A CASE STUDY ON AN INFORMATION MANAGEMENT FRAMEWORK AND IMPLEMENTATION STRATEGY

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Approval of the Graduate School of Natural and Applied Sciences

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ABSTRACT

A CASE STUDY ON AN INFORMATION MANAGEMENT FRAMEWORK AND IMPLEMENTATION STRATEGY

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M.S., Computer Engineering Department

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Today, ample amount of information is produced within the bodies of enterprises. It's necessary that this information be preserved in a most effective way, processed and put into meaningful practice in order to achieve effective business decisions. As a result, those enterprises which aim at making effective decisions, sharing their knowledge and facilitating the use of information, need institutional portal solutions.

Enterprises and institutions, with the aid of information management, aim to realize their goals through collecting, editing and documenting the information they have in order to enable right people to access it at the right time and right place.

This thesis covers what enterprise information management is, its development and importance. Moreover, considering all these issues, it includes conclusions related to enterprise information management, solution proposals with the help of an information management application developed as a prototype and its vitality for

enterprise. In this regard, this thesis gives a summary of main services and development phases of portal software developed for activating access to web sites, meeting user needs and supporting information management.

Points such as the basic structure of portal in the process of development, and personal page editing, access authorization regulation, integration to e-mail and similar systems, and project management are also elaborated.

Keywords: Enterprise portal, information management, knowledge, productivity.

ÖZ

BİLGİ YÖNETİMİ SİSTEMİ ÜZERİNDE BİR DURUM ÇALIŞMASI VE GERÇEKLEŞTİRME STRATEJİSİ

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Günümüzde kurumlar içinde birçok bilgi üretilmektedir. Bu bilgilerin en iyi şekilde korunması, işlenip anlamlandırılarak etkili iş kararları almada kullanılabilmesi gereklidir. Bu nedenle etkin iş kararları almak, sahip olunan bilgileri paylaşmak ve bilginin kullanılabirliğini daha kolay hale getirmek isteyen kurumlar, kurumsal portal çözümlerine ihtiyaç duymaktadırlar.

Kurum ve kuruluşlar, bilgi yönetimi yardımı ile, organizasyonel amaçlarını gerçekleştirmek için, toplamak, düzenlemek ve kayıt altına almak sureti ile bilgiye doğru zamanda, doğru yerde ve doğru kimseler tarafından ulaşılabilmesini sağlarlar.

Bu tezde kurumsal bilgi yönetimin ne olduğu, gelişimi ve önemi anlatılmıştır. Tüm bunlar gözönüne alınarak kurumsal bilgi yönetimine ilişkin varılan sonuçlar açıklanmış, kurum içinde prototip olarak geliştirilen bir bilgi yönetimi uygulaması ile çözüm önerilerinde bulunulmuş ve kurum için önemi belirtilmiştir. Bu kapsamda, web sitelerine erişimi etkin hale getirmek ve kullanıcı gereksinimlerini karşılayacak

şekilde düzenleyerek bilgi yönetimini desteklemek amacıyla geliştirilen portal yazılımının sağladığı temel servisler ve geliştirme aşamaları özetlenmiştir.

Geliştirilen portal yazılımının temel mimari yapısı, bu mimari yapı içinde sağlanan kişisel sayfa düzenleme, erişim yetki düzenlemesi, e-posta ve sistemlerle entegrasyon ve proje yönetimi detaylı olarak açıklanmaktadır.

Anahtar kelimeler: Kurumsal portal, bilgi yönetimi, enformasyon, verimlilik.

To My Wife

&

To My Daughter

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LIST OF ABBREVIATIONS

ADO:	ActiveX Data Object
ADSI:	Active Directory Services Interface
APS:	Application Platform Suite
ASP:	Microsoft Active Server Pages
B2B:	Business-to-Business
B2C:	Business-to-Consumer
B2E:	Business-to-Employees
CCIS:	Command and Control Information Systems
CRM:	Customer Relationship Management
DHTML:	Dynamic Hypertext Markup Language
DOM:	Document Object Model
EP:	Enterprise Portal
EIP:	Enterprise Information Portal
EIM:	Enterprise Information Management
ERP:	Enterprise Resource Planning

GUI:	Graphical User Interface
HTML:	Hypertext Markup Language
IFRAME:	Inline Frame in HTML Documents
IIS:	Internet Information Server
ISVs:	Independent Software Vendors
LDAP :	Lightweight Directory Access Protocol
ODBC:	Open Database Connectivity
OLE:	Object Linking and Embedding
MDAC:	Microsoft Data Access Components
SCM:	Supply Chain Management
SSL:	Secure Socket Layer
SQL :	Structured Query Language
TCP/IP:	Transmission Control Protocol/Internet Protocol
VBSCRIPT:	Visual Basic Script
XML:	Extensible Markup Language

CHAPTER 1

INTRODUCTION

Information can be used as the ultimate medium for adapting to fast-changing conditions led by new data processing and information technology. Constant development and change of the new world order brings about several new concepts. Among these is information management that emerged as a result of the development of management science.

No matter how well defined your management concept is, we must pay great attention to the matter of enabling people to access the knowledge developed in the body organizational body at any time they need. Information management is combining information and knowledge and keeping it ready for service.

All the staff in an organization is expected to make functional and strategic decisions everyday. There is a wide spectrum of data sources and applications required to be brought together in the organization. For instance, cooperation of two or more applications may be needed in order to carry out a decision or task. Subsequently, organization staff may analyze several application windows or be in contact to complete a single part of the overall mission. In many cases, it may prove necessary to carry out one function in database and applications for the completion of a mission [8].

Systems in an enterprise are designed in a very complex way for a certain objective. Its employees are in need of a serious orientation to successfully complete responsibilities and tasks allotted for them. Besides, the whole application cannot be

said to require an employee to fully understand and know the available databases and systems.

It is quite difficult to find, understand, and use information. In order to manage the information emerging, circulating and developing in an organization, it may be necessary to define the information management concept and categorize it parallel to the organizational needs. In such a case, you will need in-house information portal solution to modify information access, share and decision mechanisms.

Thus, the staff will be able to prepare complex reports, be aware of the new information, revise project conditions, and complete their mission on any information they need. Employees also will be capable of communicating with each other in a collaborative policy, share their knowledge and get instant answers to their questions. In addition, they will be welcome to customize and organize their own study environments according to pre-defined data categorization.

An Enterprise Information Portal (EIP) can boost efficiency via eliminating complexity. Portal solution provides a convenient operation theatre especially for integration between unconnected systems and applications and storage of information. In fact, EIP is a key technology to apply an effective information management program. EIP can be taken as a “showcase” in which information is presented through a browser and a “gateway” in which users are granted free roaming by their authority [15].

Information management is different for every organization. One of the main goals of this thesis is to define how to combine staff and information within information management framework for success.

Employees unfortunately do not make much effort to do their best in terms of personal development to do their best. In fact, the employees, especially the experienced ones, should alter available information use according to changing circumstances and develop themselves. Completing the mission in the best way means for one to comprehend his role in his study field well.

Knowledge is gained by arduous studies in the enterprise. It is quite difficult to measure the knowledge possessed by each member in the organization. Knowledge workers must strive for fathoming the importance of the fact that the knowledge they manage and use will change into knowledge experience and exploit this experience for the welfare of the enterprise.

Now knowledge gains continual importance as the ultimate asset in the organizations. The more access and the control of information and knowledge is, the more effort for creating flexible working environment will be seen. Organization must possess an information management solution to make it possible for the workers to easily reach and use the information among many data sources and applications. Thus, workers can easily check their e-mails, projects, updates and other vital information, and communicate with the other workers through a single intranet field [28].

The first thing to do when information management system is built for the first time is to define organization systems in terms of work process. After defining this process as flow activities for each worker, it must be clarified as to which worker will be responsible for which applications and systems.

This thesis primarily concentrates on contents, functions, processes and fields of Enterprise Information Management (EIM). In this regard, to achieve EIM, the requirements of an EIP and a case study with an in-house portal solution are provided.

The report document of this thesis has been divided into chapters and below is the content of each chapter.

Chapter 2 explains what EIM is, how it emerged and developed and its present importance. Information, enterprise knowledge and how enterprise knowledge appeared are also included. Moreover, it sheds a light onto how an information management can be achieved, its concept, models and strategies, functions, enterprise culture and information share. Conclusions related to information management solution proposals have also been presented.

Chapter 3 displays definitions of structure and components of information portals around the axis of EIM objective and concept. Next, main components, development phase difficulties and uses of portal are mentioned in a detailed way. Then, available portal solutions in the market are analyzed and features of major portal products are given. Finally, abilities of portal product vendors in different platforms are categorized and presented in tables.

Chapter 4 explains the EIM solutions for meeting the needs of military enterprise. Whether portal solution will be achieved in-house or via commercial portal product is clarified by a feasibility study and the results are given. In the end, design stages of portal solution meant to be developed as a prototype are described.

Chapter 5 elaborates on tells the implementation stages of portal solution developed in-house with the aid of a case study. In the first hand, a general definition of project is given and system structure, application components and software technology are explained.

CHAPTER 2

ENTERPRISE INFORMATION MANAGEMENT

2.1 Overview

In the context of the management science, the most important two concepts are information and the technology of the present century. Information is the new production factor of the corporations and businesses that are as important as the capitals at least, and technology is its indispensable part. Therefore, our century is named information technology, our society is information society, and our people are information employees. At a term like this to see the information technology as the most important component of the enterprise governance is not false.

Information management is basically a discipline to update the perpetual remaining information capacity in the institution environment, to provide the consisting information attainable, and its contains the descriptions of the necessary processes to reach these information, analysis and to provide these to be shared with the employees of the enterprise [31].

Information management contains the definitions appearing in the making information efficiently technological applicable for the purposes of the organization [20].

Information management is a systematic approach relating to the either verbal or written information to be ensured from various sources and to be saved if necessary in order to positively support the activity that the enterprise has performed, and

mechanism, improve the working activities of the employee, to increase the information sharing and efficiency [51].

Information management requires a structured process that processes the creativeness of the human brain with the capacities of the information technologies together. For this case firstly describing and determining the information sources, generating the new information, affording an opportunity to reach the information at possible widest rate, providing the modernist information technologies and applications sharing are in the forefront [34].

2.2 Information and Knowledge Management

Knowledge management and information management are related, but they are quite different concepts. Essence of the information management is based on dealing with the knowledge management and applications intimated information of the people oriented as a whole approach [37].

The difference between knowledge management and information management is clear. The first one focuses on open information, objective and concrete ones, knowledge enabling, products and sources, while the other one focuses on these and furthermore focuses on implied information, subjective and abstract ones, individuals and the knowing tendency at the individuals, enterprise activity, and advantage in a competition, enterprise culture where knowledge and information are shared and used and so on [22].

Information management is mostly perceived as type of physical form management where the information is hidden, at the same time deals with non-verbal or unrecorded information and the information that is observable, verbal or open and systematically unorganized. In other words, information management in the general sense is a discipline that embraces the information management too, in addition, also includes the technical labors in process of datum, knowledge, information, and creating the mind [35].

2.3 Enterprise Culture and Information Sharing

One of the main principles of the information management is the acceptance of information increase and enrichment by sharing. For this reason research, evaluations, measurements, reports, plans are kept as open and reachable for the employees. The employees are encouraged to share their knowledge, experiments, and to gather with experts, to modify and develop the best appliances.

To have a job environment like this can become true just by making an enterprise culture that encourages to think innovative and creative, to share the information. To generate a culture like that can be eventuated so:

- Firstly, this culture's stage is a kind of learning process. Leaders learn firstly and then the employees learn after. This stage of the Information Management is a learning organization for an enterprise.
- The leaders in an enterprise should help on determining the cultural barriers that prevents the information sharing, and at the stage of removing these.
- The leaders in enterprise should learn how to motivate the employees who make the information entrance into the EIM system so that they use their potentials at the top level.
- The employee must not consider firstly that the information hidden within himself/herself is his/her insurance to convey these information to the organization. To avoid this thought, the employee should not be worried about discarded by the leader after the leader takes the enterprise information from him/her.

2.4 Enterprise Information Management

To talk about the EIM, first what information and enterprise information mean should be explained. The information is composed of two different types that consist of statistical data –information and produced as a whole –knowledge by interpreting these data.

Enterprise information means all kind of information generated in the enterprise or ones from outside the enterprise, recorded or unrecorded about the enterprise. The information are in people's mind, generated in the end of the enterprise actions and unrecorded, since written information can be also considered within the context of the enterprise information. Therefore, we can say that the direct and indirect aim of the information management is in summary, revealing all kind of information recorded and unrecorded that exist in the enterprise, evaluating, organizing, forwarding to the places required and making the enterprise gain an indirect value addition.

Making the enterprise information recorded, forwarding to the places required and transferring to the next employees prevent repeating the labors that have been done before and provide reducing the error rate in steps that will be taken.

2.5 Enterprise Information Management Process

Information management is not only a subject of knowledge technology but also an organizational culture problem. In organizations and societies a culture is needed that cares about information, recognizes the information employees can see that information grows and comes into value when it is shared, and awards the people who share the information and use it effectively.

The other concepts that come to the mind with information management are learning organization and restructuring. Learning organization concept is compatible with the information management for some points. In learning organizations, it is emphasized upon the team that is conceded as a main factor of the enterprise learning. However, information management is predicated on individual. While the learning organization reaches from the organization to the team and then to the individual, in the information management a cause relation is set up that goes from the individual to the organization and then to the team.

It is presently an accepted fact that, the information is renewed, turned in a new shape and becomes a valuable thing. Forwarding and sharing the enterprise information in the enterprise regularly is a basis in the information management too. In fact, sharing the enterprise information means a circle like forwarding that

information to the responsible, informing about the enterprise labors, taking the reactions from the employees, evaluating, commenting on the coming reactions, and forwarding to the responsible person.

2.6 The Steps Should Be Taken In the Enterprise Information Management

Firstly, some principles need to be appropriated to come into the restructuring process according to the information management approach in an organization that demands to continue the enterprise evolution.

The information management system that will be applied in organizations will take the following steps and the absence of one or a few components included in these steps, will cause the system's not operate or operate with problems. Considering these conditions, the steps need to be taken, and qualifications need to be had in an application of information management can be summarized as below:

- Firstly, to persuade all employees who work in the organization the necessity of the program, to apply the program planned in all its bearings.
- To investigate all part of the organization's, and to determine the work what are done in these parts and to assign the job flow system.
- To determine the job flow systems that are used in the organization, the problem that are had in information generating and using.
- To provide the circulation of the information in the organization as a circle, and to refresh itself in every circulation.
- To investigate what the information management application will return to the organization in short and long term, and to forward these values to the employees.
- To prepare a manual that shows what the information management is, what the enterprise function and personal responsibilities are.

2.7 Evaluation of the Information Management

Information management does not merely consist of using the latest information technologies in the most effective way, but requires a certain culture as well. Information share, transparency, and synergy are also considered as elements of this process. Information is a phenomenon that increases and flourishes by share and support of different perspectives. For this reason, managing information well requires evolution in not only technology, but also enterprise culture.

As long as not supported with convenient platforms and integrated tools; contents, documents and data collected in enterprise are nothing but unconnected information islands; and workers suffer trouble in accessing sources except the ones they created. Generally, information and skills are recycled repeatedly and this leads a way to the fact that relative differences cannot be tracked and updated aggregation cannot be well benefited and no cooperation and share environment can be created among the workers.

On the other hand, a high correlation has been detected between management stages and information management. It has been found that when information management is used in decision-making process and subsequently the decisions are distributed and applied in the enterprise, objectives are achieved faster.

It is not enough for the implementation of information management to realize its importance. Enterprise is a unity with its staff in fact, the staff constitutes the real source of enterprise information. The matter is that knowledge achieved by the employees, intentionally or not, must be altered into enterprise knowledge. Even the latest information located in the computers of the staff decrease in value due to misevaluation.

The first step in information management application is to assume an EIM and build a suitable model for it. Enterprises should position their focal point on information management projects aiming share and transmission of hot information to data modules, which subsequently makes it necessary to use a definite information technology.

When it comes to assessing the knowledge, information managers need several methods to see how successful and efficient information management components are. Observed in activities, processes and outcomes after the change, differences will constitute criteria to measure the difference. Assessment coexists inspection. At this point, the inspector is supposed to consider the data related to the achievements of the enterprise and make decision on the possible changes necessary for the system. Moved into electronic environment, the operations within the enterprise will lead a way to a decrease in possible errors and time efficiency.

CHAPTER 3

ENTERPRISE INFORMATION PORTALS

3.1 Overview

"*In the late 1990s, portals emerged as viable corporate solution. Portals presented the capability to provide personalized information to the right users at the right time. From a repository of HTML documents, portals developed as application integration tool.*" [45]

The EIPs are the working places which integrate the applications written to different target audiences for different job necessities, written in different languages at different platforms and the information and the documents generated by these applications present as in a structure in the order of their choice [1][2].

The EIP is a web service, not a web site. The EIP presents from a window various information, documents, web based applications, databases, office documents, report, web site links, web sites, intelligence sources, e-mail applications and so on to the employees who work in the enterprise and also to the users outside of the enterprise [9].

The enterprise portals can be defined as a window opened for all information, systems and processes that are harbored in the enterprise privities, processed and collected as groups. Nowadays, a lot of information and documents are produced in the corporations .These are actually intellectual assets of the corporations [27].

These information and documents need to be protected best, used at making the effective business decisions by processing and giving it a meaning [40].

The enterprise portals apart from web portals join all kind of information and in all sources related to the enterprise under an umbrella. To reach various data like the records saved in relational databases, the information in the enterprise source planning packets and customer relationship applications, all kind of writing, sounds, pictures only by using browser provides a great flexibility [24]. Figure 3.1 depicts an overview of Enterprise Portal Structure.

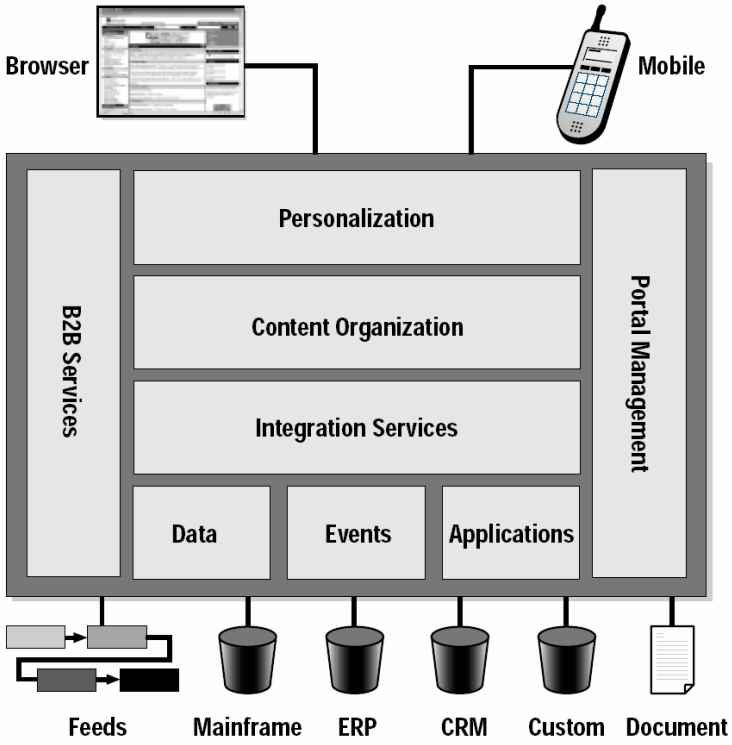


Figure 3.1 Enterprise Portal Structure

3.2 Main Components of the Enterprise Information Portal

If we look at the main components of the ideal EIPs, we see the following main components [38]:

3.2.1 Customization: Customization means integrating the portal with inside and outside sources, organizing the portal's special form for the enterprise, defining the portal's user roles, and setting up the portal's security policy. After the portal is put in service for the employees, every employee can organize his own work page according to the contents about own work needs [33].

3.2.2 Content Distribution: The enterprise information should be fixed according to the group and categories given to the portal by the enterprise. These formed information groups will be very helpful in the authorization and searching process. The employees should enroll in the categories that address their sphere of interest and so should be informed automatically about all information that gets into the portal belonging to that category [41][44].

3.2.3 Integration of Application and Data: The employees can reach all necessary applications and data on portal to do their work. In other words, the users should be reaching the enterprise applications with portal interface like ERP, CRM, SCM along with e-mail and calendar management [47].

3.2.4 Information Sharing: In the enterprise, the information is shared on portal with all implements like data transmission, information group membership, discussion groups, message dispatching, web conference tools [13].

3.2.5 Search: The searching mechanisms in the enterprise information portals enable to search on information groups, structured and unstructured data, inside and outside sources and should present the results of the search to the users integrated.

3.2.6 Security : The aim of the security mechanism, is to protect the information in portal from unauthorized people and to prevent the attacks that can occur. Especially when it is thought that either the enterprise employees or the business partners or the customers enter the same portal and reach the data, this security structure should be very good [26].

3.3 Measuring & Benefits

The benefits that enterprise portals will supply to the corporations can be appraised easily in many areas. Operational costs and income producing activities can be measured easily as a matter of "first and last" situation [25].

Which areas can be measured when using the portals are defined below [6]:

- Rising of efficiency: Reducing the work process circle.
- Rising of personnel's satisfaction: Decreasing the rate of the personnel exchange.
- Increasing of manager efficiency: Saving time of the managers during the personnel rating processes.
- Reducing of the costs: Reducing the costs, and time during the online meetings and internal meetings.

When the enterprise structures and access areas widen, the numbers, technical platforms, locations of the information islands named also as enterprise electronic data increase too. In this case, the subject of what information is where, the currency status of the information, the version management, data storage software and hardware management start bearing too high costs [42].

Measuring the enterprise portal benefits can be started just after making the portal applicable. To define the portal benefits are needs to be focused on work necessities that have not been displayed by the users' enterprise. The portal benefits that will be expressive for the enterprise will show the measurable changes for the users that are the target of the portal [14].

Centralized specifications, integration, reaching the information sources and applications easily will procure measurable benefits in the enterprise from many points. Thereby the following benefits will be gained:

- Achieve a 50% reduction in information access, search and retrieval time.

- Provide a unified infrastructure capable of fluidly supporting its growing user base.

- Reduce paper costs because of efficient on-line distribution of information.

3.4 Comparing Portal Solutions

There are different types of portal formats available. The most common is the Application Platform Suite (APS) that combines the application server and the integration support system. BEA, IBM and Microsoft portal solutions are based on the APS working model. The APS provides an environment to build complex applications and manage growing databases. It enables rapid building and deployment of applications. ERP vendors offer another portal format that allows access of their own application. The application is consolidated with the ability to integrate with other data, as well [3].

The following list consists of some of the companies that have staked a claim in this market and provides a brief commentary on the various solutions companies use the EIP for [16] [19]:

3.4.1 BEA WebLogic Platform

BEA WebLogic Platform is a combination of service-oriented web applications, Enterprise applications and messaging mechanisms. The combination includes WebLogic Server, WebLogic Integration, WebLogic Workshop, WebLogic JRockit and WebLogic Portal. It enables various components embedded in the platform to be used independently or in combination with other components. The integration of components is dependent on the request from the application [7].

3.4.2 Plumtree

One of the best-known EIP product vendors, Plumtree is the acknowledged leader in this market. The Plumtree portal solution comes with a large number of “out of the box” gadgets for connecting into enterprise applications such as SAP, PeopleSoft, Siebel, as well as messaging, security, and business intelligence systems. A number of Fortune 500 companies, including Ford and Proctor & Gamble, have picked

Plumtree as their portal of choice. It is considered one of the most complete enterprise portal solutions "out of the box" [10].

3.4.3 IBM

IBM has several offerings in the EIP space. The two most notable being the "Enterprise Information Portal" and the Lotus K-station. The "Enterprise Information Portal", aptly named, functions particularly strong as a middleware for tying into legacy systems.

The other, Lotus K-station, previously named "Raven", strength rests in a particularly strong interface with Lotus Notes/Domino and with collaboration and management unstructured products. Companies that have standardized on either Notes or WebSphere will find these offerings attractive [55].

3.4.4 Oracle

The Portal market has become "too hot" for the big ERP, CRM and e-Commerce companies to not make their own plays in this space. Actually, an extension of its web Application Server, the Oracle Portal connects very well to Oracle's back end systems. Companies that have standardized on Oracle, not just the database, but also the reporting and the application development platforms, may find this an attractive option [54].

3.4.5 Microsoft SharePoint Portal Server

SharePoint Portal Server enables single sign-on and application integration abilities. The flexible portal deployment provides various options for business management tools. The installation of the SharePoint Portal Server is quick and enables portlets to be loaded as convenient desktop applications for end-users.

The user-friendly environment of SharePoint Portal Server makes definition of role-based user groups and portal structuring quite simple. The portal provides a "complete user experience" with easily accessible functions integrated well with web services [5].

3.4.6 Sun Java System Portal Server

The Sun Java System Portal Server is equipped with all the elements required by an evolved portal solution. The centralized identification system can manage a large number of users, groups and roles. The system is integrated with powerful aggregation and collaboration capability for the users.

Remote users are provided access to applications and data outside the company's firewall with powerful identity and security mechanism. Through the open standard architecture of the portal, Internet and external access to intranet based applications and data is enabled [56].

3.4.7 Brio :

A well-known leader in the business intelligence market and it has parlayed this position into the portal space. The Brio Portal is particularly strong bringing enterprise data from multiple databases to the users when they need it.

Brio partners with Autonomy for much of its unstructured content, resulting in a solution that has best of breed capabilities for analyzing both structured reports and unstructured content [4].

3.4.8 Sybase Enterprise Portal (EP)

Sybase EP Portal Services are enterprise-level services for the development and deployment of portals and e-Business applications, which include content management, content workflow, dynamic publishing, advanced deployment options, categorization, personalization, and search and presentation services.

Sybase EP provides a cohesive and unified e-Business infrastructure for the development and deployment of portals and e-Business applications. It provides the necessary portal services, B2B extensions, mobile capabilities, infrastructure, and integration options to help you meet the challenges of today's e-Business environment, while leveraging your existing investments [57].

3.4.9 Computer Associates CleverPath Portal

CleverPath Portal provides critical benefits to the enterprise. Integrating data and applications, ranging from enterprise applications to other CA solutions (storage management, security, Business Intelligence tools and more). Content from various sources is integrated onto a single workplace that can be customized to provide a comprehensive solution to eBusiness enterprise—whether it is B2E, B2B or B2C.

Integrating and managing business processes enhance operational efficiency and provide a complete view of enterprise. Support and connections are available for all data formats, including legacy resources to make business intelligence readily available to decision-makers in the right format, at the right time. CleverPath Portal has clearly evolved, building upon the gained experiences and innovating at an accelerated pace to create a mission-critical, high quality, easily deployable portal solution in a multi-platform, multi-device, multi-system environment [58].

3.4.10 SAP

SAP Enterprise Portal offers a wealth of functionalities that can integrate applications and display all types of information. In particular, applications can interact and communicate with each other. Simple user interaction executes transactions and updates the display in the portal. It gives portal users a hands-on ability to work with programs from various sources and makes working with the components completely transparent to the user.

The greatest advantage of the portal is that it has only one interface that integrates all these applications. Users no longer have to deal with various menus or screens: all components look alike. The portal can have uniform interface because it isn't required to integrate an application's complete front-end. It only has to provide the most important excerpts or views of the required information. However, you can of course, choose to integrate the complete GUI if necessary [59].

3.5 Levels of Enterprise Portals

Information systems are useful only to the extent that the data, information and knowledge base that feed them are reliable, relevant, and timely. Personalization

deals with users' need to quick access information that is immediately relevant for their daily lives. Enterprise Portals allow users to predefine the applications that will open up simultaneously each time. In this way, the many applications that the users use frequently are just a click away [29].

In terms of levels of interface, functionality, and system architecture, Enterprise Portals represent a major advance over basic intranets.

- They provide a core IT infrastructure that allow organizations to streamline their information management, integrate disparate applications, and leverage their digital assets to serve different audiences internally and externally.
- They make it easier for users to find information and knowledge sources regardless of which system store them.
- The user need not open many different windows.
- Users need not learn complexities of many different systems and ask to be admitted (get a password) to use each other.
- Users do not have to deal with various types of non-user-friendly interfaces. Enterprise Portals provide a common interface that makes it easier to find information.
- Users may not even be bound by location to access information and perform their tasks.
- They clearly reduce information overload by providing information that is filtered, categorized, targeted, and personalized.
- They provide very advanced search mechanisms that allow users to quickly find relevant information and people with related knowledge.
- They can be configured to facilitate one-to-one, one-to-many, and many-to-many communications and collaborations.

Table 3.1 shows the features between a simple and a sophisticated portal.

Features	Basic Enterprise Portal	Advanced Enterprise Portal
Organization and management	Centralized management : easy management of group and users' rights, requires separate database to install	Highly coordinated multiple levels of Web based management : very easy o set up different levels of management; easy to analyze log of all events within the portal.
Personalization	Limited: basic users' preferences and based on stationary location	Advanced: full control of layout and controls , role based, dynamic, on the fly, and triggered by device, users' current location.
Search	Enhanced search: full text, Boolean, concept, natural language, popularity; provides notification; searches unstructured and structured documents.	Advanced searches: collaborative and affinity searches, unified internal and external WWW results, multimedia file searches.
Taxonomy	Many category levels highly hyperlinked, automated categorization; well organized directory.	Other forms of categorization; advanced thesaurus.
Collaboration tools	Integrated at the notification level only, but links to e-mail, online threaded discussions; project management software; calendar and scheduling.	Deeply integrated within the portal window, no need to launch native application: includes instant messaging and electronic meeting places.

Features	Basic Enterprise Portal	Advanced Enterprise Portal
Content Management System	Available on a limited basis: cumbersome process for uploading documents, supports document versioning and routing	Widely available: automated tagging of documents, little effort required by users for further categorization and targeted distribution, process, and work- flow features.
Measurement Tools	Integrated software	Integrated and easily customizable, real time surveys.
Integrated of internal applications	Few and integration at the interface or reports level only : applications run on the Web server	Many and deep integrations of data sources : communication among APIs, integration of mainframe and legacy systems, applications run on separate server.
Development environment	Requires high level of programming skills: not easily customizable	Provides turn key solutions easily customizable : supports object oriented development.
Systems architecture and performance	Multi tiered architecture : clear separation of presentation and applications layer, integrates easily with most databases and runs on the most popular operating systems.	Supports XML based, wireless and P2P applications and robust integrated solutions for internet, intranet, and extranet applications, highly scalable, offers caching and load balancing, APIs run on separate servers.
Security	Supports all standard authentication a security protocols out of the box.	Supports high level encryption and customized solutions, single sign-on.

Table 3.1 Levels of Enterprise Portals

3.6 Leading Vendors

In the recent growth of interest in enterprise portals, many software vendors have claimed to have a portal software solution. Some of the current leaders in this space are Plumtree, Autonomy, InfoImage, Epicentric, and SAP Portals [18]. They have been joined by very large players coming from various fields:

- Work-flow and document management.
- Content management systems.
- Data warehouse.
- Collaboration software.
- Business intelligence.
- Enterprise resource planning and customer relationship management.
- E-mail management.
- Portal business.
- Search and retrieval engines.
- Enterprise application integration solutions.
- Platform suppliers.

Many vendors provide solutions relevant for Knowledge Management that can be integrated into an Enterprise Portal platform. The following are the most relevant categories and list the most important vendors in the cited tables:

- Enterprise Portals Platforms (Table 3.2)
- Search, retrieval, and categorization systems (Table 3.3)
- Web-based discussion, communication, and community tools (Table 3.4)
- Document and content management systems (Table 3.5)

Vendor	Product	URL
Computer Associates	Jasmine ii Portal	www.ca.com
IBM	WepSphere and K-Station	www.ibm.com
InfoImage	Decision Portal	www.infoimage.com
Lotus	Lotus K-Station Portal	www.lotus.com
Microsoft	Share Point	www.microsoft.com
OnePage	Content Connect	www.onepage.com
Oracle	Oracle Portal	www.oracle.com
Plumtree	Plumtree Enterprise Portal	www.plumtree.com
PeopleSoft	PeopleSoft Portal	www.peoplesoft.com
SAP	SAPPortals	www.sapportals.com
Sun Microsystems	iPlanet Portal Server	www.iplanet.com
Sybase	Sybase Enterprise Portal	www.sysbase.com
Xerox	DocuShare	www.xerox.com

Table 3.2 Vendors of Enterprise Portal Platforms

Search, Retrieval, and Categorization Systems are shown in Table 3.3

Vendor	Product	URL
Easy Ask	EasyAsk	www.easyask.com
Google	WebSearch	www.google.com
IBM	Intelligent Miner	www.ibm.com
Lotus	Lotus Extended Search	www.lotus.com
Microsoft	Share Point Search Engine	www.microsoft.com
Netscape	Content Connect	www.onepage.com
Oracle	Ultra Search	www.oracle.com
Sun Microsystems	iPS Compass Server	www.sun.com
Tacit Knowledge	Expertise Search for Portals	www.tacit.com
Webmind	Webmind Search	www.webmind.com

Table 3.3 Vendors of Search, Retrieval, and Categorization Systems

Web-Based Discussion, Communication and Community Tool are shown in Table3.4

Vendor	Product	URL
Centor	Interaction Server	www.centor.com
Corel	NetPerfect	www.corel.com
DWL	DWL Collaboration	www.dwl.com
iMeet	iMeet Enterprise Meeting	www.imeet.com
Inovie Software	TeamCenter	www.inovie.com
Lotus	QuickPlace, Teeamroom	www.lotus.com
Microsoft	Exchange Server, NetMeeting	www.microsoft.com
Netscape	Collabra Server	www.netscape.com
PeopleLink	eCommunity Solutions	www.peoplelink.com
PowerMeeting	PowerMeeting Services	www.powermeeting.com
Web Crossing	Web Crossing	www.webcrossing.com
WebEx	WebEx Services	www.webex.com

Table 3.4 Vendors of Web-Based Discussion, Communication/Community Tool

Document and Content Management Systems are shown in Table 3.5

Vendor	Product	URL
Broadvision	One-to-One Publishing	www.broadvision.com
DeskNet	ContentWelder	www.desknetinc.com
eBT	Entrepid and Engenda	www.ept.com
Enigma	Enigma 3C	www.enigma.com
FileNet	Panagon	www.filenet.com
jetForm	InTempo	www.jetform.com
Lotus	Notes, iNotes	www.lotus.com
Mondas	IntraLink ST	www.mondas.com
Open Market	Content Server	www.openmarket.com
Oracle	iContent	www.oracle.com
Starbase	eXpressroom	www.starbase.com

Table 3.5 Vendors of Document and Content Management Systems

CHAPTER 4

CASE STUDY: DESIGN OF ENTERPRISE PORTAL

4.1 Overview

In order to complete their tasks mainly composed of making a decision and proposing methods for the decision in question, Military enterprises rely on their capability of processing, using and managing information efficiently in the complex operation theatre of the 21st century. Producing, storing, sharing, publishing, retrieving, assessing and evaluating information impose burden in terms of time and energy. This burden concerns not only the one transmitting and receiving information but also the whole organization.

Information that is not clear, understandable and well organized not only leads to energy waste, but decrease in the quality and speed of decision-making process in organizations as well. Subsequently, in military enterprises, inadequacy in information management is liable to cause loss, which cannot be compensated.

In the present century called “Information Age”, there is continually increasing information flow because of technological developments. With the consideration of the speed of developments in question, it is seen that information units can be irrelevant to developing situations and needs, what is more, can be useless and inconsistent with each other. Thus, most efforts are made to the search process and the organization coherent and current information.

Considering the volume of the information received by the headquarters, it is seen that there may be delay in decision making process evaluation, and mistakes led by wrong and information heaps and mismanaging information.

4.2 The Enterprise Portal Necessities

Military enterprise oriented information management concept and necessity functions are defined as follows.

4.2.1 The Concept of Information Management

According to worldwide-appreciated Knowledge Management and Information Management concept, knowledge is defined as synthesis achieved via manipulation of personal experience or processing available information. Information Management is, the process consisting of collecting, organizing, sharing and analyzing the experiences of personnel, seen as a system which helps to build communication among the personnel share information.

Information Management aims to convey right information to right person in right form and right time. When the aim is to cover the system to meet the services of a headquarter during peace, it is named headquarter information management system. This department may lie in a separate information portal in Information System. On the other hand, information management systems functioning during crisis and war are called Command and Control Information Systems (CCIS) and may cover information management systems used during war.

4.2.2 Need for Information Management

Information Management system which is anticipated to be built in the enterprises focuses on the techniques of storing and sharing information in order to increase effectiveness of personnel; and requires collection, classification, storing and distribution of information necessary for the development of the organization.

While the personnel have been rewarded for their performance and encouraged to preserve their information capacity in many enterprises up to the present time, Information Management approach depends on sharing the personnel's information

with each other. With this regard, Information Management requires cultural change along with technological change.

4.2.3 Function of Information Management

Information is obtained from people, systems, databases and desktop computers, and then stored and classified as valuable data in pool. When needed, this information is transmitted to relevant persons or systems through "portal" or other transfer methods; in other words, right information is delivered to right person in right time.

The present information in the pool is automatically excluded and archived when it is invalid or out of order. Moreover, it is possible to retrieve the archived information at any time.

4.2.4 Organizing, Publishing, Using Information

Detection of information likely to be needed constitutes the first level in information management. This procedure is anticipated to be carried out according to the tasks and responsibilities of the personnel in enterprises.

With an information system, it will be possible to communicate with other information systems and automatically get and store all documents, texts and other kinds of materials along with the possibility of enabling the personnel to reach the information they need.

Since it is necessary to mark all documents in the information management system with certain catalogues in order to enable the user to find them easily, documents to be included in an information management system should be marked and collected with at least the catalogues shown below.

- Document Name
- Document Title and Subject
- Classification

- Distribution Plan
- Document Number
- Document Date
- Validation Period
- Author/Contact Point
- Release Authority
- References
- Summary

So many information and documents are generated in the enterprise. It is necessary to find, to reach these and to reuse in the whole organization, to take the information stored in different system and to make significant in order to help the decision makers to make strategic decision [35]. For this reason the following objectives were defined [36];

4.2.5. Objectives of Information Management

- To support decision making process,
- To increase efficiency/effectiveness,
- To make enterprise more transparent,
- To synchronize related studies/subjects,
- To enable information share,
- To prepare documents and papers, put all the activities including their approval and coordination into computer, and achieve them.

4.2.6 Objectives Assumed Paralleling Information Management

- To increase work speed in enterprise,
- To ease the orientation of new enterprise personnel,
- To activate information exchange among the personnel and increase efficiency,
- To enable register, organization and share of information,
- To obtain and edit information via information technology, decision support and automatic information production tools.

4.3 Designing the Portal

During the design, the enterprise necessities were considered as technical and structural. During the portal designing in the enterprise, following four main factors were considered :

- Function
- Organization
- Information architecture
- Enterprise architecture

4.3.1 Function

Here, how to handle the enterprise processes and the collaboration to use in the portal was considered. During the determination of necessities, first steps were taken during the portal development by considering the following main components.

- Planning how to manage the authentication and authorization mechanisms and depending on this, how to use index system that will provide substructure to entry system from one point, and how to integrate with portal.

- Configuration how to make the information pools that is the information available in the systems, and how to integrate these with portal, hereupon to classify such information.

- Conforming to XML sketch and other industrial standards during the modeling the data exchange services and integrating between applications and composing such models.

- Planning the enterprise workflows and applying how to embed the workflow in the systems which is the building stone [25].

4.3.2 Organization

The subject that should be considered organizationally was the user-oriented circumstances. This subject needs to be considered technically. We were aware of that, if the portal that was going to be designed did not respond the organizational necessities, the solution that was going to be developed would not do any help.

Display the architectural instruction during the portal designing and manage this during the developing process was one of the important steps. The architectural instruction is actually versatile, because portal architecture is an important element that will be used during either the development process or maintenance [53].

Nevertheless, taxonomy and other metadata standards need to be determined. Taxonomy, which is the most necessary element during the developing the information architecture was the most important organizational necessity. The work to reach the information with definite standards and to store them for the enterprise was done in this process. As a result of all these with which access rights the users can access the information and how to manage it were also considered.

4.3.3 Information Architecture

Information architecture defines how the portal user uses the information and how he acts. Information architecture provides the content and the services [52]. At the Information architecture how to present the information to the user, to present the portal navigation methods and the tools shared usage oriented via a menu or toolbar

becomes important. For this purpose, the screens that can be accessed by users were designed easily by designing the enterprise information structure.

4.3.4 Enterprise Architecture

This structure portal is an important process from the point of time saving, and source usage during the implementation process. Following criterions were considered for the enterprise architecture.

- Network security: The introduction of the portal changes network security.
- Network capacity: The portal affects network traffic. Enterprise search systems crawls content over network connections.
- Scalability: The portal supports a distributed configuration.
- Redundancy and failover: The portal is expected to be up 24/7.
- Backup and recovery: The portal and its constituent document management systems require backup and recovery plans [23].

4.4 Assessing Feasibility

Actually, the enterprise portal is the intersection point of the different technologies. Presently though many portal solutions have a general usage purpose, it cannot be said that they have a strategic importance [49]. In fact, the big enterprise portal projects should be put into application within a strategic plan [50].

When an enterprise decides that the portal solution can enlist real advantages, its second step will be deciding on developing the portal solution for the enterprise or purchasing of it. Even at purchasing to say “this is exactly for the enterprise”, the portal should have an acceptable customization talent that the enterprise necessities are oriented [39].

We should not forget that although commercial portal software includes very strong mechanisms, they might not meet user needs thoroughly. Commercial portal software may not be flexible to meet the needs of every enterprise. In such a situation,

it can make up solution with the software already existing in enterprise (like Operating System, Office, Web Server, Database) and with IT department [11].

Enterprise portals are quite easy to understand and quite difficult to develop. Their ability is in the details, and the abilities can be difficult to understand and complicated [43]. In Enterprise portals, it is very helpful to begin a feasibility study, considering it as a front-end exercise for full implementation planning. In the course of this study, it is important to mark the following specific objectives:

- Assessing and prioritizing business requirements.
- Determining the feasibility of the fundamental concept.
- Identifying and weighing the issues surrounding the implementation.
- Identifying critical success factors.
- Determining the likely costs of meeting business requirements based on the priority scheme.

"*One of the best approaches for demonstrating the feasibility of the concept of portals is prototyping.*" [12]

Within the context of the information management concept that is defined for the enterprise, a case study was started about buying a commercial portal or to develop an in-house portal. Within the text of such study considering the following factors, the advantages and disadvantages of the portal solution which will be developed in-house with the commercial portal software were displayed.

- Functional requirements,
- Available IT resources,
- Portal Integration,
- Security requirements,
- Extensibility,

- Interoperability,
- Scalability.

These factors were very important components to effect deciding about portal supply, because it would be determining the solution of the information management concept with in-house or commercial product.

Firstly, if the commercial product was bought, how the product's integration would be with present applications and the necessary training about the database what came with portal product, backing up procedures, and other logistical necessities needed to be considered. In fact, the most important subject between purchasing and developing for the enterprise to be considered was the cost. For the commercial software, besides the supply cost, the maintenance costs, the afterwards development costs, the support costs were the costs to be considered [21].

The highest cost in the enterprise was the portal's relation and integration with the current systems. Some systems would need some new interfaces for integration and usage from the portal.

The developed solution does not have any cost for annual maintenance fee but commercial solutions do. Maintenance fee gap is 18% –30% of first software fee. Support and software upgrade are included in this fee [30]. Nevertheless, if there is comprehensive powerful portal product, in fact to do software upgrade is very difficult and hard. Especially it is very difficult to load a new customization after loading the commercial product after many customizations, because each new characteristic that come with the product will cause a new customization, and that will effect the other customizations [45].

Especially in the end of the alternating needs in the enterprise when the applications are available that are supplied in different times and work at different platforms, even use different databases, to find a product that will be able to integrate with all these is almost impossible. You will restructure your current applications according to the portal product what you will buy which means very high costs, or you will generate a new portal solution with your IT department in the enterprise.

Such cost is not only the financial both the restructuring and the man labor force cost [48].

Consequently, especially after the completion of the information management concept in the enterprise, it was decided that a prototype portal that is suitable for this concept will be developed by information system personnel, and the necessities will be displayed unequivocally by testing this prototype, against a commercial software that will be supplied according to these necessities.

For this reason, a portal developing team was established. As the manager of the team, I worked out conceptual design of the portal solution, within the framework of the EIM concept that was introduced in Chapter 2 and the EIPs main principles that was explained in Chapter 3. In light of this design, after determining the software platform that will be able to be integrated with our current systems, a prototype portal solution whose technical details are defined in Chapter 5, and took nearly a year to be developed.

The main purpose here is to do a prototype study about what an enterprise portal includes and how to apply to the enterprise to make the strategic needs and decision-making mechanisms applicable.

Such prototype was tested in many places and the feedbacks were taken and again updated on it. In the end, the technical substructure of an enterprise portal solution that will respond the EIM need, the processes to apply and the expectations of the user exactly have been fixed. In the end of such fixations what criterions should be sought and during the supplying of the commercial portal solution that can be needed by the enterprise have been exactly revealed.

CHAPTER 5

IMPLEMENTATION

5.1. Project Definition

The portal application aims to create a secure, customizable, easy-to-use and manageable web-based platform for organizational users to share and access vital enterprise knowledge efficiently on needs to know basis.

The portal application's user-friendly interface helps its users to customize and personalize the portal according to their needs enabling them to work in a more comfortable and efficient environment to maximize creativity.

The vital enterprise information within the portal application platform is accessed via Secure Socket Layer (SSL) connection, thus protecting the enterprise knowledge from eavesdroppers.

The portal application serves as an enterprise single sign on entry point for all the applications within the organization, thus enabling customized and personalized control over the applications within the organization from a single point.

The vital enterprise information that is kept within the portal application platform is structured in a special way so that the information is not associated with individual users. Instead, the information is associated with user roles so that the collective information is used to create an enterprise knowledge instead of a personal one.

Overall, the use of the portal application helps its users in forming an enterprise knowledge, decision-making, accessing and sharing information, and activities management.

5.2. System Architecture Design

5.2.1. System Overview

The Portal application is designed to work on the Internet Information Server (IIS) and Microsoft SQL Server that runs on Microsoft Windows Server. The portal uses Dynamic HTML and Active Server Pages technologies. Even though only Visual Basic Scripting Edition (VBScript) was used for server side scripting, both Visual Basic Scripting Edition (VBScript) and JavaScript were used for Dynamic HTML on the client side.

The portal application also makes great use of the Active Directory Service. Portal users' profiles are kept on the Active Directory and allowed parts can be modified within the portal. Information such as user's computer, organizational unit, and role are automatically retrieved, by the use of Active Directory Services Interface (ADSI), from the Active Directory on logon and user's portal window is customized according to this information.

The portal application is made of customizable service windows, each a simple database application within itself, a page-layout-management-section, a profile management section, and a project management application. Each service window is located in an iframe [76] on the main portal application window. By using Dynamic HTML and iframe technologies service, windows' position can be changed by simply dragging and dropping them to their new location. Service windows can also be removed and added back again to the portal application's main window according to users' preferences. After each session these modifications are saved to a database server. These preferences are read back from the database server on each session start for each portal user and placed in a client side XML DOM Document. All user customizations are saved in this XML DOM Document and kept on the client side until session terminates and then the modified XML DOM Document is written back

to the database server, thus reducing the network traffic and the load on the database server.

In some of the services, ActiveX Objects such as the Outlook View Control Object and the Netmeeting Object were used to make these services accessible within the portal application. Some of the other services are also reliant on Microsoft technologies such as Active Directory and Microsoft Indexing Service. These services include Active Directory navigation tool for profile queries and project indexing for project searches.

Some services in the portal application make use of several technologies at once. For example video conferencing service window creates a list of users that are allowed to make video conferencing call according to their role using the Active Directory, then filters the list according to their online status and retrieves the computer names of these online users to make it possible for Netmeeting ActiveX Control object to place calls to these users. Rest of the service windows are reliant on some sort of data stored on the database server such as weather conditions, exchange rates, dictionary, etc.

The portal application also includes a project management application. This feature helps the portal users to enter their project details to a database server and upload their related documents to a user folder on the file server in order to share their project details with other users who have access rights. Uploaded files are protected against unauthorized use via NTFS directory access rights. Project files are automatically indexed via Microsoft Indexing Service so that authorized users can query the uploaded project files catalog and have an easy access to information by using the portal's projects service window.

The portal also serves as the single sign on point for other web-based applications that runs on other platforms. Authentication process of the portal is done by the help of Windows NT authentication and the authorization is done by the help of Active Directory Services. Once a user is authentication through the Windows NT authentication process, its role is determined by the help of the Active Directory Service and the user is authorized to use the predefined services and other web based applications for that role.

Figure 5.1- Illustrates general system applications.

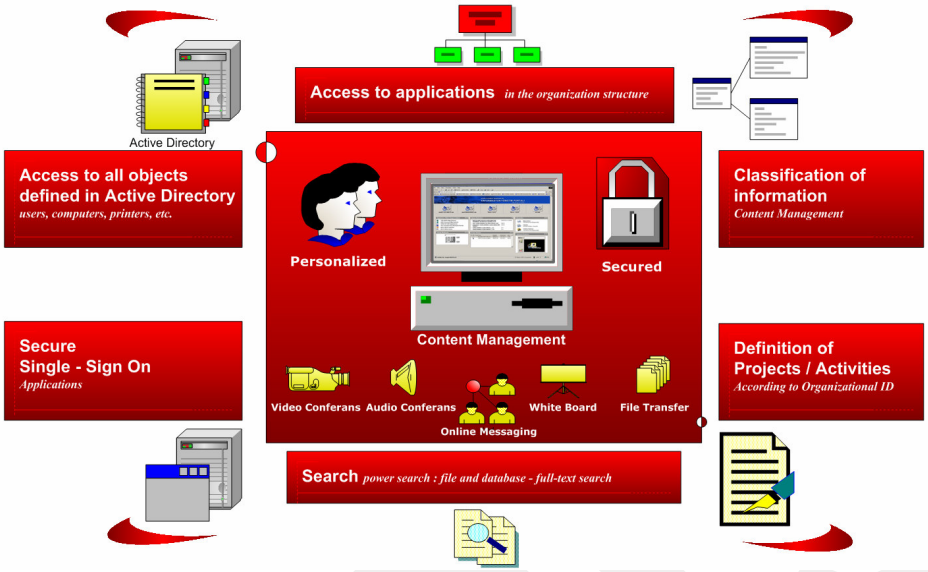


Figure 5.1 System Applications.

5.2.2. Software and Hardware Architecture

Figure 5.2 - Illustrates a typical software and hardware environment onto which an application built on the portal platform could be deployed.

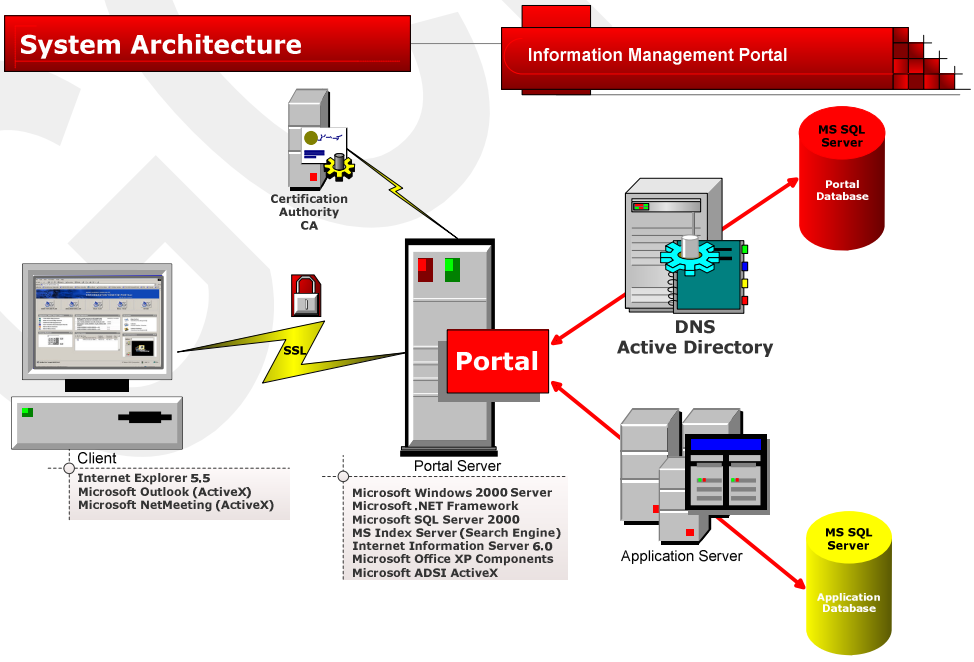


Figure 5.2 Software and Hardware Architecture of Portal.

5.3. Portal Implementation

5.3.1. User Profile

User profile is a feature of the portal application, which is used by portal users to control information kept about them in the Active Directory. By the use of the user profile feature, users can monitor their information that is retrieved from the Active Directory by using Active Directory Services Interface (ADSI) and modify them if necessary. Modification can only be done on the areas that are allowed by the domain or enterprise administrators that are responsible from the Active Directory Services. The User Profile feature also enables users to access the Active Directory from the portal application's web−based interface and change their Windows domain logon password. This feature is also dependent on the domain or enterprise administrators' permission.

5.3.2. User Page Layout

The user page layout feature of the portal application is utilized by the users to manage their service window layouts in their portal application's main document window. With the help of this feature, users are able to add service windows of various types to their portal application's main document window or remove them if they desire.

The user page layout feature works on a need−to−know basis so the users can only add service windows that they are allowed to use. Other service windows are not even visible to unauthorized users.

Every setting a user modifies with the user page layout window is kept on a client side XML DOM document and saved to the database server on each user session termination. The service windows that users are allowed to access are determined by the help of the Active Directory Service. Each user's role is determined from the Active Directory Service on each user session start, and only the allowed service windows for that role are served to the users. In this way, users are not able to see the service windows that they are not supposed to see.

Figure 5.3- Illustrates a sample User Page Layout window.

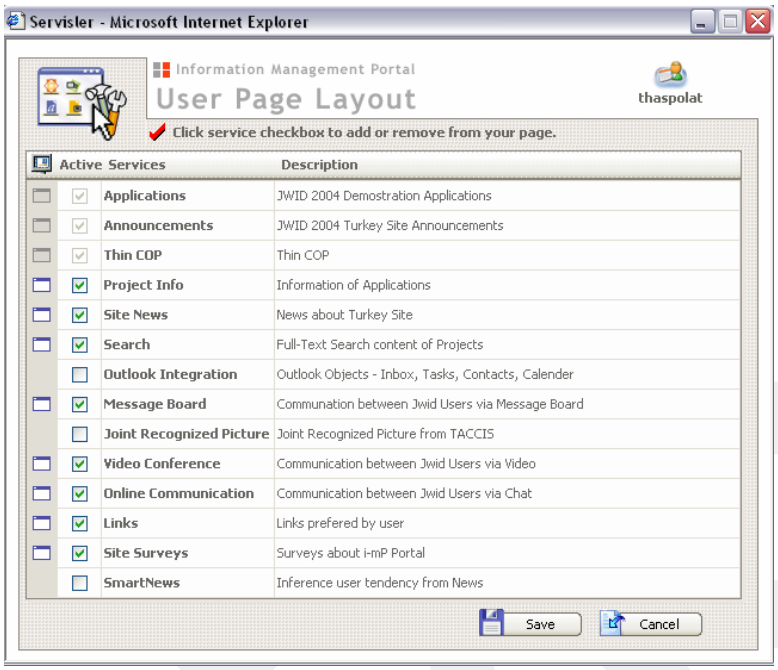


Figure 5.3 User Page Layout

5.3.3. User Project Management

The portal application includes a project management application to handle users' projects within the organization from a single location. With the help of the project management application, users are able to create projects, enter project details and project summary, and attach associated project documents of various types and upload them to a user folder on the file server to share with other users of the portal application. Once a project is created, users are allowed to review and modify their projects as they wish. Using the projects/activities service window, users are also able to search through other users' projects and view their project details and associated project documents, if they have adequate access rights.

Projects details created using the project management application feature of the portal application are stored on a Microsoft SQL Server database so that other users can query this database and get information on other users' projects. The associated files that are uploaded by users, however, are not stored in a database server. They are stored in a user folder on the file server for Microsoft Indexing Service to create a

full text search catalog, but their association information with the projects is stored in the database.

In this way when the users of the portal application search for a keyword to find a specific project, the keyword is searched through both the database entries on the Microsoft SQL Server database and the full text search catalog of the uploaded files created by Microsoft Indexing Service. This retrieves the most relevant project information available to users who are performing the search by using the projects/activities service window.

Figure 5.4- Illustrates a sample User Project Information window.

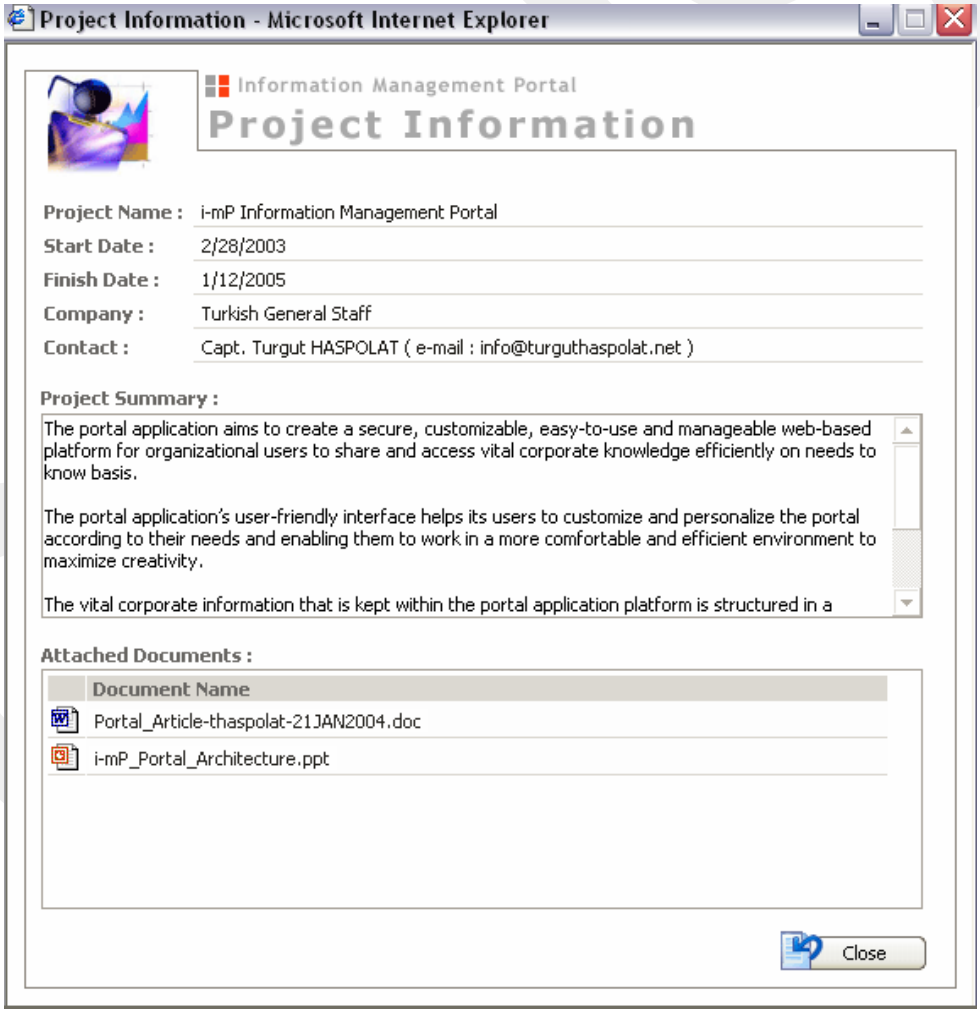


Figure 5.4 User Project Information

5.3.4. External Applications

The portal application serves as an enterprise single sign−on entry−point for all the applications within the organization. The authentication process of the portal is done by the help of Windows NT authentication, and the authorization is done by the help of Active Directory Services.

Once a user is authenticated through the Windows NT authentication process, their role is determined with the help of the Active Directory Service. The user is authorized to utilize the predefined services and other web based applications for that role.

Since the portal application determines the role of the portal users and authenticates them, there is no need for other applications to perform these tasks. In this way a central control is achieved regarding who is authorized to use which application. This also makes things easier for new application developers within the organization because they do not need to worry about authorization and authentication issues while developing their software.

5.3.5. Organization Structure

This feature of the portal application allows users to navigate through the organizational structure of the Active Directory Service by the use of Active Directory Service Interface (ADSI). Since the organizational structure already exists in the Active Directory Service, the portal application uses this organizational structure instead of creating a new redundant one, thus saving extra effort and system resources.

With the help of Active Directory Services Interface (ADSI), users can move up and down the hierarchical organizational structure to locate departments and users within the departments. Users can also gain information about other users' profiles in different departments by using this feature. Profile information includes address, phone number, computer name, etc. This feature is also used in other services of the portal application. For example, a phone book was created by modifying this feature.

In addition, conferencing service uses this feature to locate other users' computer information to place calls.

The hierarchical organization structure information held in the Active Directory is so valuable that this feature of the portal application can be used in many other services within the portal application in the future.

5.3.6. Services

The portal application includes a variety of services, which serve many different functions such as weather conditions, exchange rates, favorite links, etc. These services come in service windows which can be minimized, maximized, moved, added, or removed from the main portal application main document window according to user preferences with the help of Dynamic HTML effects.

Not all the service windows are available to all the users of the portal application. The availability of service windows is determined by the user's role, which is determined from the Active Directory Services by the use of Active Directory Services Interface (ADSI).

Most of the service windows are used to serve certain kinds of information to interested users who are allowed to see that information such as weather condition, exchange rates, dictionary, etc. For favorite links, users provide this kind of necessary user−specific information.

The information that these services provide is stored in Microsoft SQL Server database and brought to users in service windows by the help of ActiveX Data Object (ADO) component of the Microsoft Data Access Components (MDAC).

5.3.7. Search

The search feature of the portal application's project management part helps its users to search and locate project information and associated project documents of portal application's users. The search feature performs two different kind of search while searching for project details.

The first type of search method is the full text search, which is performed by using Microsoft Indexing Service. Microsoft Indexing Service is repeatedly indexing the folders where users upload their associated project documents, and a full text search catalog is being created. The keywords that the users provide to perform a search are searched from this catalog to see if they appear in a file that is uploaded as a part of user project. If they do, more information about these files are retrieved and presented to the user who is performing the search using the portal application's project search service window.

The second type of search method is the database search, which is performed by using ActiveX Data Object (ADO) of the Microsoft Data Access Components (MDAC). By using ActiveX Data Objects, the Microsoft SQL Server database is queried against these keywords that the users provide to see if these keywords match any user project details that are stored in the database server. If a matching result is found by any of the search methods, both in the Microsoft Indexing Service Catalog and Microsoft SQL Server database, then the results are merged and presented together as a single project.

Figure 5.5 - Illustrates a sample Search window.

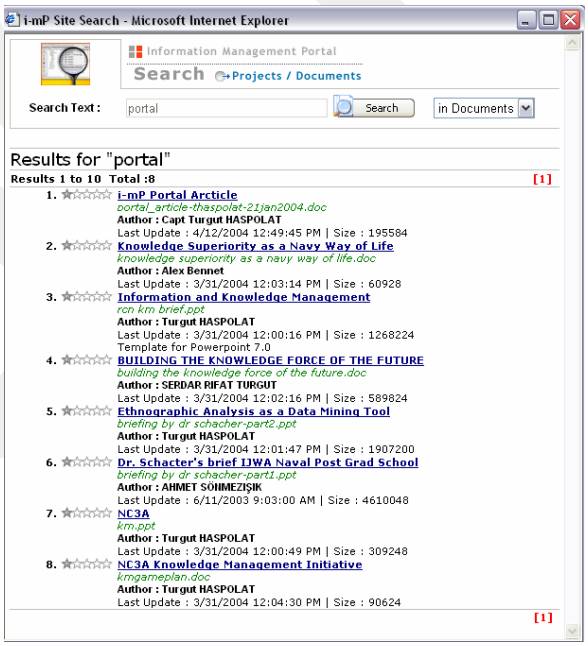


Figure 5.5 Search

5.3.8. Conferencing

The conferencing feature of the portal application helps user communicate with each other via different kinds of media such as audio, video, text, whiteboard, or combinations of these. The conferencing feature is a service window, and like all other service windows, the conferencing service window can be associated to certain roles so that its use can be limited to authorized users only. The video conferencing feature can be further limited to a small number of users in order to save crucial bandwidth.

The conferencing service window includes the Microsoft Netmeeting ActiveX Control object to perform these conferencing tasks for its users. The conferencing service window also uses Microsoft SQL Server database and the Active Directory Service in combination with some scripting to create extra features and make conferencing easier.

Using the Active Directory Services Interface (ADSI), a list of users who are allowed to use conferencing feature can be retrieved with their computer name information so the users can place a call simply by clicking their name on the list. In addition, a list of online users is kept on the database server so when retrieving the list of conferencing enabled users, the online users are marked so the user who wants to place a conference call is able to tell if the other user who is about to be called is available or not. Users of this service are also able to retrieve a list of online users so they can select who they want to call from a smaller list of users and call them simply by clicking their name from this list.

Since the conferencing service window uses the Microsoft Netmeeting ActiveX Control object to perform these tasks, it has to be configured correctly on users' computers. It is also important that the computer information held on the Active Directory for each user is kept up to date in order for users to place calls to correct users' computers.

Figure 5.6 - Illustrates Online Communication windows.

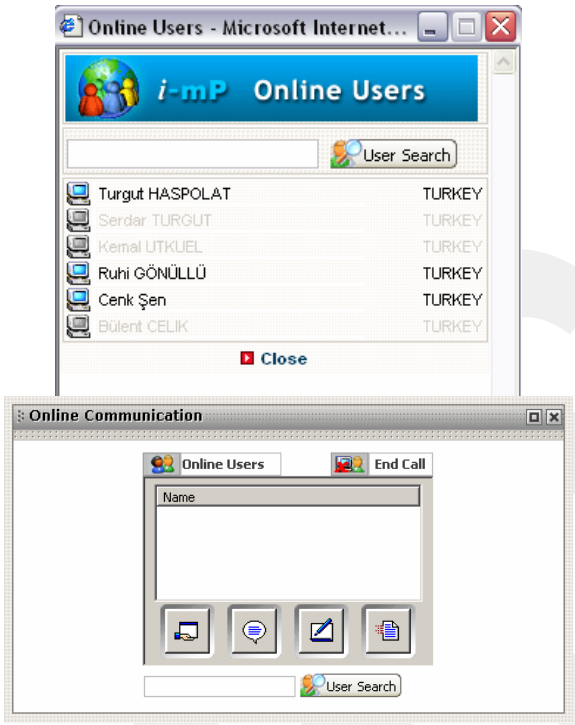


Figure 5.6 Conferencing

5.3.9. Outlook integration

The portal application has a number of service windows, which are used to add some of Microsoft Outlook's features into the portal itself to make them more easily accessible to users on a single platform amongst other services. These service windows include services such as inbox, contacts, tasks, and calendar. Since these service windows are similar to the other service windows within the portal, users are able to add and remove them as they wish.

The portal application uses the Microsoft Outlook View Control ActiveX object to include Microsoft Outlook's features in its service windows. Microsoft Outlook features such as inbox, contacts, tasks, and calendar are folders of the Microsoft Outlook, and each of these folders is included in different service windows as ActiveX Control objects. In this way, users are able to include or remove these features to their portal, one by one so that the features that are not needed do not take up any space on the portal application's main window.

By using these service windows, users are able to perform most of the tasks that they could perform by using the Microsoft Outlook from a single point without needing to leave the portal application's main window.

The use of Microsoft Outlook View Control ActiveX object is dependent on the Microsoft Outlook profile, which is located on the users' computers. Therefore, in order for these service windows to work, Microsoft Outlook profile settings must be properly created and the user must logon to the computer with appropriate Microsoft Windows domain credentials.

Figure 5.7 - Illustrates Outlook Integration windows.

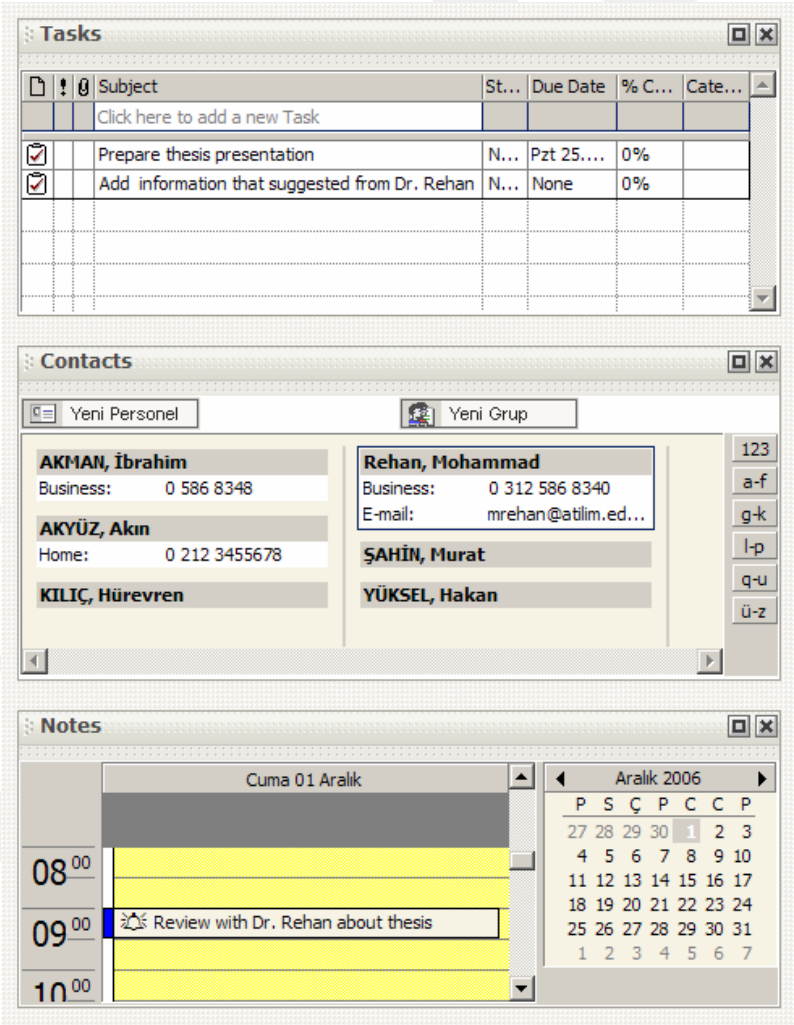


Figure 5.7 Outlook Integration

5.4. Technology Used

5.4.1. Internet Information Server

The Microsoft Internet Information Server is designed to deliver high speed, secure information publishing while also serving as a platform for developers and independent software vendors (ISVs) to extend the Internet's standard communication capabilities. The Microsoft Internet Information Server is tightly integrated with Windows Server to provide an efficient, reliable, scalable, and secure platform for administrators [61].

The portal application is a web-based application that uses Internet Information Server (IIS) as the web server. The main reason to use IIS is its support for Active Server Pages. Since the portal application is written with Active Server Pages and VBScript, the web server of choice had to support these technologies and work on Windows Server [62].

5.4.2. Microsoft SQL Server

The portal application relies on Microsoft SQL Server database for handling the database needs of the application. Microsoft SQL Server database is a Structured Query Language (SQL)–based, scalable, relational database with integrated Extensible Markup Language (XML) support for Internet applications. It is also easily accessible by any Active Server Page by the help of Microsoft Data Access Components (MDAC), and is therefore suitable for using in this project [63].

5.4.3. Microsoft Data Access Components

Microsoft Data Access Components include ActiveX Data Objects (ADO), OLE DB, and Open Database Connectivity (ODBC). Data–driven client/server applications deployed over the Web or a LAN can use these components to easily integrate valuable information from a variety of sources, both relational (SQL) and non–relational [64].

In this portal application, the ActiveX Data Objects (ADO) component was used to access and store information about user preferences, weather conditions,

dictionary, etc. User preferences of the portal application's service window layouts are stored in Microsoft SQL Server database. Using ActiveX Data Objects, these preferences are retrieved from the database server and stored in a client side XML DOM Document. When the user logs out or the user session expires, the data in the XML DOM Document is send back to the database server for storage. This is also done by using ADO.

Microsoft ADO provides consistent, high−performance access to data and supports a variety of development needs, including the creation of front−end database clients and middle−tier business objects that use applications, tools, languages, or Internet browsers. The primary benefits of ADO are ease of use, high speed, low memory overhead, and a small disk footprint.

5.4.4. Extensible Markup Language (XML)

Extensible Markup Language (XML) is the emerging Internet standard for data.[65] XML is a set of tags that can be used to define the structure of a hypertext document. XML documents can be easily processed by the Hypertext Markup Language (HTML), which is the most important language for displaying Web pages [66].

In this portal application, XML was used to store window layout information on the client side until the user leaves the session. Instead of accessing the database every time a user changes something on the portal window, all the settings are loaded to a XML DOM Document on the client side [67]. Therefore, every time a user changes something, these changes are saved to this client side XML DOM Document, thus reducing the network traffic and the load on the database server. In order to save all these modified settings, the XML DOM Document is sent back to the web server when the session terminates. Then it is written back to the database server.

5.4.5. XML Document Object Model (DOM)

The Document Object Model (DOM) class is an in−memory representation of an XML document. The DOM allows you to programmatically read, manipulate, and modify an XML document. Editing is the primary function of the DOM. The XML

DOM provides a standardized way to access and manipulate the information stored in XML documents. The DOM API serves as a bridge between applications similar to the portal application and XML documents [68].

This portal application also uses XML DOM to access and manipulate the XML Documents that contain data on user preferences. On each user session start, user's preferences are loaded to a client side XML DOM Document. After every modification, the processing for that modification is done from this XML DOM Document. When the user session terminates, these modifications are saved back to the database server.

5.4.6. Active Directory Service

The Active Directory is the directory service included with Microsoft Windows. It extends the features of previous Windows–based directory services and adds entirely new features. Active Directory is secure, distributed, partitioned, and replicated. It is designed to work well in any size installation, from a single server with a few hundred objects to thousands of servers and millions of objects. Active Directory adds many new features that make it easy to navigate and manage large amounts of information, generating savings for both administrators and end users [69].

Microsoft Active Directory Service is a fundamental service for distributed applications. It provides features such as location transparency, information on people and services, rich query, high availability, and more advanced features like support for Internet standards (LDAP, DNS), tightly integrated and flexible security, and scriptable interfaces for easy access (ADSI).

The portal application makes a great use of the Active Directory Service. The portal application uses Active Directory Service to gain information about user profiles, user roles, user computer information, listings of phone and address details, and hierarchical listing of the organization. The portal application accesses the Active Directory Service by the use of Active Directory Service Interfaces (ADSI).

5.4.7. Active Directory Service Interfaces (ADSI)

The primary and recommended application−programming interface (API) for Active Directory is Active Directory Service Interfaces (ADSI). ADSI enables access to Active Directory by exposing objects stored in the directory as COM objects. A directory object is manipulated using the methods on one or more COM interfaces. ADSI has a very simple programming model. Since ADSI is fully scriptable, it is easy to develop rich Web applications. ADO and OLE DB are supported for querying. By supporting ADO and OLE DB, Active Directory is just another OLE DB data provider.

ADSI makes it easier to perform common administrative tasks such as adding new users, managing printers, and locating resources throughout the distributed computing environment. ADSI also makes it easy for developers to "directory enable" their applications [69].

In this portal application, ADSI was used to access the Active Directory to gain user profile, role, and computer information and make modifications.

5.4.8. Lightweight Directory Access Protocol (LDAP)

The Lightweight Directory Access Protocol (LDAP) is a directory service protocol that runs directly over the TCP/IP stack. The information model (both for data and for namespaces) of LDAP is similar to that of the X.500 OSI directory service but with fewer features and lower resource requirements than X.500. Unlike most other Internet protocols, LDAP has an associated API that simplifies writing Internet directory service applications. The LDAP API is applicable to directory management and browser applications that do not have directory service support as their primary function.

Microsoft also provides the ADSI for developing client−side directory service applications. ADSI consists of a directory service model and a set of COM interfaces. These interfaces allow you to develop network directory service access applications for Windows NT/2000 and Windows 95/98. ADSI uses an LDAP provider to communicate the Active Directory and is the recommended API for directory

services. ADSI can communicate with various directory services by using their native providers [70].

This portal application queries the Active Directory with LDAP through the use of ADSI. It is used to locate other users' profiles, their computer information and even their online status with the help of the Microsoft SQL Server and some scripting.

5.4.9. Active Server Pages

Microsoft Active Server Pages (ASP) is an open, compile−free, server−side scripting environment that you can use to build powerful web applications and to create interactive web pages by combining HTML pages, scripts, and Microsoft ActiveX server components.

When the server receives a request for an ASP file, it processes server−side scripts contained in the file to build the web page that is sent to the browser. In addition to server−side scripts, ASP files can contain HTML (including related client−side scripts) as well as calls to COM components that perform a variety of tasks, such as connecting to a database or processing business logic.

ASP offers native support for Microsoft Visual Basic Scripting Edition (VBScript) and Microsoft JScript, and supports other scripting languages such as REXX, Python, and Perl through Active Scripting plug−ins. ASP also supports ActiveX Scripting, allowing virtually any scripting engine to be used. It allows web developers to write scripts that are executed on either the server or the client [71].

The portal application is written using Microsoft Active Server Pages for the reasons mentioned above. For client side scripting of the Active Server Pages, Visual Basic Scripting Edition (VBScript) was used, but for the client side Dynamic HTML effects and XML Document Object Model (DOM) management scripts, the choice of the scripting language was a combination of both JavaScript and VBScript.

5.4.10. Dynamic HTML

Dynamic HTML is a set of innovative features in Microsoft Internet Explorer 4.0. By enabling authors to dynamically change the rendering and content of a document, Dynamic HTML gives authors the ability to create visually outstanding HTML documents that interact with the user without the burden of relying on server–side programs or complicated sets of HTML pages to achieve special effects [72].

Dynamic HTML achieves these effects by modifying the current document and automatically reformatting and redisplaying the document to show changes. It does not need to reload the document or load a new document, or require a distant server to generate new content. Instead, it uses the power of the user's computer to calculate and carry out changes. Typically, Dynamic HTML documents are self–contained, using styles and a little script to process user input and directly manipulate the HTML tags, attributes, styles, and text in the document [73].

In the portal application, current look and feel such as the drag and drop effects of the service window iframes and selection highlights are achieved by using Dynamic HTML special effects. With the help of these special effects, users can minimize and maximize, add and remove, and alter positions of service windows. When these modifications are made on Dynamic HTML document window, an associated piece of vbscript code is triggered and user preferences are saved by the help of Dynamic HTML.

5.4.11. Microsoft Indexing Service

Indexing Service is a base service of Microsoft Windows that extracts content from files and constructs an indexed catalog to facilitate efficient and rapid searching. Indexing Service can extract both text and property information from files on the local host and on remote, networked hosts. The files can be simply members of a selected file system or part of a virtual web hosted by, for example, Internet Information Services (IIS).

The Indexing Service then merges the extracted information into catalogs of indexes for efficient searches. Indexing is the overall process of filtering, creating

index entries and merging them into catalogs. The final step in the indexing process is the creation of a catalog that contains a master index (and any temporary word lists and shadow indexes) storing words and their locations within a set of indexed documents. Subsequently, searching, or querying the catalogs for particular word combinations uses the master index as well as word lists and shadow indexes to execute queries quickly and efficiently [74].

The project management application of the portal application enables users to update their files to a file server in order to share them with other authorized users. These updated files (usually Microsoft Office documents) are automatically indexed and the Indexing Service of Microsoft Windows creates a catalog. Whenever a project document is needed, users can search for specific keywords about that document on the Indexing Service's catalog to retrieve that document. This helps portal users to share and locate their project documents easily.

5.4.12. ActiveX Controls

Microsoft ActiveX controls, formerly known as OLE controls or OCX controls, are components (or objects) you can insert into a web page or other application to reuse packaged functionality that someone else programmed. For example, the ActiveX controls that are included with Microsoft Internet Explorer version 3.0 or higher allow you to enhance your web pages with sophisticated formatting features and animation [75].

There are literally hundreds of ActiveX controls available today with functionality ranging from a timer control (which simply notifies its container at a particular time) to full−featured spreadsheets and word processors.

The portal application uses Outlook View Control and Netmeeting ActiveX Control objects. Users of the portal application are able to check their mailboxes, manage their contacts and tasks with the help of Outlook View Control. In addition, with Netmeeting ActiveX Control users can communicate with each other via voice, video and/or text messaging. All these tasks can be achieved within a single web browser by using these ActiveX Controls.

CHAPTER 6

CONCLUSION

In this thesis, considering the facts related to EIM, it would be seen that there is a notable relationship between information management and education in enterprise identification. In fact, approach to technology means much effort and time as human factor. It is especially impossible to use technology without educating the staff. Complementing education process with information management concept is regarded as a prominent opportunity.

The ultimate objective of enterprise portal is to access information through a single point and store information in only one room in the enterprise. Besides, the portal must be able to simulate work processes and access authorities to a one-to-one correspondence.

Many organizations should know the advantages of the portal application. Instant and easy access to well-edited information will render them more productive and efficient. Moreover, deployment of portal on a successful plan requires many steps to be taken. Detailed needs stemming from business cases should be taken into account while designing the system, which has a critical role in portal development stage.

Despite its evident achievements, a single portal is far from being expected to meet all the enterprise needs. Commercial portals have drawbacks such as dependence on the vendor and limitation of product. Providing in-house portal solution may leave a considerable room for every kind of needs. These are;

Vendor Dependence: Investing on a commercial portal solution, you will be constrained by limited characteristics of the product, development structure and integration skills. If you do not invest on your portal product towards prospective needs such as maintenance-management and education, the product will be handy for your needs only in short-term period. Thus, vendor's consistency in the market and continuity of support services should be considered.

In addition, workers may expect many things from portal solutions and these expectations may change rapidly. In this regard, it is rather difficult for products meet all the needs, or what the product provides may pretty surpass your expectations.

Rigidity: Commercial portal solutions cannot bring much flexibility in terms of the needs of the enterprise. However generic the portals are, they raise the necessity of customization as they grow. For this reason, the more generic, customizable and enriched portal solution vendors develop, the more complex and maintenance-costly product emerges.

In many cases, it is necessity to use task-specific and well-defined solutions. Generic portal solutions may remain rather complex and unnecessary. It is almost impossible to develop a portal product that is easy and quick to apply and give result. In fact, inflexibility in portal solutions is a very common problem, as available systems must be fully integrated to the portal solution. Especially to eliminate this integration problem is basic services; major portal developers include basic services as index or collaboration service in their products and force you to use them.

In-house portal solution provides great facilities in integration, support, add-ons, flexibility and especially cost. For example, developing a certain integration unit for a specific application such as Single-Sign-On (SSO) may turn out to be much easier and dependable. Thus, producing an in-house solution may help decrease the cost.

Moreover, in-house solution is a long-term one that is flexible and responsive to changing needs. Of course, just the reverse, portal may not be that flexible and even sticking to the limits of portal can be adapted as a policy in some enterprises.

Security: Enterprises like headquarters in which information security is critical use of commercial portals require special care. An unauthorized access directed outside of the enterprise is an undesired one especially in support and maintenance needs. In this case, in-house interference may be needed but this requires the staff to possess enough education and experience on the product. In addition, many portal product developers do not publicize product codes and this makes it impossible to make any modification on the product. Security matter is attaining importance in interoperability and integration issues.

Customization: Many portal solutions include structure open to modification. In fact, this is innately endowed. However, modification by workers needs is very difficult especially in commercial portal solutions. This is because of the fact that enterprise organization varies from enterprise to enterprise. For example, user roles may be different and missions are assigned to workers according to these different roles. A commercial portal is unlikely to adjust to possible changeable roles. Along with this, as in-house solutions can facilitate integration to available systems, these changes can easily be reflected. In addition, customization and maintenance costs will be less than the license of the portal product.

As the ultimate solution, in-house portal solution may bring a chance to produce a prototype. Thus, you can easily detect your needs and construct a constantly developing environment in a cycling structure. This will in turn give you a hand to detect applicable things and define enterprise capacity. Therefore, you can fully realize your expectations from an enterprise portal.

REFERENCES

[1] White Paper, Enterprise Portals in Higher Education, Edgewater Tech., Inc., 2005

[2] White Paper, Choosing an Enterprise Portal Solution, Wingspan Tech., 2004

[3] White Paper, Comparing Portal Development Tools, Infogain Corporation, 2005

[4] White Paper, How to Choose an Enterprise Information Portal Solution, Brio Technology, 2004

[5] The Portals Buyer's Guide, A handbook for better understanding and selecting the right portal solution for your business, Microsoft, 2003

[6] James Robertson, KM Column, Metrics for knowledge management and content management, 2003

[7] BEA White Paper, State of the Portal Market 2006: Portals and the New Wisdom of the Enterprise, 2006

[8] Hummingbird Whitepaper, Enterprise Information Portals, Enabling Knowledge Management in Today's Knowledge Economy, October 2001

[9] Robert Bolds, Enterprise Information Portals:Portals in Puberty, August 2001

[10] White Paper, An Overview of Corporate Portal Technology and Deployment, Survey Results From Organizations That Have Deployed Corporate Portals, Plumtree, 2005

[11] White Paper, Enterprise Portal Solution, Sybase, 2000

[12] White Paper, Implementing an Enterprise Portal, Wingspan Technology, 2004

[13] White Paper, Enterprise Information Portals, Unitas, March 2001

[14] Laura Ramos, The Total Economic Impact™ of Implementing Corporate Portals, 2002 Giga Information Group

[15] Laura Ramos, Common Mistakes in Implementing Corporate Portals, 2002 Giga Information Group

[16] TechRepublic, Real World Guide: Keeping Pace with Enterprise Portal Trends, April 2006

[17] White Paper, Portal ROI: An Examination of Payback Scenarios for Deployment of Portal, Delphi Group, 2001

[18] David Mitchell Smith, Gene Phifer, A Key to Portals and Portal Products, GARTNER Research, 21 September 2001

[19] White Paper, Managing Unstructured Content in Enterprise Information Portals (EIPs) : Documents, Taxonomies, Content and Knowledge Management in EIPs, UNITAS, May 2001

[20] Gates, W. H. (with C. Hemingway). Business @ the Speed of Thought: Using a Digital Nervous System. New York: Warner Books, 1999.

[21] Jana Polgar, Robert Mark Bram, Anton Polgar, Building and Managing Enterprise-Wide Portals, Idea Group Publishing, ISBN-13: 978-1591406617, 2005

[22] Robert D. Galliers and Dorothy E. Leidner, Strategic Information Management Challenges and strategies in managing information systems, Third edition, Butterworth-Heinemann Publishing, ISBN 0 7506 5619 0, 2003

[23] David Mercer, Creating Blogs, Forums, Portals, and Community Websites, Packt Publishing, ISBN 1-904811-80-9, 2006

[24] Tatnall, Arthur (Ed.). Web portals: the new gateways to Internet information and services. Hershey, PA: Idea Group Publishing, ISBN: 1-59140-439-8, 2005

[25] Dan Sullivan, Proven Portals: Best Practices for Planning, Designing, and Developing Enterprise Portals, Publisher : Addison Wesley, ISBN : 0-321-12520-7, September 10, 2003

[26] James J. Townsend, Dmitri Riz, Deon Schaffer, Building Portals, Intranets, and Corporate Web Sites Using Microsoft Servers, Publisher : Addison Wesley, ISBN : 0-321-15963-2, March 19, 2004

[27] Anura Guruge, Corporate Portals Empowered with XML and Web Services, ISBN:155558280x, Digital Press, 2003

[28] Richard L. Daft, Organization Theory and Design, South-Western College Pub 6 edition, ISBN-13: 978-0324156911, 1998

[29] José Cláudio C. Terra, Cindy Gordon, Realizing the Promise of Corporate Portals: Leveraging Knowledge for Business Success, Butterworth-Heinemann Pub, ISBN-13: 978-0750675932, October 11, 2002

[30] Heidi Collins, Enterprise Knowledge Portals, AMACOM/American Management Association Pub, 1st edition, ISBN-13: 978-0814407080, February 3, 2003

[31] Jennex, M.E., Productivity Impacts from Using Knowledge, Published By: Idea Group Inc., ISBN 159904451X, 2005

[32] John Sacco, Elizabeth Strait, Using an Intranet Portal, Uniform Accounting Charts and Activity Based Accounting to Assist Entrepreneural Nonprofit Program Management, George Mason University, 2004

[33] Wojtkowski, Wita.; Major, Marshall. Enterprise Information Portals : Efficacy in the Information Intensive Small to Medium Sized Business, Hershey, PA Idea Group Publishing, 2004

[34] Betz, Frederick. Executive Strategy: Strategic Management and Information Technology, : New York John Wiley & Sons, Inc. (US), 2001

[35] Board on Army Science and Technology, National Research Council, Strategic Technologies for the Army of the Twenty-First Century, ISBN: 0309046297, 1992

[36] The Benefits of Enterprise Workflow, http://www.localtgov.org.uk/benefits, Last access: 24.01.2007

[37] Barry Murphy, A New Perspective On Information Management, July 12, 2005

[38] White Paper, Enterprise Portals: The Workplace of Tomorrow, Computer Associates, March 22, 2002

[39] Michael Rudy, Enterprise Content Management: Powering the Enterprise Portal, Special Supplement to KMWorld, July/August 2001

[40] White Paper, Enterprise Portals Capabilities Overview, Computer Horizons, 2005

[41] Navarrow Wright, Content Management Is Core To Portals, BET.com, September, 2002

[42] White Paper, New Enterprise Portal Solution, Kinhu Co., Ltd., Intel Corporation, 2002

[43] White Paper, Implementing an Enterprise Portal, Wingspan Technology, 2004

[44] White Paper, Managing Unstructured Content in Enterprise Information Portals (EIPs) : Documents, Taxonomies, Content and Knowledge Management in EIPs, UNITAS, May 2001

[45] Andy Moore, Enterprise Information Portals: The Power and the Peril, KMWorld Specialty Publishing, 2001

[46] White Paper, Evolution of Portals, Infogain Corporation, 2005

[47] Alex Bennet, Department of the Navy, A case study on the Knowledge Management framework and implementation strategy of the Department of the Navy., 2001

[48] Laura Ramos, Portals With Purpose, June 01, 2004

[49] Laurie M. Orlov, Colin Teubner, Laura Ramos, Portal Projects In Search Of A Purpose, April 21, 2004

[50] Ryan Hudson, Laurie M. Orlov, Laura Ramos, Why Top Executives Should Care About Portals, 2003

[51] Angappa Gunasekaran, Omar Khalil, Syed Mahbubur Rahman, Knowledge and Information Technology Management: Human and Social Perspectives, Idea Group Publishing, ISBN : 978-1591400325, August 16, 2002

[52] Palmer, Nathaniel. 2003. "Portals and Collaboration." AIIM E-DOC Magazine, January/February. Accessed in February 2007 at

http://www.edocmagazine.com/vault_articles.asp?ID=25764&header=e_columns_header.gif.

[53] Sullivan, Dan., "Vendor Evaluations Part 2: Designing an In-House Evaluation." DM Review, March.Accessed in February 2007 at

http://www.dmreview.com/article_sub.cfm?articleId=6401

[54] White Paper, Oracle Application Server Portal 10g Technical Overview, April 2004

[55] White Paper, IBM Websphere Portal : An extrat from the Bloor Research Enterprise Information Portal Report, 2004

[56] White Paper, Enterprise Portal Solution centralizes user access to multiple applications, Sun Microsystems, Inc., 2004

[57] Thomas Gonser, Sybase Enterprise Portal Solution Overview, 2004

[58] Sumit Deshpande, Enterprise Portals:The Workplace of Tomorrow, CleverPath Portal from Computer Associates International, Inc. (CA), 2002

[59] Arnd Goebel, Dirk Ritthaler, SAP Enterprise Portal : Technology and Programming, Galileo Press, 2005

[60] Peter Robinson, Understanding Digital Certificates and Secure Sockets Layer (SSL), 2001

[61] White Paper, The Benefi ts of CRM Internet Architecture, SAGE, 2005

[62] Mark Melenovsky, Evaluating the Business Benefits for Windows Users of Deploying Windows Server, 2004

[63] David Litchfield, Strategies for Scalability with Microsoft SQL Server, 2001

[64] White Paper, An Internet Application Integration Framework, Nodus Technologies, 2003

[65] Extensible Markup Language (XML), http://www.w3.org/XML

[66] White Paper, Content Management: The Key to Enterprise Portal Success, Determining Core Requirements and Technology for Portals, SilkRoad Technology, 2004

[67] White Paper, INTEROPERABILITY : Bulding Systems Working Together For The Enterprise, Hirsch Electronics Corp, 2004

[68] Peter de Villiers, A Model for Content-based Billing in XML Environments, December 2003

[69] Sean Daily, Windows 2000 and Active Directory Administration, 2004

[70] White Paper, Directories and Public –Key Infrastructure (PKI), VeriSign, 2004

[71] Active Server Pages, http://www.aspfree.com/c/a/ASP/What-are-Active-Server-Pages

[72] Stephen Maryka, Rich Web Applications with Java and AJAX, June 2005

[73] White Paper, An XML Framework for Rich Internet Applications, Laszlo Systems Technology, July 2005

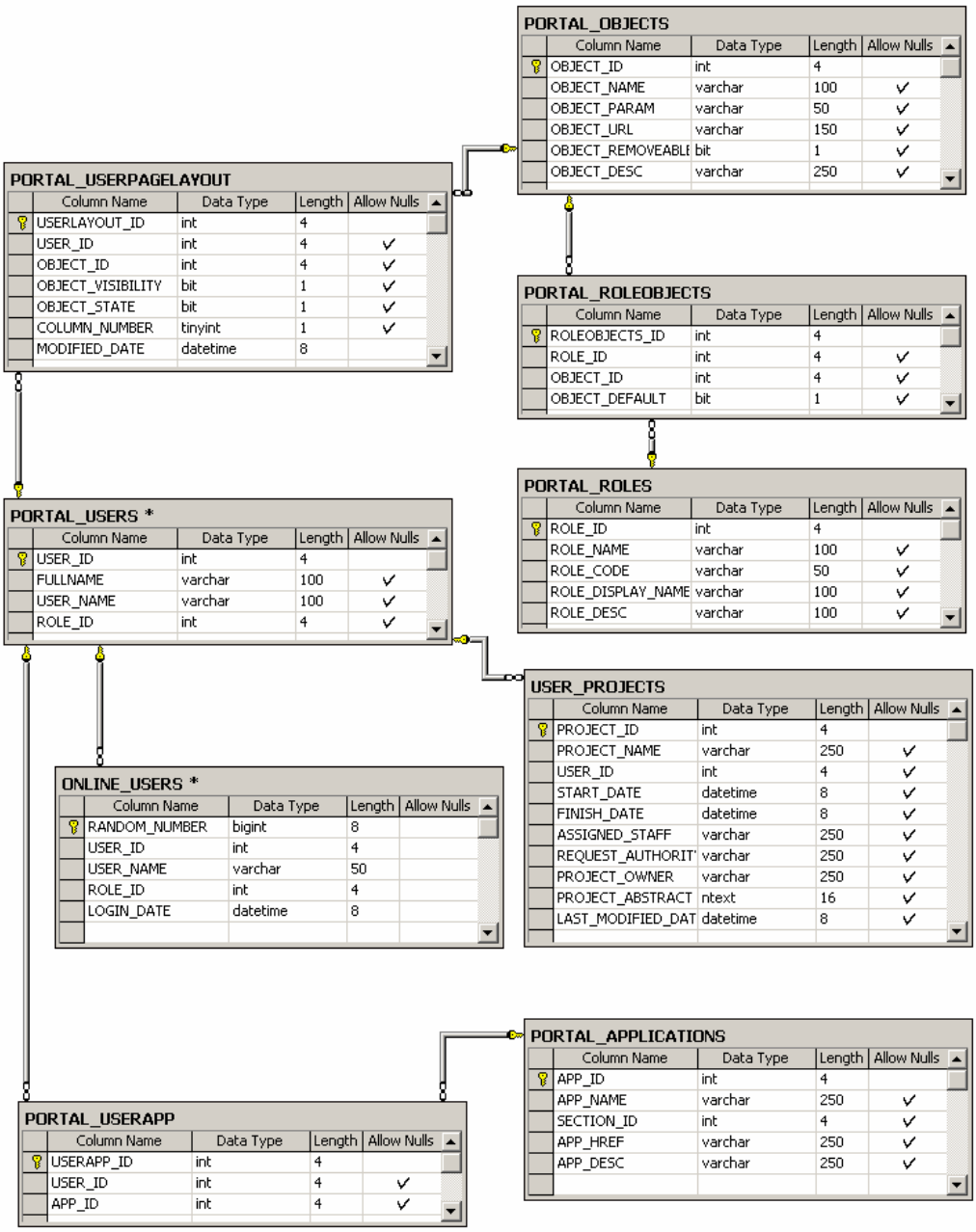
[74] Microsoft Indexing Service, http://www.reilly2001.info/xml-2-html

[75] ActiveX Controls, http://www.microsoft.com/com/default.mspx

[76] IFRAME, http://htmlhelp.com/reference/html40/special/iframe.html

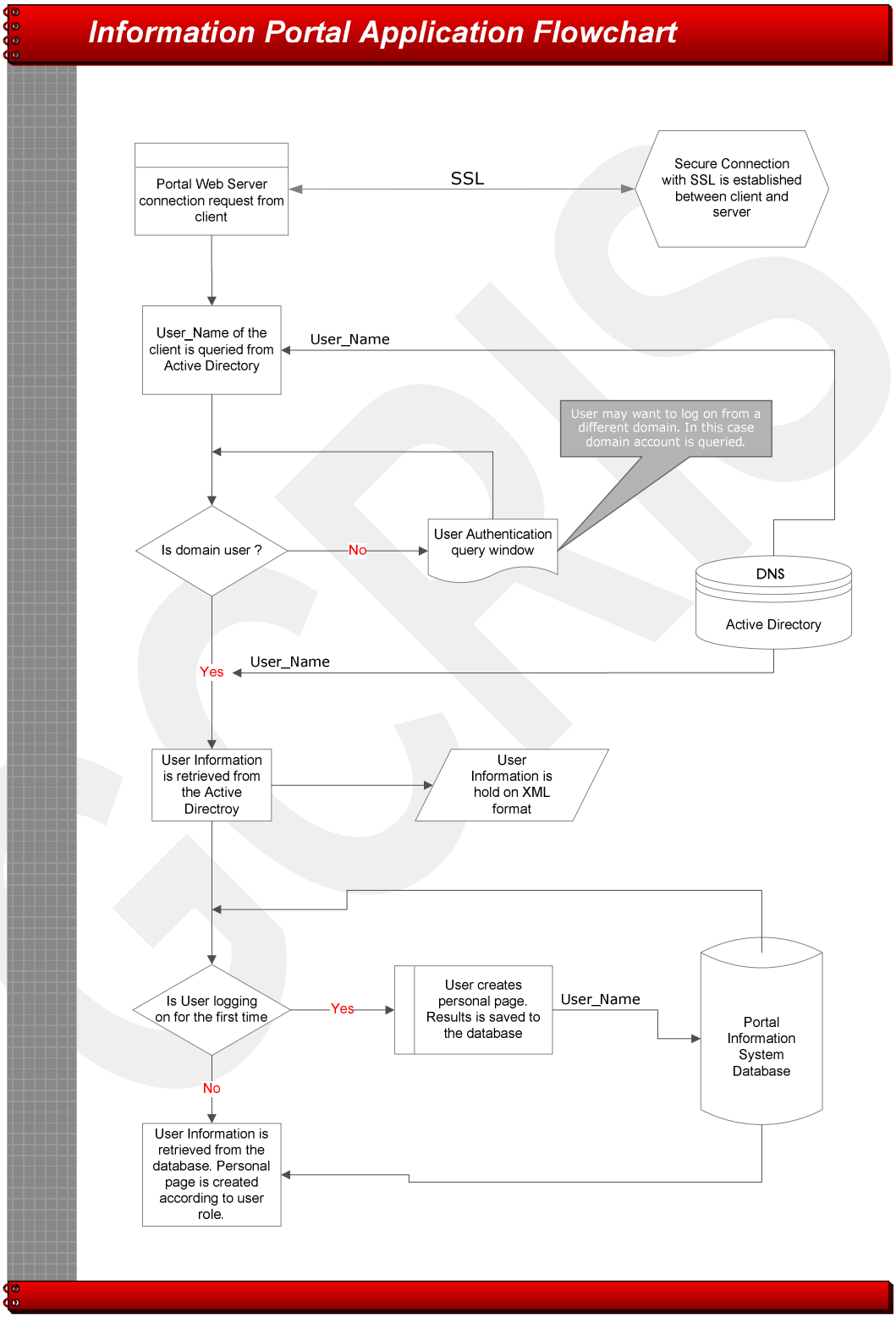
APPENDIX A

Database Diagram



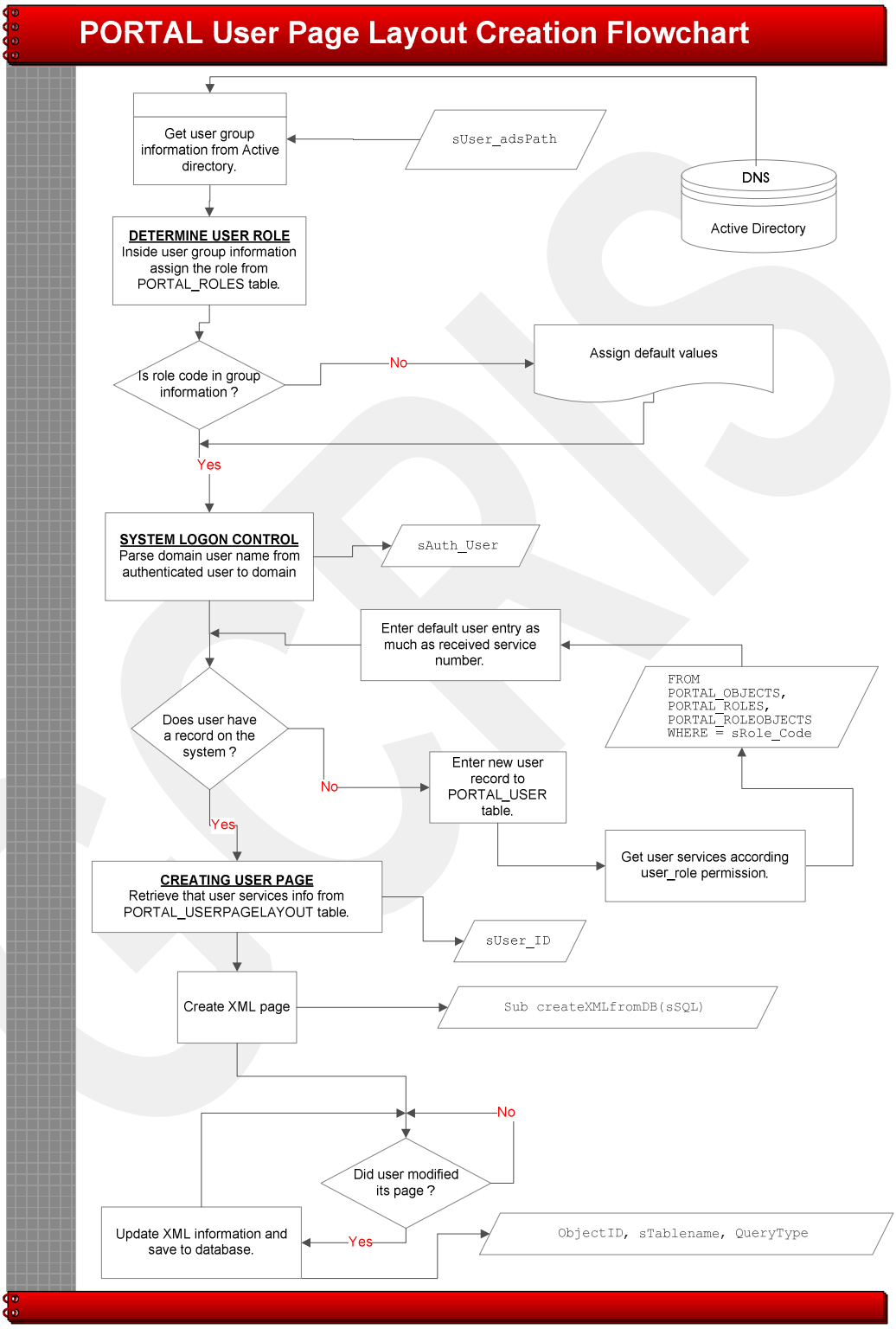
APPENDIX B

Portal Application Flow Chart



APPENDIX C

Page Layout Creation Flow Chart



APPENDIX D

Module Sources

UserContent.asp

```
<%
'-------------------------------------------------------------------------------
'USER CONTENT PAGE
'File    : UserContent.asp
'Description : User checked from Actvie directory.
'Determine users' role. According to role retrieved service information.
'-------------------------------------------------------------------------------
%>
<!--#Include file="Lib/Main.asp" -->
<!--#Include File="Lib/CurrentUser.asp" -->
<!--#include file="sconfig.asp"-->
<%
	on error resume next

	Dim v_userObj, user_adsPath, sUser_adsPath, sSQL
	'-Get all users'objects from Actie Directory

	Set v_userObj = curUserObj
	'-Get described group info in the Active Directory
	user_adsPath = v_userObj.memberof

	adsPath = v_userObj.adspath

	If typename(user_adsPath) = "String" then
		sUser_adsPath  = GetGroupOutOfDN(user_adsPath)
	else
		For Each grpName in user_adsPath
			sUser_adsPath = sUser_adsPath + GetGroupOutOfDN(grpName)
		Next
	end if

	Set OUInfo = GetObject(v_userObj.parent)
	sUser_Kadro = (mid(OUInfo.name,4))
	if err.number > 0 then
'Response.Write err.Source & " : " & err.Description & " - (" & err.number &
") <br>"
		sUser_Kadro = "Belirlenemeyen kadro"
		err.Clear
	end if

	'************************************************************
	'*  USER COMPUTER
	'************************************************************
	strUserIP = Request.ServerVariables("REMOTE_ADDR")

	set DNS = Server.CreateObject("aspdns.dnslookup")
	availableComputerName = dns.GetNameFromIP(strUserIP)
	dotLocation = (InStr(availableComputerName,"."))-1
	availableComputerName= Left(availableComputerName,dotLocation)

	OUInfo.Filter = Array("computer")

	For each comp in OUInfo
		systemComputerName = (mid(comp.name,4))
		exit for
	Next

	if err.number > 0 then
```

```
            'Response.Write err.Source & " : " & err.Description & " - ("
& err.number & ") <br>"
            systemComputerName = "belirlenemedi"
            err.Clear
      end if

      if not(LCase(systemComputerName) = LCase(availableComputerName)) then
            bComputerName = false
      end if


      session("sUser_SystemComputerName") = LCase(systemComputerName)
      session("sUser_availableComputerName") = LCase(availableComputerName)
      session("sUser_Kadro") = sUser_Kadro
      session("sUser_DisplayName") = v_userObj.displayName

      '************************************************************
      '*  DETERMINE USERS' ROLE
      '************************************************************

      'Get role info from Role Table
      'on error resume next
      Dim sFindRole, sUser_ROLE, sRole_ID, sRole_CODE

      OpenRS (strConn)

      sSQL = "SELECT * FROM PORTAL_ROLES "
      rs.Open sSQL, , , adCmdTable

      if err <> 0 then
            %>    <script    language=VBScript>Alert("Hata:    <%=sSQL%>    :
<%=err.description%>")</script><%
            CloseRS
            response.end
      end if

      if rs.Eof then
            Response.Write "Kayıt Bulunamadı"
            rs.Close
      else
            do while not rs.eof
                  sFindRole = instr(1, sUser_adsPath, rs("ROLE_CODE"))
                  if sFindRole <> 0 then
                        sUser_ROLE = rs("ROLE_DISPLAY_NAME")
                        sRole_CODE = rs("ROLE_CODE")
                        sRole_ID   = rs("ROLE_ID")
                        exit do
                  end if
                  rs.MoveNext
            Loop
            if rs.Eof then 'If there is no role code
'******************** DEBUG *********************************
                  %>  <!--   <script   language=VBScript>Alert("Role   Code
bulunamadı")</script> --><%
'******************** DEBUG *********************************
                  sUser_ROLE = "Proje Subayı"
                  sRole_CODE = "008105"
                  sRole_ID   = "6"
            end if
            rs.Close
      end if

'************************************************************
'*                         USER              LOGON              CONTROL
'************************************************************

      Auth_User     = Request.ServerVariables("Auth_User")
```

```
	sAuth_User                                                              =
Mid(trim(Auth_User),Instr(1,Auth_User,"\")+1,len(Auth_User))

	if instr(1,sAuth_User,"\") then
		sPos = instr(1,sAuth_User,"\")
		sAuth_User = Mid(sAuth_User,sPos+1,len(sAuth_User)-sPos)
	end if


	'Authenticate olan kullanıcı daha önce sisteme girmiş mi..?
	sSQL    =    "SELECT    PORTAL_USERS.USER_ID,    PORTAL_USERS.ROLE_ID,
PORTAL_USERS.USER_NAME "
	sSQL = sSQL + "FROM PORTAL_USERS "
	sSQL = sSQL + "WHERE (PORTAL_USERS.USER_NAME = '" & sAuth_User & "')"

	rs.Open sSQL, , , adCmdTable

'*************************************************************************
'*
'*  If user first time logon:
'*  username ve sRoleCode insert to PORTAL_USERS table.
'*
'*************************************************************************
	if rs.Eof then 'User couldn't find
	'********************* DEBUG *********************************
	%>   <script language=VBScript>Alert("Sisteme ilk defa giriyorsunuz.
Devam etmek için lütfen Tamam tuşuna basınız.")</script><%
	'********************* DEBUG *********************************
		rs.Close
		'Yeni Kullanıcı Kaydı
		sSQL = "SELECT * FROM PORTAL_USERS"
		rs.Open sSQL , , , adCmdTable
		rs.AddNew
			rs("ROLE_ID") = sRole_ID
			rs("USER_NAME") = sAuth_User
			rs("FULLNAME") = v_userObj.displayName
		rs.Update
		rs.MoveLast
		sUser_ID = rs(0)
		rs.Close

'Default services attained users's role
sSQL  =  "SELECT  OBJECT_ID,  OBJECT_DEFAULT  FROM  PORTAL_ROLEOBJECTS  WHERE
ROLE_ID=" & sRole_ID & " ORDER BY OBJECT_DEFAULT DESC"
		rs.Open sSQL , , , adCmdTable

		redim aUserRoleObjects(rs.RecordCount)
		redim aUserObjectVisible(rs.RecordCount)
		i=0
		do while not rs.EOF
			aUserRoleObjects(i) = rs("OBJECT_ID")
			aUserObjectVisible(i) = rs("OBJECT_DEFAULT")
			i=i+1
			rs.MoveNext
		loop
		rs.Close

		sSQL = "SELECT * FROM PORTAL_USERPAGELAYOUT"
		rs.Open sSQL , , , adCmdTable

		nCol = 1
		nRow = 1

		for i=0 to uBound(aUserRoleObjects)-1
			posColumnNumber = nCol*10 + nRow
			rs.AddNew
				rs("USER_ID") = sUser_ID
				rs("OBJECT_ID") = aUserRoleObjects(i)
```

```
                        rs("OBJECT_VISIBILITY") = aUserObjectVisible(i)
                        rs("COLUMN_NUMBER") = posColumnNumber
                rs.Update
                if nCol = 3 then
                        nCol = 0
                        nRow = nRow + 1
                end if
                nCol = nCol + 1
        next
        rs.Close

        Set objFSO = CreateObject("Scripting.FileSystemObject")
sUser_Folder = "E:\Web Sites\GnkurPortal\portal_documents\"&sAuth_User
        Set objFolder = objFSO.CreateFolder(sUser_Folder)
        Set objFSO = nothing

        session("bFirstTime") = true
    else
        sUser_ID = rs("USER_ID")
        rs.Close
        session("bFirstTime") = false
    End if
%>
```

XMLUtils.vbs

```
'*********************************************************
'*                        ---   XML UTILS  ---
'*
'* Created By: Turgut HASPOLAT & Erdem KÜÇÜK
'* XMLUtils.vb
'*
'*********************************************************


Dim objXMLDoc
set objXMLDoc = CreateObject("Microsoft.XMLDOM")

'*********************************************************************
'*
'* Sub createXMLfromDB(strSQL)
'* Purpose: According to strSQL variable perform XML from Database.
'* Input:   strSQL  - String (String)
'*
'* Output:  XML
'*
'*********************************************************************
Sub createXMLfromDB(sSQL)
    strURL = "CreateXML.asp?SQLQuery=" & sSQL
    objXMLDoc.async = false
    objXMLDoc.load (strURL)
end sub

sub passXMLtoDB(sTableName,sQueryType,sXML)
    sAspUrl                                                          =
"passXMLtoDB.asp?TableName="+sTableName+"&QueryType="+sQueryType+"&sXML="+sX
ML
    objXMLDoc.async = false
    objXMLDoc.load (sAspUrl)
end sub


'*********************************************************************
'*
'* Sub subRefreshDivPos()
'* Purpose: Changing service position write to Database as a XML
```

```
'* Input:   div pos - String (String)
'*
'*********************************************************************
sub subRefreshDivPos()
       set objNodeList = objXMLDoc.documentElement.childNodes
       set                        objNodeListOBJECT_ID                        =
objXMLDoc.getElementsByTagName("OBJECT_ID")
       set                       objNodeListCOLUMN_NUMBER                     =
objXMLDoc.getElementsByTagName("COLUMN_NUMBER")
       set                        objNodeListOBJECT_PARAM                     =
objXMLDoc.getElementsByTagName("OBJECT_PARAM")


       iNumberOfNodes = objNodeList.length
       For iCounter = 0 to (iNumberOfNodes - 1)
              oldDrop                                                        =
document.getElementById("drop_"+objNodeListOBJECT_PARAM.item(iCounter).text)
.pos

       document.getElementById("drop_"+objNodeListOBJECT_PARAM.item(iCounter
).text).pos = Cint(objNodeListCOLUMN_NUMBER.item(iCounter).text+1)
              newDrop                                                        =
document.getElementById("drop_"+objNodeListOBJECT_PARAM.item(iCounter).text)
.pos
       Next
       set objNodeList = nothing
end sub

'*********************************************************************
'*
'* Sub subFlipVisibility(sObjectID)
'* Purpose: Changed service visibility into the table
'* Input:   sObjectID - String (String)
'*
'*********************************************************************
sub subFlipVisibility(sObjectID)
       'alert(sObjectID)
       set objNodeList = objXMLDoc.documentElement.childNodes
       iNumberOfNodes = objNodeList.length
       For iCounter = 0 to (iNumberOfNodes - 1)
              set objChildNodeList = objNodeList.item(iCounter).childNodes
              iNumberOfChildNodes = objChildNodeList.length
              For iChildCounter = 0 to (iNumberOfChildNodes - 1)
                     iDataType                                               =
int(objChildNodeList.item(iChildCounter).attributes.GetNamedItem("DataTypeID
").text)
                     sBaseName                                               =
objChildNodeList.item(iChildCounter).basename
                     sValue = objChildNodeList.item(iChildCounter).text
                     if sBaseName = "OBJECT_ID" and sValue = sObjectID then
                            For iChildCounterTemp = 0 to (iNumberOfChildNodes
- 1)
                                   iDataType                                 =
int(objChildNodeList.item(iChildCounterTemp).attributes.GetNamedItem("DataTy
peID").text)
                                   sBaseName                                 =
objChildNodeList.item(iChildCounterTemp).basename
                                   sValue                                    =
objChildNodeList.item(iChildCounterTemp).text
                                   if sBaseName = "OBJECT_VISIBILITY" then
                                          if  sValue  =  "True"  then  sValue  =
"False" else sValue = "True"

       objChildNodeList.item(iChildCounterTemp).text = sValue
                                          sXMLToSend      =      "<RS>"      &
objNodeList.item(iCounter).xml & "</RS>"
                                          passXMLtoDB
"PORTAL_USERPAGELAYOUT","UPDATE",sXMLToSend 'Sub
```

```
                                    end if
                              Next
                        end if
                  Next
                  set objChildNodeList = nothing
      Next
end sub

'*********************************************************************
'*
'* Sub subFlipState(sObjectID)
'* Purpose: Changed object on/off state into the table .
'* Input:   sObjectID - String (String)
'*
'*********************************************************************
sub subFlipState(sObjectID)
      set objNodeList = objXMLDoc.documentElement.childNodes
      iNumberOfNodes = objNodeList.length
      For iCounter = 0 to (iNumberOfNodes - 1)
            set objChildNodeList = objNodeList.item(iCounter).childNodes
            iNumberOfChildNodes = objChildNodeList.length
            For iChildCounter = 0 to (iNumberOfChildNodes - 1)
                  iDataType                                          =
int(objChildNodeList.item(iChildCounter).attributes.GetNamedItem("DataTypeID
").text)
                  sBaseName                                          =
objChildNodeList.item(iChildCounter).basename
                  sValue = objChildNodeList.item(iChildCounter).text
                  if sBaseName = "OBJECT_ID" and sValue = sObjectID then
                        For iChildCounterTemp = 0 to (iNumberOfChildNodes
- 1)
                              iDataType                              =
int(objChildNodeList.item(iChildCounterTemp).attributes.GetNamedItem("DataTy
peID").text)
                              sBaseName                              =
objChildNodeList.item(iChildCounterTemp).basename
                              sValue                                 =
objChildNodeList.item(iChildCounterTemp).text
                              if sBaseName = "OBJECT_STATE" then
                                    if  sValue  =  "True"  then  sValue  =
"False" else sValue = "True"

      objChildNodeList.item(iChildCounterTemp).text = sValue
                              sXMLToSend      =      "<RS>"      &
objNodeList.item(iCounter).xml & "</RS>"
                              passXMLtoDB
"PORTAL_USERPAGELAYOUT","UPDATE",sXMLToSend 'Sub
                              end if
                        Next
                  end if
            Next
            set objChildNodeList = nothing
      Next
end sub

'*********************************************************************
'*
'* sub subMoveObject(sUserID, sObjectID, sNewPosition)
'* Purpose: Changed service column state into the table
'* Input:   sObjectID - String (String)
'*
'*********************************************************************
sub subMoveObject(sUserID, sObjectID, sNewPosition)
      sAspUrl = "ArrangeColPosition.asp?sUserID=" & sUserID & "&sObjectID="
& sObjectID & "&sNewPosition=" & sNewPosition
      set objEmptyXML = CreateObject("Microsoft.XMLDOM")
      objEmptyXML.async = false
      objEmptyXML.load (sAspUrl)
```

objects.js

```
/*********************************************************************
*                          ---   DRAG WINDOW  ---
*                                                                    *
* Modified By: Turgut HASPOLAT                                       *
*                                                                    *
* File Name : objects.js                                             *
*                                                                    *
*********************************************************************/
var d=document;
var theService;
var lastDragID="";
var setDragMark=true;
var setDragScroll=true;
var stID;
var sideSpace=10;
var sideSpaceGutter=0;
var cX,cY;
var w;

function init() {
sizeVals();
winObj=null;
ObjObjectID=null;
d.onclick=handleClicks;
d.onmousedown=engage;
d.onmousemove=drag;
d.onmouseup=release;
w=d.getElementById('wrapper');
}


function formsDisplay(displayStat) {
var i; //displayStat --> "hidden" or "visible"
if   (displayStat=="visible"&&d.getElementById('wrapper').style.display=="")
return; //prevent selection lists from redisplaying if DHTML wrapper win is
displayed
for (i=0; i<d.getElementsByTagName("select").length; i++)
      d.getElementsByTagName("select")[i].style.visibility=displayStat;
}

function selectHide(displayStat) {
var i; //displayStat --> "hidden" or "visible"
var s=d.getElementsByTagName("select");
for (i=0; i<s.length; i++) s[i].style.visibility=displayStat;
}

function handleClicks() {
e=window.event.srcElement;
if                  (e.id=="bodyTag"||e.id.indexOf("edit_")==-1||e.id=="")
{formsDisplay("visible");}
}


function whichPosition(id) {
var pos;
var col=whichColumn(id);//alert("WhichCol " + col);
for (i=0;i<eval('col'+col+'Serv.length');i++){
      if(eval('col'+col+'Serv[i]')==id){pos=i;break;}
}
return  pos;
}

function whichColumn(id) {
var col=1;
```

```
if (id.indexOf("column")!=-1||id.indexOf("topcol")!=-1) col=id.substring(6);
else {
	for (i=0;i<col2Serv.length;i++)
		if(col2Serv[i]==id) {col=2;break;};
	for (i=0;i<col3Serv.length;i++)
		if(col3Serv[i]==id) {col=3;break;};
}
return col;//alert("whichcolumn " + col);
}

function removeCheck(id,sendSave,objectNAME,objectID) {
if (confirm(objectNAME+sure_err)) {
	deleteElement(id,sendSave,objectID);
	return true;
	}
}

function deleteElement(id,sendSave,objectID) {
var temp=new Array();
var i,ii=0;
var col=whichColumn(id);//alert("whichColumn  orig" + col);
for (i=0; i<eval('col'+col+'Serv.length'); i++) {
	if 	(eval('col'+col+'Serv['+i+']')!=id)
{temp[ii]=eval('col'+col+'Serv['+i+']');ii++};//alert("temp  " + temp);
}
if (col==1) col1Serv=temp;
else if (col==2) col2Serv=temp;
else col3Serv=temp;//alert("col delete  " + col);
//alert(col1Serv+" - "+col2Serv+" - "+col3Serv);
if (sendSave) {
	d.getElementById('main_'+id).style.display="none";
	saveLayout(objectID);
}
}

function saveLayout(objectID) {
col1=col1Serv.join(",");
col2=col2Serv.join(",");
col3=col3Serv.join(",");
if (col1==null||col1=="") col1="NULL";
if (col2==null||col2=="") col2="NULL";
if (col3==null||col3=="") col3="NULL";
}

function insertElement(insertWhichID,insertAfterID,col,first) {
var temp=new Array();
var i=0,ii=0;
if (first==1) {temp[0]=insertWhichID;ii++;}
if (insertAfterID=="topcol"+col) {temp[0]=insertWhichID;ii++;}
if (eval('col'+col+'Serv.length')==0) { temp[0]=insertWhichID; }
else for (; i<eval('col'+col+'Serv.length'); i++) {
	if (eval('col'+col+'Serv['+i+']')!=insertAfterID) {
		temp[ii]=eval('col'+col+'Serv['+i+']'); ii++;
	} else if(eval('col'+col+'Serv['+i+']')==insertAfterID) {
		temp[ii]=eval('col'+col+'Serv['+i+']'); ii++;
		temp[ii]=insertWhichID; ii++;
	}
}
if (insertAfterID=="column"+col&&eval('col'+col+'Serv.length')!=0&&first!=1)
temp[temp.length]=insertWhichID;
if (col==1) col1Serv=temp;
else if (col==2) col2Serv=temp;
else col3Serv=temp;
}

function showIt(srcElement,state) {
if	(state==1)	srcElement.className="SELECTED";	else
srcElement.className="DESELECTED";
```

```
}

function sizeVals() {
browserWidth=d.body.clientWidth;
if       (pageWidth.indexOf('%')==-1)       widgetWidth=parseInt(pageWidth/2-
sideSpace*2-9);
else widgetWidth=parseInt((browserWidth-sideSpace*2-9)/2);

if (pageWidth.indexOf('%')==-1&&browserWidth<pageWidth) {
      browserWidth=pageWidth;  widgetWidth=parseInt(pageWidth/2-sideSpace*2-
9);
}
else if (browserWidth<pageWidth) { browserWidth=585; widgetWidth=285; }
if (pageWidth.indexOf('%')==-1) sideSpaceGutter=(browserWidth-pageWidth)/2;
else sideSpaceGutter=0;
browserHeight=d.body.clientHeight;
yScroll=browserHeight/2-(browserHeight/3);
formsDisplay('visible');
}

//***** START WINDOW DRAGGING FUNCTIONS *****//
function engage(){
d.getElementById('winDrag').setCapture();
var elemID=window.event.srcElement.id;
theService=elemID.substring(5);
if   (elemID.indexOf("move_")==-1)   {winObj=null;   ObjObjectID=null;return
false;}
d.getElementById(elemID).style.backgroundColor="#D4D0C8";
winObj=d.getElementById('winDrag').style;
ObjObjectID=d.getElementById(elemID).sObjectID;
orgLeft=offsetX=window.event.clientX;
if            (window.event.clientX>(widgetWidth+sideSpace+sideSpaceGutter))
orgLeft=window.event.clientX-widgetWidth-sideSpace-sideSpaceGutter;
offsetY=window.event.clientY+d.body.scrollTop;
if    (whichColumn(theService)==1)    winObj.pixelLeft=window.event.clientX-
orgLeft+sideSpace*2+sideSpaceGutter;
else winObj.pixelLeft=offsetX-orgLeft+sideSpace+9;
winObj.pixelTop=offsetY;
winObj.width=widgetWidth;
winObj.height=d.getElementById('h_'+theService).clientHeight;
winObj.display="";
return false;
} //end engage()

function drag() {
if (winObj) {
      cX=window.event.clientX; cY=window.event.clientY;
      d.getElementById('hint').style.display="none";
      if                                          (whichColumn(theService)==1)
winObj.pixelLeft=window.event.clientX-orgLeft+sideSpace*2+sideSpaceGutter
      else winObj.pixelLeft=window.event.clientX-orgLeft+sideSpace*2+9;
      winObj.pixelTop=window.event.clientY+d.body.scrollTop;
      if (cY<10||cY>browserHeight-10||cX<10||cX>browserWidth-10) {
            winObj.display="none";
            winObj=null;
            alert(dragErr);
            setDragScroll=true;
            return false;
      }
      if (setDragScroll) {setDragScroll=false;scrollIt();}
      if (setDragMark&&setDragScroll) dragMarker();
      return false;
}
}

function scrollIt() {
      if (winObj) {
```

```
                  if                                    ((cY>browserHeight-
yScroll&&d.body.scrollTop+browserHeight<d.body.scrollHeight)||(cY<yScroll+50
&&d.body.scrollTop!=0)) {
                  yInt=25;
                        if (cY<yScroll+50) yInt=-25;
                  winObj.display="none";
                  scrollBy(0,yInt);
                  winObj.display="";
                  setTimeout("scrollIt()",5);
                  winObj.display="";
            }
            else setDragScroll=true;
      }
      else setDragScroll=true;
}

function showHint(ser) {
if (window.event.srcElement.id.indexOf('edit_')!=-1) return;
var col=whichColumn(ser);
d.getElementById('hint').style.display="none";
if                                                          (col==1)
d.getElementById('hint').style.pixelLeft=sideSpace+2+10+sideSpaceGutter;
else
d.getElementById('hint').style.pixelLeft=sideSpace+widgetWidth+18+6+10+sideS
paceGutter;
d.getElementById('hint').style.pixelTop=window.event.clientY+10+d.body.scrol
lTop;
stID=setTimeout('d.getElementById("hint").style.display="";',500);
setTimeout('d.getElementById("hint").style.display="none";',5500);
}

function dragMarker() {
setDragMark=false;
var col;
var lastService="";
var lastServiceIndex;
var elementHTML=window.event.srcElement;
var  widgetID=theWidgetID();//  alert("  THewidgetID  from  DragMarker    "  +
widgetID);//The widget that was dragged
if (widgetID!=0) {
      if                                                (lastDragID!="")
d.getElementById('drop_'+lastDragID).style.visibility="hidden";
      col=whichColumn(widgetID);
      if (widgetID.indexOf("column")!=-1) {
            if (eval('col'+col+'Serv.length')!=0) {
                  widgetID=eval('col'+col+'Serv[col'+col+'Serv.length-
1];');

      d.getElementById('drop_'+widgetID).style.visibility="visible";
                  lastDragID=widgetID;
            } else {

      d.getElementById('drop_topcol'+col).style.visibility="visible";
                  lastDragID="topcol"+col;
            }
      } else if (widgetID.indexOf("topcol")!=-1) {

      d.getElementById('drop_topcol'+col).style.visibility="visible";
            lastDragID="topcol"+col;
      } else {
            d.getElementById('drop_'+widgetID).style.visibility="visible";
            lastDragID=widgetID;
      }
}
else if (lastDragID!="")
      d.getElementById('drop_'+lastDragID).style.visibility="hidden";
      setTimeout("setDragMark=true",10);//limit the invocation rate of this
function
```

```
return false;
} //end dragMarker()

function moveWidget(moveBelowThisWidget) {
var pos,col,html,where="AfterEnd";
col=whichColumn(moveBelowThisWidget);
if (moveBelowThisWidget=="column"+col) {
       if (eval('col'+col+'Serv.length==0')) {
              moveBelowThisWidget='topcol'+col;
       }
       else {

       moveBelowThisWidget=eval('col'+col+'Serv[col'+col+'Serv.length-1]');
       }
}
//alert("moveBelowThisWidget :"+moveBelowThisWidget);
html=d.getElementById('main_'+theService).outerHTML;
d.getElementById('main_'+theService).outerHTML="";
deleteElement(theService,false);
insertElement(theService,moveBelowThisWidget,col,0);
d.getElementById('main_'+moveBelowThisWidget).insertAdjacentHTML(where,html)
;
}

function release() {
       d.releaseCapture();
       setDragScroll=true;
       var col;
       if (winObj) {
       var  widgetID=theWidgetID();  //alert("thewidgetid  from  release  "  +
widgetID);//The widget that was dragged
       //alert("widgetID :"+widgetID);
       winObj.display="none";
       winObj=null;
       if (widgetID!="0") {
              moveWidget(widgetID);
              var col1,col2,col3;
              col1=col1Serv.join(",");
              col2=col2Serv.join(",");
              col3=col3Serv.join(",");
              //alert(col1+" - "+col2+" - "+col3);
              if (col1==""||col1==null) col1="NULL";
              if (col2==""||col2==null) col2="NULL";
              if (col3==""||col3==null) col3="NULL";

       changePositionObject(ObjObjectID,d.getElementById('drop_'+lastDragID)
.pos);
       }
       if (lastDragID!="")

       d.getElementById('drop_'+lastDragID).style.visibility="hidden";
              lastDragID="";
              return false;
       }
       ObjObjectID=null;
} //end release()

function theWidgetID(){
var  elementHTML=window.event.srcElement;  //The  widget  that  the  dragged
window was dropped on
var widgetID;
while (true) {
       if (elementHTML.id.indexOf('main_')!=-1) {
              //We found the widget the ID!
              widgetID=elementHTML.id.substring(5); break;//alert("case1");
       }        else        if        (elementHTML.id.indexOf('bodyTag')!=-1)
{widgetID="0";break;//alert("Case2");
       }
```

```
      else {elementHTML=elementHTML.parentElement;
            //alert("case3");
      }
}//alert("Widget ID" + widgetID);
if (widgetID.indexOf("column")!=-1) {
      if (parseInt(widgetID.substring(6))==whichColumn(theService)) {
            if
(whichPosition(theService)==eval('col'+parseInt(widgetID.substring(6))+'Serv
.length')-1) widgetID="0";
      }
}
if (widgetID==theService) widgetID="0";
if (widgetID.indexOf('topcol')!=-1) {
      col=widgetID.substring(6);
      if (eval('col'+col+'Serv[0]')==theService) widgetID="0";
}
return widgetID;
}
//***** END WINDOW DRAGGING FUNCTIONS *****//

function checkError(inputText,err)
{
for (i=0; i<inputText.length; i++) {
    ch=inputText.charAt(i);
    if (validChars.indexOf(ch) == -1) {
        alert(err);
        return false; }
  }
        return true;
}

function setupWin(url,serviceName,theWidth,theHeight){
var toppos = 0;
var leftpos = 0;
toppos = (window.screen.height-theHeight) / 2;
leftpos = (window.screen.width - theWidth) / 2;
edit_win=window.open("",serviceName,
"width="+theWidth+",height="+theHeight+",top="+toppos+",left="+leftpos+",scr
ollbars=no,status=yes,toolbar=no,menubar=no,location=no,resizable=yes");
edit_win.focus();
edit_win.document.open();
edit_win.document.write("<html><body><table  style=font-family:Verdana;font-
size:9pt                    width=100%                    border=0><tr><td
aling=center><B>Yükleniyor...</B></td></tr><tr><td    aling=center><B>Lütfen
Bekleyiniz.</B></td></tr></table></body></html>");
edit_win.document.close();
edit_win.location.href=url;
return false;
}
```

PassXMLtoDB.asp

```
<%
'*********************************************************************
'* Created By: Turgut HASPOLAT
'*
'* AppXML.asp
'*
'*********************************************************************

sTableName = Request("TableName")
sQueryType = Request("QueryType")
sXML = Request("sXML")

'*********************************************************************
'*
'* Sub AddValue(sUpdateQuery, sValue, iDataType)
```

```
'* Purpose: 'Add value to the sql update/insert string according to its data
type
'* Input:   sUpdateQuery
'*                 sValue-
'*                 iDataType
'**********************************************************************

Sub AddValue(sUpdateQuery, sValue, iDataType)
      select case iDataType
            Case adBoolean
                  if sValue = "True" then sValue = "1" else sValue = "0"
                  sUpdateQuery = sUpdateQuery & sValue
            Case  adChar,  adVarChar,  adLongVarChar,  adWChar,  adVarWChar,
adLongVarWChar
                  sUpdateQuery = sUpdateQuery & "'" & sValue & "'"
            Case adDate, adDBDate, adDBTime, adDBTimeStamp
                  sUpdateQuery = sUpdateQuery & "'" & sValue & "'"
            Case     adTinyInt,     adSmallInt,     adInteger,     adBigInt,
adUnsignedTinyInt,   adUnsignedSmallInt,   adUnsignedInt,   adUnsignedBigInt,
adSingle, adDouble, adCurrency, adDecimal, adNumeric
                  sUpdateQuery = sUpdateQuery & sValue
            Case else
                  sUpdateQuery = sUpdateQuery & sValue
      end select
End Sub

OpenRS (strConn)

set objsDOMDoc = Server.CreateObject("Microsoft.XMLDOM")
objsDOMDoc.loadXML(sXML)

'Parse DOMDocument object and create sql update/insert query string
set objNodeList = objsDOMDoc.documentElement.childNodes
iNumberOfNodes = objNodeList.length
For iCounter = 0 to (iNumberOfNodes - 1)
      set objChildNodeList = objNodeList.item(iCounter).childNodes
      iNumberOfChildNodes = objChildNodeList.length
      sUpdateQuery = "UPDATE " & sTableName & " SET "
      sInsertQuery = "INSERT INTO " & sTableName & " ("
      sInsertQueryValues = ""
      sInsertQueryColumns = ""
      For iChildCounter = 0 to (iNumberOfChildNodes - 1)
            sIsAutoInc                                                    =
objChildNodeList.item(iChildCounter).attributes.GetNamedItem("AutoInc").text
            if sIsAutoInc <> "True" then
                  iDataType                                               =
int(objChildNodeList.item(iChildCounter).attributes.GetNamedItem("DataTypeID
").text)
                  sUpdateQuery          =          sUpdateQuery          &
objChildNodeList.item(iChildCounter).basename & " = "
                  sInsertQueryColumns     =     sInsertQueryColumns     &
objChildNodeList.item(iChildCounter).basename
                  sValue = objChildNodeList.item(iChildCounter).text
                  AddValue sUpdateQuery, sValue, iDataType
                  AddValue sInsertQueryValues, sValue, iDataType
                  if iChildCounter <> (iNumberOfChildNodes - 1) then
                        sUpdateQuery = sUpdateQuery & ", "
                        sInsertQueryColumns = sInsertQueryColumns & ", "
                        sInsertQueryValues = sInsertQueryValues & ", "
                  end if
            else
                  iKeyPosition = iChildCounter
            end if
      Next
      sKeyName = objChildNodeList.item(iKeyPosition).basename
      sKeyValue = objChildNodeList.item(iKeyPosition).text
      sWhereClause = " WHERE " & sKeyName & " = " & sKeyValue
      sUpdateQuery = sUpdateQuery & sWhereClause
```

```
	sInsertQuery = sInsertQuery & sInsertQueryColumns & ") VALUES (" &
sInsertQueryValues & ")"
	If sQueryType = "INSERT" then
		conn.Execute(sInsertQuery) 'Execute sInsertQuery on sql server
	else
		conn.Execute(sUpdateQuery) 'Execute sUpdateQuery on sql server
	end if
	set objChildNodeList = nothing
Next
set objNodeList = nothing
set objsDOMDoc = nothing
set rs = nothing
set conn = nothing
%>
```

ArrangeColPosition.asp

```
<%@ Language=VBScript %>


<%
	sUserID = Request("sUserID")
	sObjectID = Request("sObjectID")
	iNewPosition = int(Request("sNewPosition"))

	OpenRS (strConn)
	'Find old Position
	sSQL = "SELECT COLUMN_NUMBER FROM PORTAL_USERPAGELAYOUT WHERE "
	sSQL = sSQL & "(USER_ID = "& sUserID &") AND (OBJECT_ID = " &
sObjectID & ")"
	sSQL = sSQL & "ORDER BY COLUMN_NUMBER"

	rs.Open sSQL, , , adCmdTable
		iOldPosition = rs("COLUMN_NUMBER")
	rs.Close

	if iNewPosition > 10 and iNewPosition < 20 then
		iToHighVal = 20
		iToLowVal = 10
		iToFirstPosition = 11
	end if
	if iNewPosition > 20 and iNewPosition < 30 then
		iToHighVal = 30
		iToLowVal = 20
		iToFirstPosition = 21
	end if
	if iNewPosition > 30 and iNewPosition < 40 then
		iToHighVal = 40
		iToLowVal = 30
		iToFirstPosition = 31
	end if

	if iOldPosition > 10 and iOldPosition < 20 then
		iFromHighVal = 20
		iFromLowVal = 10
		iFromFirstPosition = 11
	end if
	if iOldPosition > 20 and iOldPosition < 30 then
		iFromHighVal = 30
		iFromLowVal = 20
		iFromFirstPosition = 21
	end if
	if iOldPosition > 30 and iOldPosition < 40 then
		iFromHighVal = 40
		iFromLowVal = 30
		iFromFirstPosition = 31
```

```
	end if

	'Modify a recordset for the to column
	sSQL = "SELECT COLUMN_NUMBER FROM PORTAL_USERPAGELAYOUT WHERE "
	sSQL = sSQL & "(USER_ID = "& sUserID &") AND (COLUMN_NUMBER > " &
iToLowVal & ") AND (COLUMN_NUMBER < " & iToHighVal & ") "
	sSQL = sSQL & "ORDER BY COLUMN_NUMBER"

	rs.Open sSQL, , , adCmdTable

	iPosition = iToFirstPosition
	While Not RS.EOF
		if iPosition = iNewPosition then iPosition = iPosition + 1
		rs("COLUMN_NUMBER").Value = iPosition
		iPosition = iPosition + 1
		rs.Update
		rs.MoveNext
	Wend
	rs.Close

	'Modify the position of the moved object
	sSQL = "select COLUMN_NUMBER from PORTAL_USERPAGELAYOUT where "
	sSQL = sSQL & "(USER_ID = "& sUserID &") AND (OBJECT_ID = " &
sObjectID &") "
	sSQL = sSQL & "order by COLUMN_NUMBER"

	rs.Open sSQL, , , adCmdTable
	rs("COLUMN_NUMBER").Value = iNewPosition
	rs.Update
	rs.Close

	'Modify a recordset for the from column
	sSQL = "select COLUMN_NUMBER from PORTAL_USERPAGELAYOUT where "
	sSQL = sSQL & "(USER_ID = "& sUserID &") AND (COLUMN_NUMBER > " &
iFromLowVal & ") AND (COLUMN_NUMBER < " & iFromHighVal & ") "
	sSQL = sSQL & "order by COLUMN_NUMBER"
	rs.Open sSQL, , , adCmdTable
	iPosition = iFromFirstPosition
	While Not rs.EOF
		rs("COLUMN_NUMBER").Value = iPosition
		iPosition = iPosition + 1
		rs.Update
		rs.MoveNext
	Wend

	'Close database connection
	CloseRS
%>
```