INTEGRATION OF THE LITHUANIAN ACADEMIC e-LIBRARY (eLABa) INTO THE INTERNATIONAL OPEN ACCESS INFRASTRUCTURE

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Introduction

The first real step in collecting e-documents in Lithuania was taken in 2003 by creating a repository for electronic theses and dissertations (ETD) collection. This initiative was financially supported by UNESCO. Later on, the Information System of e-Documents of the Science and Studies in Lithuania was created, which can be denominated as the Lithuanian Academic e-Library (eLABa). One of the most important tasks in development of this system was creation of an infrastructure for OA. The next step in OA idea promotion was integration of eLABa into the international OA infrastructure.

- The main goal of this article is to present the experience and technical possibilities for integration of eLABa into the European and worldwide OA infrastructure.

- The article analyses the evolution of OA initiative in Lithuania; presents the goals of eLABa creation, its structure, main functioning aspects and statistics of e. objects, stored in various collections of this system; analyses motivation and possibilities for integration of eLABa into the international OA infrastructure.

The research methods are documents and data analysis.

Evolution of the open access initiative in Lithuania

Important role in rethinking of OA ideas in Lithuania have been played by various events, i.e. seminars, round-table discussions and presentations delivered by OA supporters at the national and international conferences since 2005. Most of the events in this period of time were organized or assisted by the Lithuanian Research Libraries Consortium (LMBA, http://www.lmba.lt) and the EIFL (http://www.eifl.net). Well-known activists of the OA initiatives: Melissa Hageman, Raym Crow, Lilian van der Vaart, Jean-Claude Guédon and others provided presentations in these events. These events were attended by the top-level officials of the Ministries, Research Council, librarians, and publishers. The most important events were:

- Workshop: Open Access and Scholarly Communication, 2005 (organized by LMBA and OSI);

- Workshop: Open Access - Revolution in the Scholarly Publishing?, 2005 (organized by LMBA and LABT)

- Workshop: OA in European Union and Lithuania, 2008 (organized by SPARC, LMBA, Ministry of Education and Science)

- Open Access Day 2008: Workshop Quality Assurance of Scientific Information in Open Access, October 14, 2008 (organized by the Ministry of Education and Science, Research Council of Lithuania and the Lithuanian Research Library Consortium (LMBA))

- OA Week 2009: promotion event at OA panel session at the international conference Innovation and Creativity in e-Learning, November 20, 2009

At present, most of the scientific journals, issued by the Lithuanian research and studies institutions, are freely accessible online on the websites of these institutions, its departments or publishing offices. However, only a part of them – 13 journals – have been registered in the Directory of Open Access Journals (DOAJ) catalogue. Some of the journals do not have their own website; therefore they cannot be registered in the DOAJ. Another reason – the editorial staff of some journals are not interested in providing information for DOAJ catalogues due to the fact that this makes no impact on the assessment of their scientific value and the success of journal accreditation. Also, no additional points are given and they are not included into the list of indicators for ranking of scientific production in Lithuania.

The Lithuanian Academic e-Library

The background for development of the Lithuanian Academic e-Library (eLABa) was made by implementing the project of Lithuanian Academic Libraries Network development (http://www.labt.lt, 2003) and three projects financed by the EU Structural Funds (2005-2008):

- Development of the Lithuanian Academic e-Publishing System

- The Lithuanian Virtual Library and Creation of a Full-text Documents Database

- The Lithuanian Science and Study e-Document Accumulation and Delivery to the Users.

The main goals of eLABa creation were development of the environment and tools, allowing preparation, collection, long-term preservation, and giving access to e-documents of science and studies created in Lithuania.
The other objectives of eLABa creation were the following:

- to create the infrastructure for e-publishing documents of science and studies, prepared by Lithuanian authors

- to develop environment and tools preparation, collection, long-term preservation of scientific and study e-documents and giving access to them

- to prepare, collect and get access via internet to e-documents for researchers, universities teachers, students and other interested persons using newly developed tools – the Lithuanian Virtual Library (LVB, http://www.lvb.lt), full-text databases, based on usage of the Fedora repository software (http://www.fedora-commons.org) and its services.

Other objectives, functions and ways of eLABa implementation in details were described in the documents of establishment of this system [1-3] and in articles [4-9].
Development and functioning of eLABa is regulated by the following four documents:

- The Order of the Minister of Education and Science of the Republic of Lithuania as of July 14, 2006 Re: Establishment of Information System of Electronic Documents of Science and Studies of Lithuania.[1] [2]

- The Order of the Minister of Education and Science of the Republic of Lithuania as of March 13, 2008 Re: Accumulation of Master's and Doctoral Theses and Their Summaries as well as the Reviews of Research Works Submitted for the Habilitation Procedure in the Information System of e-Documents of Science and Studies of the Republic of Lithuania[2] [3].

- The Law on Science and Studies of the Republic of Lithuania as of April 30, 2009 [3] [5].

- The Law on Copyrights and Related Rights as of May 18, 1999[4] [1].

In the orders of the Minister of Education and Science the principles and rules for submission of the e-documents to the eLABa repository, their storage and provision of these documents and its metadata to the scientific community are presented. The new edition of the Law on Science and Studies of the Republic of Lithuania oblige research and studies institutions to publish openly the results of their scientific research financed from the State or EU budget. This Law has created pre-conditions for faster OA development. However, up till now secondary legislation, regulating the mandatory procedure for submission of the scientific research publications to the OA repositories, still has not been issued. Due to this fact only two universities in Lithuania have already approved the request to collect the scientific publications in the OA repositories:

- Vilnius University – for all employees from the year 2011.

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[1] Del Lietuvos mokslo ir studiju elektroniniu dokumentu informacines sistemos (eLABa) isteigimo: Lietuvos Respublikos švietimo ir mokslo ministro 2006 m. liepos 14 d. isakymas Nr. ISAK-1506. Valstybes žinios [online]. 2006, Nr. 81-3212 [cited 2010-09-08]. Available from World Wide Web: <http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=280911&p_query=&p_tr2=>.

[2] Del Studiju baigiamuju darbu, daktaro disertaciju, ju santrauku bei habilitacijos procedurai teikiamu mokslo darbu apžvalgu kaupimo Lietuvos mokslo ir studiju elektroniniu dokumentu informacineje sistemoje: Lietuvos Respublikos švietimo ir mokslo ministro 2008 m. kovo 13 d. isakymas Nr. ISAK-655. Valstybes žinios [online]. 2008, Nr. 33-1205 [cited 2010-09-08]. Available from World Wide Web: http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=316240&p_query=eLABa&p_tr2=2>.

[3] Lietuvos Respublikos mokslo ir studiju istatymas: Lietuvos Respublikos Seimo 2009 m. balandžio 30 d. istatymas Nr. XI-242. Valstybes žinios [interaktyvus]. 2009, Nr. 54-2140. [cited 2010-09-08]. Available from World Wide Web: <http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=343430&p_query=&p_tr2=>.

[4] Autoriu teisiu ir gretutiniu teisiu istatymas: Lietuvos Respublikos Seimo 1999 m. gegužes 18 d. istatymas Nr. VIII-1185. Valstybes žinios [online]. 1999, Nr. 50-1598 [cited 2010-09-08]. Available from World Wide Web: <http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=364672>.

- Vytautas Magnus University - on a voluntary basis.

The scheme of eLABa functioning is presented in Figure 1. Using the subsystem Presentation and Uploading, graduates of master or doctoral studies can present by themselves or with the help of responsible librarians their thesis or dissertation File with metadata (the ETDs) and, if it is necessary, any additional Files, for example, texts of computer programs, work reviews, as a single Fedora Objects to the Temporary Repository. Similarly e-Documents can be uploaded for other eLABa collections (Articles, Books, Presentations, Reports, Empirical data). The eLABa Empirical data collection is associated with the data of the Lithuanian Data Archive for Social Sciences and Humanities (LiDA, http://www.lidata.eu/page.php?page=duomenys_katal ogas). The e-Documents of other collections, except ETD, have been downloaded by the data providers, who passed an appropriate training.

One of subsystems of eLABa, i.e. Content Management, allows automatic (at the estimated intervals of time) or manual (by data administrator) migrations of the Objects from the Temporary Repository to Long-term Preservation Repository. The Content Management function allows generation of the Object metadata sets for OAI-PMH protocol to the according recommendations of Google, OAIster, BASE, NDLTD, DRIVER, the DART-Europe and other Global Information Search Systems.

In eLABa Long-term Preservation Repository special converters, allowing usage of the Object metadata stream are integrated, which includes an expanded MARC 21 (http://www.loc.gov/marc/bibliographic) standard for generation of the metadata using OAI-PMH protocol in OAI DC, OAI ETD-MS or MARCXML formats. Also, eLABa foresees the possibilities to provide other services allowing exchange of metadata and objects with other OA repositories using innovative technologies such as SRU (Search / Retrieval via URL http://www.loc.gov/standards/sru), SRW (Search / Retrieve via the Web, http://www.dlib.org/dlib/february05/sanderson/02san derson.html), SWORD (Simple Web-service Offering Repository Deposit, http://www.ariadne.ac.uk/issue54/allinson-et-al) and others.

Metadata of the Objects using OAI-PMH protocol and MARCXML formats (http://www.loc.gov/standards/marcxml) from the Long-term Preservation Repository can be transmitted to the Aleph Integrated Library System and used for formation of a separate Catalogue in the Lithuanian Academic Library Network (standard MARC 21).

The following services and protocols are used for eLABa metadata presentation via Internet:
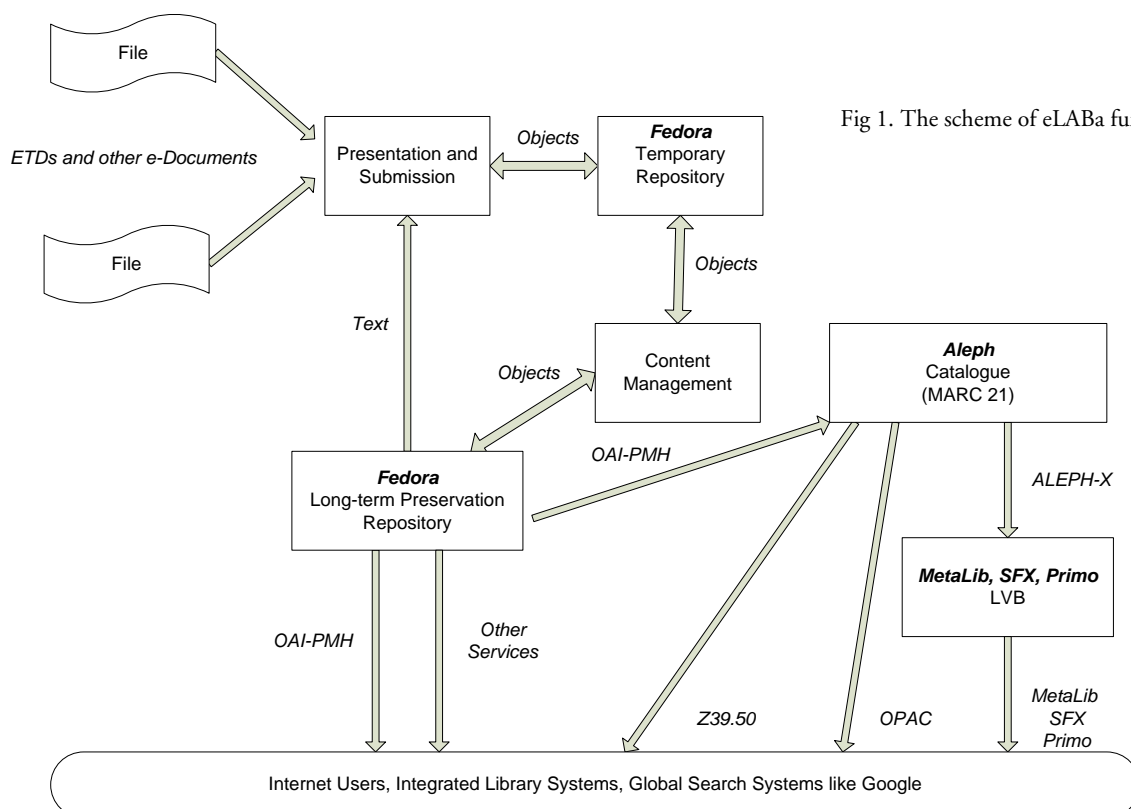

Fig 1. The scheme of eLABa functioning

- the Aleph OPAC service used for search via Internet;

- the LVB portal, based on usage of MetaLib, SFX and Primo and is used for search via Internet;

- the Z39.50 protocol is used for exchange of the metadata with other integrated library systems;

- the OAI-PMH protocol used for exchange of the metadata with other of Global Search Systems like Google.

eLABa consists of 6 science and study e-Document collections. At the 7th of September 2010, eLABa stored 19 697 full-text documents. The documents of all collections, except ETD are available for OA. The largest collection is of ETDs, i.e. 15 254 full-text documents. The access terms are determined by the authors. Signing licence agreements authors can choose one of the three options of access conditions: unrestricted, available in intranet only or withheld (Fig. 3). After the so-called embargo period is expired, ETDs automatically become unrestricted. More detailed descriptions of eLABa e-Document collections and numbers of stored documents are the following:

- ETD (bachelor and master theses, doctoral dissertations and their summaries) – 15 254 ETDs

- Books (monographs, manuals, teaching books, its parts and others issues of science and studies) – 79

- Journals (periodic or onetime reviewed scientific and popular journals and other publications) – 4 182

- Proceedings (reports in scientific or methodological conferences, seminars and other scientific and educational events) – 34
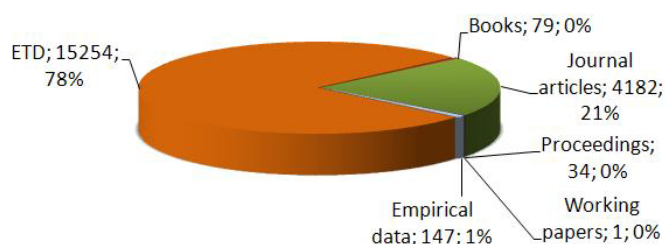
- Working papers (research, development activities and project reports, the other materials of research and studies, prepared in e-form) – 1

- Empirical data (empirical data of research in humanitarian and social sciences): http://lida.library.lt – 147.

Formation of the other eLABa collections, which can be important for researchers, teachers and students, for example – collection of e-teaching objects, are foreseen in the future.

Possibilities for eLABa international integration

eLABa, though a national aggregated repository, is already visible worldwide. It is registered in the global OA registers and, using OAI-PMH protocol and OAI DC, OAI ETD-MS or MARCXML formats, provides metadata for the following OA repositories and databases: ROAR , OpenDOAR, Also, access to eLABa data is allowed via Google, OAIster, BASE, NDLTD, DRIVER and DART-Europe internet search systems.

On the base of analysis of main goals of various projects promoting OA, and possibilities of technical integration collaboration was started and agreements were signed with NDLTD, DRIVER, DART Europe and PEER projects. The short description of these projects and motivation to participate in activities of these projects is given below.

The Networked Digital Library of Theses and Dissertations (NDLTD, http://www.ndltd.org) is an international organization, whose main goal is to promote and support international initiatives of individual institutions and their associations in
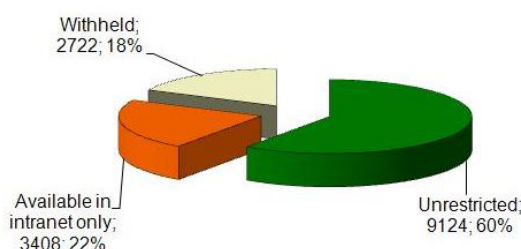

Figure 2. eLABa collections

Figure 3. Accessibility of eLABa ETDs

providing open access to ETD. Participation in activities of NDLTD allows using the eLABa NDLTD guidelines for ETD collection development and ETDs metadata creation standards, for example, ETD-MS.

NDLTD harvest metadata from eLABa via OAI-PMH Protocol, and it allows international access to all ETDs from eLABa ETD collection.

Implementation of the DRIVER project was financed by 6th Framework Programme . The main purpose of this project is creation of an infrastructure for sharing of the European research knowledge by related repositories of EU countries and making visible worldwide results of research. The background for such an infrastructure is repositories which are physically distributed in various institutions, functioning across Europe as a virtual network. The developers of DRIVER project are seeking:

- to provide optimization of the technical infrastructure of the European Academic Internet Network GEANT (http://www.geant.net) to provide possible access to various types of information resources

- to contribute to the growth of knowledge by sharing infrastructure

- to collect the European research knowledge and provide it for the global scientific community.

In this project, the development of a knowledge sharing infrastructure is carried out by including scientific documents and metadata, collected in partner institutions, using the OAI-PMH protocol and the OAI DC metadata format. The provided data must be freely accessible. Participation in DRIVER project allows eLABa developers to use the DRIVER recommendations for OA repository creation, possibilities of the unified search and access to the eLABa resources from abroad, to attend the DRIVER participant meetings and other joint projects[5]

DRIVER harvests metadata from eLABa via the OAI-PMH protocol and allowing an international access to all OA e-documents in all the eLABa collections. DART-Europe project joins activities of scientific libraries and their consortia. The main goal of this project is to improve global access to the ETDs – doctoral dissertations and their summaries. Developers of this project are seeking to create a portal, allowing OA to all ETDs in Europe. European academic libraries and their consortia are invited to allow harvesting metadata by DART-Europe portal using the OAI-PMH protocol and the OAI DC format. DART-Europe offers their partners to participate in a pan-European network, forums on ETD issues and to provide co-funding applications for development of the DART-Europe ETD vision. DART-Europe closely co-operates with the NDLTD project. Participation in the DART-Europe project allows a unified search and access to doctoral theses, stored in eLABa, and wider online scientific community.

The DART-Europe harvests metadata from eLABa via the OAI-PMH protocol and that allows international access to all OA ETDs related to doctoral dissertations from the eLABa ETD collection.

The OpenAIRE (Open Access Infrastructure for Research in Europe, http://www.openaire.eu) is a three-year project (start date: 01-12-2009), funded in accordance with the 7th Framework Programme. Thirty-eight partners from European countries participate in this project. The main goal of OpenAIRE is to support the Open Access pilot project, launched by the European Commission in August 2008. This Open Access pilot project, which covers about 20% of the FP7 budget, commits researchers from 7 thematic areas (Health, Energy, Environment, Information & Communication Technology, Research Infrastructures, Socio-economic sciences & Humanities and Science in Society) to deposit their research publications in an institutional or disciplinary Open Access repository, to be made available worldwide in full text. OpenAIRE will establish underlying structures for researchers to support them in complying with the pilot through the European Helpdesk System, build an OpenAIRE portal and e-Infrastructure for the repository networks and explore scientific data management services together with 5 disciplinary communities.

The proposed project will deliver an electronic infrastructure and supporting mechanisms for the identification, deposition, access, and monitoring of FP7 and ERC funded articles, where the main supporting mechanism will be the establishment and operation of the European Helpdesk System Additionally, the project will offer a special repository for articles that can be stored neither in institutional nor in subject-based/thematic repositories, while it will also prepare the way for similar functionality on scientific data.

The electronic infrastructure built by the project will be based on state-of-the-art software services of the D-NET package developed within the DRIVER and

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[5] Foulonneau, M; Andre, F. The Investigative Study of Standards for Digital Repositories and Related Services [online]. Amsterdam: Amsterdam University Press, 2008 [cited 2010-09-08]. Available from World Wide Web: <http://dare.uva.nl/document/93727>. ISBN 9789053564127.

DRIVER-II projects and the Invenio digital repository software developed at the European Organization for Nuclear Research. These will be further enhanced and complemented with services developed within OpenAIRE to address critical requirements and issues that arise in the target environment and require further investigation.

Kaunas University of Technology is involved in the project using WP2 (European Helpdesk) and WP3 (Dissemination) work packages. WP2 develops a European Helpdesk System, comprising the European Centre and distributed national Open Access liaison offices, and support researchers towards meeting the demands of the European Commission OA mandate in using the repository infrastructure. WP3 carries out the liaisons with other Open Access and repository related activities in Europe to achieve a widespread adoption of an Open Access policy, as recommended by the ERC Scientific Council Guidelines for Open Access and by the FP7 OA pilot.

eLABa local data management policies for FP7 and ERC funded articles will be adopted in compliance with the Open Access demands of the European Commission to be compatible with the OpenAIRE guidelines.

Participation in the OpenAIRE project will enable to use the results of this project – methodology, software and infrastructure for collection, storage and dissemination via internet FP7 and ERC funded articles in Lithuania. This project should promote an Open Access Pilot and should also promote unified search and access to articles in eLABa funded by FP7 and ERC to wider online community.

The main purpose of PEER project (Publishing and the Ecology of European Research, http://www.peerproject.eu) is to store reviewed, but not published manuscripts, to examine cumulative impact of these documents on their readers, to examine the author visibility and viability of the journals. As far as reviewed journals play an important role in the scientific communication, promote scientific progress, improve competitiveness of the European society, the scientific community agrees that in order to increase usage of the EU-funded research it is necessary to expand access to these results. However, there is no consensus in discussion about the impact of OA on the usability of scientific papers and on greater utilization of the research results. Also, there are different opinions on most appropriate duration of the embargo period. So, the Publishing and the Ecology of European Research (PEER) project is planned to carry out research in order to answer the following questions:

- How large-scale archiving in OA repositories will affect vitality of the scientific journals?
- Should large-scale archiving in OA repositories increase accessibility?
- Should large-scale archiving in OA repositories affect expansion of the European research environment?
- What factors affect the willingness to provide material to the institutional, thematic and joint OA repositories and what costs may be related with these issues?
- What are models allowing effective coexistence of traditional publishing systems and open access archives?

In the PEER project, it is foreseen to collect data in one central and 6 individual repositories. In the process of implementation of this project, 11 international publishers of 300 scientific journals are involved. The data will be compiled using the SWORD (Simple Web-called service Offering Repository Deposit) protocol. Articles will be collected only with the international DOI identifier. Metadata of the articles, including their full-texts in the PDF format and the data of citation and affiliation will be collectedand stored in selected repositories using the OAI TEI (the Text Encoding Initiative) format. It is foreseen that 50% of the documents should be uploaded directly to the central repository and the rest – to the six selected repositories, one of which is eLABa.

All individual repositories in the PEER project are using different pieces of software. So, in the process of implementation of this project, the functioning of different full-text documents uploading software using the same SWORD protocol will be checked in practice.

Conclusions

The Lithuanian Academic e-Library (eLABa), in accordance with its legal regulation, can be considered as an open access aggregated repository accumulating of scientific and study e-documents from various research and study institutions in Lithuania.

Functioning of eLABa is based on the usage of the Fedora repository software and infrastructure, allowing collections and storage of various e-objects concerning science and studies of different types and access to their metadata for the readers using OAI-PMH protocol, OAI DC, OAI ETD-MS or MARCXML formats following accordingly the DC, ETD-MS and MARC 21 metadata standards.

The largest collection of full-text e-documents stored in the eLABa repositories are master theses, doctoral dissertations and their summaries (ETD collection).

Also there are big collections of scientific articles (journal article collection). The collecting other types of e-documents of science and studies in eLABa is not so successful.

The technological background for the metadata transmission by implementing OA initiative is usage of the OAI-PMH protocol and OAI DC format, which are commonly used for the metadata collection from various repositories, including eLABa.

The architecture of eLABa meets the requirements and is integrated into the international Europe and worldwide OA projects, such as NDLTD, DRIVER, DART-Europe, PEER, OpenAIRE.

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Publisher copyright policies & self-archiving [online]. [Nottingham]: University of Nottingham, 2006-2008 [žiureta 2009-10-30]. Available from World Wide Web: <http://www.sherpa.ac.uk/romeo.php>.

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