PORTUGUESE E-GOVERNMENT INITIATIVES
VILLAGES, TOWNS, CITIES AND THE CONSTITUTIONS

CLÁUDIO TEIXEIRA¹, JOHNNY SANTOS¹, JOAQUIM SOUSA PINTO¹, JOAQUIM ARNALDO MARTINS¹

¹ IEETA – Instituto Engenharia Electrónica e Telemática de Aveiro, Departamento de Electrónica e Telecomunicações, Universidade de Aveiro – Campus Universitário de Santiago, 3800-193 Aveiro, Portugal
e-mail: claudio@ieeta.pt; johnny@ieeta.pt; jsp@ieeta.pt; jam@ieeta.pt

Traditionally, the interaction between government agencies and citizens or companies was made in governmental buildings, where a public employee receives all the requests. This scenario is gradually changing and evolving because of the rapid growth of use of new communication technologies. Thanks to this, the government-citizens interaction has been moving to considerably closer to the citizen, and sometimes it takes place on his home or working place via his personal computer and the internet. This paper explains two initiative of the Portuguese government in shorting the distance between the government and the citizens: allowing a fast access to information on parliamentary initiatives that concern the creating, changing or extinguishing villages, towns, cities, districts or other administrative areas, and enabling the consulting of the current Portuguese Constitution online, with the possibility to navigate within their reviews, enabling the consult of every article that is (or was) active at a given time. The focus of this paper is implementation issues on both initiatives, from the projects specifications until their delivery to the Portuguese Parliament.

Keywords: e-government; e-citizenship; Portuguese Constitution

INTRODUCTION

Villages, Towns and Cities and The Constitutions are two projects of the Portuguese Government to enable a faster way for citizens to consult both parliamentary initiatives that concern villages, towns, cities or districts and changes in the Portuguese Constitution.

The final goal is to provide maintenance tools, as well as searching tools, i.e.; two web applications will be built: one for the parliamentary initiatives – a single place where the staff of the Documentation Services of the Portuguese Parliament can insert, update and correct initiatives and where a citizen can search for parliamentary initiatives referring, for instance, its town; and other web application for the Portuguese Constitution with the same philosophy – a single place for administration and consulting.

At the moment, there is no way of making the search in the parliamentary initiatives concerning villages or cities. Furthermore, this kind of information must be requested to the Documentation Services, which represents a considerable waist of time and more importantly, staff, since it is necessary that an employee of the Documentation Services searches the requested information among hundreds of documents, then the document must be scanned and printed (which is a waist of paper and of course, tax money), or e-mailed to the person who requested it. Taking into consideration that the Documentation Services receive about 50 requests each month, then the need for this
project becomes obvious, since it saves resources (to the Documentation Services) and time (to the citizens).

The Portuguese Constitution search project is also something completely new: it will enable the navigation by any part of the Constitution, since the original text until the current Constitution, and it must let the user view the Constitution as it was at a given date. More features are the possibility of having comments made by constitutional specialists attached to any part of the constitution, and attached information about the discussion that lead to the changes on a given constitution part.

The two main aspects discussed over the parliamentary initiatives project are the data model and the usability issues [1,2]. The data model has a few considerations, since the documentation regarding the parliamentary initiatives has been changing over the years (on the last nearly 200 years), and those changes must not affect the model produced. The usability problem comes with the need of making the administration (updating, changing or deleting the data) online, fast and simple.

As for the Portuguese Constitution project, the main problems focused in the case study are the user navigation issues, online administration problems, and online comments insertion.

**SYSTEM IMPLEMENTATION**

Given the nature of both projects, the discussion of their implementation will be presented separately. As mentioned above, usability, data modelling and administration issues will be the main target of the discussion; also particular application problems will be addressed in each of the following sub-sections. Each sub-section will also address information modelling issues, and the corresponding implementation.

**PARLIAMENTARY INITIATIVES PROJECT - PROBLEM SPECIFICATION**

The main problem at hands is the following:

"Develop a web site that enables the citizen to access information concerning parliamentary initiatives on places (villages, towns or cities), or districts, that occurred in anytime, since the beginning of documenting such initiatives."

Together with the specification of the problem, the Documentation Services delivered several listings with the initiatives that fit into this project referring to the Portuguese 3rd Republic (about 2500 parliamentary initiatives on this scope).

Since the beginning of this project, several sub-problems where encountered:

- As in any application that deals with an information system relatively complex:
  - Guarantee the usability of the system, even though the information shown may be complex;
  - Develop an easy and effective way of maintaining the system;

- In this particular application:
  - Identify and conciliate information structures since the most recent initiatives to the oldest, in a way to accomplish an information system robust and concise, without low density tables in relation to what should be the most desirable scenario.
  - Guarantee data coherence on the data presented in the listings delivered, as well as its correct insertion into the adopted information model.

Due to space restrictions, only the particular application issues will be discussed on the paper.

All the initiatives, no matter from which date, must be inserted in the same data model. The problem with this specification is that since the beginning of documenting
of these initiatives until today, there have been several changes to the information of each initiative, especially after a change in the governmental regime.

As an example, the organ in which the initiatives where published as law projects, as well as the organ where the laws where published has changed over the years. Besides, the association of parliamentary groups with an initiative has not always been clear.

Despite these problems, it was necessary to identify which elements were common to every initiative, independently of the publication date – these elements will be the stone base of the data model. The following concepts can be classified as stone bases of the data model:

- Initiative – abstract term that designates a given intention that one wants to see realized. It can be thought as the name or title of the intention.
- Law Project – Specific proposal over a given initiative and that is intended to be approved.
- Law – The approved Law Project.
- Initiative Publication (or Law Project Publication) – Medium by which a given Law Project is made public.
- Law Publication – Medium by which a given Law is made public.

Is by using these concepts that an information model will be designed, the most concise as possible but still compatible with over 100 years of initiatives.

After the design of the model, a new step must be taken: insert the data from the delivered documents to the system.

As mentioned before, documentation was about 1000 initiatives, 1600 law projects and 450 laws. Given the documentation extent and the real possibility of typographical errors, the option was the developing of an external tool that process these specific lists (after some more manual editions). This tool has become rather useful in detecting errors in the documentation, as well as data repetitions, or even severe data incoherencies. It has also allowed all the maintenance tests to be made using real information, because in the end the information could be easily replaced by the original.

The documentation delivered consisted of several Word files with tables, and in each line was the information about a Law Project. In order to use the newly developed tool, the Word files were copied into Excel, and after a slight adjustment of the columns, the newly developed tool could be used to extract the information from the file and into the data model.

PARLIAMENTARY INITIATIVES PROJECT – SYSTEM IMPLEMENTATION

After identifying the base stones of this particular system, all it was needed to be done was to design an information model accordingly with the base stones. Figure 1 represents the entity association model of the system.

As illustrated, one Initiative can have several Law Projects. Each Law Project, on its turn, can have several parliamentary groups associated (the ones that took the initiative into the Republic Assembly) and several subscribers (the first people to embrace the Law Project). Each parliamentary group is associated to a Legislature, as well as each Law Project.
A Law Project is published in the official Law Project Publication, which has a specific name depending of the current Historical Period. To a Law Project can also be associated one Law and its corresponding Law Publication. Each Initiative can still concern one or more locations (villages, towns, cities or districts) and has a specific type given by the Initiative Type. The same Law can approve several Initiatives.

As an information repository, the option was to use a relational database, given its easiness of configuration and use, and also by its levels of performance in information retrieval.

PARLIAMENTARY INITIATIVES PROJECT – MOST RELEVANT USE-CASE AND SEQUENCE DIAGRAMS

This system can be thought of as a set of two packages: normal use package and maintenance/administration package.

The normal user can perform the actions shown by Figure 2. Free text search over an initiative, town related initiatives search or simply view the information on a given Law or Law Project are the main actions a user can perform.
FIGURE 2 - USE CASE DIAGRAM WITH THE ACTIONS OF THE NORMAL USER OF THE SYSTEM.

The administrator (see Figure 3) is able to perform the same actions as a normal user plus changing, inserting and deleting Law Projects, Towns, Laws, Parliamentary Groups or Subscribers.

FIGURE 3 - USE CASE DIAGRAM SHOWING THE ADMINISTRATOR ACTIONS PROVIDED IN THE SYSTEM.

Figure 4 represents a sequence diagram that helps to understand and clarify what kind of interaction is expected from this project. In the sequence, the normal user needs to consult information about all initiatives related with a given town. Therefore, the user selects the option referring to the search of initiatives over a given place, specifies the place to search, and results of the search immediately appear. This is the visible part of the process. Figure 4 represents all the stages of the processes.
PORTUGUESE CONSTITUTION PROJECT – PROBLEM SPECIFICATION

As any Constitution, the Portuguese Constitution has suffered some reviews since its publication in April 1976. The site to build must be able to allow the user to navigate within the Constitution, and to view the Constitution text as it was at a given date. Another feature required is to enable the tracking (and navigation) on the evolution of the text of a given Constitution part. Among the required features is also the need to enable the viewing of commentaries made by constitutional specialist to any part of the Constitution (or their reviews) and the viewing of documents referring to the discussion of an article or any other part subject to review.

Figure 5 is the result of a careful analysis of the Portuguese Constitution [3]. Each Constitution (or Review) has one or more Constitution Parts. Each of these can have more parts inside, or can be an “article container”. Each Article can have alineas or article numbers. Article numbers can also have alineas.
The design also supports new Constitution Parts that are not specified at the moment. This enables the model to be sufficiently generic to embrace any constitution. In fact, this architecture supports any documents that have items and sub items well categorized.

PARLIAMENTARY INITIATIVES PROJECT – USER NAVIGATION ISSUES

One of the problems at hand is to build a friendly interface that enables the navigation over the Constitution and their reviews, allowing the tracking of the changes on a given part.

These changes can be: text changes, adding a constitution part (alinea, article, article number, Part ...), renumbering, merging two parts, splitting one part and removing a part. Some of these changes have a straightforward implementation, but changes like reordering, merging and splitting must be analysed thoroughly.

Since the system must be user friendly, the web interface will be similar to a Windows Explorer window, where the Constitution and their reviews will be related to folders, and their sub-parts will be folders inside, consecutively until the articles, which will be treated as files inside a folder.

A navigation menu will enable users to “jump” from one review to the other, and to compare a given constitution part in two different dates. The comments and the documentation related to the part being viewed will also be available in the interface.

PARLIAMENTARY INITIATIVES PROJECT – ONLINE ADMINISTRATION PROBLEMS

As in the Parliamentary Initiatives project, the administration of this application will also be performed online, with a new feature: role based administration. This project has several types of input data users: constitution specialists will be inserting comments to a given part, parliamentary staff will be inserting documentation relevant to the discussion over the review of a given constitution part, and of course someone else will be responsible for maintaining the Constitution and their reviews up-to-date.

Each validated user can have one or more roles, and each role enables the administration of well defined constitution related topic.

IMPLEMENTATION ISSUES ON BOTH PROJECTS

The rapid development of an information system is commonly affected by the developing tools and technologies used. There are some limitations that must be taken into consideration when choosing a technology, especially when the client of the information system already has some software licenses. In these cases, the technological options should (and most of the times must) be restrained to the ones the client already has. In this particular case, the Documentation Services of the Portuguese Parliament already have a SQLServer installed as well as a Windows Internet Information Server (IIS). Therefore, and to store the information the option was to use a database stored in the SQLServer; for hosting the site was used the Windows IIS. The sites will be developed using Microsoft .Net, and it will be designed to work on a single aspx page, using C# [4] as code-behind programming language.

In order to create strong data models, the use of simple index restrictions and foreign key restrictions was not enough; it was necessary something stronger, internal inter-table mechanisms to guarantee the coherence of data should be implemented. Therefore, it became necessary to specify database triggers to guarantee for instance, that all of the 3rd Republic Law Projects needed a foreign key regarding the Legislature in which it took place (prior to the 3rd Republic this condition is not yet very clear).
Another feature of the SQL Server [5] used was the programming of stored procedures to diminish the execution time of the SQL instructions and to guarantee that the data format is the expected, and that the decision of what to be returned is of the database administrator and not of the site programmer. In this project, this would not be a very serious problem, but these are some of the good practice rules useful to multidisciplinary projects that should (or should it be must?) be present at all times in projects development.

**RESULTS**

Recalling the sequence diagrams presented before, an illustration of what was achieved with this site is illustrated in Figure 6 to Figure 9.

All of the features developed can be accessed using a menu in a side bar of the site. This menu is at most 3 levels in depth. It only displays the root options plus the current branch option selected. Figure 6 shows the administrator menu (since it has the options of introducing and changing data – *Introdução de Dados* and *Alterar Dados*) opened in the search option. This menu provides a fast way of accessing data, since the menu is always visible.

![Figure 6 - Menu Options. The maximum depth of the menu is 3 levels.](image)

Figure 7 shows the interface used to change the information on a given Law. It is composed by 4 tabs, Initiative (only for deleting or read-only, but not editing), Initiative Publication (read-only), Law information (fully editable) and locations affected by the Initiative (read-only). While editing a given law, only the information regarding the law itself can be changed. The same philosophy is used to change the information about a given Law Project. The information that can be changed concerns the Law Project itself, the respective Law (if applicable). The locations affected by the Law Project are read-only, since they are connected to the Initiative, and not to the Law Project.
FIGURE 7 - SCREENSHOT OF THE INTERFACE USED TO CHANGE THE INFORMATION ON A GIVEN LAW. THE FIRST TAB (INICIATIVA) IS ALL DISABLED, SINCE THE INFORMATION ON AN INITIATIVE CAN NOT BE CHANGED. IF THE INITIATIVE HAS BEEN INCORRECTLY INTRODUCED, THE ONLY OPTION IS TO DELETE IT AND CREATE IT AGAIN.

Figure 8 and Figure 9 represent two steps of the diagram presented in Figure 4 - Sequence diagram on the interaction between the user and the system, in order to search for initiatives in a specific town. Figure 8 represents the location choosing step, and Figure 9 represents the information available on the selected location.

FIGURE 8 - SELECTION OF PLACE TO SEE THE RELATED INFORMATION.
FIGURE 9 - SCREENSHOT OF THE INTERFACE FOR DISPLAYING THE INFORMATION ON INITIATIVES ASSOCIATED WITH A GIVEN PLACE. IN THIS CASE, THE INFORMATION SHOWN IS FROM THE LAW PROJECT (PROJECTO LEI). INFORMATION ABOUT THE LAW (LEI) AND ABOUT THE INITIATIVE (INICIATIVA) IS ALSO AVAILABLE.

As for the Portuguese Constitution Project, there are still no screenshots available since its development started later. There is already a simple model that has the required functionality and that has already been approved by the final client, which has already made remarks concerning usability issues.

USABILITY ISSUES

One of the pre-requisites for an application to be considered practical is its usability. In order to achieve good usability criteria, the people that will be working (administration mainly) with the applications were involved in every step of the design with an important impact in the final interface, since the interface would be used mainly by these people.

For the search scenarios, their opinion was also relevant, since they are used to interfaces for search and retrieve results on this area, so they also have a good usability experience from other sites.

SECURITY

Having in mind that the site’s administration are made online, security measures were developed [6] based on the use of administration logins whose passwords are stored in a database has an hash key generated using the original password and a “salt”, a cryptographically strong random number, which makes very hard the discovery of the original password. Users are authenticated by regenerating the hash key, and comparing it to the value on the database.

Another measure that will be taken is to only allow authenticated users from within the site’s intranet. Over the internet, all users will be considered as normal users.
CONCLUSIONS

This paper explains two initiatives of the Portuguese government in shortening the distance between the government and the citizens. The main project phases were presented and explained. In spite the projects are yet to be finished, the expectations surrounding them are increasing amongst the Portuguese Parliament staff.

This investment of the Portuguese Government will contribute for bringing the Parliament Initiatives closer to the citizen, and will also enable good searching tools for the media specialized in these subjects.

Since these projects are not yet available to the general public, there is no statistical data about their usage.

REFERENCES

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