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IMPLEMENTING NATIONAL OPEN ACCESS RESEARCH DATA ARCHIVE

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Research data archives in Lithuania

There are number of different local registries, databases, and other repositories to store various research data in Lithuania. However, collection and storage of scientific data is often bound to internal regulations and procedures of certain institutions; access to scientific data in most cases is only available directly from the collecting institution. In addition, diverse software tools and various formats are used to store data; there is a lack of information about what institutions have collected what research data. Therefore, usage of this data in inter–institutional and multidisciplinary levels becomes rather complicated; there is a huge risk of losing highly valuable data. For those reasons, Vilnius University has decided to implement the project *National Open Access Research Data Archive* (in Lithuanian: *Nacionalinis atviros prieigos Mokslo Informacijos Duomenų Archyvas*, abbreviation: MIDAS).
The needs assessment was carried out in 2010, before starting the project. Scientific institutions were asked to fill a survey about existing practices in research data collection: what types of data they collect, what kinds of software they use, are they satisfied with current situation? During the initial stage of system design process in 2012, a similar survey was conducted once again, but now to determine the needs of potential users of MIDAS.

Implementation aims and principles of MIDAS archive.

The purpose of implementing National Open Access Research Data Archive is to establish the infrastructure that enables collection, organizing and storage of empirical and research data (with corresponding metadata), ensuring free, convenient, interactive search, access and analysis of data. MIDAS will ensure interaction and integration with other science, studies and biomedical data archives and data registers (i.e., Lithuanian Academic E-Library eLABa[1], Lithuanian Data Archive for Social Sciences and Humanities LiDA[2], Lithuanian Networked Digital Library of Theses and Dissertations Lit-ETD[3], National Medical Picture Archiving and Information Exchange System MedVAIS[4], etc.), compatibility with popular search engines (Google, Bing, Yahoo), and will especially support interdisciplinary research and collaboration both at personal and institutional levels. The users of National Open Access Research Data Archive will be researchers, lecturers, professors, students, science and studies institutions and/or their representatives, institutions wich present research data (e.g., hospitals) or their representatives, research and development (R&D) enterprises or their representatives, public administration institutions which use R&D statistical data, other interested physical and judicial persons. MIDAS archive will be based on usage of open code software, XML format and other open metadata, bibliographic, information retrieval standards (CERIF, CERIF for Datasets, CIF, DICOM, Dublin Core, MARC21, ISO/IEC 11179-1:2004, OAI-PMH, etc.). That will ensure compatibility with other information systems, data archives and registries in Lithuania and internationally (e.g., it is foreseen that MIDAS archive should comply with Data Citation Index[5] requirements of Thomson Reuters). The main development principles are: privacy and security (i.e. information confidentiality, integrity and non-repudiation), usability, accessibility (i.e., functioning 24 hours per day, 7 days per week), and extensibility (i.e., software architecture scaling in cases of incorporation of additional hardware).

[1] http://www.elaba.lt
[2] http://www.lidata.eu/en/
[3] https://etd.elaba.lt/
[4] http://accelerator.rssing.com/browser.php?indx=1133055&item=3051
[5] http://thomsonreuters.com/data-citation-index/

Lead institution of the National Open Access Research Data Archive project is Vilnius University[6]; project partner – Vilnius University Hospital Santariškių Klinikos[7]. The project participants are 13 science, studies and medical institutions (which have signed the collaboration agreements). The MIDAS project is funded by EU Structural Funds and national budget. Project budget is almost 15 mio LTL (~4.34 mio EUR); project implementation duration is 30 months; according to current plans, it should be completed in the 2nd quarter of 2015.

Planned MIDAS outcomes and peculiarities

At the MIDAS archive project the following components will be developed:

- Centralised infrastructure with the main and reserve data centres (located at the Centre of Information Technology Development[8] and at the Institute of Mathematics and Informatics[9] of Vilnius University), distributed virtualisation platform, Storage Area Network-type disk data storage, and hierarchical data storage for archive data (consisting of slower disk arrays and libraries of magnetic tapes);
- National united research data archive (with analytical software tools), which collects and stores empirical and other research data of different science areas;
- Infrastructure of biomedical research data collection and transferring (which will secure reliable accessibility and reuse of research data). Biomedical data component will consist of DICOM (for collecting data from medical equipment), ECG (for collecting electrical cardiogram data from medical devices), content management (for managing of collected data), data depersonalisation, and data archiving (for saving biomedical data in local data storage or central MIDAS database) modules;
- Public interactive e-service "Search, Delivery and Analysis of Research Data".

National Open Access Research Data Archive will collect data on researchers, R&D institutions, projects and grants, financing sources, classifiers of science and studies, MIDAS users, research objects, projects, equipment, data, and metadata.

MIDAS implementation will warrant the following possibilities:

- *Guaranteed safety and effective sharing of research data* among Lithuanian science and studies institutions and with international partners.
- *Increased quality of research outputs*: researchers will be able to explore and examine more data; easier access to research data will involve and encourage more academics and other people to participate in discussions about the accuracy, reliability and relevancy, etc. of scientific results.
- *Increased efficiency of research performance*: researchers will be prevented from duplication of effort in research data collection; time and material resources will be saved while collecting the same type of data from different institutions. In addition, time and material resources will be saved significantly by collecting data preserved in medical institutions and providing virtual access with no special software or hardware requirements, using ordinary web browsers (Internet Explorer, Google Chrome, Mozilla Firefox, Safari, Opera).
- *Increased variety of research outputs*: easier access to data will foster research that is unrealizable or economically unviable in practice due to consumptions of time and other resources for data collection; scholars, PhD students and others will have an interest in creating original and exclusive papers by formulating more diverse aims and objectives.
- *Decreased expenses for science and studies institutions*: lower expenses of research data storages, simpler scientometric analysis and research planning.
- *Increased quality of education*: lecturers, associate professors and professors will have more possibilities of exploiting the newest and most relevant data as well as be more informed while sharing knowledge and giving assignments for students.

Information infrastructure tools will be developed and implemented in MIDAS to ensure that scholarly

[6] http://www.vu.lt/en/
[7] http://santa.lt/
[8] http://www.ittc.vu.lt/en/
[9] http://www.mii.vu.lt/?lang=en

communication flows smoothly. Scholarly communication is considered as: (1) communication among researchers, lecturers, professors, (2) information sharing between science and educational institutions, and (3) dissemination of scholarly outputs both nationally and globally. Special attention in MIDAS will be given to motivating, encouraging researchers to present accurate and comprehensive metadata for their research data, and opening their data for usage by other researchers (e.g., increasing the quota of researcher's personal data space proportionally to his/her research data made public). Services and tools implemented in MIDAS will allow users to measure and analyse research data that are uploaded to the archive. In addition, data analysis subsystem will allow to process research data with various multi-dimensional data analysis, visualisation, classification and grouping algorithms, allowing users to run large distributed and parallel computations using Vilnius University grid and supercomputer resources. The data analysis process involves: (1) user authentification based of MIDAS single sign-on (SSO), (2) selection of data which is stored in MIDAS for analysis, (3) defining the workflow of data analysis, selecting the steps from the following set: data getting, initial data preparation (cleaning, filtering, transformation, transposition, separation), selection of data analysis algorithm and setting of control parameters, appointing calculation resources, review of analysis results, review of technical characteristics of data analysis algorithm operation, saving of analysis results in MIDAS infrastructure or in user's computer. The interface of data analysis tool will be realised as webpage, user will use it with web browser; any additional installations in user's computer and any programming skills will not be needed.

Conclusion: MIDAS will provide virtual services for researchers and other participants in research and education that can lead to more efficient, effective and higher quality research. Users will have the possibilities to register, find and cite research data, search for other infrastructures or tools (which provide data archiving services), use them, also share or integrate data and tools to other science and studies infrastructures. In addition, National Open Access Research Data Archive will increase the visibility of Lithuanian science in international context and international cooperation possibilities, because of simpler, more convenient, unified, advanced possibilities of research data collection, analysis, application and sharing.

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OPEN ACCESS PUBLISHING IN LITHUANIA: MYKOLAS ROMERIS UNIVERSITY PUBLISHING CASE STUDY

Natalija Popkova

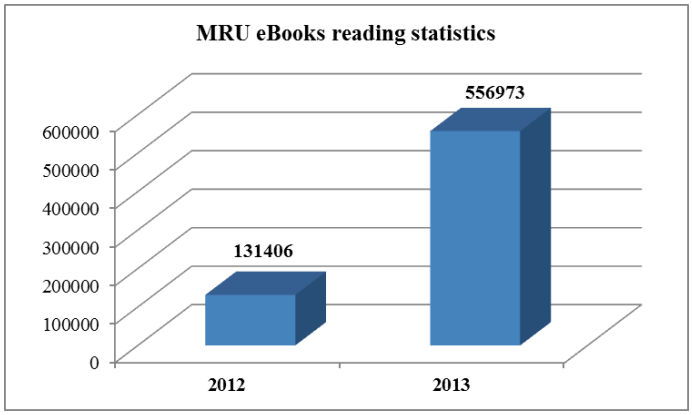
The aim of this article is to analyze the results of Mykolas Romeris University (further MRU) open access published publications in 2013. MRU is international institution of higher education, which is developing internationality. One of the strategic aims of University is a growth of remote studies, consolidation in continuing studies market and enhanced erudition. To become electronic university, where all services are available online, is also important goal to be pursued.

Since the beginning of 2013 year, the university became involved actively in open access movement and started executing open access policy. Science and research publications are provided by open access in university website and can be freely used not only by students, lecturers but also by broad public. This way, international university cooperation, researchers' network creation, new interdisciplinary studies, innovation growth, information sharing and popularization of science are encouraged. Open access to scientific studies results gives sense to executed significant research, making them available to public, expands visibility not only in national but also international expanse. Open access specialists, experts and people connected with it are invited and trainings are provided in order to introduce the open access to as many scientists as possible.

In 2013 the university signed The Berlin Declaration on Open Access which says that open access has to satisfy two conditions: authors provide possibility to access their scientific works for free and allow users to use them supposing copyright is not violated, and upload their work to at least one electronic documents repository.

MRU institutional repository[1] was created at the same time, where science publications, books, conferences material, PhD thesis, students' papers (Masters and Bachelors) and other MRU employees' scientific production are placed. MRU institutional repository and MRU mandate were registered in world open access repositories register ROARMAP, on 17th October and in Open DOAR and ROAR Registry of Open Access Repositories as well.

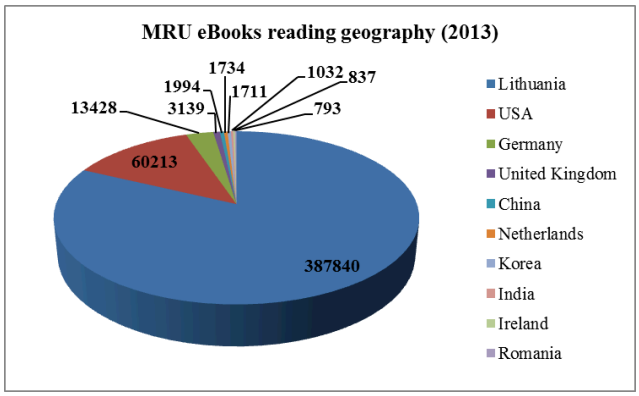
In order to present academic books to students and broad society more effectively, broader, and with better services, since 2011 year, Mykolas Romeris University together with Lithuanian Association of periodicals and Vilnius Gediminas Technical University created eBooks Portal Baltic – eBooks (now MRU eBooks[2]) where students and lecturers of university can read books for free. People, who want to purchase printed book, could order it even from their homes, using special *Print on demand* technology, which allows every reader to get their own printed book even if it is sold out in bookshops. Electronic books have been successful since the first year: university community members were connected 18308 times; external users subscribed 105 MRU electronic books. There are 150 books in the portal and their number is growing. Since March of 2013 all portal books have been available to world readers. MRU eBooks portal readability in 2013 has increased 4 by times compared to 2012.



[1] https://repository.mruni.eu/

[2] http://ebooks.mruni.eu/

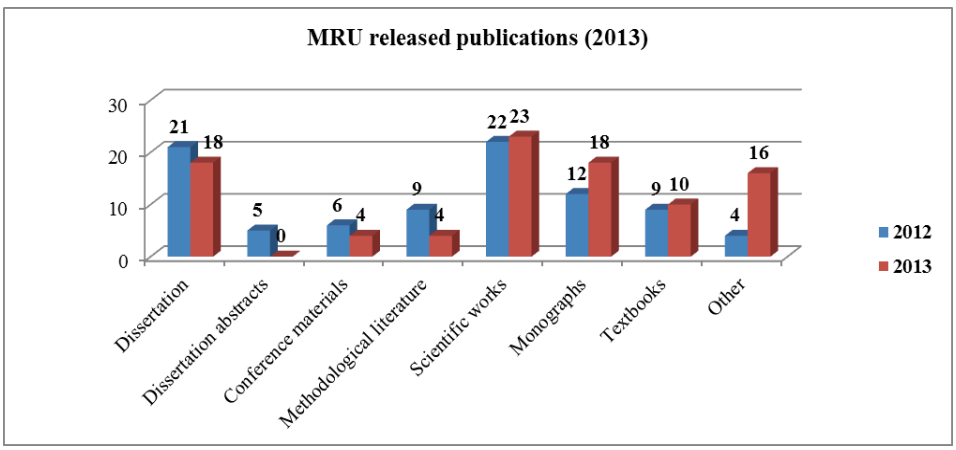
The number of readers in different countries has expanded. Although the most readers are from Lithuania, geographical coverage of the readers' enlargement was seen in the United States of America, Germany, and the United Kingdom. 750881 visitors visited the portal and 7423 unique visitors registered.

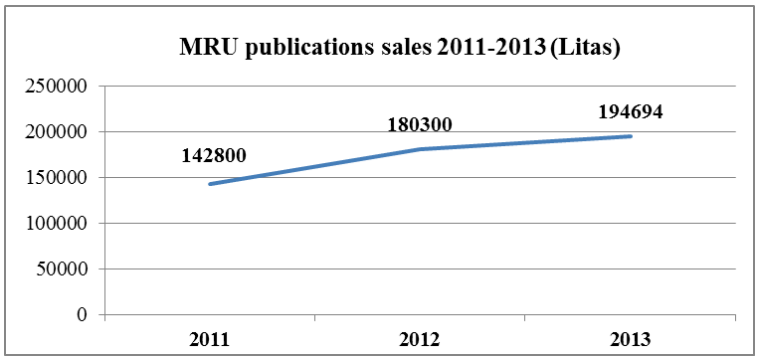


In 2014 year there is a plan to install Open Monograph Press in MRU. This is open-source publishing platform for process management, which optimizes work while publishing discontinuous scientific publications (monographs, science studies and etc.) Functions of reviewing, editing, cataloging and publishing processes management are implemented in the platform. OMP platform can change main publishing house catalog with distribution and sales organizing property.

MRU released publications (2013)

Having reduced initial published items quantity and moved to print on demand model, all published publications printed in 2013 were realized or distributed in other way according to publication commercial potential and purpose. Great economic benefit for user and institution itself could be seen. Initial printing quantity of new commercial publications was from 50 to 100 items. Having evaluated MRU publishing commercial benefit, increase of sold books revenues is seen.





MRU publishes scientific journals which are also available freely. Users can read, download, copy, print, perform search in the articles without additional permission of publisher or author. MRU scientific journals "Jurisprudence" and "Social Technologies" are included into Directory of Open Access Journals (DOAJ) open repository journals ctalog. Other MRU journals are waiting to be approved and included in the catalog.

Open Journal Systems, widely used electronic publishing system of scientific journals, was implemented in 2013 in all MRU periodic scientific journals as a result of reaction to science and technologies progress. This system covers all scientific journals publishing process from manuscript submission to the complete full-text number publication by open access.

In order to foster academic ethics, MRU has implemented plagiarism prevention. Starting form 2013, all manuscripts submitted for printing are checked with the plagiarism prevention system CrossCheck, which provides the possibility to find and compare texts in the Internet in various formats and languages.

In 2013 MRU signed a contract regarding regular Digital Object Identifier

(DOI) grant for scientific articles published in MRU. 150 unique DOI codes have been granted for scientific articles published in MRU and that allows easy access to the articles on the Internet even if the electronic article location was changed.

Since 2013, in pursuance to legitimize open access of scientific activity results, Creative Common license – Attribution-Non Commercial-No-Derivatives 4.0 International (CC-BY-NC-ND 4.0) is applied for MRU scientific articles. Users of licensed work can move the work to their computer and distribute it to others, but it is necessary to specify the author and it is prohibited to use the work for commercial purposes. Derivative works are not licensed.
Openly accessible books with Daisy (Digital Accessible Information System) format have been published in MRU in cooperation with Lithuanian Library of the Blind since 2014 in order to increase accessibility of books for disabled people. Books for blind and partially sighted people published in this format provide possibility to use them as sighted people use. They can not only listen, but also read these books.

Findings

First year practice has shown that Open Access to scientific and studies publications not only encourages international cooperation of University, new interdisciplinary studies research, information sharing, but can also be financially beneficial. The aim of the university is to continue this activity, encourage scientists to publish and contribute fully to the movement of open access, expand spectrum of services for users and pursue new possibilities to optimize publishing activity.

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OPEN ACCESS TO RESEARCH ARTICLES PUBLISHED IN ICELAND IN 2013

Solveig Thorsteinsdottir

Introduction

The frequency of open access (OA) in Iceland is measured by searching for articles in Web of Science (WOS) published in foreign journals from the entire country. Further, a search was done in the Directory of OA Journals (DOAJ) to find out how many articles were published in Green, Hybrid or Golden OA.
The outcome is compared with the outcome in other countries.
The outcome for OA in Iceland is also compared with articles published at Landspitali the National University Hospital of Iceland. Landspitali is also included in the total number for Iceland. The year measured is 2013.
The outcome for Landspitali is also compared to a search done 2010 for Landspitali by using a different search method for the year 2013 than used the year 2010, which covered a four year period 2007 – 2010, to find out if the different methods would show a different result for OA for Landspitali.
An analysis was done for the articles published 2013 by searching the Directory of OA Journals (DOAJ) to find out if Landspitali had used all options to publish in Green, Hybrid or Golden OA.
The SNIP score for the journals that published the Golden and Hybrid articles from Landspitali in 2013 were also studied to compare the score for Golden OA articles and Hybrid OA articles.

Number of articles published in open access in Iceland

According to the search done in Web of Science and limited to the year 2013, there are 969 articles and review articles published from Iceland in foreign journals. Of these 969 articles, 108 articles are in OA. These are all articles published as Golden or Hybrid Open Access. The OA limit used in Web of Science is limited to journals indexed in Directory of OA journals (DOAJ). A search was done on the 861 remaining articles that were non OA articles from the Web of Science search. Of these 861 articles, 10 articles were in Golden or Hybrid Open Access. These additional 10 articles were added to the 108 Golden or Hybrid OA articles from the Web of Science search and the total became 118 Golden or Hybrid OA articles or 12.2% of all articles from Iceland.
Golden or hybrid open access is about 12% and is 5% lower for Iceland than stated in the article *Anatomy of open access publishing* (Laakso M) where golden open access is approximately 17%. A search was done for the 851 non Golden OA articles and 187 articles were found to be in Green Open access or 19.3% of all articles published in foreign journals that year.
Green Open access to research articles in Iceland is 19,3% or 6% higher compared to the outcome in the article *Anatomy of Green Open Access* (Björk B-C) where according to the article Green Open access is approximately 12%.
Green, Gold or Hybrid OA articles published from Iceland in 2013 were 305 of the total of the 969 articles published or 31.5%. The remaining 664 articles are closed access.
Table 1:

Year 2013	**Iceland 969 articles**
Golden or hybrid OA	118 articles (12.2%)
Green OA	187 articles (19.3%)
Total Green, Hybrid and Golden	**305 articles (31.5%)**

Table 1: Open access in Iceland 2013

Number of articles published in OA from Landspitali National University Hospital compared to all the article published in Iceland

Golden or hybrid open access to full text articles from Landspitali is higher than the percentage for the whole country for Golden or Hybrid OA. Green open

access to full text articles from Landspitali is the same percentage as for the whole country for Green OA. Table 2:

Year 2013	**Iceland 969 articles**	**Landspítali 264 articles**
Golden or hybrid OA	118 articles (12.2%)	55 articles (20.8%)
Green OA	187 articles (19.3%)	51 articles (19.3%)
Total Green, Hybrid and Golden	**305 articles (31.5%)**	**106 articles (40.1%)**

Table 2: Open access Iceland 2013 compared to Landspitali open access 2013

In the year 2013, 264 research articles were published in foreign journals from Landspitali. Of these 106 articles were OA or 40.1%. Golden or Hybrid OA were 55 articles or 20.8%. (22 articles were Golden OA from 11 journals) Green OA were 51 articles or 19.3%. Table 2. Of the 264 articles 158 articles are closed.
Golden or hybrid open access from Landspitali is about 20.8% which is 3% higher than stated in the article *Anatomy of open access publishing* (Laakso M) where golden open access is approximately 17%.

Landspitali published 32 articles in Icelandic journals in 2013. All these articles are in OA and are accessible through Hirsla, the repository for Landspitali. If the Icelandic articles are added to the number of articles published in foreign journals open access is 46.6%. The Icelandic articles are not included in the results since only one Icelandic journal in health sciences is indexed in international databases. Although most of the journals in health sciences from Iceland are open on the publisher's website, none of them are defined as open access journals. None of the journals use a digital object identifier (DOI) and they are not listed in the Directory of Open Access Journals (DOAJ).

Comparing the result from 2007–2010 with the result from the 2013
Publications from Landspitali the year 2013 have decreased by 34 articles compared to the year 2012. The reason is not certain but one of the reasons might be the lack of funding to the hospital in the last few years due to the recession from the year 2008. Landspitali has not been able to support research sufficiently since the recession started.

For the search done for the year 2013, a different method was used than the year 2010. The search 2013 showed a better result for OA for Landspitali than the method used for the search done in year 2010. In a search done in PubMed in 2010 covering a four year period, 2007-2010, for Landspitali only 14% were in OA. Of the total articles 75% were in OA in PubMedCentral and 25% through Golden OA. As stated in the article *Scholarly publishing at Landspitali the National University Hospital of Iceland* (Thorsteinsdottir) In comparison with the result from 2007–2010, the result from the 2013 search shows an increase in OA articles at Landspitali from 14% to 40.1% off published articles. The search for the year 2013 was in-depth. It was done in different databases and each article was examined. The outcome is not comparable since the method was not the same but it will be interesting to look at the difference again for the year 2014 by using the same method as the year 2013. From both searches, the majority of the Green OA is from PubMedCentral. Authors that have received a grant from National Institute of Health (NIH) have to comply with the mandate from NIH and all the articles that have been funded from NIH are deposited in PMC. Search method is important and to receive a correct outcome it is not enough to search just one database. It is important to view each article to receive the correct outcome.

Options used to publish in Green, Hybrid or Golden OA the year 2013
Of the 264 articles published in the year 2013 from Landspitali in foreign journals, 158 articles are closed. Of the 106 articles published in OA, the 55 Golden or Hybrid OA articles published from Landspitali were published in 30 journals. Of these 30 journals, 11 were Golden open access journals that did publish 22 articles.

Table 3

Golden Open access journals	**Hybrid Journals**
BMC Musculoskelet Disord	Am j Clin Nutr
BMC Public Health	Ann Rheum Dis
BMJ Open	Circulation
Cardiol Res Pract	Clin J Am Soc Nephrol
Environ Health	Clin Kidney
Gastroenterol Res Pract	Eur j Cardiothorac Surg
Health Quality Life Outcomes	Eur J Heart Fail
Nutrients	Eur Respir J
Open J Anesth	Food Nuts Res
PlosGenet	Genome Res
PLosOne	Haematologica
	HIV Med
	Invest Ophthalmol Vis Sci
	J Clin Nurs
	J Infect Dis
	J Neurol Neurosurg Psychiatry
	N Z Med J
	NEJ Med
	Palliat Med

Table 3: Golden and Hybrid (paid OA) OA journals from Landspitali the year 2013

Green OA were 51 articles published or 19.3%. A search was done in Directory of OA journals (DOAJ) for the 158 closed articles from Landspitali. Of the 158 closed articles, publishers allowed Green OA for 66 articles. Thus, publishers of the remaining 92 articles did not allow Green OA. If authors at Landspitali had used their rights to deposit into Hirsla, the Landspitali repository, 117 articles could be Green open access or 44.3% instead of 19.3% (51 articles) or about 25% higher Green open access.

The study does also show that 40% of research articles or 66 journals in the health field do not allow Green OA. Publishers of 50 of these 66 (76 %) journals allow paid Hybrid OA for the 56 articles published from Landspitali that were closed 2013. None of the authors of the 56 articles at Landspitali selected the paid OA option for the 50 journals that did allow it. Table 4 (Next page)

Acta Anaesthesiol Scand	Emerg Med J	Issues Ment Health Nurs	Neurogastroenterol Motil
Acta Ophthalmol	Eur Heart J	J Am Geriatr Soc	Prostate
Acta pædiatrica	Eur j Cancer Prev	j Clin endocrinol metab	Psychooncology
Acta Psychiatr Scand	Eur j Clin Nutr	J Clin Hypertens	Rheumatology
Allergy	Eur j Gastroenterol Hepatol	J Clin Nurs	Scand j Caring Sci
Am J Hematol	Eur j Psychol Assess	J Intern Med	Scand J Gastroenterol
Am J Hypertens	Eur j Public Health	J Neurol neurosurg psychiatr	Scand J Immunol
APMIS	Eur Respir J	J Nurs Manag	Scand j Infect Dis
Arthritis Rheum	Foot Ankle Int	J Nutr	Scand J Rheumatol
Br J dermatol	Hepatology	J Psychiatr Ment Health Nurs	Scand J urol
Brain Inj	HIV Med	Kidney Int	Worldviews Evid Based Nurs
Curr Med Res Opin	Hum Mol Genet	Nat Commun	
Disabil Rehabil	Hum Reprod	Nat Genet	

Table 4. 50 Journals that allow Paid OA and not Green OA

Three of these 66 journals that do not allow Green OA were not found in (DOAJ). The remaining 13 journals do not allow paid nor Green OA.
Table 5:

Am J Med Genet	Eur j Contracept Health care
Am J Respir Crit Care Med	Eur J Palliative Care
Asian Cardiovascular Thoracic Annals	Hip int
Bioactive Carbohydrates Dietary Fibre	JAMA
Clin Chem	N Engl J Med
Clin Exp Rheumatol	Nature
Clin Lympoma Myeloma Leuk	Sleep
Curr Hypertens Rep	Stroke

Table 5. Journals that allow No access

Of the 158 articles that are closed, 7 articles are published in non-subscription journals in Iceland. All the authors of these articles have been contacted and asked to deposit the final manuscript into Hirsla since all the publishers for these journals allow Green OA. None of these authors have responded to the request. No reason has been given but these articles from Landspitali are with authors from different countries and it might be difficult to get permission from co-authors to deposit the articles in Hirsla?
Mandates are important regarding the success of open access. At Landspitali there is a new request, unfortunately not a mandate, from the year 2013 where all researchers who receive funds from Landspitali are kindly requested to deposit the final reviewed manuscript into Hirsla, and allow open access to the articles. The new request might help towards Green open access at Landspitalinn but a strong mandate is what is needed.
If authors at Landspitali had used all options for publishing in OA: Green, Hybrid or Paid OA the OA could be 86.3%. Table 6.:

Year 2013	**Landspítali 264 articles**	**If all options used for OA**
Golden or hybrid OA	55 articles (20.8%)	111 articles (42%)
Green OA	51 articles (19.3%)	117 articles (44.3%)
Total Green, Hybrid and Golden	**106 articles (40.1%)**	**228 articles (86.3%)**

Table 6: Open access if Landspitali had used all option for open access 2013

The Impact for the journals that published the Golden and Hybrid articles from Landspitali the year 2013

It has often been stated that open access journals do not receive as high impact as traditional journals. The Source Normalized Impact per Paper (SNIP) score from Scopus were studied to compare the score for Golden OA articles and Hybrid OA articles for the journals that published the Golden and Hybrid articles from Landspitali in 2013.

Of these 22 Golden OA articles that were published from Landspitali in 2013, 9 articles were published in PLos One and 3 articles published in PLos Genet. Both these journals are valued as important Golden OA journals and receive good (SNIP) score compared to other Golden OA journals. Out of the 11 Golden OA journals only one was not registered in Scopus and therefore did not have a (SNIP) score.

It has often been stated that open access journals do not receive as high SNIP score as traditional journals but 19 journals which published the Hybrid articles only 7 of the 19 journals had SNIP score higher than 2.000 and these were old traditional journals such as Circulation and N Engl J of Medicine that tend to score much higher than new open access journals. The rest of the hybrid journals had slightly higher SNIP score than the open access journals.

Overall the impact factor for OA articles published in Hybrid journals from Landspitali is higher than for articles published in Golden OA journals.

Table 7:

Golden Open access journals	SNIP(Scopus)	Hybrid Journals	SNIP(Scopus)
BMC Musculoskelet Disord	1.109	Am j Clin Nutr	2.337
BMC Public Health	1.215	Ann Rheum Dis	3.081
BMJ Open	0.881	Circulation	4.529
Cardiol Res Pract	0.477	Clin J Am Soc Nephrol	2.055
Environ Health	1.341	Clin Kidney	0.317
Gastroenterol Res Pract	0.460	Eur j Cardiothorac Surg	1.566
Health Quality Life Outcomes	1.511	Eur J Heart Fail	1.712
Nutrients	0.912	Eur Respir J	2.395
Open J Anesth	0	Food Nuts Res	0.593
PlosGenet	1.803	Genome Res	3.088
PLosOne	1.063	Haematologica	1.547
		HIV Med	1.082
		Invest Ophthalmol Vis Sci	1.326
		J Clin Nurs	1.090
		J Infect Dis	1.697
		J Neurol Neurosurg Psychiatry	1.715
		N Z Med J	0.376
		N Engl J Med	15.414
		Palliat Med	1.825

Table 7: (SNIP) score from Scopus for Golden and Hybrid OA journals from Landspitali

Conclusion

Open access is growing slowly in Iceland. The total outcome for all of open access: Green, Golden or Hybrid for all of Iceland is approximately 30%. For Landspitali the total is approximately 40%.

Golden or hybrid open access research articles are accessible right after publication but green open access mostly after 6 – 12 months embargo.

For all of Iceland immediate Golden or Hybrid access after publication is approximately 12% which is 5% lower for all of Iceland than open access in other countries as stated in the article *Anatomy of open access publishing (Laakso M)* where golden open access is approximately 17%. For Landspitali Golden or Hybrid OA is 20.8% or which or 3.4% higher than stated in this article.

Green Open access to research articles in Iceland is 19.3% or 6% higher compared to the outcome in the article *Anatomy of Green Open Access* (Björk B-C) where according to the article Green Open access is approximately 12%.

The outcome is the same for Landspitali as for all of Iceland.

Looking closely at Directory of Open Access Journals (DOAJ), authors from Landspitali do not use all their options to publish in Green nor Golden or Hybrid open access.

If they did use all options to publish in Green OA at Landspitali Green OA access could increase by 20% to 44.3%. If Landspitali did use all the option to publish in Hybrid paid OA. Additional 56 articles from Landspitali could be Hybrid paid OA or increase access from 20.8% to 42%. Publishers of 50 of these journals allow paid Hybrid OA. If authors at Landspitali had used all options for publishing in OA: Green, Hybrid or Paid OA, the OA could be 84.3%.

Impact factor for OA articles published in Hybrid journals from Landspitali is higher than for articles published in Golden OA journals.

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Solveig Thorsteinsdottir Project manager Health Science Library Landspitali

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THE PAST, PRESENT & FUTURE OF OPEN ACCESS

Mikael Laakso

Introduction

Through my doctoral research which recently culminated in the article-based thesis titled "Measuring Open Access - Studies of Web-enabled Innovation in Scientific Journal Publishing" I have been observing the development of Open Access (OA) journal publishing since 2009, particularly focusing on article-level uptake on both the publisher and author-side OA mechanisms. The last five years has been a period of very rapid transformation for the journal publishing space, which has evolved to accommodate the changing market demand for OA dissemination. Having had a front seat in observing the developments from different angles this article documents some key conclusions regarding the past, present, and future of OA in the context of journal publications.

The broad spectrum of OA

Due to the fast pace at which change has happened in the journal publishing space, even the short span of five years has challenged the implications of elementary definitions. When I first started by research into OA I had a very clear (i.e. naïve) picture of what types of OA mechanisms are available and what they are called, much due to the simple concepts of "gold OA" and "green OA" which have stuck and are still core parts of the vocabulary around OA. However, the broadening spectrum of OA and the different varieties of it has increasingly challenged the use of these terms.

With delayed OA (embargoed free access to subscription content), hybrid OA (individual articles in subscription journals made OA through author payment), promotional OA (limited time sporadic access to subscription journal issues), and the ongoing debates about licensing nuances of OA content, the universal label of "gold OA" is becoming increasingly hard to stretch across all journal-mediated OA.

Likewise, "Green OA" has basically become used a catchall definition to any copies not provided directly by journals and can be made available anywhere, at anytime, in any potential version of the article manuscript. On the high end of the quality scale of green OA there are clearly labeled accepted versions of article manuscripts made available through institutional or subject repositories, on the low end are unlabeled manuscript files found on seemingly random websites. Straightening out the vocabulary and definitions of OA is something that needs to be done, as it is the existing dualism, despite its attractive simplicity, is not enough to properly acknowledge the important differences there is across the OA spectrum.

OA provided by journals

Through longitudinal bibliometric studies on publisher-side developments it has become clear that OA journal publishing is no longer a marginal enthusiast activity, but instead a channel to disseminate high-impact research as well as a prospering commercial business for journal publishers who successfully facilitate OA publishing. While the decade of the 1990s was a time when journals, authors, and readers were still figuring out the circumstances and possibilities that free reader access to journal articles entailed, from around 2005 and onwards there has been an aggressive growth in the number of articles published as OA directly through journals – particularly when it comes to articles published by author-side payment, so called author processing charges (APC) (Laakso & Björk, 2012). The same study also suggested that OA journal publishing had grown to account for a double-digit share of all article content indexed in the Scopus bibliographic database (11%) for content published in 2011. OA is a major transition from the dissemination models based on paid access, either through subscriptions or pay-per-view, but gradually the tides

seem to be changing. Influential research funders as well as authors are becoming more comfortable with the notion of publication services necessitating payment, journal publishing on a larger scale is after all not something that can be done for free.

OA provided by authors

On the author-side it has been interesting to compare what degree authors provide OA to articles published in subscription-based journals, and to what degree that coverage could be extended within the limitations of existing publisher policies that authors have to agree to in order to get their articles published. While actual uptake is hard to pinpoint exactly due to the unstructured nature of author-provided OA, a figure that we arrived in 2010 was 12% of all annual articles (Björk et al 2013). My recent study into the self-archiving policies of the 100 largest journal publishers by article output suggested that over 80% of all articles published in 2010 could have been uploaded to an institutional or subject repository as an accepted manuscript after 12 months of publication (Laakso 2014). So even accounting for a modest increase in uptake for self-archiving among authors since the uptake study was conducted there is still a substantial gap in unrealized potential for providing OA to content published in subscription journals. Authors should become much more active in self-archiving their works, but making that happen is easier said than done.

In an era where institutional repositories have largely become the norm for at least academic institutions the issue for the low uptake for self-archiving seems to lie elsewhere than lacking technical infrastructure. What appears to be the largest hurdle for increasing the rate of self-archiving seems to be awareness and attitude, both of which can be influenced but ultimately not controlled. Funder and institutional mandates are potentially effective authorative ways of getting authors to provide OA to their publications. However, additional methods could be to just provide visible feedback-looping to facilitate OA-enabling behavior among authors. Something which had a little to no presence five years ago were so-called academic social networks like ResearchGate and Academia.edu, services which have now to a degree replaced author homepages for providing access to one's publications. In addition to providing basic social networking features these services provide metrics to monitor article downloads, something which could be argued to motivate continued self-archiving. Popular OA journals have also been providing similar metrics for all published articles as one way of showcasing the impact their articles get, highlighting the competitive advantage of OA. A similar approach should also be adopted by developers and administrators of institutional repositories, giving authors feedback on article usage could help tackle the awareness & attitude dilemma. The snowballing effect of researchers experiencing the benefits of OA first-hand when it comes to accessing publications of others could facilitate changed behavior when it comes to making the conscious decision to self-archive one's own research or even publish in an OA journal.

OA in the larger context of open science

During the last two decades OA has emerged through a mix of ideology, behavior, technology, policy, and business. These factors have aligned and fueled the rapid growth of OA uptake, both with regards to journal publishing and self-archiving. However, OA is only a component of the larger push towards the notion of 'open science'. OA to publications has been a low hanging fruit in the sense that to a large extent OA requires low-level technical sophistication in its most basic form (a PDF on the web) and is enabled simply by removing access barriers like paywalls. Enabling free access to e.g. research data requires both resolving technical and intellectual property aspects as well as getting the practice socially integrated into the mindsets of researchers like OA has been doing for the last 20 years. Interesting developments are currently in progress with relation to open science both in Finland and internationally, concerted efforts which aim to take the necessary steps forward to take openness in science beyond just OA to research publications (https://rd-alliance.org; http://avointiede.fi). Data standardisation, ethics, preservation, and citation are just some of the challenges that need to be resolved in order for free access to it to be of meaningful value, challenges which OA did not have to struggle with to the same degree.

OA has come a long way and has really matured in the last 20 years. OA will without a doubt continue to be an increasingly important component in the field of academic research as we move towards more transparent research processes with less redundancy.

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Mikael Laakso is researcher in Information Systems Science at Hanken School of Economics. His area of research has been Open Access publishing and aspects related to business models and web-innovation with regards to scientific journal publishing. He defended his article-based thesis on Open Access publishing in May 2014.

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KNOWLEDGE EXCHANGE WORKING GROUP ON AUTHORITY FILES

Adrian Price

A Knowledge Exchange (KE)[1] working group has recently published a report on the use of authority files in the information landscape. Authority files – or controlled lists of data elements – are already widely used in information systems, and as information becomes more global, the need for quality controlled data also increases.

Repositories are an area where authority files can be used extensively. In essence, a repository could be seen as (potentially) being "nothing but" an aggregation of several authority files, if they were available. Authority files need to be quality controlled, maintained, and (technically)be enabled for sharing, so they can be used by repositories.

The KE report investigates a number of areas in which authority files exist and could be of use, or are being developed. At the journal/book level well known examples of authority files are ISSN's and ISBN's, and at the article level the Digital Object Identifier (DOI) is widespread for the unique identification of scholarly articles. Going yet one level down, the ORCID[2] is the new kid on the block. It is a system being put into operation for the unique identification of individual authors of scholarly publications. The ORCID system is tied into the wider ISNI[3] – International Standard Name Identifier - system, which is used for the identification of not only scholarly authors, but also inventors, artists, performers etc.

Steps are also underway to provide the means of uniquely identifiying organisations, as organisations are also important (legal) entities in the global workflow. ISNI's are also used to uniquely identify the organisations involved in, for example, scholarly publishing.

Quite likely, repositories will also be using local authority files. For example the repositories of Danish universities all use a local journal database, where journal data is enriched by data used, for example, by the local Danish Bibliometric Indicator. This ensures a dataset which is used in a uniform way across all universities: updates are made centrally and distributesd to all universities. There is also a local Danish researcher database available for Danish universities.

The use of journals is another area where authority files are important. The Sherpa/Romeo database can be used in the area of data regarding self-archiving of an authors articles. With the increased focus on Open Access, both internationally and in several countries also locally, data regarding Open Access publication channels is an area which could be further developed.

The Knowledge Exchange report can be found here: http://www.knowledge-exchange.info/Admin/Public/DWSDownload.aspx?File=%2fFiles%2fFiler%2fdownloads%2fAuthority+Files%2fKE+AF.pdf

Adrian Price The Faculty of Science Library, Frederiksberg. SCIENCE Research Documentation. University of Copenhagen

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[2] http://www.orcid.org/
[3] http:(//www.isni.org/

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DANISH OPEN ACCESS BAROMETER:
Mapping Open Access to Danish research and creation of an online prototype for automated open access monitoring.

Mikael K. Elbæk

Introduction

Monitoring a phenomenon has two remarkable effects: 1. It enables us to understand its properties and interact with the object in an informed way. When it comes to open access this means that we can understand the direction of a development; is it growing, diminishing or simply stagnant. Knowing this is a key component if you want to make strategic decisions for open access; where are we? where are we going? and which measures are working and which are not. The second effect (an interesting fact about social phenomenon such as publishing), is that when something is being monitored it tends to stimulate that which is being monitored[1].

We (the project group behind the Danish Open Access Barometer) believe that open access is important and that if we want to further the progress of open access, monitoring and taking informed decisions and stimulate the progress is one of the key components.

Danish Open Access Barometer was a one year project funded by DEFF (Danish Electronic Research Library). The project started in February 2013 and was concluded in March 2014. The project partners were: Copenhagen University Library (CULIS), Roskilde University Library, University of Southern Denmark Library and the project was led by the Technical Information Center of Denmark, Technical University of Denmark.

Background

Analysis looking at the current state of open access is a growing sub-topic of bibliometrics and webometrics[2]. In our preliminary study we made a review of the current literature[3]. However, it was the Swedish project *OA-publicering vid svenska lärosäten - en kartläggning 2011*[4] that was our biggest inspiration throughout the project, and the two projects did cooperate with each other over the course of the projects. The projects had a similar scope to map open access nationally - and hence had to deal with the local context of systems and processes.

Aim of the project

The Danish Open Access Barometer had two main goals:

1. To map the state of open access to peer reviewed research articles from Danish universities in 2011

2. To create a prototype of a web based and automated Open Access Barometer.

The optimal vision for the project was to create an attractive looking web interface that would monitor open access to the research literature output from Danish research institutions and that this should be done in an automated fashion without or as little human interference as possible. Even though Denmark

[1] Taylor, Winslow Frederick (1913). The Principles of Scientific Management, Harper 144 S.

[2] Examples are research by Bo-Christer Björk, Laakso, M and Solomon, D http://www.openaccesspublishing.org/ and Canadian Science-Metrix: http://www.science-metrix.com/

[3] Review of current literature made by the project: https://infoshare.dtv.dk/twiki/bin/view/OpenAccessBarometer/LitteraturTilInspiration

[4] OA-publicering vid svenska lärosäten - en kartläggning 2011" :http://www.kb.se/openaccess/nyheter/2014/OA-publicering-vid-svenska-larosaten/

has a fairly mature infrastructure of CRIS systems and repositories (all universities and public research institutions at present report their research in the Pure CRIS system), we anticipated that at present it would not be possible to get a complete status of the current open access position in Denmark at the various research institutions. It was foreseen that focussing on these two complimentary projects would generate knowledge about the current possibilities and what must be done to achieve the optimal vision: just concentrating on one of the two aspects mentioned above would not be sufficient.

Method

The main focus for the methodology has been the repeatability of the method. In the methodology presented here we will mainly describe the data sources used and their limitations[5]. All methods have been presented at the project's workshops and sent to all stakeholders identified by the project. All preliminary and final results were also sent to the participating institutions to review and comment on the results.

Why BFI data?

The reason for choosing BFI data was two fold: 1. The data includes peer reviewed articles from all Danish universities and therefore can answer what the state of open access is, being a subset of publications from universities and which are the main object in focus of open access policies. 2. the data is well defined through negotiations between universities and the relevant government ministry, and all universities have incitements for delivering a high level of metadata quality and completeness, as this influences the allocation of money.

Open access definition

The Danish Open Access Barometer's short definition of open access is: "Open Access is research literature that is published on the Internet, either in an open archive and/or in an Open Access journal, in a way that enables public access. "[6]

Data sources

The data sources and the conditions applying to them are summarized on the following page.

Processing the data

Data sources were as far as possible harvested through the APIs of the data sources. The main BFI dataset was however only available by request and delivered on a CD-ROM in Excel (.xls) format by the Agency for Research and Innovation. All data was collected in one CSV-file using scripting. Everything has been documented on the project GitHub[7].

Review / evaluation

Methods, partial and final results were sent to all stakeholders that were monitored in the project. Most importantly the chance was given to review the final result and this increased the total open access percentage from 11 % to 21 %.

The formula on how to review the results was send to all stakeholders and they were given three weeks to provide their feedback.

[5] The complete analysis using Excel is decribed and documented on the project wiki (it can be downloaded under "Dokumenter"): https://infoshare.dtv.dk/twiki/bin/view/OpenAccessBarometer/WebHome#Dokumenter

[6] Open Access Barometer open access definition: https://infoshare.dtv.dk/twiki/bin/view/OpenAccessBarometer/ProjektDelEt#Definition_af_Open_Access

[7] Open Access Barometer GitHub: https://github.com/dtulibrary/oa_barometer

Data import direct from sources	Auto	Manual	Comments
1. BFI dataset from 2012 (2011 publications)	No	Yes	The National Bibliometric Indicator (BFI) dataset has been the main source for the project and other sources are connected to this using unique identifiers like ISSN, DOI, and Pure UUIDs. Provided on a CD-ROM.
2. CRIS (Pure) from Danish universities	Yes	-	Metadata from Pure CRIS' is included indirectly via metadata from BFI and the National Danish Research Database.
3. Institutional Repositories, where Pure is not used for the deposition of full texts and open access information	No	-	Insitutional repositories are not included - because there currently is no simple way to link records in the BFI data set to complimentary datasets and at the same time to maintain the goal of automatic processes. Missing ID's such as ISSN, DOI etc. * As with Institutional repositories subject repositories are not included*
4. Subject specific repositories (Arxiv, PudMed etc.)	No	-	Is included and matched and linked via ISSN
5. Open access journals (via DOAJ)	Yes	-	Is included and matched and linked via ISSN
6. SHERPA/RoMEO	Yes	-	Not possible because of missing metadata*
7. Delayed Open Access	No	-	Not possible because of missing metadata*
8. Hybrid open access - single articles that are paid for open access in a journals that is otherwise toll access.	No	-	(*) Sources that could not be included in the automated process but are directly or indirectly included in the manual review.

Analysis

In this article we present an overview of the results. In the original report we did several breakdowns on the statistics to compare universities, research areas and publication channels. In the follow chart we present three main factors:

- Open Access potential (green)
  - Out of the total number of publications how many could have been open access, either because they are either published in open access journals or because they are published in journals that allow deposit into a repository e.g. the green colour code in SHERPA/RoMEO.
- No-Open Access potential (red)
  - Articles that are not published in open access journals, or no deposit is allowed in a repository.
- Realised Open Access (blue)
  - Shows how much was open access after the review of the results.

The top-performing universities, IT-University and Technical University of Denmark, are both single-faculty universities in technical domains: Computer Science and Engineering. Universities performing less well tend to be universities that are strong in humanities and the social sciences[9].

Open access mapping: an analysis of Danish universities BFI publications from 2011

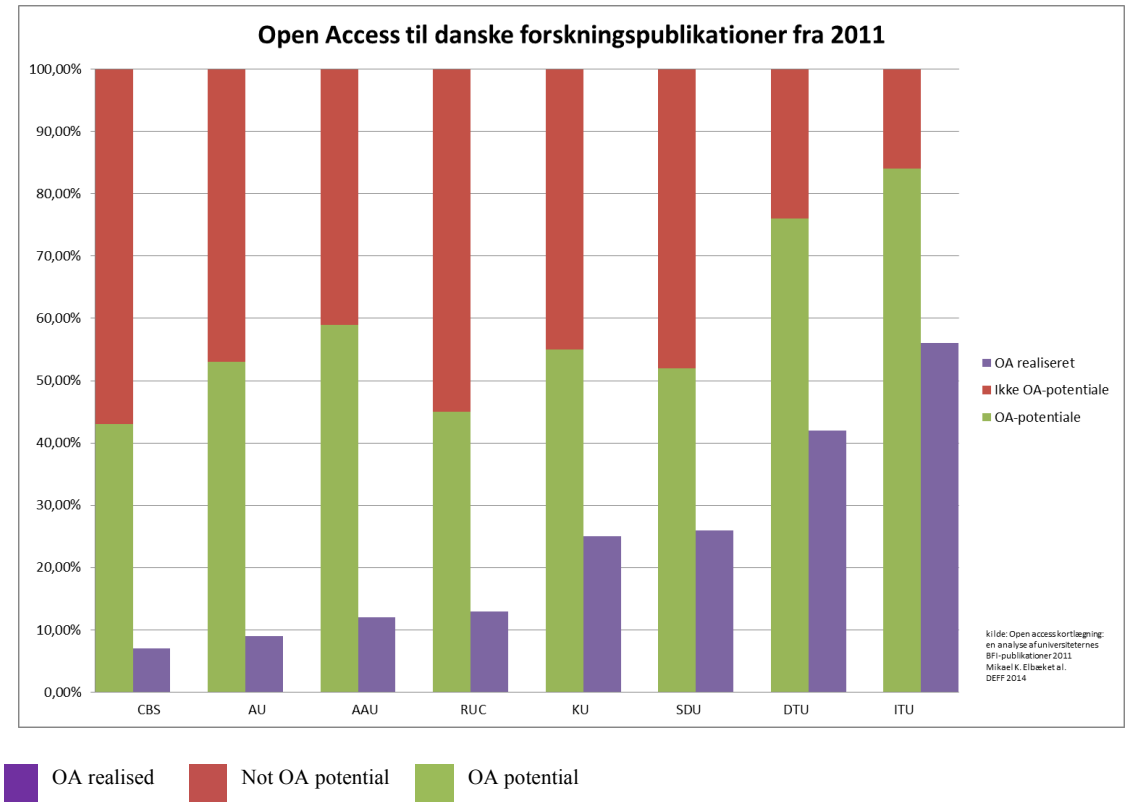


Figure 1: Open Access to Danish peer review articles 2011[8]

[8] Source: Open access-kortlægning: en analyse af universiteternes BFI-publikationer 2011, Mikael K. Elbæk et al., DEFF 2014.

[9] It is important to note that University of Copenhagen only provided a random sample in their review of the result. This may skew the final result.

Number of publications with or without OA-potential and realised OA

Universitet	OA-potential	No OA-potential	OA realised	Total (B+C+D)	Total (actual)
Copenhagen Business School	148	230	27	405	403
Aarhus University	1920	2055	417	4392	4392
Roskilde University	123	210	50	383	383
Aalborg University	586	517	150	1253	1253
University of Copenhagen[9]	29	33	18	80	73
University of Southern Denmark	1506	1966	1094	4566	4134
Technical University of Denmark	891	538	947	2376	2263
IT-University	15	7	25	47	45
Total	5218	5556	2728	13502	12946

Prototype of the Danish Open Access Barometer

The specification of the Danish Open Access Barometer was developed as a working prototype. In the following we will describe the functional requirements the project team identified. This specification is not an exclusive list of requirements but intended as a starting point to showcase some of the possibilities using data and tools readily available. Following the presentation we will present some actual screen shots from the prototype, which is also accessible here: URL: http://unstable.openaccessbarometer.cvt.dk/barometer/frontpage

Username: oab
Password: chee1Kee

It is required that the open access barometer will illustrate:

- Actual open access share compared to total production.
- Open access potential of total production.
- Development of the open access percentage over time.
- Most popular journals and their open access options.

Parameters for analysis that the open access barometer provides:

- Institutions (universities)
- Areas of expertise (The four main research areas of the BFI : sciences, social sciences, humanities and medicine)
- Open Access publication / Not Open Access publication
- Open access types (green vs. Golden OA (blue , green, yellow , white))
- Journals (top 20 of most used journals)

Parameters not currently possible with the current data sources, but which potentially should be possible:

- Publication year, which makes it possible to observe trends over time (the project had only data from 2011)
- Departments / Faculties / etc, which makes it possible to see smaller units such as departments, centres and research groups and their open access performance
- Single author open access performance - e.g. using ORCID identifiers
- Continuous and automated update of the Open Access Barometer.

Out of Scope

The following parameters are omitted:

- Discovery, Data consumption, Person information.
- Other publication types, including non-peer-reviewed research contributions, pre -prints, working papers, student essays, books and book contributions, etc.

OA Barometer definition reflects, on the one hand, the open access demands of the funders and

universities, which require only open access to peer-reviewed scientific articles.

Responsive design and platforms
In the development of Open Access Barometer an emphasis on responsive design has, as far as possible, be incorporated. The Open Access Barometer should be available regardless of platform and format and be adapted to different platforms such as PC , tablet or mobile phones, or Windows , MacOS, Linux , etc.

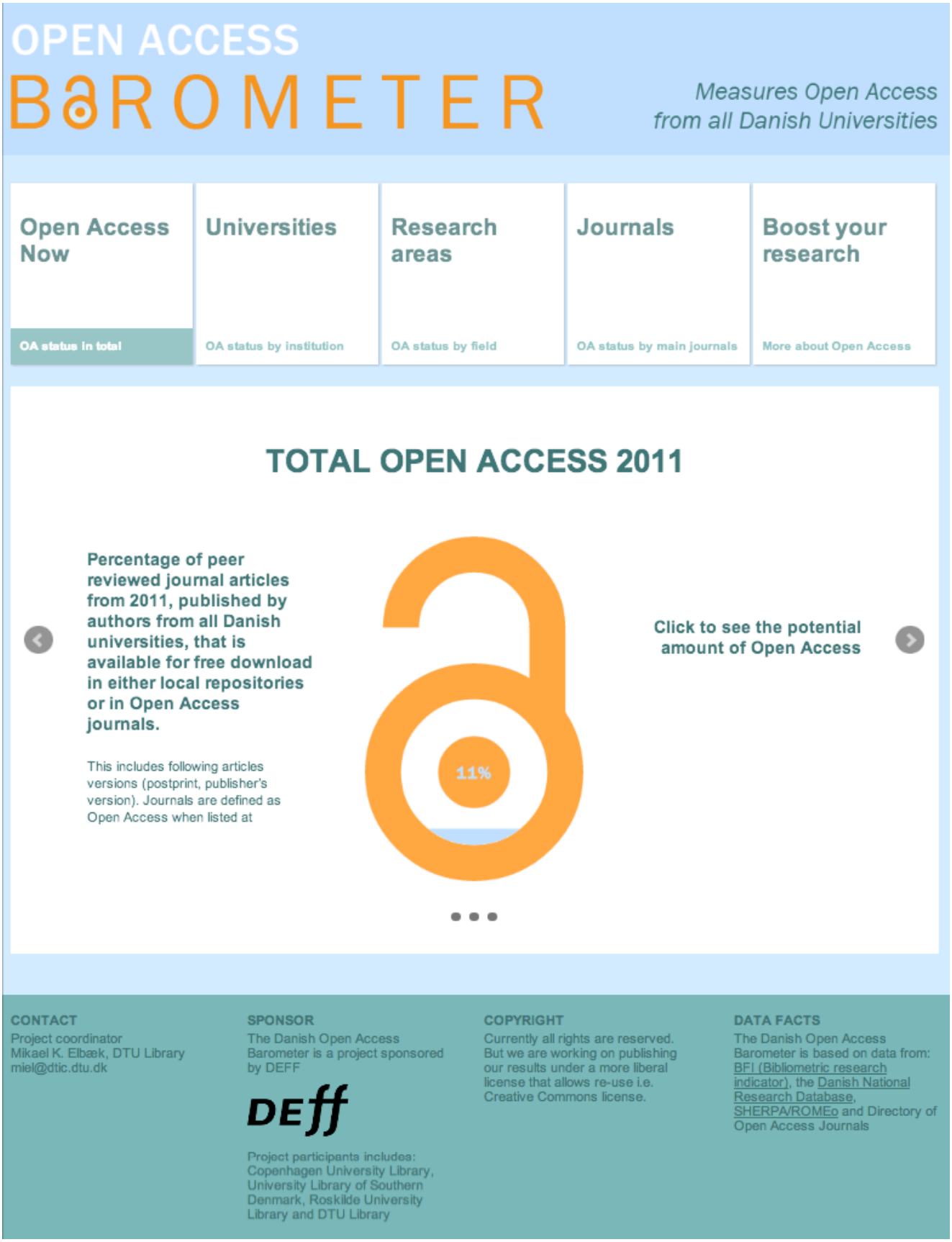
Technology
The emphasis is on maximum transparency and development in a form that matches the open access agenda that the Open Access Barometer is intended to promote.

Therefore, the Open Access Barometer is developed on an open source platform, and data and code is accessible to the public and reusable under a non-restrictive license.

The entire Open Access Barometer database, data processing and web interface is documented in an open GitHub :
https://github.com/dtulibrary/oa_barometer

To illustrate the Open Access barometer, screenshots from the main areas of the prototype are shown on the following pages:

Frontpage


OPEN ACCESS
BAROMETER
Measures Open Access from all Danish Universities
Open Access Now
Universities
Research areas
Journals
Boost your research
OA status in total
OA status by institution
OA status by field
OA status by main journals
More about Open Access
TOTAL OPEN ACCESS 2011
Percentage of peer reviewed journal articles from 2011, published by authors from all Danish universities, that is available for free download in either local repositories or in Open Access journals.
This includes following articles versions (postprint, publisher's version). Journals are defined as Open Access when listed at
11%
Click to see the potential amount of Open Access
CONTACT
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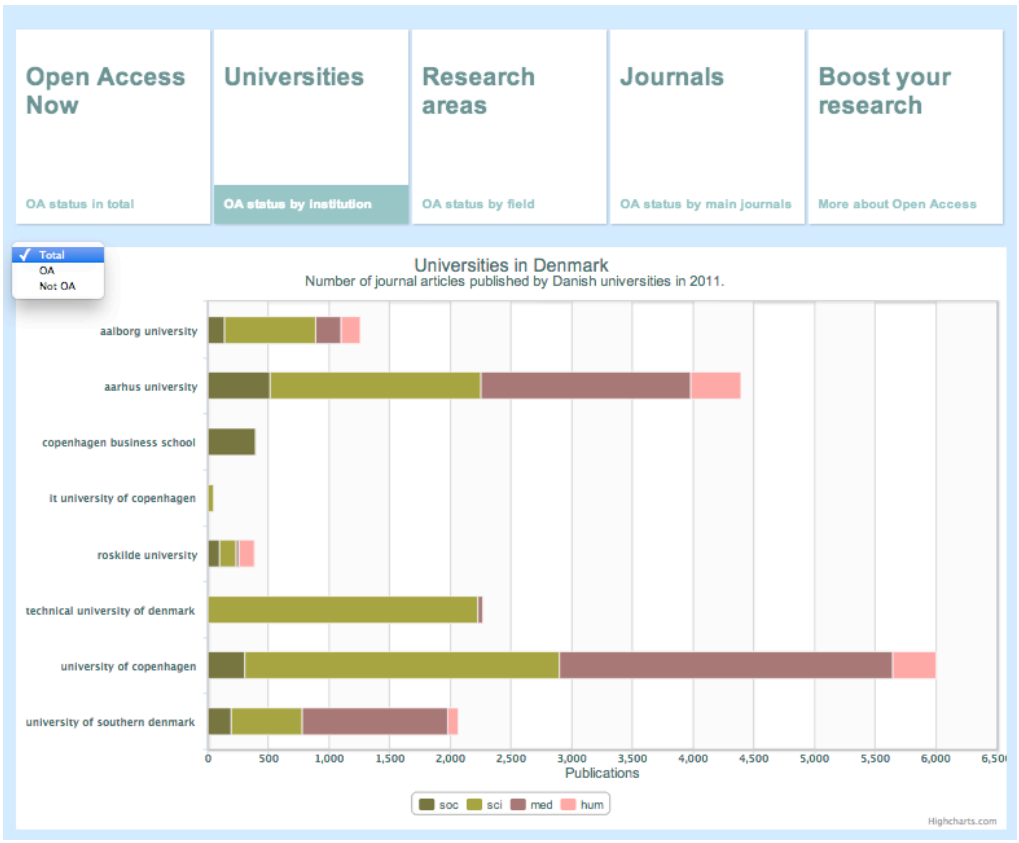
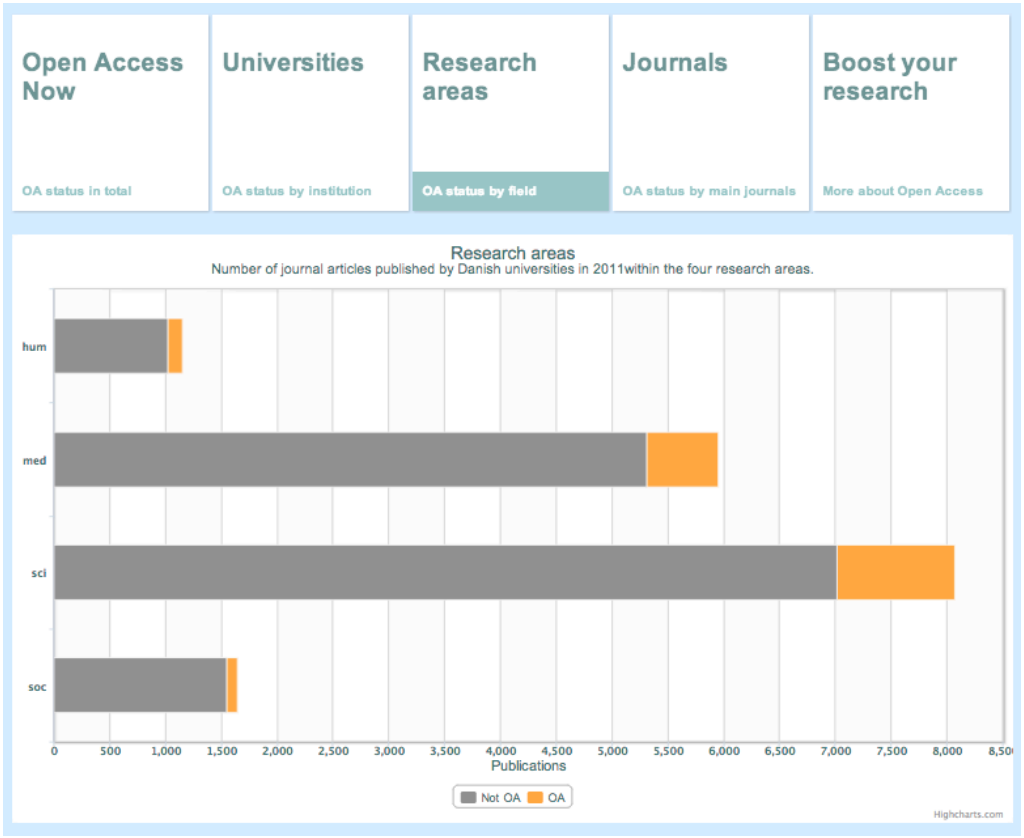
Mikael K. Elbæk, DTU Library
miel@dtic.dtu.dk
SPONSOR
The Danish Open Access Barometer is a project sponsored by DEFF
DEFF
Project participants includes: Copenhagen University Library, University Library of Southern Denmark, Roskilde University Library and DTU Library
COPYRIGHT
Currently all rights are reserved. But we are working on publishing our results under a more liberal license that allows re-use i.e. Creative Commons license.
DATA FACTS
The Danish Open Access Barometer is based on data from: BFI (Bibliometric research indicator), the Danish National Research Database, SHERPA/ROMEo and Directory of Open Access Journals

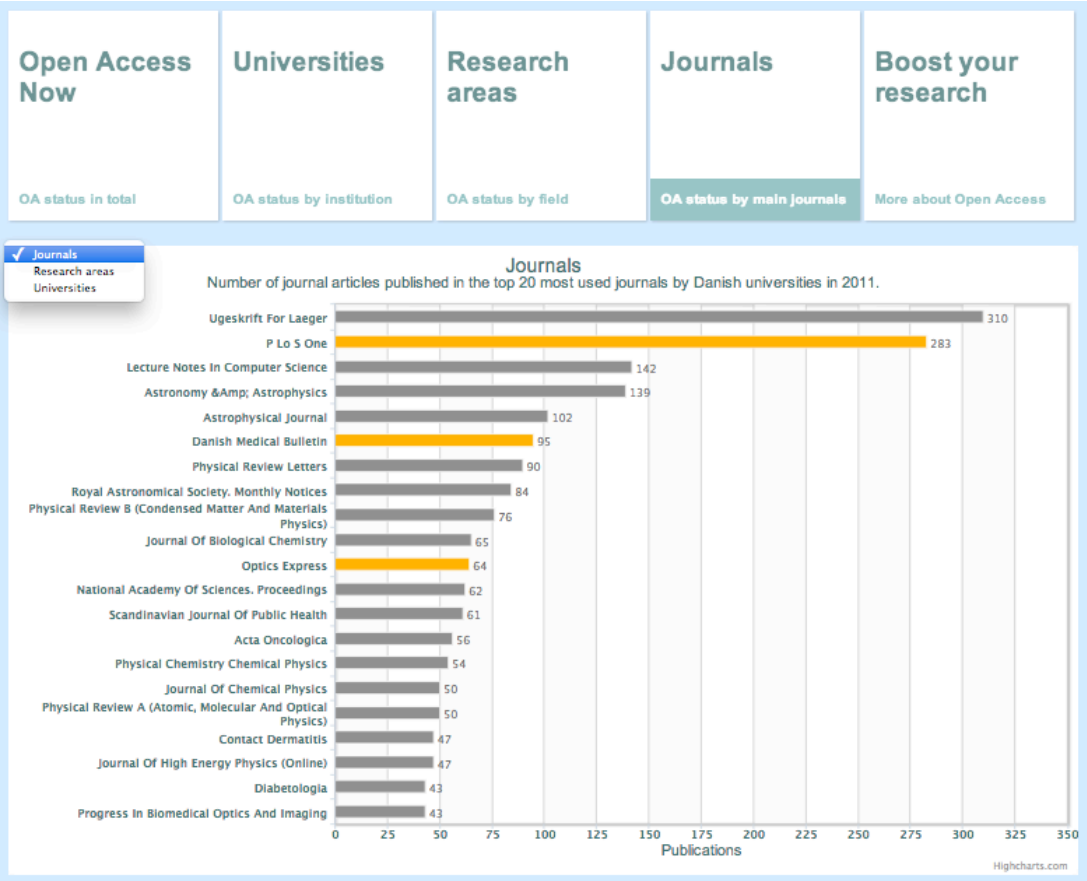
Universities



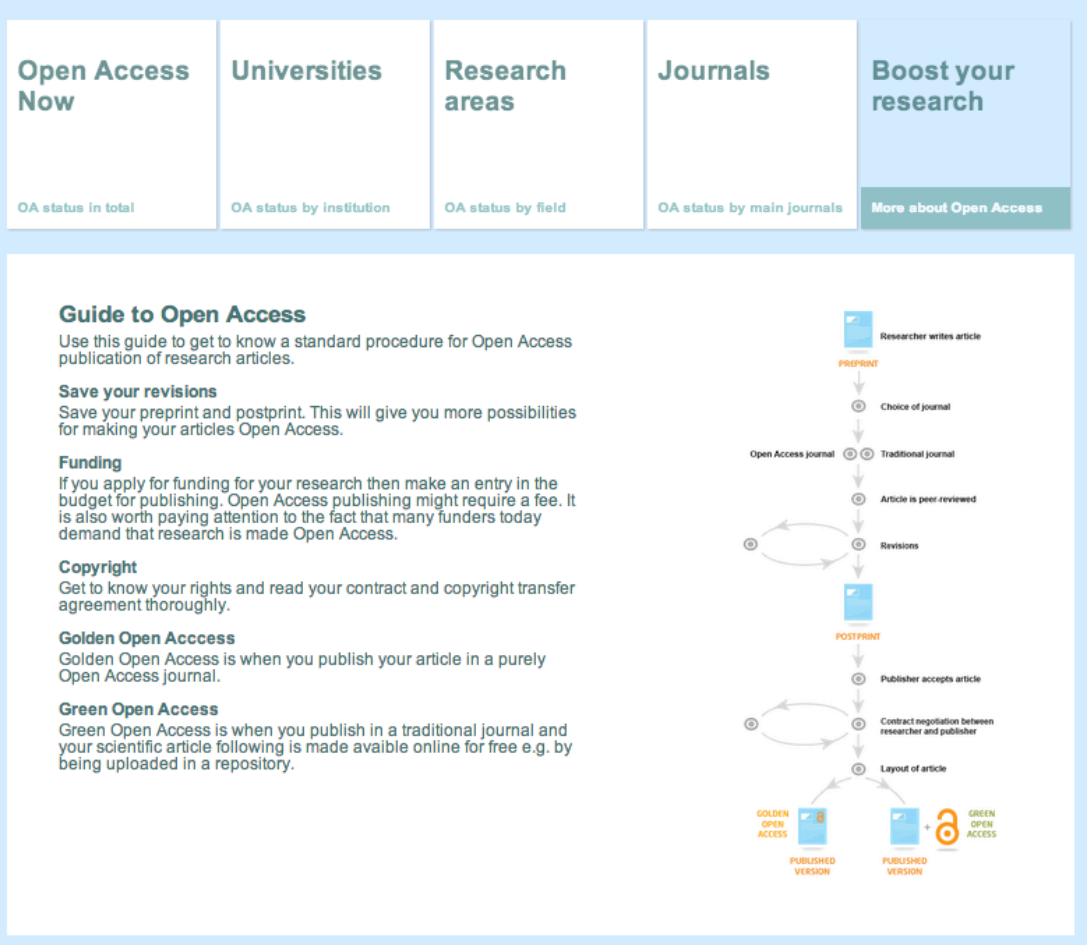
Research areas



Top Journals



Boost your research



Perspectives and concluding remarks

The results of this projects show that open access numbers for Denmark are very much in alignment with the numbers found in our neighbouring countries.

Something more exciting in the eyes of the author is that there is already great potential in making visualisations of open access performance, as demonstrated with the prototype presented here. However, in the current setting there is a need for further improvements, in particular of metadata which can be obtained from the Pure repository system and uniform registration practices at the universities.

In regards to link research funding to publications and thereby the ability to be able to measure the grant holders' ability to live up to their open access requirements, there is also a need for the research funders to start giving their grants unique ID's and even better, to start sharing metadata in a formalised way about grants and projects[10].

With regards to Pure metadata there is a need to provide metadata about open access and open access licenses such as Creative Commons, in order to derive the open access status of publication records without necessarily having the full text in the Pure CRIS.

In the DEFF project "Forskningsdokumentation og kommunikation" there is a task to redevelop the Danish National Research Database, which includes the implementation of elements that have been identified within this project.

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Mikael K. Elbæk, Technical Information Center of Denmark, Technical University of Denmark

[10] As propsed by the author in: Open Access policies and the supporting infrastructure: status in Denmark MK Elbæk ScieCom Info 9 (2)