

Unified tools and ITC applications for business administration systems

Veronica ȘTEFAN, Ph.D., Associated Professor
Valahia University of Targoviste, Romania.
veronica.stefan@ats.com.ro

Victoria FIRESCU, Ph.D., Associated Professor
Pitești University Romania
firescuvictoria@yahoo.com

Abstract

The ITC revolution asks new requirements containing elements that are determined for the business management in the whole world and also in Romania. Moreover, management tools have to be brought up to date with the latest solutions for managing infrastructure and relationships with users.

One of the objectives is to observe the reasons determining the organizations to apply those new technologies, if they do that and how have changed the performance level. It exists factors asking strongly for the applications and it is necessary to develop a strategy to identification and to apply this new change. This paper focuses on emerging business and technology developments, investigating how the web will drive business in the future and how this will impact on public sector bodies in Romania. The authors try to project the new changes in high technology and economic environment for find a way to improving organizational performances.

Key words: Web portal, standard IT&C technologies, business administration, interoperability, IT Governance.

Introduction

Managing the flow of internal and external requests as they enter, leave or circulate around the organization is essential to maintaining quality working systems. Day to day exchanges between elected officials, employees, users, managed users or partners, be they for assistance, complaints, administrative and technical enquiries, constitute a mass of organizational events to be managed. Each request must be addressed to the appropriate solution provider and resolved in accordance with agreed levels of service. Moreover, a trace of the request must

be recorded to give a complete view of the citizen's or user's past and present environment. By introducing software solutions to automate internal procedures, with the support of all actors, departments can significantly boost their productivity.

The ITC revolution asks new requirements containing elements that are determined for the business management in the whole world and also in Romania. A solution regarding those imperatives can be the application of many instruments, such as an efficient information technology and communications (IT&C) strategy, proposed by a good policy of IT Governance. By introducing software solutions to automate internal procedures, with the support of all actors, departments can significantly boost their productivity. To reach these objectives, we will analyze some type of specific software application in the fields.

1. Actual knowledge stage in the area

Communication management has become an extremely dynamic domain, powered by the evolution of the new information technologies and by the rapid, effective and safe communication needs within the economic sector.

Since the information is the basis of all the economic activities, systems have to be developed to produce and manage it effectively. The objective of those systems is to ensure the availability of the required information when it is needed, and to present it in a usable manner.

The management of a modern organization is based on a set of complex theories, philosophies and scientific methods.

An example of such technology is the computerized communication that has the potential of reducing the volume of information that the managers have to take into account, enlarging, at the same time, the horizon of an activity for the individual that monitors it.

Today, we assist at a computer communication explosion, induced by the economical, cultural or political factors, based on the increasing roles that the communication processes have in the social life. The Internet has already begun to revolutionize the modalities the organizations operate and do business in. Enhancing communication by means of a communication portal in the economic sector is directly linked to the concrete problems of the transition management towards an European society based on knowledge.

We consider that the communication portal has as its goal the effectiveness of communication in the organizations

from the local economic sector through the efficient management of the requests and problems from the organization. The use of a communication portal for the internal communication within an organization will lead to:

- A better management of the problems the organization encounters. It refers to the process of effectiveness. In making decisions (defining the priorities in solving problems, structuring the solving procedures for requests and problems, increasing the reaction speed for requests, automating the transfer of problems/request towards certain departments/persons that have the necessary competence for solving them, increasing the internal control etc.);
- A better management of the resources. Decreasing the solving time of a problem, making responsible the employees, efficient use of hardware and software resources;
- The economic sector can accomplish a better internal communication having as finality the organization change, i.e. making the institution flexible and building an organization culture centered on quality.

2. The objectives

By means of a portal created at the organization level, its employees can access different information through a web browser, such as e-mail, CRM tools, information about organization and other systems from a central point or disparate information, all these being available on the web servers, databases or application servers for that organization.

For a large or geographically distributed organization, the information described above can also be accessed by the users by means of an intranet, an internal network of that organization that uses the Internet technologies. However, in comparison with an intranet, a portal can bring improvements in many major interest areas for the organization and its employees.

The first of these areas is **the application integration** - in many ways, an organization portal is nothing but a set of business software (CMS, CRM, web sites, databases etc.), data and external services for the organization, all these being accessed through a single web-type interface. The most important test for the integration

quality is *the single-sign-on*, where the user authenticates once before accessing many applications. As the organization grows, the problem of managing multiple password grows also, this being available for the roles/groups or permissions for accessing certain resources. A portal solution can solve this problem by integrating all the applications in a coherent manner, starting from the lowest levels. From the users' point of view, the interface is the one that is important, but the services for integration of data and existing applications should also be considered.

Another interest area is *the personalization*, where the users have to have the facility of choosing what they see on the screen, according to the group membership and their constraints. Here, the *subscription and notification* facilities should also be taken into account, by means of which the users can opt in for information or applications to be sent on their screens, controlling at the same time the presentation mechanisms. We mention that we will consider both the personalization according to the preferences of the user and the one based on the *click-stream*.

Very important for an organization portal is *the content management*, being necessary to have the indexing and directory functions for managing the structured and unstructured data from the databases, web sites or other applications. The content management may require passing the borders of the organizations, involving robots for crawling the pertinent data from the Internet, their incorporation in the existing systems, their indexing and sending for the most appropriate analysts. Regarding the content management, the search and publishing functions have also to be taken into account. The search functions should permit the users to obtain the required information based on criteria given to a search engine, including the options for navigation and accessing the information. The publishing functions, on the other hand, should facilitate the employees to publish information, with support for all the main data types and for classifying the access of the published information according to the (pre)defined groups or individuals at the organization level.

Last but not least, *the collaboration* is one of the advantages of a portal, offering increased workflow productivity, increased interaction among employees and between organization and partners. The collaboration

functions can vary from e-mail to developing work communities. As an example, the portals can allow the employees from various locations to create virtual meeting rooms where there is chat, voice or video applications.

3. General architecture

The emergence of the portals will dramatically change the access for information both inside an organization and outside it. The components of a portal, like the servers or the browsers, are all well-known and they can be managed individually very well. But their integrated management generates a series of provocations. Thus, the management of the content, of the servers and of the browsers is considered a critical success factor for accomplishing the goal of a portal.

In the portal management, the most important factors are:

- management processes - the management of applications, performance, security and user accounts;
- management tools - are those responsible for the support of the management processes and they are generally assigned to the human resources;
- the human resources of the management team, together with the abilities and the experience regarding the network administration.

The web browser is the most important application from the point of view of the access to the applications within a portal, whose implications are:

- all the information have to be available as web content, directly accessible through a web browser, plug-in or as a dynamically downloaded code-part (Java). This content can exist as static web pages, interpreted scripts (CGI, Active Server Pages, Perl, PHP, etc.) or compiled programs (ISAPI, ASP.NET, JSP) that access databases, dynamically generating HTML; the content can exists also as audio or video stream;
- the model for accessing the information has changed from the one where a special configuration is necessary for the client for accessing the information, to the one where the access is always available for the client, except for the cases where some politics prevent it;
- the information accessed through the web servers contains the majority (80%) of the Intranet traffic. As

a consequence, an efficient management is requested regarding the web resources, the bandwidth and traffic, for offering acceptable qualities for web-based services;

- in the case of a content that generates high traffic, the traditional network design techniques, based on the peaks and average loads do not correspond to the reality.

Because the information from a portal is viewed as content available through a web browser, the structuring and arranging modality will determine the success or failure of the portal.

Depending on the content desired by the target visitors, the design of the page can considerably differ. Both the content of the pages and the links from them can affect the satisfaction of the visitors (templates and designs of pages that should contain text and graphics, easy navigation between pages, easy return at the main page, fast loading of the pages, efficient links to interactive services, updated pages, viewing the site map, the pages change management in the whole site, easy selection of the pages to be printed or downloaded). We see the answer of these problems imposed by the users through the creation of standard templates for different types of pages and different types of uses for that pages, using special servers for managing the content, real-time compression of the web pages or dynamic generation of the site-map when the site is built using databases.

The improvements in the content management will have a positive impact over the general performance. Although the improvements of the web servers performances are part of the optimization solution, they have to be accompanied by the improvements of the technologies for content management, for having an important impact over the performance of the organizational portal.

In this context, there exist three critical areas of development:

- distribution and replication of the content - pushing the content closer to the access points of the users can reduce the bandwidth and improve the response time necessary for requesting the pages. The content can be replicated in an active manner in the network under the control of an operator or it can be replicated dynamically by the network elements. The cache servers are examples of network elements that can facilitate

the dynamic replication of the content. Another example might be the database content, which is replicated at certain time intervals or live;

- distribution of the content requests - when there are many content instances in the network, the network elements should cooperate directly for satisfying optimally the request at any moment. This requires an increased level of content intelligence in the network elements themselves;
- measuring the resources for the content webfarms - a server or cache from a web farm will satisfy a request for content in any moment. Accordingly, the management should concern the local servers, the uplink bandwidth or any other precious resources necessary for requesting web pages.

Most users are provoked by the request, the management and the dissemination of information.

These activities require a longer time, thus being more difficult to control. The portals can solve alone this problem of information management only in the case when solutions that address directly the need of document management are implemented. For this, the users have to have the capacity to add and update periodically the content, to protect the pages from the modifications made by other users and to have a content workflow that should manage the revisions, especially for the shared documents.

4. Web application model for managing the content

As the politics and procedures for content management are formulated, it is important that some tasks be assigned to certain persons, for ensuring the appropriate implementation and accomplishment of the tasks.

For lightening the design and for creating a consistent model for the pages, some styles can be created that could indicate the uniform localization of the standard icons, of the buttons or graphics and the dimensions and the modalities of linking the pages. Another part of the style can consist of creating templates for web pages - HTML files used as starting points for any person wanting to create web pages or content for the portal.

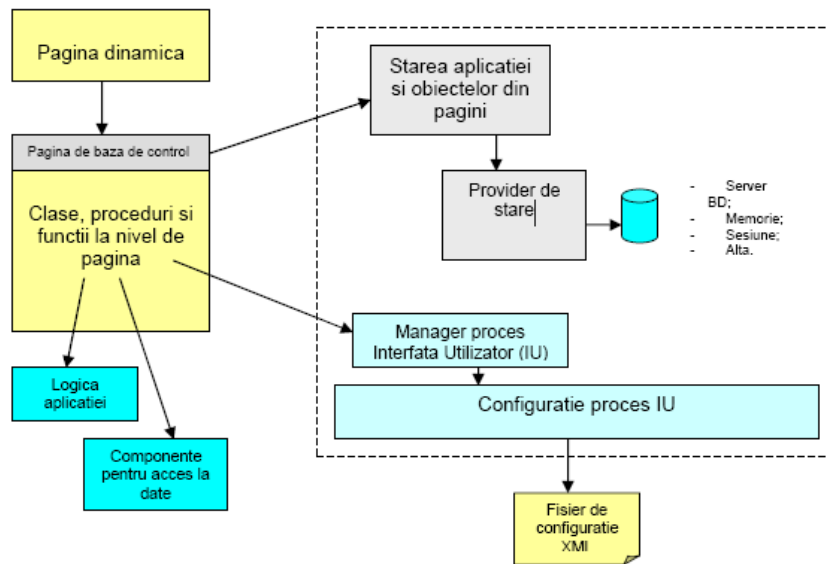
The applications that are executed within a portal are web applications, built over web server and over databases used for storing data. Web servers can send to the clients static pages or pages generated dynamically, with content taken from databases, web services, Internet

/Intranet or other applications that generate important content for the users. Among the most important technologies that generate dynamic pages, having at the same time high performances, there is ASP.NET from .NET Framework, freely available from Microsoft and Jakarta Struts on Java 2 Enterprise Edition.

At the same time, there have to be taken into account the other technologies that permit dynamic generation of content, like PHP, Perl, CGI, ASP, Zope etc.

For a person to access the content of the portal, one will need a simple web browser, the installation of a special application on the client not being necessary.

Regarding the user interface, this will be based on the following general architecture, that is applicable to any modern server-side technology. A graphic illustration of this architecture is presented in the following picture:



We also point out that an important step after the choice of the technology, or, maybe combined with it, is achieving the following choice: building from the start or developing based on the existing portal solutions.

In the latter case, only open-source solutions will be chosen, where the source-code is available so that we can implement the necessary modifications for the above functionalities. At the same time, we will try not to modify the original source code, so that when a new portal version is available, new functionalities will be

available for free, all these having already been tested by many users.

Between the most popular open source portals we count:

- based on Java:
 - eXo <http://www.exoportals.org>
 - GridSphere <http://www.gridisphere.org>
 - Liferay <http://www.liferay.com>
- Based on PHP, Perl:
 - PHPNuke;
 - Metadot Portal Server;
- Based of ASP.NET:
 - DotNetNuke <http://www.dotnetnuke.com>
 - Rainbow Portal <http://www.rainbowportal.org>

Choosing an open-source solution will be based on:

- portal facilities
 - adding new modules/portlets after the finishing the implementation;
 - integrated CMS;
 - User interface;
 - Database;
 - Personalization;
 - Administration;
 - Number of modules/portlets out-of-box;
 - Number of modules/portlets developed by the community.
- Necessary work volume for modifying the source code for accomplishing the required functionalities;
- Opinions and reports form the Internet;
- The experience and the opinions of team members.

Conclusions

The proposed subject is part of the actual problems of the transition management towards a European society based on knowledge.

We also have to take into account that a professionalized economic sector can not exist without using best quality tools for accessing the information they need, when they need, where they need. The communication portal solution tries to improve the efficiency of the communication between the institutions by means both of reducing the expenses (phone, post, paper) and increasing the speed of access to information in a permanent change.

This paper is aimed to enhance the communication activities for the economic local sectors by creating and implementing a software communication portal that should allow a new quality in organisational communication management. The optimisation of the communication activity will be available for the economic organisations that have the necessary logistics, namely a permanent Internet connection. The communication portal has as main goal the communication optimisation by means of Internet technologies and the access of all information available in a location.

Analyzing and designing the communication system for the organizations from the local economic sector the will reveal the efficiency degree regarding the communication between the different economic organizations. This objective regards the most efficient means for improving the efficiency between the institutions of economic sector. We wish here to develop (as to analyze and project) a system that would be optimal both from the point of view of introduction/implementation (hardware, software, teaching the human resources) costs and the future development, by providing the computer science specialists and the best tools for developing modules/portlets in an accessible/easy-to-be-learnt programming language.

Furthermore, we want to accomplish a comparative study between the open-source portals taking into account the requests for an optimized communication application resulted from above. After this study we will decide to build a portal application that would include the necessary functions (authentication, authorization, security, database access, server-side language etc.) or to modify such an existing application to correspond to the needs of the project.

Finally, the product will be one that corresponds to the needs resulted from the analysis, answering this way to the need of efficiency in economic sector.

Among the main functions of the portal we can mention the communication through e-mail, discussions forums, real time communication, secured file transfer for documents and data, document versioning, all these being accessed through a single web based interface.

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Veronica STEFAN
Ph.D., Associated Professor
Valahia University, Targoviste, Romania
veronica.stefan@ats.com.ro

Member of scientific and professional associations:

- CEDIMES
- SIEAR

Scientific research

- 3 books printed in publishing houses accredited by C.N.C.S.I.S.
- 11 articles in national magazines,
- 25 articles in international (17) and national (8) symposiums' releases;
- 6 scientific research contracts



Victoria FIRESCU
Ph.D., Associated Professor
University of Pitesti, Romania
firescuvictoria@yahoo.com

Member of scientific or professional associations:

- the Romanian General Association of Economists
- member of C.E.C.C.A.R.
- CEDIMES

Scientific research

- 14 books printed in publishing houses accredited by C.N.C.S.I.S.
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