CREATING WEB BASED COMMUNITIES USING XML PORTALS

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ABSTRACT

The fast growing of Internet in several domains, originates the appearance of numerous virtual communities, sometimes named Web based communities, of information and knowledge exchange. The adoption of Information and Communication Technologies (ICTs) in education and the creation of educational virtual communities don't follow the growing of Internet in the other sectors.
The success of virtual communities could be found on the facility to communicate, the easy access to resources and the continuous contribution of the members to the knowledge of the community. To be fully adopted in education is essential to change the educational paradigm and integrate ICTs in all the education and administration processes.
This paper presents the principal conduct lines to develop Web based communities in higher education using XML Portals, integrating the several services and resources of the institution and promote the communication and knowledge exchange between students, teachers and staff.

KEYWORDS

Web Portals, e-learning, virtual communities and XML

1   INTRODUCTION

The abrupt growing of Web sites in the Internet, quickly substitutes the Information Society denomination to the Knowledge Society. In the first years of the Internet the main rule was the production of information; but now days the main rule is the selection of the information and its quality.

The search engines give so many results that are a manner of luck to find the information that we need, or with the quality that we expected. The way that we select progressively the Web sites for obtaining information is something that makes us act as quality filters of the huge information that exists on the Internet.

The appearing of virtual communities happens when some people start to exchange information or knowledge using mailing lists, forums, chats and more recently the Blogs. This kind of communities is normally constituted by people that have something in common. When somebody disposes information using these systems, this information can be transformed in knowledge after. This process of transformation is the same that is used in e-learning.

The Web based learning or e-learning appeared at the moment when somebody read a Web page and learned something. The first applications of education based on the Web had appeared with the emergence of tutorials that teach how to program in HTML. These tutorials were not more than simple pages in the screen of the computer, allowing an easy learning without following, however, an education model [1].

The Web based learning adapts itself to the change in the paradigm of education: the model "to form for life" is replaced by the model "to form along life ". The training becomes more accessible and more versatile

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and each individual is able to define his direction and to get specialize in the area of there interest, and at the time and place that is more convenient for him.

With the dissemination of virtual communities (Yahoo Groups is the leader in their support), the technologies and the budget aren't the reason of the weak utilization of ICT's in Education. The e-learning and the virtual communities will be in the future used at the same level that the email is used now in education, only when the teachers change the way that they face the education, center more on the learning (student) and less on teaching (lecturer).

With the development of one Portal that gives access to all learning contents, communication services and dispose all the academic and scientific information online, maybe the solution to lead everyone to use ICTs in all the educational procedures.

2   THE PORTAL FRAMEWORK

After a study done in the operative context of the Institution, it was concluded that the information systems of Escola Superior de Tecnologia e de Gestão (ESTIG) considers a small assemblage of applications which help the process of make timetables, management of summaries, registration of expenses of the cost centers and giving the information about evaluation of the teachers.

Instituto Politécnico de Bragança has an information system which integrates the modules: Personal management, stewardship, treasure, accountancy and academic services which have the responsibility of all the Institution management.

The exchange of information between the management organ of the schools and the central organism is not always efficient, that is why it can be opportune to promote a high level of information decentralization without damage of the data and human resources. These were the premises which were in basis of the Portal.

The complexity of integration can be found on the variety of applications, the use of different technologies and the compatibility between the data sources. There are several databases in the different services, like SQL Server, Oracle, MySql and Access.

The main problem detected in the system design was the appearance of inconsistent data between the several systems. The integration of the relevant data of these sources to build a Data Warehouse was the challenge encounter in the specification of the framework.

Portal framework is mainly based on XML and PHP to resolve the questions of interoperability between the several systems. The XML is used for some static data that is transformed with XSLT. The dynamic pages were developed using PHP and the data are loaded from an Oracle Database in Data Warehouse configuration, and the XML files are used for store the menus. To parse the XML files, having more compatibility with the old browsers, the PHP is used for parsing XML files instead XSLT when the browser doesn't support XSLT.

The replication/integration of data was a big problem because the central organism had very concerns about security. The solution encountered was the development of a middle tier application that has the trust of both entities to transfer de data from the IPB central services to ESTIG Data Warehouse.

The development of agents for data replication using Web Services, is been implemented to bypass the limitations of Firewalls, and having in mind the questions of security. These agents have the mission to evaluate the information on the data source and make it complaint with the specifications of the Data Warehouse. With a programmed schedule each agent collects the information, analysis the differences with the main information system and sends the data using SQL querys.

The other problem that was resolved with this framework was the integration of an LDAP server to centrally authenticate all the users with the different profiles, using the same login and password for all the applications.

The migration of some features of the portal to Web Services technology, using standards like SOAP (Simple Object Access Protocol) and WSDL (Web Services Description Language), will permit the constant interoperation of the Portal with other services. One feature that will be developed with the support of EUNIS (European University Information Systems) is the development of an UDDI (Universal Description Discovery Integration) database for a Learning Objects sharing at European level. This

component uses peer-to-peer communication, Web Services, IMS Learning Resource Metadata and SCORM Content Packing.

Another advantage of an XML portal is the low effort to develop multilanguage interfaces, all is needed is to change the content, there are no neediness to change the format. The development of multiplatform versions for PDA's and cellular phones (ubiquitous systems) are more facilitated because the data are the same only a new Style Sheet as to be created.

The access to the Portal is based on profiles. These profiles are: student (fig. 1), lecturer, administration, administrative staff and coordinators of departments and courses. Each user as permissions to do the tasks related to his profile. The teacher profile is associated to the department witch the coordinators as access to all the information related to the students, subjects and lectures belonging to his department. The same philosophy is applied to the course director and the presidents of the several organisms in the school.
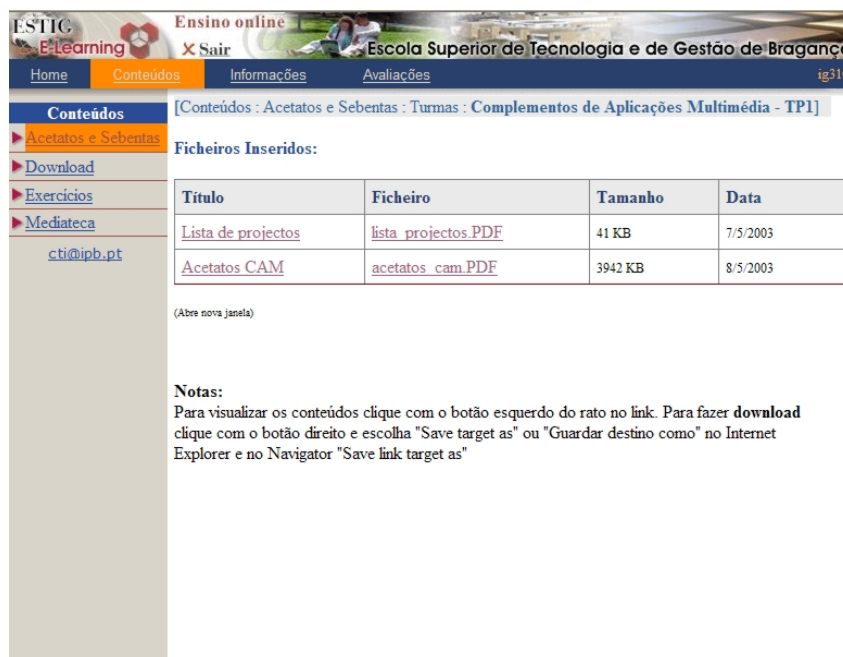

Figure 1. ESTIG e-learning portal – Student view

3 RESULTS AND CONCLUSIONS

After a short period of usage, the main objective of the integration of all administrative tasks with the learning process in a Portal was achieved. This can be seeing on table 1, witch the interest for the use of ICTs in learning, increase significantly from the only five percent that use Email and their homepages to dispose contents, to eighty percent that use now regularly the Portal.

Table 1. Portal statistics

ESTIG Portal	
Analysis period	05/03/2003 to 28/11/2003
Nº of lectures that use the Portal	125 of 157 (80%)
Nº of students that use the Portal	900 of 2200 (40%)
Nº of subjects online	74 of 170 (40%)
Nº of contents files	1057

The use of the discussion forums is still very low, but the use of email for students and lectures communications increase significantly. The discussion forums need to be moderate by the lectures and the students need to be stimulated to use them regularly.

The integration of Web services in more areas of the portal is now in an advanced state of development, making possible the interoperability between the portal and all the other educational services.

In the future the Portal may integrate a personalization system of time-tables, Data Mining tools to generate reports of the quality of education and services and the possibility to doing all administrative and pedagogic processes online.
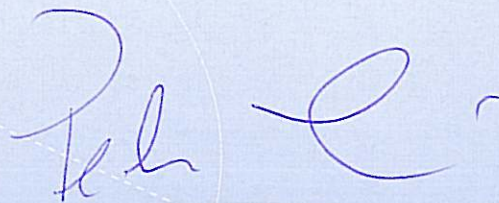
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CERTIFICATE

Paulo Alves

Has participated **and presented a paper** at the
IADIS International Conference
Web Based Communities 2004,
held in Lisbon, Portugal, March 25-26, 2004

Conference Co-Chair
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Dear Author

I am pleased to inform you that your submission to the IADIS
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Hope to see you in Lisbon, in March.

Best regards,
Pedro Isaias
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Evaluation Results:

Originality: 6 - Good
Significance: 6 - Good
Technical: 6 - Good
Relevance: 6 - Good
Classification: 6 - Good
Comments: - Interesting for specialists
- I don't like section 2: it brings nothing new
- Please elaborate on section 4 - results and conclusions (it can certainly be improved with more detailed results)

Originality: 5 - Average
Significance: 6 - Good
Technical: 5 - Average
Relevance: 6 - Good
Classification: 5 - Average
Comments: This paper will certainly attract the attention of a sample of conference attendance that would be willing to discuss and share experience with the design, development and implementation of Portal. The reflection on the experience reported in the last section of the paper is really useful.
Positive Points: Good proposal of work to explore
Negative Points: Like the idea but would like to see more for example when the author says that "the use of XML and SOAP in the portal framework permits a new level of integration...."