

# Knowledge Representation and Modelling Legal Norms: The EU Services Directive

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**Abstract.** This paper presents an ontology based model which assists the user in formally specifying her or his information demand and in turn to deliver information across diverse authorities and local and functional jurisdictions, but individualised to the user's needs. For integration of information from and about different sources and relevant authorities, an information layer model is used. Text modules allow for flexibility, the reuse of text, and individualisation of information. Although the focus of this paper is on the transposition of the information duties imposed by the EU Services Directive, most considerations also apply to legal information and transaction portals in general, especially those which need to represent broad as well as in-depth information.

**Keywords:** Public information and transaction portals, E-Government, Austria.

## 1 Introduction

This paper describes some elements of a draft concept developed by the author within the e-government framework of the Federal Chancellery of Austria with regard to the electronic transposition of the Directive on Services in the Internal Market 2006/123/EC. The Services Directive aims to facilitate the cross-border provision of services within EC-Member States. Legal and administrative barriers, which hinder SMEs from making use of their freedoms to establish and to provide services, are to be removed to boost cross-border service provision. To reach this goal, the Directive enshrines *inter alia* that all the requirements applicable to providers must be easily accessible at a distance and by electronic means, and that this information must be provided in a clear and unambiguous manner and in plain and intelligible language (Art. 7). Moreover, it must be ensured that all procedures and formalities relating to access to a service activity and to the exercise thereof may be easily completed, at a distance and by electronic means (Art. 8).

Despite the many exceptions, the Services Directive takes a horizontal approach: it establishes common rules for service providers. Services within the meaning of EC Treaty (Art. 49) are all service activities normally provided for remuneration, in particular activities of an industrial character, of commercial character, of craftsman

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\* The views expressed in this paper are entirely and solely those of the author.

and of the professions. The Austrian taxonomy differs from this EU definition, as a coextensive concept of “services” does not exist. Many of the relevant Austrian rules are vertical in the sense that they are activity-related (particular rules for directory publishers, chimney sweepers, private tutors, consulting engineers, veterinaries, etc.). Furthermore, Austria is a Federal State, therefore legislation and enforcement of law on national, regional or local levels need to be incorporated, and a variety of different “competent authorities” has to be involved.<sup>1</sup> Bearing the complexity of the Austrian legal framework in mind, representation of cross-linked knowledge about procedures, formalities and other requirements applicable to providers is a very challenging task.

This paper focuses on the information presentation component whilst taking into account that information must be connected to the proper procedures and formalities. Issues relating to administrative back-office processes are not addressed.

## 2 An Information Portal for Service Providers

The concept presented here establishes an information portal which is capable of interlinking text, text elements and meta-data from different levels and sources, in order to satisfy the user’s information demand. According to the specific needs of a user, all relevant text elements have to be identified, selected, and sequenced. To do so, an intelligent, guided navigation system combined with a small question answering system, both based on formal semantic notations, is chosen. Since legal laypeople generally prefer and can better utilize an intelligent navigation system as opposed to searching for foreign or legal concepts, the emphasis is on classification and navigation. For integration of information from and about different sources and relevant authorities, an information layer model is used. This model allows for distributed maintenance of content by the respective authorities. Since the system and its information content have to be developed to a large extent from scratch, and the resulting information portal will have to deliver individualised information units to the user, legal knowledge representation as a top-down approach is employed. A semantic network will not be sufficiently expressive for this task; it must be extended by terminological logic, which allows for negations, non-taxonomic relations and the inference procedures subsumption and instance-classification.<sup>2</sup>

Open textured concepts, the open structure of law and the need for abstract, ex ante interpretation of legal norms and administrative practice are crucial points within such a legal information portal. In many cases constraints will have to be weakly encoded, accompanied by textual explanations and links to further information and supporting bodies. This is not a deficiency of the technical system, but necessary to reflect the special demands of the legal system and to safeguard legal certainty.

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<sup>1</sup> To learn more about the Services Directive see [1] and [6], for the Austrian perspective [9]. The situation in Germany is similar, cf. [4], especially Chapter D.

<sup>2</sup> An interesting approach is taken by Salhofer/Stadlhofer [15]. They use a comparatively easy to use and easy to maintain concept tree for goal discovery, on which ontology based forms can be automatically generated. Though it is also their intention to hide complexity from the user, a concern which is supported only to some extent by this paper, the overall approach is of great value for a public information and transaction portal like the one established here.

The idea of an electronic legal information portal should not be confused with face-to-face legal advice. In a conversation, the adviser will be aware of the individual context of the question. She or he will know why a specific question is asked and what the questioner is going to do with the answer. The adviser may check back, or switch to more adequate language if necessary, and has a good chance to detect misconceptions. On the contrary, an information portal has to work on a more abstract level and without a direct human verification loop. Of course, there already exist some attractive electronic legal advice systems which try to simulate face-to-face advice, but feasible and trustworthy applications are restricted to very narrow areas or specific topics of law, and they usually do not work with cross-border concepts.<sup>3</sup>

## **2.1 The User's Perspective**

A provider who wants to establish in or to deliver services to another EU Member State is in general not familiar with the respective foreign legal system. Perhaps she or he is also not completely familiar with the language and it is likely that she or he lives in a different world of concepts [8]. Therefore a foreign provider will not be able to assess if the activity in question is, for example, covered by the Austrian Crafts and Trade Code, and if so, under which part of it. Maybe a corresponding activity does not exist or exists with a different meaning in the target country, e.g. dental care of horses is in Germany a craft, but in Austria it is just part of the work of the veterinary. Even "traditional" professions may be regulated differently, may allow for more or less activities or may impose deviant or unexpected requirements, which may have no counterpart at all in the provider's home country. In Austria for many activities (within and beyond the Crafts and Trade Code) proficiency has to be proven, and rules of practice may be spread over several laws. Even for activities which do not demand proof of proficiency, a vast number of professional rules may be applicable. Finally, the procedures and formalities a provider must satisfy to access and exercise her or his service activity are not restricted to the professional regulations; one may consider, for example, rules regarding the operating site, the equipment, the commercial register, social insurance duties, etc.

Since the spirit of the Directive is not to make the provider read the law but to make the provider comprehend the law, and in particular to make the provider recognise the requirements imposed on her or him by law and order, it is not sufficient to present the original text of the legal norms. The provider needs intelligible, unambiguous and purposeful information, delivered via an easy-to-use interface, which leads her or him through the labyrinth of the Austrian legal system. On basis of the information provided, the user should be aware of the requirements imposed on her or him, be able to select the effectively necessary formalities and procedures, and to recognize if procedures and formalities depend on each other or are concurrent.

Legal information is better understood by laymen when presented in (real life) context, e.g. based on life- or business events.<sup>4</sup> To bundle user relevant information in

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<sup>3</sup> Cf., e.g. the BEST-project [17], <http://www.best-project.nl/>.

<sup>4</sup> For a general description on administrative portals based on life- or business events and further references see [11], pp. 218--230. See also [5].

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life- or business events allows for interconnecting multiple information sources, administrative bodies and other organisations.<sup>5</sup> Additionally, provided that texts are appropriately phrased, structured and annotated, the same information content may be presented or made accessible under different perspectives. Hence the approach taken here is to assign information and processes to service activities and to organise the service activities under canonical business situations. An intelligent semantic class hierarchy should enable the user to shift to related or overlapping business situations or activities, without having to start from the very beginning.

At a first glance, it seems that an in-depth individualisation assists the user best. On the other hand, individualisation must be restricted for reasons of complexity, maintainability, and liability. Additionally, in-depth individualised information may lead the user to get caught in details while losing the overall view on the whole issue. Maybe the user did not decide about all the details yet, or perhaps she or he is flexible and is searching for variants and options. Here a middle course is attempted. Because of the complexity of the vertical legal rules some individualisation is inevitable, but the user may not become restricted in her or his course of action by partial information or per computer code. One has to be aware that a reduced representation of the complexity of the legal system as well as of the reality, which is done by describing standardised life- or business situations in plain language, produces incomplete knowledge. If complexity is concealed from the reader, her or his scope of behaviour and action will be restricted. The law may of course be presented in a less complicated manner, but not be shortened to fit on the screen or to virtually satisfy the call for simplification of procedures by the Services Directive (Art. 5). Therefore the user has to be given textual information about the reasons and consequences on the differentiations made. Furthermore, the system must fairly point out its limitations and, when indicated, forward the user with her or his information need to a more proper source or to an individual advisory service.

### 2.2 Starting with some Questions

The order of structural elements arises from the relevant European and Austrian legal framework. Only the essential considerations are mentioned below. The basic structure is the following:

- I Select Country of origin
- II Select type of provision of services:
  - a. Establishment in Austria
  - b. Provision of services in Austria without being established in Austria
- III If 2 b. was selected: Posting of workers yes/no

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<sup>5</sup> Proper examples for administrative information portals based on business events *and* trying to involve all administrative levels are the Austrian Amtshelfer <http://help-business.gv.at>, the Dutch Overheid voor ondernemers en organisaties <http://www.overheid.nl/ondernemers>, or the Australian Business Entry Point <http://www.business.gov.au>. See also the BASIS Public Services Broker Study [14] and <http://www.basis.ie>. The focus of the BASIS study was, however, not on information-oriented services but rather, on transaction-oriented services.

- IV Select kind of activity (profession)
- V If 2 a. was selected and if relevant/applicable:
  - a. Select legal form of business (sole trader, private ltd. company, ...)
  - b. Select specific business situation (branch, agency, ...)
- VI If relevant/applicable: Select location (place of exercise of service activity)

For individualisation of information, the different information needs and different underlying requirements national and foreign EU providers have, must be considered. Moreover, even the differentiation between the citizenship of a natural person and the country of origin of a business may become relevant. A detailed breakdown would significantly increase the complexity of the system. Nevertheless, the system should at least offer the possibility to add text elements tailored to particular needs of providers belonging to specific countries or groups of countries. In case of multilingual content, this option would also allow for language selection.

In the next step a differentiation between providers who want to establish in Austria, and those who want to provide services for a limited period in Austria but are established in another Member State, has to take place. These two situations result in partially differing information needs and differing procedures and formalities. On the one hand, there is the option to describe both situations in one go. This offers the advantage of a more proper way to deal with overlapping contents, and with problems to subsume the real life situation correctly. On the other hand, this would result in longer texts, in which a large number of text elements might be irrelevant for many users. Furthermore, the texts concerning cross-border services must be blanked out for national providers. The final decision was to propose two separate information channels, to develop a common textual connector, to share text elements if applicable, and to allow the user to switch between the two situations.

An essential element is the selection of the kind of activity. Ultimately, the only possibility to guide a foreign provider through the Austrian labyrinth is to connect all relevant information, procedures and formalities to activities or groups of activities and to ask the user for the activity she or he wishes to exercise. Certainly, a valid list of all possible service activities (that would be a few thousand) does not exist, and since law is abstract and the matter a dynamic one, a complete list or description is not achievable at first. However, starting with common, frequently requested activities and working out the feasibility of the rest in the long-term is undoubtedly the best approach.

The question still remains, how can the user find the correct service activity? A foreign provider will be accustomed to different concepts and may assign different meanings to similarly named terms. Therefore the decision was to revert to the relevant parts of the NACE<sup>6</sup> 2.0 classification of economic activities. NACE is a five-level classification primarily used for statistical matters within the EC [7]. Since NACE is based on an EC Regulation,<sup>7</sup> it is available in all official languages of the EU and allows the user to navigate in her or his preferred language. Service providers may also be familiar with it from its use in their home country, e.g. for collecting statistical data. For this purpose the relevant parts of NACE have to be extracted,

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<sup>6</sup> Nomenclature générale des activités économiques dans les Communautés européennes.

<sup>7</sup> Regulation 3037/90/EEG recently amended by Regulation 1893/2006/EC.

reduced to the levels necessary, and supplemented by subordinated “Austrian” activities. Additionally, a short “job description” in simple and easy to understand terms has to be assigned to each activity to help the user determine which actions are encompassed by a specific concept. This job description should also include relations to similar or overlapping activities. The classification work may be supported by the Austria-specific subclasses and the alphabeticum as developed by Statistics Austria.<sup>8</sup> Provided the basis is well elaborated, a semantic search could also be implemented at a later stage, e.g. incorporating multilingual thesauri.

Finally, the place of exercise of the activity may be crucial for allocation of information and procedures. In regards to service providers without permanent establishment in Austria, localization is circumstantial and better solved by providing summarized information on regional differences or regional authorities where indeed essential. In respect to cross-border providers who want to establish in Austria, localization on the regional and/or local level may become prerequisite. To serve all relevant constellations the localization tool must be based on postal code level and be connected to an advanced directory reflecting the local, regional and federal jurisdictions. In interaction with the information layer model, localization has to take place at the point where the provision of non-localized information is inadequate.

### 2.3 Structured Representation of Information

Since law is complex and involved authorities are numerous, and as expert knowledge is usually dispersed over the involved authorities, it will not be possible to develop and maintain all relevant information at one central point. Therefore the information portal presented herein is constructed to be a knowledge base and a directory at the same time. The knowledge base will primarily consist of information on federal level, and basis information on regional level. As regards to electronic procedures, the system must operate as a directory, but may support the development of interoperable processes. To support flexible integration of distributed or shared information sources and processes, text modules and an information layer model are used.

The goal is not to describe any and every activity and business event separately, but to use text elements or text blocks and to assemble them on a case-by-case basis in order to obtain continuous and individualised descriptions, and respectively instructions for the user. The degree of formalisation of course differs, some activities will need to be handled separately, other activities, e.g. those covered by the Crafts and Trade Code, leave more room for formalisation (like common requirements for all or at least groups of professions). The module technique allows also for integration of text elements from external sources into the first layer view, for example job descriptions and professional rules as developed and collected by the Austrian Chamber of Commerce within its own information system.

To work with text modules is, however, sophisticated: not only is the arrangement of the single elements challenging, but it also demands high standards of verbalisation to produce comprehensible and coherent descriptions as a result. Additionally, the editor support must be comprehensive, as changing a text for one instance will change

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<sup>8</sup> Statistics Austria, [http://www.statistik.at/web\\_de/klassifikationen/oenace\\_2008\\_implementation/](http://www.statistik.at/web_de/klassifikationen/oenace_2008_implementation/).

it for all places it is reused as well, and applicability of the modification for all instances of the text block must be checked.

Additionally, an information layer model consisting of two layers is used. The abstract upper level presents basic information on the chosen service activity (or a group of service activities) and the related processes, in context of the chosen business situation. This is done across the diverse authorities (and other stakeholders) and local and functional jurisdictions. Only in a few cases will it be impossible to provide abstract basic information without preceding regionalisation. On this upper level the user shall be given a survey of all relevant requirements, procedures and formalities. The upper level information must be adequate to enable the user to recognize and identify those requirements which apply to her or him, and to further specify any possible supplementary information need and her or his line of action.

The second layer provides detailed information about single elements of the upper level, especially in regard to specific requirements of formalities and procedures. Consequently, specification of authorities and their functional and local jurisdiction must take place within the second layer. At this point electronic procedures or forms may also be integrated or linked if existing. In a next step a SOA to enable semantic search of Web Services [2], [12], [16] could be modelled.<sup>9</sup>

This approach not only allows for structured integration of information subject to distributed competencies, it also allows for distributed supply of content. At this juncture it does not matter if external actors bring in content or if the second level links to external content. The latter variant will be more attractive for those authorities which do not want to give up their individual appearance or own information portals. Both variants of course assume a coordinated network and some agreement on wording, structuring and quality of texts, especially since the text must be coherent in regard to first layer information.

### 3 Observations

The considerations within this paper rely to some extent on a small prototype application developed in summer 2008.<sup>10</sup> The prototype was built to visualise the requirements that a system has to meet to fulfill the information duties of the Services Directive. It deals with two rather complex service activities, and since its task was to be just a showcase, it is predominantly hard-coded. The lesson learned from the prototype: aside of structural and layout deficiencies, the application was devised too simplistic and turned out to be unable to transport the complexity of the existing legal framework in a way which is transparent and useful to the user.

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<sup>9</sup> To develop a SOA to integrate the Austrian e-government landscape is never a trivial task, since there exists a high number of isolated and incompatible applications (some of which offer input or output interfaces for data transfer) on all levels of administration. For preliminary work on a common architecture in regard to the Services Directive see [3].

<sup>10</sup> Available at <http://www.help.gv.at:81/dlr/> (un/pw = dlr/showcase; choose "DLR-Assistent"; only the services "Personenbetreuung" and "Stukkateure und Trockenausbauer" are valid). The prototype is not built on information layers and provides all relevant information at once.

The concept provided herein is decidedly more intricate, and thus able to carry the demands of the existing legal framework. The details on its implementation are, however, not yet certain. But even though the Directive's transposition deadline (by 28th December 2009) is pressing, a sustainable system based on an overall plan, which may be finalised in all its intricacies at a later point in time, should be given priority over a hastily constructed portal which is inadequate.

At the end of this paper the reader may question the actual need for such complexity in the law, but this is outside of the scope of this discussion. What is certain is that administrative simplification should not be tackled by means of modern ICT alone, but also deliberate techniques such as legal and regulatory measures and process reengineering [13].

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