

# Open Access and Institutional Repositories in Bulgaria

Georgi Simeonov<sup>1</sup> and Peter Stanchev<sup>1,2</sup>

<sup>1</sup> Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria

<sup>2</sup> Kettering University, Flint, USA

gsimeonov@math.bas.bg, pstanchev@kettering.edu

**Abstract.** The paper presents the current situation regarding open access, institutional repositories (IRs) and journals in Bulgaria. It focuses on e-publications and related research content available in digital format on the web. It includes development of IRs in Bulgaria and discusses their content, software and various access restrictions that apply to content. A survey is used to identify current state of open access for IR and e-journals not just those that are using OAI-PMH.

**Keywords:** Open Access, Institutional Repositories, Publishing, Bulgaria

## 1 Introduction

The Bulgarian research community is informed about the benefits of open access and uses open access research publications, but the promotion of open access is more of an individual effort, than the result of institutional support or policy. There is a certain level of awareness among libraries, though still very few institutions are involved in managing repositories. In the last year in a special meeting of the Association of University Libraries (AUL) steps of building more open repositories were outline.

The Bulgarian Academy of Sciences, the coordinator of research in Bulgaria, intends to establish a network of scientific open access centers. The Institute of Mathematics and Informatics at the BAS (IMI-BAS) coordinates this network and provides support for academic institutions and researchers. Moreover, IMI-BAS launched a national project to develop the research infrastructure and digital repositories for researchers, educators, public bodies and companies who need contemporary scientific and education information and resources. This foster integration between academia, the public sector and industry, as well as strengthen the institutional links between all major research and education organizations (Universities, Institutes of Bulgarian Academy of Sciences, etc.). IMI-BAS organized National Information Day “Open Access to Scientific Information. Other big player is the Bulgarian is the Information Consortium (BIC) with 38 members.

## 2 Open Access Repositories in Bulgaria

The structure of the Bulgarian open access repositories are given in Table 1 and 2.

Table 1. Open Access Bulgarian Repositories				
Title	Organization	Content	Software	Items (Aug. 29, 2011)
Repository at IMI-BAS Address: <a href="http://sci-gems.math.bas.bg">http://sci-gems.math.bas.bg</a>	Institute of Mathematics and Informatics at Bulgarian Academy of Sciences	Journal Archives, Articles, Book Series Proceedings	DSpace	1182
Research at Sofia University Address: <a href="http://research.uni-sofia.bg">http://research.uni-sofia.bg</a>	Sofia University "St. Kliment Ohridski"	Papers, MSc Theses, PhD Thesis, Events	DSpace	375
NBU Scholar Electronic Repository Address: <a href="http://eprints.nbu.bg">http://eprints.nbu.bg</a>	New Bulgarian University	Papers, MSc Theses, PhD Thesis, Lecture Notes	Eprints	336

Table 2. Open Access Bulgarian Repositories (under development)				
Title	Organization	Content	Software	Items (Aug. 29, 2011)
Electronic Repository Central Medical Library Address: <a href="http://nt-cmb.medun.acad.bg:8080/jspui/">http://nt-cmb.medun.acad.bg:8080/jspui/</a>	Medical University of Sofia (MUS)	Journal Articles, Books, Lectures, PhD Thesis	DSpace	5
DSpace at University of Rousse Address: <a href="http://dspace.ru.acad.bg/">http://dspace.ru.acad.bg/</a>	University of Rousse	Papers, MSc Theses, PhD Thesis	DSpace	3

## 3. The Bulgarian Open Access publishing

In 2011 there are 28 Bulgarian Open Access journals listed in the Directory of Open Access Journals (DOAJ) [1]. Permanently growing number of Bulgarian OA journals available in the Directory of Open Access Journals (DOAJ) is evident that the Bulgaria is only in the initial phase of adopting the idea of open access. DOAJ

statistics for total number of registered Bulgarian journals per year is given in Figure1.

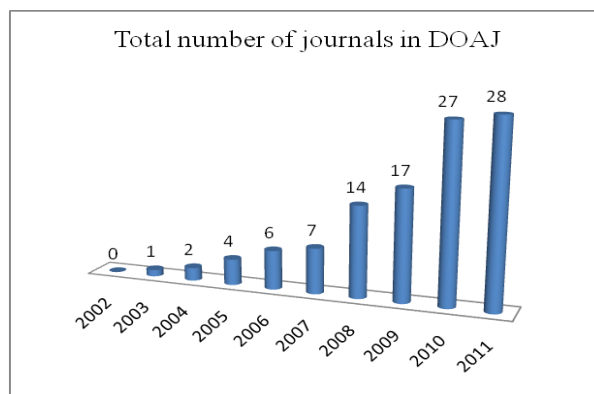


Fig. 1. Article Level OAI-PMH Harvest Available from DOAJ

Not only digital repositories are compliant with OAI-PMH (Open Archives Initiative - Protocol for Metadata Harvesting) [2]. DOAJ began offering a new schema for registered articles called "doajArticle". It has been added to the OAI-PMH interface. The format is built based on the new DOAJ article XML schema that significantly improves the value of OAI-PMH harvested article content. Prior to this addition the only scheme available was Dublin Core. This makes possible interoperability between DOAJ journals and Institutional repositories and accelerates Open Access Initiative spread. In table 3 the Bulgarian OA Journals in 2011 are given [3].

Table 3. Bulgarian OA Journals in 2011

Journal Title	Subject	Publisher
Academic Open Internet Journal	Multidisciplinary	Bourgas University, Technical College
Advanced Studies in Biology	Biology	Hikari Ltd
Advanced Studies in Theoretical Physics	Physics (General)	Hikari Ltd
Advances in Theoretical and Applied Mechanics	Mechanical Engineering	Hikari Ltd
Applied Mathematical Sciences	Mathematics	Hikari Ltd
BANTAO Journal	Urology	Balkan Cities Association of Nephrology, Dialysis, Transplantation and Artificial Organs
Bibliosphere	Library and Information Science	NBU Library
Bolgarskaâ Rusistika	Languages and Literatures	Obšestvom Rusistov Bolgarii
Bulgarian Journal of Plant physiology	Biochemistry --- Botany	Bulgarian Academy of Sciences 2004 Continued by General and Applied Plant Physiology

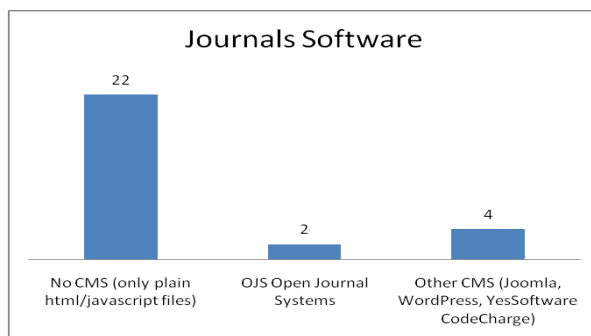
Bulgarian Journal of Science and Education Policy	Education	University of Sofia
Bulgarian Journal of Veterinary Medicine	Animal Sciences	Trakia University
Contemporary Engineering Sciences	General and Civil Engineering	Hikari Ltd
Ecologia Balkanica	Ecology	Union of Scientists in Bulgaria
General and Applied Plant Physiology	Biochemistry --- Botany	Bulgarian Academy of Sciences
Information & Security: An International Journal	Computer Science --- Military Science	Procon Ltd.
International Journal Bioautomation	Medicine (General) --- Biology --- Biotechnology	Academic Publishing House
International Journal of Algebra	Mathematics	Hikari Ltd
International Journal of Contemporary Mathematical Sciences	Mathematics	Hikari Ltd
International Journal of Mathematical Analysis	Mathematics	Hikari Ltd
International Mathematical Forum	Mathematics	Hikari Ltd
Journal of Culture Collections	Microbiology	National Bank for Industrial Microorganisms and Cell Cultures Bulgaria
Journal of International Research Publications: Economy & Business	Business and Management	Science & Education Foundation
Journal of International Research Publications: Materials, Methods & Technologies	Science (General)	Science & Education Foundation
Review of the Bulgarian Geological Society	Earth Sciences --- Geology	Bulgarian Geological Society
Trakia Journal of Sciences	Science (General) -- Agriculture (General)	Trakia University
Venets: The Belogradchik Journal for Local History, Cultural Heritage and Folk Studies	Anthropology	SCS Consulting Ltd.
ZooKeys	Zoology	Pensoft Publishers
ZooNotes	Zoology	Plovdiv University

In table 4 the used software tools are given.

Table 4. Bulgarian OA Journals Software 2011

Journal URL	Software	Content License
<a href="http://www.acadjournal.com">http://www.acadjournal.com</a>	YesSoftware CodeCharge v.2.0.5 build 01/22/2002	
<a href="http://www.m-hikari.com/asb/">http://www.m-hikari.com/asb/</a>	No CMS (only plain html files)	
<a href="http://www.m-hikari.com/astp/">http://www.m-hikari.com/astp/</a>	No CMS (only plain html files)	
<a href="http://www.m-hikari.com/atam/">http://www.m-hikari.com/atam/</a>	No CMS (only plain html files)	
<a href="http://www.m-hikari.com/ams/">http://www.m-hikari.com/ams/</a>	No CMS (only plain html files)	
<a href="http://www.bantao.org">http://www.bantao.org</a>	No CMS (only plain php/html files)	
<a href="http://bibliosphere.nbu.bg">http://bibliosphere.nbu.bg</a>	No CMS (only plain html files)	CC BY-NC-ND
<a href="http://journals.slavica.org/index.php/bulus/index">http://journals.slavica.org/index.php/bulus/index</a>	CMS Open Journal Systems v 2.3.0.0	
<a href="http://www.bio21.bas.bg/ipp/gapbfiles/content.html">http://www.bio21.bas.bg/ipp/gapbfiles/content.html</a>	No CMS (only plain html files)	
<a href="http://bjsep.org">http://bjsep.org</a>	No CMS (only plain php/html/javascript files)	
<a href="http://tru.uni-sz.bg/bjvm/bjvm.htm">http://tru.uni-sz.bg/bjvm/bjvm.htm</a>	No CMS (only plain html files)	
<a href="http://www.m-hikari.com/ces/">http://www.m-hikari.com/ces/</a>	No CMS (only plain html files)	
<a href="http://eb.bio.uni-plovdiv.bg/about/">http://eb.bio.uni-plovdiv.bg/about/</a>	CMS WordPress 3.0.5	CC BY-NC-ND
<a href="http://www.bio21.bas.bg/ipp/gapbfiles/content.html">http://www.bio21.bas.bg/ipp/gapbfiles/content.html</a>	No CMS (only plain html/javascript files)	
<a href="http://infosec.procon.bg">http://infosec.procon.bg</a>	No CMS (only plain html files)	
<a href="http://www.clbme.bas.bg/bioautomaton/">http://www.clbme.bas.bg/bioautomaton/</a>	No CMS (only plain html/javascript files)	
<a href="http://www.m-hikari.com/ija/">http://www.m-hikari.com/ija/</a>	No CMS (only plain html/javascript files)	
<a href="http://www.m-hikari.com/ijcms.html">http://www.m-hikari.com/ijcms.html</a>	No CMS (only plain html/javascript files)	
<a href="http://www.m-hikari.com/ijma/">http://www.m-hikari.com/ijma/</a>	No CMS (only plain html/javascript files)	
<a href="http://www.m-hikari.com/imf.html">http://www.m-hikari.com/imf.html</a>	No CMS (only plain html/javascript files)	
<a href="http://www.bioline.org.br/cc">http://www.bioline.org.br/cc</a>	unknown CMS	
<a href="http://www.economy-business.eu">http://www.economy-business.eu</a>	No CMS files in HMTL & SWF	
<a href="http://materials-technologies.ejournalnet.com">http://materials-technologies.ejournalnet.com</a>	No CMS files in HMTL & SWF	
<a href="http://www.bgd.bg/REVIEW_BGS/frames_home_EN.html">http://www.bgd.bg/REVIEW_BGS/frames_home_EN.html</a>	No CMS (only plain html files)	
<a href="http://tru.uni-sz.bg/tsj/">http://tru.uni-sz.bg/tsj/</a>	No CMS (only plain html files)	
<a href="http://www.venets.org">http://www.venets.org</a>	No CMS (only plain html/php/javascript files)	
<a href="http://pensoftonline.net/zookeys/">http://pensoftonline.net/zookeys/</a>	CMS Open Journal Systems	CC BY
<a href="http://nature.uni-plovdiv.bg/index.php?option=com_content&amp;view=article&amp;id=302&amp;Itemid=146">http://nature.uni-plovdiv.bg/index.php?option=com_content&amp;view=article&amp;id=302&amp;Itemid=146</a>	CMS Joomla 1.5	CC BY-NC-ND

The most of OA journals (22) are relying to use only plain html files. There are only 2 journals based on OJS open source software (Open Journal System). CMS softwares are WordPress and Joomla. Used commercial software is YesSoftware (see Figure 2).



**Fig 2.** Journals software

## 4 Conclusion

The output of this study is useful for interoperability in order to build a national harvesting service. Article Level OAI-PMH Harvest Available from DOAJ is very useful to build a national harvesting service.

Bulgarian OA journals available in DOAJ are in the initial phase of adopting the idea of open access. Publishers' software migration will be inevitably to Content Management Systems and well-known Open-Source (Freeware) Journal Management Software.

**Acknowledgments.** This work was supported in part by Open Access Infrastructure for Research in Europe (OpenAIRE) EU project, the Bulgarian National Science Fund under the Project D002-308 "Automated Metadata Generating for e-Documents Specifications and Standards".

## References

1. DOAJ - Bulgarian Open Access journals - <http://www.doaj.org/doaj?func=findJournals&hybrid=&query=Bulgaria>
2. DOAJ - New OAI-PMH metadata format - <http://www.doaj.org/doaj?func=loadTempl&templ=070509>
3. DOAJ Journals by country statistics - <http://www.doaj.org/doaj?func=byCountry>