

The EU-Services Directive: An e-Framework to optimize public administration

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Abstract—The Point of Single Contact, proposed by the EU Services Directive, is a reliable source of electronic processing of information that facilitates the interaction of citizens with the public administration. This paper presents an eFramework designed to improve the communication between the citizens or businesses and the public administration. Using this framework the governments can offer eServices to its citizens, as well as the possibility to interact with various public government-level services, without the need to directly interact with the involved institutions. An example of such an electronic service would be the possibility to open a business using a single browser. We present the architecture as well as technical details for the implementation of such a framework. We also present a pilot application designed to orchestrate the workflow for opening a business. Such a solution is based on state-of-the-art technologies such as InfoPath, SharePoint, BizTalk, and Web Services.

Keywords: *eGovernment, EU-Services Directive, eFramework for public administration.*

I. INTRODUCTION

Public administration is subject to major changes, affecting many countries. One such change is the compulsoriness to implement the European Union Services Directive. One of the most important goals of Romania for this year is setting up a Point of Single Contact (PSC), as requested by the European Union. The Point of Single Contact is an electronic means through which service providers can find the information and complete the necessary formalities necessary to doing business there. Each member state must have its own PSC, which should be a reliable source of electronic processing of information that should facilitate the interaction of citizens with the public administration.

In this paper we present the design details of a framework for optimizing the relationship between Governments and citizens using eServices. Such a framework can represent the central brain of a PSC implementation. Using this framework the governments can offer online services to its citizens as well as the possibility to interact with various public government-level services, without the need to directly interact with the involved institutions. An example of such an electronic service is the possibility to open a business using a simple web browser.

The framework implements the „one-stop paradigm” and the „one-stop government”. The „one-stop paradigm”, coming from the business sector, refers to the fact that the

customer should not have to seek information from different contacts, but from a single central point. This point provides capabilities to be accessed by various means: telephone, email, etc. The „one-stop government” concept is the mapping of the paradigm on the public sector, the idea being that administrative services should be offered from one source.

The framework is generic, allowing the integration in the electronic environment of various scenarios, such as opening or closing a business. It thus facilitates the interaction between public administration and citizens. In this paper we also present the implementation details of a pilot implementation of this framework. We also evaluated the solution by integrating a workflow for opening a business as encountered in the real-world Romanian environment.

The rest of this paper is structured as follows. We first present the analysis and general architecture of the framework. In the next section we present implementation details of the pilot solution, presenting the technical issues and solutions. Next we present several obtained results and, in the final section, we give the conclusions.

II. THE IMPLEMENTATION OF PSC IN OTHER COUNTRIES

As PSC implementation is a current problem for all member countries of the European Union, various solutions have been rendered, the majority of them based on the principles presented in the current paper. A series of countries such as Germany, Austria and the United Kingdom have proceeded with the requirements and implementation of the PSC.

A. Germany

Two of the most important IT players in the implementation of a PSC in Germany are Siemens IT and Fraunhofer Fokus Institute for Open Communication Systems [4]. At this stage it has been implemented a prototype with a number of five scenarios using Siemens technologies.

Another prototype provided by Fraunhofer Fokus Institute is based on Microsoft technologies and served as a model for the current pilot solution [3]. Three basic roles were assigned in the test scenario: customer, point of single contact and back office. Unlike the solution described in this article, the proposed architecture in Germany’s case is not extensible, does not include the capability of allowing the public organization construct or modify any workflow (so a simple change in the legislation must be handled by a

specialized computer specialist), it does not handle security, etc.

B. Austria

Austria is one of the countries that tried to implement many electronic services in the last years. Authorities claim that the Austrian legislation is prepared to enter a new phase in eGovernment (that is the point of single contact) [5]. One of the main achievements in the relationship between citizens and public administration is the “Citizen Card”. The Citizen Card offers a set of tools meant to help the citizen communicate with authorities and companies via the Internet in the most secure way. The two main functions of this card are authentication and the possibility to create digital signatures.

The first step in implementing a PSC is establishing transparency throughout the operation flow. One of the most important Austrian eGovernment sites is: www.help.gv.at, called HELP [6]. It is an Internet platform that provides links to a large number of public authorities, as well as information on all interactions with Austrian authorities required in the most frequent life situations such as pregnancy, childbirth, marriage or housing, and permits the electronic processing of some of these procedures. The basic principles of this portal are: transparency, readily understandable format, clarity of information and concentration on essential facts. It is considered a very useful interface between authorities and citizens. The information covers scenarios for more than 200 life situations. The citizen can find out what documents will have to be furnished, what fees to be paid, deadlines to be met and what forms or specimen documents can be downloaded at any time. The forms published here are in Adobe PDF and/or Word Document format.

At the moment Austria has a series of important eGovernment tools (Citizen card, eGovernment quality mark, Electronic record system (ELAK), Electronic payment, Electronic signature, Electronic delivery, Timestamping service, Electronic Mandates), but the implementation of the PSC is still in progress. Furthermore it can be considered that information can be easily accessed through the presented Internet portals.

C. United Kingdom

United Kingdom is one of the countries that stresses upon the impact the implementation of a PSC would have on the local economy as well as on the European economy and on EU Single Market. The implementation of EU Services Directive is mainly supported by two entities: SITPRO and BERR [7].

SITPRO Limited is widely recognized as the world's leading trade facilitation body and for more almost 40 years has been at the vanguard of efforts to make international trade easier. Its focus is the procedures and documentation associated with international trade.

BERR represents the Department for Business Enterprise and Regulatory Reform. Its goal is to boost productivity and keep the UK competitive and an attractive place to do

business, as well as to help companies succeed overseas and to bring foreign investment to the UK.

III. E-FRAMEWORK ARCHITECTURE

As a PSC implementation is a current problem for all member countries of the European Union, various solutions have been rendered, the majority of them being based on the principles presented in the current paper. A series of countries such as Germany, Austria and the United Kingdom have proceeded with the requirements and implementation of the PSC [1][2].

The main parts of any PSC implementation are the front-end and, as expected, the back-end. The front-end is represented by the project's interface both for the user and for the Point of Single Contact worker. The back-end is represented by the layer of communication among administrative entities involved in the process and the defined protocols to serve this purpose. The PSC should integrate existing front-office and back-office applications of the current administrative sector. The front-office is the interface for the citizen and its purpose is to keep the citizen satisfied with the services. The back-office represents the medium for the document and operation flow of administrative operations.

The starting point for developing the presented solution was the analysis of the current business processes in Romanian market. The framework follows a component-based development, being composed of several modules responsible with the implementation of the different functional requirements (Figure 1). The analysis of the current business environment furthermore highlighted the functionality needed to be integrated so that to obtain a generic framework, capable to cope with various possible scenarios (such as, for example, use the PSC in order to modify some business data, close a business, change one's driving license, etc.).



Figure 1. The architecture of the framework.

The generic architecture is based on the observation that any PSC has to provide information regarding all business processes, has to work like a consultant for the user and has

to be able to coordinate the process throughout its entire lifespan.

The adopted strategy was to split the system into three main components: the user interface, a component for parsing the documents and storing data in databases, and a component for managing administrative processes (as presented in Figure 1).

IV. A PILOT IMPLEMENTATION

Starting from the general architecture we developed a prototype for Romania, which is meant to show that business workflows can be automated efficiently. The project uses several off-the-shelf products useful for e-Government scenarios, providing all the tools and applications for implementing a complex system. The pilot implementation was designed according to the workflow diagrams analyzing the current process of registering a limited liability company with a single Romanian associate (Figure 2).

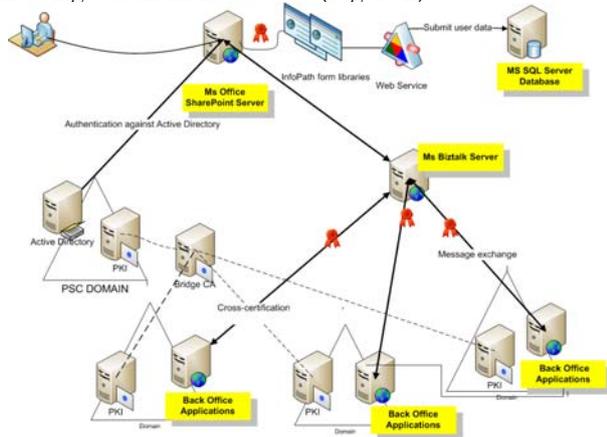


Figure 2. Technology and server mapping of the PSC pilot solution.

A. The implementation of the front-end component

The front-end of the implementation is responsible with the user interface. This interface must provide enough information to the user and be easily understood and work with. As seen in Figure 3, the solution chosen for the interface provides integration among the main components of the interface: the database engine, the SharePoint portal, the InfoPath forms and the data validation WebService.

In this architecture the user is presented with forms designed using InfoPath. He can fill out several fields (according to some legal issues), either online or completely offline – InfoPath is fully integrated in the Office suite – and submits the data using standard web services. The data is next processed in conjunction with Microsoft SharePoint, which provides important features such as Internet Explorer based collaboration functions, process management modules, search modules and a document-management platform. One of the basic usages of SharePoint is the hosting of websites that access shared workspaces, information and documents.

The design and implementation of the forms and online portals were based on several considerations. The interface should not confuse the user: it has to be easy to understand

and use, providing relatively easy access to important pieces of information. The design of the forms was kept very close to their original paper versions (the one agreed by the Government) in order to preserve the familiarity that the user already has with them. The forms were also designed according to the XML standard.

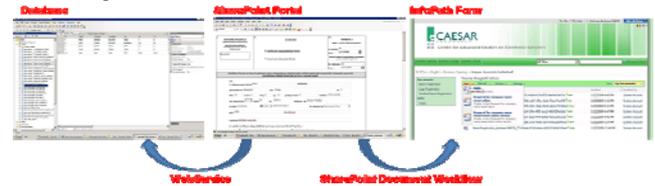


Figure 3. Database, Form template, SharePoint portal integration with the means of web services.

The main product used for the front-end component is InfoPath Forms, used to collect the needed data from the user. InfoPath forms are connected both to a SharePoint portal and an SQL Server database. The SharePoint portal serves as a container for the forms needed by the current business processes, as a document storage center and as an environment for document workflows. The portal also offers document storage facilities for a wide range of documents: Office compatible formats, images, Adobe PDF. This provides the advantage of manipulating various document formats as provided by the user (for example, in one scenario the user can fill an Office form, while in another he can work with some PDF document). Furthermore, the portal provides mechanisms for creating user tasks and sending emails automatically.

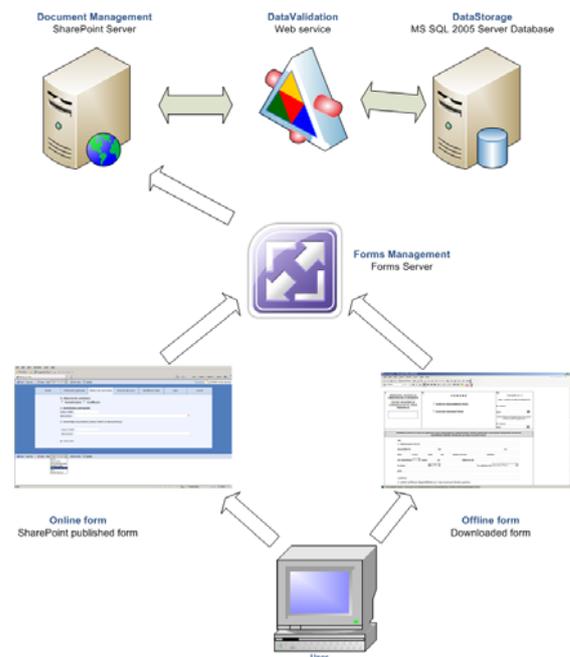


Figure 4. Interface components and interactions.

Behind the interface resides a database server. This not only serves as a data storage facility, but also has a role in

archiving the form data. The communication between the form data and the database is handled by a series of web services containing specific validation rules. The goal of the web services is to provide interoperability between the framework interface components. A web service based architecture provides also the advantage of parallelization of actions, and thus provides increased processing speeds. In the current implementation we provide two types of services: ASP .NET web services (the services that provide custom data validation) and Data Services (services responsible with manipulating the data).

Document management is a critical part of the business process registration. In many steps of this process, in addition to the standard forms, various documents might also be needed, such as scanned legal documents. These documents may not have a standard content, thus they have to be scanned and uploaded. In the pilot implementation, the application appointed to perform document management is the SharePoint portal. A specific container, called a „Document library”, is created for every type of document. Moreover, if the document is modified during the process, the SharePoint versioning system makes available the latest version until the end of the processes.

The front-end design is based on the idea of providing complete interaction between all entities involved in the administrative workflows: users, public administration entities, etc. One solution consists in rendering the user interface through a SharePoint publishing portal, with anonymous access enabled. This is intended to be of use not only for proceeding with administrative operations, but for keeping the citizens informed with laws, changes and offering support for their operations.

SharePoint technology is well known for the facilities provided to access document workflows and it can also be used for document storage. Moreover it provides full integration with InfoPath Forms and information content management.

If a citizen or company wants to use the framework’s facilities for online form submitting, they only need a user account within the portal. Once a user account is enabled one can benefit from full support and information throughout the whole process. Full support means the user submits data and he gets immediate feedback on it. This feedback might refer to the data correctness, the next operating step or to the worker to which the task of reviewing his application was assigned to.

B. Document Workflows

The SharePoint portal has a number of basic built-in workflows, but in complex projects the recommended practice is creating specific project workflows.

The basic document workflow used at this moment starts when a new form is submitted and the data is validated through the web service. During the workflow, pieces of information are processed, including the applicant’s data, address, e-mail and phone number. A critical point in this workflow is creating a new task and assigning it to a PSC worker, steps done programmatically by the workflow designer. The new task consists in making further checks (if

needed) on the newly submitted form or just quickly reviewing it. After the worker finishes the task and marked it as completed, a system generated email is sent to the user. The body of the email can contain several types of messages. For example an approval message consisting of new further steps in the current process, or new documents to be uploaded in order to process the current request. The denial message can request the user to provide new data as the data he provided is not valid or fake.

Creating document workflows is not only provided through visual tools, but requires coding activities as well. The document workflow is integrated within a SharePoint publishing site as it is one efficient way of making use of new portal technology. Document workflows can be easily designed within SharePoint and the user interface satisfies all the standards.

C. Database storage

In order to store the data required through the business registration process, a database is needed. For the pilot implementation we used SQL Server. The database design is a company centered design. The central table of this database holds the company data (ID, name, Unique Identification Code – CUI and Commerce Register Number). The tables from the database contain columns corresponding to pieces of information from all the forms that should be filled out in order to complete the business registration process. Some data is common to all the forms, for example the name of the applicant or the name of the firm. It would be redundant to insert this data into the database each time the applicant fills out a form so the only data entered in the database is data concerning information contained in the form.

Currently the database contains 30 tables containing data merged from 13 forms. The tables represent the company data, the applicant's data and information delivered throughout the form. For example, in order to store redundant information, the database designer needs to create a new table having the columns containing the redundant information. In our implementation this was repeated for each redundant section from every form used.

Moreover a series of legislative issues were considered. A company can have one main headquarter and multiple secondary ones. In this case a separate table was created to hold their exact addresses. This table is linked through a foreign key to the central company table. Then, for fulfilling the business registration process for a certain company, the applicant should fill out all the forms required by the law. To track the forms filled out by a user for the registration of a certain business, a table with the name of all the forms was created and each table referring to the data in a certain form is linked through a foreign key to the main form table.

D. Business orchestrations

The central component of the back-end component of the framework is the Microsoft BizTalk Server, which helps design and manages the business workflows. The main purpose of this server is to facilitate the design and to be able to configure processes that unite several „actors” in the architecture. By using connectivity components in BizTalk,

this, the data validation web service reduces the risk of validation errors and the manual checks done so far, by public administration employees.

Optimizing user interaction and improving user experience with e-Government electronic services offered over the Internet are two goals of the PSC project and the European Union Services Directive. By achieving these goals the solution provided can have an important social and technological impact. The efficiency and security of the solution can increase the citizen trust in electronic services and will increase the appreciation towards the public administration.

As the implementation of the PSC is a very big step in Romania's future commercial development, this has to be done considering all possible factors, but the most important one is the end user. The presented solution provides the generic functionality to not only develop PSC implementations, but also optimize and secure the user interaction with public administration, leading to an increase in the trust between them.

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