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OPEN SOURCE AND FREE SOFTWARE CONCEPTS IMPLEMENTED IN PUBLICATION OF ACADEMIC RESEARCH

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Abstract: This paper aims to point the importance of Open Access, Open Source and Free Software in academic research and publication. Not being known by many, the differences between the concepts exists and their creators want them to be public. There are presented as well international catalogues and directories of open access research, and some Romanian journals are described as example.

1. General Context

The academic journals which are providing free access to their content started to gain an increasing importance. This approach is only possible due to the amazing development of the Internet in the last two decades.

There are, in this context, academic journals which are providing free and unrestricted access to the online version of the journal for anyone who want to read/download the content of the published articles. There is the option of providing the open access with a temporary delay (especially for those journals which are printed as well) in order to facilitate the depletion of the initial printed version.

This initiative comes to help especially the small universities (with libraries that have less features and which are less actualized) or those institutions located in areas/countries economically disadvantaged.

The present paper aims to present, in its first part, the concepts and terminology from an economically point of view. Then a short review of catalogues with academic open access journals and academic Romanian journals which are using the system.

2. Open Access system in the academic field

Open access is a concept about improving and extending access to scientific research. It's desirable the resources to be made available for as many persons as possible through their internet publication with free access.

Open access literature it's written in digital format, online accessible, free with no copyright restrictions. All this is possible because of the internet and authors or copyright holder's consensus.

Peer review evaluation is supported in Open Access and all the major initiatives which are using this concept for academic and scientific literature publication are highlighting the importance of this kind of evaluation.

Most times, for elaborating academic papers the universities don't pay the authors and this is why the try of implementing a system such Open Access leads to the loss of some possible gains.

Even if its realization is cheaper then classic literature, the Open Source literature is not realized without any costs. The efforts are not focused in realization of academic Open Access literature with fewer costs but focused in searching for better ways to cover the costs than taxing the readers and creating access barriers for resources. The ways of cover the costs depends on the way Open Access literature is published.

There are two ways of publishing:
1. Open Access Journals
2.Open Access Archives (storages)

There is a big difference between the two ways of publishing: archives are represented by non peer reviewed articles and the journals are with peer reviewed articles. This difference explains other major differences between the two ways especially the costs differences and the realization modality.

Open Access Archives are non peer reviewed articles free for everyone. They can be papers circulated before printing without evaluation, papers circulated after printing or both. Archives can be propriety of institutions, universities, laboratories or fields (example given: Economic field). The authors can archive their scripts before printing without someone's consensus. Many journals allow the authors to do so. There are protocols of Open Access Initiatives which are harvesting data from archives making them interoperable with other archives, the users being able to find a particular archive without prior knowing about its content, location or existence. Open source software has been developed for this issue.

Open Access Journals are containing peer reviewed articles and evaluated this way they are made available for everyone. The costs for realization of such journals are for articles evaluation, script realization and storage space on servers. Open Access journals are covering their costs very similar the televisions or radio stations are doing this thing: the interested persons in content publishing will cover the production costs and so the access to articles is free of charge for everyone has the necessary equipment. Some times this means that journals must have subsidies from host universities. In other situations journals receive a fee for processing the accepted articles, fee paid by the author or his sponsor. Journals remove this fee in economic adversity conditions. Usually, when there are subsidies from institutions there are no processing fees. In the situations of income from other sources (like: publications, advertising or auxiliary services) the fees will be decreased. There are discounts as well. For a diversity of situations, the paying methods for Open Access Journals could be creatively realized. [2]

There are as well **hybrids** Open Access Journals. In this journals only some articles are Open Access – the ones for which the fees were paid by the authors. The **delayed** Open Access Journals are those journals in which some articles are with free access only after an embargo period.

The articles published in the main Open Access Journals are included in bibliographic data bases for every domain.

The advantages of using Open access are multiple. Starting with the main advantage: the public access to the content for everyone, the authors will have popular articles and better integrated in scientific structure, the readers from institutions which cannot afford the journal will have access and researchers from small institutions whose libraries cannot afford the journal will have access as well. The financial supporters of the journal, those who are paying fees will see the results of research for which they are paying, the patients and medical personal will be updated with the last medical scientific research. [3]

About Open Access publications after conferences there are some official declarations: Budapest (February 2002), Bethesda (June 2003), Berlin (October 2003). The principles of Open Access Publishing were presented as well as definitions, goals and various characteristics.

The Open Access Budapest Initiative describes the way of publishing with open access:

"By open access to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited." [4]

Based on Bethesda Open Access Publishing Declaration, open access publishing has to meet the following two conditions:

1) The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use.

2)A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving (for the biomedical sciences, Pub Med Central is such a repository). [5]

What's to notice is the fact that open access is more a feature of individual work than a characteristic of journals or publishing houses.

3. About Free Software and Public GNU license

GNU project was started in 1984 for developing a full operating system similar to UNIX, which is free software: the GNU Operating System. Versions of GNU Operating System which are using Linux kernel are widely used; although these systems are often called "Linux" they have to be correctly called GNU/Linux. The kernel of GNU Operating System is not finished yet. This is the reason for still using UNIX kernel. There are many versions of GNU/Linux.

GNU is the acronym from GNU 's not UNIX and is pronounced the way is written. Among the versions the recommendation is for the distributions which are one hundred percent free software, in other words respecting the freedom.

The initiator of this project was Richard Stallman:

"Of course your values could be different from my values, but I just tell you that my values are: I don't want software if it doesn't respect my freedoms. In fact I so much don't want it that I won't take it. If someone offers me a program with only condition that I will not share it with you then I'm going to tell him: "No". I will tell him that to be a good neighbor I will have to refuse that software, I will refuse it!" [6]

This quote shows the values that are the base of GNU and Free License development. What Richard Stallman wanted to implement was a platform almost identically with UNIX system in which a program could run, could be copied, distributed, studied or could be modified freely. The initiator wanted to be no more bound to restrictions in software using. He wanted that every software product to be given to others.

In one email sent on September the 27th 1983 he wrote:

"Free Unix! Starting this Thanksgiving I am going to write a complete UNIX-compatible software system called GNU (for GNU 's Not UNIX), and give it away free to everyone who can use it.

To begin with, GNU will be a kernel plus all the utilities needed to write and run C programs: editor, shell, C compiler, linker, assembler, and a few other things. After this we will add a text formatter, a YACC, an Empire game, a spreadsheet, and hundreds of other things. We hope to supply, eventually, everything useful that normally comes with a Unix system, and anything else useful, including on-line and hardcopy documentation."[7]

All this technology was going to make the rule possible to respect, the rule mentioned as well, by him:

"I consider that the golden rule requires that if I like a program I must share it with other people who like it. I cannot in good conscience sign a nondisclosure agreement or a software license agreement.

So that I can continue to use computers without violating my principles, I have decided to put together a sufficient body of free software so that I will be able to get along without any software that is not free."[8]

This project has been developed until today mean while the GNU Public License was born (also called GNU GPL General Public License). This license sets all the principles of the free software.

The first version of GNU GPL was published in 1989 by Free Software Foundation, Inc. from United States.

This version was for the software products of this company or any other software product of which author wanted to use this license. Among the main features of the license specified in that publication were ideas which are the basis for next versions.

"The license agreements of most software companies try to keep users at the mercy of those companies. By contrast, our General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. The General Public License applies to the Free Software Foundation's software and to any other program whose authors commit to using it. You can use it for your programs, too.

When we speak of free software, we are referring to freedom, not price. Specifically, the General Public License is designed to make sure that you have the freedom to give away or sell copies of free software, that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things." [9]

Those are the principles the GPL Public License is based on. These principles are extending the users freedoms for his sake and others.

GPL License is bound to the free software concept which is explained further.

4. Free Software Concept

In the computers vocabulary it is usually now days the "free software" term. The majority of persons using "free software" term does not know very clearly what does this mean and the differences between free software and other terms like open source. Mostly the concept of free software creates confusions.

The "free software" term is a matter of freedom not a mater of price. For a better understanding of this term we can use the words of the founder of the system based on free software:

"Free software means free as in free speech not free as in free beer."[10]

We understand this way that free software doesn't really mean the price of the software. The free software idea gives the users the right to run, copy, distribute, study change and improve the software. More exactly it refers four types of freedom for software users:

Freedom 0: the freedom to run the program for any purpose

Freedom 1: the freedom to study how the program works and change it to make it do what you wish. Access to the source code is a precondition for this

Freedom 2: the freedom to distribute copies so you can help your neighbor

Freedom 3: the freedom to distribute copies of your modified versions to others. By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this. [11]

It's obvious the fact that such a way of creating software brings the problem of financing the projects because volunteering does satisfy only a part of necessities.

Free Software Foundation

The main organizational sponsor of the GNU project is Free Software Foundation. Free software Foundation raise founds from many sources like big corporations, charitable foundations or individual supporters. Besides the primary mission which is the same with GNU goal (giving the right to study, copy, modify and redistribute the programs), Free Software Foundation helps freedom of speech, press freedom and an internet associations, the rights to use encryption software for private communication and the right of writing soft products unstopped by private monopolies. Even if it was born in America, Free Software Foundation has "sister" organizations in Europe, Latin America and India.

5. Open Source Concept

Open Source Initiative is a charitable corporation from California, founded in 1998. Open Source Initiative is formed by Open Source Definition representatives and the community founded for revising and approving of compatible Open Source Definition licenses. Open Source Initiative is active involved in building Open Source communities in education and public speeches for promoting the competence and importance of non owned software. The Open Source Initiative member's team travels frequently in the whole world for participating at Open Source conferences and events, meetings with open source software developers and users and for discussions with executives from the public and private sectors about how technologies, licenses and Open Source developing models can provide strategic and economic advantages. [12]

Open Source History is linked to UNIX history, internet and free software. The next link in the chain of events is year 1997 when Eric Raymond published an article "The Cathedral and the B a z a r". This article presentation in September 1997 at O'Reilly Pearl conference leaded Netscape firm to announce in January the 22nd 1998 that it is planning to make public the source code of the popularly browser as free software. The "Open Source" term was invented in the 3rd February 1998 session at Palo Alto, California. Later in the same year at another conference it was decided that is time to quit the moralistic attitude which was associated in the past with "free software" term and to focus the idea strictly on practically and business considerations as well as in Netscape case.[13]

Open Source is therefore a newer concept than Free Software launched on different considerations but they have in common some principles (the public source code, licenses for free copy etc).

Yet, the GNU and Free Software founder, Richard Stallman in his published essays remembers that a difference between the two terms should be known. Some of his arguments are listed bellow:

"In 1998, a part of the free software community splintered off and began campaigning in the name of "open source." The term was originally proposed to avoid a possible misunderstanding of the term "free software," but it soon became associated with philosophical views quite different from those of the free software movement."[14]

"Free software" and "Open Source" movement are two different movements with different goals even if some times they are cooperating at some practically projects.

The fundamental difference between the two movements consists of their values, in their ways of seeing the world. For Open Source movement the reason for which a software should be open source is not an ethically one but a practically one. "Open Source" is a development methodology and "Free Software" is a social movement. For "Open Source" movement the programs that are not free represent a non optimal solution. For "Free

Software" movement the soft programs which are not free represent a social problem. The solution is "free" programs.

At the Open Source Developers Day, in August 1998 some commercial developers invited, said that they intend to transform only a piece of their work in "Open Source". The focus of their business is the development of temporary add-ons. They want to sell these add-ons to free software users.

These practices of some Open Source producer's doest correspond to the "Free Software" principles and this is why the "Free Software" founders are trying to inform the public that since the beginning there is a difference between "Open Source" and "Free Software" goals. The founders are saying that these differences must be known by the public.

6. Open source and Open access in academic research

Types of items assessment to an academic journal

There are many systems of article evaluation depending on every journal's policy. It could happen that a journal has less valuable scripts of which to choose from and this is why it could be a bit stimulant in selecting other scripts. On the contrary, when the publishing space is limited or there are very little funds, peer review could be used for selecting an extremely small number of scripts.

Mostly, the decision of making a script "good enough" is totally the task for the editor or the organizer of the journal. In other situations the reviewers could be in charge to do this thing with only a little guidance from the coordinator about which level of stringency to use.

Very popular journals have very strictly standards for publishing and articles with a good scientific quality will be rejected if the editors will consider that they are not a progress in the field. Generally, such of those journals has a 2 level evaluation system. In the firs stage editorial team checks if what the article highlights would be innovative enough for warranting the publication. Most articles are rejected in this stage. The articles which pass these evaluations are sent for a depth review by external reviewers. Even if the reviewers are giving their consent for publishing and all suggestions, evaluations and critics are done the articles still could be returned to authors to be shortened for fitting the journal's length limits.

Other journals send generally all the articles (excepting those ones which they easily see that unfit) for being evaluated by multiple reviewers. Reviewers are questioned not only in the scientifically quality and the correctitude but if the article is addressed as well to a general group of readers, not only for some group of specialists. In the last case the recommendation is, usually, the publishing in a specialist journal. The editor could give authors the opportunity to send the script and its evaluation to such of this magazine where it could be accepted without a further evaluation.

The magazines specialized on scientific field are using the evaluation firs for filtering the obvious mistakes and incompetence and plagiarism as well the too segmented work or application of already known methods. At some journals only 5% of received articled are published as long as other journals are publishing 70% of what they receive. Some Open Access journals have the policy of making the reviews public. In these situations the review is published with the script.

For keeping the integrity of reviewing process the authors who send articles to a journal are usually not informed about who is going to review the paper. Some other times they don't even know the identity of the editor responsible with publishing their article.

In the "blind" or "double-blind" review system the author's identity is hidden for the reviewer for this thing to not influence the quality of the evaluation. In such of this situations it is possible that the editor which is responsible for the article to know the author's identity. The system in which the reviewer knows the author's identity is called "single-blind" review and is different from "double-blind" review.

The critics of "double-blind" review system are highlighting the fact that besides the editorial effort to assure the anonymity, the process very often fails because specific approaching, methods, writing styles, notations, etc could lead to certain groups of people from the research field and even to a particular person. The double-blind review supporters are argument is that this system has the same efficiency as the classical one and it leads to a better perception of correctitude and equality in the global publishing domain. They say as well that if the reviewers of some work are known to each other, the responsible editor for the article may very easily verify the peer's objectivity. The single-blind system is dependent on the participants' willingness.

When the single or double blind review system is not used, when interest conflicts appear between authors and assessors knowing each other, is recommended this conflicts to be made public so for the assessor is forbidden to say it's opinion about the article.[15]

International Catalogues with Open Access Journals

Because there are many Open Access Journals from lots of various fields, the International Catalogues were created. They contain Open Source Journals from different fields.

Examples of such catalogues: DOAJ, Open J Gate, OAIster, RePEc. Further is a presentation of the most important and popular catalogues with statistics about the number of articles and journals, the time evolution and information about their foundation.

Directory of Open Access Journals

Directory of Open Access Journals has a very big journals data base at the end of 2008 it was listing 3765 journals. From these journals, in 1312 the article level searching is possible; the total number of including articles was 222745. [16]

The titles are from very various fields as: agriculture, biology, business, chemistry, medical field, history, literature, law, math and engineering. The goal of Directory of Open Access Journals is to increase the recognition of Open Access Academic Journals making their usage easier and raising their impact. The content of Directory of Open Access Journals is comprehensive and there is a quality guarantee system.

The included journals may opt for introduction of every single article in Directory of Open Access Journals data base. The indexed elements are: the title, the authors, abstract, ISSN, year of apparition, the volume of apparition, the number of apparition, starting page, ending page, keywords. Further the users of this Directory could access the information on three levels of details.[17]

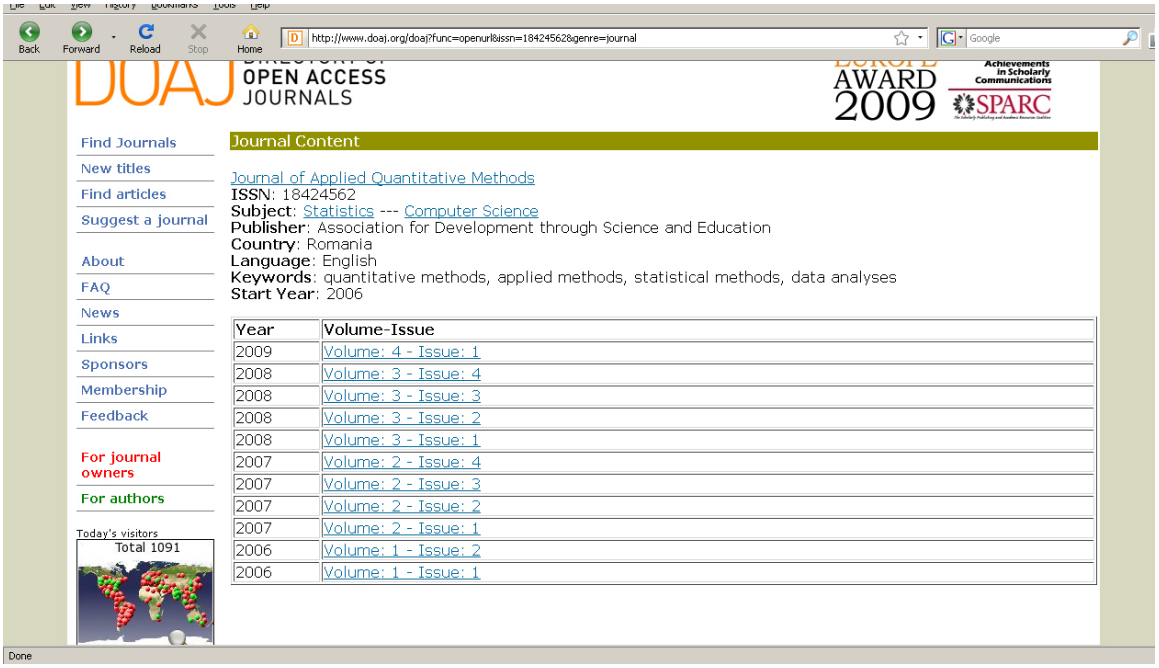

Figure 6.1 - An indexed DOAJ journal

In **Figure 6.1** we can see that the first particularization level is a general one. Besides synthetically information about the journal (name, web link, scientific fields, the publishing house, the origin country, language, keywords and starting year of journal) it offers a summary in which the indexed content for a journal is chronologically listed.

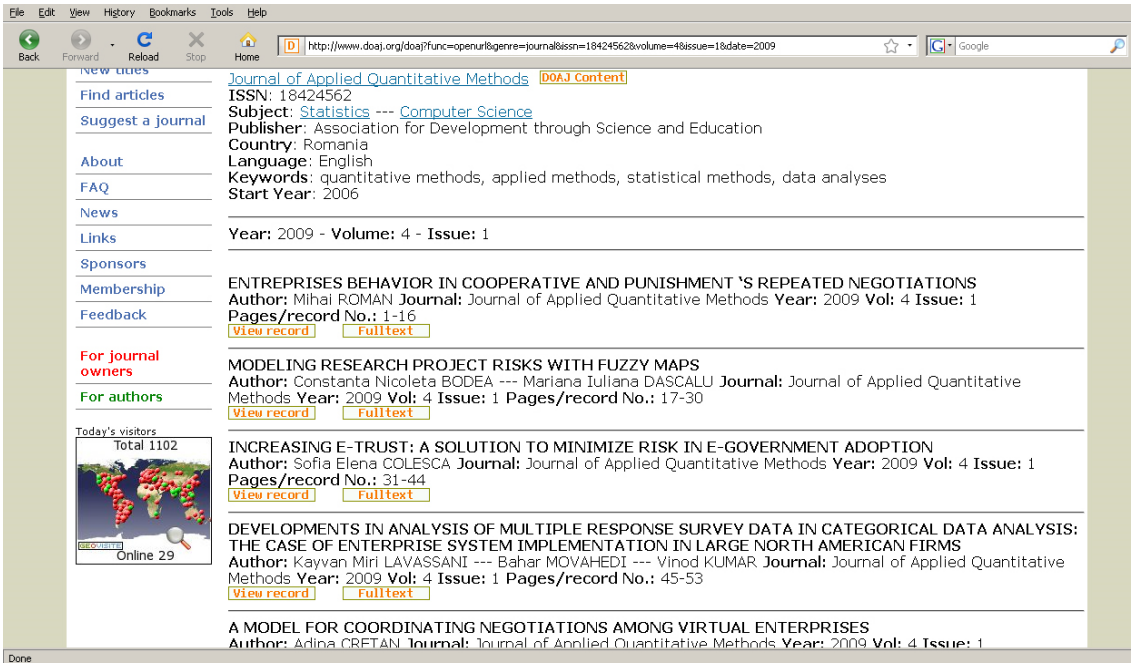

Figure 6.2 - An DOAJ indexed journal number

The users of Directory of Open Access Journals can opt for visualization of the indexed content of an particularly journal number (as it's visible in (**Figure 6.1**)). At this level of details it is possible to see information about: article name, authors, publishing year,

the volume in which the article was published, the number in which the article was published, the starting page, ending page, link to the full article (usually to the journal's site) and link to the next detailing level.

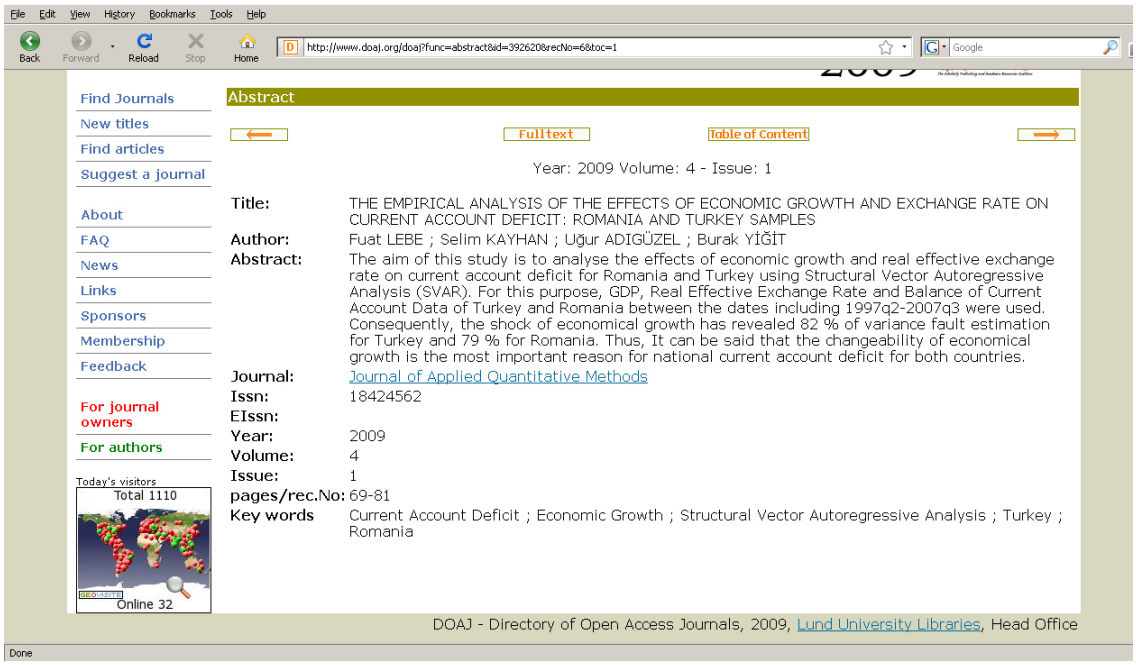

Figure 6.3 – Summary of an DOAJ indexed article

At the next level of indexed content presentation by Directory of Open Access Journals it is possible to detail the elements of an article. There are, that way, available: link to the full version of the article from the page of the journal, link to the superior detailing level (prior presented), the title, the authors, abstract, ISSN, the year of apparition, the volume in which the article was published, the number in which the article was published, start page, end page and keywords.

Open J Gate[18]

Open J Gate is a portal to journals and literature at a global level, literature that is using Open Access System. It was created in 2006 and it is the contribution of Informatics (India) Ltd for the promotion of Open Archives Initiative. It is ass well a journals data base in which are indexed about 5700 Open Access Journals with links to the texts from editor's web sites.

It contains academic journals for research and industry. The main elements which are characterizing this portal are: -this is the portal with the largest number of journals. From the total of 5634 journals, 3267 are peer reviewed; –it has links to one million Open Access Articles and this number is increasing with 300 000 articles/day; -it has different searching facilities.

OAIster [19]

This is a project of Digital Library Production Service from University of Michigan. It's main goal is to create a huge collection of digital academic resources which were very difficult accessed, free resources easy to reach and find by anyone. Besides these online journals, OAIster is using data from Open Archive Initiative and international deposits.

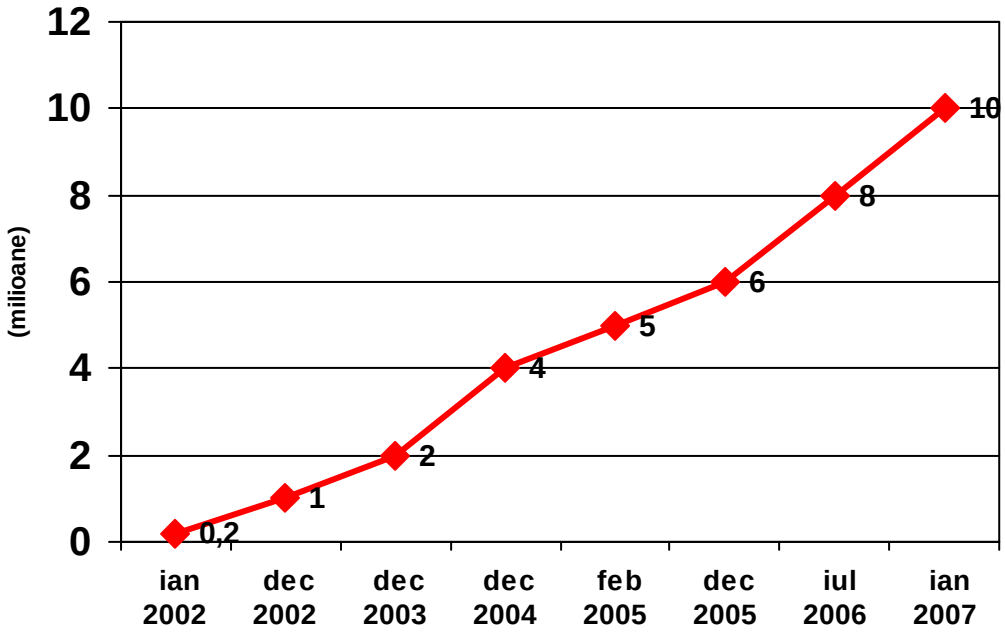

Figure 6.4 – Time evolution of number of records in OAIster

The OAIster data deposits are scattered in countries like: United States (272), Germany (72), England (63), France (32), Canada (27), Brazil (23), Spain (18) and other countries (Spain, Sweden, Scotland, Poland, Finland, etc).[20]

RePEc[21]

Research Papers in Economics is the collaborative effort of hundreds of volunteers from 76 countries for improving the research publishing in the economic field. The heart of the project is a decentralized Open Source Journal and Articles data base available for everyone. RePEc data base is populated with more than 760 000 objects of interest 648 000 being available online:

- 295 000 newspapers;
- 450 000 journal articles;
- 1 800 software components;
- 13 000 books and chapters listing;
- 20 500 publications and publications quotations;
- 11 200 listing from institutional contacts.

RePEc gives institutions the possibility to create personal archives. The non institutions users have the possibility to load their materials into one archive (Munich Personal RePEc Archive) for being included in RePEc because personal archives are not supported.

Romanian Open Access Journals

Since the beginning of year 2000 in Romania appeared a series of Open Access Journals, especially academic journals from fields like: informatics, economics, mathematics, physics, electronics, medical field, etc. Example: Journal for the Study of Religions and

Ideologies, Journal of Applied Quantitative Methods, the Romanian Economic Journal, Economic Informatics Journal, Theoretical and Applied Economics, Open Source Science Journal, etc. Further is a presentation of these journals.

Economic Informatics Journal[22]

It is an Open Access journal founded by the Economic Informatics Department from Academy of Economic Studies, Bucharest. It was published with the support of Ministry of Education, Research and Innovation. This journal is listed in various Open Access catalogues like Directory of Open Access, Open J Gate and others. Founded in 1997 it becomes an Open Access Journal since 1999.

The published Articles content includes research from informatics domain like: Algorithms, Artificial Intelligence, Business Intelligence, Collaborative Systems, Computer Networks, CRM, Data Compression, Data Mining, Data Structures, Data Warehouses, Databases, Decision Support Systems, Distributed Systems, Document Management, E-Society, E-Business, E-Commerce, E-Learning, ERP, Image Processing, Information Systems, IT Audit, IT Economics, IT Security, K-Management, Mobile Solutions, Multimedia, Programming Languages, Project Management, Quantitative Methods, Software Engineering, Software Metrics, Software Optimization, Software Quality, Software Testing, Systems Analysis, System Design, Telecommunication, Web Development.

Starting with the first number of 2007 the journal is published exclusively in English. It is accredited CNCSIS in B+ category. This journal can be accessed at www.revistaie.ro.

Journal of Applied Quantitative Methods[23]

Founded in 2006 and member of Association for Development though Science and Education) it is a quarterly Open Access Publication.

Journal of Applied Quantitative Methods is a double-blind peer-review scholarly publication in the broad area of quantitative methods whose goal is to identify relevant problems in high need of solutions by encouraging the application of quantitative methods across disciplines including but not limited to the following: Biostatistics, Computer Systems and Networks, Content Management, Data Mining, Data Modeling, Data Quality, Distributed Systems, Information Management, Information Technologies, Knowledge Management Metrics, Neural Networks, Operational Research, Patterns and Practices, Project Management, Quality and Reliability, Quantitative Analyses Using IT Methods, Optimization Problems, Information Security, Simulation, Social Sciences, Statistical Methods.

Proposals from other related spheres of research can be submitted to the editors. The journal is an open-access journal published on the Internet, with four issues per year. The language in which materials can be published is English.

Journal of Applied Quantitative Methods is listed in Directory of Open Access Journals and can be accessed at www.jaqm.ro. It is accredited CNCSIS in B+ category.

Journal for the Study of Religions and Ideologies[24]

Founded in 2002 Journal for the Study of Religions and Ideologies is a journal edited by S C I R I and S A C R I.

Open Access Journal since 2006 it is an academic peer review publication destined to the teachers and young researchers which are interested in the study of religions and ideologies. The publishing languages are Romanian and English. All the articles contain the title, abstract and keywords in English. The journal is exclusively published on the internet.

J.S.R.I. encourages interdisciplinary approaches engaging the following domains: religious studies, philosophy of religions, ethics, political philosophy and political science, anthropology, sociology, inter religious dialogue and communications theory. All articles must explore the religious dimension of the issues covered.

Published three times a year is the first Romanian journal included in Arts and Humanities Citation Index and Current Contents: Arts and Humanities of ISI data bases. The journal is listed in Directory of Open Access Journal and can be accessed on www.jsri.ro.

Theoretical and Applied Economics[25]

Founded in 1994 the journal becomes Open Access Journal in 2004. It is edited by General Association of Romanian Economists. It appears monthly and it has an economically multidisciplinary profile and its goal is to disseminate the theoretically and pragmatic results of scientific research in economic field or connected fields. The publishing of studies is done after following the assessment procedures.

This journal is indexed in RePEc data bases, Directory of Open Access Journals and others major catalogues with Open Access Journals. It is as well CNCSIS accredited in B+ category.

The Romanian Economic Journal[26]

This journal appeared for the first time in 1998 in Temper/Tempus Economics For Romania program (one of the largest such program which ever took place in our country).

In 10 years from the first apparition, the constancy and the high quality of the journal began to be very well appreciated in both Romanian and foreign academic field. The result is that The Romanian Economic Journal is accredited since 2000 by CCSIS.

Open Source Science Journal[27]

Founded in 2009 Open Source Science Journal is a quarterly scientific journal in the Open Source field.

The Journal is listed in INSPEC Index Copernicus, EBSCO, Google Scholar.

The editorial board includes professors and PhD students in Computer Science. Their practical experience is in object oriented programming, software quality and software engineering. The scientific board includes PhD in Computer Science or Economic Informatics, their research is focused on software development issues. They have published papers and books in the Computer Science field.

7. Conclusions

Open Access and Open Source are for now days an important field for developing applications especially for improving the academic research field and people access to information in journals and other publications.

In this paper the main goals of the both terms were discussed. An overview about the actual implementation of these technologies in scientific journals development is important and it is to be used for further improvements of the access to information.

As anyone must have easy and freely access to knowledge, developing Open Source applications must be the goal for both young and experimented developers.

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16. http://www.guba.com/watch/3000135244
17. http://www.opensource.org/anbout
18. http://www.opensource.org/history
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