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WP6: Socio-Economic Constructivism & Language

DELIVERABLE 6.9

Contract Descriptions at Semantic Level for Dynamic Service Composition



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<p>Short Description This Deliverable presents an applied approach to Digital Ecosystems, namely a case study of dynamic service composition in the Information Society Technologies (IST) business domain. Leaning on an empirical analysis of contract and negotiation processes in the IST sector in the Region of Aragón, contract descriptions at semantic level are elaborated in order to construct a test for dynamic service composition. After analyzing some standards of contract description languages, eContract Legal-XML was adopted to create, share and access the services offered. To support the definition of contract a prototypal creator, viewer and searching tools were developed. Furthermore, some key theoretical issues concerning DE regulation were analyzed from the legal point of view.</p>

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Achievements*	<p>The following research activities and tasks underlying this Deliverable were completed: (1) <i>Empirical data collection</i>: Contacting enterprises and collection of the contractual material constituting the research object; (2) <i>Semantic description</i>: Description of contracts at the semantic level and DSC-oriented analysis of negotiation and discovering protocols, as well as of the contracts described; (3) <i>Ontologies</i>: Creation of ontologies in order to store legal data; (4) <i>Service discovering</i>: Analysis on how to discover a service with specific contract details.</p>
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Work Packages	WP1 (Automata Theory & Autopoiesis) DE regulatory issues tackled in this deliverable are linked to the theory of autopoietic social systems WP3 (Autopoietic P2P Networks) the DE architecture builds up the basis for DE regulatory issues. WP 11 (Bridging DE Research...) DE impact index. WP12 (Socio-Economic Models for DE): regulatory issues discussed in this Deliverable are a part of the DE governance approach.
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Domains	Dynamic Service Composition (DSC) Ontology development and use to support semantic tools
Targets	DSC and DE researchers, SMEs in the IST branch, policy-making and public agencies
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PhD Students*	No PhD students involved
Outstanding features*	(1) Improvement of XLS2LegalXML: usability; introduce the use the ontology to support the label translation and to restrict the vocabulary used by the creator of the document. (2) Development of a Semantical Service Finder in a Digital Ecosystem Platform with some of the next functionalities: translate the labels of the e-Contract Legal-XML document from its original language (German, Spanish, French, English, ...) to a common language (for example English); Convert an e-Contract document from its Legal-XML representation to its ontological (OWL) representation; Review Ontology design to simplify it and include new requirements; Create a module to include the deductive service search tools in the service composition platform; A new version of the Finder tool allowing semantical search that is.
Disciplinary domains of authors*	UniZar: P. Bueso (commercial law, IT law, e-commerce), D. Oliver (IT law, legal theory) / ITA: J. Val, M. Ángel Barcelona, J. I. Calvo (software engineering)

The information marked with an asterisk () is provided in order to address Recommendation n. 4 from the Year 2 review report*



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Executive Summary

This Deliverable presents an applied approach to Digital Ecosystems, namely a case study of dynamic service composition in the Information Society Technologies (IST) business domain. Leaning on an empirical analysis of contract and negotiation processes in the IST sector in the Region of Aragón, contract descriptions at semantic level are elaborated in order to construct a test for dynamic service composition. After a short introduction to the objectives and scope of the Deliverable (Section 1), we explicate what methodological patterns have been followed during the research (Section 2). We introduce then an overall description of the IST negotiation and contracting processes and briefly explain the features of the IST business domain in Aragón (Section 3). This enables us to present a short domain description as well as to highlight the main features of contracting processes for each selected area: *web and software development*, *hosting services* and *management and maintenance services* (Section 4). Once the scope of the project was established, we introduce the technological background that supports it: DSC, e-Contract Legal-XML, the first version of the contract ontology (Section 5), together with the description of the capabilities implemented by the prototypal tools. In order to avoid the repetition of project objectives but looking for synergies with other projects, OPAALS is compared with other research projects related with digital contract definition and use (Section 6). Finally, we identify some basic key features of digital business ecosystems as regulation fields and try to map the major *legal and regulatory issues* connected to them.

Once we established the scope of the project, the purpose of the software infrastructure might be summarized as including the following points:

- To allow the DSC of products based on Web Development, Housing, Hosting and IT Maintenance products.
- To create some basic tools for supporting e-Contract LegalXML document creation, publishing and search.
- To develop a common ontology supporting the four kinds of contracts, in order to increase the semantic capabilities of the publishing and searching tools (multilingual environments, deductive capabilities, etc).
- To create some test cases in order to probe supposed tools capabilities and, if possible, to detect new functionalities or improvements.

1 Introduction

The objective of this deliverable is to elaborate an operative example of how digital ecosystems may work in practice, namely a case of dynamic service composition (hereinafter, DSC)¹ within the information society technologies (IST) business domain in the Region of Aragón.

DSC may be deemed a crucial aspect of market-oriented digital ecosystems –which especially holds- for small and medium-sized enterprises (SMEs) partaking in them. Yet, a number of issues are posed by DSC when it comes to deploy it in practice. From a socio-economic viewpoint, one of the key challenges is to create a realistic and legally-safe environment within which complex contract operations, like those involved in DSC, can be completed. Otherwise, SMEs shall be reluctant to take advantage of digital ecosystems to improve their business. When it comes to elaborate a working example of DSC in digital ecosystems, the actual contract and negotiation practices in the selected business domain must be first analyzed in order to make a semantic description of contracts and agreements between companies, as well as to find out what informal (non-written) elements do exert influence on them. In our case, this presupposed to collect relevant empirical information about contract and negotiation processes in the IST branch in Aragón.

Only upon this basis it is possible to conceive a feasible DSC framework in which an automation of those processes can be undertaken. Given that there is a huge diversity of IST services or products which might be dynamically negotiated and contracted, we have narrowed down the scope of the analysis to three main contract areas: *web & software development*, *hosting & co-location* and *IT management & maintenance* services. Contract materials do significantly vary from one company to another, so that a first modelling effort was needed to draft a limited number of templates capturing the relevant contract structures, contents and values, and therefore providing a semantic contract description specifically oriented towards DSC. These descriptions had to be converted into DSC-ready templates, which could be done by resorting to XML. As contracts are legal documents with their own special features, a dedicated format turned out to be necessary, and in this case we selected the Legal-XML standard. The implementation of this standard for DSC purposes opens the possibility to seek, discover and compose a given IST service satisfying specific requirements (contract details) as offered by different providers. Since clients seeking for IST services are in their turn small companies, it appeared meaningful to integrate DSC in the wider context of a methodology for business processes. In this regard, we have tried to integrate the test case into the CMMI methodology.²

¹ By DSC we primarily mean composition at the semantic level, since automatic composition at the syntactical level of the interfaces is a very difficult problem that presupposes either the adherence to a common interface standard for any kind of service (not realistic), or the automatic generation of glue logic (very challenging task). For a detailed description of our approach to DSC, see Section 5.

² A comprehensive explanation of this can be found in Sections 2 and 5.

A living-lab test case will be performed in order to validate the proposal of dynamic service composition based on legal aspects. We propose to cover the Supplier Agreement Management Process Area of the Capability Maturity Model®.³ Integration to select the best IT suppliers. We will develop some tools in order to model, publish, search and consume contract based services that allow us to simulate this scenario, that is:

- Look for a computer standard for contract representation.
- Develop a basic tool to create contracts following the standard.
- Develop a semantic oriented tool to support service publication, searching and composition.
- Look for the capabilities ontologies might add to improve service searching and publication.

This legally-laden approach to DSC in the IST business domain raises further legal issues which are tightly related to digital ecosystems regulation and governance.⁴ In this respect, this Deliverable has suggested two lines of work: on the one hand, the question arises what regulatory strategies would fit digital (business) ecosystems best; and, on the other, it should be discussed how usual legal notions such as customary law (i.e. custom taken as a source of law) or competence are evolving in this context. In the last analysis, this legal-theoretical research work could give an insight into what may be called the digital ecosystems law.

³ <http://www.sei.cmu.edu/cmmi>

⁴ See Section 7, as well as OPAALS D1.2 and D11.2, both available at: www.opaals.org

2 Methodological Remarks

This section briefly explains the methodological patterns which have been followed during the research.

2.1 Branch Selection: IST in Aragón

When launching the research tasks, two business domains were considered: the tourism sector and the IST sector. The former was attractive because of its major import in the region, not to mention that it has also proven as a promising field during the DBE Project.⁵ But we finally selected the IST sector because of three reasons. First, both the ITA and the Advanced Lab for Legal-Business Applications (UniZar) have established in recent years close connections with many companies or actors involved in this branch in Aragón, gaining thereby fruitful insights into it, which was deemed as an advantage point with regard to OPAALS. Secondly, IST is not only accorded a strategic relevance for the region, but is also regarded as a critical priority in the regional government R+D+I planning (besides, it is of great interest for the government department which has been supporting the DBE project since it started).⁶ Finally, the choice of the IST sector makes it easier to obtain comparable (say, cross-national) research results.

2.2 Branch Analysis and Selection of Companies

After selecting the research field, and by taking advantage of dedicated ITA and UniZar knowledge bases, a first prospective, initial survey was conducted on the web, which allowed for a comprehensive overview of the regional IST sector. Relevant data concerning the service and product offers were collected in order to pre-select a representative number of companies to be contacted and invited to participate in the research. This, moreover, served to properly define and target the collection of information (documentation, quests and interviews).

2.3 Collection of Information and Field Work

A prior requirement for performing the research tasks is collecting extensive and in-depth information about IST contracting and negotiation processes. To this purpose, two sources of information were chosen: documentation and interviews.

⁵ J. Val, «The experience of the Aragon Region as a Catalyst of Digital Business Ecosystems», in: F. Nachira, A. Nicolai & P. Dini 2007

⁶ The field work was expected to help micro and small enterprises improve their contract processes. It has been detected that SMEs in this sector need to improve their knowledge in this field and they start to feel that it is more important than they used to consider. Indeed, this is one of the main returns SMEs will obtain for participating in this project.

- Collection of documentation⁷

Selected firms were first required to provide a variety of documents, ranging from fact sheets or product or service offers and presentations to written agreements and model contracts used in practice. Information and documentation publicly available on the companies websites was also taken into account. Additionally, in some cases contracts and further legal documents (general terms or conditions) which are used by other, not necessarily Aragón-based companies and are available on the Internet were considered as well (mainly in the IT maintenance & management contract area). A list of firms contacted and documentation can be found in ANNEX I. As it may be observed, seventeen (17) companies were contacted and fourteen (14) of them have provided very detailed information. The project was explained to all of them as a first step to get their involvement.

- Interviews

By studying the documental material, enough information was gathered to prepare and target the interviews with the management staff of the selected companies. The aim of the interviews was to detect and discover relevant aspects of negotiation and contracting processes, which makes it possible to sketch a general description of the features of this business domain. An especial focus is set on those normative elements which, being of informal character, cannot be inferred from the collected documentation. This implicit, somewhat hidden “legal” knowledge on the business domain is expected to reveal customary standards and self-regulative trends in the IST sector.⁸ Having regard to that aim, we have opted for the methodology of semi-structured interviews with an average duration of one hour. The model-quest used as a basis for the semi-structures interviews can be found in ANNEX II (please note that it is a model: depending on each company’s specific activities, dedicated questions were discussed).

It is clear that it is not easy to involve SMEs in a research project without funding and additionally to get this kind of key information from them. But we have the support of the regional Government to perform this activity, and they trusted us to give us that information. Furthermore, we have provided them, as a consideration for their collaboration, with a short report on contract practices, aimed at improving their contracts by detecting and removing possible inconsistencies. The regional Government is very interested in this activity since micro and small companies do not pay much attention to these issues as long as they do not have problems with it. It is of high value if they are able to anticipate these problems before they happen.

2.4 Methodology for Dynamic Service Composition: An Example

This chapter introduces the methodology we followed in order to build a “living-lab” scenario used to validate the proposed concepts to obtain DSC in run-time.

⁷ Although the scheduled research was conceived conversely (see Milestone 6.2, § 1), we decided to collect and analyze documentation first in order to clear the ground for targeting the interviews.

⁸ See OPAALS Work Packages 6 and 12.

The service composition should be realized by taking contracts definitions as the rules for the services selection. In order to obtain the desired results we followed these steps:

- First we defined a real use case.
- After that, we analysed the technology and standards for semantic contract definition.
- Then we developed an infrastructure to perform the “Living-Lab”.
- Finally we made some tests and wrote down conclusions for future work.

The next paragraphs make a more detailed description of each of these steps.

2.4.1 Defining a Real Use Case

In year 2005 ITA started to develop the Softaragon Project:⁹ a Regional initiative to improve IT SMEs software development processes. Since then, more than 20 IT SMEs have introduced, followed and been certified in different levels (2nd and 3rd) of the Capability Maturity Model Integration®,¹⁰ defined and certified by the Software Engineering Institute.¹¹ As a result, ITA created a wide network of contacts with IT SMEs in the Aragon region.

This network of contacts and our knowledge of the CMMI improvement process were the determinant factors to select the IT sector as the one to perform our validation tests. From these points we defined the use case of ***select the best IT supply chain in order to cover the Supplier Agreement Management Process Area of the Capability Maturity Model®.***¹² That is, we proposed a real use case that can be translated in a problem of the real world and can be validated by and with real IT SMEs.

We used the contacts of Softaragon to conduct a survey focussing the IT SMEs involved in the project. We asked them about the kind of services, products and projects they offer to their customers and they demand to their providers. The survey looked for the properties of the offers, measurements and units too. The result was a vision of the more common IT offers provided by the IT SMEs of Aragon. This vision allowed us to reduce the scope of the proposed tests in order to study in depth the main kind of contracts. The four contracts that were selected are:

- Web Development
- Housing (Co-location)
- Hosting
- IT Maintenance

⁹ <http://www.ita.es/softaragon>

¹⁰ <http://www.sei.cmu.edu/cmmi>

¹¹ <http://www.sei.cmu.edu/cmmi>

¹² <http://www.sei.cmu.edu/cmmi>

2.4.2 Analyzing Technology and Standards for Semantic Contract Definition

Once we defined the use case we demanded real contract templates from the SMEs in order to analyse its properties. We focused on their legal aspects, their structures, common terminology (both from the syntactical and semantic point of view) and other aspects that should be taken into consideration to make a real contract negotiation.

We obtained a “common contract infrastructure” sketch together with a subset of knowledge of the supply chain in order to cover the Supplier Agreement Management Process. We used these preliminary ideas to conduct our research so as to looking for the technologies and standards which support contract definition in a semantic way.

Our study was centred in the analysis of four standards for semantic contract definition and composition:

- CWM- Contract Workflow Models: we reviewed some proposed models to find common patterns and references in service semantic definition, service composition or information exchange formats.
- OWL-S – Semantic Mark-up Language for Web Services: an W3C initiative to create an ontology standard to describe web services trying to allow access them by content rather than just by keywords.
- CEL – the Contract Expression Language is currently being developed by the industry consortium Content Reference Forum.¹³ It is an XML based language designed to express contractual agreements between different parties for the purposes of capturing and communicating contractual information and facilitating contract execution and enforcement by machines with respect to granted permissions, mandated obligations and stipulated prohibitions. In addition to modelling contractual agreements using the deontic concepts of rights, obligations and prohibitions, it has distinct features for specifying statements of intentional, factual and exclusive types, defining preference rules for resolving conflicts, and supporting lifecycles and trust management of contracts in open and distributed environments.
- legalXML e-Contracts: the legalXML schema was developed by the OASIS LegalXML eContracts Technical Committee,¹⁴ and approved on 27 April 2007. The eContracts Schema is intended to describe the generic hierarchical structure of a wide range of contract documents. The use of the eContracts Schema will facilitate the maintenance of precedent or template contract documents and contract terms by persons who wish to use them to create new contract documents with automated tools. Use cases covered include negotiated business contracts, ticket contracts, standard form business and consumer contracts and click-through agreements.

¹³ <http://www.crforum.org>

¹⁴ http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=legalxml-econtracts

Although all of the possibilities are supported by international standardization organisms and are based in similar technology background (xml based, ontologies reference, ...), our choice was legalXML. We based this decision first on the fact that it was developed by Oasis – a non profit consortium with more web services developed in the world.¹⁵ On second place a Technical Committee of the Oasis consortium developed the e-Contract DTD an open XML standards for the mark-up of contract documents to enable the efficient creation, maintenance, management, exchange and publication of contract documents and contract terms, and, finally, but more important, it was the only standard that, when the state of the art was realized, has been used to develop real development projects such as the one defined on <http://www.aija.org.au/info/techn/SAE-filing/Summary.doc>

Once we chose the eContract legalXML framework as our template to represent the contract documents, we proceeded to map our contract templates (for Web Development, Housing, Hosting and IT Maintenance) in the e-Contract DTD, that is we defined the subsets of allowed sentences needed to represent our contracts of reference.

2.4.3 Development of an Infrastructure to “Living-Lab” Performance

Although the final objective of the project was to develop a basic infrastructure to automatically and semantically offer, search and compose Web services, when we realized the state of the art described in previous paragraphs, we discovered the research and development of the technologies and tools were in early stages. Hence, we decided that it was better, at least for this phase, to establish a more realistic objective. So, to allow the project progress and to obtain intermediate results, we decided to perform the “Living Lab” following two parallel, but convergent, ways:

- We developed a set of tools to perform some basic validation tests.
- We studied in depth the use of OWL to develop a semantic framework for the contract description and the use of the obtained ontology to support the service search and composition.

As a result of the former way, we obtained a set of useful tools to create, visualize and search LegalXML formatted contracts:

- An user interface to translate text based contracts into legalXML contracts.
- A visualization tool for e-Contracts formatted documents which shows them as a tree (of concepts – in someway like the taxonomy of an ontology).
- A search engine on the e-Contracts clauses properties (under development).

We complemented this way, based on a syntactical approximation, with the way of building and use of an ontology to support contract description and search. To do it:

- First we explored Protégé capabilities to develop ontologies and to make deductions (searches) over their concepts instances (in our case contract/services description instances).

¹⁵ <http://www.oasis.org>

- We used Protégé to develop a preliminary multitier ontology representing our models of contract.
- Then we studied the semantic possibilities of the ontological representation of the contracts: for example the multilingual translation capabilities.
- Finally we looked for some semantic annotation tool (for example DOSE) that can be used to translate multilingual contract to a common and shared (human) language without lack of semantic content (for example “translating” it to English).

We used these developments to create some test cases.¹⁶

2.4.4 Test-Making, Conclusions and Future Work Outline

As we suggest in the previous paragraphs, booth parallel vias have to converge in order to allow DSC with semantic capabilities. Nevertheless, they touch as one important aspect/characteristic regarding the universe of the IT contracts that increments the necessity of use of an ontology as base of the knowledge needed to make automatic negotiations (in a way similar to humans): an ontology would save measurement units conversion, language translation or concept identification depending on its position in the document (for example, the meaning of “band width” in the keyword section it is not the same as its meaning in a clause used to define a service).

On the other hand, the examples, we created, show us that there is still a lot of work to do. For example, although legalXML and OWL are both XML-based, the translation from a document which is written in the former to an ontology set of instances is not easy.

First of all “meta-framework” of legalXML labels written in a common language should be defined as base for a multilingual service DSC (which is a very important challenge in the European context).

Once these common labels would be established the proposed ontology would be improved (simplified in some points, increased in others), and linked to a synonym dictionary.

These synonyms would allow “automatic document” translation (by replacing terms) and, in future and advanced versions, units of measurement, currency and values conversions. Hence, an automatic translator could be built.

When all the documents are expressed in the same language, we think the next step should be a study of the necessities to make conversions from legalXML to OWL labels: that is to know the necessities to convert a legalXML document in a set of instances of concepts of a predefined ontology.

After that, an automatic converter prototype would be created. We think it would be a necessary platform for the automatic semantic service searches.

¹⁶ These cases, the executables of the tools, their the source code files and some demos can be found at: <http://opaalstools.sourceforge.net>

When the automatic (search and composition) tool is developed, it could be improved by adding inference capabilities to the search engine: that is, in order to allow it to infer some client necessities from the ones it requested in its queries.

Finally a good idea to improve the DSC final infrastructure would be to gather the entire services request in order to conduct post analyses, which allows finding vocabularies, deficiencies in different languages or new clauses in the contract definitions, which would both add to ontology improvements.

3 IST Negotiation and Contracting Processes

This section presents an overall description of the IST negotiation and contracting processes and briefly explains the features of the IST business domain in Aragón.¹⁷

3.1 An Introductory Note on the IST Branch in Aragón

It is difficult to define accurately the boundaries of the IST sector (in Aragón), for it involves a wide range of public and private actors or stakeholders (research and educational institutions, public administrations, private companies...), which are in turn concerned with a huge variety of social and commercial activities.¹⁸ Being focused on B2B relations, this Deliverable is confined to IST companies. In recent years, however, the number of IST companies shows an extraordinary growth in the Region of Aragón –the same goes for their commercial interests–, as it does in other European regions. Official records are lacking in this respect, but one may estimate that there are around three hundred (300) IST-related companies based in Aragón.¹⁹

3.2 Contracts and Services

The IST business domain is probably one of the most evolving and dynamic social areas nowadays. As a consequence, there exists a **plenty of contract modalities** which are directly related to IST services or products. They range from software development up to comprehensive online marketing strategies. Further instances of such a variety could be web tools and solutions development; service collaboration agreements, assistance, maintenance and training contracts; integral IST services contracts; software sales, licensing and distribution, including escrow and IPR agreements of any sort; web domain register and related contracts; hosting, co-location and data storage service contracts; information security services; mobile phone utilities; web content providing; hardware sales; social networking and web 2.0 services; IST consulting; as well as the most diverse forms of IT outsourcing. It is easy to realize that object, parties, duration, scope, conditions and scope may significantly vary from one contract type to another.

When it comes to analyze the contracting processes, handling such a variety would be certainly unworkable. Thus, a selection of contracting areas or topics was made according to the **criterion of recurrence** (or representativeness) in the region.²⁰

¹⁷ Hereby some descriptive categories and structures follow the IST-Contract approach, which makes it easier to compare results and findings in both projects. See: *IST-Contract Project Deliverable No. 6.1* at: www.ist-contract.org

¹⁸ Further details in: Government of Aragón, *I Director Plan for the IS Development in Aragón* (2006), as well as *2007 Report on the IST sector*, available at www.observatorioaragones.org

¹⁹ See Aragonese Observatory for the Information Society: www.observatorioaragones.org

²⁰ An additional argument is that services selected are mutually combinable, so that DSC becomes more realistic (if we think in the “domain-driven” feature).

The following general contracting areas were selected:

- Web & Software Development²¹
- Hosting & Co-Location (in Spain so-called *housing*)
- IT Management & Maintenance

This gives us a simple **typology of contracting areas** which is easy to manage for analytical purposes. A fourth type was also initially considered: the IST consulting contracts, but we finally left it aside, for it may be very different in each particular case and therefore unsuitable for a general semantic description.

Nonetheless, from the point of view of both business and legal processes, the three selected contracting areas diverge in the nature of the services involved. Web and software developments appear as **scheduled services**, while web management and storage solutions (hosting, co-location or *housing* and the like) are **continuous services**. Essentially, IT systems or networks management and maintenance are regarded as continuous service contracts, but they may include scheduled services as well.

Another interesting point is the intertwinement of these contracts. IST contractual relationships (be they formalised or not) may comprise very different agreements. In other words, IST-related services open the possibility of making very **complex contracts** from the content perspective. For instance, the development of web tools and solutions is often negotiated or contracted together with data storage solutions (e.g. hosting) and even with IST management services. Thus it may well be the case that multiple distinct services are agreed on within the same contract, so that it becomes difficult to clearly delimitate them.

3.3 Actors and Scenarios (Overview)

Actors are business entities or partners engaged in IST negotiation and contracting processes. In every process there are at least two actors, namely one client²² and one provider. This constitutes the first and **basic scenario**.

▪ Client

The client is the company seeking for a certain IST product or service in order to rationalize, improve or otherwise contribute to its business. In the normal case, clients behave strategically and try to establish a beneficial agreement (i.e. low costs for better conditions). When contracting, legally-entitled staff, typically the manager, acts on behalf of the company. Still, in the region upon focus clients are, to a great extent, small and medium enterprises, even micro-enterprises (less than five employees): SME's make up 90% of the registered companies in Aragón, and the largest corporations based or operating in the region are used to engage their IST centralised services. Given this client profile, it is usual that the person responsible for negotiating contracts plays simultaneously several organizational

²¹ As it is noted later on (see § 4.1), in this Deliverable software development is only considered within the framework of web development services.

²² We avoid the term "customer" because under Spanish law it refers to persons, not companies.

roles. This is to say that the manager acts as commercial agent, technical and even legal advisor. Actually, most problems in the contract definition and deployment may be connected with that.

- **Provider**

The IST provider is the company which offers a certain IST product or service. It is also represented by management staff entitled to conclude contracts related to the services provided. Within the provider structure, several organizational units or departments must be distinguished which are responsible for carrying out the contracting process and the client relationship. Yet IST companies in Aragón are rather small or medium-sized, so that it is often the case that there exists no strict separation between different functional areas.

In addition to this simple scenario, a bit more complicated one will be considered: **subcontracting**.²³ Here the client subscribes a contract with the provider, which in turn engages one or more subcontractors for carrying out the project or delivering the service.

- **Subcontractor**

The IST subcontractor is the company which provides a certain IST service to a company acting itself as provider of the client (this being necessary in order to meet the client needs as laid down in the contract). There are many different modalities of subcontracting, but in the IST sector frequent cases concern particular aspects of web and software development projects (e.g. graphic design, programming or analysis tasks, IPR issues...), systems and data storage and in-house technical assistance in systems management. When analysing the legal implications of this business domain, the essential question is how the subcontract does get integrated into the frame contract. In this regard it is fruitful to distinguish between **opaque and transparent subcontracting**, depending on whether it has been explicitly agreed on in the contract.

A final remark must be made concerning the participation of public administrations as clients in the IST domain. When a public institution acts as a client, contracting processes may be quite different from the B2B relationships. It is likely that the major difference lies in the degree of formalisation.

3.4 Formalisation and Computer-Assisted Contracting

IST negotiation and contracting processes in Aragón are overwhelmingly human-centric and in most cases they are carried out through conventional means, which is typical for SME-centred business in the region.²⁴ The degree of formalization of those processes is quite different depending on contract parties and subjects. There

²³ Please note that the simple scenario (one client, one provider) also entails subcontracting, albeit in another sense, because clients are normally companies which subcontract providers in order to receive a service they cannot perform by themselves.

²⁴ Only two of the providers contacted have implemented on-line contracting tools, namely Gabilos (software sales and distribution) and Embou (Internet access and software and hardware sales).

are cases in which some service parts or even the entire service (for instance, low budgeted web development projects) are governed by informal or semi-informal agreements and do not generate legal documents like those which we are usual in the business context. Nevertheless, two trends can be identified which point to an increasing level of formalization in this sector.

On the one hand, legal and self-regulative IST norms tend nowadays to impose formalization duties on the actors, which may facilitate the modelling of contractual relationships. A good instance for this is the data processor mandatory agreement, as established by the Spanish Data Protection Act.²⁵ This act has significantly contributed to a higher contractual formalization in the sector, since many IST services may imply access to or processing of personal data under responsibility of the client (data controller).

On the other hand, many IST providers, subcontractors and clients have begun to systematically control and monitor the quality of services. All actors are more and more resorting to specific methodologies or tools in an attempt to rationalize their business processes. Besides BPM, ERP, BI or CRM tools, ITIL and CMMI seem to be the most used methodologies in this sector. These may be even considered as computer-assisted contracting tools, since they are used to gather information and to monitor obligations and conditions, as well as for negotiation, management and client relationship purposes. This shows that IST agreements are a promising field for contracting process automation.

3.5 Resources

In order to make this domain description operative, we must look at the resources involved. These are of two kinds, namely human and organizational resources, and technical resources (or systems).

▪ Human and organizational resources²⁶

Service Manager. The service manager is the role at the client which is accorded the responsibility of negotiating and establishing contracts with providers, as well as for signing partial acceptance proofs or documents when necessary (e.g. in web or software development services).

Account Manager. On the provider's side, the account manager is the role which is responsible for managing individual clients from the very beginning of the relationships. It may share the client relationships management tasks with the

²⁵ See Article 12.2 of the Spanish Data Protection Act (Ley Orgánica 15/1999, de 15 de diciembre): «Processing on behalf of third parties shall be regulated in a contract (...), it being expressly laid down that the processor shall process the data only in accordance with the instructions of the controller, shall not apply or use them for a purpose other than that set out in the said contract, and shall not communicate them to other persons even for their preservation. The contract shall also set out the security measures referred to in Article 9 of this Law, which the processor is obliged to implement»

²⁶ Given the small size of IST provider companies in Aragón, many of the following roles may be undertaken (i.e. organizational units can be made up) by only one person.

project manager (e.g., he or she may consult a project manager before agreeing obligations). This role is assumed in most cases by the commercial department.

Project Manager. When a scheduled service is concerned, the project manager is the role at the provider which is in charge of directing the project development as agreed in the contract. In large companies, the manager usually is not the same person who negotiated and established the contract, whereas in small companies, the same person may act simultaneously as account and project manager.

Legal or Contract Advisor. In some cases, the clauses drafting and reviewing appear as separate tasks in the negotiation and contracting process. Still, this presupposes companies (client, providers or subcontractors) of a given size and with a relatively complex internal structure.

▪ Systems

Desk tools, digital repositories and document management systems. Regardless of the company size, IST contracting processes are always assisted by some kind of document management system, which is mainly used for storing detailed contract, project and offer templates. Such systems may be pretty simple (e.g. those based on usual desk applications), but sometimes special document management tools are used to store electronic documents and scanned paper documents.

BI, EPR and CRM systems. Customer relationship management systems, business intelligence or electronic resource planning tools are becoming widespread in IST companies. They are used to track any relevant information on the client, which includes information generated in negotiation and contracting processes.

Development tools and environments. In case of web or software development, the provider uses dedicated development tools and environments, as well as some other mechanisms (such as code and impact analyzers) to improve the quality of the service. These tools are used by developers and project managers to obtain information as a base for engineering or programming decisions.

BPM tools. Advanced or leading IST actors may use special tools for business process management, which help them to improve planning activities as well as to monitor the performance of processes.

3.6 Lifecycle: Stages in the Contracting Process

Contracting lifecycles may be approached from many different perspectives. Yet, this general overview of the sector must account for a large variety of contracting areas and objects, so that a business-oriented approach would not be meaningful. Instead, a legal approach has been preferred. From this point of view, three stages can be defined in each contracting process: the pre-contractual stage (negotiation), the contractual stage, and the conflict management or dispute resolution stage (see Figure 1 below).²⁷

²⁷ «Most B2B applications of e-commerce are in three areas corresponding to the different phases of the related business processes. Transaction preparation applications (pre-sale/pre-purchase phase) include advertising, catalogues and stock lists, price comparisons, information services-information

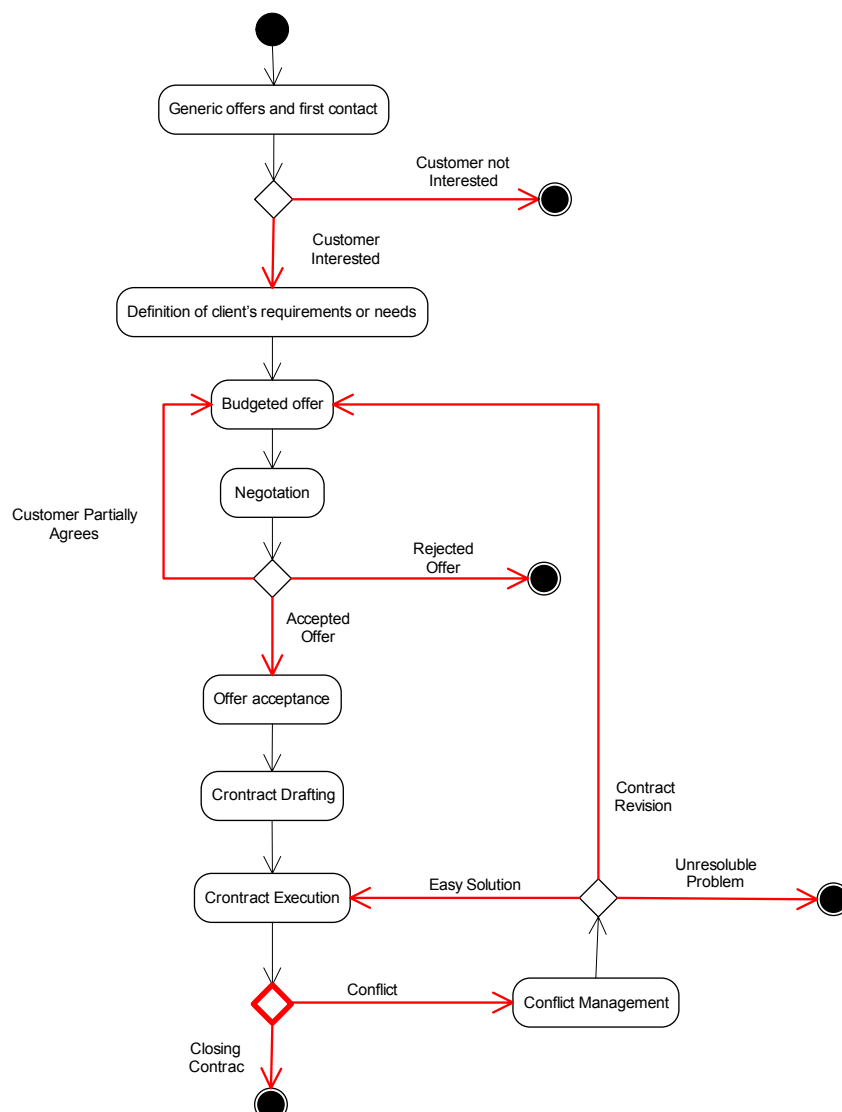


Figure 1: Simplified Activity Diagram of a Contract Execution

▪ Pre-contractual stage (negotiation)

The pre-contractual stage is concerned with defining and matching client's needs and provider's solutions. Even though its legal implications are few, this phase is particularly important in order to keep record of the agreement-building process, as well as to gather evidence and proof elements which can be resorted to in case of conflict. The pre-contractual phase may be split into several moments –not all of them do apply to every process:

Generic offers and first contact – The process normally begins with a generic product or service offer on the provider's side, including commercial

about offers, and negotiation between seller and buyer. Transaction completion applications (sale-purchase phase) include ordering, billing and payment, finance and delivery. And transaction support applications (after sale/purchase phase) include information capture, information management, market analysis, market development, guarantee management, credit administration and handling returns» (Dini et al 2008; referring to European Commission 2007).

advertising, which is mainly done via web; clients usually contact providers upon this basis, but sometimes contacts can be directly established.

Definition of client's requirements or needs – After first contacts, clients present their requirements or needs to providers and both parties try to define them as accurately as possible. In some IST contracting processes, such as software or web development services, this stage necessarily covers a number of face-to-face meetings, whereas in other cases it is carried out by phone or mail.

Budgeted offer – With the information gathered in the previous stage, providers do elaborate a budgeted offer attempting to match the client's needs.

Negotiation – Once clients receive the budgeted offer, it is often the case that they go on negotiating and bargaining over it, addressing new aspects or reconsidering initial demands, whereby service price, deployment or delivery dates and scope are the major issues at stake. Nevertheless, this will depend on the type of product or service. Actually, in many cases providers do not work on request, but with fixed offers or predefined service packages, which leaves no room for negotiation.

Offer acceptance – There exists several options for conveying the acceptance (via e-mail, fax or even by phone), but the most used one is to sign up and submit back to the provider an 'acceptance sheet', which is normally annexed to the budgeted offer. The period of validity does vary depending on the type of contract or service, and it can be laid down in the offer; otherwise, informal customary rules do apply.

Due to the particular features of the IST branch, a general duty of fair information and advising ought to be fulfilled by the provider. Knowledge and competence on technical issues can not be taken for granted on the client's side, and this must be compensated by the provider, for otherwise it is not possible to achieve an appropriate balance between the parties. Such a duty derives from the *bona fide* ('good faith') general contracting principle and is expected to govern the whole contract process.

▪ Contractual stage: contract drafting and structure

Apart from informal trends in the IST sector, the assessment of documentation collected suggests that the contractual stage is quite complex from the legal point of view. Three major reasons may be put forward to explain this. Firstly, contracting elements (ranging from general terms, offers, budgets up to contracts and written or unwritten agreements) mostly remain interrelated in a non-systematic way. Up to now, one of the problems detected is precisely the 'spontaneous' mix of documents governing the contractual relationship. Such a mix turns out to be difficult to handle in legal terms –for instance, some contracts are openly taken to be automatically modified when changes in online general terms and offers are introduced. Secondly, actors do lay emphasis on the service or product budgeted offer, rather than on the contract itself. This implies that in many cases no contract is explicitly concluded and performed, so that important contract conditions and clauses must be inferred from other formal or informal elements. When contracts are formalized, however, clause-drafting is often not perceived as a crucial issue, and models and templates

used for former clients are filled for new ones without adaptations. There are also general terms of conditions applicable to the product or service contracting, which makes up a bulk of documents which may be mutually inconsistent.²⁸ Furthermore, a proper negotiation on contract clauses and terms does not normally take place, for providers do resort to fixed conditions and general terms. Thirdly, contracts are not always drafted (or amended) by legal experts with long-lasting experience in the IST sector, which may provoke outstanding structure and drafting problems in terms of legal quality. Contributing to solve or minimize this problem can be seen as an outcome of the ITA and UniZar research tasks.²⁹

▪ Conflict management and dispute resolution

Clients and providers often agree on conflict management and dispute resolution mechanisms to deal with the problems arose during contract deployment. There are three options for this: internal conflict management, alternative dispute resolution and courts. In the first case, the parties explicitly agree on avoiding external agents in order to tackle interpretation or compliance problems, so that the parties commit themselves to make efforts for settling negotiated and friendly solutions. Alternative dispute resolution schemes (ADR, ODR) have become increasingly important in the IST sector, especially as far as IPR issues are concerned. However, according to the documentation collected, this option is not widespread in the region upon focus. In Aragón, contract parties are rather used to solve disputes before courts.

One might state, all in all, that IST contracting processes in Aragón are governed both by explicit contractual agreements and unwritten or informal mechanisms. This poses the problem of which rules, whether the formal or the informal ones, should be modelled and implemented by an automated contracting system. This question points to a weakness in some projects addressing the automatization of contracting and negotiation processes, since they merely focus on formal clauses. The OPAALS project, on the contrary, is interested in living lab. Further research was needed to clarify what rules apply in practice and how they are interpreted.

3.7 Legal Aspects: Customary Rules and Self-Regulation

The interviews conducted with management staff of IST companies provided interesting information about informal rules and business uses governing contract and negotiation processes in the sector. These rules and uses are not necessarily included in the contracts or in other relevant documents, but may significantly contribute to regulate the sector. The following questions can be underlined:

▪ Pre-contractual rules

With regard to the pre-contractual stage, budget and offer are normally supposed to be valid only within a given period of time. This period may vary depending on

²⁸ Within a DSC model, services to be composed are decided at runtime. Discovered services are expected to interoperate, which in legal terms would mean that contract provisions of different IST providers must be mutually consistent. Otherwise clients may not be willing to enter a contract due to legal uncertainties.

²⁹ See also Section 4.4.

the contract area: validity periods which are explicitly referred to in writing range from fifteen (15) to ninety (90) days, albeit such limitations are handled in a quite flexible way, as most interviewees recognized. Because of the particular features of this sector, periods of validity may ‘informally’ be extended up to six months or even longer. If no fixed validity period is settled in offers or budgets, it is normally presumed that they are valid for thirty (30) days. Another aspect regards the moment at which parties consider that a contract between them has been legally established. According to legal general provisions, contracts become legally effective since offers are accepted. Yet in practice this acceptance may be expressed in different ways: for some providers it suffices with an e-mail, while others require a signed paper-document (acceptance forms) to be sent by post or by fax. A third problematic issue seems to be who has to pay pre-contractual expenses and costs if a final agreement is not reached: most providers do meet the costs of negotiation and preliminary works if the contract fails, as a part of their marketing and pre-selling strategies.

- Flexible compliance approach

A very significant feature of contract relationships in this sector is the flexible approach to the compliance of contract clauses. Parties seem to assume that some contract deviations are likely to occur: on the provider’s side, flexibility appears mainly with regard to deadlines and stipulated periods, while on the client’s side it is the co-operation duties which are not abide by. Most providers do declare they were never taken nor they ever took a client to court because of contract infringements. Controversial issues tend to be solved informally without third parties involvement. Recourse to judicial actions was reported only in few cases.

- Self-regulatory mechanisms and customary rules

None of the providers interviewed are or have been involved in a self-regulatory scheme (including good practices, codes of conduct and quality seals). They seem to be much more interested in business certification models (ISO 9001) and IT methodologies (ITIL, CMMI, SoftAragon). As for non-written norms or practices which are assumed in the negotiation and contract processes, interviewees pointed again to flexible contract compliance and to undertaking preliminary costs if an agreement is not reached. Further norms concern, for instance, meeting venues (meetings are expected to be held at client’s headquarters) or the informal duty of trying a friendly settlement in case of conflict, as well as other conduct rules such as avoiding criticism on competitors and not preventing clients from moving to another provider. Courtesy rules were also pointed at.

- Collaborative competence and clustering

With regard to participating in IST business clusters, strategic alliances or related initiatives (be they under government support or not), most providers declare to collaborate with other IST companies in the Region. They even coined the words ‘coopetir’ and ‘copetence’ (putting together the words ‘cooperar’, co-operate and ‘competir’, compete) to designate this model. Providers consider that this kind of initiatives may be important and expect a certain return in the middle run.

4 Selected IST Contract Areas

This section presents a short domain description and highlights the main features of contracting processes for each selected area.

4.1 Web & Software Development

Web development (which may often include software development as well) is one of the most demanded and provided IST services in Aragón.³⁰

4.1.1 Short Domain Description

The following elements are involved in this contracting area:

- Services (contract object)

Web development services entail some basic contents, which are usually divided into two parts: web design and a web development. But it may be also linked to a diversity of Internet-related projects and solutions, ranging from hosting services or corporate intranet implementation to web 2.0 services, such as search engine optimization (SEO), social media optimization (SMO) or even cyber-marketing strategies.

- Scenario (contract parties and related actors)

Even though some projects are developed within a simple scenario (one client and one provider), usual operations involve some sort of subcontracting. In most cases provider companies solely engage one subcontractor in each project for carrying out some specific design, analysis or programming tasks, but eventually the whole project may be subcontracted. Subcontracting modalities diverge from one project to another, and both opaque and transparent contracting is resorted to. Banks or similar financial institutions do intervene in all contracting processes for payment purposes.

- Human resources (or roles within the contracting process)

As for the human resources taking part in contracting processes, we have found out different constellations and denominations, since it depends on each provider's internal structure. Anyhow, typical roles are:

- Commercial or sales department – This organizational unit is responsible for client relationships and early negotiation steps. Afterwards, and during the whole project life, commercial staff undertakes the role of account or contract manager
- Project or technical management department – As a technical-profiled unit, it is responsible for taking requirements from clients and, on this basis, developing

³⁰ As mentioned earlier, software development will be here considered within the framework of web development contracts.

the web solution (design aspects are normally subcontracted). During the project life, it shares responsibilities with account managers.

- Consulting department – It can be in charge of budget drafting, and sometimes operates at the same time as business consulting unit in connection with the previous units.
- Management and legal-business department – It may exist a dedicated legal and management unit, which is responsible for administrative, contracting and invoicing issues. It only appears in (relatively) large companies.
- Systems (IT resources used in the contracting process)

The following IT resources are used in the contracting process:

- CRM and ERP – This kind of tools are normally resorted to for management ends, although not all the companies make use of them. When it comes to large or important projects, an intranet (accessible by clients) may be used for project management purposes.
- Software environments – During the process, project or service management software, pre-exploitation and development environments are normally used.
- Digital repositories – They contain offer, budget, project and contract templates. In this contracting area, it is often the case that desk applications are used for this purpose.

4.1.2 Contracts and Negotiation

Interviews provided most of the information about contracting and negotiation processes in the field of web development services. The following findings may be underlined.

- Contacts and negotiation between clients and providers do take place normally through conventional means (phone, e-mail and personal meetings in most cases), but legally-relevant documents (budgeted offer and contract) always need the client's written approval. Interviewed managers would see automated contracting systems as a highly positive advance, but recognize cultural and practical difficulties as for its implementation.
- Apart from some simple, delivery-ready web services (which may be offered as fixed products), all projects are customized.³¹ Thereby a proper definition of clients' needs and requirements seems to be the greatest problem, affecting both design and development. Managers think, in this regard, that it would make sense that contracting systems allow for some kind of pre-view utilities (e.g. sketches of the web project).
- In the negotiation stage, clients are mostly interested in web functionalities, but negotiations on price do not take place in normal cases, for services are offered on a work-hour basis.

³¹ This makes it difficult to formalize web development contracts. Anyway, creative solutions may be sought for as to this problem: e.g. formalizing just "basic offers", leaving details for annexes.

- During the project, it is usual that clients try to amend or otherwise modify the service parameters (change of request). In practice, however, most changes are finally not implemented. Parties are subject to scheduled milestones and the projects advances only after partial acceptance proofs by the client. As a change requires a new budget, clients abandon their claims because of the cost increase or deployment-time extension.
- During the contract execution, the most frequent difficulties providers are faced with are delays in making materials available which are necessary for developing the project according to the contracted work-plan. Even though penalty clauses are usually agreed on, these are not resorted to in practice (the same goes for validity deadlines in budgeted offers). A kind of implicit flexibility clause in complying with time deadlines does apply (within reasonableness).

As for conflict management and dispute resolution, the overwhelming contract practice points to court-based mechanisms. Yet provider companies in the IST sector declare not to have any serious dispute concerning contract fulfilment (at most they may have payment problems, but even that is seldom).

4.2 Hosting & Co-Location (*Housing*) Services

The second contracting area which has been analyzed is *hosting & co-location* (the latter is called 'housing' in Spain). Its main characteristics are described below.

4.2.1 Short Domain Description

The following services, actors, human resources and systems are involved in this contracting area:

- Services (contract object)

There exists a wide range of services in this area (service denominations do vary as well). Examples of this variety are co-located hosting, web hosting, dedicated hosting or managed hosting. Among these services we have focused on virtual web hosting and co-located server hosting, which in Spain are known respectively as 'hosting' and 'housing'. At least in Aragón, these are the two most frequent contracts. The former implies renting a certain hard disk space (and a certain data transfer capacity) for a given period of time, whereby clients are expected to manage it. The latter consists in renting a physical space (which is equipped with certain security, power and connectivity features) where client's server or servers are located for a given period of time.

- Scenario (contract parties and related actors)

A simple contract scenario (one client, one provider) applies to hosting services, which do not involve any sort of subcontracting. Co-location or housing, on the contrary, may involve subcontracting: most housing providers offer just a part of

the space-share they have hired in larger, dedicated data centers (often located in Madrid or Barcelona), and only few of them have their own data centers for this service. This subcontracting is normally transparent to the client and explicitly detailed in contracts. Banks or similar financial institutions do intervene in all contracting processes for payment purposes.

- Human resources (or roles within the contracting process)

Denomination and constellations of human resources taking part in contracting processes, as mentioned, do vary depending on each provider's internal structure. In this contracting area, involved roles are:

- Commercial or sales department – This organizational unit is responsible for client relationships and early negotiation steps.
- Project or technical management department – As a technical-profiled unit, it is responsible for taking requirements from clients.
- Consulting department – It plays a minor role if any, as prices and budgets are normally determined in advance.
- Management and legal-business department – A dedicated legal management unit only appears in (relatively) large companies.

- Systems (IT resources used in the contracting process)

The following IT resources are used in the contracting process:

- CRM and ERP – This kind of tools are normally resorted to for management ends, although not all the companies make use of them.
- Digital repositories – They contain offer, budget and contract templates. It is often the case that desk applications are used for this purpose.

4.2.2 Contracts and Negotiation

Both interviews and documentation analysis have pointed to several issues which are emphasized by the contract parties.

- Hosting and co-location services, in contrast to web development, are legally conceived as contracts to which clients may only adhere or not ('adherence contracts'), that is, service terms and conditions are not negotiated. Instead, providers define a number of 'packages' trying to match in advance the needs of different client profiles.
- In principle, the widespread use of hosting and housing packages seems to facilitate contract modelling and therefore it is interesting for DSC purposes. Yet, the problem remains to be solved of inconsistencies in the formulation of packaged offers. Providers often follow different criteria when drafting their offers. Take for instance a hosting contract: one provider may offer a contract price based on bandwidth connectivity, while another may calculate contract prices on a bit-rate or transfer-rate basis. This could make service searching and discovering too burdensome for clients and constitutes an obstacle from the viewpoint of DSC. Instead of that, providers should present offer parameters, so to say, in translatable or standardized terms. In short, if a given

company wants to enter a digital business ecosystem and wants their offers be sought for dynamically, it must have a standardized offer which is able to operate within a DSC scheme.

- Service availability, bandwidth, storage capacity, security and backup utilities and technical assistance seem to be the most significant aspects in these contracts. Nonetheless, in view of their detailed drafting, clauses on provider liability limitations and exclusions play the leading role in these contracts.
- Being typical for IST contracts, liability issues become extremely important in hosting services, in special as far as content liability is concerned.
- Relevant deficiencies were found out with respect to data protection issues in hosting contracts. Providers normally operate as personal data processors on behalf of their clients and, as mentioned, there are some due clauses according to Spanish law. Still, some of these clauses are missing in the contracts analyzed, which is probably because of lacking legal (data protection law) expertise on the provider's side.

4.3 IT Management & Maintenance Services

This section describes the major features of the contracting processes related to IT management and maintenance services.

4.3.1 Short Domain Description

Most SME in the Region do not have a dedicated IT department, and therefore they opt for subcontracting IT network or system management and maintenance. The following elements are involved in this contracting area:

- Services (contract object)

Although they can be contracted simultaneously, one could distinguish two main services in this area: IT management and IT maintenance. IT management is often referred to as network management service (SGR in Spanish), and consists in the remote management of client's IT assets. IT maintenance includes in-house IT assistance and in most cases IT components, supplies and hardware delivery.
- Scenario (contract parties and related actors)

IT management and maintenance services are based on a simple contract scenario (one client, one provider) and usually do not include any sort of subcontracting. Nevertheless, some providers limit their service offer to remote IT management, so that they subcontract certain IT maintenance and in-house assistance services. Subcontracting remains normally opaque to the client, but in some cases both parties agree on a specific clause in this respect.
- Human resources (or roles within the contracting process)

Two operative company units do normally intervene in this contract area:

- Commercial or sales department – This organizational unit acts as a kind of contract and account manager and is responsible for client relationships.
- Technical department – A technical-profiled unit is in charge of the technical aspect of systems and networks management and maintenance (it could be compared with the project management area in the software development projects).
- Systems (IT resources used in the contracting process).
The following IT resources are used in the contracting process:
 - CRM and ERP – This kind of tools are normally resorted to for management ends, although not all the companies make use of them. Some providers do use special service management software.
 - Digital repositories – They contain offer, budget and contract templates. In this contracting area desk applications normally are used for this purpose.

4.3.2 Contracts and Negotiation

The following contract and negotiation issues may be underlined on the basis of both interviews and documentation.

- Providers offering only IT maintenance services are proactive in looking for clients, and they regularly contact SMEs to introduce their service offer. In many cases, they act as IT suppliers as well. To a large extent, IT maintenance services appear to be contracted informally. Most clients tend to consider that budgeted offers are enough to govern relationships with providers, and do not stress on formalizing contracts.
- In principle, services are offered on a non-negotiable basis, but price discounts may be applied on various reasons. In this regard, IT maintenance providers seem to be more flexible than IT management providers: the latter declare that negotiations do not normally focus on prices, but rather on other aspects which may be more important to the clients, such as the service features (for instance: service availability conditions) or even the form of payment. It is unusual that changes or amendments are introduced during contract execution, but since contracts are normally long-lasting it may occur that a re-negotiation of contract terms takes place within two or three years.
- Pre-contractual agreements are seldom. Service offers normally include the basic contract conditions (such as price, period of validity, a short description of the service), so that when they get accepted the contract is deemed to have been established.

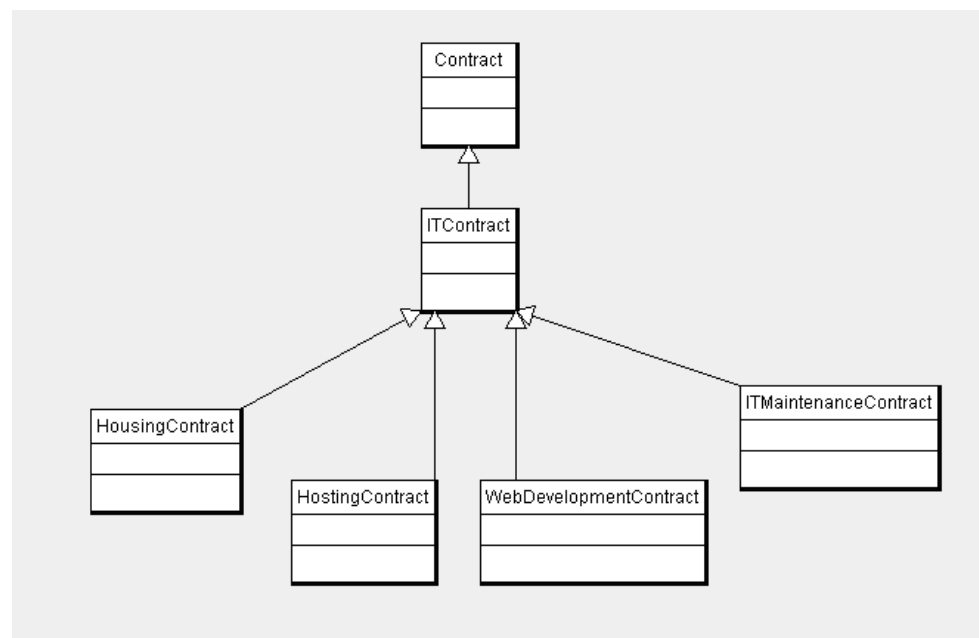
4.4 Semantic Description and IST Contract Templates

When addressing the modelling and semantic description of IST contracts, the first goal we pursued was to represent the contract structures on the content level. The

analysis of available documentation³² led us to draft four templates covering the three contract areas selected: *web development*, *hosting & co-location* and *IT maintenance* services (see Figure 2). These contracts were selected because they are quite frequent in the IST business domain, and can be taken to be representative of the contractual relationships among IST providers and SMEs (almost all SMEs may be in need of these services). Furthermore, they can be combined with each other.

Contract templates were conceived to meet several criteria: they had to be specific (suited for each contract area), comprehensive (they should include all clauses and parameters which are relevant in each contract area), operational (neither too simple nor too complex) and model-ready (as far as possible). In addition, it was attempted that contract structures of different services do not diverge very much from one another: templates were expected to be comparable, i.e. elaborated according to a common structure, so that they can be applied to a variety of contract contents without significant modifications.

As legal documents, contracts always show some kind of structure. Its content is normally organized according to both legal and technical patterns which in turn are dependent on contract traditions or practices. For analytical purposes it makes sense to differentiate three types of contract contents: clauses which are typical for legal contracts in general, clauses typical for IST-related contracts (such those regulating IPR or data protection issues) and clauses typical for each particular contract. This is represented in the class diagram of next Figure.



³² More than fifty (50) legally-binding documents were analyzed in this stage, comprising mainly budgeted offers (which normally include a selection of legal clauses) and contracts. Additional information on contracts was collected, for the sake of comparison, on the following websites: www.telefonica.net, www.arsys.es, www.hostalia.com, www.acens.com (hosting & housing) and www.adsystems.es, www.ainur.es, www.sirpyme.com (IT management & maintenance).

Figure 2: Classification of IST Contract contents

Our task does not finish in merely describing the structure of contracts, but also entails a proposal for a better systematization. To this regard, all contracts analyzed were reduced to one single model-structure:

Contract Structure
0. Introductory Part
1. Contract Object (Service Description)
2. Contract Duration
3. Price and Form of Payment
4. General Conditions Applicable to Service Provision
5. Intellectual Property Issues
6. Confidentiality and Data Protection Issues
7. Contract Amendment
8. Contract Termination
9. Notifications and Communications
10. Jurisdiction and Conflict Resolution

We encountered two major problems as to contract modelling. The first one concerns its scope: we do not limit the analysis to “service-conditions” (say, the contract object), but envisage the whole content structure. However, taking into account all possible clauses would have rendered templates too complex and therefore unsuitable for modelling. Thus, some minor, company-specific provisions and clauses have been left aside. As a matter of fact, when preparing a test model for DSC, the question arises whether offers and contracts should be entirely formalized or formalization should be confined to certain important clauses. We opted for using only selected clauses for modelling due to four reasons:

- (1) *Undesired complexity*. Attempting to model the whole contracts –some of them may be twenty pages long or even more– would add undesired complexity to the test model.
- (2) *Practical relevance*. Not all clauses seem to be important for clients when looking for an offer. We have selected those clauses which, according to the interviews, are accorded more relevance by clients.³³
- (3) *Search ease*. Most clients are unlikely to search for too specific contract details. If a search machine is to be useful and usable, it shall be expected to include a limited amount of search fields.
- (4) *Homogenization problem*. To parameterize all or too many clauses would have a dissuasive effect on potential DBE participants: we cannot expect providers to model their whole contracts according to the formalization instructions of the DBE. This would be little operative, costly and burdensome for providers.

³³ Not all clauses are equally important to the parties: some of them are deemed more important than others. A classification according to the practical relevance of the clauses should be integrated into the templates in order to face the “formal-informal regulation” problem, which could be done in the light of the interviews findings. It proved meaningful to sort out these critical clauses for the sake of DSC testing, as it is explained in the next section.

These are furthermore free to elaborate their offers as they like. A balance must be achieved between modelling and contract freedom.

In order to give an account of those elements which have not been used for the test model, we opted for introducing the “annex” element in the templates, where providers can include any other clauses, whereby in the contract model in XML the reference to this annex is included. Yet, this leads to the following problem. For some providers may be tempted, for marketing purposes, to display beneficial contract details in selected fields or parameters (in special, price), but making later restrictions in the annex to the offers that clients may seek for. This is the old “small print” problem in contracts. Provided that no imperative law applies, this is a regulation and governance issue: what can be or not standardized, done or not, must be decided within the community.

Finally, as it has been mentioned in previous sections, we found out a number of problems or even deficits with regard to the legal quality of the contracts, such as legal-systematic imperfections, contract-dressing, redundancies, omission of legally compulsory clauses, among others. We tried therefore to achieve an improvement of legal quality as well as to convey it into the templates. A full version of all templates can be found in ANNEXES III, IV, V, VI and VII.

5 A Working Example of DSC

Once we established the scope of the project, the purpose of the software infrastructure might be summarized as including the following points:

- To allow the DSC of products based on Web Development, Housing, Hosting and IT Maintenance products.
- To create some basic tools for supporting e-Contract LegalXML document creation, publishing and search.
- To develop a common ontology supporting the four kinds of contracts, in order to increase the semantic capabilities of the publishing and searching tools (multilingual environments, deductive capabilities, etc).
- To create some test cases in order to probe supposed tools capabilities and, if possible, to detect new functionalities or improvements.

5.1 Technology Background

5.1.1 Dynamic Service Composition Background

Dynamic web Service Composition can serve applications or users on an on-demand basis. With dynamic composition, the application's capabilities can be extended at runtime so that theoretically an unlimited number of new services can be created from a limited set of service components, thus making applications no longer restricted to the original set of operations specified and envisioned at design and/or compile time.

When a service provider wants to publish its web service, it first generates a Web Services Description Language (WSDL) file to describe its web services with the help of the Simple Object Access Protocol (SOAP) interpreter. Then, the service is registered in the Universal Description, Discovery, and Integration (UDDI) repository and made available for invocation. The UDDI repository now contains all necessary information to identify this web service along with a URL that points to its corresponding WSDL file. Once a service requestor has queried the UDDI repository and found that this web service best suited its need, it can download the WSDL file of this service and use it to generate messages to interact with the web service by the SOAP interpreter.

This flow of events is shown in following diagram (next page):

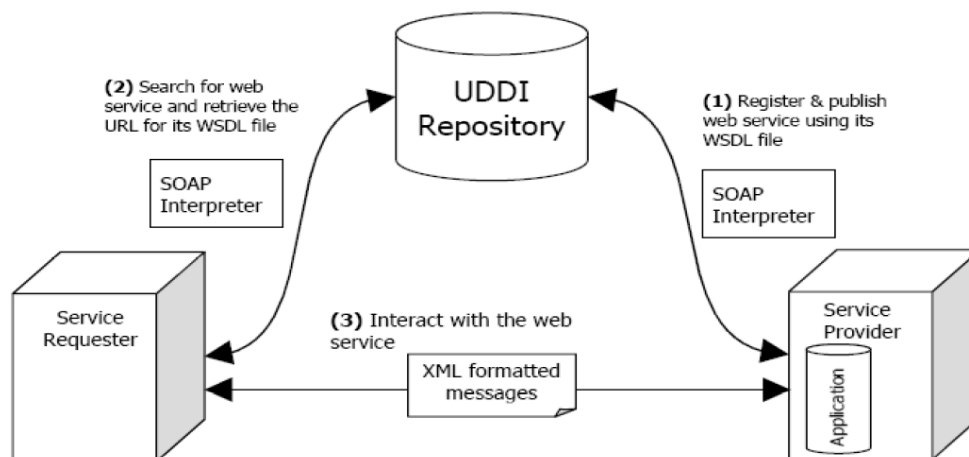


Figure 3: Overview of the Web Services Paradigm

Web services architecture enables applications to communicate with other applications. Therefore, web services is a key technology that enables business models to move from the Business to Consumer (B2C) model to the Business to Business (B2B) model, which is especially useful in implementing complex business transactions. Moreover, automatic (dynamic or static) composition enables businesses to compile value-added services from elementary services thus forming new services not defined at design times. Also, businesses can discover and bind to interfaces at runtime, consequently minimizing the amount of static preparation that is needed by other integration technologies to build customizable applications – not to mention other advantages such as minimizing intervention from end users.

Service Composition is the orchestration of a number of existing services to provide a richer composite service assembled to meet some user requirements, in our case to find the best contracts which fulfil user requirements. Service composition techniques typically involve expressing elemental services and composite services, the latter being compositions of elemental services and other composite services. The definition of composite services requires the expression of the flow of control and information between the elemental services. Techniques for this draw heavily on business process modelling and languages for workflow.

The composition of web services can be done in a static or dynamic way. It can be done statically by allowing the requestor to build an abstract model of the tasks that should be carried-out during the execution of this web service, at design and/or compile time. This abstract model is nothing more than a representation of a set of tasks and the data dependency among them. However, this should be done before the composition planning starts. Each task contains a query clause that is used to search the real atomic web service to fulfil the task. Static composition is usually implemented through graphs. On the other hand, dynamic composition is achieved by creating the abstract model of tasks and selecting the atomic web services automatically without the interference of the service requestor in the composition process. This type of classification is usually related to the workflow-based composition techniques.

The DSC techniques/technologies can be classified as:

Runtime Reconfiguration Using Wrappers: In wrapping, one or more components are wrapped inside another component – called the wrapper – which functions as an interface converter by matching the interfaces of the existing component with a newly introduced one. The wrapper receives a request from other components, does minor changes to make the message interpretable by the wrapped component, and forwards it to the wrapped component. Once a component is identified, a wrapper is used to provide the additional context dependency interfaces to the component so that it can interact with a new component. In this case, a type conflict may be resolved (using common parent types between the component and wrapper). Also, the implementation behaviour of an existing component should be adapted with the new logic introduced by the wrapper.

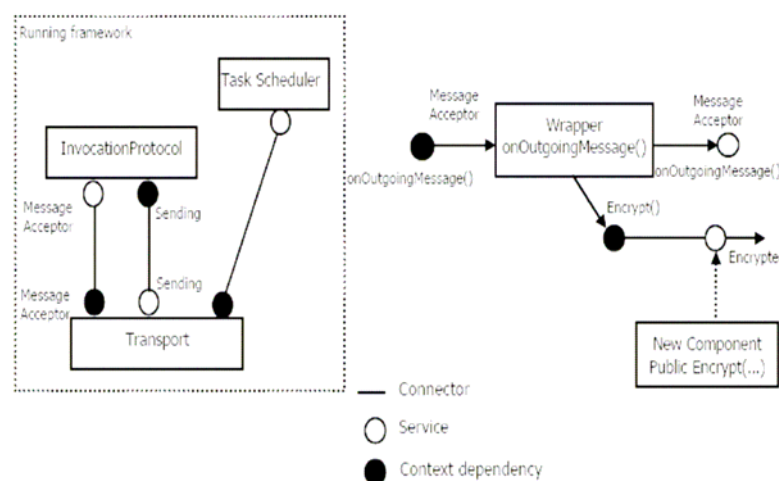


Figure 4: Interface Adaptation Using Wrappers

The wrapper is controlled by a reconfiguration tool. Before injecting the wrapper, the reconfiguration tool is used to extract the component type of information from a newly introduced component (obtained from service and context dependency interfaces of the component). Based on this information, a new component type manager can be created which corresponds to the new component type. The type manager is then registered with the reconfiguration tool. Now, the wrapper can be inserted into the component. Injection starts from a method in the interface of the type manager that corresponds to the particular implementations to be wrapped. The type manager controls how a wrapper is composed with existing components. It decides when and the order at which the wrapper and the wrapped components should be executed.

The wrapping approach is a black-box adaptation technique that does not touch the wrapped component's internal implementation. However, it may result in considerable implementation overhead since the complete interface of the wrapped component needs to be handled by the wrapper. This may also lead to excessive amounts of adaptation code and serious performance reductions.

Runtime Component Adaptation: This technique involves adapting components into new components or services by changing the interfaces and implementation behaviour of the component at runtime. It is particularly useful for making

potentially incompatible components composable. It can be subdivided into two techniques:

- Superimposition: It defines a set of reusable component adaptation types that should be configurable and composable with each other to allow for complex component adaptations.

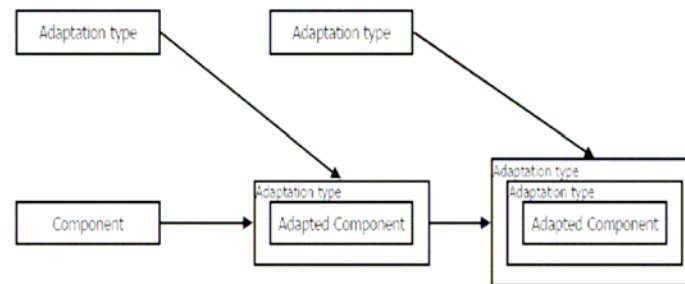


Figure 5: Adapting a Given Component Using Superimposition

- Type-Safe Delegation: A component may have references to other components. Messages to this component, which do not have matching methods, are automatically delegated to the appropriate referenced component. Therefore, some sort of binding operation is required between the referee component and the referenced components. What is interesting in this approach is that the referenced component can be reused in an unanticipated way; it introduces no dependencies between refereed and referenced components. Refereed components are adapted automatically to extend the referenced types. Therefore, the resulted refereed component must, in itself, be composable and reusable.

Composition Language: A composition language provides a means to define higher-level abstractions that better describe component composition. A composition language is a combination of an Architectural Description Language (ADL), a scripting language, a glue language, and a coordination language.

The ADL is used to specify the component architecture style. The scripting language is used to define various configurations of components for different applications based on the architectural style used. The glue language allows legacy components that were not designed to be composable with other components, to have plug and play capabilities. Glue can adapt component interfaces, client/server contracts, and platform dependencies. The coordination language is used to specify and configure the coordination mechanisms and policies for concurrent and distributed components.

Workflow-Driven Composition Techniques: It can be argued that a composite service is similar to a workflow where the flow of work items is specified. This technique defines an abstract process model that includes a set of tasks and their data dependencies. Each task contains a query clause that is used to search the real atomic service to fulfil the task. This requires the requester to specify several constraints, including the dependency of atomic services, and the user's preference

among others. This reduces much of the service composition complications to a constraint satisfaction problem.

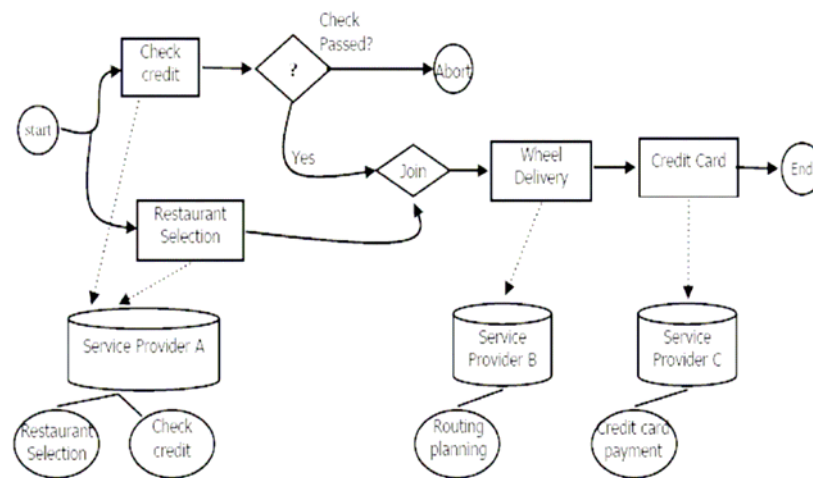


Figure 6: An Example of Workflow Composition

Ontology-Driven Web Service Composition: This technique facilitates the semantic dynamic composition of web services. The ontological descriptions and relationships among web services are used to automatically and semi-automatically compose web services. The ontology-driven approaches mainly compose the services based on the goal-oriented inferring and planning.

Most of the ontology-driven techniques mark-up web service descriptions with ontologies and develop algorithms to match and annotate WSDL files with relevant ontologies. The possible compositions are obtained by checking the semantic similarities between interfaces of individual services (semantic matching) and considering the service quality (QoS matching). Then, these compositions are ranked and presented according to these two dimensions.

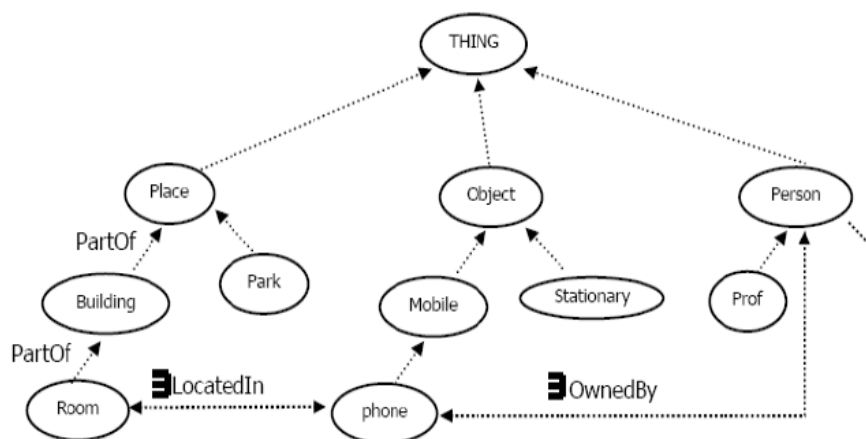


Figure 7: An Example of Domain Ontology

The composition is performed based on understanding the semantics of interactions/capabilities of the elementary services. The previous illustration shows

an example of ontology for a particular domain. To achieve semantic composition, these techniques mostly require a domain-specific ontology design that defines explicit formal specifications of the concepts and relationships among the concepts. It might also require an extraction module that helps in building ontologies from service profiles. The example shows the taxonomic classification of concepts as well as the relationships that exist between entities.

Declarative Composition Techniques: Composite services are generated from a high-level declarative description. The technique uses composability rules to determine whether two services are composable. Most of the time these rules act as constraints that must be satisfied in order to compose a service. The rules are used to generate composition plans that conform to a service requester's specifications. Techniques that fall under this classification usually tend to reach optimality of classification of the state-of-the-art dynamic web services composition against some defined objectives (i.e., cost, time...etc.) as they are mathematically modelled. Mostly, the optimality can be achieved by mapping rules to constraints and trying to solve them using operation research methods.

From the literature, see references section, one can make the following observations:

Semantic Composition: Semantic description, selection, and composition of service components have gained momentum in the last few years. Ontology-driven composition techniques have been envisioned to reduce the complexity and time needed to generate and execute the composition by utilizing semantic knowledge. Web service ontology bridges the concept gaps in various parts of the service description and in particular interfaces parameters. Nonetheless, a significant effort must be made to uncover the potential benefits to be gained from applying semantic technologies to other techniques.

Composition Languages: Despite the clear advantages over an object-oriented approach, the composition language approach suffers from significant limitations that make its usage shrinking with time. The main limitation is that many languages need to be compiled and therefore, there is no support for components being plugged in at runtime. The complexity of the approach makes recursive composition a challenge. Moreover, the lack of a standardized composition language questions interoperability among existing implementations.

Composition Execution: As far as the execution of composite services is concerned, it seems that the new generation of dynamic web service composition techniques must support centralized, distributed, and/or hybrid paradigms. This trend is motivated by the fact that web service components participating in a composition are distributed in nature.

Hybrid Techniques: These will integrate different techniques in order to improve the overall performance. The obvious example of such integration is the use of semantic knowledge (ontology) in generating composition workflows, adaptability and wrapping interface matching, even in defining the composability rules for the declarative composition. Another possible integration can be achieved by extending the workflow composition technique by modelling the abstract process constraints

as composability mathematical rules – from declarative techniques – thus yielding the ability to reach composition optimality.

Runtime Reconfiguration Using Wrappers: The usage of ontologies to describe components would facilitate type mismatch-free wrapping.

5.1.2 Legal Contract Modelling Background

As we state in point 2.4, we did a little research on Contract Modelling languages and tools. We found different standards which were in different stages of development and implementation. All of them are based in XML (it is the standard for mark-up document development) and have been developed by enterprises and organizations in order to create common contract frameworks allowing real e-Business development, that is DSC.

The problem comes from the specific point of view they apply for creating those standards: they are centered in solving the problem of automatic machine information exchange, they are centred in the construction of a common documents infrastructure, and thus they are suffering from the lack of the legal aspects related to the contract of a product and services between two companies that can be under different laws, business rules and, of course, geographically far away from each other.

We have not found any report talking about the way as to how the problems deriving from the authentication, the reputation, or the different laws can be solved in a real and completely distributed scenario. From our point of view, these problems have to be solved (by governments and parliaments) before a real distributed system allowing DSC would be implemented.

However, to solve these problems would mean not only to create a new legal framework, but to change some business cultural concepts related to the territorial world concept we have been educated on.

5.1.3 Semantical Support Background

The OPAALS project tries to solve, or at least enumerate and try to solve (in a context of e-service location, negotiation) some of the most important challenges that nowadays computers scientists have to face:

- Allow people to find what they are looking for (information, services, business opportunities ...) on the networks (the Web, the intranet or into their own computers).
- To classify information (text document) in particular according to their contents: for example to differentiate between a Hosting and a Housing offer/contract.
- Solve the gap between computers and humans understanding and knowledge representation. It does not only mean to transform its representation (or at least to make them “compatibles”) but it supposes to make human understanding “compatible”, that is, to solve idiomatic and even cultural human differences. This means not only to translate words from one language to another, it could also mean to convert measurement units or

currencies: for example for a technician “Mb” and “MB” has different meanings (the former means “Mega bit” while the second means “Mega Byte” something that not every people knows).

- Save human resources to support the “low” administrative/bureaucratic activities by doing it as much “automatically” and “intelligently” as possible, within a dynamic digital environment.

To achieve these goals, it seems logical to establish a common representation framework which could be used as base to accomplish the previous objectives. Ontologies were chosen by the research community to represent the knowledge out of different reasons:

They have been used for centuries as a human knowledge representation: they are a philosophical tool to classify entities and to obtain new knowledge from the explicitly represented by the ontology itself.

They allow the generation of membership (hierarchical), component (in some sense “horizontal”) and axiomatic relations between the concepts which represents the world being represented.

Other attributes (properties) can be defined for the concepts, their “materialized” instances, in order to get a full description of the modelled world.

A lot of reasoning methods, that is their mathematical developments, have been created and so they can be (or would be in the future) implemented in a computer.

A lot of ontologies have been created: medical disease treatments and classification, product description, etc. They represent “pieces” of the world in which some people are interested and they can be mixed to increase the world representation.

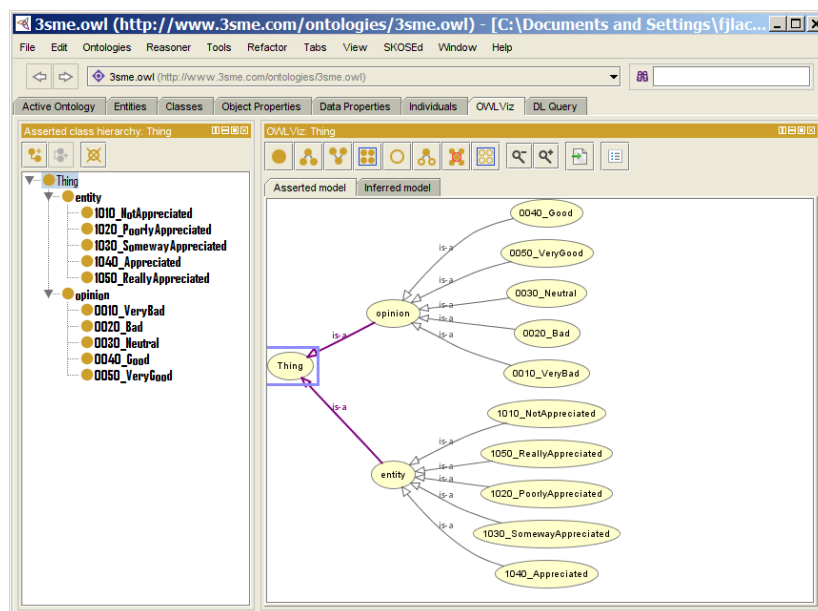
They are closely related with a thesaurus: concepts can be associated with terms and a weight can be given in order to represent the “association” rate. As we will show, this feature allows to annotate documents (text, video or audio) and, in some sense, language translation: the association of a document to some ontology concepts by detecting the presence of an associated term (or some of them) in its context gives meaning to the document in the context in which the Ontology (and its synonymous sets) was developed.

Once the framework was chosen, the next step was to choose the digital representation of it. In this respect, there were many proposals made by the community: RDF, DAM+OIL and OWL are the more important ones. All them were (are) standards developed by the W3C consortium and therefore vendor and platform independent. OWL is the latest ontology representation language; its definition collects its predecessor features and is open to new ones, moreover it is based on XML which makes ontology representation easy and portable.

In order to summarize, simplify and clarify ontologies and OWL (as its digital representation framework), we can see ontologies as high level models (for no computing people) of the world. Relational Data Models and Classes Models are ontologies –at least “partial” ontologies-, and OWL is the “programming” language. So development tools are needed to allow non-technical people to create ontologies and so to represent its knowledge.

Since the first OWL specification review was published in 2004, a lot of tools were developed to create and view ontologies, create concept entities, reason over it or annotate documents. In this second phase of the OPAALS project our goals were: to create a first version of the “e-Contract” ontology; to find a reasoning tool over the ontology concepts and “materialized” entities, allowing our own improvements in the deduction engine and offering an API to serve as base for the development of our own “reasoning” module.

From our point of view Protégé is a tool with all the characteristics of the previous paragraph. It was developed by the Stanford University and is distributed under GPL license. Furthermore, its source code is available and open to community improvements such as changing it or developing new plug-ins. Moreover, Protégé offers an API to develop our “reasoning” module in order to integrate it in our e-business ecosystem. It offers an easy user interface supporting the development of ontologies which can be saved both in RDF and OWL formats. Moreover some of its plug-ins allow a graphical view of the ontology which, depending on its size, will be very important for a correct ontology creation.



For the moment we have not found a Protégé Plug-in for document (text) annotation (indexation). We, the Instituto Tecnológico de Aragón, created our annotation tool by improving the DOSE capabilities. It was a GPL open source tool developed by the Polito college of the Torino University and, with the included improvements and further ones proposed to be done in the third project phase, will help us to “translate” service contracts from the different languages (English, German, Spanish, ...) to a common one (English for example). Translation means not only to change the language of a predefined set of words, “*ancho de banda*” is the Spanish translation of “*bandwidth*”. It also means to be open to the use of linguistic synonymous sets too, i.e. semantically equivalent words, of each of the supported languages: “*capacidad de transmisión*” in some context has the same meaning as “*ancho de banda*”. In other words, to translate the offer/contract template document

to a common named concepts framework reducing the reasoning effort by saving it from the geographical (linguistic) origin of the document.

Although an ontological representation of the services offers/contract was obtained as a result of this phase of the project, it is so far “only” a computing vision of the contract. We also need a high level representation supported by international commerce law experts. The e-Contract schema from the Oasis organization was our choice. It was a DTD schema defining a Legal-XML content and disposition to be considered an e-Contract document. As the documents are implemented in XML, it is platform, vendor and application independent and increases its portability possibilities.

5.2 Contract modelling infrastructure

5.3.1 e-Contract legalXML

The e-Contract LegalXML is the standard we chose to create our contract. It provides us with a modelling infrastructure developed by the Oasis Consortium (<http://www.oasis.org>). Its schema is an XML schema to describe the generic structure of a wide range of contract documents. The eContracts Schema aims to facilitate the storage, maintenance and processing of natural language precedents for contract documents and contract terms that may be used to create contract documents. It can be used by organizations who maintain precedent or template documents that will be used in automated document assemblies, document construction and publishing systems to create contract documents. Thus, it is expected that it will be used mainly in back-end, automated processing systems, rather than by lawyers and others involved in day-to-day contract preparations.

Moreover, in our previous research of legal document standards, we found it is being used in the development of some software judicial process support applications. Therefore, we concluded that some editors or document development tools had to be created. The reality was completely different: we were not able to find any tool for the use of e-Contract Legal XML, so we had to create our own toolset to create e-Contract documents.

First we created an e-Contract LegalXML editor. As the project’s objective is not to create an e-Contract editor, we (both Unizar and Ita) created some MS Access templates to create the basic contract for the services we studied in our “Living Lab”: that is for a basic Web Development, Housing, Hosting or IT Maintenance contract. Then we developed an XLS to e-Contract Legal XML converter which would validate the obtained XML and in case of error would not create the output document³⁴.

³⁴ ¹ If you are interested in the functionalities of the XLS2LegalXML Tool, please, refer to Annex VIII of this document

Once the users were able to create e-Contract LegalXML documents our work focused in the way to automatically find services through a network. We worked in two directions: we created the LegalXmlFinder and studied the way it can be adapted to be a Semantic finder².

The LegalXMLFinder tool is a very simple web user interface which looks for the presence of a predefined set of words and in associated values in a unique document syntax. It provides some semantic capabilities (terms are linked to their definitions) but it cannot be dynamically improved³⁵.

Although XLS2LegalXML and LegalXMLFinder are very basic tools, the test we developed in order to use them allowed us to validate the supposition we made when we chose e-Contract LegalXML. But which is more important, it allowed us to detect its insufficiencies and necessities for further development, which are gathered in point 5.5.

5.3.2 Development of the e-Contract Ontology v1.0

Before we started the development of the e-Contract ontology, we conducted some research on contract ontology development. We found some papers and Kavilan[1] provides an interesting example of contract ontology development. This paper proposes to create a “multi tier” ontology. First they created a generic template, in order to support all contract clauses from a high semantical point of view. After the generic template was created, they extended it, in different iterations, to obtain a more specialized and specific ontology: they aggregated new sub-concepts to incorporate new Knowledge about the contract.

Although the proposed way to obtain the ontology seems logical (it was an iterative software development process), the problem we had to solve was different: whereas they built an ontology for contracts without a reference framework, we had to do it observing the restrictions imposed by the e-Contract LegalXML definition. That means not only to built the ontology, but it means to do it taking in account the format of the documents (the position of the terms in the document ...).

So we first develop an ontology which can be used for whichever e-Contract. We reviewed the e-Contrat DTD definition and we built it using Protégé. The result is shown in Figure 8. It is simplified (attributes are not shown) because of the size of the graphic.

³⁵ If you are interested in our work on obtaining a Semantic finder, please refer to the point 5.3.2 of this document.

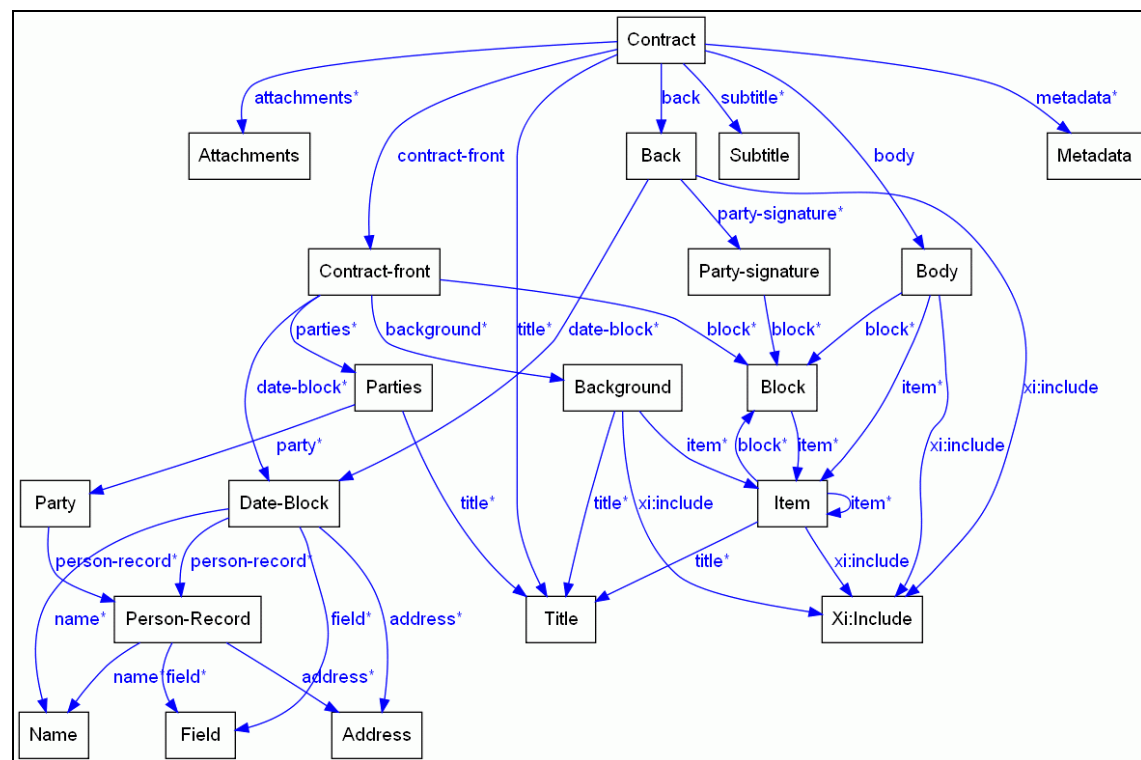


Figure 8: Generic e-Contract Ontology

The ontology gathers all the pieces which can be used to create an e-Contract document. Blue arrows represent composition relations: a contract is composed of attachments, a contract front, etc. The number of each component is signalled by the presence of a “*”. Its presence means 0 or more while its absence means obligatory component. Then we extended the ontology to include the subset of the e-Contract elements we used for the construction of our eContract set (the contract for Hosting, Housing, Web Development or Network Maintenance). The result is shown below.

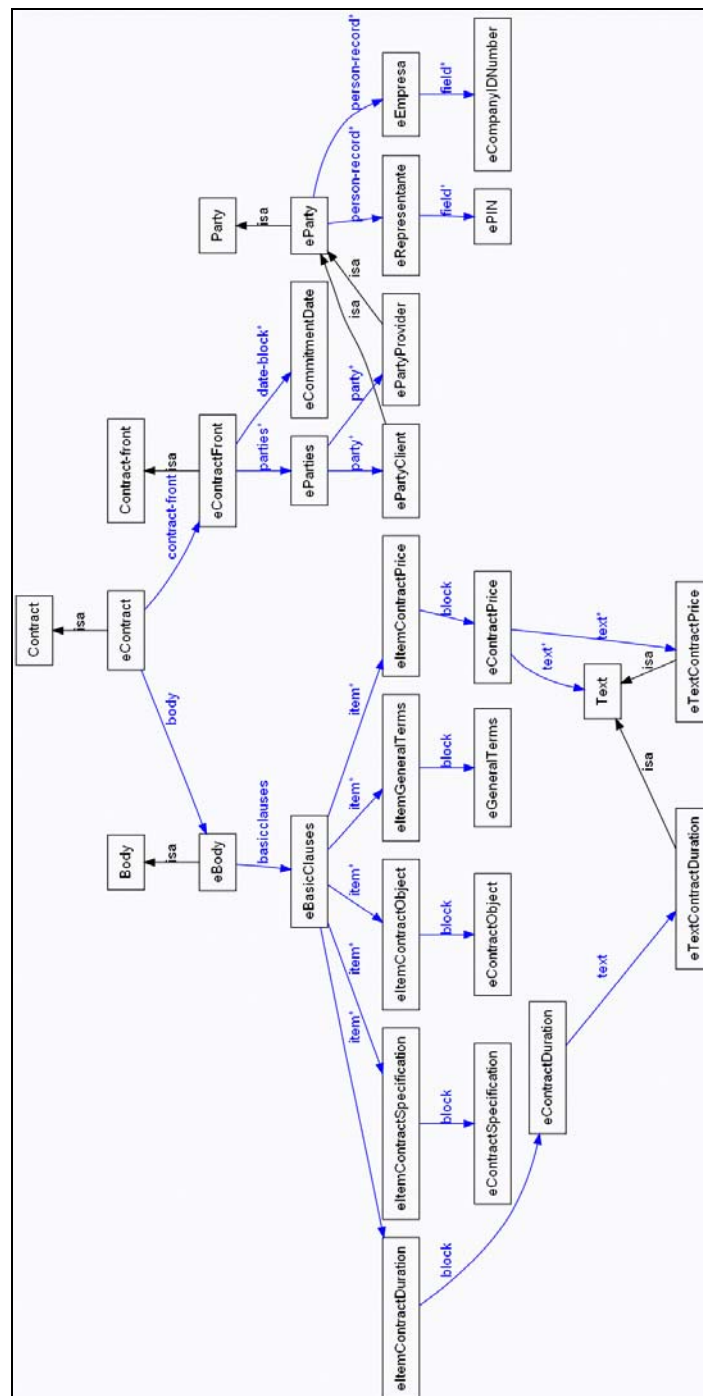


Figure 9: e-Contract Template for the Examples of the Project

For simplicity, non-relevant concepts of the previous diagram are omitted. Here a new kind of relation, ‘is-a’ (represented as a black arrow), is introduced. This new version of the ontology introduces new concepts which are specialization of some of the created in the first revision of the ontology showed in Figure 8. Some of them give meaning in the universe we are modelling. For example, the concept “*eItemContractDuration*” tells us we are speaking about the time-span a contract is going to be in force.

Once the templates of the e-Contract for Hosting, Housing, Web Development or Network Maintenance were created we saw the need to develop more specific concepts because of the different kinds of measures and clauses usages in each kind of contract. We provide the diagram of the ontology in Figures 10 to 13. For the sake of clarity, we divided it in four diagrams: one for each contract.

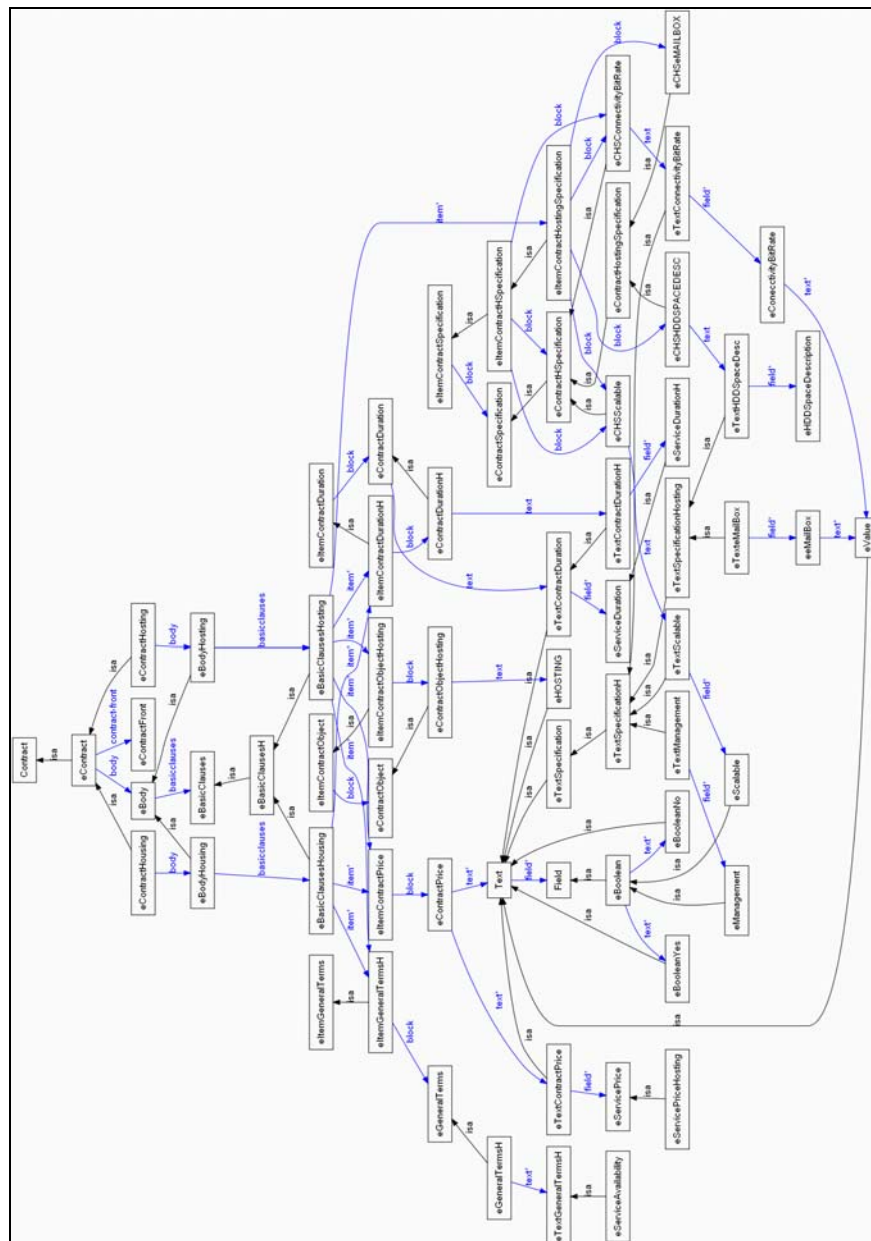
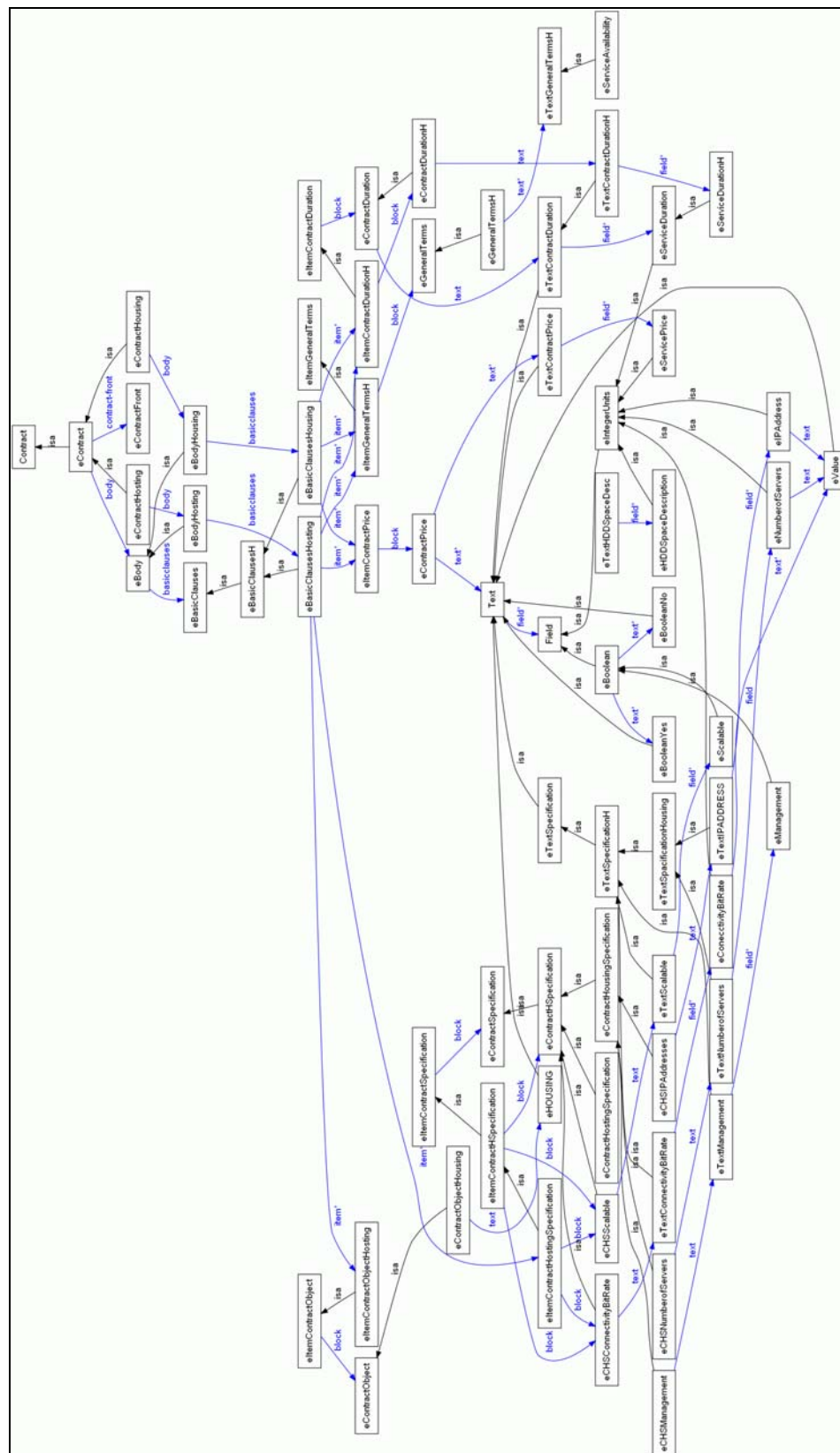


Figure 10: Hosting e-Contract Ontology



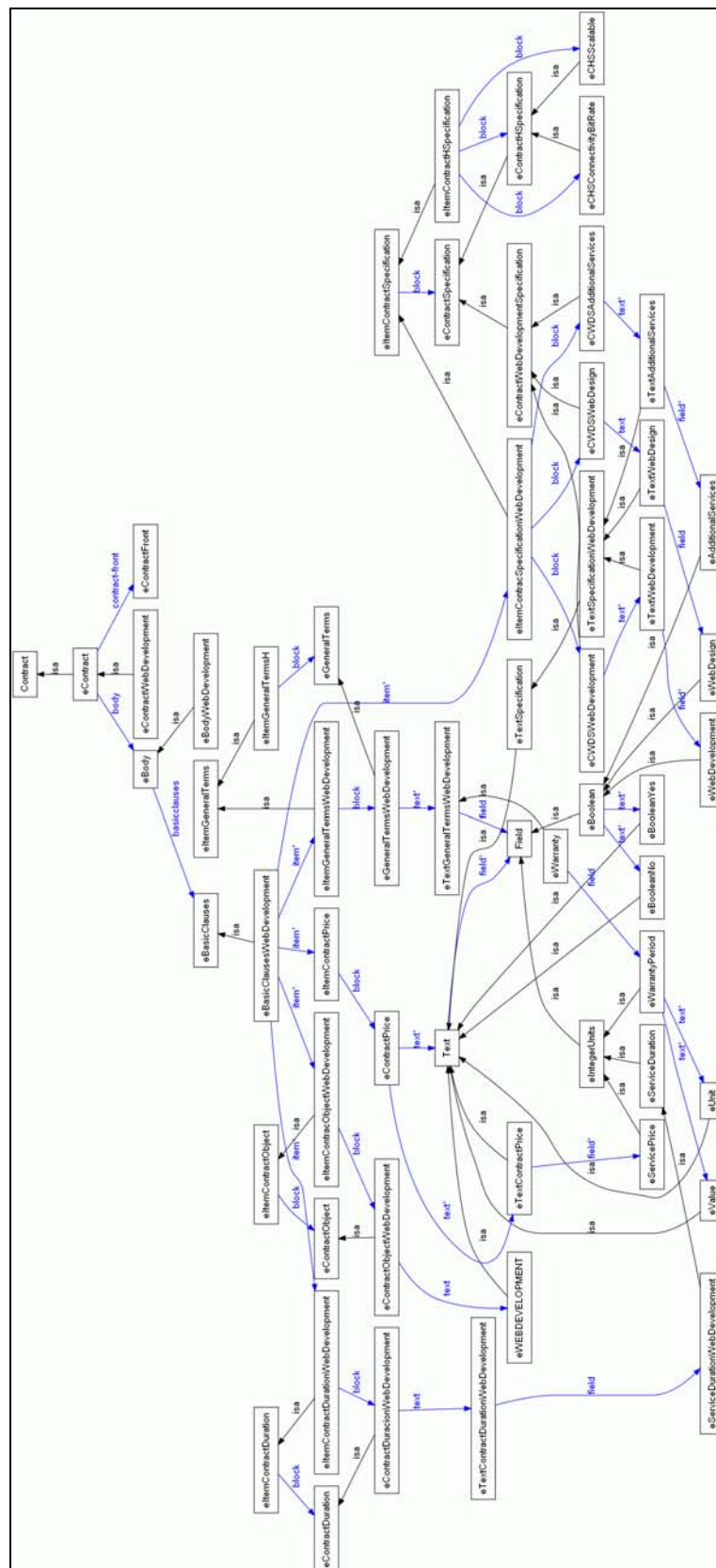


Figure 12: Web Development e-Contract Ontology

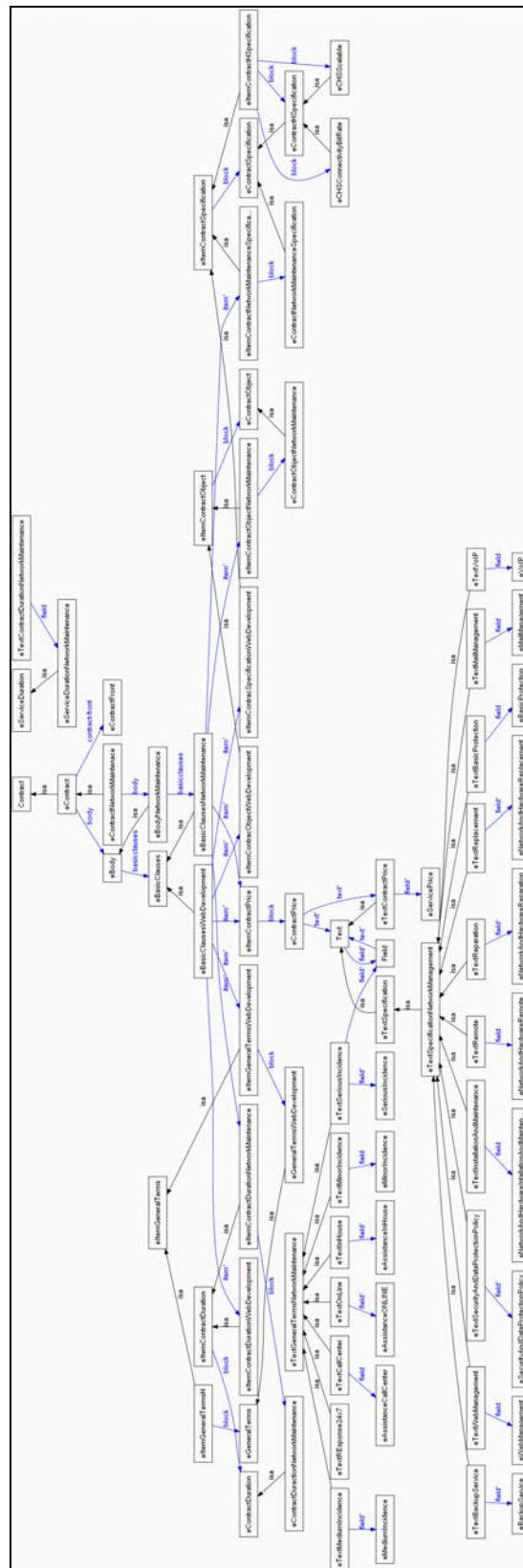


Figure 13: Network Maintenance e-Contract Ontology

If a comparison of the previous diagrams is made with respect to the one proposed in [1], our ontology is considerably more complex. The origin of the complexity is that we need to gather both the concepts use for the contract definition and their situation on the formatted document: the meaning of a concept depends on the concept itself and on the part of the document it appears on. Although we think it is an important aspect, it is rather obvious that we will need to simplify the final ontology version. As we will elaborate in point 5.5.3 of this document, we think the simplification can be achieved by means of the development of a module to convert the e-Contract from LegalXML to OWL.

5.3 Dynamic Service Composition Infrastructure

As it is suggested in the Methodology chapter of this document when we elaborated on the state of art of research in order to get to know the technologies and tools developed to support DSC, we found it might be very difficult to build a complete prototype. That is why we decided to divide our work in 3 phases:

- We built a local e-Contract LegalXML finder.
- After the Servent would be re-engineered and work right, the local finder will be integrated in a “Yellow Pages” service supported by the new Servent Revision.
- In the final phase, the Finder would have been integrated in the rules engine in order to search the best service offer.

We were only able to complete the first phase because so far there has not been a new release of the Servent platform. Therefore, we were not able to perform the Finder integration into the Servent Platform. So, we studied the opportunities of the introduction of ontologies as a support for the semantic DSC would offer.

We worked in two parallel, but convergent, ways:

- We developed a set of tools to perform some basic validation tests.
- We studied in depth the use of OWL to develop a semantic framework for the contract description and the use of the obtained ontology to support the service search and composition.

As the result of the former way, we obtained a set of useful tools to create, visualize and search LegalXML formatted contracts (please, refer to [Annex VIII](#) and [Annex IX](#) to obtain more details of the tools):

- An user interface to translate text based contracts into legalXML contracts.
- A visualization tool for e-Contracts formatted documents which shows them as a tree (of concepts – in someway like the taxonomy of an ontology).
- A search engine for the e-Contracts clauses properties.

We complemented this way, based on a syntactical approximation, by means of building and using ontology to support contract description and search. To do it:

- First we explored Protégé capabilities to develop ontologies and to make deductions (searches) over their concepts instances (in our case contract/services description instances).
- We used Protégé to develop a preliminary multitier ontology representing our models of contract.
- Then we studied the semantic possibilities of the ontological representation of the contracts: for example the multilingual translation capabilities.
- Finally, we looked for some semantic annotation tool (for example DOSE) that can be used to translate multilingual contracts to a common (English) language without neglecting of semantic content.

We used these developments to create some test cases. These cases, the executables of the tools, their source code files and some demos can be found at <http://opaalstools.sourceforge.net/>.

5.4 Conclusions and future work

5.4.1 Future Work for the Creation of e-Contract LegalXML Documents

As explained above, the XLS2LegalXML tool is just a prototype which means that a lot of improvement can be made. We enumerate here only some of the most important ones:

- Improve usability: although creating an e-Contract document from an Ms Excel document is a start, it is clearly not sufficient for a complete DSC system. A new GUI should be developed to create a complete e-Contract document starting from scratch.
- A very interesting new functionality will be to use the ontology to support the label translation and to restrict the vocabulary used by the creator of the document.

The use of the ontology can support the use of money and measurement units conversion.

5.4.2 Future Work for the inclusion of the Ontology

In the creation process of the e-Contract ontology and when we created some contract instances over the ontology, we detected some necessities and requirements for the inclusion of a Semantical Service Finder in a Digital Ecosystem platform. From our point of view to accomplish this goal the process (and the software implementing it) should include the following points:

- Translate the labels of the e-Contract Legal-XML document from its original language (German, Spanish, French, English ...) to a common language (for example English). As we suggested in previous paragraphs, the translation will be based on a synonymous set of the concepts: so “band width”, “ancho de banda”, “velocidad de transferencia” or “transfer speed” would be translated to “band width”. Moreover, this first step would be used to obtain measurement units conversion to the predefined one: for example bandwidth will be able to be measured just as Mb instead of support MB or Mb in the rest of the process.
- Convert an e-Contract document from its Legal-XML representation to its ontological (OWL) representation. The format conversion is the step which will allow the use of the Protégé deduction engine for the dynamic search of services. To do it we will need to study the schema conversion utilities in order to build the LegalXML-OWL converter.
- As we suggested in paragraph 5.3.3, our ontology would have to be reviewed trying to simplify it and to include new requirements that will be able to appear after studying the format conversion possibilities.
- Create a module to include the deductive servicer search tools in the service composition platform.
- A new version of the Finder tool allowing semantic search:
 - Including the functionalities described in previous points when it gathers offers/contracts of services.
 - Using it to reformulate correctly the user requests.
 - Saving user requests to allow their analysis and to detect possible improvements of the ontology (or its synonymous sets).

6 Research Synergies (DE Cluster)

It goes without saying that all the projects involved in the Digital Ecosystems Cluster³⁶ have a direct connection with the OPAALS project. Still, some of them show clearly converging research interests, in particular with the tasks carried out by ITA and UNIZAR. The best example for this is the IST-Contract Project.³⁷ Its main goal is to develop frameworks, components and tools which make it possible to model, build, verify and monitor distributed electronic business systems. This is envisaged on the basis of dynamically generated, cross-organisational contracts underpinning formal descriptions of the expected behaviours of concrete services and of the system as a whole. The project's objective comprises also to develop systems capable to specify electronic B2B interactions in legally-binding or contractual terms; to dynamically establish and manage contracts at runtime, as well as to apply formal verification techniques to sets of contracts within a digital business environment; and to apply monitoring techniques to contract implementation in order to increase business trust in e-business infrastructures.

In view of these objectives, the IST-Contract Project opens a promising field for research synergies and rises occasion to a fruitful collaboration in order to gain deeper insights into the digital ecosystems socio-legal implications. Bearing this idea in mind, a prospective assessment and study of this collaboration was made from the OPAALS point of view. The major conclusions may be summarized as follows. While OPAALS is centred in modelling contracts and dynamic service composition, IST-Contract rather focuses on contract monitoring issues, which leads it to leave aside all contract parameters which are not understandable and manageable by a computational system. IST-Contract guiding vision is to define a contract as a set of obligations and conditions, mostly regarding time and price, so that, for instance, a given delay in fulfilling orders or requirements can be automatically bargained against price reductions (or it may even be interpreted by the system as breaching or voiding the contract), as the system monitors all the messages interchanged (via web-service) and enables to see in real time the execution of the contract. For this general purpose, several contract and business domains were analysed by the IST-Contract team,³⁸ among which the service level agreement (SLA) in software engineering proved especially interesting for us.

As a matter of course, there are some divergences between these two approaches: this is precisely what makes the collaboration meaningful. A twofold aspect may be underlined which differs from the approach followed by ITA and UniZar in

³⁶ See: http://www.digital-ecosystems.org/de/refs/ref_proj.html

³⁷ IST-Contract (Contract-based Systems Engineering Methods for Verifiable Cross-organisational Networked Business Applications / FP6 - Specific Targeted Research project - IST-2004-034418). Further details on this project may be found at: <http://www.ist-contract.org>

³⁸ Namely: modular certification test; dynamic insurance settlement; aerospace aftermarket; SLA in software engineering.

OPAALS. Firstly, the IST-Contract project is concerned with service delivery processes in which large organizations, and therefore a great number of actors and resources are involved. In our case, on the contrary, most actors in the IST sector in Aragón are small and medium size enterprises, whose organizational structure is far simpler than that of a large organization. In this regard, a further difference concerns subcontracting and outsourcing processes. In the business domains analysed by IST-Contract, subcontracting is normally a transparent process, which raises a lot of legal issues to be considered, while in the IST sector in Aragón it comes normally to opaque subcontracting. Secondly, the IST-Contract approach may be deemed simplified from the legal point of view. It basically deals with only one aspect making up the contract content, namely the term (period, time) of obligations compliance by service providers. Because of this, the resulting domain models become too complex from the subjective or actor's perspective, but perhaps too simple from the object or matter perspective. As they put it, «conditions and obligations involved in the legal aspects of the contracts which cannot be formalized and processed by a software system are not in the scope of the IST-Contract scenarios».³⁹

Our OPAALS research, however, does deal with those aspects in fact. ITA and UniZar must first analyze and structure the contracts, in order to make it possible to model and publish them on a certain platform or infrastructure, so that they can be sought for, negotiated, articulated and signed. Hereby dynamism in contracting services is envisaged, be it because the contract is “flexible” (negotiations are then possible) or because there exist several providers offering the same service (a better supply chain could be then established). Despite of this twofold difference, we concluded that collaboration was necessary. What can be fruitful in it mainly concerns the legal dimension. It is hardly justifiable that legal and regulatory issues remain out of the theoretical and operative models for any digital ecosystems, because the legal structure decisively shapes them. Provided that up to now there are few legal regulations or case law applying to this matter, the OPAALS contribution may fill up this analytical gap. Therefore we contacted the Universitat Politècnica de Catalunya (UPC), one of the leading institutions in the IST-Contract Project, with which a promising collaboration was initiated.

As a first experience, UPC agreed with us in analysing and using our contract templates (see Annexes III and ff.) for a modelling proof. This may have made it possible that UPC checks out whether the technical platform developed in the IST-Contract project is compatible with real contract structures. On the other hand, ITA and UniZar could obtain an important feedback as to the improvement and adaptation of the contract content structures. As a result, an increase of the feasibility and marketability of both projects would be expected.

After first contacts were realised and some contract definition were exchanged, UPC requested us that for them a contract legal framework was the service definition itself and they, for the moment, were not interested in the legal definition of the contract (legal clauses) which our project concerns on.

³⁹ See *IST-Contract Project Deliverable D6.1*, p. 72

Besides, it would be interesting to contact other projects involved in the Digital Ecosystems Cluster. An example of this is the ONE Project,⁴⁰ which deals with negotiation issues. It envisages setting forth how companies could create contract agreements to supply complex, integrated services as virtual organizations (or coalitions). Furthermore, the ONE project is geared towards SME's in order to provide them with a trusted, secure and free of charge technological environment in which they are able to create tactical and strategic alliances. This has a tight connection to ITA and UniZar interests, for addressing collaborative competition issues within digital ecosystems is one of our research tasks in OPAALS. As our platform (Servent) was not yet correctly working at that time we thought it was preferable to wait until DSC in order to establish a negotiation background.

⁴⁰ Open Negotiation Environment (funded under 6th Framework Programme, Action Line: IST-2005-2.5.8 IST for Networked Businesses). See: <http://www.one-project.eu>

7 Digital Ecosystems Regulation and IS Law

Recent developments and next future visions of the Internet have engendered new and complex environments for interaction –between machines, applications, organizations and persons– which begin to be analyzed from the *digital ecosystem* (DE) paradigm. Yet, although the emergence of this kind of environments poses a number of regulatory challenges, the rising general theory of DEs has not yet addressed them from a legal viewpoint. This section contributes to fill this gap, even if it is only preliminary⁴¹. We first try to clarify what a DE is, whereby our attention will be largely focused on the *digital business ecosystem* [7.1]. After briefly touching upon the Internet regulation debate [7.2], we shall confine ourselves to identifying some basic key features of digital business ecosystems as regulation fields and to mapping the major *legal and regulatory issues* connected to them [7.3]. We introduce then some regulatory strategies which may suit digital business ecosystem, such as (regulated) *self-regulation* and *regulation-by-technology* [7.4]. Finally, we pinpoint what consequences may be drawn from DE research as to our understanding of competition law [7.5].

7.1 Digital Ecosystems

A DE can be defined as a combination of a specific technological infrastructure, the so-called “digital environment”, and those entities or “digital components” (software, services, business processes or models, contractual frameworks, law, knowledge, etc.) which have been formalized, digitalised and transported within the ecosystem and which can be further processed by humans or by computers.⁴² Since there are always people –be they individual or collective players– involved in such an environment, it seems meaningful to complete this technical definition by adding a third aspect, namely the social community related to DEs.⁴³ This working definition could be surely refined, but these three elements –digital environment, digital components and social community of players– are inherent to all DEs.

A detailed classification of DE players is lacking,⁴⁴ but we can at least identify two types of actors involved: those actors which are responsible for the design and development of the technological infrastructure and those which use it for mutual interaction or transaction purposes. These two types may of course overlap, but whether this overlap exists and to what extent it does will depend on the specific

⁴¹ This task should continue in Phase III of OPAALS in WP12, Task 12.11 on “Regulation and governance strategies for digital ecosystems”(M12.4 and D12.12).

⁴² See www.digital-ecosystems.org; further approaches to the concept of DE may be found in Dini (2007: 25), who combines three definition frameworks based respectively on natural, social and computer sciences; or in Nachira, Dini & Nicolai (2007: 5), focusing on the concept of business digital ecosystem.

⁴³ «In a digital ecosystem the users can be considered to be the source of an ‘external’ selection pressure on the digital organisms» (OPAALS D1.2: p. 86). See further OPAALS D1.2: p. 87 ff.

⁴⁴ However, see DBE D32.2: p. 15-16.

organizational settings of each DE. Figure 14 illustrates this approach to DEs as socio-technological environments:

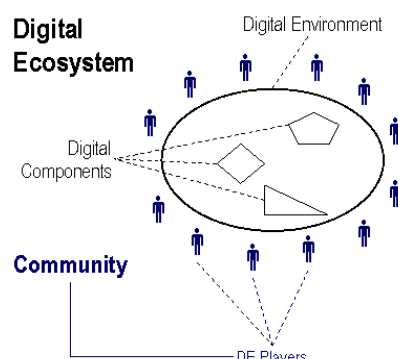


Figure 14: DE as socio-technological environment

Particular settings and structure of DEs may vary. As recently developed, however, the DE paradigm relies on certain normative assumptions associated with political, economic and social science arguments which determine DE design and architecture features. In this regard, a DE has been defined as «an open, loosely coupled, domain clustered, demand-driven, self-organising agent environment, where each agent of each species is proactive and responsive regarding its own benefit/profit (...) but is also responsible to its system» (Boley & Chang 2007: 2); or as «a self-organising digital infrastructure aimed at creating a digital environment for networked organisations that supports the cooperation, the knowledge sharing, the development of open and adaptive technologies and evolutionary business models».⁴⁵ In this line of thinking, we approach DEs as open, distributed and decentralized environments, in which local autonomy of DE players and Service Oriented Architecture (SOA) principles are duly safeguarded thanks to the absence of a single point of control or failure (say, a central server).⁴⁶ These features respond to normative decisions on the side of DE proponents and have profound governance and regulation implications –we turn back to this point later on.

By now, DE practical applications are few. Perhaps the most advanced implementation of the DE paradigm is the *Digital Business Ecosystem* (DBE), so that we shall focus on it.⁴⁷ DBEs result from combining the DE infrastructure and a

⁴⁵ Boley & Chang (2007: 2) offer this negative definition: «A Digital Ecosystem is: unlike a client-server architecture, where the communication is centralised and which acts as a command and control environment; unlike a Peer-to-Peer architecture, where, at any time, each agent has a well defined role, i.e. can only be client or server, but not both; unlike a Grid architecture, which stitches partners together for resource sharing but cannot avoid counterfree riding; unlike a Web service network, where brokers are centralised and service requesters and providers are distributed in a hybrid architecture that does not guarantee trust and QoS. A Digital Ecosystem instead is an open community, and there is no permanent need for centralised or distributed control or for single-role behaviour. In a Digital Ecosystem, a leadership structure may be formed (and dissolved) in response to the dynamic needs of the environment».

⁴⁶ For a detailed description of the DE core architecture, see OPAALS D3.6. This, however, does not exclude other approaches to DEs which are based on different or even diverging assumptions. For a comparison between European and USA DEs, see Nachira 2005.

⁴⁷ Applications of the DE paradigm go beyond the business field: it could be applied to other areas such as eGovernment. In this respect, see: www.eisco2008.eu/declaration.php

business orientation. To put it in terms of system theory, they make up a functional differentiation or specialization of DEs. Possibly the most striking feature of DBE is the so-called *Dynamic Service Composition* (DSC). This is a rather complex functionality, but it could be seen as the autonomous discovery and creation of new services or processes by combining existing components on the runtime upon a previous user request.⁴⁸ This reveals the potential significance of DBEs for small and medium sized enterprises (SME) trying to operate at a large scale. As stated in the seminal research works on DEs, these «will offer opportunities of participation in the global economy to SMEs and to less developed or remote areas» and «foster local economic growth», which will «preserve local knowledge, culture and identity and contribute to overcome the digital divide».⁴⁹ The challenge is how legal and regulatory issues can be introduced into the DE paradigm in a way that ensures DE workability in real business practices without damaging the architecture and design principles.⁵⁰

7.2 Approaching DE Regulation

Although the concept of regulation is difficult to grasp,⁵¹ discussing regulatory issues posed by DEs at least requires a working definition of it. We shall adopt the notion developed by Black (2008: p. 139) upon former definition attempts.⁵² According to her, «by regulation is meant sustained and focused attempts to change the behaviour of others in order to address a collective problem or attain an identified end or ends, usually through a combination of rules or norms and some means for their implementation and enforcement, which can be legal or non-legal». Some complementary remarks may be worth adding for the purpose of this paper. Firstly, regulation is both a process and a product; for it entails a *set of practices* and procedures leading either to establish or to formalize *norms* or normative expectations –which are binding at least in some respect. It thus necessarily implies

⁴⁸ Further details about DSC can be found in Dustdar 2007.

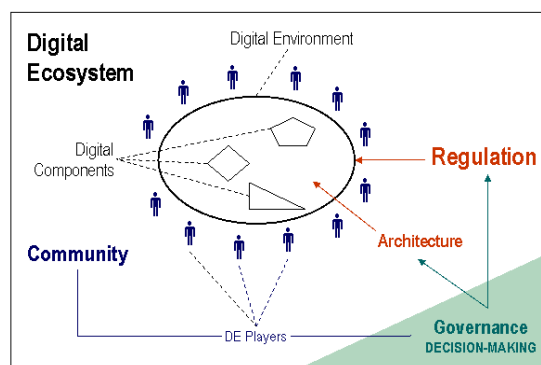
⁴⁹ See www.digital-ecosystems.org. Dini et al. (2008) underline «the need for more sophisticated technology that can support the distributed coordination of loosely coupled B2B transactions in reconfigurable value networks, thereby preserving local autonomy and avoiding dependence on centralised transaction servers», and that «these aspects are centrally important in development contexts: (a) the local autonomy, because it is about social constructivist understandings of self-determination and (b) the independence, because, by empowering individual players, no matter how small, to play in the B2B market at the same level of multinational corporations, it achieves in the electronic B2B space a similar flattening and democratising effect the web has already reached in the content-sharing space».

⁵⁰ «Legal requirements for underwriting contracts and guaranteeing operational aspects of the architecture can lead to an inflexible technology environment based on fixed legal entities»; «finding an organisational and decision-making framework that can mirror the de-centralised, distributed attributes of the technological architecture is a major challenge» (OPAALS D3.6 p. 82).

⁵¹ See e.g. Baldwin and Cave (1999: p. 1 ff.). After reviewing recent literature on governance and regulation, Daring (2008: 17, 18) defines regulation as a «policy practice of placing restrictions (either legal or rule-based) on those aspects of social and economic behaviour considered potentially detrimental to the common good». A far broader notion of regulation as «any form of social control» is used in OPAALS (D3.6: p. 20).

⁵² See in special Selznick 1985: p. 363.

a certain form of *institutionalization* or institutional framework, be it formal or informal, state-based or not. Moreover, regulation attempts to steer or otherwise organize a given *social context* or action sphere. Therefore its outcome, the norms, is always intended to affect human behaviour, which can be pursued either directly (*social regulation*) or indirectly by addressing those technological means or infrastructure underlying human actions (*technical regulation*). As a binding decision-making, regulation is a legally and politically laden phenomenon which remains tightly linked to societal distribution and exercise of power. In this way it merges into the manifold concept of *governance*. Actually, considering the variety of approaches to governance,⁵³ European governance,⁵⁴ Internet governance,⁵⁵ or electronic governance,⁵⁶ it might be said that this concept stresses political and power-related dimensions involved in any regulatory process. Likewise, as far as concerns DEs, governance is about «community decision-making» (Darkin, Whitley & Dini 2008: p. 138), so that it inevitably emerges when dealing with regulation. We shall however try to tackle governance and regulation as two separate issues –to the same extent as politics and law have been traditionally distinguished.



⁵³ «Governance in the public context is closely related to government and democracy, but has a different focus. (...) Government is the institutional view. (...) Democracy is the legitimacy view. (...) Finally, governance is the regulatory view. It is about how to best guide, steer or lead the society so as to identify and realize common interests» (Gordon 2004: p. 2-3); «“governance” emphasizes the regulatory, guiding or steering function of the state, i.e. the directing of society so to protect public interests and achieve, to the extent possible, the common good» (Gordon 2005: p. 3). See also Darkin (2008: p. 17 ss.) and Rhodes (1997, 1996).

⁵⁴ The phrase “European Governance” refers to “rules, processes and behaviour that affect the way in which powers are exercised at European level, particularly as regards openness, participation, accountability, effectiveness and coherence”, which are considered as “principles of good governance” in combination with the EU-legal principles of subsidiarity and proportionality (European Commission 2001: p. 10-11).

⁵⁵ Internet governance has been defined as, «the development and application by Governments, the private sector and civil society, in their respective roles, of shared principles, norms, rules, decisionmaking procedures, and programmes that shape the evolution and use of the Internet» (WGIG 2005b: p. 4).

⁵⁶ «eGovernance is about the use of ICT to support the guiding or steering of an organization to achieve its goals. In the political context, as a special case, eGovernance is about the use of ICT to steer society and promote public interests» (Gordon 2004: p. 5); according to Finger & Pécoud (2003: 6), eGovernance «a dynamic concept, which implies the growing use of the NICTs for the three State’s main functions (e.g. e-Government, e-regulation and e-democracy), increasingly involving non-state actors at levels other than the national one».

Figure 15: DE Regulation, as separated from governance

As mentioned, a DE may be conceived as a socio-technological environment, i.e. a social interaction field which is built upon and immediately determined by a specific technological infrastructure. This applies in a sense to any social area, but the intertwinement of the social and the technological may be sometimes so relevant that it becomes a distinctive feature. The clearest instance for this is the Internet. In order to frame the subsequent discussion on DEs it might then be useful to briefly touch upon the Internet regulation debate. This debate has taken on rather huge proportions –even leaving aside governance aspects⁵⁷, so that we must confine ourselves to highlight some recurrent themes which are connected with those changes the digital turn of modern societies has brought about –virtualization, deterritorialization and horizontalization of social interactions (Lipps 2006: p. 5-6). The phrase “Internet regulation” calls to mind a large variety of issues, but these boil down to three interwoven questions. Firstly, *what regulation needs are to be considered?* Rising social environments such as the Internet always pose issues which need to be regulated, be it to avoid detrimental effects or to foster a certain development.⁵⁸ Secondly, *do pre-existing legal or regulatory norms (which were not set for the Internet) apply on the Internet as well, and do they suffice for governing it, or is it rather necessary to establish specific norms addressing Internet activities?* Thirdly, *how could we manage to make (both pre-existing and specific) regulation certain and effective in online environments?* Legitimacy and governance issues apart, the bulk of Internet regulation debates lay behind these questions, or at least could be traced back to them.

Take for instance the privacy issue –a similar development could be observed in other regulative areas. As the Internet evolved it was soon realized that an increasing number of privacy concerns should be accounted for. Both at national and international level, data protection or privacy laws were in force years before the advent of the Internet, such as the European Council 108 Convention (1981), or before the Internet extended as a part of every day’s life, e.g. the EU Data Protection Directive (1995). At first, this *pre-existing regulation* was expected to solve those concerns: principle-based or analogical solutions were invoked for that purpose, and they could possibly have been sufficient to a certain extent.⁵⁹ But it

⁵⁷ For an overview see e.g. Pérez et al. (2008) and WGIG (2005a; 2005b).

⁵⁸ Internet Regulation has been conceived of as involving three related *spheres*: «direct regulation of the Internet infrastructure itself; regulation of activities that can be conducted only over the Internet; and regulation of activities which can be, but need not be, conducted over the Internet» (Froomkin 2005: p. 1).

⁵⁹ Earsterbrook’s (1996) early “law of the horse”-thesis about Internet regulation is a striking instance for this. As Mandel (2007: p. 563-64) observes, «it is inevitable that legal disputes concerning the new technology will be handled under the pre-existing legal scheme in early stages (...); there often will not be enough information and knowledge about nascent technologies to develop or modify appropriate legal rules, or there may not have been enough time to establish new statutes, regulations, or common law for managing the technology. In addition, there often appears to be an inclination to handle new technology disputes under existing rules. This response is usually the easiest, both administratively and psychologically. Not surprisingly, however, the pre-existing legal structure may prove a poor match for new technology. Often there will be gaps or other problems with applying the existing legal system to a new technology issue».

was not long before the shortcomings of this approach became apparent. On the one hand, regulation-by-principles leaves too much room for uncertainty –it provides, so to say, many “doubtful” solutions– and regulators attempted to reduce this uncertainty by setting new norms. On the other hand, some online situations did not have an offline equivalent and could not be properly coped with by resorting to pre-existing law. Special measures for the Internet, that is, *specific regulation*, were thus established, such as the norms included in the 1997 EU Directive on privacy in telecommunications. However, the regulatory strength of both previous and new provisions proved to be problematic, which led to the issue of effectiveness. This problem comprises several interrelated aspects. Activities conducted over the Internet may involve various geographical locations, so that diverse or even opposite regulatory frameworks can apply to them. The number of such activities increases dramatically, and so does the number of related conflicts, but there is no settled way to deal with them. Public authorities have no means to enforce or implement regulatory decisions beyond their territories or jurisdictions and even within them –tracking human actions is much more burdensome when they are carried out online than it is offline; and the same goes for courts or other official means to deal with Internet-related conflicts. In view of that, regulatory tools and strategies were sought for to overcome effectiveness obstacles in online privacy regulation. So, self-regulatory power was explicitly recognized to private actors and organizations, in an attempt to get Internet users and stakeholders involved in the making and application of regulatory decisions; international legal frameworks were created in order to bridge diverging national laws on privacy issues, providing hybrid regulatory solutions such as the Safe Harbor Agreement;⁶⁰ and a focus was put on the very technological infrastructure of the Internet, taking it as a “code” in which social and legal norms could be embedded.

Regulatory debates on DE show a similar structure.⁶¹ DEs raise a number of regulation needs and issues which must be first identified. Also in this case there exists a previous legal or regulatory framework which proves to be relevant to DE activities, whatever they may be. And DEs are likely to pose particular problems which do not have a significant offline counterpart, so that special regulatory measures must be taken. Certainty and effectiveness of DE regulation will make necessary to discuss regulatory strategies.

7.3 Mapping DBE Regulatory Issues

Up to now, the only available classification of DBE-related regulatory issues is allegedly oriented to promoting trust on the side of (potential) DBE players.⁶² So to speak, DE theorists do conceive legal and regulatory matters as “building blocks” of

⁶⁰ See <http://www.export.gov/safeharbor>, as well as Dhont, Pérez & Pouillet 2004.

⁶¹ Decision-makers must «be careful to avoid being blinded by the marvels of new technology in deciding law and technology cases», and must «look beyond the technology involved in a dispute to focus on the legal issues in question» (Mandel 2007: p. 552 and 560).

⁶² See DBE D32.1: p. 20 and D32.2: p. 11; OPAALS D3.6: p. 21; Elaluf-Calderwood & Tsatsou 2007: p. 100 ff. This taxonomy is essentially derived from Berkey’s (2002) overall description of international regulatory problems of e-commerce.

“regulatory trust” for SMEs partaking in DBEs, and split them into three major categories: *privacy and consumer protection*, *e-signatures and security* and *jurisdiction and consumer protection*, which respectively include a somewhat heterogeneous sample of sub-topics, as depicted in Figure 16:

Privacy and consumer protection	Jurisdiction, standards, third-party countries, reputation, compliance with data protection legislation, unauthorised disclosure, traceability or record keeping
E-signatures and security	Authentication, invoicing and payments systems, certification authorities, validity of contracts, encryption technologies, electronic storage, notification when using e-invoices, compatibility of payment systems
Jurisdiction and consumer protection	Cross-border online contracting, legal recognition of electronic contracts, legal validity of B2B contracts, jurisdiction, information requirements for online contracts, verification of orders, notification of receipt, SME education and awareness, dispute resolution.

Figure 16: Building blocks for regulatory trust (DBE D32.2: p. 13)

Regulatory issues are further classified by DE proponents as “internal”, “external” or both “internal-external”, depending on their relationship to the DBE environment.⁶³ *Internal issues* are those that either «arise in the DBE environment» (DBE legal identity, applicable rules within DBE, governance arrangements) or are «directly linked to participants and their activities in the DBE environment» (issues related to transactions carried out within the DBE, copyright questions, security and data exchange in the DBE, identity of DBE members...); *external issues* are those that «are not in the power of the DBE members or governors to effect», such as the external regulations applicable to e-business activities. In addition, some regulatory *issues* are seen as *both external and internal* (e.g. data protection requirements, e-signature certification). Moreover, an actor-based classification is suggested –albeit not fully developed– in order «to both identify issues relevant to particular DBE parties and to analyse the same issues from the perspectives of different DBE actors», namely service providers, users and business analysts.⁶⁴ In this line, a useful classification of legal issues related to SME clusters and DBEs is provided by the LEKTOR Project. After analyzing the EU regulatory framework and reviewing several EU projects addressing legal implications of e-business, this project resorts to case studies and interviews with SMEs in order to offer the following classification of legal issues:⁶⁵

⁶³ DBE D32.2: p. 14-15, basing on the ALIVE project on virtual companies (van Schoubroeck et al. 2001).

⁶⁴ DBE D32.2: p. 15.

⁶⁵ See the Lektor *eCatalogue on Legal Issues in eBusiness* (p. 8). Interestingly enough, the LEKTOR project links legal issues to business activities, and further includes a tentative prioritization: see both the Lektor *Analytical Study* (p. 33 ff.) and *Regulatory Roadmap* (p. 12 ff.) at www.ubique.org/lektor.

Priority (1=most 3=least)	LEKTOR eCatalogue of legal issues		
	KEYWORD	e-BUSINESS ACTIVITY	LEGAL ISSUES
1	Advertising	e-advertising, commercial communications	Consumer protection, data protection, privacy, competition, unfair competition
1	Alternative Dispute Resolution ADR	cross-border e-commerce	Out-of-Court Settlement
2	Author's rights	content creation; software development	copyright
1	B2B	e-contract; e-commerce; e-payments	e-signatures;
1	B2C	e-contract; e-commerce; e-payments	data protection; privacy; consumer rights
3	Business culture	trans-border trading; e-commerce	
2	CM(S)	e-business; collaborative networks; DBE; supply chain management etc	Data protection; data retention;
2	Commercial Communications see SPAM		
2	Consumer protection	B2C	Data protection, privacy; consumer rights
1	Conflict resolution see ADR		
1	Copyright	content creation; software development	Copyright; licences
1	Copyright	content creation; software development	Copyright
2	CMS - Content Management Systems	e-business in general; collaborative digital environments, DBE, B2B; B2C	liability (internal/external); data protection (internal; customers)
2	CRM - Customer Relationship Management	e-business in general; collaborative digital environments, DBE	Data protection; privacy; security
2	Cross-border transactions	e-commerce	validity of e-contracts; e-payment; e-signatures
1	Cybercrime	ISP activities; e-commerce	Liability; counterfeit products; © infringement
2	Cyber-Hooliganism	on-line marketplace;	"spam"; identity theft; collateral spam
2	Data processing	e-business in general	Data protection
1	Data protection	B2C; e-commerce	privacy issues; consumer protection
3	Data storage	e-business in general	limitations
1	Digital Signatures = e-signatures	e-commerce; e-contracts; e-procurement	authentication;
3	Distance marketing	e-commerce	competition rules
1	Distance selling	B2B; B2C	consumer protection rules
1	Domain Names	website creation	registration; ©; Trademark; competition
2	eBusiness		
2	eCommerce		
2	EDM - Electronic data management	e-business; collaborative networks; DBE; supply chain management etc	Data protection;
2	e-invoices	e-commerce; B2B; (B2C); e-signatures	validity; enforceability; authentication;
2	e-procurement	e-business; collaborative networks; DBE; supply chain management; B2B	validity; e-contracts; e-signatures; e-invoices
1	E- signatures = digital signatures		
2	Enforcement	e-commerce; e-contracts;	ADR; validity
2	ERP - Enterprise Resource Planning	e-business in general; collaborative digital environments, DBE.	Human resources regulations; finances; IPRs
3	EU regulations		validity; national implementation
1	Hyperlink	website creation;	Liability (for © infringement; unlawful content etc.)
1	Identity Theft see cybercrime		
1	Industrial Property see IPR	Software/hardware development; e-business	Patents; trademarks
2	Information Society		
1	Intellectual Property see IPR	content creation; software development	copyright/author's rights; exceptions;
3	Interoperability	software development; supply chain management	patents; copyright
2	Liability	ISP activities; e-commerce; collaborative work environments; on-line transactions	third-party liability; internal liability; liability for content of third parties
1	Licensing	Content and software creation; OSS	copyright; copyleft; licences
1	on-line contract = e-contract		
2	On-line payments	e-commerce; trans-border trading	security; enforceability
2	on-line services	ISP	liabilities
2	Open source communities	Software development; content creators	"Creative Commons"; copyleft
1	OSS Open Source Software	Software development; software purchase and use;	License; copyright; copyleft
1	Out-of-Court Settlement see ADR		ADR
1	Patents	Hardware and software development	registration; pre-check; protection
1	Phishing see Cybercrime		
1	Privacy	B2C; e-commerce; data processing; RFID tagging	Data protection; data retention;
3	Reverse engineering see Interoperability		
1	Security	e-commerce; e-payments; B2C (retail payments); B2B (wholesale payments)	validity; enforceability
1	Spam	advertising	unsolicited commercial communications; data protection; consumer protection
3	Supply chain management	Supply chain networks; business processes management	data protection; privacy; financial issues
1	Trojan Horse see Cybercrime		
1	Trust	B2C; e-commerce	
2	TTP - Trusted Third Party	e-contract; e-signatures; e-payments; e-procurement	Certification; authentication
1	Unsolicited communication see SPAM		
2	Validity	e-contracts; e-invoices	enforceability
2	VAT	e-commerce; trans-border trading	registration; recuperation rules
3	Virtual Private Networks	e-business; collaborative working environments; DBE	authentication; trust; security; SLA (Service level agreement)
3	Website	e-commerce; advertising;	domain names; competition; copyright

Figure 17: LEKTOR eCatalogue on Legal Issues in eBusiness

These classificatory attempts entail some useful aspects, but remain little differentiated, i.e. too generic, and therefore do not fully capture those regulatory or legal complexities involved in DBEs, so that it is likely to provide limited guidance

for DBEs players and regulators.⁶⁶ They are rather overall classifications of legal issues raised by e-business in general. We thus shall try to refine this classification in order to sketch a guide to DBE legal and regulatory issues. To this end, it first makes sense to take a look at other socio-technological environments, such as SME IST-clusters, virtual professional communities (VPCs), e-marketplaces or B2B trading platforms, which offer a starting point for DBE regulation discussions. In the broadest of terms, a DBE can be conceived as a community of players or actors trying to do online business in a way that allows DSC. Taken as social communities and specialized business areas, DBEs show some similarities to those environments.⁶⁷ Of course there are significant differences between them, but an insight into DBE regulatory problems may be gained by approaching them comparatively. In our view, legal and regulatory issues posed by DBEs may be mapped according to a scheme which consists of three interwoven parts: (1) firstly, two major *regulation spheres* covering both the DBE as a social community and the particular activity carried out within it, in our case B2B business transactions; (2) secondly, some *regulatory topics* which may be typical for these spheres; and (3) thirdly, a variety of *regulatory constraints* predetermining or at least influencing most regulatory options and decisions on those topics. A tentative map of DBE-related legal and regulatory issues can be introduced upon this basic structure:

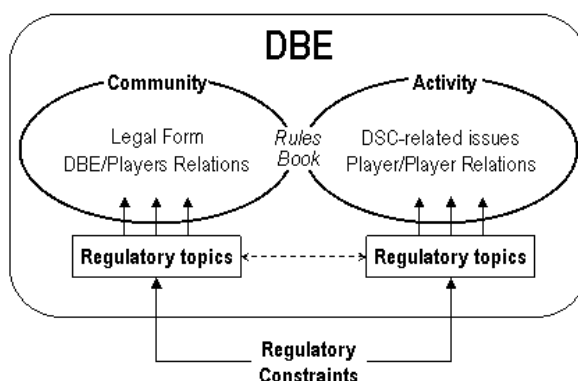


Figure 18: Map of DBE Legal and Regulatory Issues

4.1. Regulation Spheres

When dealing with DBE-related regulatory problems, a starting distinction may be drawn between regulating the *DBE community* and regulating the *DBE activity*. However, although these spheres can be separated for analytical purposes, they remain intertwined to some extent. What is termed here as the *DBE rules book* connects regulation in both spheres, and entails a systematic and coherent set of norms governing DBEs. In other words, it operates as an interface between

⁶⁶ Just to mention a couple of inconsistencies: the topic “consumer protection” is included in both categories at the same time, “SME education and awareness” and “legal validity of B2B contracts” are listed at the same level of regulatory issues without further explanation, “compliance with data protection legislation” redundantly appears as a regulatory issue within the category of “privacy and consumer protection” issues, and so on.

⁶⁷ B2B Internet trading platforms include «all Internet based technical solutions that aim at facilitating the establishment of new trading relationships between companies or at supporting existing relationships» (Expert Group on B2B Trading Platforms 2003: p. 3).

community and activity regulation and expresses the intertwinement of social and technological regulation, for it contains both rules related to social behaviour within the community and design or architecture features defining the very DBE technical infrastructure.

The regulation of the DBE community makes up in a sense the DBE ‘constitution’. It may be taken to comprise two major issues. Firstly, it includes the foundational settings of the DBE, say, the legal form and structure of the community, which has to be seen as a take-off regulatory decision. It can be assumed that potential players will be willing to enter a DBE if it has some legal entity rather than it has not, so that a given legal form must be chosen if a DBE is expected to work out as a business area.⁶⁸ As discussed later, this choice does imply situating the DBE under a given (compulsory) legal framework. Secondly, this sphere is about the internal and organizational rules of the DBE as such and, in particular, about those rules governing relationships between the DBE itself and the DBE players. In this regard, the key aspect is probably what might be called the *DBE access contract*,⁶⁹ which must cover admission, membership, participation and exclusion conditions.⁷⁰ It is plausible that one of the central conditions that players are expected to accept when accessing a DBE is compliance with the rules governing the DBE internal interactions, which leads to the sphere of DBE activity regulation.

The sphere related to the *DBE activity* is concerned with the regulation of the relationships between DBE players themselves, i.e. with player-player transactions. There are at least two questions which must be answered in this sphere: what are the particular rules applicable to single business transactions between DBE players (*first-order contract rules*), and what are the rules applicable to the relationships within the DBE as a business environment (*second-order contract rules*). As for the first set of rules governing DBE activities, single transactions can be expected to be largely governed by contract agreements which are established between the DBE players. In their turn, second-order rules are to be laid down in the *rules book*. In this regard, a major challenge will be how to establish a regulatory framework for DSC, which is not only the DBE’s most striking functionality, but also implies making complex contracts whose regulation poses a range of specific problems. As it was mentioned in section 4 of this Deliverable, DSC leads to scenarios in which one client can simultaneously enter different contracts with different providers under potentially inconsistent conditions, so that second-order solutions must be reached to address this issue.

In principle, DBE constitutional and organizational settings (*DBE community regulation*) are irrespective of the specific interactions carried out within it –be they contracts, information exchanges or any other type of interactions–, which seem to require a dedicated regulatory framework (*DBE activity regulation*). But they will normally overlap to a certain degree. For instance, a general ADR model could be

⁶⁸ Just to name some options, a DBE could take on the form of a civil or unincorporated association, a registered company, a partnership, an EEIG or even an association (or European association), as well as a number of (EC) corporate structures.

⁶⁹ The term is borrowed from Rodríguez de las Heras’ (2005: p. 231-32) study on e-Marketplaces.

⁷⁰ This is closely related to governance issues. See Wallentin et al. (2005: p. 24 ff.) on VPCs.

launched for solving any dispute arisen within the DBE, be it related to the community or to the activity.

4.2. Regulatory or Legal Topics

DBE regulation may be also approached in terms of legal topics or issues. This can be done in various ways. For instance, a thematic list could be provided of those legal issues which are expected to be relevant for DBEs, as it is usual with regard to Internet-related environments,⁷¹ and this list can eventually be refined and systematized by linking it to specific actors or to DBE lifecycles.⁷² Previous attempts of listing e-business legal topics show that a comprehensive classification is hardly achievable on an abstract level. Any legal issue may possibly arise, for it depends on the type of activity carried out within the DBE. As we have seen, those attempts do converge to a certain point, and any plausible list of DBE-related legal topics must surely include, at least, the following issues: *access contract and membership conditions*; *e-contracting and e-trading rules* (including first and foremost legal validity issues); *fair-market and competition rules* (i.e. rules on unfair commercial practices); consumer protection (if B2C is involved); *confidentiality, security and privacy and data protection aspects*;⁷³ *IPR and especially middleware-related IPR issues*; and, finally, *liability, dispute resolution, applicable law and jurisdictional issues*. Such a list could be extended and detailed at will. Anyway, we think that any list of relevant topics becomes more useful for players and regulators if it gets linked to the above regulation spheres. A tentative scheme could be as follows:

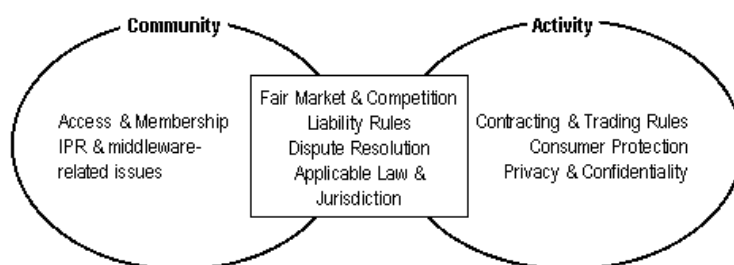


Figure 19: Tentative Classification of Legal Topics

⁷¹ For instance, legal issues raised by SME Clusters have been classified as follows (Seddon et al. 2006: p. 28 ff.): *choice of the legal structure* (for both clusters as such and specific co-operative networks); *relationship between cluster and cluster broker*; *know-how, IPR and confidentiality issues*; *legal barriers* (procurement and state aid) and ‘other’ issues such as *data protection and competition law* problems. In the same line, VPC legal issues have been classified into *IPR issues* (knowledge creation, ownership, protection and exploitation; infringement and liability; and confidentiality), *corporate law issues* (mainly related to the legal form), *labour law issues* and ‘other’ legal issues such as *international jurisdiction and arbitration* (Wallentin et al. 2005: p. 55 ff.).

⁷² It appears that the aforementioned taxonomy of DBE regulatory issues (Figure 3) tried to follow this line. The same goes for VPCs or SME Clusters.

⁷³ In many legal systems, privacy and data protection remain individual rights, and thus are not applicable to legal persons. In that case, confidentiality would operate as counterpart of privacy.

In addition to these broadly-defined topics, a wide range of sector-specific issues may appear depending on concrete areas of DBE deployment, and even more specific issues may be raised by the parties entering contractual agreements within the DBE –as the foregoing analysis of the IST branch in Aragón has suggested. What must be underlined now, however, is that both the DBE constitution and the rules book governing DBE transactions may be seen as an exercise of self regulatory powers by a certain community of actors. But this does not mean that these are totally free in taking regulatory decisions. Quite the contrary, a variety of regulatory constraints must be accounted for.

4.3. *Regulatory Constraints*

Despite of the fact that DBEs are a new or emerging field, it cannot be contended that there are no rules or principles affecting it, i.e., that there are no limits to DBEs regulation. On the contrary, there exists a dense network of constraints which will surround any DBE initiative. These must be taken seriously, for otherwise DBEs will not work. As mentioned, one of the first questions to be solved by DBE communities is the legal form or structure which the DBE will take on. The choice of legal form, in turn, implies basing or locating the DBE (as a legal entity) on a certain territory, and therefore under a certain jurisdiction or legal order –for the sake of argument (but also for practical reasons), we assume that the DBE will be based in Europe and will act under EU law.⁷⁴ Already this may constrain the regulatory freedom of the DBE community –to give just an example: if it takes the legal form of a European Economic Interest Group (EEIG),⁷⁵ each member of the group could be held individually liable for the actions of the DBE. However, most legal and statutory constraints do normally depend on the type of activity carried out by a legal actor, in our case the DBE. For instance, whether the DBE is confined to B2B transactions or whether it envisages B2C relationships as well makes a big difference. In the latter case, a bulk of consumer protection legislation shall be applicable, whereby affecting many other aspects (e.g. promotion rules, contracting rules, information duties, jurisdictional issues). In this regard, the DBE legal form issue must be distinguished from the legal status which is applicable to this legal person, and which is normally determined by the kind of activities involved. So, regardless of its legal entity, a DBE will probably fall into the concept of Information Society Service Provider in terms of the EU Directive on eCommerce.⁷⁶ Likewise, if a DBE is devoted to commercial interchanges and therefore constitute some sort of ‘market’, it will be subject to competition law –so that some external regulation on unfair commercial practices ought to be respected.

Again, it is difficult to agree on a general classification of regulatory constraints, for they are rather context-dependent. Nonetheless, an insight into the analysis of regulatory constraints may be gained trying to unfold the EU regulatory framework

⁷⁴ Both national and international law (international treaties and bilateral agreements) will be left aside here.

⁷⁵ See European Council Regulation (EEC) No 2137/85.

⁷⁶ The establishment of any B2B eMarket is subject to EU law and particularly to the eCommerce Directive: see in this respect EC COM 2004/479, p. 4.

on e-business activities (i.e., following a directive-by-directive approach). This framework is made up of both compulsory and non-compulsory (dispositive) elements, and only within the latter can DBEs be said to be self-regulating. Under EU law, there are legal provisions which must be considered at least in the following areas:

- e-commerce and IS services in general;⁷⁷
- e-signatures and PKI infrastructures;⁷⁸
- privacy and data protection rights in general;⁷⁹
- privacy within the field of electronic communications;⁸⁰
- data retention by electronic communication providers;⁸¹
- copyright and related rights in the Information Society;⁸²
- e-money;⁸³
- competition and fair market;⁸⁴
- consumer protection (including unfair commercial practices, unfair contract terms, distance contracts and consumer financial services);⁸⁵

In view of this EU regulatory framework for e-business, it would be naïf to think of a DBE as a community without regulatory constraints which could be completely self-regulating (or autopoietic) –it could be at most, to borrow the term from Moore (1978), a ‘semi-autonomous’ field. In each sphere of activity and for each legal topic related to DBEs there may be compulsory, optional (or subsidiary) and free regulation contents. These contents, mainly in form of legal rules, do exist independently of the DBE, and DBE actors cannot –at least not directly– influence their existence. Furthermore, the DBE environment has to facilitate compliance with compulsory rules: these are not only to be implemented by state organs, but the

⁷⁷ Directive 2000/31/EC on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market.

⁷⁸ Directive 1999/93/EC on a Community framework for electronic signatures.

⁷⁹ Directive 95/46/EC on the protection of individuals with regard to the processing of personal data.

⁸⁰ Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector

⁸¹ Directive 2006/24/EC on the retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks.

⁸² Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society; Directive 2004/48/EC on the enforcement of intellectual property rights.

⁸³ Directive 2000/46/EC of the European Parliament and of the Council of 18 September 2000 on the taking up, pursuit of and prudential supervision of the business of electronic money institutions.

⁸⁴ See e.g. arts. 81 and 82 of the EC Treaty.

⁸⁵ Directive 2005/29 of 11 May 2005 on unfair business-to-consumer commercial practices in the internal market; Directive 93/13/EC of 5 April 1993 on unfair terms in consumer contracts; Directive 2002/65/EC concerning the distance marketing of consumer financial services and amending council directive 90/619/EC and directives 97/7/EC and 98/27/EC.

community bears a responsibility in implementing them. However, this is not to say that there is no action margin for DBEs to regulate themselves. The next section introduces the question of what mechanisms and strategies are available to regulate DBEs.

7.4 Regulation Strategies for Digital Ecosystems

Generally speaking, all approaches to Internet-related regulation share a common starting point: the shortcomings of state and command-and-control regulation when it comes to steer digital environments. In an attempt to surmount these limits, ‘new’ regulation models –which had been already applied to face regulatory crises in welfare states (e.g. responsive and reflexive regulation models)– have been adopted,⁸⁶ and specific regulatory tools have also been launched for the Internet and IST-related environments.⁸⁷ If states are not able to meet regulatory needs in digital environments, at least a combination of state and non-state regulatory tools seems to be required. This holds for our case: DBEs can be regulated only on the basis of a regulatory strategy which integrates different instruments. Discussions on regulation are not only important to DBE participants (DBE-internal regulatory debates), but also to governments or political institutions involved in IST regulation (DBE external regulatory debates),⁸⁸ and any DBE regulatory scheme will have to rely on a combination of internal and external regulatory tools.⁸⁹ The following four regulatory instruments are at the forefront both in theory and practice, and have been successfully used to regulate digital and ICT-related environments which are similar to DBEs (at least in certain aspects), such as virtual communities and social networks, e-business platforms and digital marketplaces.

1. Self-regulation and Co-regulation

Self-regulation is deeply rooted in society (in a commercial context, see Uría/Menéndez 2006, p. 53-54). This is clearly shown by the so called “customary law” in the case of continental or civil law legal systems (as opposite to Anglo-American or common law legal systems). In this context, “custom” means a behaviour which is generalised, repeated and uniform observed in a social community determined geographically or regarding other relevant features (as profession or activity). The members of such a community consider such conduct as

⁸⁶ See, among many others, Teubner 1986; Baldwin 1997; Black 1998; Griffiths 2003; Nonet & Selznick 1978; Ayres & Braithwaite 1992; Black & Baldwin 2008.

⁸⁷ See e.g. Holznagel & Werle 2002; Farrell 2002; Mifsud 2008; Koops et al 2006; Bennet & Raab 2003. As Reidenberg (1996) early observed, the Internet challenges classic patterns of regulation, not only as for who are the rule makers, but also as for the instruments used to set, implement and enforce rules.

⁸⁸ Koops et al. (2006) suggest the following starting points for regulating ICT-environments: technological neutrality of regulation, equivalence principle (*what holds off-line, should also hold on-line*); active involvement of social and private actors (through *self-regulation* and *co-regulation*), regulation-by-technology, and regulative internationalization and harmonization.

⁸⁹ Alternative modes of governance such as co-regulation and self-regulation must be seen as a part of a new regulatory policy aiming to increase the transparency, effectiveness and legitimacy of EU action. See *EU White Paper on European Governance* COM (2001) 428 final.

a juridical binding one, i. e., its observance relies on being of legal nature (Lacruz 2002: p. 154). As the Spanish Supreme Court has said, it is a rule which is established by the social consciousness by means of the repeating of the conduct done with juridical purpose (Decision of April 18, 1951). Such a conduct is recognised by state institutional regulation (at the present time, only for ruling relations between persons acting as private parties; i. e., Art. 1 of the Spanish Civil Code and Art. 2 of the Spanish Commercial Code) as a source of law. Nevertheless, the external and internal requirements in order to qualify a conduct as a piece of customary law (time and geographical requirements, uniformity, collective *opinio iuris*) make of customary law a very rare law today, because of the broad geographical dimension of communities and their quick evolution. Thus, and as a contemporary adaptation of the basic idea of customary law, *self-regulation* has evolved in the last decades as a legal and theoretical concept defining the capacity of a given social field, sector, area or community to establish its own rules. More accurately, self-regulation is a (process leading to establish a) set of norms voluntarily developed and accepted by those who take part in a certain social activity or interaction area (Trudel 2000: p. 204). In this sense it is an interesting means to govern social areas in which rules and practices can be well-established with little (or even without) state intervention, such as the Internet as a whole and, more concretely, the field of e-commerce.⁹⁰ The key idea is that laws cannot be imposed from outside, but must be acknowledged by those agents operating in the social field which they are expected to regulate. Self-regulation, however, has many faces, and several types can be distinguished e.g. according to rule-making procedures, degree of state intervention or enforcement tools.⁹¹ Only two approaches to self-regulation will be touched upon here. Following the first one, self-regulation is any (institutionalized) process by which a given social agent (or a group of them), normally a collective agent, establishes rules governing its own activity or parts of it without state intervention. Leaving aside public law (e.g. criminal and tax law) constraints, the private ruling power is almost unrestricted. This way of understanding self-regulation, which was in former years deemed typical for Anglo-American countries, is not fruitful for DBE regulation purposes. In our view, self-regulation does not equate to any social or private standard, but rather implies some sort of legal or state control. State law provides the basis for social groups to create substantive rules and norms in a self-regulative process, that is, it regulates social self-regulation. This approach is usually referred to as *co-regulation* or *regulated self-regulation*, and it shows almost a worldwide trend.⁹² The aim is to structure social systems by providing procedures in which they can regulate themselves and on certain occasions by establishing minimum compulsory legal contents and requirements. In either case, private regulative schemes are supposed not to merely express the interests of single enterprises, associations or sectors –as it may happen if regulation is by and large left to the private sector, which is often defined as self-regulation– but convey a certain social legitimacy and consensus. The EU directives have resorted to this strategy to facilitate regulation in

⁹⁰ A detailed analysis of Internet-related self-regulation can be found in Mifsud 2008.

⁹¹ See for instance Mifsud 2008; Darnaculleta 2005; Esteve 2002; Baldwin & Cave 1999.

⁹² «As ICT law advances through the years, a gradual increase can be discerned in preference for co-regulation» (Koops et al 2006: p. 123)

many fields. Thanks to this openness of statutory legislation to private forms of regulation, state legislation can be combined with normative instruments generated and thus accepted by the social agents operating in a given social field. In the case of B2B e-commerce, self-regulation is the keyword, and it is assumed that it can play an important role in areas which are not covered by (mandatory) law.⁹³ Codes of conduct and other self-regulative tools, under certain circumstances, do better meet regulative needs and reflect a consensus between all relevant stakeholders.⁹⁴ Its ability to catch up with technological advances and sector-specific problems of e-business makes co-regulation a proper solution to effectively regulate B2B trading platforms and DBEs.

2. Alternative Dispute Resolution (ADR/ODR) Tools

Under a variety of names, alternative dispute resolution (ADR) has been for long competing with courts and official adjudication procedures. Yet it seems to be the advent of the Internet what makes ADR a trendy issue. Attempting to catch up with the ever-increasing complexity of the web society, official dispute resolution mechanisms have become too complicated and slow, and therefore inefficient in dealing with the wide range of conflicts raised by the digital medium. Further the international dimension of online interactions, either of commercial or merely informational character, points to the need for “deciders” beyond the state law. Resorting to courts in Internet-related disputes raises a number of complicated questions: which law applies, which authority has jurisdiction over the dispute, which forum is competent to hear the dispute, is the decision enforceable across borders? Further the cost of court proceedings may exceed the value of the goods or services in dispute, or their duration may be far slower than virtual time. Alternative online or just “out-of-court” systems have been worldwide set in motion to compensate the lacks of state law to plenty fulfill its adjudication functions. ADR refers to any unofficial means and processes designed to assist parties in resolving differences, supposedly in a speedy, cheap and easy way. Classic examples for ADR are facilitation or conciliation, mediation, and arbitration. More recently a wide range of new ADR procedures have been set going due to the so-called “de-judicalisation”: settlement conference, early neutral mediation, hi/lo arbitration, baseball arbitration, mini-trial, summary jury trial, private jury trial, med-arb, arb-

⁹³ EC COM 2004/479: p. 7. See also Pullman et al 2006: p. 23 ss.

⁹⁴ See EC COM 2004/479: p. 8. A plea for a better self-regulation in B2B Internet trading platforms is to be found in an Expert Group on B2B Trading Platforms (2003: p. 30), encouraging the development of «Codes of Conduct aiming at enhancing transparency in the Internet platform and stronger commitment to respect fair trade principles. Such Codes of Conduct and participation terms should, wherever possible, be elaborated with the involvement of all relevant stakeholders, e.g. operators, buyers and suppliers, to ensure that all interests are duly taken into account. (...) Only under this condition can it be reasonably expected that Codes of Conduct are effectively followed and implemented. Codes of Conduct or participation terms should be fair and well balanced for all parties involved. (...). Self-regulation depends on the willingness to respect the agreed rules and principles in reality. The credibility of voluntarily agreed Codes of Conduct would certainly benefit from further enhancement by certification services and trust seals for B2B Internet trading platforms». One of the most interesting outcomes of this Expert Group Report was a checklist for the assessment of Codes of Conduct related to B2B Internet trading platforms (See Annex II).

med, mediation with arbitration on last offers. And things also get more sophisticated on the Internet, where on-line dispute resolution systems (ODR), i.e. online arbitration, mediation and automated negotiation are increasingly gaining room both for B2C and B2B interactions. The belief that ADR perfectly suits the Internet world is widely spread.

3. Hinge-Law or Hybrid Law Solutions

It is a matter of course that online regulation cannot be achieved without involvement of the United States and several Asian countries.⁹⁵ Take for instance the data protection issue. The overwhelming dominance of U.S. based companies on the Internet makes it impossible to assure effectiveness of any regulatory attempt a strong level of data protection in Europe, or elsewhere, unless they assume certain privacy standards. As these, however, are still largely neglected within their legal culture, the need arises of making two different cultural and legal traditions compatible with each other. This can be achieved through new forms of regulation –properly, of self-regulation– which can work out in a global environment by merging contradicting legal frameworks. Such hybrid institutions are taken to be the seed of the forthcoming regulation models for the knowledge society, and are even considered as the only way in which state law can be able to cope with Internet-related regulation problems. Through this sort of *hinge-law* (in German: *Scharnierrecht*), legal interfaces are created which preserve the autonomy of national or regional regulative systems, making them at the same time compatible with the global and decentralized organization of the Internet.⁹⁶ As concerns the intersection between data protection and e-commerce, this role is to be played by the Safe Harbor Agreement, which aims to conciliate two opposite approaches to privacy regulation, namely the European strong and state law model, on the one side, and the United States model, largely based on private norms and policies under little or lacking official control (improperly called self-regulation), on the other.⁹⁷ This is not a kind of surface opposition, but is firmly rooted in both legal cultures. Data protection is approached in Europe as a fundamental right prevailing, at least *prima facie*, over economic interests, whereas in the United States it is rather a mere commercial issue, so that the companies claim ownership over customer information and tend to deal with it just as they do with any other company asset. It belongs to the spirit of Safe Harbor to harmonize these approaches without outstanding damages in either models. European states attempt to provide their consumers with a pragmatic level of data protection, but not at any rate. In a non-traumatic way, i.e. through self-regulation, this agreement is ultimately expected to export strong data protection standards to the United States, where domestic law and weak self-regulation leave much to desire as far as privacy protection is concerned.

⁹⁵ «As the Internet is neither an exclusively American nor an European phenomenon, a global regulatory framework is needed» (Holznagel and Werle 2002: p. 9).

⁹⁶ Farrel 2002: p. 27; Holznagel and Werle 2002: pp. 20-21.

⁹⁷ Farell 2002: p. 37.

4. *Lex informatica, Regulation-by-Technology and 'Code as Law'*

The well-known significance of technical infrastructures for regulatory purposes has been successfully pointed out by Lessig (1999), who claims that the *code* of the cyberspace is built into its software and hardware.⁹⁸ More accurately, the concept of 'code as law' refers to the process of setting legal norms through decisions on the contents and design of the technical infrastructure and applications; moreover, these decisions are dictated not only by purely functional issues, but also, and perhaps more importantly, by issues concerning the desired use of the technical infrastructure (van der Hof & Stuurman 2006: p. 206). The process of developing and setting technical standards and defining technical features of digital environments is a process of regulation (i.e. self-regulation). Being a technical issue, the code may implement rules coming from both states and private groups, enabling them to waive territorial borders and legal frameworks and thus complementing state regulation. In many respects, regulation by technology is similar to self-regulation (be it based on contracts or codes of conduct). As Reidenberg (1998: 574) puts it: «lex informatica allows customized rules to suit particular network situations and preserve choices for individual participants».⁹⁹

7.5 Digital Business Ecosystems and Competition Law

As pinpointed above, and regardless of its legal entity, DEs and especially DBEs can be considered as markets for Information Society Services. This facet of DBEs raises the issue of its analysis from a Competition (Antitrust) Law point of view: in an EU context, all regulatory and governance decisions shall comply with Art. 81 et seq. of the EC Treaty and the rest of primary and derivative EU provisions in this field of law. So, one of the first issues which shall be considered is if a concrete DBE has to be regarded as a separate market in order to be assessed for Competition Law purposes; here can be relevant the consideration of DBEs as innovative markets (Glader 2006). This is a very important point to determine the effect, i. e., of the *de minimis* rule in such an assessment, especially relevant as far as SMEs are going to be the principal agents in a DBE and this can represent a big advantage in order to work together in a business environment. But probably the most relevant aspect to be analyzed is the impact of changing the pattern to a collaborative competition approach: potential competitors are going to collaborate in the development of their business, at least, they are going to exchange information, in order to provide its services in a common frame by means of DSC. For the same purpose, they might achieve horizontal agreements establishing minimal standards for the services offered in the DBEs, which can be necessary in order to enable DSC. All this can restrain competition. However, the question is, if, despite of that, such agreements can be assessed positively because of the advantages of operating in a DBE for all agents involved.

⁹⁸ See e.g. Reidenberg 1998; Lessig 2002; 2003 and 2004; Leene & Koops 2005; Klieve & de Mulder 2005; Bal 2005; Hosein et al 2002; Dommering & Asscher 2006.

⁹⁹ Many issues concerning regulation, especially regulatory implications of the architecture, have been already discussed in previous Deliverables of this Project: see e.g. OPAALS D3.6 (in particular p. 18 ss., 49 ss., 65 ss. and 81 ss.) and D12.2; as well as DBE D32.2.

8 Concluding Remarks

From the engineering point of view, the work that we conducted in order to establish the technological and scientific background of the project, allowed us to define the main functionalities which our prototypal tools had to include in order to achieve the final goal of producing a real DSC based on a semantically driven interoperability. Although these ideas seem to work perfectly in a lab environment, when trying to put them all together in some of the prototypal tools we detected a few problems that need to be solved before a complete implementation can be developed.

Some of the problems we found, for example the necessity of a common legal “language” (idiomatic), were already introduced in the papers we studied and are not exclusive of the project. This problem is intrinsic to the European context in which the project is being developed. So, if we want to obtain a good SME Business Platform allowing multilingual participation it must to be solved. Fortunately, some of the capabilities introduced by ontologies will help us to solve it, by the inclusion of synonyms to the concepts expressed in different languages. Another problem, which can be solved by using ontologies, is the measurement unit transformation, that is to allow everyone to understand or to save the difference between “MB” and “Mb” in a contract clause.

Although this problem, the unit transformation, is a typical example of the use of ontologies, we did not take it into account until we started to study the contract clauses of the SMEs of Aragón and to develop the templates of the contracts. We neither took into account the lack of tools to create documents following the Legal-XML e-contract specification: if we want to achieve that someone uses it, some (more advanced) tool has to be developed. This tool, if we want to harvest the entire ontology strength, should be able to transform XML e-contract documents to its ontological representation.

The transformation utility/tool together with a new release of the ontology for the contracts (more simple and flexible) and the results of this work package will be necessary to support a real DSC and to create a real DE.

As far as the legal aspects are concerned, we have seen that both digital ecosystems as such and DBE in particular seem to reproduce, albeit at a lesser scale, basic regulatory problems and issues which are typical for the Internet in general (virtualization, technological turbulence, extraterritoriality, jurisdictional difficulties, multiple normative sources). How and to what extent these problems will affect DBEs will depend on the features and particular settings of each DBE, but, anyway, an adequate balance between over-regulation and under-regulation must be pursued, for otherwise regulatory attempts are likely to hamper DBE developments. DBE regulation, as a special modality of ICT regulation, requires an active involvement of the DBE actors and stakeholders, but it cannot be carried out regardless of the state legal constraints affecting most of the issues and topics raised by DBE activities. Therefore, a complex or combined regulatory strategy was suggested: under the EU framework for e-business, co-regulation and codification

(regulation-by-technology) seem to be the most adequate strategies. DBE regulatory needs (both community preferences or free decisions and decisions conditioned by external constraints) can be properly met by combining different instruments.¹⁰⁰ In any case, a decision on the basic elements for the introduction of legal and regulatory issues into the DE paradigm must be taken as a relevant part of a general theory on DEs. This shall be done in a way that ensures DE workability in real practices (especially regarding SME business practices) without damaging the architecture and design principles of DEs. Because of its importance, this task is going to be pursued in Phase III in the framework of WP12 departing of the basic approach given in this deliverable and by undertaking the following steps: (a) to focus on Regulation as a face of Governance; (b) to review the relationship between Regulation and Governance in the context of DEs; (c) to build its work under strong consideration of D12.2, of the work done in WP11 and under a critical review of the building blocks for regulatory trust proposed in DBE's D32.2; (d) to identify narrowly Regulatory Spheres, Regulatory Topics and Regulatory Constraints; (e) to formulate a Regulation Strategy for DEs, especially exploring the consideration of DEs as providers of Information Society Services and as markets for Information Society Services.

¹⁰⁰ «Regulation in e-business follows the principle of requisite variety established in systems theory by W. Ross Ashby: 'the larger the variety of actions available to a control system, the larger the variety of perturbations it is able to compensate'. The ability to manage complexity in a self-organising and evolving system is in direct relation to the capability of the system to represent diversity through combinations of less complex regulations. Hence, in order to manage the complexity of the regulatory domain in digital ecosystems, it is helpful to build from general constraints towards the nuances of local and user-specific implementations (OPAALS D3.6: p. 21). See also DBE D32.1 on different regulatory layers.

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OPAALS PROJECT

Contract n° IST-034824

WP6: Socio-Economic Constructivism & Language

DELIVERABLE 6.9

Contract Descriptions at Semantic Level for Dynamic Service Composition

ANNEXES

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ANNEX I – Documentation Collected

Company Name	Documentation Available
Alerce www.alerce.es	Document types: contracts Services or products: information systems for logistics
Apser www.apser.es	Document types: contracts, offers, budgets, projects Services or products: networks management, hosting, housing
Barrabés Business Solutions www.barrabes.com	Document types: projects Services or products: business IST consulting
Cierzo Development www.cierzo-development.com	Document types: contracts, offers, projects, budgets Services or products: web solutions, business IST consulting
Dialcom Networks www.dialcom.com	Document types: contracts, confidentiality agreements Services or products: software development, licensing and distribution
DSI www.dsi-e.com	Document types: contracts, projects, offers, agreements Services or products: software products, web solutions
Embou www.embou.com	Document types: contracts, offers Services or products: high bandwidth access
Eon www.eon.es	Document types: contracts, offers, budgets Services or products: software development and web solutions
Gabilos www.gabilos.com	Document types: contracts, offers, budgets Services or products: software development, licensing and distribution
Iritec www.iritec.es	Document types: contracts, offers, budgets Services or products: hosting, housing, web solutions
Izanet www.izanet.com	Document types: contracts, offers, budgets Services or products: hosting, housing, web solutions
Minalink www.minalink.com	Document types: contracts, offers Services or products: e-commerce, web solutions, web content
Net2U www.neodoo.es	Document types: contracts, offers, budgets, projects Services or products: software and web solutions
Seinteco www.seinteco.es	Document types: contracts, offers, budgets Services or products: IST legal consulting, software solutions
Tool Banking Solutions www.tb-solutions.com	Document types: contracts, offers, commercial presentations Services or products: security and e-signature platforms
Trackglobe www.trackglobe.com	Document types: contracts, projects Services or products: business IST consulting
WARP Networks www.warp.es	Document types: contracts, projects Services or products: software development, IST consulting

ANNEX II – Model Quest

Interviews with management staff of IST companies: model quest

1 – Descripción del dominio de negocio

- ¿Cuáles son los contratos más frecuentes que realiza su empresa?
- Señale las partes habituales que intervienen en ellos (empresa / cliente / subcontratista / ...)
- Recursos básicos implicados en la contratación
 - Roles (personas) involucrados en la negociación y en la contratación (por cada parte contratante)
 - Sistemas utilizados
 - CRM / BI / ERP
 - Herramientas de gestión documental, repositorios digitales, herramientas BPM, herramientas de gestión o entornos de desarrollo de software, estándares o métricas (IEEE...), etc.
 - Otros: ...

2 – Proceso de contratación

- Desarrollo de la negociación
 - ¿Cómo discurre (y a través de qué canales) la negociación con los clientes?
- Oferta, aceptación y contraofertas
 - ¿Llega a algún tipo de acuerdo precontractual? ¿Verbal o por escrito? ¿Sobre qué aspectos principalmente?
 - ¿Recibe contraofertas (al presupuesto, a la propuesta de contrato...)? ¿Sobre qué aspectos principalmente?
 - ¿Cómo se documentan los tratos preliminares o la negociación? (mail, fax, presupuesto escrito...)
 - ¿Es vinculante el presupuesto? ¿Durante cuánto tiempo suele considerarse vigente?
 - ¿Cuándo entiende que se acepta la oferta? ¿Cómo se documenta la aceptación?
 - ¿Ofrece servicios o productos a precio fijo o no negociable?
 - ¿Se limita la oferta/negociación al objeto principal o abarca otros aspectos (asistencia, formación...)?
- ¿Cuáles son las principales dificultades que suele encontrar en la negociación con el cliente?
- ¿Quién corre con el coste del trabajo precontractual si hay / si no hay acuerdo?
- ¿A qué aspectos suelen dar mayor importancia los clientes a la hora de negociar o contratar? Por ejemplo: precios, plazos de ejecución...
- ¿Formaliza contratos on-line o sólo por escrito?
- A la hora del desarrollo y cumplimiento del contrato, ¿qué problemas o conflictos suelen plantearse más?
- ¿Suelen recibirse peticiones de modificaciones o plantearse cambios durante el contrato (p.ej. plazos, precios)?
- ¿Suele haber flexibilidad ante el incumplimiento de plazos o de otras cláusulas del contrato? ¿Qué aspectos se considera "menos grave" incumplir?
- En caso de subcontratación, ¿cómo se coordina el cumplimiento del contrato original?
- ¿Suele pactar algún sistema de gestión y solución de conflictos entre las partes (arbitraje y otros medios alternativos)?
- Forma parte del algún programa de buenas prácticas, código tipo o sello de calidad (autorregulación). En caso afirmativo, ¿qué ventajas piensa que tiene para su empresa?
- ¿Existen normas o prácticas que no estén reflejadas por escrito, pero que se dan por sobreentendidas en los procesos de negociación y contratación (p.ej., en cuanto a las relaciones entre las partes, las reuniones de trabajo, etc.)?
- ¿Forma su empresa parte de algún "cluster" o de alianza estratégica con otras empresas del sector, o con participación de alguna institución oficial o pública?

ANNEX III – Contract Templates Test Versions

This Annex contains the simplified versions of the contract structures for web development (1), web hosting (2), co-location (3) and network management & maintenance services (4). As explained in sections 2, 3, 4 and 5 of this Deliverable, these shortened versions solely include the most relevant contract clauses, as they were drafted in order to test the computer tool which has been developed for DSC purposes. They are presented as follows:

- In the first subsection, contracts templates are split into two parts, namely the **contract front** (including the most usual preliminary clauses) and the **contract body** (including the basic clauses selected for testing), which are firstly displayed in tables. In the second subsection screen shoots of the corresponding **Excel™ file** are provided.
- Key to table columns:

No. stands for the reference number of clauses

Type indicates whether clauses are typical for contracts in general (A), for IT services contracts (B) or for the specific contract upon focus (C).

Keyword is the short-denomination accorded to clauses.

Semantic Notes are brief semantic descriptions explaining the keywords.

Value indicates what type of value may be attributed to clauses. It may be ‘boolean’ (yes/no), ‘string’ (any character chain) or ‘integer’ (numbers).

Range/Example: in this column examples or possible ranges of values are given for the sake of illustration.

In some cases, a warning note may appear in the semantic description of the keywords (e.g. ‘A detailed description of additional services must be provided separately’, or ‘Special conditions may apply’). This is meant to indicate the user seeking for a certain service that the terms and conditions included in the template are only valid for standard services. Furthermore, there might be divisions or subdivisions in the templates which could be taken to be to be redundant. This is not the case, though, since further items may be added to the selected clauses. Please find the extended, full versions of the contract structures in Annex IV, V, VI and VII.

1. Web development services

1.1. Basic Contract Template

(A) Contract Front

No.	Type	Keyword	Semantic Notes	Value	Range / Example
1.	A/B/C	Contract Parties	Contract Parties Data	-	-
1.1.	A/B/C	Provider	Provider Company Data	-	-
1.1.1.	A/B/C	Name	Company Registered Name	String	WebWorks SL
1.1.2.	A/B/C	ID	Company ID Number	String	40404040W
1.1.3.	A/B/C	Address	Company Registered Address	String	Street, Postal Code, City, Country
1.1.4.	A/B/C	Representative	Company Legal Representative	String	Name, First Name
1.1.5.	A/B/C	PIN	Representative's Personal / Tax ID	String	14142121R
1.2.	A/B/C	Client/Customer	Client/Customer Data	-	-
1.2.1	A/B/C	Name	Company Registered Name	String	Pardillos SL
1.2.2	A/B/C	ID	Company ID Number	String	30303030V
1.2.3	A/B/C	Address	Company Registered Address	String	Street, Postal Code, City, Country
1.2.4	A/B/C	Representative	Company Legal Representative	String	Name, First Name
1.2.5	A/B/C	PIN	Representative's Personal or Tax ID	String	31313131Q
2.	A/B/C	Acknowledgements	Legal capacity mutual acknowledgements	String	In witness whereof, the parties agree to the terms of this contract on behalf of their organizations (...)
3.	A/B/C	Contract Date	Date of the contract	String	DDMMYYYY

(B) Contract Body (Basic Clauses)

No.	Type	Keyword	Semantic Notes	Value	Range / Example
1.	A/B/C	Contract Object	Overall description of the contract object	-	-
1.1	A/B/C	Type of Service	Denomination of the service or product	String	Web Development
2.	A/B/C	Contract Content	Detailed description of contents & specific features included	-	-
2.1	C	Web Design	Web structure, design & presentational issues	Boolean	Yes / No
2.2	C	Web Programming	Web analysis and programming	Boolean	Yes / No
2.3	C	Additional Services	Additional services offered: SEO, SMO, Translations, Content management, etc.. <i>Please note that Special conditions may apply to these services. Detailed information must be provided separately</i>	Boolean	Yes / No
3.	A/B/C	Contract Duration	Contract duration and term-related aspects	-	-
3.1	C	Delivery Term	Term within which the web development project shall be delivered, expressed in months. This term starts when all materials are provided by the client.	Integer	2
4.	A/B/C	Contract Price	Price, form of payment, invoicing issues	-	-
4.1	A/B/C	Price Description	Standard price in euros for basic SME projects (design and/or programming only, as stated in the content description) with a maximum of 60 work hours. <i>Please note that In case of non-standard projects and additional services, detailed information must be provided separately.</i>	Integer	1800
5.	A/B/C	General Terms	General terms applicable to this contract	-	-
5.1	C	Warranty	Technical warranty after delivery, expresed in months. <i>Detailed information on warranty coverage must be provided separately.</i>	Integer	6

1.2. Excel File for Web Development Contracts

(A) Contract Front

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	TITLE	Web Development Example 1											
2	AUTHOR	OPAALS											
3													
4	Provider												
5		Company Registered Name	WebWorks SL										
6		Company ID Number	45454545W										
7		Company Registered Address	Calle Mayor - 50001 Zaragoza										
8		Company Legal Representative	Roger Mandias										
9		PIN	14142121R										
10													
11	Client												
12		Company Registered Name	Pardillos SL										
13		Company ID Number	30303030V										
14		Company Registered Address	Calle Mayor 2 - 50008 Zaragoza										
15		Company Legal Representative	Luisito Perez										
16		PIN	31313131Q										
17													
18	Acknowledgements	In witness whereof, the parties agree to the terms and conditions of this contract on behalf of his or her organization as of the date indicated below											
19													
20	Date												
21													
22													
23													
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37													

(B) Contract Body – Basic Clauses

	A	B	C	D	E	F	G	H	I	J
1	BASIC CLAUSES									
2	CONTRACT_OBJECT	Type of Service	Web Development	string	25	www.opaals.org/semantic.xml				
3	CONTRACT_CONTENT	Web Design	Yes	boolean		www.opaals.org/semantic.xml				
4		Web Programming	Yes	boolean		www.opaals.org/semantic.xml				
5		Additional Services	No	boolean		www.opaals.org/semantic.xml				
6	CONTRACT_DURATION	Delivery Term	2	integer		www.opaals.org/semantic.xml				
7	CONTRACT_PRICE	Price Description	1800	integer		www.opaals.org/semantic.xml				
8	GENERAL_TERMS	Warranty	6	integer		www.opaals.org/semantic.xml				
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(C) Semantic Notes

	A	B	C
1	General terms applicable to this contract		
2	CONTRACT_OBJECT	Type of Service	Type of service or product
3	CONTRACT_CONTENT	Web Design	Description of contents and specific features included
4		Web Programming	Web structure, design and presentational issues
5		Additional Services	Additional services offered (special conditions apply): SEO, SMO, Translations, Content management, etc. For a detailed description of additional services, see ANNEX
6	CONTRACT_DURATION	Delivery Term	Contract duration and term-related aspects
7			Terms within which the web development project shall be delivered, expressed in months. This term starts when necessary materials are provided by the client.
8	CONTRACT_PRICE	Price Description	Price, form of payment and invoicing issues
9			Standard prices in euros for basic SMC projects (design and/or programming only, as stated in the contract description) with a maximum of 50 work hours. For non-standard projects and additional services, see ANNEX
10	GENERAL_TERMS	Warranty	General terms applicable to this contract
11			Technical warranty after delivery, expressed in months. For detailed coverage and exclusions, see ANNEX
12			
13			
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2. Web Hosting Services

2.1. Basic Contract Template

(A) Contract Front

No.	Type	Keyword	Semantic Notes	Value	Range / Example
1.	A/B/C	Contract Parties	Contract Parties Data	-	-
1.1.	A/B/C	Provider	Provider Company Data	-	-
1.1.1.	A/B/C	Name	Company Registered Name	String	WebWorks SL
1.1.2.	A/B/C	ID	Company ID Number	String	40404040W
1.1.3.	A/B/C	Address	Company Registered Address	String	Street, Postal Code, City, Country
1.1.4.	A/B/C	Representative	Company Legal Representative	String	Name, First Name
1.1.5.	A/B/C	PIN	Representative's Personal / Tax ID	String	14142121R
1.2.	A/B/C	Client/Customer	Client/Customer Data	-	-
1.2.1.	A/B/C	Name	Company Registered Name	String	Pardillos SL
1.2.2.	A/B/C	ID	Company ID Number	String	30303030V
1.2.3.	A/B/C	Address	Company Registered Address	String	Street, Postal Code, City, Country
1.2.4.	A/B/C	Representative	Company Legal Representative	String	Name, First Name
1.2.5.	A/B/C	PIN	Representative's Personal or Tax ID	String	31313131Q
2.	A/B/C	Acknowledgements	Legal capacity mutual acknowledgements	String	In witness whereof, the parties agree to the terms of this contract on behalf of their organizations (...)
3.	A/B/C	Contract Date	Date of the contract	String	DDMMYYYY

(B) Contract Body (Basic Clauses)

No.	Type	Keyword	Semantic Notes	Value	Ranges / Example
1.	A/B/C	Contract Object	Overall description of the contract object	-	-
1.1	A/B/C	Type of Service	Denomination of the service or product	String	Web Hosting
2.	B/C	Specifications	Description of contents & specific features included	-	-
2.1	C	Connectivity	Gigabytes (GB) transfer per month	Integer	0-5GB / 6-10GB / >10GB
2.2	C	Scalable	Automatically burstable/scalable bandwidth. <i>Special price conditions may apply.</i>	Boolean	Yes / No
2.3	C	HardDiskSpace	Hard Disk Space, expressed in Gigabytes	Integer	<1GB / 1-5GB / >5GB
	C	eMailBoxes	Number of electronic mailboxes included	Integer	1-20 / 21-50 / >50
3.	A/B/C	Contract Duration	Contract duration and term-related aspects	-	-
3.1	C	Hosting duration	Contract duration or term, expressed in months	Integer	12
4.	A/B/C	Contract Price	Price, form of payment, invoicing issues	-	-
4.1	A/B/C	Price Description	Price per month, expressed in euros	Integer	50
5.	A/B/C	General Terms	General terms applicable to this contract	-	-
5.1	C	ServiceAvailability	Service Availability guaranteed. Special conditions apply (pursuant to Service Level Agreement). Detailed information must be provided separately.	-	-
5.1.1	C	24/7 Availability	24/7 Service Availability guaranteed	Boolean	Yes / No

2.2. Excel File for Hosting Contracts

(A) Contract Front

1	TITLE	Hosting Example 1
2	AUTHOR	OPAALS
3		
4	Provider	
5	Company Registered Name	Hosting Guapo SL
6	Company ID Number	20202020W
7	Company Registered Address	Rue del Percebe 1 - 50006 Zaragoza
8	Company Legal Representative	Pablo Roncha
9	PIN	21212121W
10		
11	Client	
12	Company Registered Name	Pardillos SL
13	Company ID Number	30303030V
14	Company Registered Address	Calle Mayor 2 - 50008 Zaragoza
15	Company Legal Representative	Luisito Perez
16	PIN	31313131Q
17		
18	Acknowledgements	In witness whereof, the parties agree to the terms and conditions of this contract on behalf of his or her organization as of the date indicated below
19		
20	Date	
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(B) Contract Body – Basic Clauses

Microsoft Excel - oferta_hosting_1						Escribe una pregunta					
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C22											
BASIC CLAUSES											
CONTRACT_OBJECT		Type of Service		Web hosting		string		25		www.opaals.org/semantic.xml	
SPECIFICATIONS		Connectivity		10		integer				www.opaals.org/semantic.xml	
		Scalable		Yes		boolean				www.opaals.org/semantic.xml	
		HDD Space		2		integer				www.opaals.org/semantic.xml	
		Mailboxes		30		integer				www.opaals.org/semantic.xml	
CONTRACT_DURATION		Hosting duration		12		integer		12		www.opaals.org/semantic.xml	
CONTRACT_PRICE		Price		50		integer				www.opaals.org/semantic.xml	
GENERAL_TERMS		24/7 Service Availability		Yes		boolean				www.opaals.org/semantic.xml	

(C) Semantic Notes

1	ContractObject	Type of Service	Type of service or product
2			
3	Specifications	Connectivity	Description of contents and specific features included
4		Scalable	Automatically scalable or scalable bandwidth. Special price conditions apply: see ANNEX
5		HardDiskSpace	Hard Disk Space, expressed in GB
6		eMailBoxes	Number of electronic mailboxes included
7	ContractDuration	Hosting duration	Contract duration and term-related aspects
8			
9	ContractPrice	Price	Price, term of payment and invoicing issues
10			
11	GeneralTerms	Service Availability	General terms and conditions applicable to this contract
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3. Co-location Services

3.1. Basic Contract Template

(A) Contract Front

No.	Type	Keyword	Semantic Notes	Value	Range / Example
1.	A/B/C	Contract Parties	Contract Parties Data	-	-
1.1.	A/B/C	Provider	Provider Company Data	-	-
1.1.1.	A/B/C	Name	Company Registered Name	String	WebWorks SL
1.1.2.	A/B/C	ID	Company ID Number	String	40404040W
1.1.3.	A/B/C	Address	Company Registered Address	String	Street, Postal Code, City, Country
1.1.4.	A/B/C	Representative	Company Legal Representative	String	Name, First Name
1.1.5.	A/B/C	PIN	Representative's Personal / Tax ID	String	14142121R
1.2.	A/B/C	Client/Customer	Client/Customer Data	-	-
1.2.1.	A/B/C	Name	Company Registered Name	String	Pardillos SL
1.2.2.	A/B/C	ID	Company ID Number	String	30303030V
1.2.3.	A/B/C	Address	Company Registered Address	String	Street, Postal Code, City, Country
1.2.4.	A/B/C	Representative	Company Legal Representative	String	Name, First Name
1.2.5.	A/B/C	PIN	Representative's Personal or Tax ID	String	31313131Q
2.	A/B/C	Acknowledgements	Legal capacity mutual acknowledgements	String	In witness whereof, the parties agree to the terms of this contract on behalf of their organizations (...)
3.	A/B/C	Contract Date	Date of the contract	String	DDMMYYYY

(B) Contract Body (Basic Clauses)

No.	Type	Keyword	Semantic Notes	Value	Ranges / Example
1.	A/B/C	Contract Object	Overall description of the contract object	-	-
1.1	A/B/C	Type of Service	Denomination of the service or product	String	Co-located server
2.	B/C	Specifications	Description of contents & specific features included	-	-
2.1	C	Number of servers	Number of servers/units in server rack	Integer	2
2.2	C	Connectivity	Gigabytes (GB) transfer per month	Integer	100
2.3	C	Scalable	Automatically burstable/scalable bandwidth. Special price conditions may apply.	Boolean	Yes / No
2.4	C	IP Adresses	Number of static IP addresses	Integer	2
2.5	C	Management	Server management & maintenance	Boolean	
3.	A/B/C	Contract Duration	Contract duration and term-related aspects	-	-
3.1	C	Hosting duration	Contract duration or term, expressed in months	Integer	12
4.	A/B/C	Contract Price	Price, form of payment, invoicing issues	-	-
4.1	A/B/C	Price Description	Price per month, expressed in euros	Integer	300
5.	A/B/C	General Terms	General terms applicable to this contract	-	-
5.1	C	ServiceAvailability	Monthly connectivity percent guaranteed upon compensation. Special conditions apply (pursuant to Service Level Agreement). Detailed information must be provided separately.	Integer	99.5

3.2. Excel File for Co-location Contracts

(A) Contract Front

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	TITLE	Co-location Example 1											
2	AUTHOR	OPAALS											
3													
4	Provider												
5		Company Registered Name	Housing Mulon SL										
6		Company ID Number	10203040A										
7		Company Registered Address	Avenida Poleo Menta 7 - 50016 Zaragoza										
8		Company Legal Representative	Maria de la O										
9		PIN	33333333S										
10													
11	Client												
12		Company Registered Name	Pardillos SL										
13		Company ID Number	30303030V										
14		Company Registered Address	Calle Mayrta 2 - 50008 Zaragoza										
15		Company Legal Representative	Luisito Perez										
16		PIN	31313131Q										
17													
18	Acknowledgements	In witness whereof, the parties agree to the terms and conditions of this contract on behalf of his or her organization as of the date indicated below											
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20	Date												
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(B) Contract Body – Basic Clauses

	A	B	C	D	E	F	G	H	I	J
1	BASIC CLAUSES									
2	CONTRACT_OBJECT	Type of service	Co-located server	string	25		www.opaals.org/semantic.xml			
3	SPECIFICATIONS	Number of servers	1	integer			www.opaals.org/semantic.xml			
4		Connectivity	100	integer			www.opaals.org/semantic.xml			
5		Scalable	Yes	boolean			www.opaals.org/semantic.xml			
6		IP Addresses	2	integer			www.opaals.org/semantic.xml			
7		Management	No	boolean			www.opaals.org/semantic.xml			
8	CONTRACT_DURATION	Duration	12	integer	12		www.opaals.org/semantic.xml			
9	CONTRACT_PRICE	Price	300	integer			www.opaals.org/semantic.xml			
10	GENERAL_TERMS	Service Availability	99.95	integer			www.opaals.org/semantic.xml			
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(C) Semantic Notes

	A	B	C	D	E
1	ContractObject	Type of Service	Type of service or product		
2	Specifications	Description of contents and specific features included			
3		Number of servers	Number of servers / units in a server rack		
4		Connectivity	GB transfer per month		
5		Scalable	Automatically tunable or scalable bandwidth. Special price conditions apply: see ANNEX		
6		IP Addresses	Number of static IP addresses		
7		Management	Server management		
8	ContractDuration	Contract duration and term-related aspects			
9	Hosting duration	Contract duration or term, expressed in months			
10	ContractPrice	Price, form of payment and invoicing issues			
11		Price	Price per month, expressed in euros		
12	GeneralTerms	General terms and conditions applicable to this contract			
13		Service Availability	Connectivity percent guaranteed monthly upon compensation. Special conditions apply (pursuant to Service Level Agreement: see ANNEX)		
14					
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4. Network Management & Maintenance Services

4.1. Basic Contract Template

(A) Contract Front

No.	Type	Keyword	Semantic Notes	Value	Range / Example
1.	A/B/C	Contract Parties	Contract Parties Data	-	-
1.1.	A/B/C	Provider	Provider Company Data	-	-
1.1.1.	A/B/C	Name	Company Registered Name	String	WebWorks SL
1.1.2.	A/B/C	ID	Company ID Number	String	40404040W
1.1.3.	A/B/C	Address	Company Registered Address	String	Street, Postal Code, City, Country
1.1.4.	A/B/C	Representative	Company Legal Representative	String	Name, First Name
1.1.5.	A/B/C	PIN	Representative's Personal / Tax ID	String	14142121R
1.2.	A/B/C	Client/Customer	Client/Customer Data	-	-
1.2.1.	A/B/C	Name	Company Registered Name	String	Pardillos SL
1.2.2.	A/B/C	ID	Company ID Number	String	30303030V
1.2.3.	A/B/C	Address	Company Registered Address	String	Street, Postal Code, City, Country
1.2.4.	A/B/C	Representative	Company Legal Representative	String	Name, First Name
1.2.5.	A/B/C	PIN	Representative's Personal or Tax ID	String	31313131Q
2.	A/B/C	Acknowledgements	Legal capacity mutual acknowledgements	String	In witness whereof, the parties agree to the terms of this contract on behalf of their organizations (...)
3.	A/B/C	Contract Date	Date of the contract	String	DDMMYYYY

(B) Contract Body (Basic Clauses)

No.	Type	Keyword	Semantic Notes	Value	Ranges / Example
1.	A/B/C	Contract Object	Overall description of the contract object	-	-
1.1	A/B/C	Type of Service	Denomination of the service or product	String	Co-located server
2.	B/C	Specifications	Description of contents & specific features included	-	-
2.1	C	Networks & Hardware	Networks/hardware-related services	Boolean	Yes / No
2.1.1	C	Remote	Remote management of networks and hardware	Boolean	Yes / No
2.1.2	C	Installation & M.	Hardware management, installation and maintenance	Boolean	Yes / No
2.1.3	C	Reparation	Reparation of standard IT equipment. Special IT equipment excluded.	Boolean	Yes / No
2.1.4	C	Replacement	Replacement of IT equipment while being repaired	Boolean	Yes / No
2.2	C	Software	Software-related services	-	-
2.2.1	C	Installation & M.	Software management, installation and maintenance, including both commercial applications and dedicated software	Boolean	Yes / No
2.3	C	Security	Information security services	-	-
2.3.1	C	Basic Protection	Standard security utilities, including antivirus, firewall and IDS	Boolean	Yes / No
2.3.2	C	Backup Service	Daily backup services	Boolean	Yes / No
2.3.3	C	Security & Data	Security document for systems processing	Boolean	Yes / No

		Protection Policy	personal data, as required by law		
2.4	C	Communications	Communication Services	-	-
2.4.1	C	Email Management	Email services M&M	Boolean	Yes / No
2.4.2	C	Web Management	Web management and maintenance	Boolean	Yes / No
2.4.3	C	VoIP	Management, installation and maintenance of Voice over IP services	Boolean	Yes / No
3.	A/B/C	Contract Duration	Contract duration and term-related aspects	-	-
3.1	C	M&M duration	Contract duration or term, in months	Integer	12
4.	A/B/C	Contract Price	Price, form of payment, invoicing issues	-	-
4.1	A/B/C	Price Description	Standard price in euros for basic SME M&M Services. Price per month. Special terms may apply to non-standard services. Information must be provided separately.	Integer	>50 / 51-100 / >100
5.	A/B/C	General Terms	General terms applicable to this contract	-	-
5.1	C	Assistance	Modalities of assistance included	-	-
5.1.1	C	Call-Center	Phone assistance	Boolean	Yes / No
5.1.2	C	On-line	On-line or telematic assistance panel	Boolean	Yes / No
5.1.3	C	In-house	Assistance delivered in-house	Boolean	Yes / No
5.2	C	Response Hours	Business hours for delivering assistance	-	-
5.2.1	C	24/7	24 hours, 7 days a week, 325 days a year	Boolean	Yes / No
5.3	C	Response Time	Time within which assistance is delivered, expressed in hours	-	-
5.3.1	C	Minor Incidence	Response time (in hours) in case of usual problems with no information lost or systems damage	Integer	24
5.3.2	C	Medium Incidence	Response time (in hours) in case of temporary malfunction or disfunction of networks or systems	Integer	3
5.3.3	C	Serious Incidence	Response time (in hours) in case of malfunction or disfunction causing serious damages to networks or systems	Integer	1

3.2. Excel File for Network Management & Maintenance Contracts

(A) Contract Front

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	TITLE	M&M Example 1											
2	AUTHOR	OPAALS											
3													
4	Provider												
5		Company Registered Name	SGR Services SL										
6		Company ID Number	90202020W										
7		Company Registered Address	Calle Escoria 1 - 50008 Zaragoza										
8		Company Legal Representative	Roger Federer										
9		PIN	01215121K										
10													
11	Client												
12		Company Registered Name	Paredillo SL										
13		Company ID Number	30303030V										
14		Company Registered Address	Calle Mayor 2 - 50008 Zaragoza										
15		Company Legal Representative	Luisito Perez										
16		PIN	31313131Q										
17													
18	Acknowledgements	In witness whereof, the parties agree to the terms and conditions of this contract on behalf of his or her organization as of the date indicated below											
19													
20	Date												
21													
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(B) Contract Body – Basic Clauses

A	B	C	D	E	F	G	H	I	J
1	BASIC CLAUSES								
2	CONTRACT OBJECT	Type of Service	Networks Management & Maintenance	string	25		www.opaals.org/semantic.xml		
4	SPECIFICATIONS	Networks & Hardware							
6		Remote	Installation & Maintenance	Yes	boolean		www.opaals.org/semantic.xml		
7		Reparation	Replacement	Yes	boolean		www.opaals.org/semantic.xml		
8		Software	Installation & Maintenance	Yes	boolean		www.opaals.org/semantic.xml		
11		Security	Basic Protection	Yes	boolean		www.opaals.org/semantic.xml		
12			Backup Service	Yes	boolean		www.opaals.org/semantic.xml		
13			Security & Data Protection Policy	Yes	boolean		www.opaals.org/semantic.xml		
14		Communications	Email Management	Yes	boolean		www.opaals.org/semantic.xml		
15			Web Management	Yes	boolean		www.opaals.org/semantic.xml		
16			VoIP	Yes	boolean		www.opaals.org/semantic.xml		
17	CONTRACT_DURATION	MM Duration		12	integer	12	www.opaals.org/semantic.xml		
18	CONTRACT_PRICE	Price		30	integer		www.opaals.org/semantic.xml		
19	GENERAL_TERMS	Assistance							
20		Call-Center		Yes	boolean		www.opaals.org/semantic.xml		
21		Online		Yes	boolean		www.opaals.org/semantic.xml		
22		In-house		Yes	boolean		www.opaals.org/semantic.xml		
23		Response Hours	24/7	Yes	boolean		www.opaals.org/semantic.xml		
24		Response Time							
25		Minor Incidence		24	integer		www.opaals.org/semantic.xml		
26		Medium Incidence		3	integer		www.opaals.org/semantic.xml		
27		Serious Incidence		1	integer		www.opaals.org/semantic.xml		

(C) Semantic Notes

A	B	C	D	E	F	G
1	CONTRACT OBJECT	Type of Service	Type of service or product			
2	SPECIFICATIONS	Networks & Hardware	Description of contents and specific features included			
3		Remote	Networks/hardware-related services			
4		Installation & Maintenance	Remote management of networks and hardware			
5		Reparation	Hardware management, installation and maintenance			
6		Replacement	Replacement of standard IT equipment. Special IT equipment excluded.			
7		Software	Replacement of IT equipment while being repaired			
8		Installation & Maintenance	Software-related services			
9		Security	Software management, installation and maintenance, including both commercial applications and dedicated software			
10		Basic Protection	Information security services			
11		Backup Service	Standard security utilities, including antivirus, firewall and IDS			
12		Security & Data Protection Policy	Daily backup services			
13		Communications	Security document for systems processing personal data, as required by law			
14		Email Management	Communication services			
15		Web Management	Email services management and maintenance			
16		VoIP	Web management and maintenance			
17	CONTRACT_DURATION	MM Duration	Management, installation and maintenance of Voice over IP services			
18	CONTRACT_PRICE	Price	Contract duration and term-related aspects			
19	GENERAL_TERMS	Assistance	Contract duration or term			
20		Call-Center	Price, form of payment and invoicing details			
21		Online	Standard price in euros for basic SME M&M Services. For non-standard and additional services, see ANNEX			
22		In-house	General terms and conditions applicable to this contract			
23		Response Hours	Modalities of assistance included			
24		Response Time	Phone assistance			
25		Minor Incidence	On-line or telephonic assistance panel			
26		Medium Incidence	Assistance delivered in-house			
27		Serious Incidence	Business hours for delivering assistance			
28			24 hours, 7 days a week, 325 days a year			
29			Time within which assistance is delivered, expressed in hours			
30			Response time (in hours) in case of actual problems with no information lost or systems damage			
31			Response time (in hours) in case of temporary malfunction or disfunction of networks or systems			
32			Response time (in hours) in case of malfunction or disfunction causing serious damages to networks or systems			

ANNEX IV – Contract Structures (1): Web Development

Estructura del contrato

0. Parte introductoria
1. Objeto del contrato (descripción de los servicios)
2. Plazos de ejecución del contrato
3. Precio y forma de pago
4. Condiciones generales
 - 4.1. Obligaciones de las partes
 - 4.2. Condiciones relativas al desarrollo del proyecto
 - 4.3. Puesta en funcionamiento y formación de usuarios
 - 4.4. Garantía técnica
 - 4.5. Responsabilidades
5. Propiedad intelectual y documentación
6. Confidencialidad y protección de datos
 - 6.1. Confidencialidad
 - 6.2. Protección de datos de las partes
 - 6.3. Acceso a datos personales por cuenta de tercero
7. Modificación del contrato
8. Vigencia, terminación y resolución del contrato
9. Notificaciones
10. Ley aplicable, jurisdicción y resolución de conflictos

0. Parte introductoria

0.1. Identificación de las partes contratantes

- | | | |
|---------|----------------------|-----------------------------------|
| 0.1.1 | Prestador | |
| 0.1.1.1 | Denominación social: | ... |
| 0.1.1.2 | CIF: | ... |
| 0.1.1.3 | Domicilio social: | ... (dirección) / ... (localidad) |
| 0.1.1.4 | Representante legal: | ... (nombre) / ... (apellidos) |
| 0.1.1.5 | DNI: | ... |
| 0.1.2 | Cliente | |
| 0.1.2.1 | Denominación social: | ... |
| 0.1.2.2 | CIF: | ... |
| 0.1.2.3 | Domicilio social: | ... (dirección) / ... (localidad) |
| 0.1.2.4 | Representante legal: | ... (nombre) / ... (apellidos) |
| 0.1.2.5 | DNI: | ... |

0.2. Reconocimientos

- | | |
|-----------------------------------------------------------|-----------------------------|
| 0.2.1. Reconocimiento mutuo de capacidad y representación | Siempre incluido (no varía) |
|-----------------------------------------------------------|-----------------------------|

0.3. Modalidad de contratación

- | | | |
|-----------|---------------------------------------------------|------------------------------------|
| 0.3.1. | Por escrito | |
| 0.3.2 | Electrónica (online) | |
| 0.3.2.1 | Condiciones de celebración | |
| 0.3.2.1.1 | Momento de perfección del contrato: | Aceptación online /Confirmación |
| 0.3.2.1.2 | Lugar de celebración del contrato: | domicilio del prestador / cliente |
| 0.3.2.1.3 | Confirmación obligatoria por parte del prestador: | Sí (por escrito / por e-mail) / No |

0.4. Definiciones

1. Objeto del contrato (descripción y contenidos del servicio)

1.0. Descripción general del objeto del contrato

1.0.1	Palabras clave para búsquedas DSC	Sitio Web, Página Web, Diseño Web, Desarrollo Web, Programación Web, Requisitos funcionales
-------	-----------------------------------	---------------------------------------------------------------------------------------------

1.1. Descripción de los contenidos del servicio

Estructura y diseño de la web

1.1.1	Estructura y diseño de la web:	Sí / No
1.1.1.1	Extranet	Sí / No
1.1.1.1.1	Definición de módulos o secciones	...
1.1.1.1.2	Otras características	...
1.1.1.2	Intranet:	Sí / No
1.1.1.2.1	Definición de módulos o secciones	...
1.1.1.2.2	Tipo de certificación o protocolo	https / ...
1.1.1.2.3	Autenticación usuarios	
1.1.1.2.4	Autenticación individualizada	Sí / No
1.1.1.2.5	Tipo de autenticación	login & pass / ...
1.1.1.3	Diseño y presentación de la web	
1.1.1.3.1	Creación de logos	Incluido / No incluido
1.1.1.3.2	Banco de imágenes	Incluido / No incluido
1.1.1.3.3	Infografía	Incluido / No incluido
1.1.1.3.4	Mapas	Incluido / No incluido
1.1.1.3.5	Redacción de textos	Incluido / No incluido
1.1.1.3.6	Traducciones	Incluido / No incluido
1.1.1.3.6.1	Inglés	Sí / No
1.1.1.3.6.2	Otros idiomas	Sí (...) / No
1.1.1.3.6.3	Prestaciones adicionales	
	• Boletines	No / Sí
	• Tablón anuncios	No / Sí
	• Contenidos 2.0 incluidos	No / Sí: ... (blog, wiki, otros)
	• Otros contenidos	... (ej: utilidades e-learning)

Desarrollo y programación web (requisitos funcionales)

1.1.2	Desarrollo y programación web	Sí / No
1.1.2.1	Arquitectura	Tipo de servidor / Tipo de base de datos
1.1.2.2	Diseño optimizado para	... (IE, Firefox, Safari...)
1.1.2.3	Accesibilidad de la web (WAI)	Sí (...) / No
1.1.2.4	Peso máximo por página	... / Sin definir
1.1.2.5	Resolución mínima	... / Sin definir
1.1.2.6	Hoja de estilos (CSS)	...
1.1.2.7	HTML validado para	...
1.1.2.8	Otras características técnicas	
1.1.2.8.1	JavaScript (validado para)	Sí (validado para ...) / No
1.1.2.8.2	Uso de Flash	Restringido / No restringido
1.1.2.8.3	Impresión sin errores	Sí / No
1.1.2.8.4	Otros	...

Extras o contenidos adicionales del servicio

1.1.3.	Extras o contenidos adicionales del servicio	Sí / No
1.1.3.1	Integración con sistemas de la empresa (CRM, BI, ERP)	Sí: ... (alcance) / No
1.1.3.2	Migración de sistemas de la empresa a la web	Sí: ... (alcance) / No
1.1.3.3.	Otros	...

Mantenimiento

1.1.4.	Mantenimiento	Sí / No
1.1.4.1	Mantenimiento correctivo (solución problemas técnicos)	Sí / No
1.1.4.1.1	Periodo	...
1.1.4.1.2	Modalidades de respuesta	...
1.1.4.1.3	Tiempos máximos de respuesta	...
1.1.4.1.4	Exclusiones	...
1.1.4.2	Mantenimiento pasivo (mejoras y adaptaciones)	Sí / No
1.1.4.2.1	Periodo	...
1.1.4.2.2	Exclusiones	...
1.1.4.3	Mantenimiento activo (gestión de contenidos)	Sí / No
1.1.4.3.1	Periodo	...
1.1.4.3.2	Exclusiones	...

*Opción de servicios complementarios / combinados**

1.1.5.	Servicios complementarios o combinados	Sí / No
1.1.5.1	Hosting	Sí / No
1.1.5.2	Co-location (Housing)	Sí / No
1.1.5.3	SEO	Sí / No
1.1.5.4	SMO	Sí / No
1.1.5.5	Otros	...

☞ *La contratación y prestación de estos servicios se rige por sus contratos específicos.*

2. Plazos de ejecución del contrato**2.1. Plazo general de ejecución del contrato**

2.1.1	Plazo general de ejecución del contrato	DD-MM-AAAA / XX días*
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☞ *En el caso de que se señale un plazo en días, éstos se cuentan desde la fecha del contrato*

2.2. Plazos de ejecución por fases* o servicios

2.2.1	Diseño	DD-MM-AAAA / XX días
2.2.2	Análisis funcional	DD-MM-AAAA / XX días
2.2.3	Programación	DD-MM-AAAA / XX días
2.2.4	Puesta en funcionamiento	DD-MM-AAAA / XX días

☞ *La denominación de las fases varía de un prestador a otro, pero estas cuatro pueden aplicarse a todos*

2.3. Condiciones de revisión de los plazos

2.3.1	Causas de revisión de los plazos	...
2.3.2	Condiciones de revisión de los plazos	...
2.3.3	Preaviso	... días
2.3.4	Forma de la comunicación	por escrito /
2.3.5	Efectos de la revisión de los plazos	...
2.3.5.1	En caso de aceptación	modificación del contrato
2.3.5.2	En caso de no aceptación (terminación del contrato)	sin / con (...) indemnización

2.4. Penalizaciones por incumplimiento de los plazos

2.4.1	Alcance: sólo incumplimientos imputables al prestador	Sí (no varía)
2.4.2	Incumplimiento del plazo general de ejecución	

2.4.2.1	Retraso > ... días laborables / naturales*	... € / ... % precio total (sin IVA)
2.4.3	Incumplimiento de los plazos parciales*	
2.4.3.1	Diseño: > ... días laborables / naturales	... € / ... % precio total (sin IVA)
2.4.3.2	Análisis funcional: > ... días laborables / naturales	... € / ... % precio total (sin IVA)
2.4.3.3	Programación: > ... días laborables / naturales	... € / ... % precio total (sin IVA)
2.4.3.4	Puesta en marcha: > ... días laborables / naturales	... € / ... % precio total (sin IVA)

☞ Se suelen fijar tablas con diferentes retrasos (número de días) y penalizaciones

3. Precio y forma de pago

3.1. Precio

3.1.1	Precio del servicio contratado sin impuestos:	... €
3.1.2	Precio total del servicio contratado (impuestos incluidos):	... €
3.1.3	Dietas y desplazamientos incluidos en el precio:	Sí / No

3.2. Forma de pago

3.2.1	Distribución del pago	pago único / fraccionado
3.2.2	En caso de pago fraccionado	
3.2.2.1	Cantidad o porcentaje del total / Momento del pago	... (€ o %) / ... (fecha o fase)
3.2.2.2	Cantidad o porcentaje del total / Momento del pago	... (€ o %) / ... (fecha o fase)
3.2.3	Modalidades de pago	
3.2.3.1	Transferencia bancaria:	sí / no
3.2.3.2	Domiciliación en cuenta del cliente:	sí / no
3.2.3.2.1	Penalización por devolución de recibo:	... € / no
3.2.3.3	Otras:	...

3.3. Facturación y aspectos tributarios

3.3.1	Facturación:	manual / telemática
3.3.1.1	Número de facturas a emitir	...
3.3.1.2	Momento de emisión de facturas	...
3.3.1.3	Impuestos (IVA) incluidos en los precios	sí / no

3.4. Condiciones de revisión de los precios acordados

3.4.1	Causas de revisión de precios	...
3.4.2	Condiciones de revisión de precios	
3.4.2.1	Forma de comunicación	por escrito / ...
3.4.2.2	Plazo de preaviso	... días
3.4.3	Efectos de la revisión de precios	
3.4.3.1	En caso de aceptación	modificación del contrato
3.4.3.2	En caso de no aceptación (terminación del contrato)	sin / con (...) indemnización

3.5. Penalizaciones por demora en el pago

3.5.1	Alcance: incumplimiento imputable al cliente	
3.5.2	En caso de pago único: cantidad o porcentaje / plazo	... (€ o %) / ... (día, semana)
3.5.3	En caso de pago fraccionado: cantidad o porcentaje / plazo	... (€ o %) / ... (día, semana)

3.6. Dietas y gastos de desplazamiento

3.6.1	Dietas y gastos de desplazamiento incluidos	Sí / No
3.6.2	Pago de gastos de desplazamiento fuera de	... (localidad)
3.6.3	Cuantía de las dietas	... € / día

4. Condiciones generales de prestación de los servicios

4.1. Obligaciones generales de las partes

4.1.1	Obligación de cumplimiento de condiciones pactadas	Sí (no varía)
4.1.2	Obligación de prestación del servicio (prestador)	Sí (no varía)
4.1.3	Obligación de pago de contraprestación (cliente)	Sí (no varía)
4.1.4	Cumplimiento de normativa aplicable a las partes	Sí (no varía)

4.2. Condiciones relativas al desarrollo del proyecto

4.2.1	Deberes de colaboración (ambas partes)	
4.2.1.1	Respuesta diligente a dudas y consultas (ambas partes)	Sí (no varía)
4.2.1.2	Listado de personas de contacto y responsables	Sí / No
4.2.2	Reuniones de trabajo (incluidas en el precio)	... (núm.) / ... (periodicidad)
4.2.2.1	En la sede del prestador	... (núm.) / ilimitadas
4.2.2.2	En la sede del cliente	... (núm.) / ilimitadas
4.2.2.3	Documentación de las reuniones (actas)	Sí (prestador)
4.2.2.4	Plazo de aprobación de las actas de reunión	... días (después de la reunión)
4.2.3	Deber de facilitar recursos necesarios para el proyecto	Sí (no varía)
4.2.3.1	Accesos necesarios a instalaciones y sistemas del cliente	Sí (no varía)
4.2.3.2	Momento entrega de materiales necesarios por el cliente	DD-MM-AAAA / ... días / ...
4.2.3.3	Espacio de trabajo	Sí / No
4.2.4	Pruebas de aceptación parcial por parte del cliente	Sí (no varía)
4.2.4.1	Conformidades puntuales a petición del prestador	Sí / No
4.2.4.2	Pruebas de aceptación obligatorias	Sí / No
4.2.4.2.1	Diseño y estructuración	Sí / No
4.2.4.2.2	Otras	...
4.2.4.3	Forma de aceptación	expresa / tácita (... días)
4.2.5	Seguimiento y control del proyecto	
4.2.5.1	Facultad de inspección del proyecto por el cliente	Sí / No
4.2.5.2	Informes periódicos por parte del prestador	Sí (... periodicidad) / No
4.2.6	Fase de preproducción (pruebas y control de calidad)	Sí / No
4.2.6.1	En los servidores del prestador	Sí: ... (periodo) / No
4.2.6.2	En los servidores del cliente	Sí: ... (periodo) / No

4.3. Puesta en funcionamiento y formación de usuarios

4.3.1	Condiciones de la puesta en funcionamiento	
4.3.1.1	Instalación y puesta en marcha en servidores del cliente	Sí (no varía)
4.3.1.1	Prueba de aceptación del proyecto terminado	Sí / No
4.3.2	Entrega de documentación	Sí (no varía)
4.3.3	Acciones de formación de usuarios	Sí / No
4.3.3.1	Descripción de las acciones formativas	...

4.4. Garantía técnica

4.4.1	Garantía técnica de buen funcionamiento	Sí (no varía)
4.4.2	Alcance	...
4.4.2.1	Solución de problemas y consultas incluidas	sí / no
4.4.2.2	Exclusiones	
4.4.2.2.1	Mal uso o alteraciones por parte del cliente	sí (no varía)
4.4.2.2.2	Otras	...
4.4.3	Modalidades y tiempos de respuesta	...
4.4.4	Momento de entrada en vigor	...
4.4.5	Duración del periodo de garantía técnica	... (núm. días / meses)

4.5. Responsabilidades

4.5.1	Independencia jurídica de las partes contratantes	sí (no varía)
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4.5.2	Responsabilidades del prestador	
4.5.2.1	Copias de seguridad del proyecto	sí / no
4.5.2.2	Exclusiones generales de responsabilidad	
4.5.2.2.1	Incumplimientos del cliente	sí (no varía)
4.5.2.2.2	Por software o desarrollos de terceros	sí (no varía)
4.5.2.2.3	Problemas preexistentes en los sistemas del cliente	sí (no varía)
4.5.2.2.4	Exclusión de responsabilidad por acumulación de trabajo	sí / no
4.5.2.2.4.1	Condiciones	...
4.5.3	Responsabilidades del cliente (alcance)	
4.5.3.1	Indemnización por gastos derivados de acciones legales	sí / no
4.5.3.2	Otras	...
4.5.4	Exclusión de responsabilidad por fuerza mayor*	sí / no
4.5.4.1	Acreditación de la fuerza mayor por quien la alega	sí (no varía)
4.5.4.2	Otras condiciones	...
4.5.5	Condiciones aplicables a las reclamaciones	sí (no varía)
4.5.5.1	Plazo desde la aparición de la causa	sí (... días) / no
4.5.5.2	Por escrito	sí (no varía)
4.5.5.3	Otras	...

* Las diferencias, en cuanto a fuerza mayor por ejemplo, entre este contrato y los de hosting o SGR responden a que este esquema está basado en contratos que contienen dicha previsión

5. Propiedad intelectual

5.1 Cuestiones básicas

5.1.1	Reconocimiento de titularidad de la web corporativa	cliente (no varía)
5.1.2	Propiedad intelectual sobre diseños y elementos gráficos	...
5.1.3	Propiedad del software desarrollado (en su caso)	cliente / prestador
5.1.4	Acceso a códigos fuente y documentación básica (<i>escrow</i>)	Sí / No
5.1.5	Prohibición de contratación de personal del prestador por cliente	sí (... años) / No

5.2 Uso de recursos que son propiedad de las partes

5.2.1	Exclusivamente para la ejecución del contrato	sí (no varía)
5.2.2	Restricción de uso o explotación de desarrollos del prestador	sí / no

5.3 Uso de recursos que son propiedad de terceros

5.3.1	Sujeción expresa a las respectivas condiciones de uso	sí / no
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6. Confidencialidad y protección de datos

6.1 Confidencialidad (información confidencial)

6.1.1	Definición de información confidencial	sí / no
6.1.1.1	Toda información aportada por las partes	sí / no
6.1.1.2	Otra	...
6.1.1.3	Definición de información no confidencial	...
6.1.2	Restricciones de uso de la información confidencial	
6.1.2.1	Limitación a la ejecución del contrato	sí / no
6.1.2.2	Prohibición de revelación a terceros	sí (no varía)
6.1.3	Condiciones de protección de la información confidencial	
6.1.3.1	Regla de la equivalencia de protección entre partes	sí / no
6.1.3.2	Destino de la información después del contrato	destrucción / devolución
6.1.3.3	Duración de la obligación de confidencialidad:	... años
6.1.3.4	Otras condiciones	...

6.2. Protección de datos de las partes (datos personales derivados del contrato)

6.2.1	Responsable del fichero o tratamiento	nombre del prestador
6.2.2	Finalidad y usos de la información	
6.2.2.1	Gestión / cumplimiento del contrato	sí (no varía)
6.2.2.1	Envíos comerciales	sí / no
6.2.2.1	Otras	sí / no
6.2.3	Cesiones previstas	sí / no
6.2.3.1	Finalidad (sólo de entre las indicadas antes)	...
6.2.3.2	Destinatarios	...
6.2.4	Información sobre derechos	
6.2.4.1	Acceso, rectificación, cancelación, oposición	sí (no varía)
6.2.4.2	Forma de ejercicio	por escrito / e-mail

6.3. Acceso a datos personales por cuenta de tercero

6.3.1	Delimitación expresa del responsable y del encargado	cliente y prestador (no varía)
6.3.2	Limitaciones de uso y tratamiento de los datos	
6.3.3	Limitación a finalidad de gestión del alojamiento web	sí (no varía)
6.3.4	Sujeción a instrucciones del responsable	sí (no varía)
6.3.5	Otras condiciones no previstas legalmente	...
6.3.6	Medidas de seguridad	
6.3.6.1	Definición del nivel de seguridad aplicable	básico / medio / alto
6.3.7	Destino de la información confidencial después del contrato	destrucción / devolución

7. Modificación de las condiciones de prestación de los servicios**7.1. Causas de modificación**

7.1	Supuestos habilitantes	...
7.2	Requisitos y condiciones formales	
7.2.1	Comunicación	por escrito / por e-mail
7.2.2	Plazo de preaviso	... días
7.2.3	Otros	...

7.2. Efectos de la modificación de condiciones pactadas

7.2.1	En caso de aceptación	modificación del contrato
7.2.2	En caso de no aceptación (terminación del contrato)	sin / con (...) indemnización

7.3. Subcontratación y cesión de derechos y obligaciones

7.3.1	Prohibición de subcontratación y cesión	sí / no
7.3.2	Necesidad de autorización del prestador	sí / no
7.3.3	Responsabilidad del prestador por actos del subcontratista	sí / no

8. Vigencia, terminación y resolución del contrato**8.1. Entrada en vigor**

8.1.1	Fecha o momento de entrada en vigor del contrato	... (DD-MM-AAAA / momento)
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8.2. Causas de resolución y terminación del contrato

8.2.1	Mutuo acuerdo	sí (no varía)
8.2.2	Incumplimiento de las condiciones pactadas	sí (no varía)
8.2.2.1	Salvo incumplimiento de plazos	sí / no
8.2.3	Pérdida de confianza o falta de colaboración del cliente	sí / no
8.2.4	Quiebra o suspensión de pagos de alguna de las partes	sí / no

8.2.5	Disolución de alguna de las empresas contratantes	sí (no varía)
8.2.6	Causas legalmente establecidas	sí (no varía)

8.3. Condiciones de la resolución del contrato

8.3.1	Incumplimiento por parte del prestador	
8.3.1.1	Reclamación previa por escrito (del cliente)	sí / no
8.3.1.1	Preaviso	sí (... días) / no
8.3.2	Incumplimiento por parte del cliente	
8.3.2.1	Reclamación previa por escrito (del prestador)	sí / no
8.3.2.2	Preaviso	sí (... días) / no

8.4. Efectos de la resolución del contrato

8.4.1	Entrega de productos y documentos generados	sí / no
8.4.2	Pago de trabajos realizados antes de la resolución	sí / no
8.4.3	Indemnización por incumplimiento condiciones pactadas	sí (...€ / ...%) / no
8.4.4	Otros efectos	...

9. Notificaciones

9.1	Direcciones de las partes a efectos de comunicaciones	según § 0.1
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10. Ley aplicable y resolución de conflictos

10.1. Legislación aplicable

10.1	Legislación española	sí (no varía)
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10.2. Reconocimiento de fuero o jurisdicción

10.2	Sumisión a juzgados y tribunales de	... (partido judicial)
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10.3. Procedimientos extrajudiciales de resolución de conflictos

10.3.1	Procedimiento extrajudicial (arbitral)	sí / no
10.3.2	Carácter	obligatorio / opcional
10.3.3	Órgano (arbitral) o procedimiento designado	...
10.3.4	Otras previsiones (p. ej. gastos derivados del arbitraje)	...

ANNEX V – Contract Structures (2): Web Hosting

Estructura del contrato

0. Parte introductoria
1. Objeto del contrato (descripción del servicio)
2. Duración del contrato
3. Precio y forma de pago
4. Condiciones generales de prestación del servicio
 - 4.1. Obligaciones de las partes
 - 4.2. Disponibilidad del servicio
 - 4.3. Condiciones de uso del servicio
 - 4.4. Responsabilidades y/o garantías
5. Propiedad intelectual
6. Confidencialidad y protección de datos
 - 6.1. Confidencialidad
 - 6.2. Protección de datos de las partes
 - 6.3. Acceso a datos personales por cuenta de tercero
7. Modificación del contrato
8. Terminación y resolución del contrato
9. Notificaciones
10. Ley aplicable, jurisdicción y resolución de conflictos

0. Parte introductoria

0.1. Identificación de las partes contratantes

0.1.1	Prestador	
0.1.1.1	Denominación social:	...
0.1.1.2	CIF:	...
0.1.1.3	Domicilio social:	... (dirección) / ... (localidad)
0.1.1.4	Representante legal:	... (nombre) / ... (apellidos)
0.1.1.5	DNI:	...
0.1.2	Cliente	
0.1.2.1	Denominación social:	...
0.1.2.2	CIF:	...
0.1.2.3	Domicilio social:	... (dirección) / ... (localidad)
0.1.2.4	Representante legal:	... (nombre) / ... (apellidos)
0.1.2.5	DNI:	...

0.2. Reconocimientos

0.2.1. Reconocimiento mutuo de capacidad y representación	Siempre incluido (no varía)
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0.3. Modalidad de contratación

0.3.1.	Por escrito	
0.3.2	Electrónica (online)	
0.3.2.1	Condiciones de celebración	
0.3.2.1.1	Momento de perfección del contrato:	Aceptación online /Confirmación
0.3.2.1.2	Lugar de celebración del contrato:	domicilio del prestador / cliente
0.3.2.1.3	Confirmación obligatoria por parte del prestador:	Sí (por escrito / por e-mail) / No

0.4. Definiciones

1. Objeto del contrato (descripción y contenidos del servicio)

1.0. Descripción general del objeto del contrato

1.0.1	Palabras clave para búsquedas DSC	Alojamiento Web, Hospedaje Web, Hosting, Sitio Web, Página Web
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1.1. Descripción de los contenidos del servicio

1.1.1	Ancho de banda / tasa de transferencia (mensual):	... GB
1.1.1.1	Escalabilidad automática	Sí / No
1.1.2	Espacio en disco duro	... GB
1.1.2.1	Escalabilidad automática	Sí / No
1.1.3	Correo electrónico	Sí / No
1.1.3.1	Número de buzones	... buzones
1.1.3.2	Capacidad por buzón	... MB / GB
1.1.3.3	Modalidades de acceso	POP3 / Webmail / ...
1.1.3.4	Panel de control	Sí / No
1.1.3.5	Redirección cuentas internas	Sí / No
1.1.3.5.1	Número máximo	... / Sin limitación
1.1.3.6	Listas de correo	Sí / No
1.1.3.6.1	Número de listas	...
1.1.3.6.2	Número máximo usuarios	...
1.1.3.6.3	Otras características	... (mayordomo, alta en web, etc.)
1.1.4	Seguridad	Sí / No
1.1.4.1	Servidor seguro	Sí / No
1.1.4.2	Cortafuegos y monitorización de puertos	Sí / No
1.1.4.3	Anti-spam	Sí / No
1.1.4.4	Copia de seguridad	Sí / No
1.1.4.4.1	Periodicidad	Diaria / Semanal / Mensual
1.1.5	Gestión DNS dominio	Siempre incluido
1.1.6	Otras prestaciones	Sí / No
1.1.6.1	Número cuentas FTP	...
1.1.6.2	Envío de formularios	Sí / No
1.1.6.3	Estadísticas de conexión y visitas	Sí / No
1.1.6.4	IP propia	Sí / No
1.1.6.5	Directorios de acceso restringido	Sí / No
1.1.6.6	Servidor de chat	Sí / No
1.1.6.6.1	Número de salas privadas	...
1.1.6.7	Sistema de foro	Sí / No
1.1.6.8	Sistema de envíos SMS	Sí / No

1.2. Datos complementarios

1.2.1.	Lugar del hospedaje (localidad, dirección, país)	...
1.2.2.	Nombre o nombres de dominio	...

2. Duración del contrato

2.1. Periodo de duración del contrato

2.1.1	Duración del alojamiento	Anual / ...
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2.2. Entrada en vigor

2.2.1	Fecha pactada de entrada en vigor	DDMMAAA
2.2.2	Otras condiciones de entrada en vigor	Sí / No
2.2.2.1	Primer acceso al servicio	Sí / No

2.2.2.2 Confirmación inicio del servicio (via e-mail) Sí / No

2.3. Prórroga del contrato

2.3.1 Tipo de prórroga Tácita expresa
 2.3.2 Condiciones de la prórroga (expresa)
 2.3.2.1 Preaviso ... días
 2.3.2.2 Forma de la comunicación por escrito / por e-mail / ...

3. Precio y forma de pago

3.1. Precio

3.1.1 Precio del servicio contratado sin impuestos: ... €
 3.1.2 Precio total del servicio contratado (impuestos incluidos): ... €
 3.1.3 Ampliación de prestaciones (escalabilidad) Sí / No
 3.1.3.1 Tasa de transferencia mensual ... GB / ... €
 3.1.3.2 Espacio en disco ... GB / ... €

3.2. Forma de pago

3.2.1 Periodicidad Mensual / Trimestral / Anual
 3.2.2 Primer pago por adelantado Sí / No
 3.2.3 Ampliación de prestaciones (escalabilidad) Siguiendo Factura / Factura aparte
 3.2.4 Modalidades de pago
 3.2.4.1 Transferencia bancaria: Sí / No
 3.2.4.2 Domiciliación en cuenta del cliente: Sí / No
 3.2.4.2.1 Penalización por devolución de recibo: ... € / No
 3.2.4.3 Otras: ...

3.3. Facturación y aspectos tributarios

3.3.1 Facturación: Manual / Telemática
 3.3.2 Impuestos (IVA) incluidos en los precios Sí / No

3.4. Condiciones de revisión de los precios acordados

3.4.1 Causas de revisión de precios ...
 3.4.1.1 Adaptación anual IPC Sí / No
 3.4.1.2 Aumento costes de gestión o seguridad Sí / No
 3.4.2 Condiciones de revisión de precios
 3.4.2.1 Forma de comunicación por escrito / ...
 3.4.2.2 Plazo de preaviso ... días
 3.4.3 Efectos de la revisión de precios
 3.4.3.1 En caso de aceptación novación del contrato
 3.4.3.2 En caso de no aceptación (terminación del contrato) sin / con (... €) indemnización

4. Condiciones generales de prestación de los servicios

4.1. Obligaciones generales de las partes

4.1.1 Obligación de cumplimiento de condiciones pactadas Sí (no varía)
 4.1.2 Obligación de prestación del servicio (prestador) Sí (no varía)
 4.1.3 Obligación de pago de contraprestación (cliente) Sí (no varía)

4.2. Disponibilidad del servicio (SLA)

4.2.1	Pauta general	24x7x365 / ...
4.2.2	Porcentaje de disponibilidad garantizado	... %
4.2.3	Regla de los límites razonables de disponibilidad	Sí / No
4.2.4	Interrupciones y suspensiones temporales del servicio	Sí / No
4.2.4.1	Causas	
4.2.4.1.1	Técnicas (reparación, mantenimiento, mejora)	Sí / No
4.2.4.1.2	Imputables a terceros (problemas de red o servidor)	Sí / No
4.2.4.1.3	Imputables al cliente	Sí (no varía)
4.2.4.2	Plazo máximo de interrupción	... horas / ... días
4.2.5	Fuerza mayor	Prevista (no varía)
4.2.5.1	Exclusión general de responsabilidad de las partes	Sí / No
4.2.5.2	Causa de resolución del contrato si interrupción mayor de	... días

4.3. Condiciones de uso del servicio (obligaciones del cliente)

4.3.1	Respeto de instrucciones técnicas y de uso	Sí (no varía)
4.3.2	Prohibición de acceso y alteración de estructura del servidor	Sí (no varía)
4.3.3	Prohibición de usos contrarios a ley o derechos de terceros *	Sí (no varía)
4.3.4	Uso activo del servicio de correo electrónico	Sí / No
4.3.4.1	Vaciado de buzones si se mantienen inactivos	... días / No

☞ Ejemplos de usos prohibidos: publicación/transmisión contenidos discriminatorios o violentos, publicación/transmisión de contenidos que vulneren derechos de propiedad intelectual, recogida o utilización ilícita de datos personales; usos ilícitos del correo electrónico (spammig, mail bombing...)

4.4. Responsabilidades y garantías

4.4.1	Reconocimiento (cliente) de funcionamiento inicial correcto	Sí / No
4.4.2	Periodo de prueba	Sí / No
4.4.2.1	Plazo	... días
4.4.2.2	Libre desistimiento	Sí / No
4.4.2.3	Reembolso contraprestaciones abonadas	Sí / No
4.4.3	Fianza	Sí (...€) / No
4.4.4	Independencia jurídica de las partes contratantes	Sí (no varía)
4.4.6	Responsabilidades del prestador	Sí (no varía)
4.4.6.1	Exclusiones generales de responsabilidad	Sí (no varía)
4.4.6.1.1	Uso o mal uso del servicio por el cliente	Sí / No
4.4.6.1.2	Pérdida o borrado accidental de datos	Sí / No
4.4.6.1.3	Daños por interrupción del negocio	Sí / No
4.4.6.1.4	Daños por correo electrónico no operativo	Sí / No
4.4.6.1.5	Daños a terceros	Sí / No
4.4.6.1.6	Responsabilidad por contenidos alojados	Sí / No
4.4.6.1.7	Fallos del servicio imputables a proveedores de acceso	Sí / No
4.4.6.1.8	Lentitud del servicio	Sí / No
4.4.6.1.9	Contaminación de equipos y daño por virus	Sí / No
4.4.6.1.10	Intrusiones de terceros	Sí / No
4.4.6.1.11	Configuración defectuosa de equipos por el cliente	Sí / No
4.4.6.1.12	Deterioro de equipos	Sí / No
4.4.6.2	Responsabilidad si se supera plazo máx. de interrupción	Sí / No
4.4.6.3	Restauración o reposición de datos	Sí / No
4.4.6.3.1	En caso de pérdida imputable al prestador	Sí (no varía)
4.4.6.3.2	En caso de pérdida imputable al cliente	Sí (... € hora) / No
4.4.7	Responsabilidades del cliente	Sí (no varía)
4.4.7.1	Responsabilidad general por los contenidos*	Sí (no varía)
4.4.7.2	Gastos derivados de acciones legales	Sí / No
4.4.7.3	Otras responsabilidades expresamente asumidas	...
4.4.8	Condiciones aplicables a las reclamaciones	sí (no varía)
4.4.8.1	Plazo desde la aparición de la causa	sí (... días) / no
4.4.8.2	Por escrito	sí (no varía)

4.4.8.3 Otras ...

☞ Ejemplos: contenido web, información transmitida y almacenada, enlaces, reivindicaciones de terceros y las acciones legales por infracción de derechos de terceros (propiedad intelectual, honor, intimidad...) y protección de menores...

5. Propiedad intelectual

5.1 Cuestiones básicas

5.1.1	Medios y recursos para la prestación del servicio	
5.1.1.1	Reconocimiento expreso de la titularidad del prestador	Sí / No
5.1.2	Medios y recursos de terceros a disposición del cliente	
5.1.1.1	Sujeción expresa a condiciones de uso	Sí / No

6. Confidencialidad y protección de datos

6.1 Confidencialidad (información confidencial)

6.1.1	Definición de información confidencial	sí / no
6.1.1.1	Toda información aportada por las partes	sí / no
6.1.1.2	Otra	...
6.1.1.3	Definición de información no confidencial	...
6.1.2	Restricciones de uso de la información confidencial	
6.1.2.1	Limitación a la ejecución del contrato	sí / no
6.1.2.2	Prohibición de revelación a terceros	sí (no varía)
6.1.3	Condiciones de protección de la información confidencial	
6.1.3.1	Regla de la equivalencia de protección entre partes	sí / no
6.1.3.2	Destino de la información después del contrato	destrucción / devolución
6.1.3.3	Duración de la obligación de confidencialidad:	... años
6.1.3.4	Otras condiciones	...

6.2. Protección de datos de las partes (datos personales derivados del contrato)

6.2.1	Responsable del fichero o tratamiento	nombre del prestador
6.2.2	Finalidad y usos de la información	
6.2.2.1	Gestión / cumplimiento del contrato	sí (no varía)
6.2.2.1	Envíos comerciales	sí / no
6.2.2.1	Otras	sí / no
6.2.3	Cesiones previstas	sí / no
6.2.3.1	Finalidad (sólo de entre las indicadas antes)	...
6.2.3.2	Destinatarios	...
6.2.4	Información sobre derechos	
6.2.4.1	Acceso, rectificación, cancelación, oposición	sí (no varía)
6.2.4.2	Forma de ejercicio	por escrito / e-mail

6.3. Acceso a datos personales por cuenta de tercero

6.3.1	Delimitación expresa del responsable y del encargado	cliente y prestador (no varía)
6.3.2	Limitaciones de uso y tratamiento de los datos	
6.3.3	Limitación a finalidad de gestión del alojamiento web	sí (no varía)
6.3.4	Sujeción a instrucciones del responsable	sí (no varía)
6.3.5	Otras condiciones no previstas legalmente	...
6.3.6	Medidas de seguridad	
6.3.6.1	Definición del nivel de seguridad aplicable	básico / medio / alto
6.3.7	Destino de la información confidencial después del contrato	destrucción / devolución

7. Modificación de las condiciones de prestación de los servicios

7.1. Causas de modificación

7.1	Supuestos habilitantes	...
7.2	Requisitos y condiciones formales	
7.2.1	Comunicación	por escrito / por e-mail
7.2.2	Plazo de preaviso	... días
7.2.3	Otros	...

7.2. Efectos de la modificación de condiciones pactadas

7.2.1	En caso de aceptación	modificación del contrato
7.2.2	En caso de no aceptación (terminación del contrato)	sin / con (...) indemnización

7.3. Subcontratación y cesión de derechos y obligaciones

7.3.1	Prohibición de subcontratación y cesión	sí / no
7.3.2	Necesidad de autorización del prestador	sí / no
7.3.3	Responsabilidad del prestador por actos del subcontratista	sí / no

8. Vigencia, terminación y resolución del contrato

8.1. Entrada en vigor

8.1.1	Fecha o momento de entrada en vigor del contrato	... (DD-MM-AAAA / momento)
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8.2. Causas de resolución y terminación del contrato

8.2.1	Mutuo acuerdo	sí (no varía)
8.2.2	Incumplimiento de las condiciones pactadas	sí (no varía)
8.2.2.1	Salvo incumplimiento de plazos	sí / no
8.2.3	Pérdida de confianza o falta de colaboración del cliente	sí / no
8.2.4	Quiebra o suspensión de pagos de alguna de las partes	sí / no
8.2.5	Disolución de alguna de las empresas contratantes	sí (no varía)
8.2.6	Causas legalmente establecidas	sí (no varía)

8.3. Condiciones de la resolución del contrato

8.3.1	Incumplimiento por parte del prestador	
8.3.1.1	Reclamación previa por escrito (del cliente)	sí / no
8.3.1.1	Preaviso	sí (... días) / no
8.3.2	Incumplimiento por parte del cliente	
8.3.2.1	Reclamación previa por escrito (del prestador)	sí / no
8.3.2.2	Preaviso	sí (... días) / no

8.4. Efectos de la resolución del contrato

8.4.1	Entrega de productos y documentos generados	sí / no
8.4.2	Pago de trabajos realizados antes de la resolución	sí / no
8.4.3	Indemnización por incumplimiento condiciones pactadas	sí (...€ / ...%) / no
8.4.4	Otros efectos	...

9. Notificaciones

9.1	Direcciones de las partes a efectos de comunicaciones	según § 0.1
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10. Ley aplicable y resolución de conflictos**10.1. Legislación aplicable**

10.1 Legislación española sí (no varía)

10.2. Reconocimiento de fuero o jurisdicción

10.2 Sumisión a juzgados y tribunales de ... (partido judicial)

10.3. Procedimientos extrajudiciales de resolución de conflictos

10.3.1	Procedimiento extrajudicial (arbitral)	sí / no
10.3.2	Carácter	obligatorio / opcional
10.3.3	Órgano (arbitral) o procedimiento designado	...
10.3.4	Otras previsiones (p. ej. gastos derivados del arbitraje)	...

ANNEX VI – Contract Structures (3): Co-location

Estructura del contrato

0. Parte introductoria
1. Objeto del contrato (descripción del servicio)
2. Duración del contrato
3. Precio y forma de pago
4. Condiciones generales de prestación del servicio
 - 4.1. Obligaciones de las partes
 - 4.2. Conectividad / disponibilidad del servicio (SLA)
 - 4.3. Subcontratación y cesión
 - 4.4. Responsabilidades y garantías
5. Propiedad intelectual
6. Confidencialidad y protección de datos
 - 6.1. Confidencialidad
 - 6.2. Protección de datos de las partes
 - 6.3. Acceso a datos personales por cuenta de tercero
7. Modificación del contrato
8. Terminación y resolución del contrato
9. Notificaciones
10. Ley aplicable, jurisdicción y resolución de conflictos

0. Parte introductoria

0.1. Identificación de las partes contratantes

0.1.1	Prestador	
0.1.1.1	Denominación social:	...
0.1.1.2	CIF:	...
0.1.1.3	Domicilio social:	... (dirección) / ... (localidad)
0.1.1.4	Representante legal:	... (nombre) / ... (apellidos)
0.1.1.5	DNI:	...
0.1.2	Cliente	
0.1.2.1	Denominación social:	...
0.1.2.2	CIF:	...
0.1.2.3	Domicilio social:	... (dirección) / ... (localidad)
0.1.2.4	Representante legal:	... (nombre) / ... (apellidos)
0.1.2.5	DNI:	...

0.2. Reconocimientos

0.2.1. Reconocimiento mutuo de capacidad y representación	Siempre incluido (no varía)
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0.3. Modalidad de contratación

0.3.1.	Por escrito	
0.3.2	Electrónica (online)	
0.3.2.1	Condiciones de celebración	
0.3.2.1.1	Momento de perfección del contrato:	Aceptación online /Confirmación
0.3.2.1.2	Lugar de celebración del contrato:	domicilio del prestador / cliente
0.3.2.1.3	Confirmación obligatoria por parte del prestador:	Sí (por escrito / por e-mail) / No

0.4. Definiciones

1. Objeto del contrato (descripción y contenidos del servicio)

1.0. Descripción general del objeto del contrato

1.0.1	Palabras clave para búsquedas DSC	Co-location, Housing, Servidores, Data Center, Rack, Dedicated Hosting
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1.1. Descripción de los contenidos del servicio (I): arrendamiento de servidor dedicado, *dedicated server*

1.1.1	Descripción de IDC	Sí (no varía)
1.1.1.1	Localización	...
1.1.1.2	Acceso instalaciones	24x7x365 / ...
1.1.1.3	Vigilancia instalaciones	24x7x365 (no varía)
1.1.2	Descripción del equipo	
1.1.2.1	CPU	...
1.1.2.2	Fabricante	...
1.1.2.3	Modelo	...
1.1.2.4	RAM	...
1.1.2.5	Descripción discos	Sí (no varía)
1.1.2.5.1	Tamaño	... GB / TB
1.1.2.5.1	Tamaño	SATA / SAS / ...
1.1.2.5.1	RAID	Sí / No
1.1.2.6	Sistema operativo	Windows / Linux / ...
1.1.3	Software y funcionalidades	
1.1.3.1	Software preinstalado:	Sí / No
1.1.3.1.1	Detalles	...
1.1.3.2	Funcionalidades de gestión	Sí / No
1.1.3.2.1	Panel de control	Sí (no suele variar)
1.1.3.2.1.1	Detalles	...
1.1.3.2.2	Avisos automáticos SMS o e-mail	Sí / No
1.1.3.2.3	Otras funcionalidades de gestión	...
1.1.4	Conectividad	
1.1.4.1	Tráfico por tasa de transferencia	Sí / No
1.1.4.1.1	Transferencia máxima	... GB mensual
1.1.4.1.2	Flexible (Escalable)	Sí / No
1.1.4.2	Tráfico por ancho de banda / caudal garantizado	Sí / No
1.1.4.2.1	Transferencia máxima	... Mbps
1.1.4.2.2	Flexible (Escalable)	Sí / No
1.1.4.3	Número de IPs fijas	...
1.1.4.3.1	Rango de IPs	Sí / No
1.1.5	Seguridad	
1.1.5.1	Firewall	Sí / No
1.1.5.1.1	Tipo	Perimetral / Independiente
1.1.5.1.2	Detalles	...
1.1.5.2	Monitorización	Sí / No
1.1.5.2.1	Detalles	...
1.1.5.3	Copias de seguridad	Sí / No
1.1.5.3.1	Detalles	...
1.1.5.4	Servicio de continuidad	Sí / No
1.1.5.4.1	Detalles	...
1.1.6	Administración y soporte	Sí / No
1.1.6.1	Instalación y puesta en marcha	Sí / No
1.1.6.2	Soporte técnico	Sí / No

1.1.6.2.1	Cobertura	...
1.1.6.2.2	Disponibilidad	24x7 / ...
1.1.6.3	Manos remotas	Sí / No
1.1.6.3.1	Detalles (número de horas por mes, alcance...)	...
1.1.6.4	Administración delegada del servidor	Sí / No
1.1.6.4.1	Detalles	...
1.1.7	Otros servicios incluidos	...

1.2. Descripción de los contenidos del servicio (II): alojamiento de servidor en rack

1.2.1	Descripción de IDC	Sí (no varía)
1.2.1.1	Localización	...
1.2.1.2	Acceso instalaciones	24x7x365 / ...
1.2.1.3	Vigilancia instalaciones	24x7x365 (no varía)
1.2.2	Número de servidores (unidades de altura en rack)	... (1, 2, 3, 4, 8)
1.2.3	Alimentación y suministro eléctrico	
1.2.3.1	Conexión eléctrica incluida	Sí (no varía)
1.2.3.2	Fuentes de alimentación múltiples	Sí / No
1.2.3.2.1	Número de conexiones adicionales	...
1.2.3.3	Limitaciones al consumo mensual	Sí (...) / No
1.2.4	Conectividad	
1.2.4.1	Tráfico por tasa de transferencia	Sí / No
1.2.4.1.1	Transferencia máxima	... GB mensual
1.2.4.1.2	Flexible (Escalable)	Sí / No
1.2.4.2	Tráfico por ancho de banda / caudal garantizado	Sí / No
1.2.4.2.1	Transferencia máxima	... Mbps
1.2.4.2.2	Flexible (Escalable)	Sí / No
1.2.4.3	Número de IPs fijas	...
1.2.4.3.1	Rango de IPs	Sí / No
1.2.5	Seguridad	
1.2.5.1	Firewall	Sí / No
1.2.5.1.1	Tipo	Perimetral / Independiente
1.2.5.1.2	Detalles	...
1.2.5.2	Monitorización	Sí / No
1.2.5.2.1	Detalles (nivel de monitorización)	...
1.2.5.3	Copias de seguridad	Sí / No
1.2.5.3.1	Detalles	...
1.2.5.4	Servicio de continuidad	Sí / No
1.2.5.4.1	Detalles	...
1.2.6	Administración y soporte	Sí / No
1.2.6.1	Instalación y puesta en marcha	Sí / No
1.2.6.2	Soporte técnico	Sí / No
1.2.6.2.1	Cobertura	...
1.2.6.2.2	Disponibilidad	24x7 / ...
1.2.6.3	Manos remotas	Sí / No
1.2.6.3.1	Detalles (número de horas por mes, alcance...)	...
1.2.6.4	Administración delegada del servidor	Sí / No
1.2.6.4.1	Detalles	...
1.2.7	Otros servicios incluidos	

1.3. Descripción de los contenidos del servicio (III): arrendamiento de rack o porción de rack

1.3.1	Descripción de IDC	Sí (no varía)
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1.3.1.1	Localización	...
1.3.1.2	Acceso instalaciones	24x7x365 / ...
1.3.1.3	Vigilancia instalaciones	24x7x365 (no varía)
1.3.2	Descripción del rack	...
1.3.2.1	Capacidad total (núm. servidores)	42 / ...
1.3.2.2	Capacidad arrendada	... (50%, ½ rack) / ...
1.3.2.3	Características físicas (detalles)	... (dimensiones, puerta rejilla, paneles)
1.3.2.4	Reserva de espacio adyacente	Sí / No
1.3.2.4.1	Detalles	...
1.3.3	Alimentación y suministro eléctrico	...
1.3.3.1	Conexión eléctrica incluida	Sí (no varía)
1.3.3.2	Número de fases	...
1.3.3.2.1	½ Rack	... (e.g. 1 fase 16 amp.)
1.3.3.2.1	Rack completo	... (e.g. 2 fases 16 amp.)
1.3.3.2	Número de tomas eléctricas (regletas)	...
1.3.3.2.1	½ Rack	... (e.g. 1 regleta 9 tomas)
1.3.3.2.1	Rack completo	... (e.g. 2 regletas 9 tomas)
1.3.3.3	Limitaciones al consumo mensual	Sí / No
1.3.3.3.1	½ Rack	... (e.g. 4 amp.)
1.3.3.3.1	Rack completo	... (e.g. 8 amp.)
1.3.4	Conectividad	...
1.3.4.1	Tráfico por tasa de transferencia	Sí / No
1.3.4.1.1	Transferencia máxima	... GB mensual
1.3.4.1.2	Flexible (Escalable)	Sí / No
1.3.4.2	Tráfico por ancho de banda / caudal garantizado	Sí / No
1.3.4.2.1	Transferencia máxima	... Mbps
1.3.4.2.2	Flexible (Escalable)	Sí / No
1.3.4.3	Número de IPs fijas	...
1.3.4.3.1	Rango de IPs	Sí / No
1.3.5	Seguridad	...
1.3.5.1	Firewall	Sí / No
1.3.5.1.1	Tipo	Perimetral / Independiente
1.3.5.1.2	Detalles	...
1.3.5.2	Monitorización	Sí / No
1.3.5.2.1	Detalles (nivel de monitorización)	...
1.3.5.3	Copias de seguridad	Sí / No
1.3.5.3.1	Detalles	...
1.3.5.4	Servicio de continuidad	Sí / No
1.3.5.4.1	Detalles	...
1.3.6	Administración y soporte	Sí / No
1.3.6.1	Instalación y puesta en marcha	Sí / No
1.3.6.2	Soporte técnico	Sí / No
1.3.6.2.1	Cobertura	...
1.3.6.2.2	Disponibilidad	24x7 / ...
1.3.6.3	Manos remotas	Sí / No
1.3.6.3.1	Detalles (número de horas por mes, alcance...)	...
1.3.6.4	Administración delegada del servidor	Sí / No
1.3.6.4.1	Detalles	...

1.3.7 Otros servicios incluidos

1.4. Descripción de los contenidos del servicio (IV): arrendamiento de espacio en IDC

1.4.1	Descripción de IDC	Sí (no varía)
-------	--------------------	---------------

1.4.1.1	Localización	...
1.4.1.2	Acceso instalaciones	24x7x365 / ...
1.4.1.2.1	Puerta independiente de acceso	Sí / No
1.4.1.2.2	Modalidad de acceso	Llave / Tarjeta
1.4.1.3	Vigilancia instalaciones	24x7x365 (no varía)
1.4.2	Descripción del espacio arrendado	Sí (no varía)
1.4.2.1	Dimensiones	... m ²
1.4.2.2	Espacio mínimo alquilable	... m ² (p.ej. 5 m ²)
1.4.3	Alimentación y suministro eléctrico	
1.4.3.1	Conexión eléctrica incluida	Sí (no varía)
1.4.3.2	Número de líneas independientes	1 / 1+1 (redundante)
1.4.3.3	Limitaciones al consumo mensual	Sí / No
1.4.3.3.1	Detalles	...
1.4.3.4	Otras características (e.g. niveles de protección)	...
1.4.4	Conectividad	
1.4.4.1	Tráfico por tasa de transferencia	Sí / No
1.4.4.1.1	Transferencia máxima	... GB mensual
1.4.4.1.2	Flexible (Escalable)	Sí / No
1.4.4.2	Tráfico por ancho de banda / caudal garantizado	Sí / No
1.4.4.2.1	Transferencia máxima	... Mbps
1.4.4.2.2	Flexible (Escalable)	Sí / No
1.4.4.3	Número de IPs fijas	...
1.4.4.3.1	Rango de IPs	Sí / No
1.4.4.4	Puertos de red / puertos RJ-45	
1.4.4.4.1	½ Rack	... (p.ej. 6)
1.4.4.4.2	Rack completo	... (p.ej. 12)
1.4.4	Otros servicios incluidos	... (UPS, climatización especial...)

2. Duración del contrato

2.1. Periodo de duración del contrato

2.1.1	Duración del servicio	Anual / ...
-------	-----------------------	-------------

2.2. Entrada en vigor

2.2.1	Fecha pactada de entrada en vigor	DDMMAAA
2.2.2	Otras condiciones de entrada en vigor	Sí / No

2.3. Prórroga del contrato

2.3.1	Tipo de prórroga	Tácita expresa
2.3.2	Condiciones de la prórroga (expresa)	
2.3.2.1	Preaviso	... días
2.3.2.2	Forma de la comunicación	por escrito / por e-mail / ...

3. Precio y forma de pago

3.1. Precio

3.1.1	Precio total del servicio contratado sin impuestos:	... €
3.1.1.1	Precio total del servicio contratado (impuestos incluidos):	... €
3.1.2.1	Precio por unidad de servidor dedicado	... € mensual / anual

3.1.2.2	Precio por unidades de altura en rack	
3.1.2.2.1	1 unidad	... € mensual / anual
3.1.2.2.2	2 unidad	... € mensual / anual
3.1.2.2.3	3 unidad	... € mensual / anual
3.1.2.2.4	4 unidad	... € mensual / anual
3.1.2.2.5	5 ó más unidades	... € mensual / anual
3.1.2.2.6	Conexión adicional (en caso de alimentación múltiple)	... € mensual / anual
3.1.2.3	Arrendamiento de rack o porciones de rack	
3.1.2.3.1	½ rack	... € mensual / anual
3.1.2.3.2	Rack completo	... € mensual / anual
3.1.2.3.3	Reserva de espacio adyacente	
3.1.2.3.3.1	½ rack	... € mensual / anual
3.1.2.3.3.1	Rack completo	... € mensual / anual
3.1.2.4	Arrendamiento de espacio	... € mensual / anual
3.1.3	Instalación y puesta en marcha:	Incluido / no incluido / no aplicable
3.1.3.1	En caso de no estar incluido:	... € por servidor
3.1.4	Cuota de alta:	Sí / Alta gratuita
3.1.4.1	Cuántía de la cuota de alta:	... €
3.1.5	Ampliación de conectividad (en caso de escalabilidad)	
3.1.5.1	Ancho de banda flexible	... € por Mbps
3.1.5.2	Cuota de transferencia	... € por GB

3.2. Forma de pago

3.2.1	Tipo de pago	Única / Fraccionado
3.2.2	Periodicidad (si pago fraccionado)	Mensual / Trimestral
3.2.3	Condiciones especiales de pago	...
3.2.4	Modalidades de pago	
3.2.4.1	Transferencia bancaria:	Sí / No
3.2.4.2	Domiciliación en cuenta del cliente:	Sí / No
3.2.4.2.1	Penalización por devolución de recibo:	... € / % del precio / No
3.2.4.3	Otras:	...

3.3. Facturación y aspectos tributarios

3.3.1	Facturación:	Manual / Telemática
3.3.2	Impuestos (IVA) incluidos en los precios	Sí / No

3.4. Condiciones de revisión de los precios acordados

3.4.1	Causas de revisión de precios	...
3.4.1.1	Adaptación anual IPC	Sí / No
3.4.1.2	Aumento costes de gestión o seguridad	Sí / No
3.4.2	Condiciones de revisión de precios	
3.4.2.1	Forma de comunicación	por escrito / ...
3.4.2.2	Plazo de preaviso	... días

4. Condiciones generales de prestación de los servicios

4.1. Obligaciones de las partes

4.1.1	Obligación de cumplimiento de condiciones pactadas	Sí (no varía)
4.1.2	Obligación específicas del prestador	
4.1.2.1	Obligación de prestación del servicio	Sí (no varía)
4.1.2.2	Puesta a disposición del local / del hardware	Sí (no varía)
4.1.2.2.1	Momento entrega llaves / tarjetas / hardware	Firma contrato / DDMMAA / ...
4.1.2.3	Puesta a disposición de otros recursos necesarios	Sí (no varía)
4.1.2.3	Facilitar información necesaria para el plan de terminación	Sí (no varía)

4.1.3	Obligación específicas del cliente	
4.1.3.1.	Obligación del pago de la contraprestación	Sí (no varía)
4.1.3.2.	Cumplimiento normativa interna IDC	Sí (no varía)
4.1.3.3.	Facilitar medios y recursos necesarios	Sí (no varía)
4.1.3.4.	Designación persona responsable / de contacto	Sí (no varía)

4.2. Conectividad y disponibilidad del servicio (SLA)

4.2.1	Mantenimiento e intervenciones	
4.2.1.1	Por parte del prestador	
4.2.1.1.1	Notificación previa	Sí (... días) / No
4.2.1.1.2	Duración máxima	... horas
4.2.1.1.2	Otros detalles	...
4.2.1.2	Por parte del cliente	
4.2.1.1.1	Autorización por escrito necesaria	Sí / No
4.2.1.1.2	Otros detalles	...
4.2.2	Porcentaje de disponibilidad garantizado	... %
4.2.3	Reglas de cómputo	
4.2.3.1	Conectividad: cálculo del tiempo de caída	...
4.2.3.2	Medición de exceso de caudal de tráfico (escalabilidad)	...
4.2.4	Penalizaciones	
4.2.4.1	Tiempo de caída extento de penalización	...
4.2.4.2	Tabla de penalizaciones (por porcentajes de caída)	...
4.2.4.3	Condiciones aplicables a las penalizaciones (facturación...)	...

4.3. Subcontratación y cesión de derechos y obligaciones

4.3.1	Prohibición de subcontratación o cesión	Sí / No
4.3.2	Necesidad de autorización del cliente	Sí / No
4.3.3	Necesidad de notificación al cliente	Sí / No

4.4. Responsabilidades y garantías

4.4.1	Independencia jurídica de las partes contratantes	Sí (no varía)
4.4.2	Exclusiones generales de responsabilidad	
4.4.2.1	Por infracción de ley	Sí (no varía)
4.4.2.2	Por fuerza mayor	Sí (no varía)
4.4.2.2.1	Plazo máximo de notificación desde la aparición de la causa	... horas / días
4.4.2.2.2	Duración máxima sin terminación contrato (salvo pacto)	... días / meses
4.4.2.2.3	Exclusión de indemnizaciones y cargos	Sí (no varía)
4.4.2.2.4	Otros detalles	...
4.4.3	Responsabilidad del prestador	
4.4.3.1	Exclusiones	
4.4.3.1.1	Por incumplimiento contractual del cliente	Sí (no varía)
4.4.3.1.2	Por la infraestructura del operador de telecomunicaciones	Sí (no varía)
4.4.3.1.3	Fallos, averías, problemas de suministro ajenos al prestador	Sí (no varía)
4.4.3.1.4	Por accesos no autorizados, ataques e intrusiones	Sí (no varía)
4.4.3.1.5	Interrupciones operativas y de mantenimiento programadas	Sí (no varía)
4.4.3.2	Responsable por daños en información o equipos	Sí (no varía)
4.4.3.2.1	Condiciones aplicables (negligencia o dolo)	...
4.4.4.	Responsabilidades del cliente	
4.4.4.1	Responsabilidad por contenidos alojados / transmitidos	sí (no varía)

4.4.4.2	Responsabilidad por vulneración normativa seguridad	sí (no varía)
4.4.4.3	Indemnización por gastos derivados de acciones legales	sí / no
4.4.4.4	Suspensión por disfunciones causadas por el cliente	sí (no varía)
4.4.4.4.1	Detalles:	...
4.4.4.5	Suspensiones del servicio por motivos de orden público	sí (no varía)
4.4.5.	Garantías*	
4.4.5.1	Hardware	sí / no
4.4.5.1.1	Detalles	...
4.4.5.2.	Periodo de prueba / libre desistimiento	sí (... días) / no
4.4.5.2.1	Detalles	...

☞ *Sólo para servidores dedicados*

4.4.6	Condiciones aplicables a las reclamaciones	...
-------	--------------------------------------------	-----

5. Propiedad intelectual

5.1 Cuestiones básicas

5.1.1	Medios y recursos del cliente	
5.1.1.1	Obligación de autorizar uso del software necesario	Sí / No
5.1.2	Medios y recursos de terceros a disposición del cliente*	
5.1.1.1	Sujeción expresa a condiciones de uso	Sí / No

☞ *Sólo para servidores dedicados*

6. Confidencialidad y protección de datos

6.1 Confidencialidad (información confidencial)

6.1.1	Definición de información confidencial	sí / no
6.1.1.1	Toda información aportada por las partes	sí / no
6.1.1.2	Otra	...
6.1.1.3	Definición de información no confidencial	...
6.1.2	Restricciones de uso de la información confidencial	
6.1.2.1	Limitación a la ejecución del contrato	sí / no
6.1.2.2	Prohibición de revelación a terceros	sí (no varía)
6.1.3	Condiciones de protección de la información confidencial	
6.1.3.1	Regla de la equivalencia de protección entre partes	sí / no
6.1.3.2	Destino de la información después del contrato	destrucción / devolución
6.1.3.3	Duración de la obligación de confidencialidad:	... años
6.1.3.4	Otras condiciones	...

6.2. Protección de datos de las partes (datos personales derivados del contrato)

6.2.1	Responsable del fichero o tratamiento	nombre del prestador
6.2.2	Finalidad y usos de la información	
6.2.2.1	Gestión / cumplimiento del contrato	sí (no varía)
6.2.2.1	Envíos comerciales	sí / no
6.2.2.1	Otras	sí / no
6.2.3	Cesiones previstas	sí / no
6.2.3.1	Finalidad (sólo de entre las indicadas antes)	...
6.2.3.2	Destinatarios	...
6.2.4	Información sobre derechos	
6.2.4.1	Acceso, rectificación, cancelación, oposición	sí (no varía)
6.2.4.2	Forma de ejercicio	por escrito / e-mail

6.3. Acceso a datos personales por cuenta de tercero

6.3.1	Delimitación expresa del responsable y del encargado	cliente y prestador (no varía)
6.3.2	Limitaciones de uso y tratamiento de los datos	
6.3.3	Limitación a finalidad de gestión del alojamiento web	sí (no varía)
6.3.4	Sujeción a instrucciones del responsable	sí (no varía)
6.3.5	Otras condiciones no previstas legalmente	...
6.3.6	Medidas de seguridad	
6.3.6.1	Definición del nivel de seguridad aplicable	básico / medio / alto
6.3.7	Destino de la información confidencial después del contrato	destrucción / devolución

7. Modificación de las condiciones de prestación de los servicios

7.1. Causas de modificación

7.1	Supuestos habilitantes	...
7.1.1	Causas técnicas y de gestión	Sí / No
7.1.2	Mejoras y actualización tecnológica	Sí / No
7.2	Requisitos y condiciones formales	
7.2.1	Comunicación	por escrito / por e-mail
7.2.2	Plazo de preaviso	... días
7.2.3	Otros	...

7.2. Efectos de la modificación de condiciones pactadas

7.2.1	En caso de aceptación	modificación del contrato
7.2.2	En caso de no aceptación (terminación del contrato)	sin / con (... €) indemnización

8. Terminación y resolución del contrato

8.1. Causas de resolución y terminación del contrato

8.1.1	Expiración del plazo acordado	Sí (no varía)
8.1.2	Mutuo acuerdo	Sí (no varía)
8.1.3	Incumplimiento de las condiciones pactadas	Sí (no varía)
8.1.4	Quiebra o suspensión de pagos de alguna de las partes	Sí / no
8.1.5	Causas legalmente establecidas	Sí (no varía)

8.2. Condiciones de la resolución del contrato

8.2.1	Incumplimiento por parte del prestador	
8.2.1.1	Reclamación previa por escrito (del cliente)	Sí / no
8.2.1.1	Preaviso	Sí (... días) / no
8.2.2	Incumplimiento por parte del cliente	
8.2.2.1	Reclamación previa por escrito (del prestador)	Sí / no
8.2.2.2	Preaviso	Sí (... días) / no

8.3. Plan de terminación

8.3.1	Obligación de negociar plan de terminación	Sí / no
8.3.1.1	Detalles	...

9. Notificaciones

9.1	Direcciones de las partes a efectos de comunicaciones	según § 0.1
-----	-------------------------------------------------------	-------------

10. Ley aplicable y resolución de conflictos**10.1. Legislación aplicable**

10.1 Legislación española sí (no varía)

10.2. Reconocimiento de fuero o jurisdicción

10.2 Sumisión a juzgados y tribunales de ... (partido judicial)

10.3. Procedimientos extrajudiciales de resolución de conflictos

10.3.1	Procedimiento extrajudicial (arbitral)	sí / no
10.3.2	Carácter	obligatorio / opcional
10.3.3	Órgano (arbitral) o procedimiento designado	...
10.3.4	Otras previsiones (p. ej. gastos derivados del arbitraje)	...

ANNEX VI – Contract Structures (4): Networks M & M

Estructura del contrato

0. Parte introductoria
1. Objeto del contrato (descripción del servicio)
2. Duración del contrato
3. Precio y forma de pago
4. Condiciones de prestación del servicio
 - 4.1. Obligaciones generales de las partes
 - 4.2. Atención al cliente e intervenciones
 - 4.2.1. Modalidades de asistencia y actuación
 - 4.2.2. Tiempos de respuesta
 - 4.3. Informes y reportes
 - 4.4. Cesión y subcontratación
 - 4.5. Responsabilidades
5. Propiedad intelectual
6. Confidencialidad y protección de datos
 - 6.1. Confidencialidad
 - 6.2. Protección de datos de las partes
 - 6.3. Acceso a datos personales por cuenta de tercero
7. Modificación del contrato
8. Terminación y resolución del contrato

0. Parte introductoria

0.1. Identificación de las partes contratantes

- | | | |
|---------|----------------------|-----------------------------------|
| 0.1.1 | Prestador | |
| 0.1.1.1 | Denominación social: | ... |
| 0.1.1.2 | CIF: | ... |
| 0.1.1.3 | Domicilio social: | ... (dirección) / ... (localidad) |
| 0.1.1.4 | Representante legal: | ... (nombre) / ... (apellidos) |
| 0.1.1.5 | DNI: | ... |
| 0.1.2 | Cliente | |
| 0.1.2.1 | Denominación social: | ... |
| 0.1.2.2 | CIF: | ... |
| 0.1.2.3 | Domicilio social: | ... (dirección) / ... (localidad) |
| 0.1.2.4 | Representante legal: | ... (nombre) / ... (apellidos) |
| 0.1.2.5 | DNI: | ... |

0.2. Reconocimientos

- | | |
|-----------------------------------------------------------|-----------------------------|
| 0.2.1. Reconocimiento mutuo de capacidad y representación | Siempre incluido (no varía) |
|-----------------------------------------------------------|-----------------------------|

0.3. Modalidad de contratación

- | | | |
|-----------|-------------------------------------|---------------------------------|
| 0.3.1. | Por escrito | |
| 0.3.2 | Electrónica (online) | |
| 0.3.2.1 | Condiciones de celebración | |
| 0.3.2.1.1 | Momento de perfección del contrato: | Aceptación online /Confirmación |

0.3.2.1.2	Lugar de celebración del contrato:	domicilio del prestador / cliente
0.3.2.1.3	Confirmación obligatoria por parte del prestador:	Sí (por escrito / por e-mail) / No

0.4. Definiciones

1. Objeto del contrato (descripción y contenidos del servicio)

1.0. Descripción general del objeto del contrato

1.0.1	Palabras clave para búsquedas DSC	Mantenimiento, Gestión, Sistemas, Redes, Asistencia, Seguridad,
-------	-----------------------------------	-----------------------------------------------------------------

1.1. Descripción de los contenidos del servicio

1.1.1	Redes y Hardware	
1.1.1.1	Gestión remota de redes	Sí / No
1.1.1.2	Configuración y mantenimiento de redes y hardware	Sí / No
1.1.1.3	Reparación de equipos y periféricos	Sí / No
1.1.1.4	Equipos de sustitución	Sí / No
1.1.2	Instalación y mantenimiento de software:	Sí / No
1.1.2.1	Aplicaciones ofimáticas y software común	Sí / No
1.1.2.2	Aplicaciones propias del cliente	Sí / No
1.1.3	Seguridad de sistemas:	Sí / No
1.1.3.1	Protección anti-virus, anti-spam, IDS...	Sí / No
1.1.3.2	Gestión de las copias de respaldo	Sí / No
1.1.3.3	Documento o plan de seguridad (LOPD)	Sí / No
1.1.3.3.1	Elaboración	Sí / No
1.1.3.3.2	Gestión	Sí / No
1.1.4	Comunicaciones:	Sí / No
1.1.4.1	Administración correo electrónico	Sí / No
1.1.4.2	Administración páginas web	Sí / No
1.1.4.3	VoIP	Sí / No

2. Duración del contrato

2.1. Periodo de duración del contrato

2.1.1	Modalidad del servicio	Anual / por horas
2.1.2	Bonos o packs por horas	
2.1.2.1	Número de horas contratadas	...
2.1.2.1	Caducidad	Sí (anual / ...) / No

2.2. Entrada en vigor

2.2.1	Fecha pactada de entrada en vigor	DDMMAAA
2.2.2	Otras condiciones de entrada en vigor	...

2.3. Prórroga del contrato

2.3.1	Tipo de prórroga	Tácita expresa
2.3.2	Condiciones de la prórroga (expresa)	
2.3.2.1	Preaviso	... días
2.3.2.2	Forma de la comunicación	por escrito / por e-mail / ...

3. Precio y forma de pago

3.1. Precio

3.1.1	Precio total del servicio contratado sin impuestos:	... € anual / ... € por ... horas
3.1.1.1	Precio total del servicio contratado (impuestos incluidos):	... € anual / ... € por ... horas
3.1.2	Cuota de alta (contratos anuales prorrogables)	Sí: ... € / No

3.2. Forma de pago

3.2.1	Tipo de pago	Única / Fraccionado
3.2.2	Periodicidad (si pago fraccionado)	Mensual / Trimestral
3.2.3	Condiciones especiales de pago	...
3.2.4	Modalidades de pago	
3.2.4.1	Transferencia bancaria:	Sí / No
3.2.4.2	Domiciliación en cuenta del cliente:	Sí / No
3.2.4.2.1	Penalización por devolución de recibo:	... € / % del precio / No
3.2.4.3	Otras:	...

3.3. Facturación y aspectos tributarios

3.3.1	Facturación:	Manual / Telemática
3.3.2	Impuestos (IVA) incluidos en los precios	Sí / No

3.4. Condiciones de revisión de los precios acordados*

3.4.1	Causas de revisión de precios	...
3.4.1.1	Adaptación anual IPC	Sí / No
3.4.1.2	Otras	...

☞ Para este tipo de contratos no suele haber revisión de precios durante el periodo de vigencia anual. Pero cuando se prorroga el contrato (sobre todo, si es tácitamente), por ejemplo, puede haber un aumento de precio debido al mayor coste de gestión o de seguridad, o de los desplazamientos, entre otras muchas causas. En este caso sería posible que aparecieran condiciones específicas: comunicar el aumento por escrito o e-mail, señalar un plazo de preaviso... En caso de que se acepte la revisión de precios, el contrato continúa igual en todos sus términos. En caso de no aceptación no tendría lugar la prórroga e incluso (si contrato plurianual) podría haber lugar a indemnizaciones.

4. Condiciones generales de prestación de los servicios

4.1. Obligaciones de las partes

4.1.1	Obligación de cumplimiento de condiciones pactadas	Sí (no varía)
4.1.2	Obligaciones específicas del prestador	
4.1.2.1	Obligación de prestación del servicio	Sí (no varía)
4.1.2.2	Cumplir normativa interna de trabajo del cliente	Sí (no varía)
4.1.2.3	Emplear personal debidamente cualificado	Sí (no varía)
4.1.2.4	Devolución en perfecto estado equipos y materiales	Sí (no varía)

☞ Como anexo al contrato puede figurar un plan de actuación general en materia de gestión y mantenimiento de redes (plazos, periodicidad de las visitas...)

4.1.3	Obligación específicas del cliente	
4.1.3.1	Obligación de pago de la contraprestación	Sí (no varía)
4.1.3.2	Información sobre la normativa interna de trabajo	Sí (no varía)
4.1.3.3	Facilitar acceso a instalaciones de la empresa	Sí (no varía)
4.1.3.4	Facilitar medios y recursos necesarios	Sí (no varía)
4.1.3.5	Prohibición de no contratar servicios análogos	Sí / No

4.2. Atención al cliente e intervenciones

4.2.1	Modalidades de asistencia	
4.2.1.1	Soporte y asistencia telefónica*	Sí / No
4.2.1.1.1	Horario de atención telefónica	24 h. 7d. / ... (otros horarios)
4.2.1.2	Soporte y asistencia telemática**	Sí / No
4.2.1.3	Asistencia en sede del cliente*** (in-situ)	Sí / No
4.2.1.3.1	Días y horario	...
4.2.1.3.2	Días festivos incluidos	Sí / No
4.2.1.3.3	Desplazamientos computables (bonos por horas)	Sí (i/v: ... h.) / No
4.2.1.4.	Asistencia técnica y reparaciones en sede del prestador	Sí / No

☞ Los horarios de atención telefónica suelen ser de 8.30 ó 9.00 h. a 18.00 o 19.00 de lunes a viernes, pero puede haber otras muchas combinaciones (desde limitarse a ocho horas diarias cinco días a la semana hasta incluir sábados u horarios más amplios...).

☞☞ El soporte telemático puede ser desde un panel de gestión y comunicación de incidencias online hasta sistemas de conexión remota que permitan la resolución de incidencias desde la sede del prestador.

☞☞☞ En el caso de contratar bonos de horas, suele ser importante saber si de las horas contratadas se descuentan los desplazamientos, por ejemplo: un desplazamiento i/v puede computarse como una hora a descontar del bono. Las reglas de cómputo pueden variar de un prestador a otro

4.2.2	Tiempos de respuesta	
4.2.2.1	Asistencia telefónica	
4.2.2.1.1	Incidencia grave	... minutos / horas
4.2.2.1.2	Incidencia moderada	... minutos / horas
4.2.2.1.3	Incidencia leve	... minutos / horas
4.2.2.1.4	Asistencia técnica	... horas
4.2.2.2	Asistencia telemática	... minutos / horas
4.2.2.2.1	Incidencia grave	... minutos / horas
4.2.2.2.2	Incidencia moderada	... minutos / horas
4.2.2.2.3	Incidencia leve	... minutos / horas
4.2.2.2.4	Asistencia técnica	... horas
4.2.2.3.	En sede del cliente (in situ)	... minutos / horas
4.2.2.3.1	Incidencia grave	... minutos / horas
4.2.2.3.2	Incidencia moderada	... minutos / horas
4.2.2.3.3	Incidencia leve	... minutos / horas
4.2.2.3.4	Asistencia técnica	... horas
4.2.2.4	Reglas para el cómputo del tiempo de respuesta*	...

☞ Las reglas para el cómputo del tiempo de respuesta pueden variar según la metodología aplicada por el prestador. El campo se deja en blanco: tratar de reflejar todas estas reglas añadiría demasiada complejidad a la estructura del contrato.

4.3. Informes y reportes

4.3.1	Presentación de informes (por el prestador)	Sí / No
4.3.2	Alcance y periodicidad de los informes	... (ámbito) / ... (frecuencia)

4.4. Subcontratación y cesión de derechos y obligaciones

4.4.1	Prohibición de subcontratación o cesión	Sí / No
4.4.2	Necesidad de autorización del cliente	Sí / No
4.4.3	Necesidad de notificación al cliente	Sí / No

4.5. Responsabilidades

4.5.1	Independencia jurídica de las partes contratantes	Sí (no varía)
4.5.2	Exclusiones generales de responsabilidad	
4.5.2.1	Por infracción de ley	Sí (no varía)

4.5.2.2	Por fuerza mayor	Sí (no varía)
4.5.2.3	Otras	...
4.5.3	Responsabilidad del prestador*	
4.5.3.1	Exclusiones	
4.5.3.1.1	Por incumplimiento contractual del cliente	Sí (no varía)
4.5.3.1.2	Por intervenciones independientes del cliente	Sí (no varía)
4.5.3.1.3	Por accesos no autorizados, ataques e intrusiones	Sí (no varía)
4.5.3.1.4	Deficiencias e interrupciones operativas	Sí (no varía)
4.5.3.2	Responsable por daños en información o equipos	Sí (no varía)
4.5.3.2.1	Condiciones aplicables (negligencia o dolo)	...

☞ Las condiciones en las que el prestador asume responsabilidad por daños causados en el sistema y los equipos del cliente puede variar, pero siempre se excluyen los que deriven del uso normal de los equipos o los que se produzcan por seguir instrucciones del cliente. En cuanto a las deficiencias e interrupciones del servicio, no causan responsabilidad aquellas que no sean imputables al prestador.

4.5.4.	Responsabilidades del cliente	
4.5.4.1	Por alteración de las condiciones de gestión del sistema	sí (no varía)
4.5.4.2	Indemnización por gastos derivados de acciones legales	sí / no
4.5.5	Condiciones aplicables a las reclamaciones	...

5. Propiedad intelectual

☞ Sin cláusulas de propiedad intelectual

6. Confidencialidad y protección de datos

6.1 Confidencialidad (información confidencial)

6.1.1	Definición de información confidencial	sí / no
6.1.1.1	Toda información aportada por las partes	sí / no
6.1.1.2	Otra	...
6.1.1.3	Definición de información no confidencial	...
6.1.2	Restricciones de uso de la información confidencial	
6.1.2.1	Limitación a la ejecución del contrato	sí / no
6.1.2.2	Prohibición de revelación a terceros	sí (no varía)
6.1.3	Condiciones de protección de la información confidencial	
6.1.3.1	Regla de la equivalencia de protección entre partes	sí / no
6.1.3.2	Destino de la información después del contrato	destrucción / devolución
6.1.3.3	Duración de la obligación de confidencialidad:	... años
6.1.3.4	Otras condiciones	...

6.2. Protección de datos de las partes (datos personales derivados del contrato)

6.2.1	Responsable del fichero o tratamiento	nombre del prestador
6.2.2	Finalidad y usos de la información	
6.2.2.1	Gestión / cumplimiento del contrato	sí (no varía)
6.2.2.1	Envíos comerciales	sí / no
6.2.2.1	Otras	sí / no
6.2.3	Cesiones previstas	sí / no
6.2.3.1	Finalidad (sólo de entre las indicadas antes)	...
6.2.3.2	Destinatarios	...
6.2.4	Información sobre derechos	
6.2.4.1	Acceso, rectificación, cancelación, oposición	sí (no varía)
6.2.4.2	Forma de ejercicio	por escrito / e-mail

6.3. Acceso a datos personales por cuenta de tercero

6.3.1	Delimitación expresa del responsable y del encargado	cliente y prestador (no varía)
6.3.2	Limitaciones de uso y tratamiento de los datos	
6.3.3	Limitación a finalidad de gestión del alojamiento web	sí (no varía)
6.3.4	Sujeción a instrucciones del responsable	sí (no varía)
6.3.5	Otras condiciones no previstas legalmente	...
6.3.6	Medidas de seguridad	
6.3.6.1	Definición del nivel de seguridad aplicable	básico / medio / alto
6.3.7	Destino de la información confidencial después del contrato	destrucción / devolución

7. Modificación de las condiciones de prestación de los servicios

7.1. Causas de modificación

7.1	Supuestos habilitantes	...
7.1.1	Causas técnicas y de gestión	Sí / No
7.1.2	Mejoras y actualización tecnológica	Sí / No
7.2	Requisitos y condiciones formales	
7.2.1	Comunicación	por escrito / por e-mail
7.2.2	Plazo de preaviso	... días
7.2.3	Otros	...

7.2. Efectos de la modificación de condiciones pactadas

7.2.1	En caso de aceptación	modificación del contrato
7.2.2	En caso de no aceptación (terminación del contrato)	sin / con (... €) indemnización

8. Terminación y resolución del contrato

8.1. Causas de resolución y terminación del contrato

8.1.1	Expiración del plazo acordado	Sí (no varía)
8.1.2	Mutuo acuerdo	Sí (no varía)
8.1.3	Incumplimiento de las condiciones pactadas	Sí (no varía)
8.1.4	Quiebra o suspensión de pagos de alguna de las partes	Sí / no
8.1.5	Causas legalmente establecidas	Sí (no varía)

8.2. Condiciones de la resolución del contrato

8.2.1	Incumplimiento por parte del prestador	
8.2.1.1	Reclamación previa por escrito (del cliente)	Sí / no
8.2.1.1	Preaviso	Sí (... días) / no
8.2.2	Incumplimiento por parte del cliente	
8.2.2.1	Reclamación previa por escrito (del prestador)	Sí / no
8.2.2.2	Preaviso	Sí (... días) / no

9. Notificaciones

9.1	Direcciones de las partes a efectos de comunicaciones	según § 0.1
-----	-------------------------------------------------------	-------------

10. Ley aplicable y resolución de conflictos

10.1. Legislación aplicable

10.1	Legislación española	sí (no varía)
------	----------------------	---------------

10.2. Reconocimiento de fuero o jurisdicción

10.2 Sumisión a juzgados y tribunales de ... (partido judicial)

10.3. Procedimientos extrajudiciales de resolución de conflictos

10.3.1	Procedimiento extrajudicial (arbitral)	sí / no
10.3.2	Carácter	obligatorio / opcional
10.3.3	Órgano (arbitral) o procedimiento designado	...
10.3.4	Otras previsiones (p. ej. gastos derivados del arbitraje)	...

ANNEX VIII – XLS2legalXML Tool

1. How to Download

The first step is to download the application. You can do it at <http://opaalstools.sourceforge.net>, where there is a link to download the tool. Once you click a new web page is opened with a list of available releases. These are XSL2XML and the Finder, clicking on the XSL2XML deploys two links, one is the source and the other is the compiled code of the application with examples to show contracts for the operation of the application.



2. Creation of a contract for a service provided by a company

Companies can generate contracts for services rendered. Each of these services may have more than one contract. This is because each service may have contracted various clauses. At the time of service provision, this can be contracted for months or quarters. Each mode generates a distinct separate contract for each service.

When a company wants to generate contracts for your services, you must download the templates for each service. There is a template XLS file for each service and these are: Hosting, Housing, and Maintenance Web Developer Network. The company must complete these templates for their contracts. Data included are: data from the company providing the service, and provision of these services.

In the first sheet XLS is the company data, such as: name of the business name, address and company ID number and more.

	A	B	C	D	E	F	G	H	I	J
1	TITLE	Hosting Example 1								
2	AUTHOR	OPAALS								
3										
4	Provider									
5		Company Registered Name	Hosting Guapo SL							
6		Company ID Number	20202020W							
7		Company Registered Address	Rue del Percebe 1 - 50006 Zaragoza							
8		Company Legal Representative	Paolo Roncha							
9		PIN	21212121W							
10										
11	Client									
12		Company Registered Name	Pardillos SL							
13		Company ID Number	30303030V							
14		Company Registered Address	Calle Mayor 2 - 50008 Zaragoza							
15		Company Legal Representative	Luisito Perez							
16		PIN	31313131Q							
17										
18	Acknowledgements	In witness whereof, the parties agree to the terms and conditions of this contract on behalf of his or her organization as of the date indicated below								
19										
Contract Front / Body KEYVALUE / Body DESCRIPTION /										
Listo										

In the second XLS sheet is the contract of service. For each clause in the contract service, including the following information: name of the clause, value, and data type and description length semantics.

Name Clause: This is the label by which customers find the service provided; the possible values may be price or length of service.

Value: This is the value of the name of the clause. For example, this value will be for the duration 12 or 36. This is the only data of this paper that the company must change.

Data Type: There are 4 types of data, which are:

- String: Data Type is a string, the search is conducted by comparison of text fragments.
- Integer: numeric data type, the search is conducted for values that are higher or lower within a range.
- Boolean: Possible values: Yes or No. The search is compared with these 2 possible values
- Length: In the case of a data type string (strings) is the number of characters that includes a maximum. In the case of type integer is the maximum value of the numeric value.

Semantics Description: Description of the clauses clearly indicating its unit of measure, if applicable, and their possible values.

The terms of the contracts have been classified as nested. This is to group the clauses relating to a concept.

	A	B	C	D	E	F	G	H	I	J
1	BASIC CLAUSES									
2		CONTRACT_OBJECT								
3			Type of Service	Web hosting	string	25	Type of service or product			
4		SPECIFICATIONS					Description of contents and specific features included			
5			Connectivity	10	integer		GB transfer per month			
6			Scalable	Yes	boolean		Automatically burstable or scalable bandwidth. Special price conditions apply: see ANNEX			
7			HDD Space	2	integer		Hard Disk Space, expressed in GB			
8			Mailboxes	30	integer		Number of electronic mailboxes included			
9		CONTRACT_DURATION					Contract duration and term-related aspects			
10			Hosting duration	12	integer	12	Contract Duration or term, expressed in months			
11		CONTRACT_PRICE					Price, form of payment and invoicing issues			
12			Price	50	integer		Price per month, expressed in euros			
13		GENERAL_TERMS					General terms and conditions applicable to this contract			
14			24/7 Service Availability	Yes	boolean		Service Availability guaranteed. Special conditions apply (pursuant to Service Level Agreement, see ANNEX)			
15										
16										
17										
18										
Contract Front / Body KEYVALUE / Body DESCRIPTION /										

For the creation of contracts the company providing service, create a file for each contract for each service. The files provided by the tool XLS2XML serve as templates for service contracts. These files are:

Template to generate contracts for hosting services is oferta_hosting_1.xls

Template to generate contracts for housing services is oferta_housing_1.xls

Template to generate contracts for web services is oferta_web_1.xls

Template to generate contracts for maintenance services and network management is oferta_sgr_1.xls

The only data that are required are data on the service provider and to change the values of the clauses of the contract that provides the service. After this step the application XLS2XML can be run. This application will convert their contracts into XLS file format files and XML-contracts following the OASIS Legal XML Standard.

3. Requirements and Implementation

Once the provider has applied the contract templates to define new contracts formats, they can be transformed to theirs XML representation by launching the application.

The application was developed to run on a Java Virtual Machine 1.6 or higher. If you do not have Java, this software can be downloaded from the URL java.com. To launch the application you must unzip the downloaded file to a folder and run the run.bat file from a command line MS-DOS or run.sh file with in a computer with Unix / Linux.

lib	Carpeta de archivos	25
xls	Carpeta de archivos	25
contractsGenerator.jar	38 KB Executable Jar File	25
eContracts-Reference.dtd	28 KB XML Document Typ...	25
run.bat	1 KB Archivo por lotes M...	25

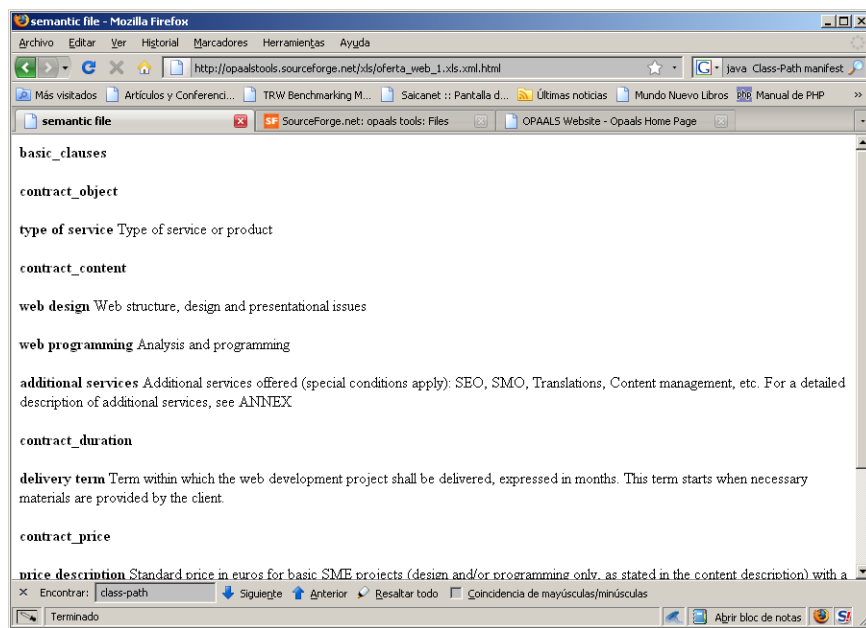
The contracts generated should be stored in the folder / xls. By executing this application, it generates a structure with the following files.

4. Application functionality

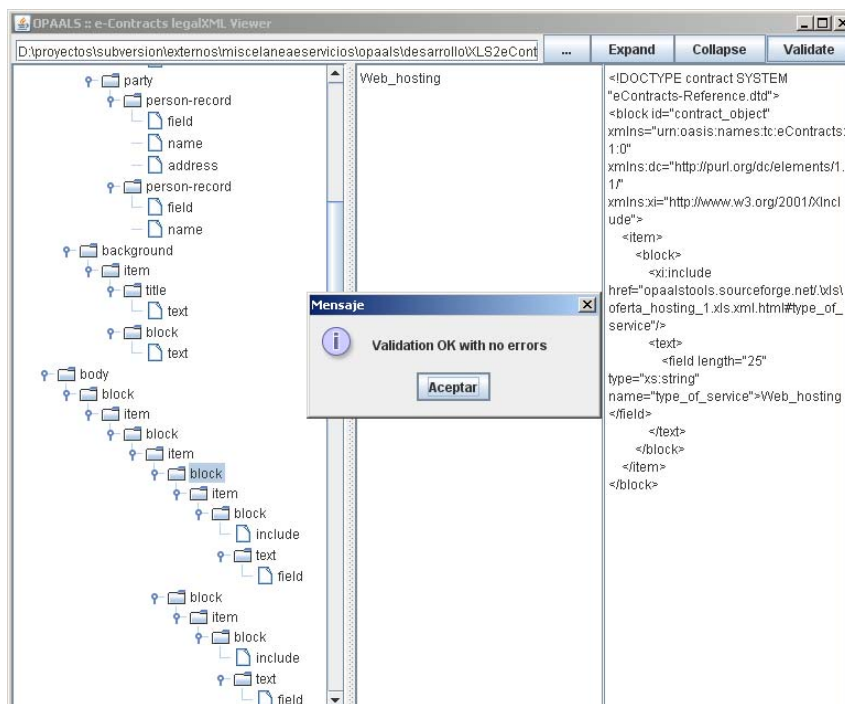
Once the application is launched, this takes care of generating a web / which will conduct the searches in the Finder. These files will be copied in the home path where the application is running.

The application implements the following functions:

- Generating semantic files: With the data provided, the semantic descriptions are generated in HTML documents so that users know the search for meaning of terms and measurement units.



- Generating XML files to generate forms in the search engine. With the structure of the XML files generated from the XLS is generated by an automated search forms. This will speed up the changes in the generation of contracts providing them with great flexibility.
- Generating files of service contracts in XML format e-contract. Based on the XSL files are generated files where data is stored in each of the services and their contracts
- Validating XML files e-contracts compared to a DTD file which is a description of structure and syntax of an XML document e-contratc. Thus, the files are guaranteed to meet the standard set generated by OASIS.
- Viewing documents generated XML e-contracts. It uses a XML file viewer to see if the data from the documents and XML-contracts have been successfully generated



5. Glossary

DTD: Stands for Document Type Definition. The document type definition (DTD) is a description of structure and syntax of an XML document

OASIS: OASIS (Organization for the Advancement of Structured Information Standards) is a nonprofit consortium that drives the development, convergence and adoption of open standards for the global information society

e-contract: This is the format used in the search of contracts. The standardization of the document has left quite open the creation of contracts. This project has generated a contract with 3 distinct parts, the header data of the speakers of the contract, the body that make up the contract and walk down where the signatures of the participants. Actually the application only uses the part of the header to identify the service provided and the terms of the contracts.

Finder: Tool that is responsible for composing services and business services between the various providers.

XLS: Extension files spreadsheet.

ANNEX IX – Finder Tool

1. How to Download

The first step is to download the application. You can do it in the URL <http://opaalstools.sourceforge.net>, where there is a link to download the tool. Once you click a new web page is opened with a list of available releases. They are XSL2XML and the Finder, clicking on the Finder deployed two links, one is the source and the other is the compiled code of the application with examples to show contracts for the operation of the application.

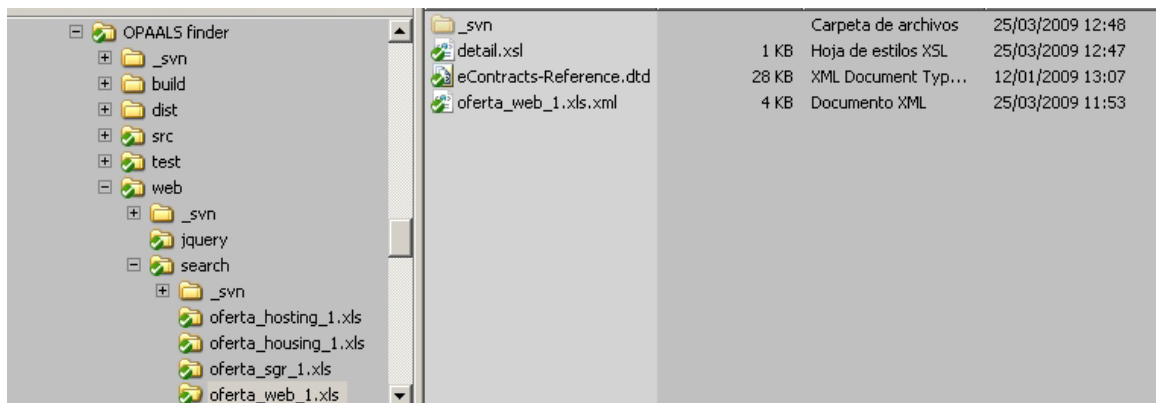


2. Requirements and Implementation

The application is made in java 1.6, to release must be installed Java Virtual Machine (JVM) that is prerequisite to run the application. If you do not have Java, this software can be downloaded from the URL java.com. To launch the application must unzip the downloaded file to a folder and run the run.bat file from a command line MS-DOS, or run.sh file from a computer with Unix / Linux. This will open a screen in the web browser to the URL of <http://localhost:8080/index.html> once you see this line runs on the server console commands. Once launched creates a local Web server on port 8080, provided the following services, available to any browser current with the latest releases such as: Internet Explorer, Mozilla Firefox or Chrome

3. Setting the search tool

Searched on the different XML files, first there must be some files with the XML structure of each contract generated. These contracts, which do not contain data services, but if the XML structure of contracts, are used to generate the templates are stored in the Web folder. For the creation of the search template, we choose each type of contract generated no data, because depending on this type of contract will generate its Web interface. These files through XSLT libraries to generate an automated Web interface for entering the search parameters. From these files plan contract, the library and the template is generated *formulario.XSL* an HTML document that is returned by the Web server to include the search parameters.



For each type of service is generated one or more contracts. Contracts that have been generated by the companies providing service contracts issued in each of the folders.

4. Search

To perform searches on XML service files will display a Web interface with which to search XML files used to provide. Each type of contract previously generated with the tool XSL2XML: Web Developer, Hosting, Housing and maintenance of networks, has created a directory for each type of contract

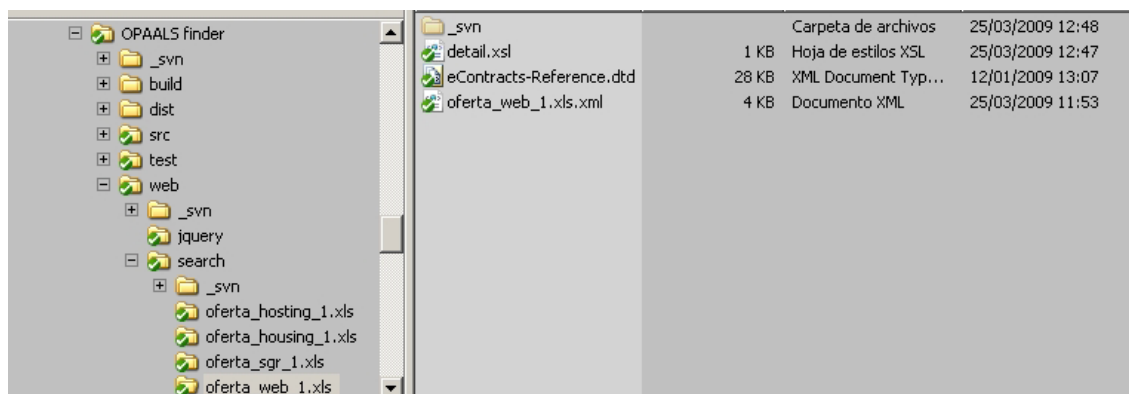
This is created dynamically depending on the XML files that are published in the web directory, which has previously been generated by the tool XLS2XML. The fields are supported:

Boolean, whose possible values are Yes, No and Empty. Field open: looking for text alphabetically numeric field: being able to make 3 types of searches

Max: Fill in seeking greater values of this field.

Min: Fill in the search for lower values of this field.

Range: Fill in the Major and Minor field gives us all the major and minor search.



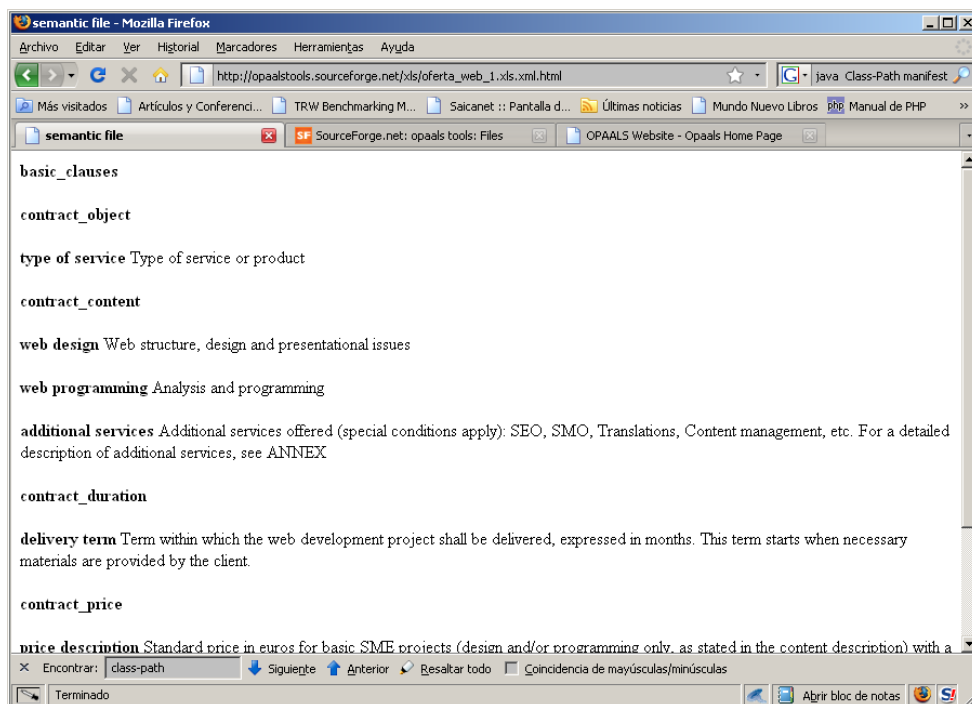
Once the fields have been filled in to search according to user preferences, it sends the search request to the Web server. The Web server for performing a search with the parameters entered in the folders of services depending on the type of service you are doing the search

Each service has been defined a number of contracts. These contracts have been stored in folder web / search / type of service. For each type of service that can be generated by contracts and these companies can offer a service for various types of services with different clauses. For example, the AAAA can offer a service of housing prices by changing the clause, depending on the number of months engaged the service.

When you perform a search application searches for each of the fields or clause has been introduced into the search form. The application looks in the folder for each field through the XML protocol called XPath searches to locate the node for which they are looking through XQuery is to the value of this search.

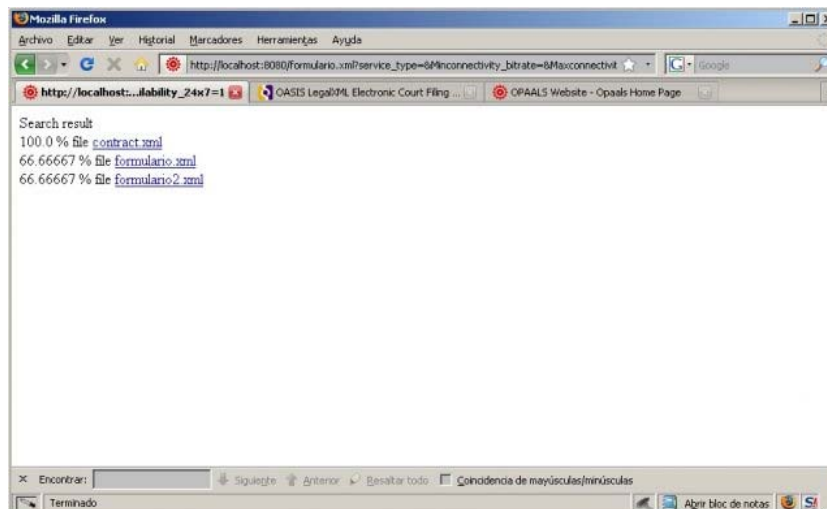
5. Clauses

Each of the fields that were defined in the services has a semantic description of it. They give an explanation of the meaning of the fields, their units of measurement as it is not the same thing to the price of a product in Euros and U.S. Dollars is not talking about the same bandwidth in bps. Which provides a semantics, and that whoever performs the search has to know the units of measurement and meaning of each field. On the search page to find the name of each field a link to the semantic definition of the clause. These files must be in the folder web / and have been generated from the XLS2XML XLS file.



6. Services found

The results are stored in an internal table and are updated for each field in turn result in increased success and showing a degree of success depending on the number of fields, to show the end user. Once that has been searching for each contract in the folder for these services are shown to users through an HTML page:



The user is shown all the files on contracts that have been identified for this service with a success rate as the defined search criteria. Clicking on these files, the user will be shown the information necessary to contact the service provider.

7. Glossary

XML: Metalanguage of brands, in plain text used to define structures defined by W3C.

e-contract: File-based brands to define XML structures contracts, as defined by OASIS.

Contract: An e-based document that defines a service contract to a company with its terms.

Clauses: Conditions under which a company provides a service.

Service: Activity in which a company bases its business, a service can be set to 1 or more contracts, as they may have different terms.

Membership services: Choice of contracts undertaken by the user from the results that the tool displays Finder contracts closer to those desired.

XPath: Expressions to locate nodes in XML documents

XSLT: Expressions to interpret XML node and convert it to other languages

XLS: Extension of Excel documents.

XQuery: Expressions of searches are conducted within the XML files

XLS2XML: Tool that transforms the contracts defined in documents created with XLS format e-contract.