

Consolidated information resource of office documentation at *Iskra* corporation

Roman Holoshchuk¹, Yulia Moskaliuk²

¹Socail Communications and Information Activity Department, Lviv Polytechnic National University, UKRAINE, Lviv, S. Bandery street 12, E-mail: roman@ridne.net

²Socail Communications and Information Activity Department, Lviv Polytechnic National University, UKRAINE, Lviv, S. Bandery street 12, E-mail: yulzzzia1@mail.ru

Abstract – *The relevance of computer facilities and content management system techniques while working with the office documents is discussed. Database designing for the office documentation using an MySQL open-source software product is proposed. Besides, the importance of Internet web-site to provide to company's information resources for users is considered. The research aims to provide more precise and adequate recommendations for the design of information system so that this system can be implemented successfully and contribute to improvements in organizational effectiveness.*

Key words – consolidated information resource, document, relational database management system, queries, registration of documents, web-site, content management system, personified access.

I. Introduction

Modern increase in production technologies and the widespread introduction of computers into research, production and management processes of any enterprise results in giving special attention to the effective collection, consolidation, storage and processing of information. The concept of information resources consolidation is connected with the need to make effective decisions using the latest information technology and to meet the requirements of databases that store information about the main company activities. As management process is based on a variety of systems, the significant part of it plays the documentation. If workflows are organized effectively, employees' productivity and efficiency increases, and administrative costs are getting reduced. Database technology enables to function the necessary record keeping effectively: registration of documents and their rapid search, consolidating data in the form of reports, certificates and more. For remote personified access to the necessary information and company's document database we need to develop and implement a corporate website using content management technologies.

II. Analysis of recent research and publications

At present the problem of documentation management requires the implementation and use of computer technologies to collect, store, process information and automate record keeping processes. Issues connected with computerization of the office work, electronic documents circulation are considered in many works, among which should mention the works by A.O. Pyestryetsov,

G.G. Aseev, A.L. Mankowskiy. However, the technological aspect of document management and its information technology aspect needs further investigation [4].

According to Y.I. Palekha crucial factor for the staff management culture is the use of new information technologies in the office, other elements of information culture, that is, "in addition to knowledge of computer management, you also need knowledge and skills to create documents with electronic media, organization of their circulation, means of electronic communication; the use of corporate resources and global electronic networks requires the implementation of a culture of information retrieval, the use of documentary information while querying, the culture of using modern means of office"[8].

Automation of record keeping processes is a prerequisite for the rational management of the corporation and its subsidiaries, the means to increase efficiency and reduce the cost of management. The high efficiency of industrial automation information technology was noted by the academician V.M. Glushkov, who provided details of trends in the industry and presented them in his book "Fundamentals of paperless informatics" [2]. In particular, he pointed to the need for computer networks, common (corporate) and distributed databases. Regarding the implementation and use of electronic documents V.M. Glushkov introduced the term "paperless computer science", and automation of organizational management which is identified in a separate section of the above mentioned book.

Trends in the development of modern computer technology in the direction of information society are changing the emphasis on the use of databases: they are important products of production and consumption, and not just tools to automate various human activities. From this perspective, the database can be a useful source of information, i.e. information product that provides access to data and production including the consolidation of new information and products for an unlimited period of time. It is known that the variety of information materials and messages circulating in cyberspace is growing at an unprecedented pace. Correspondingly there is a need for reliable data storage as well as its efficient manipulation [7]. All these needs correspond to the database because they have accumulated a lot of developments to support data integrity and its quick access, and the division of data access between users of different levels [1].

According to the concept of database the basis of information technology is data organized in a database that adequately reflect the reality of a particular subject area, and provide the user with the relevant information [5]. Database management system (DBMS) provides complete control over data definition, their processing and use. DBMS also facilitates the processing of large amounts of information stored in numerous tables. Various DBMS products provide the three basic functions: data definition, data processing and manipulation of data [3].

The need for the formation of high-quality databases to make timely informed decisions identifies trends and predicts future outcomes [5].

III. Statement of the problem

Due to the large number of information flows circulating in the enterprise there is a need to create a single consolidated resource of office documents by means of Internet technology which provides both information from various sources and relevant information to the users of the global network. Access to the data using a specialized information system takes much less time than obtaining this information from any paper. The use of database technology to solve this problem will create new information products based on documentary information that exist at the enterprise, increase productivity, save time and dismissal of employees to perform frequently recurring transactions related to the record keeping processes.

To solve problems in the field of enterprise management applications the database technology is selected, as it is used for storing and accessing the large amounts of information, presentation of reference and information work. Also, database technology can automate a variety of record keeping functions. To present the level of the enterprise record keeping processes to a new level involves getting a new information product of office documents using a database that supports the search for documentary information required elements, and generating reports of completed documents while preparing informative documents which are the basis of enterprise document management estimation.

The database should provide speed, high quality recording, analysis, and systematization according to the set parameters of office documents. This database can be used for reporting and analyzing, or as a source for other applications. Documents should be registered to ensure their accounting and monitoring. Registration is obligatory for all documents that require accounting implementation and use (administrative, planning, reporting, accounting and statistics, financial, etc.), as those created and used by the firm and those coming from other institutions and individuals. The mandatory registration details include a document title, an author (correspondent), a document date, a document code, a document title or summary, a resolution (executer, number of questions, author, date), and the executer (deadline, mark on the performance: short recording of the issue, date of execution, code of document-answer). The description of required details can be added in case of need – the executer shows his receipt to see a document progress, applications and more. Details are important to find the necessary information and prepare the consolidated accounts of certain issues.

All data are stored in the database of the server. To access the system resources we use a password protection for appropriate DBMS. User rights of the system are defined by the administrator while registering and regulating both the access to documents according to their classifications, and a set of features available for this user.

Consolidated resource of office documents will be used by employees at general enterprise departments

which is the basis of research and basic clerical work processes. It includes the formation catalogue of cases and the organization and management of archives, records office documentation, its circulation, storage and updating, implementation and development of new technologies processing. Actions with documents and tasks performed through a web interface allow to get the system connection from anywhere in the world, thus creating a single information space of organization, including remote offices and teleworking.

IV. Discussion

Using a website as a modern information technology is a necessary tool to improve the company's image, create the new information environment, and move to the next level of communication. Besides, it helps to extend the field of advertising to attract new customers.

In addition to these features a website can be used to simplify the documentation processing. The income papers as well as outcome and internal documentation require registration, so if it is based on the needs of the department it is necessary to develop a database that will facilitate the effective conduct of registry documents, which, in its turn, will reduce the processing, speed up the movement of documents in organizations, and increase the efficiency of management. Database can be used through a web interface of the enterprise's site. The remote location of the database provides record keeping services to employees for their work with documents regardless location, as they have their own password and the relevant access rights to work with documents and certain sections of the site.

The purpose of the database development is to build an information system represented in the network and enables remote use of database through the web interface to provide consolidated information relevant to users who interact with the system. The purpose of consolidated information resource is to order, store and analyse the documentary data, prepare the consolidated reporting and provide the feedback of the documents status, the amount and structure of documents that are part of performance indicators in general, record keeping process optimization. The work results should be reliable and adequate to be used for management decisions with consolidated information. Implementation of data consolidation is proposed at the general department of investigated PJSC "Iskra".

The developed information system should solve the following problems:

1. Providing the main company information, its contact details;
2. Giving user registration functions;
3. Differentiation of access rights for registered users;
4. Implementation of remote registration by filling in forms on the site;
5. Searching for the necessary document information by key details;
6. Ability to view and download useful materials to work with documents, typical patterns, etc.;

7. Ensuring the safety of the personal information.

Besides the successful web site operation we need to develop a user-friendly and intuitive interface system.

Input consolidation data include the details of office documents which are circulating inside of the enterprise. These include registration code, document type, delivery type, degree of openness, the summary, an electronic document file itself, its name, author of resolution, the resolution text, time of execution, a mark of performance, notes. Also the input data comprises the information about departments that design and develop documents including code of division, its name, and telephone number; information about the correspondents, i.e external organizations or individuals from whom documents are received including code of correspondent, type name, country, city, street, house number, postal code, phone, and email.

Output data is the consolidated information that is formed by selecting and merging accounting data of documents as a result of querying a database from the web interface (front-end of the site), and with the administrative panel. Output data also includes reports containing consolidated information on relevant issues and are designed for specific classes of users according to their rights to download document templates that are typical for this company.

The introduction of a consolidated information system increases productivity, saves time of employees to perform frequently recurring transactions related to record keeping processes. It promotes teleworking, new technologies application, and online company advertising.

V. Methods and means of development

The peculiarity of information consolidation is to present information about the company on a specially designed website and communication with the office documents database via network. Providing online information about the company can be done either by creating a web page that hosts the basic information about it or developing a WWW-server that provides much greater opportunities as it can accommodate standard or customized software, visual imaging products, and more.

All methods of development sites can be divided into two main groups [6]. The first group of development site methods comprises hand-writing websites using one or more web programming languages. The second group of development site methods includes automated methods of website development – a special site builder or content management system (CMS).

Methods for developing websites using CMS is one of the most popular today [9]. To achieve the objectives it was chosen the method of automated design of websites using CMS Joomla. CMS Joomla includes different tools for making a website. With a simple interface you can add new articles and news, edit pages and create the required number of sections, categories and objects on the site [9]. Joomla is written in PHP and as a content uses repository database MySQL. To store information it is chosen MySQL-RDBMS that perfectly integrates with PHP and serves as the basis to create dynamic Web-sites. MySQL

server controls access to data, so you can work with it simultaneously with multiple users, providing quick access to data and provide access only to those users who have right to it. It uses SQL which is worldwide used as the standard database query language. Apache is used as a web server which is an independent, nonprofit, free product. As a programming language PHP is used which is designed to generate HTML-pages on a web server and work with databases. Using a free software the Web-system is cross-platformed and requires no special hardware requirements.

VI. The structure of the database and company website

Designing a database we must decide on its needs and functions, choose a type, consider a table design, define key fields and identifiers, and trace relations between tables.

To avoid errors it is needed to create a data model in the form of ER-diagrams. It will be a prototype for future database. Then we need to start creating a database, tables and columns by specifying their data type and value for each other. Scheme of the database as ER-diagram is shown in Fig. 1.

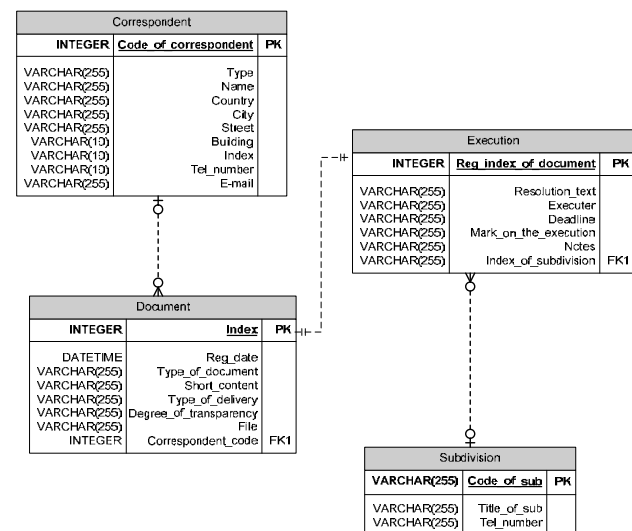


Fig. 1. ER-diagram of the database structure

The developed database stores registration data of the enterprise office documents and provides speed and high quality recording, analysis, and systematization according to set parameters of office documents.

On the home page of the site it is displayed the Main Menu, basic information about the company, a hyperlink to its partners, authorization form, search online, and the possibility of monetary payment by electronic payment system PayPal.

Page "Company" includes the purpose, objectives and strategy. In this section, you can also learn the history of the company and its regulatory base.

Page "Templates" contains standard document templates and files about their appearance and issuance which are helpful for the staff and creators of documents. These files can be downloaded to a PC by clicking on the selected file.

Page "Articles" contains a list of the categories of publications that provide specific information about the activity of PJSC "Iskra".

Banner "Partners" provides information about the companies collaborating with the company.

On the "Search" visitors can find any of the information contained on this site.

Page "Registration of document" contains interactive form through which the user according to the category of access may submit registration information of the document, namely data about the correspondent (code, type, name, country, city, street, house number, postal code, phone, email), information about the document (registration code, registration date, sender, type of document, type of delivery, degree of openness, a summary, the file name of the document and its attachment as the electronic version), information about the status of the document (the responsible executors, text of resolution, the time of execution, mark on the execution, note), and data about subdivision (division code, its name and phone number). Registration information is received via administrator's e-mail and recorded into four MySQL database tables.

The administrator can restrict access to certain parts of the site for selected user groups. With the purpose of convenience all members are grouped. Permissions are given to the group of people rather than to an individual. It enables to create user groups:

- 1) Administration – access to all sections of the site;
- 2) Subdivisions – access to certain sections of the site;
- 3) Partners – limited access to general information about the company.

Using php-script we get connection with MySQL database through a front-end of the site to display various reports on the status of the documents and search for registration details of office documents. Electronic versions of the documents are stored in the appropriate folder on the server, and their names are saved in the database.

In the PHPMyAdmin environment, you can use the created database including run queries and search for the specified criteria.

Conclusion

Designing a unified consolidated resource of office documents containing information of different types of

documents and correspondents enables to generate relevant information to queries and represent it in a convenient way for user. It is recommended to implement it using DBMS technology and web technologies. The use of modern opportunities of web technologies gives an ability to accumulate information in a database without time delay and territorial restrictions.

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