4.3.1.C.- Input system demonstrator for experts, (Template for LR Experts and a Transformation Software from Template to KB),
- 4.3.1.H.- Material for training sessions. (Report)
- 4.3.1.I.- Web based solution for sharing a FAQ among Land Registers Experts. (web sites)

**Payment will be formalized within the period of a month after the outputs delivery, and once its completion is ascertained and functionality according to the contract has been tested.**

**Second installment 50% of the price, after reception of following deliverables. They will be delivered within a period as scheduled in the contract and ultimately on 31/07/2019:**

**Payment will be formalized within the period of two months after the outputs deliver, and once its completion is ascertained and functionality according to the contract has been tested.**

**Contractor will guaranty the functionality of all deliverables during the period the contract is pending and after completion, for a period of one year starting with the date of delivery of the final result of the contract.**

## **7. EVALUATION CRITERIUM**

### **7.1. Selection procedure**

As general term, the subcontract will be awarded to the contractor who submitted the most advantageous economic offer, which does not automatically entail the lowest price, because the principle of best value for money must be assured. Consequently, in the evaluation, in order to award the fairest offer, will be also taken into account some additional criteria, such as it is detailed hereafter.

The bid has to include not only the global amount offered, but also the unitary prices, properly detailed and justified, which has been used to get the final bidding price.

The applicants will be evaluated in relation to each other. The applicant who convinces ELRA that he/she is the most suitable party to carry out the task will be rated as best.



The selection will take place on basis of the set of evaluation criteria outlined in this tender, paragraph 7.3.

Documents and references must be written in the English language

## 7.2. Evaluation process overview.

The procedure overview is detailed in this table:

03.10.2017	Prior Announcement at ELRA web site
06.11.2017	Tender invitation
06.11.2017-20.11.2017	Possibility to ask for clarifications
06.11.2017-07.12.2017	Submission of offers
08.12.2017-10.01.2018	Selection of best offer
11.01.2018-31.01.2018	Contracting phase & Signing of contract
31.01.2018	Start of technical activities
31.07.2019	End of technical activities

## 7.3. Evaluation criteria

The evaluation criteria and weight coefficient of each block are laid down on the following table:

Price	30%
Methodology and Activities aligned: creation of IMOLA KOS	25%
Methodology and Activities aligned: technical development of software needed	25%
Professional Qualification of Applicant, experience in related projects and demonstration of affinity with legal domains	20%

The applicant can receive a maximum of 400 points, (100 points for each categories), such as it is characterized on each one of following tables. The conclusion of the service contract is dependent on a minimum score of 275 points.

### 7.3.1. Price

The subcontract will be awarded according to selection procedure detailed on paragraph 7.1. The bid has to include not only the global amount offered, but also the unitary prices, properly detailed and justified, (even licensed software if necessary and travel expenses to face-to-face training sessions), which has been used to get the final bidding price, to assure the coherence and feasibility of bid.

The applicants will be evaluated in relation to each other according to the following criteria.

<b>Block 1. Price</b> <b>(Maximum extension 2 A.4).</b>	
Best bidder:.....	60 points
Second bidder:.....	40 points
Third bidder:.....	30 points
Four bidder:.....	20 points
Other bidders:.....	15 points
<b>Expense items specification and justifying:.....</b>	<b>20 points</b>
<b>Proof of coherence and feasibility of the bid:.....</b>	<b>20 points</b>

### 7.3.2. Methodology and design of activities

The applicant has to describe his/her methodology along with the detailed design of activities envisaged in this tender, to produce the outputs contemplated on the project.

Methodology Guide lines:

- The methodology and description of activities shall be set down aligned with sorting included in the WS defined on paragraph 4.2.4 and 4.2.5, to guarantee the transparency and competitiveness of bids.
- An analysis and project planning with an indication of the relevant milestones and the activities to be accomplished.
- Explanation of how the described general and technical requirements will be fulfilled
- Demonstration that the requested results can be achieved within the given timeframe
- An insight into the offered semantic and technical solution.
- The necessity of using licensed software should be proved in the case an open source one was not fit in best.
- Description of the efforts required by land registers experts -contact points of ELRN-.
- Further relevant topics as deemed necessary by applicant.

The applicants will be evaluated in relation to each other according to the following criteria.

The score detailed for each concept must be considered up to a maximum.

## **BLOCK 2. Work Package 1: creation IMOLA KOS**

**(Maximum extension 4 A.4)**

### **Knowledge analysis, modeling and representation -thesaurus and control vocabularies-**

- Detail analysis and technical design.....20 points
- Development of the input system and transformation data...25 points
- Ontological Construction.....25 points

### **Validating results and check quality**

- Description of methodology proposed.....10 points

### **Training**

- Description of methodology and material proposed.....10 points
- FAQ.....10 points

## **BLOCK 3. Work Package 2: technical development of the needed software**

**(Maximum extension 4 A.4)**

### **Develop a system for the formal model retrieval: development of indexing and retrieval systems for KOS based systems**

- Web service.....20 points
- Knowledge management system customized.....25 points

**Visualization of the semantic structure. Development of a system that allows Land Registry experts and interested audience in the field to check the Semantic structure generated (Thesauri)**

- Web system for visualizing the thesauri.....25 points
- Interface system for to share and exchanges resource.....20 points

**Validate the software and systems developed in Work Package**

- Description of the methodology proposed.....10 points

**7.3.3. Professional Qualification of the Applicant and affinity with semantic web technologies/architecture, experience in related projects and legal domains.**

**7.3.3.1. Professional Qualification of the Applicant and affinity with semantic web technologies/architecture**

The applicants should explain why they are qualified to carry out the task outlined in this tender. This includes a description of the applicant's qualifications that are deemed necessary to successfully complete the activities and deliverables outlined in this tender.

The applicant has to demonstrate his/her affinity with semantic web architecture and technologies. Hereby, the applicant describes and explains his knowledge and experience in this field. This includes for example a description of the relevant project(s) that the applicant has been involved in and the technical model(s) that the applicant has developed in the past.

In addition, the applicant guarantees that he/she as well as the legal person that he/she represents, is not subject to an insolvency proceeding and that they will

not be subject to such a proceeding in the foreseeable future. Further, the applicant includes a copy of his CV.

#### **7.3.3.2. Experience in related projects.**

The applicant shall attach a minimum of three relevant European projects related to the tasks of this tender, as references, which are able to give evidence of the applicant's qualifications and working method.

Additionally the skill of applicant to explain semantic and technical issues to non-technicians will be appreciated, as well as the ability of creating a collaborative environment that enhances the efficiency of training and the input system. As it is an innovative project, academic experience and competence to provided and certified this technical and semantic knowledge to LR experts will be also be a criterion of assessment.

#### **7.3.3.2. Demonstration of affinity with legal domains**

The applicant should demonstrate his/her affinity with legal domains, concerning semantic web architecture and technologies. Hereby, the applicant describes and explains his knowledge and experience in this field. This includes for example a description of the relevant project(s) that the applicant has been involved in and the technical model(s) that the applicant has developed in the past. The applicant shall attaches a minimum of one relevant projects related to the legal domain, as reference, which will give evidence of the applicant's qualifications and working method in related domains.

The applicants will be evaluated in relation to each other according to the following criteria.

The score detailed for each concept must be considered up to a maximum.

## **Block 4. Professional Qualification of the Applicant, experience in related project and affinity with legal domains**

**(Maximum extension 2 A.4)**

### **Professional qualification of applicant and affinity with semantic web technologies and architecture**

- Description of the applicant's qualifications and  
CVs.....20 points
- Certified training and innovation experience.  
.....25 points

### **Experience in related projects**

- Minimum of three relevant European projects related to the task of this  
tender.....30 points
- The degree of importance and similarity and quantity will be taken into  
account.
- Additional projects will be evaluated in case of draw on this partial  
score

### **Demonstration of affinity with legal domains**

- Knowledge and experience in this field.....25 points

## **7.4. Award of contractor**

The members of Steering Committee will be involved in the analysis, evaluation of bids and selection of contractor. In order to support and facilitate this activity the Executive Committee will make up a report regarding the bids submitted two weeks after the deadline to apply.

On the basis of this analysis and evaluation process a ranking will be set up. This ranking will not be published; applicants not awarded the contract will be informed on the shortcomings with regard to the assigned Contractor.

The applicants will be evaluated in relation to each other. The applicant who convinces ELRA that he/she is the most suitable party to carry out the task will be rated as best.

The Board of ELRA will carry full responsibility for the determination of the winning party.

## **8. CLAUSES IN RESPECT TO NOT FULFILLING OR LATE COMPLETION OF CONTRACT.**

### **8.1.- Breach of contract.**

Either party commits a breach of contract where it fails to perform its obligations in accordance with the provisions of the contract. Where a breach of contract occurs, the party injured by the breach is entitled to the following remedies: damages; and/or termination of the contract. Damages may be either general damages or liquidated damages.

Should the Contractor fail to perform any of its obligations in accordance with the provisions of the contract, the Contracting Authority is without prejudice to its right to claim for damages, also entitled to the following remedies: suspension of payments, and/or reduction or recovery of payments in proportion to the failure's extent.



The Contracting Authority is entitled to deduct such damages from any sums due to the Contractor or call on the appropriate guarantee.

The Contracting Authority shall be entitled to compensation for any damage which comes to light after the contract is completed in accordance with the law governing the contract.

The Contracting Authority is entitled to impose financial penalties. It may deduct such financial penalties from any sums due to the Contractor or call on the appropriate guarantee. These financial penalties may represent a 3% by each month of delay, up to 10% of the total value of the contract, without prejudice the possibility of termination of contract.

#### **7.5.2. Termination by the contracting authority**

The Contracting Authority may, by giving seven days' notice to the Contractor, terminate the contract in any of the following cases:

- (a) the Contractor is in serious breach of contract for failure to perform its contractual obligations;
- (b) the Contractor fails to comply within a reasonable time with the notice given by the Project Manager requiring it to make good the neglect or failure to perform its obligations under the contract which seriously affects the proper and timely performance of the services;
- (c) the Contractor refuses or neglects to carry out any administrative orders given by the Project Manager;
- (d) the Contractor assigns the contract or subcontracts without the authorization of the Contracting Authority;
- (e) the Contractor is bankrupt, subject to insolvency or winding up procedures,

is having its assets administered by a liquidator or by the courts, has entered into an arrangement with creditors, has suspended business activities, or is in any analogous situation arising from a similar procedure provided for under any national law or regulations relevant to that Contractor;

(f) any organizational modification occurs involving a change in the legal personality, nature or control of the Contractor, unless such modification is recorded in an addendum to the contract;

(g) any other legal disability hindering performance of the contract occurs;

(h) the Contractor fails to provide the required guarantees or insurance, or the person providing the earlier guarantee or insurance is not able to abide by its commitments;

(i) the Contractor has been guilty of grave professional misconduct proven by any means which the Contracting Authority can justify;

(j) it has been established by a final judgment or a final administrative decision or by proof in possession of the Contracting Authority that the Contractor has been guilty of fraud, corruption, involvement in a criminal organization, money laundering or terrorist financing, terrorist related offences, child labour or other forms of trafficking in human beings or has committed an irregularity;

(k) the Contractor, in the performance of another contract financed by the EU budget/EDF funds, has been declared to be in serious breach of contract, which has led to its early termination or the application of liquidated damages or other contractual penalties or which has been discovered following checks, audits or investigations by the European Commission, the Contracting Authority, OLAF or the Court of Auditors;

(l) after the award of the contract, the award procedure or the performance of the contract proves to have been subject to substantial errors, irregularities or fraud;

(m) the award procedure or the performance of another contract financed by the EU budget/EDF funds proves to have been subject to substantial errors,

irregularities or fraud which are likely to affect the performance of the present contract;

(n) the Contractor fails to perform its obligation in accordance with conduct code or conflict of interest

(o) the Contractor is unable to provide a suitable replacement to an expert, the absence of which affects the proper performance of the contract.

The cases of termination under points (e), (i), (j), (l), (m) and (n) may refer also to persons who are members of the administrative, management or supervisory body of the Contractor and/or to persons having powers of representation, decision or control with regard to the Contractor.

The cases of termination under points (a), (e), (f), (g), (i), (j), (k), (l), (m) and (n) may refer also to persons jointly and severally liable for the performance of the contract.

## **9. SETTLEMENT OF DISPUTES**

The parties shall make every effort to settle amicably any dispute relating to the contract which may arise between them.

Once a dispute has arisen, a party shall notify the other party of the dispute, stating its position on the dispute and any solution which it envisages, and requesting an amicable settlement. The other party shall respond to this request for amicable settlement within 30 days, stating its position on the dispute. Unless the parties agree otherwise, the maximum time period laid down for reaching an amicable settlement shall be 120 days from the date of the notification requesting such a procedure. Should a party not agree to the other party's request for amicable settlement, should a party not respond in time to that request or should no amicable settlement be reached within the maximum time period, the amicable settlement procedure is considered to have failed.

In the absence of an amicable settlement, a party may notify the other party requesting a settlement through conciliation by a third person. If the European Commission is not a party to the contract, it may accept to intervene as conciliator. The other party shall respond to the request for conciliation within 30 days. Unless the parties agree otherwise, the maximum time period laid down for reaching a settlement through conciliation shall be 120 days from the notification requesting such a procedure. Should a party not agree to the other party's request for conciliation, should a party not respond in time to that request or should no settlement be reached within the maximum time period, the conciliation procedure is considered to have failed.

If the amicable settlement procedure and, if so requested, the conciliation procedure fails, each party may refer the dispute to either the decision of the national jurisdiction or arbitration according to it this contract is governed.

## **10. APPLICABLE LAW**

This contract shall be governed by the Belgium law given that it is the country of the Contracting Authority.

## **11. DATA PROTECTION**

Any personal data included in the contract shall be processed pursuant to Regulation (EC) No 45/2001 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data. The data shall be processed solely for the purposes of the performance, management and monitoring of the contract by the Contracting Authority without prejudice to possible transmission to the bodies charged with monitoring or inspection in application of EU law. The Contractor shall have the right to access his/her personal data and to rectify any such data. Should the Contractor have any queries concerning the processing

of his/her personal data, s/he shall address them to the Contracting Authority. The Contractor shall have right of recourse at any time to the European Data Protection Supervisor.

Where the contract requires processing personal data, the Contractor may act only under the supervision of the data controller, in particular with regard to the purposes of processing, the categories of data which may be processed, the recipients of the data, and the means by which the data subject may exercise his/her rights.

The data shall be confidential within the meaning of Regulation (EC) No 45/2001 of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data by Community institutions and bodies and on the free movement of such data. The Contractor shall limit access to the data to staff strictly needed to perform, manage and monitor the contract.

The Contractor undertakes to adopt technical and organizational security measures to address the risks inherent in processing and in the nature of the personal data concerned in order to:

a) prevent any unauthorized person from having access to computer systems processing personal data, and especially:

aa) unauthorized reading, copying, alteration or removal of storage media;

ab) unauthorized data input, unauthorized disclosure, alteration or erasure of stored personal data;

ac) unauthorized persons from using data-processing systems by means of data transmission facilities;

b) ensure that authorized users of a data-processing system can access only the personal data to which their access right refers;

c) record which personal data have been communicated, when and to whom;

d) ensure that personal data processed on behalf of third parties can be

processed only in the manner prescribed by the contracting institution or body;

e) ensure that, during communication of personal data and transport of storage media, the data cannot be read, copied or erased without authorization;

f) design its organisational structure in such a way that it meets data protection requirements.