**Electronic Scientific Journal Management Systems**

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Abstract—In this article, the authors present modern information systems for the automatization of the full cycle of electronic scientific journal creation and publishing. The advantages of using open access journal systems are shown. The choice of the Open Journal System (OJS) as the platform for creating an electronic base of scientific journals is substantiated. The authors present the structure of an electronic scientific jour nalmanagement system and describe the features of its implementation within the framework of the pilot system of the eGovernment of the Republic of Tatarstan. Keywords: integration of electronic resources, information systems of automatization for creating and publishing electronic scientific journals, digital libraries, Open Journal System.

INTRODUCTION Currently, information communication technologies (ICTs) are used at almost every stage of scientific and educational activities and electronic forms of presenting scientific materials are gradually replacing paper forms. Moreover, conversance with new scientific results and communication occur more frequently over the Internet. New methods of information processing, storage, and transmission based on digital technologies are being created and made widely available. The difficulty of electronic scientific information processing occurs due to not only to the constant growth of the number of scientific publications, but the fact that scientific and educational electronic journals and resources are becoming dissolved in the total electronic information flow. The traditional approach to electronic publication storage and access through the interface of fulltext search systems is most common today; however, due to the growing volumes of electronic information and features of the electronic publication life cycle, the use of the standard services and search tools of the Inter net that relate to electronic scientific information has become less effective. The problem of electronic data integration, which includes scientific and educational content in a one entire information space, is very top ical. To some extent this problem can be solved through the creation of special information systems. Integration of information resources is tradition ally one of the basic functions of research libraries; until recently it played the role of the single repository of scientific information. In the Internet age when publishers provide online access to scientific contents, the role of research libraries is changing. In addition there are legal issues of the preservation and provision of access to digital research resources; copies of articles are not available if it is impossible to get them in a publishing company. One of the methods for providing access by libraries to the newest scientific content is the execution of publishing functions by libraries themselves [1, 2]. In particular, a survey that was con ducted by Library Publishing Services confirms this fact [3, 4]. Thus, the world’s leading research libraries and publishers are taking part in the creation of a scientific communication system and establish a new integration system of scientific literature using the network infrastructure. One of the powerful effects of the information society and, in particular, of the automatization of the library information field, is the appearance and development of a new kind of IT system, the digital library (DL) [5], which is a distributed information system that provides the opportunity to store and effectively use the various collections of electronic documents, which are accessible to end users through a wide area network. The components of digital libraries are specific electronic collections of information resources. Dlibrary technology is widely used in the field of information storage (for example, [6]) and can be used for journal information systems. The modern scientific journal and publication management system is a specific class of digital library management systems (DLMSs) (according to the terminology in [7]). It can use advanced and widely used digital library technologies that take the specifics of the business processes of scientific publications into account. The aims of this article are a review of existing opensource projects for electronic publication management and their analysis in the context of the evaluation technique of the DLMS developed in the frame work of the European DELOS project (http://www. delos.info). The authors also noted the specific features of the use of digital library technology for editorial process automation in scientific journals using the example of the Open Journal System (OJS). INFORMATION AND COMMUNICATION TECHNOLOGIES IN INFORMATION AND PUBLISHING ACTIVITIES Using information and communication technologies in information and publishing activities allows leading modern publishing companies not only to organize the anticipation of the release of the electronic versions of scientific journals, but also provides new information services for authors, readers, editorial boards, and editorial staffs. For example, almost all modern management information systems for scientific and educational information provide services of scientometrical data reception, on which the analysis of the publication activity of employees of scientific institutions and universities is performed and the most perspective directions for the development of scientific research are identified. The world’s largest scientific publishing companies were among the first that started to use ICTs. They created their own electronic book publishing systems and are constantly developing them. Examples include the information system of the Springer publishing com pany (www.springer.com), the Science Direct plat form (http://www.sciencedirect.com) of Elsevier (www.elsevier.com), and the electronic publication system of the scientific archive arXiv.org (http://arxiv.org/). Two Russian projects, viz., eLIBRARY.ru (http://elibrary.ru) and the mathematical portal MathNet.Ru (www.mathnet.ru) are innovative for a number of such solutions [8, 9]. We also note the project for the automation of the electronic journal Lobachevskii Journal of Mathematics (www.ljm.ru), in the framework of which the process of research material review by an editorial board became fully automatic (and the editorial board became a network) including automatic selection of reviewers from a database of experts, notification system support, and the control of terms [10, 11]. For the first time in an electronic mathematical journal the conversion of incoming papers and their storage in the MathML for mat were organized, which allowed the creation of the search system by formulas [12]. Scientific publishing and the creation of electronic educational and scientific collections are an integral part of the research and educational activities of any research institute. A number of scientific journal and publication management systems were created in 2004–2008 to provide these activities. The greatest practical interest lies in those that are open source. Due to open source there is an opportunity to improve the system and give it the required functionality. The presence of a development team who develop new modules, which are often innovative, using advanced ICT is important. An important component of the modern scientific journal management system is services that control the review and provide for the collective editing of electronic documents. Such services must provide editorial processes: classification, annotation, parceling out data definitions, publishing, long-term storage, converting, distribution, participations, usage statis tics, harvesting, association with collection, relation ships with institutional repositories, access control, subscription, notification delivery, and new arrivals. As well as the remote viewing of articles in scientific journals and their further processing for final publication, information journal systems provide access to generated content and advanced searches (by author, title, keyword, and other types) in electronic collections, in other words, they fully implement the functionality of digital libraries. From this point of view, an electronic scientific journal can be viewed as a scientific digital library, using the articles in a journal as information objects. Therefore, well developed digital library tech nologies can be used for the creation of electronic scientific publication management systems. As well, approaches of formation of conceptual models, which generalize the gathered experience in the field of cre ation, and the use of digital libraries, in particular, the Digital Library Reference Model, (DLRM) [7], which was designed in the framework of the DELOS project, can be used for analysis of such systems. ELECTRONIC JOURNALMANAGEMENT SYSTEMS AS A SPECIAL CLASS OF DIGITAL LIBRARY MANAGEMENT SYSTEMS The DELOS DLRM model includes three differ ent levels of conceptualization of the digital library concept: • Digital library: a certain digital library with its content, users, rules, etc.; • Digital library system: software on whose basis digital libraries are created; • Digital library management system: software for the creation and management of digital library sys tems, with digital library functionality. The professional roles played within the digital libraries of the DELOS DLRM model are chiefly described in terms of end users, designers, administra tors and software developers, so four user form levels are made. As well, the model consists of six core con cepts, each of which has its own properties: architec ture, content, functionality, users, policies, and qual ity. These concepts can be used as criterions for evalu ation and due to their universality they can be used to analyze almost any information system.