Applying a Dynamic Background Library to evaluate legal Problems in Connection with Domain Names

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Abstract - Domain names are of enormous utility for an efficient browsing through the Internet. Nevertheless, a lot of legal problems and conflicts are faced, for instance domain grabbing or hurting existing trademarks, if someone wants to register a certain domain or already possesses one. In this paper, we describe the so-called LAPD-Inspector, a Web-based application that uses a Dynamic Background Library (DBL) with the aim of retrieving accurate and topical information about the legal status in connection with domain names as well as supporting users within some problem-specific scenarios.

I. INTRODUCTION

Domain names can be seen as an enormous enhancement of browsing through the Internet, because people do not have to memorize and remember a huge amount of "complex" number-based IP addresses. Thus, from the point of view of users, domain names are memory-friendly. To mention one further advantage of the use of domain names, they are effectively used for marketing purposes (e.g. for trademarked goods) as they represent a part of the corporate identity of companies. Nevertheless, registering and possessing a domain also brings up problematic aspects, in particular concerning legal issues. For example, the given rules for registering domain names laid down by the ICANN [1] do not fully provide for problematic legal aspects deriving out of the registration process. This results in a lot of expensive and time-consuming lawsuits.

Against this background, we have developed a web-based tool, the LAPD-Inspector – where LAPD is the abbreviation for "Legal Aspects and Problems in connection with Domains" –, supporting legal experts and, in a future version, any non-experts being faced with different critical aspects. This support must be given through enhanced retrieval mechanisms of context-specific, accurate and topical information about the law-dependent status of domain names e.g. in order to prevent legal problems on registering a certain domain name, or in order to continuously check the legal features of domains. Therefore, we utilize the Dynamic Background Library (DBL), which is a smart tool for defining the needed semantics that enable the access to topical information on external systems through the usage of search services. The DBL was developed at the Institute for Information Systems and Computer Media (IICM) at Graz University of Technology (see [2]) and has been mainly applied within the scope of education (e.g. see [3] or [4]).

In this paper we discuss the theoretical background of legal problems in connection with domain names and describe the development process of the LAPD-Inspector as well as the web application itself. In section II, the aspects and problems about registering and possessing domains are examined closer. Thereafter, section III characterizes the most relevant scenarios within this scope and ties up to the DBL's theoretical model. Finally, the technical realization of the LAPD-Inspector is outlined and first experiences with respect to reliability and utility are pointed out.

II. LEGAL ASPECTS IN CONNECTION WITH DOMAIN NAMES

At the outset of the domain name registration, IANA (Internet Assigned Numbers Authority), as a part of the University of Southern California's School of Engineering and under U.S. Government contract, held the central coordinating functions of the domain name distribution. After signing an agreement in February 2000, ICANN (Internet Corporation for Assigned Names and Numbers) took over the largest part of its work to provide services to perform the operation of IANA. [5]

ICANN was created through a Memorandum of Understanding (MoU) between the U.S. Department of Commerce and ICANN in order to transfer the management of the Domain Name System (DNS) from the U.S. government to the global community. ICANN, organized as an international, non-profit corporation, has responsibility for Internet Protocol (IP) address space allocation, protocol identifier assignment, generic (gTLD) and country code (ccTLD) Top-Level Domain name system management, as well as root server system management functions (see [1]). The administration of the ccTLDs is delegated to the relevant country, whose government or public authority designates an organization, enterprise or individual to exercise the public trust function of a ccTLD as stated in [6]. The resulting organizational chart is visualized in figure 1.

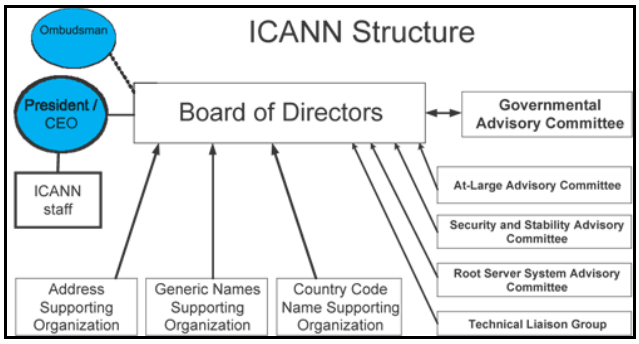

Fig. 1. Organizational Chart after its Evolution and Reform Process conducted in 2002 (see also [5]).

As the DNS became popular and widespread, various problems emerged chiefly resulting from of the maxim “potior est, qui prior est”. Therefore, those who are first to register a domain, enjoy priority, and as soon as a domain has been distributed, a succeeding applicant is unable to register the same domain (see [7]). With a steadily growing number of internet users the DNS has become more and more important for the economy. It is of utmost importance for enterprises to be able to use their brand as a domain name to be recognized in the virtual world as well. Hence, the uncomplicated way of registering a domain and the consequential problems like domain grabbing resulted in an increasing amount of disputes which usually consume a long time and raise questions of venue, application of law and its enforcement. [8]

Consequently, there was the need to establish a dispute settlement mechanism which ought to be fast and cost-efficient and ought to produce a consequent jurisdiction in adaption to the universality of the medium. A prototype – the Uniform Domain Name Dispute Resolution Policy (UDRP, [8]) – has been developed under large international participation, where especially the World Intellectual Property Organization (WIPO, [9]) took part in. The UDRP was adopted by all accredited registrants for domain names in the gTLDs (.com, .net, .org, .biz, .info and .name), but also some ccTLDs have adopted the policy on a voluntary basis. However, the UDRP is only limited to the so-called “cyber squatting”-cases as stated in paragraph 4 (a) of the UDRP (see [10]). ICANN introduced the UDRP as an alternative dispute settlement mechanism although it itself does not act as a dispute settlement body. It accredited four Dispute Resolution Providers, which observe ICANN’s Rules for Uniform Domain Name Dispute Resolution Policy. The first to be accredited by ICANN was the WIPO Arbitration and Mediation Center and with more than 8000 cases filed up to now, it is the highest frequented Dispute Resolution Provider (for further details refer to [11]).

The advantages of the UDRP compared with national jurisdiction and national arbitration are obvious: the brevity of the procedure, the comparatively low costs and the avoidance of complicated questions of venue, application and enforcement of law. However, there are some disadvantages which are arguments against the effectiveness of letting the complainant choose a Dispute Resolution Provider. Since the costs of the settlement procedure are usually born by the complainant, decisions in favor of the complainant might be a result. [8]

Despite the UDRP and its possible advantages, the settlement of disputes – even in form of arbitration – ought to be the last resort. In times where cost efficiency and rapidity play a decisive role there is the need to provide means for avoiding disputes wherever the opportunity exists. The WIPO Arbitration and Mediation Center offers a possibility of searching through its case database to find similar cases already decided, which also gives those who want to register a domain name the chance to clarify potential legal problems already at the outset when no disposal – whether in form of money or not – has been undertaken.

This index consists of all WIPO UDRP panel decisions and is combined with a legal index to the aforementioned (see [12]). However, a good deal of legal knowledge is a precondition for being able to derive benefit from this index. Consequently, a system would make good economic sense where, at request, not only the guiding principles from similar cases relevant for each user would be filtered out but, in addition, other information systems would be integrated. Finally, at best, conclusions in form of expert systems would be drawn out of the accumulated mass of information to provide even non-experts with supportive information and help them save money and time.

III. THREE ILLUSTRATIVE SCENARIOS

Considering the legal aspects highlighted in the last section, the target groups for these problems can mainly be found in the commercial sector. Typical scenarios where our application could be helpful comprise situations like someone wanting to assure that there are no legal consequences for registering a certain domain or not violating legal aspects of the newly reserved domain. Further, it is conceivable that a person might be interested in reports on possibly arising problems with a given domain name.

Although the website of WIPO already provides a very effective query mechanism to access existing decisions on cases of domain name disputes (accessible under [12]), it is necessary for most cases to retrieve information from other sources. The following subsections deal with relevant scenarios and describe the additional information relevant for each scenario.

A. Scenario 1: Evaluation of legal problems before registering a domain name

The first scenario deals with the intention of registering a certain domain name. In this case, the availability and the legal aspects for this domain name have to be checked. Therefore, we suggest the following rules given as list of questions and correlating links (for the virtual domain "<QUERY>" and only given for ".com" domains):

- Is the domain name still available? (URL: http://www.domainbank.net/modules/domain_check.cfm?domain=<QUERY>&TLD=.com)
- If the domain name is not available anymore, what is the content of the website? (URLs: http://<QUERY>.com, http://www.<QUERY>.com)
- Is there a trademark for the domain name registered? An answer can be retrieved for example at the website http://www.uspto.gov/index.html. Here, the query term would look more complex than the first two.
- What decisions exist for this or similar domains? (http://arbiter.wipo.int/domains/search/index.html)

Taking these questions into account, the user can get a good overview of legal problems in connection with a chosen domain. Being provided with a flexible technical solution as shown later on in section 4, it would be very easy to adapt a certain query or even the list of information sources.

B. Scenario 2: Ongoing evaluation of legal aspects with a domain name

This scenario is rather different from the first one. While information about the availability and a possible existing website is rather uninteresting within this scenario, it is more important to focus on trademarks and relevant decisions, e.g. by WIPO, if a user wants to check legal aspects in the scope of his brand, company or website. Nevertheless, for this scenario the last two questions of subsection 3.1 are also relevant. Further, new rules concerning the latest decisions or even pending cases could be defined, e.g. using the advanced search of WIPO website. Hence, within this scenario it is much more important that the proposed tool provides a comfortable way to allow users adapting the scenario to their needs.

C. Scenario 3: Summary of legal problems in connection with a domain name

In contrary to the last two scenarios, this one aims much more on providing background information, whereas questions about the availability of a domain or a trademark are not so much relevant. Therefore, the following aspects are highly relevant, if someone wants to get a summarizing report about legal problems in connection with a domain:

- Information about the domain and its owner (realizable with a WHOIS lookup)
- Information about the trademark (same as in scenario 1)
- Decisions or cases on legal problems in connection with the domain (available at WIPO's website)
- Legal problems of the domain's owner (also accessible using the advanced search of WIPO's website)

To conclude this section, it has to be said that the rules for the depicted scenarios represent the basis of our first solution attempt and, therefore, may not be complete. In particular, there are other organizations than the WIPO dealing with legal aspects and providing information about decisions and cases. Keeping this in mind, a flexible and extendable knowledge space is one of the most important functional requirements for our tool, which is described closer in the following.

IV. REALIZATION AND FIRST EXPERIENCES

In order to implement an application that support users within the scope of the three scenarios described in the last section, we decided to apply the so-called Dynamic Background Library (DBL), as initially mentioned and described in [2].

A. Basic Concept of our Dynamic Background Library

As stated in [3], the missing possibilities of static assets within learning content repositories led us to the development of the DBL. The main idea of this tool is about managing background knowledge available through various information retrieval systems, specified e.g. by a query to a certain search engine. Within the scope of e-learning, we evaluated and realized important features for the DBL. For instance, by defining background knowledge as a set of concepts (i.e. keywords and phrases), it is important to assign them to instructional units such as chapters or lections. Another important feature of our DBL is given by the fact that the visualization of the concepts (and their hyperlinked connection to enhanced query formulations) is adaptable to the user's preferred way to consume the background knowledge: thus, the four specified view modes are *embedded links*, *end of page*, *end of chapter* and *end of content*. Further, an adaptation towards the user's expertise level – novice, regular, or expert – is considered within the DBL as well.

A first prototype of the DBL, the so-called EHELP system, was implemented within Hyperwave's eLearning Suite. Nevertheless, [4] report that this first implementation of the DBL misses some important features, such as a context-based selection of the appropriate information sources. Furthermore, we faced the problem of using a more common technology than a server-side JavaScript engine. Thus, the overall system was redesigned, and a new prototype was realized within the Openwings framework [13]. The new DBL is based on the idea of a so-called Concept-based Context Modeling System. Therefore, we implemented four Openwings services fulfilling the following tasks (see also figure 2): (a) the Manager is responsible for the configuration of the application and the communication with external systems; (b) the Profiler processes information about the context, i.e. a hierarchy of context items, the concepts within this context and the matching patterns (synonyms); (c) the Modeler aims to provide the models for a context retrieved from the profiler and containing information on a higher semantic level (i.e. the current implemented models

interpret the meaning of conceptual spaces for its utilization for the LAPD-Inspector); (d) the Data Handler deals with data management (i.e. access to persistent user data).

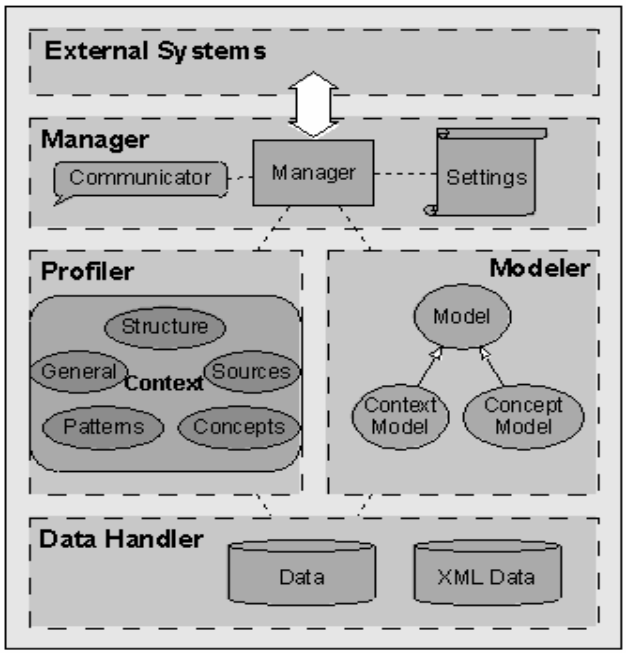

Fig. 2. The Concept-based Context Modeling System in Detail.

B. Functionality and Advantages of our Dynamic Background Library

With respect to [14], the new implementation of the DBL applies the idea of a concept-based modeler which allows building conceptual spaces as *context*-dependent sets of concepts within a specific knowledge domain. Therefore, the knowledge domain can be described by a name and other metadata and divided in divisions and subdivisions by means of so-called *context-items* (i.e. the result can also be seen as a simple taxonomical structure). Thereafter, DBL-concepts are constructed and interrelated to these context-items. A DBL-*concept* itself may also include *matching patterns* in order to determine synonyms. Finally, for each concept a set of *search queries* must be specified, which are then assigned to a set of pre-defined *information sources* (i.e. the set of information retrieval systems).

Due to the new design EHELP, a couple of advantages for applying the DBL for legal problems in connection with domain names or other areas can be outlined at this point:

- In contrary to an inquiry at WIPO's website, different information sources, which can be pre-defined by an own GUI-based tool in a very comfortable way, might be applied by each concept.
- Each scenario can be adapted very fast to new aspects. Even new scenarios can be created without much effort. This can be done e.g. by reformulating, scaling or replacing an existing conceptual space.
- The knowledge space for this application might be used by other systems or components. In concrete, the service-oriented Openwings framework offers commonly known interfaces to access the conceptual model of the application.
- To support internationalization, it is easy to extend the application by simply adding country-specific concepts or, if necessary, by creating an own scenario for a country. In fact, for querying legal aspects for a country the GUI shown in the next subsection has to be adapted appropriately.
- The overall concept for this system can be easily adapted for applications in other fields. For instance, we successfully applied the DBL within the scope of adaptive e-learning, as stated in [4].

In addition, the Openwings framework provides a couple of technical advantages, such as security/privacy, flexibility, modularity, migration transparency, and so forth. These advantages are well-known for service-oriented architectures and therefore will not be treated in this paper. The next section focuses on the overall design of the LAPD-Inspector.

C. The LAPD-Inspector Application

From the technological point of view, the core of the tool we have developed to support users in the scope of this paper consists of an adapted version of the Concept-based Context Modeling System described in the previous section, which, in turn, represents the new version of our DBL. The *enhanced* DBL has been extended by a GUI (see figure 3) that allows the user to enter a domain name, to choose a certain pre-defined scenario and to be provided with a result list containing all relevant information about legal problems in connection with the entered domain name (an illustrative example is given in figure 4).

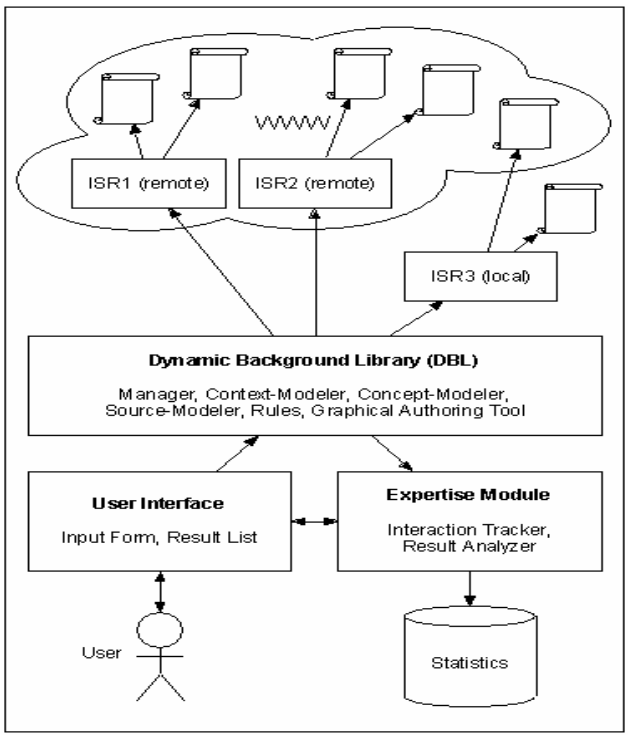

Fig. 3. Architectural Design of the LAPD-Inspector applying the Dynamic Background Library.

From the point of view of the users, the first prototype of the LAPD-Inspector was designed considering the scenarios depicted in section 3 and can be explained as follows (as an illustrative example of utilizing Scenario 1 see also figure 4):

- The context of the application comprises the knowledge space for the overall functionality. Hereby, a context-item can be seen as one scenario.
- With the DBL's graphical tool it is easy to create new scenarios by adding a context-item and assigning certain concepts, e.g. to provide a new use case or support for legal aspects of a domain for another country. In fact, our first prototype of the LAPD-Inspector application focuses at the international domains ".com", ".org", and ".net".
- Any information retrieval system could be added to the list of information sources by specifying the IRS's name, its URL and the way to commit a query.
- The rules listed for each scenario in section 3 are realized by creating a DBL-concept using the domain name as query term on one or more information sources and assigning this concept to the accordant scenario (context-item).
- In our actual implementation the queries on each information source are simply displayed.

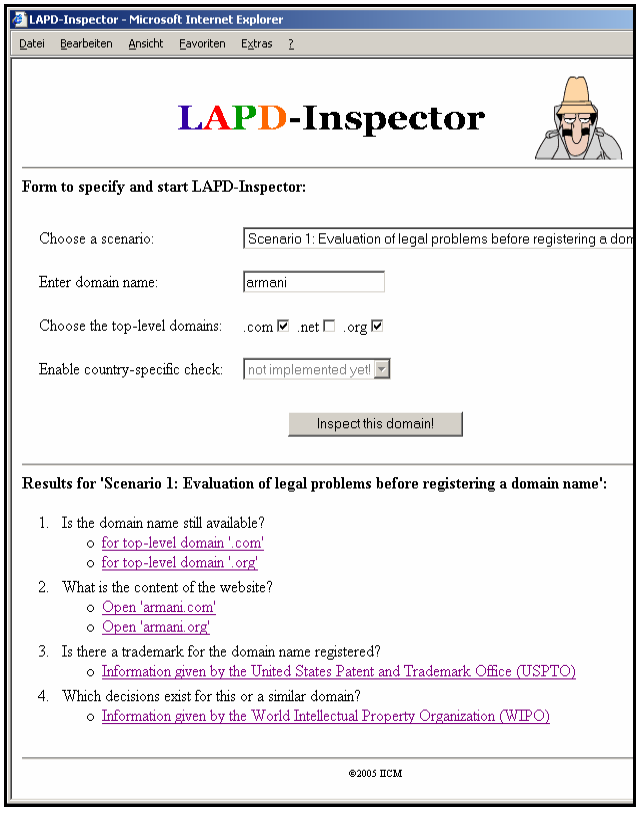

Fig. 4. The LAPD-Inspector Application displaying Links to relevant Information for Scenario 1 (domain name: 'armani'; concepts: the four questions of the scenario; two information sources for questions 1 and 2, one for questions 3 and 4).

In some cases, it could be necessary to gather and evaluate certain query results and provide a more comprehensible answer for a user lacking of expert knowledge about legal aspects on domains. Such an expertise module is planned to be realized as future work. Furthermore, the concept modeler is still somehow inflexible, because we cannot define interrelated conditions among concepts. In the scope of this application, such dependencies among concepts could reduce the cognitive load on the user, because some rules do not need to be applied if a certain condition is not fulfilled.

The first version of the LAPD-Inspector was evaluated with respect to some chosen and commonly known cases, such as *Giorgio Armani Modefine S.A. vs. A.R. Mani* (2001), *Red Bull GmbH vs. Harold Gutch* (2000), *Microsoft Corporation vs. StepWeb* (2001), *Playboy Enterprises International, Inc. vs. Tonya Flynt Foundation* (2001), etc. These "simulated" tests produced appropriate results. In particular, results about the domain's registry information and the website itself fit in all cases. In contrary, information quality is rather low for checking brands, because all possible combinations of the query term are displayed. Thus, the user has to browse through the link-list and find the appropriate information on possible legal problems. For information on WIPO's decisions and cases, the number of query results is also very high, but it offers the possibility to refine the query. A more comprehensive evaluation is going to be conducted in the next few months.

V. CONCLUSIONS AND FUTURE WORK

From our point of view, the LAPD-Inspector represents a very helpful tool to support people involved with the registration and possession of domain names. At this stage, the web-based application lists the most relevant links for the chosen scenario. Further, our first prototype is primary usable for legal experts, because the retrieved results are not evaluated and translated to a level which non-expert may understand.

As our future work, we are working on improving the DBL towards gathering and interpreting search results as well as defining dependencies between concepts, which would allow the implementation of an expert system for legal aspects in connection with domain names. Next to the enhancement of the DBL, we plan to evaluate the system's usefulness and acceptance applying methods such as a usability case study and a field study on the utilization of an online demo version.

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