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A web Information System application on Forest Legislation: The case of Greek Forest Principles

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Abstract

The Greek forest legislation is a very complicated issue, because of the existence of too many laws concerning the same topic. The definition of forest is critically important as it controls the scope of forest science. Numerous legitimate definitions of forest and forestlands have been published by the Greek authorities. A need to categorize and classify some complex parts of the Greek forest legislation is obviously essential. Nowadays new web technologies and Information and Communication Systems (ICTs) offer amazing capabilities for settlement of such projects. This paper presents a Web based Information System (WIS) that attempts to become a source of information about the Greek forest legislation. The WIS was named Gre.Fo.L (Greek Forest Legislation) and at this version (v.2.1) represents the definitions of the basic forest principles, located in the Greek legislation, through a historical review. The findings relate to the legitimate definitions since the establishment of the Greek state. Gre.Fo.L is designed to also study other environmental issues as it intends to expand in later versions.

Keywords: Web Information System, Greek Forest Legislation, definition of forest, forest principles

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1. Introduction

The World Wide Web (WWW) constitutes an enormous database of hypertext-enabled document servers and readers on the Internet. It is also a distributed, dynamic, and promptly growing information source that has stimulated innovating research developments in various aspects of every modern activity such as digital libraries, information retrieval, education, commerce, government, and health care [1].

Nowadays, Internet is considered as an extremely dynamic and rapidly growing resource of information as Information and Communication Technologies (ICTs) are being applied in various aspects of every modern activity [2]. They offer amazing opportunities for development and exploit new capabilities for enhanced provided services in sustainable development, protection of the environment as well as economy, education, society and culture. These applications may assist people realize environmental issues and policy suggestions as they ensure that environmental knowledge is diffused to a wider audience [3].

Currently, the rapid growth of the www has created a need of developing new and effective Web data management systems [4]. *Web Information System, or Web-based Information System (WIS)*, is an information system that exploits the potential offered by internet web technologies, to deliver information and services, to users or other information systems-applications. It is a software system whose main purpose is to publish and maintain data by using hypertext-based principles.

Web-based information reclaims many benefits of multimedia technology, presenting and distributing data through the internet practically and simply. Today's fast broadband connections enable anyone to stream sophisticated content to a computer anywhere in the world, as the information can be retrieved spontaneously. This advantage can be a crucial factor for every researcher, scientist, student and any other individual that search information. A significant amount of interactive multimedia content is now delivered via the internet. Over the past few years, the www has been transformed into a platform which can support all views of organizational work. As a result, the benefits of this platform supplied increasingly important information systems efforts, leading to the development of information systems based on web technology [5].

Interactive multi-media web applications and devices continually retrieve and support information, in a way that enhances the learning and training process via a quality interaction [6]. Lately, the use of modern information systems in environmental and management problems is adopted by many relative scientists and researchers. The reason for such a phenomenon is the major assistance they provide not only in organizing and presenting data in a user friendly environment, but in decision making as well. Simulation, modeling, Geographical Information Systems, Expert Systems etc represent state of the art technologies which find use in all areas of forest interest [7]. ICTs are being applied of forest management in mapping and monitoring of forest resources and environmental threats [8].

1.1. The Greek Forest Legislation

Human-forest relations, conservation, protection and development of forests, are treated by forestry law, by using multiple use principles, aiming to fulfill the need to make planning on the basis of values of use [9]. Forestry law also includes definition of forest. Definitions vary widely from country to country sometimes with legal and policy ramifications while, agreement on the meaning of such terms as forest and forestland is a logical first step in reaching agreement on natural resource problems [10].

In our days, the definition of forest has been changing towards a wider range of qualitative characteristics and it is defined as an ecosystem that combines simultaneously various land uses [11]. The Greek forest legislation as a part of the general law system of Greece is defined as a very complicated sector. Many legislative frameworks and relative provisions about the protection and management of the natural environment have been published since the foundation of the Greek Republic, aiming to solve critical issues, policymaking towards the environment in general and specifically about forests. Regardless of whether enforced or negotiated, forest public policy, which implies a group of strategic plans and measures applied to support forest planning and management, once authorized by legal dispositions, enjoys a compulsory character [12].

Although the fundamental principles of forestry considered as a strictly scientific issue, as many special environmental scientists have luxuriated in establishing the basic definitions of forest and forestlands, the applicable legislation seems to define these concepts officially towards the state, in order to form and wield the necessary forest policy framework.

The evolution of society in general and the growing needs of the country side and mountainous populations leaded the state to take measures in order to determine people's rights and liabilities among the natural environment and specifically the forest, through a functional, reliable and equitable legislative framework. Consequently, the Greek State, understanding this need, has published many legal frameworks aiming to find solutions to the existing and ever-increasing environmental matters that occur over the years. Subsequently, they have formulated the definitions of forest and forestland, through specific laws, more than seven times since the foundation of the Greek state. Moreover, some other relative concepts like: grass land, seashore, riparian zone etc, have also been specified by particular laws.

It is pointed out that the -protected by law- definitions of forest and forestlands, are of the most significant questions of forestry science, because it is bottomless to consider forest management, protection and policy without giving a definite answer to these basic queries. It is indispensable for the governments to clarify this publicly in order to exercise forest policy and to provide social peace. In general, the major issue is the protection and conservation of the natural environment in a way that builds an intercourse between the people and the environment [13].

The aim of this paper is to provide a functional and user-friendly designed web informational system that analyzes and represents the main forest principles and definitions of the Greek forest legislative system through a historical review. The proposed WIS application presents its findings categorized and classified, as its purpose is to provide all the available information about this significant part of the Greek forest legislation.

2. Methods and Material

A specialized HTML (Hyper Text Markup Language) editor like Adobe Dreamweaver™ was used to create this web-based application. Adobe Dreamweaver CS5.5 is a Graphical User Interface-GUI program that also allows code and script writing [14]. The process included both graphical interface work and code authoring as well Figure.1 introduces the interface of Dreamweaver CS5.5. Cascading Style Sheets (CSS) were used to achieve equable and similar appearance of every individual element of a web page, whereas flash elements like Spry Menu bars, Spry Collapsible Panels and Spry Tabbed Panels –all available in Dreamweaver- were incorporated aiming to achieve modern appearance and maximum usability.
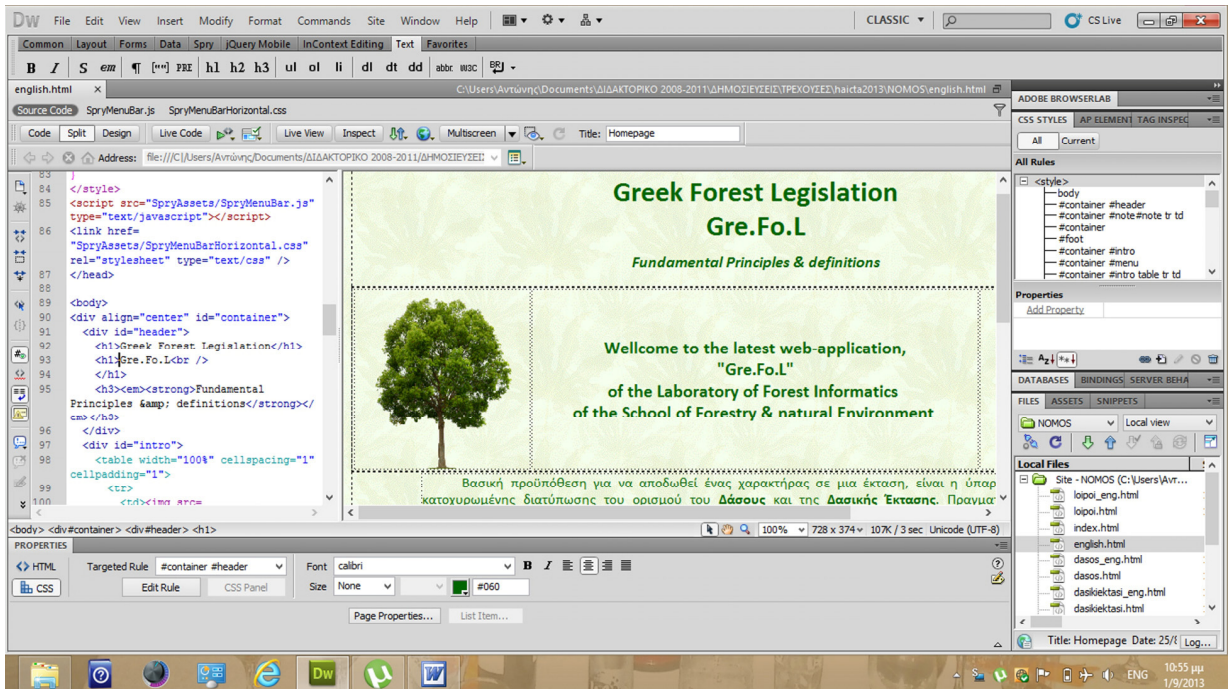
Fig. 1. Interface of Dreamweaver CS5.5 (Source code and GUI)

Other software were also employed to accomplish all the additional requirements of the project: an image editor like Photoshop to create graphics, Adobe Flash for animation objects and a database of Microsoft Access 2010 to categorize and classify the available data presented in the proposed WIS.

The necessary data such as laws, legislations, provisions and terminology, were retrieved on the web and especially in the website of the Greek National State printing which includes the total amount of the Greek legislation. A diligent survey was accomplished among the respective Government Gazettes. The needful legislation found and analyzed properly, isolating the relevant articles and paragraphs that contain the definitions of the basic forest principles. The findings were registered in a small database which includes 9 records with 9 particular fields. This was very important, because the data needed to be categorized and classified in order to have them accessible during the development of the WIS.

The application has the structure of a website and aims to present its content combined with all the desirable characteristics of a well-designed website, such as aesthetics, functionalism, easy navigation and ergonomics [15]. The impact and success of such an application depends on the extent of adoption of the important principles and success dimensions, located in the bibliography. Delone and Mclean propose an information system success model detailing the essential dimensions for a successful WIS.

Figure.2 presents the critical factors for a successful WIS, as they are described by "The D&M IS Success Model". It is important to underline that the proposed WIS was developed taking notice of these following critical factors.
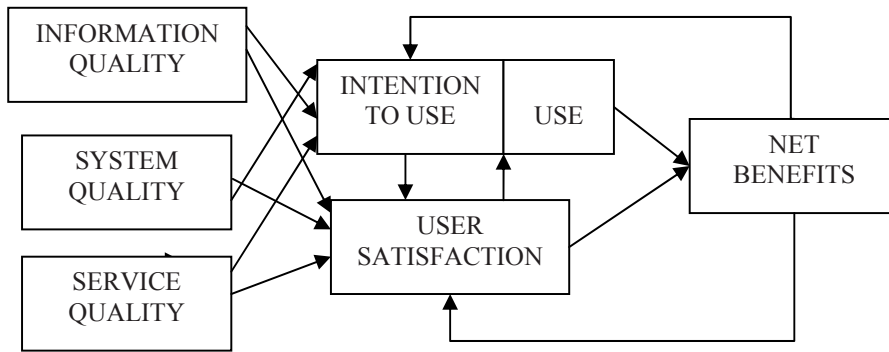
Fig. 2. Interface of Dreamweaver CS5.5 (Source code and GUI)

The *System quality* in the Internet environment measures the desired characteristics of an Informational System. These are: *Usability, availability, reliability, adaptability, and response time*. These are very important qualities, because user satisfaction is basically depending on them. The proposed WIS attempts to achieve sufficient usability of the user's interface which refers to the fluency or ease with which a user is able to interact with a system in a simple way [16]. Usability Engineering (EU) is a discipline that is concerned with the question of how to design software that is easy to use [17].

Information quality refers to the content issue. The content of the WIS touches a specific subject and hammers to be personalized, complete, relevant, secure and easy to understand, in a manner to prorate the necessary amount of information.

Usage measures everything from a visit to a Web site, to navigation within the site, to information retrieval, to execution of a transaction. As the proposed WIS concern to a special target group, it has been developed rather to ensure a good usage level in order to achieve user satisfaction.

Finally, *net benefits* are the most important success measures as they capture the balance of positive and negative impacts of the WIS on users and visitors. Some of the net benefits could be: time saving, reduced search costs and cost savings.

3. Methods and Material

The proposed WIS represents a source of information about the Greek Forest Legislation. It was named as *"Gre.Fo.L v.2.1" (Greek Forest Legislation)*. Specifically in this version, it contains all the fundamental principles and definitions of Forestry according to the Greek legislation. It consists of seven individual web pages in Greek. There is also an English edition of seven web pages as well, appointing the primal legal information. User can simply change language selecting the corresponding button in the interface.

Figure 3 illustrates the structure of Gre.Fo.L and the diffusion of information. The same framework applies both in Greek and English edition. All web pages are connected to each other due to the main spry menu bar which provides all the appropriate internal links.
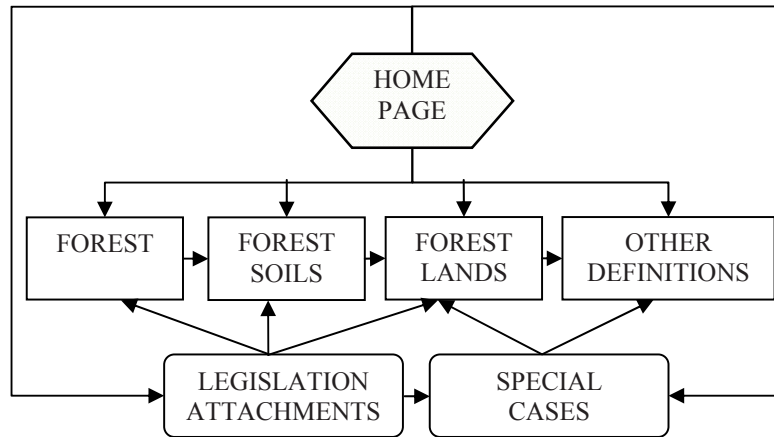
Fig. 3. Structure and Flow chart of "Gre.Fo.L"

Home page welcomes users and informs them briefly about the topic and nature of the application. Substantially, every single web page constitutes an individual chapter. The first four chapters contain the respective definitions and terms, mentioning the corresponding law provisions. It is noticed that there have been seven different or similar definitions of Forest and Forest lands. Figure.4 introduces the main interface of Gre.Fo.L. User can chose among a list of law titles, to obtain the relevant definition. The same way of presentation was developed for the first four chapters.

Further, some other comprehensions needed to be defined by the law. All of them, that play a key role in environmental protection along with others, are presented in the chapter "Other definitions". All the comparative legislation is cited in the chapter "Legislation". Law titles, Government Gazettes, detachments, articles and provisions are presented, while access to the full text of the laws is allowed. Finally, some special legislative frameworks are mentioned in the last chapter "Special cases".

Fig. 4. Interface of the chapter "Forestlands"

4. Discussion

A very critical comment about the Greek legal system history could be that newfangled legislation often discredits a previous law, turning it into a "dead letter", or modifies some older clauses in order to adjust various problems and to update due to the new needs and conditions of the society and the state. This fact is evident in the Greek forest legislation, as a result of the existence of too many laws that often cause overlapping and confusion.

Over the years, the legitimate definitions of Forest had become ineffective and obsolete. As a result, they had to be either replaced or enriched, because of the arising social and environmental needs. Specifically, development of technology, residential flare, tourism development and consumerism are some factors that have a great impact to the natural environment. In conclusion, a contemporary and scientifically correct -legally enforceable- definition of forest is always indispensible for a state aiming at the protection and conservation of the natural environment.

For example, the so called "Forest code" which contains the entire forest law, has been formatted three times over the last 90 years. Moreover, newer laws have tried to be more illustrative and clear about the conceptual topics, explaining terms and orders in a more analytical manner, but not always successfully. Inevitably, basic legislation is usually followed by other provisions and arrangements to clarify some important issues such as the wording of the main definitions and principles of forestry.

The proposed WIS is actually an attempt to categorize and organize some essential topics of the Greek forest legislation and present the findings publicly. This paper releases "Gre.Fo.L Version 2.1 the case of Greek Forest Principles". Newer versions could be developed concerning other important environmental law issues and gradually a remarkable resource may occur of such an expansion. They may have to incorporate a database in an HTML environment as the amount of information will gradually expand. The whole project emphasizes in the diffusion of rich and reliable information, aiming at user-friendly structure that attracts the visitor. Generally, an important advantage of the WIS is the fast and easy updating of site content that allows the web administrator to supply users with the latest comparative information.

Finally, the development of tools to find quality information on the Web is currently a pressing need. Gre.Fo.L's main goal is to provide documental and reliable information through a manageable application. It addresses to a wide target group of people that are interested in environmental issues and legal environmental policy. These could be professional foresters, researchers, environmental scientists, lawyers, jurisprudents and students. As far as the

implementation of the project, it could be adopted by the Greek Forest authorities as a useful tool in decision making, by students in an educational manner and by environmental organizations in order to apply a legal support towards the environment when necessary.

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