

## SHARING SOME LESSONS LEARNED FROM THE REPOSITÓRIUM

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### ABSTRACT

The global movement for Open Access that emerged in the beginning of this century was fundamental to expand the channels of dissemination of scientific production of higher educational institutions. The Institutional Repositories (IR) were one of those channels. The Universidade do Minho, Portugal was the first worldwide community of Portuguese language and one of the first in Europe to translate and implement an IR, the *RepositóriUM*, in 2003. This study aims to examine the initiatives developed during the implementation phase of *RepositóriUM* and discuss its possible application in other contexts. It also fits in a broader context associated with the implementation project of the institutional repository of the Universidade Federal da Bahia, Brazil. The methods used to meet the initial step of this study consisted of a documentary survey of normative and bibliographic documents of the *RepositóriUM* and their content analysis, and analysis of the data collected automatically by the support software. After six years of implementation of the *RepositóriUM*, the data presented are positive both in terms of growth in the number of archives and communities, and in consultations and downloads translating into an increase visibility for both the institution and for its researchers. From the analysis we also considered that some measures associated with the process of implementation of the *RepositóriUM* can be successfully adopted by other institutions.

KEYWORDS: Institutional repository, open access, open access initiative

### INTRODUCTION

The concept of open files was consolidated in October 1999 during a convention in Santa Fé (VAN DE SOMPEL; LAGOZE, 2000), held in New Mexico under the auspices of the Council on Library and Information Resources, of the Digital Library Federation, the Scholarly Publishing & Academic Resources Coalition, of the Association of Research Libraries and of the Los Alamos National Laboratory.

In December 2001, at a meeting convened in Budapest by the Open Society Institute (OSI), it was discussed as the main theme the need to work together in a more rapid and efficient way so it could be possible to release the academic and scientific content for open access. We concluded from this event that through joint efforts we could achieve a significant return. The result was the Budapest Open Access Initiative (BOAI), as well as a declaration of principle, strategy, and commitment. Later, other initiatives and documents came to energize the movement for open access, including the statement of Bethesda, 2003 (Statement on Open Access Publishing), and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, in 2003.

The "open philosophy" is the movement defined by the "use of tools, strategies and methodologies that reflect a new model which represents a new process of communication." (COSTA, 2006) It encompasses issues such as: free or open source software, open archives (globally interoperability), and open access (wide dissemination of results of scientific research). The Open Access Initiative (OAI) has spawned a new paradigm in terms of disseminating and accessing scientific knowledge by advocating the provision of web texts of academic and scientific character making it possible, besides access: to search, copy, download, distribute, print and quote (INSTITUTO BRASILEIRO DE CIÊNCIA E TECNOLOGIA, 2006).

The Open Access Initiative has enabled researchers and scientists to effectively make use of basic Web technologies - blogs, discussion lists, portals, repositories (SWAN, 2008), modifying the system of science communication. According to Ferreira (2008, page 112), "Several studies for the implementation of more agile and economical mechanisms to facilitate a greater exchange of content are being made effective [...]." The adoption of institutional repositories has grown in all countries thanks to the opportunities designed by information and communication technologies (ICT) by promoting free access to scientific and academic institutions, reversing a monopoly framework of the editors of scientific journals, usually together with commercial interests that strongly affect the access to that scientific production effective until the 1990s.

The Universidade do Minho (UM), Portugal, was the first worldwide community of Portuguese language and one of the first in Europe to translate and implement an IR (RODRIGUES et al., 2004). The creation of this Repository (*RepositóriUM*)<sup>1</sup> occurred within the Virtual Campus project (e-UM) of the same university, submitted to the initiative of the Electronic University (e-U), established by the Portuguese Government. It was the Documentation Services' (SDUM) responsibility in 2003 to implement the same, being the organizational unit responsible for the libraries in UMinho and authors of the project proposal. This one deserves our particular attention as it reveals a full articulation of the Documentation Services of UM with the implementation of the *RepositóriUM*, revealing an integrated and integrating vision of the issue of the access to knowledge and scientific publication. This project developed

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<sup>1</sup> <http://repositorium.sdum.uminho.pt/>

by the Universidade do Minho has served as the basis for the process of implementing the institutional repository of the Universidade Federal da Bahia (UFBA), Brazil.

## **STUDY OBJECTIVES**

This text refers to the first stage of a proposed action-research that aims to promote new means of dissemination of scientific knowledge at the UFBA, through the implementation and promotion of an institutional repository. Within this project we have the study of the implementation and development process of the *RepositóriUM* - Institutional Repository of the Universidade do Minho, organized around two steps.

In a first step to which this text relates, the initiatives will be analyzed and described having in view the implementation of the *RepositóriUM*. In a second step, a joint survey by questionnaire will be carried out to characterize the different types of users and the type of use they make of it. This second stage of the study is still ongoing.

To summarize, this text aims to present the data and conclusions from the analysis of the process of implementation and development of the *RepositórioUM*, and reflect on the applicability of these findings to other contexts, including the case of the Universidade Federal da Bahia.

## **MATERIAL AND METHODS**

To comply with the initial stage of this study – to examine and describe the initiatives related to the implementation of the IR of UM – it was carried out with a documentary survey covering different types of documents (from normative documents from UM to papers published in journals and conference proceedings), as well as the analysis of records related to the access to the *RepositóriUM* recorded automatically by the support software to the IR<sup>2</sup>.

Document analysis focused on the analysis of the Rector's order, RT-56\2004 of December 6, 2004, document originated in the rectory of the UM, in which it was encouraged the different organic units of UM to join the project of the IR. In that document, different departments, institutes and centres of research of the UM were alerted to: (i) the creation of the *RepositóriUM* on November 20, 2003, (ii) the principles underlying the Declaration of Berlin, (iii) the base model of the document on self-archive policy of publications and of the institutional commitment statement to be adopted in the process of formation of communities within the *RepositóriUM*.

The Circular DS\UM-194\04, November 23, 2004, sent by the Director of the Documentation Service of the UM was also analyzed, and in which was included a brochure explaining the *RepositóriUM* and the Circular RT-06\2005 March 15, 2005, derived from the Rectory of the UM, reinforcing the need to join the IR of the

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<sup>2</sup> The authors are grateful to Eloy Rodrigues, director of SDUM and Ricardo Saraiva the availability of many of the data referred to in this text.

Universidade do Minho and disclosing what had been established in terms of allocating special resources for the organic units and centres of the UM which performed the insertions of documents in the *RepositóriUM*.

The documentary survey also included a bibliographic review with which articles were identified in journals, published texts in conferences and other events of public communication, which had as its main theme the implementation of the *RepositóriUM*.

In addition, we analyzed data provided by SDUM (Documentation Services of the UM) related to the processes of formation of the different communities, whether derived from records made directly by the services or arising from automated registrations associated with support software of the *RepositóriUM*<sup>3</sup>.

## RESULTS

The deployment of the *RepositóriUM* began in May 2003, and counted on an important step which was the translation of the graphical interface to the Portuguese language, contributing for other Portuguese speaking countries and institutions no longer need to carry out this step. The implementation process was developed in several stages. We consider the description of this process, the steps carried out between May 2003 and January 2005, being the design and submission of the plan phase for purposes of obtaining funds in the context of the e-University program preceded that beginning date. It was considered as the date of completion of this phase of the project implementation the date of January 2005 as was established by the Rector's order, RT-56\2004 of December 6, 2004, that implemented the institutional policy for the *RepositóriUm*. Table 1 systematizes the main stages of implementation of the *RepositóriUM*.

Table 1 – Stages of the implementation process of the *RepositóriUM* (Based on RODRIGUES, 2005 and Rodrigues et al., 2004)

Period	Action	Observations
May and June of 2003	Installation, configuration and translation of DSpace.	There was no translation into Portuguese. Installation of the physical and logical infrastructure: operating system, web server, database, etc.).
July and September of 2003	Convened through the list of distribution of the UM-Net for doctors and masters to target their theses and dissertations.	Convocation received only by doctors and masters who remain in UM. Delivery of documents via: e-mail, FTP, direct delivery.
September and November of 2003	Establishment of pilot communities.	Indication of 6 organic units, 4 accepted: Biological Engineering Centre, Polymer Engineering Department, Information System Department, and Economics and Management Research Centre.

<sup>3</sup> StatisticsAddOn, available in: <http://wiki.dspace.org/index.php/StatisticsAddOn>

Period	Action	Observations
November 20 of 2003	Official opening for the UM community and general public	About 280 filed documents
Year of 2004	Attempt to increase the number of documents deposited in the system and to promote the use of both the UM and external community.	General appeal and visits to 10 departments, centres and research centres of UM.  Three pilot communities failed to perform the archiving.
End of first semester of 2004	Definition of strategies for affirmation and development of the <i>RepositóriUM</i> .	Communication and promotion of the <i>RepositóriUM</i> and of Open Access, active participation in the international community on Open Access, Repository and DSpace, the definition of an institutional policy for UM.
December 6 of 2004	Definition of the policy for the UM <i>RepositóriUM</i> through the Rector's Order RT - 56\2004.	For the year of 2005, the Rectorry established financial incentive to the Units in relation to the type and number of documents available.
January of 2005	Outset of the policy set.	

At the end of the first year of this process, it could be said about the IR "[...] that, generally, the project [was] a success and that the concept of institutional repository [was] at the Universidade do Minho to last." (RODRIGUES *et al.*, 2004).

The technical preview of the software selected allowed flexibility in the installation process. The next step was the provision of content that began with the theses and dissertations of master and PhDs approved by UM that "[...] was one of the motivations for the formation of *RepositóriUM*." (Rodrigues *et al.*, 2004, page 3).

In the third stage of the process pilot communities were established to test the system with other types of documents besides theses and dissertations – it was proposed to include in the study's pilot phase six organic units of UM, in which in this stage 4 of those units accepted to be part of the community in the *RepositóriUM*: Biological Engineering Centre of the Biological Engineering Department, Polymer Engineering Department, Systems of Information Department, and Economics and Management Research Centre. In the selection of the organic units invited to join the pilot phase of the project a number of criteria was adopted: (i) diversity of scientific areas, (ii) geographical location and type of organic unity<sup>4</sup>, and (iii) the importance of scientific output.

This pilot phase has identified some problems and issues that the group of implementation itself has sought to address and are presented in Table 2.

<sup>4</sup> The UM has two campuses located in two different cities: Braga and Guimarães and is composed of units of different nature including the departments and research centres.

TABLE 2 – Problematic Areas (Source: RODRIGUES et al., 2004)

<b>Problem areas identified in the pilot phase of the implementation of the <i>RepositóriUM</i>:</b>
• Intellectual property and copyright
• Promoting and mobilizing the community of researchers and libraries
• Quality control of contents
• Reflection on the contribution of the research as a whole and for society in general
• Placement of the IR in the scholarly communication and traditional scientific system

In order to resolve or alleviate some of the problems identified several initiatives were undertaken being them presentations on the systematic operation of the repository, the development of an information kit, available on the archive site that guides toward creating communities<sup>5</sup>.

From the documentary analysis we identified the nature of the objectives underlying the creation of the *RepositóriUM*, which are presented in Table 3.

TABLE 3 – Objectives underlying the creation of the *RepositóriUM* (Source: RODRIGUES, 2005)

<b>Objectives underlying the creation of the <i>RepositóriUM</i>:</b>
Contribute to enlarge the impact of research conducted at UM, thereby increasing the visibility and accessibility to their scientific output.
Preserve the cultural and intellectual memory of UM.
Facilitate information management at the University establishing itself as a component of its information system.

The nature of the objectives underlying the *RepositóriUM* are directly linked to the principles of the open access movement, and also correspond to an increasing need of higher education institutions in becoming more visible in their activities, particularly with regard to the research undertaken.

In the process of formation of its IR, UM defined and publicized among its members the basic conditions for the archiving process, which are systematized in Table 4.

<sup>5</sup> Available in: <http://repositorium.sdum.minho.pt/about/index2.htm>

TABLE 4 - Basic requirements for archiving on RepositóriUM (Source: RODRIGUES, 2005 and RODRIGUES et al., 2004)

<b>To be liable to deposit in the <i>RepositóriUM</i>, the documents must carry out a set of requirements:</b>
• Author or co-author is a member of UM
• Result of teaching activity or innovation and development (I & D)
• Digital format
• Complete and ready to be published
• Permanent
• The concession to UM of the non-exclusive right to preserve and provide access through <i>RepositóriUM</i>

The conditions for archiving follow in its general lines the usual principles of such repositories, being up to each of the depositors, i.e., to any of the members of one community, to ensure compliance with the conditions of deposit, particularly during the self-archiving process.

The growth process of the *RepositóriUM*, particularly in terms of number of communities, was established rather quickly. Launched publicly in 2003, with only four initial communities in 2005, when the Rectory reports widely, at the institution, the institutional policy for the *RepositóriUM*, and launches a program of financial incentives directed to different organic units of UM, assigning to them a financial boost to the type and number of documents available that they make accessible in *RepositóriUM*. This policy seems to have had a positive effect, as suggested by the enormous growth of the repository in terms of number of communities, being 7 in 2004 and 33 in 2005 (see Table 5).

TABLE 5 – Evolution of the communities per year (Source: Data provided by the Documentation Services of the Universidade do Minho)

Year	December 2004	December 2005	December 2006	December 2007	December 2008	December 2009
N. of Communities	7	33	35	35	36	36

Another indicator of the impact of the incentive policy to the deposit adopted by UM and made operational by the Rector's Circular order RT-06\2005 of March 15, 2005, was the growth of the annual number of deposits, rising from 626 in 2004 to 3105 in 2005, and 4990 in 2006 (see Table 6). However, it should be noted that these were the prime years of community building process that, in some cases, was associated with significant joint archiving of documents, sometimes organized in an institutional way by the communities. So it does not correspond exclusively to the process of self-archiving

TABLE 6 - Evolution of the number of filed documents per year (Source: Data provided by the Documentation Services of the Universidade do Minho))

Year	December 2004	December 2005	December 2006	December 2007	December 2008	December 2009
N. of documents	626	3105	4990	6296	7391	8806

In 2006, the UM team that streamlines the design of *RepositóriUM*, developed and released a set of technical features associated with the DSpace software, which allows additional data regarding such aspects as the number of visits and download files from the repository, and the country from which they are made consultation and/or are downloaded. Table 7 presents the data on the number of downloads and consultations per year, considering the number of existing communities.

TABLE 7– Consultations and downloads per year (Source: Data provided by SDUM)

YEAR	DOWNLOADS	CONSULTATIONS
2006	444 292,7	381 341
2007	906 878,1	894 013
2008	1 087 963,6	1 543 842
2009	1 163 089,8	1247 134
2010 <sup>4</sup>	14 275,4	20 290
TOTAL	3 616 499,5	4 086 620

The data in Table 7 are more an indicator of the growth process of the *RepositóriUM* related to the primary use for the consultation (and download) of documents revealing that the aim of increasing the visibility of scientific production and publication of the institution, and to increase the free access to this production is being achieved, considering both the national context and the global context. According to January 2010, the access and consultation carried out in the *RepositóriUM* from outside the country, is already of 48% and cover a wide range of countries with particular focus on Brazil (see Table 8).

TABLE 8- Countries of origin of consultations and downloads of documents from the *RepositóriUM* in January 2010 (Source: Data provided by SDUM)

COUNTRIES	PERCENTAGE
Portugal	52%
Brazil	26%
United States	6%
European Union	3%
Índia	2%
China	1%
Others	10%



## CONCLUSIONS

The Universidade do Minho was involved from the beginning in the worldwide Open Access. The Budapest Open Access Initiative (BUOY) was released in 2001, and in 2003 activities for the implementation of the *RepositóriUM* were initiated, showing the relationship of those who were in charge of the project. Moreover, the translation and customization of the DSpace software for the Portuguese language has contributed to the software update by Portuguese speaking countries, including Brazil.

The process of implementation of the IR at the Universidade do Minho was based on the actions planned in close consultation with the Documentation Services of UM and supported by the Rector of the university (the highest body of the institution). Institutional support from the Rectorate became essential for the development of the project which had an intense phase and rapid growth particularly in response to a second moment. In this moment it was understood the need to set the self-archive of the order RT-06\2005 of March 15, 2005, in which it is clear the Rectorate's position in relation to the *RepositóriUM*, and with which it discloses the institution's policy on this issue and encourages the different units of UM to join the project making available special funds for this purpose in 2005. This positioning resulted in a significant increase in the number of communities in 2005, which increased from 7 communities in 2004 to 33 in 2005 (Table 5). Consequently, the number of filed documents increased 426% (Table 6).

Of the four organic units that participated in the pilot project, three stand out in number of filed documents - Biological Engineering Centre of the Biological Engineering Department, Polymer Engineering Department, and Systems of Information Department - while the community of the Biological Engineering Centre presents the largest number of documents of all *RepositóriUM*. Only two organic units do not have communities in IR: Law School and the School of Nursing.

The focus of the highest organs of UM in the development of institutional repository, with a clear institutional policy for the project and incentives to deposit as is evident in the circular RT-06\2005 March 15, 2005, are measures that we consider examples. These examples may be followed with the necessary modifications to other similar projects, particularly in the process of implementation of IR at the Universidade Federal da Bahia, the final goal of the action-research in which we are involved.

After six years of implementation of the *RepositóriUM*, the data presented are positive both in terms of growth in number of communities formed (Table 5), in terms of number of documents filed per year (Table 6), which shows a growth over the years, and in terms of consultations and downloads of documents (Table 7), which results in extending the visibility for both the institution and for its researchers. The collection of statistical data related to consultation and download of documents from the *RepositóriUM* is one indicator of visibility that can also be viewed as a stimulus to

the deposit by making visible to the authors-depositors the visibility of their work, and being an initiative to consider in other processes in the formation of IR.

We believe that the data collected and analyzed regarding the process of implementation of the IR at the Universidade do Minho are a source of inspiration and useful experience for the development of the IR of other institutions. We also believe that the development of further studies on this repository as those which are ongoing within this project may represent the most relevant information for both the process of growth and dynamism of the *RepositóriUM*, and the development of other repositories. In this sense, we have an ongoing set of studies to: (i) identify and characterize the type of initiatives to support and stimulate the self-deposit in the *RepositóriUM* at the level of the different communities, (ii) perceptions and behaviours of teachers and researchers of the UM with respect to the *RepositóriUM*, and (iii) profile and behaviour of the use of the *RepositóriUM* by users accessing the same for consultation or for document downloads. The results of these studies will be given at the time of communication to the academic and scientific community.

We believe that the data presented and discussed in this paper can contribute to the development of the IR of the UFBA and other institutions. We also believe that for the Universidade Federal da Bahia to achieve the desired success in their project, it is evident the need for a commitment from the central administration of the institution, as regards both the policy as well as the resources. Mobilization around the issue is important for researchers to be aware of today's need to join the Open Access, following the changes in the dissemination of scientific production.

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