E-Government Applications for the Information Society

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Abstract

The incorporation of Information and Communication Technologies (ICTs) in activities and services such as education, culture and medicine constitutes a contemporary reality and governmental activities and services could not be an exception. Apart from expanded citizen services, e-government also offers a complete reshuffle of public organizations and their services through the efficient use of Internet services. This article presents an e-government platform which supports easy public access to governmental information, e-transactions between citizens and public organizations through the acceptance of e-documents submissions (e-applications and e-petitions) and their management through the e-protocol and finally, electronic delivery of a requested document. In addition, a model Greek e-government web portal is presented, which supports the Government to Citizen (G2C) model, which focuses on governmental information dissemination, which includes among others information about ministries, social services, and city news and information.

Keywords: *e-government, e-protocol, e-transactions, e-applications, e-petitions, ICTs.*

1. Introduction

Nowadays electronic government (commonly known as e-government) is a vast area of study for ICT experts and there are many ideas and policies surrounding it. The main concern of e-government applications developers and designers is the user. Therefore, a lot of effort is put into the development of quality user-friendly and user-centric services that accommodate their needs and wishes, which are essential and crucial towards the financial growth of the European Union.

Hence, e-government must fulfill the requirements of its users, namely high-quality services, effectiveness, efficiency, accountability and e-inclusion services for everybody. It is essential that public administrations become more contemporary and more innovative emphasizing on achieving impact and greater user assimilation. In order to make progress in what concerns organizational innovation and it being an ongoing process, the improvement of human resources and skills is an absolute necessity.

The extensive use of ICTs by a government in order to provide and exchange information and services with citizens, entities and businesses is commonly referred to as e-government. In particular, mainly the Internet as well as Web-based applications are being used by increasingly more governments every day in order to alter and facilitate the operation of conventional government services and their transactions with not only the citizens but also with businesses and other entities [1],[2].

The impact of e-government is none other than better government, which is more trustworthy and more reliable as it offers a vast number of advantages such as better policy outcomes, higher quality services, greater engagement with the citizens, greater collaboration between agencies, higher productivity and finally, financial benefits for all.

In much the same way as other e-services (e-learning, e-health and e-commerce), e-government introduces a great wave of technological innovation as well as government reinvention [3],[4],[5],[6].

The use of contemporary ICTs and especially of web-based technologies by e-government applications, provide citizens and businesses with access to governmental information and services and contribute to the improvement of the quality of the services and to the provision of more opportunities to actively participate in democratic processes [7],[8]. In particular, the aforementioned provisions include transactions between government and business (G2B), government and citizen (G2C), government and employee, in various governmental entities such as justice, taxation, welfare, social security, procurement, intra-governmental services etc. [9],[10],[11],[12],[13],[14]. All of the above require technical policies and specifications in order to achieve interoperability, security and IT systems coherence across the public sector [15],[16],[17].

Based on all of the above information and knowledge, this article presents a generic e-government application, which is based on a highly interactive, user-case model (citizen, employee, and administrator) and a flexible-interoperable scheme of assistive ICT tools, which essentially aims

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towards the design and development of more modular e-transactions. In addition, and within the aforementioned e-government environment, a user-friendly Greek e-government web portal was designed and created, which supports a very important e-government model, namely the Government to Citizen model (G2C), focusing on governmental information dissemination to Greek citizens, which includes among others information about ministries, social services, general information, etc. [18].

2. Structure of the E-Government Environment

The e-government environment consists of three systems: A web portal, the e-protocol system and finally the e-applications/e-petitions system. The last two will be described as one, since the latter may be considered as an extension of the e-protocol system. The governmental organization consists of six departments (planning, havoc compensation, housing, protocol, finances and research). Each department has one director and a large number of employees.

2.1 Web Portal's Environment Tools

The web portal environment includes tools that offer flexibility and adaptability depending on their use. The design of these tools is based on web services, such as discussion forums, chat, message box, e-libraries, which are widespread in the public web community. These tools are distinguished into two groups: ''informative'' and ''communicative''. On the one hand, the ''informative'' tools include services related to the information of governmental functions and their presentation. On the other hand, the ''communicative'' tools include services that allow the communication of users belonging to the same or different group (session level). The web portal environment enables the management of these tools according to the user groups' permission. More explicitly, the ''informative'' tools are the following: announcements, frequently asked questions (F.A.Q.) and e-libraries. Respectively, the ''communicative'' tools are: discussion forums, message boxes, chat and e-requests. Finally, it must be noted that the environment relates the tools according to the specific user level permissions. These levels are analyzed in the sections to follow.

2.2 User Levels

Seven user levels are distinguished in the web portal environment. Different supporting tools exist in each one of them.

Depending on the corresponding use, these levels have also a different role: Administrator, Manager, Director, Employee, Protocol Administrator (Employee), Registered (Authorized) User and Unauthorized User (Guest). Each of them interacts with the other through the ''informative'' and ''communicative'' tools related to each level.

The administrator coordinates and manages the e-government application through the administrative tools. The administrator determines which user level-group has the permission to use the corresponding ''informative'' and ''communicative'' tools. Moreover, the administrator can communicate with the other user levels in order to solve issues and has the privilege of updating the system. Finally, the administrator decides about the preparation, design and diffusion of the electronic content to the citizens. Through user friendly and interactive ICT web tools, the administrator authors the governmental content.

The Manager, Director and Employees user levels are described together, as they incorporate many similarities. The manager decides about the preparation, design and diffusion of the electronic content. Moreover, through the communicative tools, the employees cooperate with the directors, the directors with the manager and the manager with the administrator with respect to discussing solutions to problems and to exchange ideas for the better functionality of the system. Finally, these three user levels play an important and diverse role in the e-protocol chain, which will be described later.

The Protocol Administrator (Employee) is responsible for the e-protocol system. Besides the "informative" and "communicative" tools, he/she has the ability to view, change (under conditions) and add applications/petitions to the e-protocol system. The applications/petitions are fully categorized and new categories can be created.

The Registered (Authorized) Users have the ability to see and change specific information regarding their account, can view the progress of their applications/petitions and finally, they can make new applications/petitions that are supported by the e-application/e-petition system.

Finally, Unauthorized Users (Guests) can enter and search the data structure as a means of gathering important information. Finally, they may be informed about the news and events through the news and calendar service.

3. User Tools and Services

3.1 Administrative Tools

The environment provides administrative tools that are divided into two groups as follows: Management of the web portal system and management of the e-protocol and e-applications/e-petitions system. The management of the web portal system incorporates management of the "informative" services and management of the "communicative" services. The management of the informative services is an important issue, as through it the administrator has the flexibility to manage the following ontologies: The users, the main menu description, the e-library, announcements and finally, the frequently asked questions (F.A.Q.). The environment tools enable the administrator to organize the informative content.

Correspondingly, the communicative services group consists of interactive forms through which the administrator manages chat session, the discussion forum and finally, the message box.

Management of the e-protocol and e-applications/e-petitions systems incorporates management of the petitions, their categories and their deadlines. The transactions executed in each group concern retrieval, insertion and update of the corresponding data. All web requests/responses are carried out through interactive and user-friendly forms.

3.2 Manager-Director-Employees Environment Tools

The environment tools for these user levels are divided into three groups: Communicative, Informative and General Services. The group of communicative services is the one that enables these three user levels to communicate with the other user levels. The tools that employ these tasks are: the discussion forum, the message box, and chat. The second group of the informative services consists of tools that enable the fast access and management of the electronic content. This content cannot be accessed by unauthorized users. The general services group includes tools that are different for each user level and play an essential role in the e-protocol chain.

3.3 Protocol Employee Environment Tools

The environment tools of this user level are similar to the ones mentioned in 3.2. In addition, this level has extended tools regarding the e-protocol system. The protocol employee has more privileges in the e-protocol system and can also interact with the e-petitions system. This level is the starting and ending point in the e-protocol chain.

3.4 Registered-Authorized Users Environment Tools

The registered-authorized users have permission to interact with the e-Petitions system. They can submit an application to the agency, as long as it is supported by the system. Moreover, the registered-authorized users have the ability to track the status of the applications they had submitted in the past. Finally, they can view and change some of their account information.

3.5 Guest-Unauthorized Users Environment Tools

The Guests – Unauthorized Users, on the other side, can browse the web portal in order to obtain valuable information regarding the agency and/or the issue(s) they wish to apply for. In order to apply, the guests-unauthorized users have to create an account (register) and interact with the e-Petitions system.

4. Structure Presentation

4.1 General Description

The presented environment is used as the web portal of the Earthquake victims' Compensation Agency. The application serves as a means for the electronic collaboration of the agency's employees as well as for the general informing of citizens regarding the e-services. The basic contribution is the application of the communicative services (discussion forum, chat, message box) as a means of central-based communication of the agency with its employees and with the citizens. The main objective of the developed infrastructure is the diffusion of information from the agency to everyone and the improvement of the e-services to the citizens. The portal's contribution with respect to information and valorization is the diffusion of the agency's information and services to the simple Internet user.

4.2 The Core of the E-Protocol System

The e-Protocol system accepts petitions from various sources such as deposits, faxes, standard mail, e-mail and from the Internet. In the case where the petition's source is the Internet, the applicant receives a confirmation number and directions in order for his/her application to be fully registered. This mechanism is intended to avoid fake applications entering the e-protocol system.

Once a new petition has entered the system, the application is regarded as a new task that must be assigned to someone in order to process it. In the beginning it is assigned by the Protocol Administrator to the Department Manager, who in his/her turn assigns it to one or more Department Directors and the latter to one or more employees. Finally, it reaches the Protocol Administrator who completes it and sends it to the Correspondence Office. All steps are automated and the system has been designed so as to minimize the need of human intervention. For instance, the users are notified by the system when a new task is assigned to them.

4.3 Security

The transactions are made under secure communications (SSL) and there is an idle timeout of 20 minutes. If there is no activity during this period, the system automatically logs out the user.

5. A G2C Web Portal

As it was mentioned before, within the presented e-government environment, a user-friendly Greek e-government web portal was designed and created, which supports a very important e-government model, the Government to Citizen model (G2C), focusing on governmental information dissemination to Greek citizens, which includes among others information about ministries, social services, and city news and information.

5.1 Structure of Content

The government to Citizen Web portal that will be described contains three links (government info, Greek news and info-city). The structure content of the system consists of the following steps:

In the first step, there was the task of collecting all the necessary information regarding the objectives of the portal. That is to say information regarding all of the Ministries of Greece, the hospitals, pharmacies, cinemas, news agencies and other social services in the city was collected, in order to be assessed.

In the second step, there was the task of categorizing this information after the assessment, in order to have a more clear view of how to organize it and present it in the best possible way. The presentation of the information within a web portal is materialized bearing in mind the needs of the user-visitor at all times. The main aim is to render the web portal accessible and user friendly to the user-visitor, who will be able to easily and quickly navigate through the web pages of his/her choice, without having to spend time

unnecessarily on searching. In this case, the information regarding the Greek Ministries, the Greek News Agencies and the info-city was presented in separate web pages.

The third step involved the studying of the appropriate e-content. This task was undertaken aiming at presenting only the most interesting and necessary information for the users-visitors rather than feeding them with redundant information. Following this task, the e-content was written and embedded into the system.

The final task had to do with the in depth study of the standards and technologies used for the creation of this web portal. Such technologies include HTML for the design of the web pages and the FLASH technology, which was used in order to provide zoom in and zoom out services to individuals with visual impairments. The "design for all" approach was adopted constituting the web environment user friendly equally to disabled individuals as it is for normal citizens.

5.2 G2C Web Portal Presentation

The G2C Web Portal main page namely, "E-government Services", contains the three links, regarding information about life in Greece. The Main Page of the system has a very simple structure with a single column of the three links, in order to help the user-visitor navigate more easily. All three of these links, will be analyzed in detail, namely, "Government Info", "Cities Info" and finally "Gr News".

By clicking on the link "Government Info" on the main page, the user enters the correspondent page. There, the user can find a list of links of all the Greek Ministries. When clicking on one of the Ministries, the user will have access to information such as the address, the telephone and fax numbers and finally the web address of each Ministry, which appears on the right hand side of the page.

Hence, the user-visitor has the possibility of initially obtaining basic information about a Ministry of his/her choice such as its phone number and address. More specifically, the personal phone numbers of the Minister, Deputy Minister and General Secretary of the Ministry can also be found in this page. For more information regarding the specific Ministry, the user has the possibility of visiting the Ministries web site, by simply clicking on the provided link.

Correspondingly, by clicking on the link "Info City", the user enters the corresponding page. This page presents the implementation of an info-city for the two largest cities in Greece namely, Athens and Salonika, information that is essential for both a citizen and a visitor.

After choosing his/her preferred language (Greek or English), the user enters another page, whereby the page instigates the user to choose one of the two aforementioned cities (Athens or Salonika). After the selection of the city, a page is loaded where the user can choose one of the following social services, to get informed about vital and useful information regarding the city's activities and services of his/her interest, such as theatres, cinemas, pharmacies, hospital, useful phone numbers, inter-city motor buses, airlines, radio-taxis, railways, radio stations, TV channels, museums and art galleries.

By clicking on one of the above links, the user can get all the necessary information regarding these institutions. For example by clicking on the link "Cinemas", the user accesses information about all the cinemas in the city, their addresses and their telephone numbers.

As it was mentioned before, the FLASH technology, which was used in order to provide zoom in and zoom out services to individuals with visual impairments. By right clicking the mouse and selecting the "zoom in" function, the user views a larger version of the web page. Reversely, by choosing the zoom out function, the user can view the original version of the web page.

Finally, by clicking on the link "Gr News", the corresponding page loads. This page provides Greek news to the web users-visitors and to the overseas Greek citizens. It contains news from well-known Greek radio stations and news agencies and acts as a Greek news library. This is the first ever Greek media web portal. By clicking on one of the image links, the user can access information regarding the correspondent radio station or news agency such as their program as well as news feedbacks.

6. Conclusions

The aim of e-government and of EU governments in general is the simplification, acceleration and improvement of governmental e-services and e-provisions to the citizen, to businesses and to other interested entities. The E-Europe policy emphasizes on online government with the use of modern ICTs in order to ensure the easy, efficient and user-friendly online access to governmental information, services and decision-making procedures. In other words, the basic aim is the design and development of web-based services towards the improvement of access to public information and services, the improvement of e-transactions transparency and security and finally, to

ensure the access to specific data in order that the citizens can actively participate in decision making processes.

It must be mentioned that when discussing improvement of governmental services to the citizen, it is from both a quantitative and a qualitative point of view. In addition, it means the restructuring as well as the reengineering of government entities and their respective provided services since now they incorporate state-of-the-art ICT technologies and particularly web-based tools and services.

The life cycle of an e-government transaction, begins with the easy access to governmental information and services, then moves on to the actual e-transaction between the citizen and the governmental body before the e-delivery of the requested document to the citizen.

In order to achieve a successful life cycle it is essential to design and develop an e-government platform that can support e-protocol and e-applications/e-petitions functions. This paper presented an e-government platform that was developed for a Greek public entity that supports the aforementioned functions and which presents the practical use and importance of the integration of ICTs into the different aspects of traditional government. More particularly, this e-government platform provides public information diffusion, it accepts e-document submissions and it manages them through e-protocol and finally, it supports easy communication among the entity's departments as well as robust and user-friendly management, storage, search, retrieval, handling and delivery of the e-documents.

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