The Impact of Open Access Policies on Libraries: The New Era in Publishing Industry

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Abstract: *Statement: The development and widespread adoption of Internet as a strong information tool is transforming the Publishing Industry. The field, perhaps most, affected by this change is the one of Information Science, which is about to face new challenges and adopt new roles and techniques. Information Organizations assess, collect and manage both printed and digital material. The aforementioned fact is addressing new issues such as collection policy, copyright issues and their financial implications.*

Aim/Objectives: This paper aims to discuss the Open Access issue, as a way of disseminating scientific information worldwide in regards to e-content management. Furthermore, it explores new policy's parameters.

Methods: An extended bibliographic review is held along with a qualitative analysis of the European Informational environment. Furthermore, observation techniques and data collection is curried out in existing information repositories and their design and operation as a means of publishing mechanisms.

Expected Results: It is anticipated that a further development of Institutional repositories will expand the Information Organizations' e-content. This will gradually take over grounds traditionally belonging to the publishing industry. Libraries as key organizations in their establishment and management should promote their development. It is expected that the aforementioned techniques will enhance research communication via library infrastructures. Furthermore, we believe that libraries will be in a position to reevaluate the economics of information into the European Information Society.

Conclusion/ Suggestions: It is evident that in order to manage the electronic material in Information Organizations using repository techniques, cooperation at national and international level is needed. Also, a strongly related policy among Europeans, regarding scientific e-content and a common approach to its financial treatment is also of essence. As a result, Information Organizations will produce qualitative and added value services and products.

Introduction

The development and widespread adoption of Internet, the recent technological advances along with the increasing cost of journal subscription and the shrinking budgets of Information Organizations have brought forward the Open Access movement. The latter had a great impact on the Publishing Industry and its transformation to a knowledge management medium with new parameters in its production, distribution policies and finances.

It is evident that the changes occurring in the publishing industry are affecting libraries and information organizations in general. Through these, the information science as a field of an applied discipline abiding to the theoretical framework of management studies and that of economics of information as a commodity is also being transformed. Probably the best example in assessing these changes in the world of information is the emerging setting of knowledge repositories within institutions that traditionally were handling information and proceeded to its processing in order to yield knowledge products.

Information organizations assess, collect and manage both printed and electronic resources. As digital resources are overtaking information organizations, their management and accessibility introduce different kind of responsibilities and tasks for information workers. As a result, information organizations are about to face a new role in efficiently managing institutional knowledge capital.

Along these lines, this paper aims to present the major issues regarding Open Access and the creation of Institutional repositories that emerged, as the key way to manage, disseminate and preserve the e-content of knowledge institutions. Within this framework it also stresses the need for cooperation in national and international levels as a means to expand e-content and its information processing. This is expected to render added value services and generate new informational products and byproducts.

The methodological approach for the study included a bibliographic review along with observation techniques based on institutional repositories functions over the internet. Furthermore, data collected for a study [Manessi 2005] on establishing an Institutional Repository within the National Documentation Center of Greece were used. Data analysis focused on the elements of production within the Institutions research centers, the variety of research tools in recording scientific information and the production of databases by the National Documentation Center.

Definitions

The Open Access movement has emerged during the past few years as an alternative way of disseminating scientific information cost-free without the indifference of Publishing Industry. Bailey [2005] defines Open Access as follows:

> "free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of 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".

If we look closely at Bailey's definition we see the following elements: information is disseminated via internet to all users, the user has to have the freedom to make use of this information in every possible way leading to further informational applications

without any barriers and at the same time the non profit character of information use has to be maintained. Scientific and technical institutions, such as universities, research or innovation centers, etc are the chief organizations that actually produce scientific information. Their production has up to now be bought, published, organized and distributed by the Publishing Industry, who has in its own turn resell this informational output back to the institutions. In the process the cost of the final output had been multiplied by the mere fact of the processing itself and the profit of the processing organizations. Along with it the time elapsing between information production and rendering the final usable informational output was also increased depending upon stages of processing, means of dissemination, etc. This created an increasing dissatisfaction among information organizations emerging primarily from the high cost of obtaining scientific information along with the elapsing time of having it available, the variety and multiplicity of formats in presenting and accessing it, the overlapping of many of the scientific sources available in brokers' packages, the information vacuums created in certain subject areas also a result of brokerage practices, etc. It became evident that information organizations had to face the problem and the technology available had to be exploited towards that area in order to provide solutions *for managing information that was available within the organization and managing knowledge emerging as a result of the organizations' informational capital*.

Information centers of the aforementioned institutions with their expertise over acquiring, managing and preserving information could now play a key role in managing electronic scholarly products and participating in the evolving scholarly communication commodities. Organizations that both produce and manage scientific information have concluded that the best way to provide and organize this digital content is by establishing what is now called Institutional Repository.

> Lynch [2003] has defined Institutional Repositories as being:
> "a set of services that a University offers to the members of its community for the management and dissemination of digital material created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access of distribution".

Lynch's definition places repositories as an integral part of information services and pinpoints the essentials of organization and access; it also emphasizes the value of long-term preservation of digital content. This is not new as e-content preservation has been one of the main issues in information science the last decade. However, the issue is addressed in the context of raw data production along with processed metadata and the complexity of the issues involved. The daily overwhelming production of digital materials in all possible and known formats, its dynamic nature in conjunction with the complexity of their management have introduced a new philosophy that of E-Content Management.

Boiko [2001] gives the following definition of Content Management:

> "at the highest level, Content Management is the process behind matching what you have with what they want. You are an Organization with information and functionality of value. They are a set of definable ardencies who want that value. Content Management is not just a way to create large web-sites, but

upon closer examination, it is in fact an overall process for collecting, managing and publishing content to any outlet".

What is stressed in this definition of Content Management is that in fact Content Management is a unique way to acquire, assimilate, develop and disseminate digital content of every format to all users no matter where they are via internet. In this sense, international standards, technology and transfer media have to focus in one goal: accessibility.

In order to clarify this one should look at the definition of scientific information. Bailey [2005] defines scientific information as:

> "a variety of materials produced by the institute and its community members from many units, such as e-prints, technical repartees, theses and dissertations, datasets and teaching materials".

This is but an indication of the variety in formats, platforms of recording, means of publication and distribution channels.

Finally, the aforementioned definitions have been presented here in an attempt to set commonly accepted terminology for the purposes of this paper. They also constitute a basis upon which issues regarding Open Access, Institutional Repositories, Content Management and Scientific information can be discussed.

Bibliographic Review

The Open Access movement, although has been around for some years now, still raises many fundamental questions among information workers. Questions like "what is Open Access?" and "is it the same as free access?" are raised from time to time and argued over. Quite a few articles have been written in an attempt to shed more light over Open Access or clarify the concept. Bailey [2006] in his work "Open Access and Libraries" has given us a good account of how open access has emerged though the Budapest Open Access Initiative and how this became a reality through the Bethesda Statement on Open Access Publishing leading to Berlin's Declaration on Open Access. The article offers a good account of the basic characteristics of Open Access Literature along with a discussion regarding the approach that "open access content is in fact the content with the minimum restrictions in accessing it'. Understanding that Open Access can only be accomplished through the enforcement of specific strategies, it introduces the concept of "self archiving" and the creation of "open access journals" as the dominating two characteristics that could in fact promote open access.

Furthermore, Bailey tries to assess the impact of Open Access on libraries, and the escalating changes on their role. The new role of librarians and information professionals is also examined in the context of the present challenges. It is evident in his work that he believes that libraries have a significant role to play in establishing Open Access policies, an opinion that we do share. We also believe that libraries have a key role to play not only in creating or establishing the practices but also in exploring new forms of knowledge access and distribution. In this concept, Bailey accepts the formation of Institutional Repositories as a vigor endeavor derived from the adoption of Open Access and gives a list of ways that a group of reference librarians could effectively and efficiently support Institutional Repositories.

We also believe that the form of institutional repositories might develop as much broader application of what Bailey is describing. For example, an institutional repository might act eventually as an informational brokerage station of linked institutions or even individual researchers.

In conclusion, Bailey admits that Open Access has gained a lot of approval in the last six years while the Publishing Industry is slowly overcoming its initial hostile reaction towards it. What is also of great interest and we should all follow closely is to see how the Publishing Industry is trying to find ways to benefit from Open Access practices. It will be worth seeing the new information products that will emerge as a result and the shaping of scientific information market.

Looking now at the work of Horwood et all [2004] "*Open Access Initiative Compliant Institutional Repositories and the Role of Library Staff" we see a* discussion on the role of librarians in the development and promotion of Institutional Repositories. Horwood et all see the development of institutional repositories as a continuation of the library's functions regarding acquisition, organization and availability of printed and electronic resources.

In addition, he and his colleagues stress the importance of collaboration among librarians and Information Technologies staff even more than before. The use of Open Access Initiative demands Protocol of Metadata Harvesting in order to support both its technical structure and its interoperability. The management of e content gathered in the repository augments the need for such cooperation. Furthermore, it introduces a whole new aspect in educating librarians and information professionals, the skills needed for currying out their work and the background knowledge in navigating expert searches.

Another article by Jenkings and Breakstore [2005] "Content In, Content Out: The Dual Role of Reference Librarian in Institutional Repositories" focuses on practical issues of "how to do a repository". The article presents the new and important role of reference librarians in promoting and establishing Institutional Repositories; it explores the different ways of convincing the authors to submit their content but also the means of marketing Institutional Repositories among users. They conclude by stressing the importance of reference librarians and their distinctive knowledge of specialized research needs and scholarly communication patterns among users that influence the development and further growth of IR.

Strong believer of the idea that further development of IR will lead to an increase of Information Organization's e-content is Chang [2003] author of the "Institutional Repositories: The Library's New Role". In this article, Institutional Repository is introduced as a new concept of collecting, managing, disseminating, and preserving scientific information created by faculty staff and students. The creation of IR is used as a response to the Publishing Industry's monopoly of disseminating scientific information. As a result, libraries need to recruit librarians that possess both managerial and communicative skills. These skills will pave the road for libraries to influence the authors to trust them with their writings, users to search the IR and above all to become the institution-wide policy makers regarding e content management.

In summarizing, it is evident that Open Access Initiative had played a key role in the development of Institutional Repositories. Libraries should take part in the shaping of repository policies and assume their new role in acquiring, managing and disseminating scientific e content. It is also expected that such practices are greatly affecting the publishing industry and the world of scientific information brokers.

Libraries and librarians should be open minded to new emerging products and follow closely the reshaping of their suppliers.

Open Access vs Publishing Industry

Up to few years ago, the only known and possible way for an author to make his/her work accessible to a wide audience was by submitting it for review to a relevant scientific journal and wait for an approval or not. Publishing Industry had almost exclusive power over this procedure as it could control and shape what, where and when an article could be published or not. Also, it was the only one in setting the cost of obtaining the work.

In addition, in most cases but not exclusively, Publishers chose the means of classifying the work and created the access points for it. They included it or not in indexes, abstracts and reference works and determined its dissemination. However, we have to point out here that libraries individually or collectively in some cases have been engaged in information processing projects such as indexing and abstracting of scientific articles, thus providing their own means of dissemination. Though, in many cases these works were limited in scope, time or subjects and libraries as a rule relied heavily on information brokers for scientific information access tools.

In this situation, Institutions along the years found themselves in a situation where the cost of gaining access to online resources was continuously rising while their budget was steadily decreasing. At the same time technology could offer solutions in eliminating unsuccessful dissemination of scholarly information by traditional publication methods. The latter fact was actually diminishing the need for information services bought as a package with the content All of the above led the Institutions to an ongoing inquire in an attempt to discover the mean, the way or even the method to disseminate scientific information cost-free without the implication of the publishing industry. As a result Open Access Initiative was borne as an answer to the aforementioned challenges with its cost-effective, copyright friendly and technology-savvy character.

Open Access is a revolutionary movement that during the past few years has gained many passionate supporters but also considerable opposers. The main goal of Open Access is to make scholarly information more readily available, slow down its commercialization and most importantly to decrease the cost of disseminating and accessing scientific information. The way it is developing Open Access is becoming something more than a movement. It’s a promise given to change, transform and reshape the publishing future.

According to Bailey, [2006] and the Budapest OAI (BOAI) an institution can achieve Open Access through two ruling strategies: a) self-archiving and b) open access journals. The first strategy refers to authors placing their articles in an open, freely accessible and online archive. As opposed to the “open access journals” strategy in which authors have the ability to publish their writings in open access journals. These kinds of journals do not charge readers with subscription access fees and make the articles fully accessible to all users because they do not enforce any copyright restrictions or financial barriers. An institution can apply both strategies, the one following the other as by allowing authors to place their work in the open archive obtains the desired scientific e- content and by proceeding to the next strategy of open

access journals can acquire a review process of the works deposited and secure the quality of its content.

These two strategies can be the answer to traditional Publishing Industry procedures that has been acquiring and reviewing articles and then producing journals available only through subscriptions. Subscription practices have been limiting access to those who can afford it, increasing the gap between info-poor and info-rich. Moreover, Publishing Industry forces authors to give over their copyright in order to have their work published in journals.

However, Open Access has a long way to prove itself as a viable solution that can fulfill its promise of transforming the future. Scenarios vary and include:

a) withering and failure of the Initiative,
b) success by surmounting the traditional publishing model and
c) partial success by combination of elements from both the traditional publishing industry and the open access movement [Bailey, 2006].

The first scenario is based on the assumption that authors will be suspicious of the movement as not being in their best interest. As a result, they will not entrust their articles to be published through open access venues. Institutions will have the same approach as they will believe that authors will try to push forward work of lesser quality as review processes might be not enforced. Open Access dies out because both Institutions and authors are unable to trust the new movement feeling more comfortable with the traditional one. This scenario is based on the assumption that authors will dismiss the advantages offered by the retention of copyright, the rapid dissemination of their work and the greater impact guaranteed by the Open Access Initiative. However, it is evident that the exact opposite is going to happen: funding agencies and universities will ask authors to publish their research work through open access venues as these can secure its quick and wide dissemination. In conclusion, this scenario presenting Open Access as a dying out process is considered to be unrealistic.

Contrary to that, scenario two offers a new dimension. It presents Open Access as a successful paradigm overtaking the traditional publishing models. Authors and institutions are well aware of the benefits and advantages of engaging in such a movement. Institutions move forward in ameliorating Open access policies by introducing review committees, standards and knowledge organization procedures, such as indexing techniques, abstracting and extensive free text searching capabilities. Publishing Industry looses its advantages of reputation, academic reviewing and informational processing (ie Indexing and abstracting) over the cost-free subscription to Open Access Journals. This is a highly optimistic scenario that takes as given the further development of policies and procedures described above. It also assumes that Publishing Industry will remain idle and will not proceed to develop new products in order to keep a share of the information market.

The third scenario is in fact a combination of the two previous ones. Open Access will coexist with Publishing industry and they will both gain appreciation and usage from authors as well as institutions. Given as it may, open access will prove to be an important catalyst promoting change rather than the cause of the eradication of Publishing Industry. Publishing Industry is expected to evolve towards new directions

in information handling and to develop new products and/or services. Reputation and prestige of some journals will continue to attract authors interested in supplying articles and users will be willing to pay subscription or information service fees.

This latter scenario seems to be not only more plausible but also is already becoming a reality. Many institutions in European Union and abroad, are embracing open access movement and they are asking their faculty members, researchers and students to actively participate in it. Within this framework Institutional Repositories emerged collecting, managing, disseminating and preserving the electronic scientific information produced within the boundaries of an Institution.

Institutional Repositories and Scientific Information

It is also evident that the natural place to house an Institutional Repository is the Library of the Institution. The library is the main vehicle of managing information and catering to the informational needs of the institutional community. As a result the library is not only the designated reference point for all information services, but it also has accumulated expertise along with infrastructure and know-how in handling it. Librarians are aware of the different formats and the multiple meanings that content can obtain as well as the difficulty in managing and preserving digital materials. It is this awareness that made possible the establishment of IR [Leung, 2005].

The basic characteristics of an IR are:

- Its institutional definition
- Its scholarly content
- Its cumulatative and perpetual character and
- Its combination of interoperability along with open access.

These imply that an IR should only collect assess, organize, distribute and preserve solely the e-content produced by the community members of an Institution [Chang, 2003]. This creates a limiting environment and contradicts the library's philosophy that requires open reference services drawing from a variety of sources.

In this sense an IR brings libraries back to housekeeping procedures where we turn within our organization, create our own perfect informational sources and then we emerge from there to outreach for the sources of our neighbors. In some ways it is very much like the creation of our own opacs some decades ago. However, if we look collectively at what this can create in terms of a systematic approach in acquiring, organizing and disseminating scientific information we can spot immediately the importance.

To clarify this even further one should take into account the following parameters in establishing IRs [Horwood et al, 2004]:

- The realization that the intellectual capital produced by the community members of the institution will gradually increase rising issues of efficiently collecting, organizing and disseminating scientific information in digital formats.
- The active role that the librarians should play in the development of IR in conjunction with the expertise of IT staff.
- The selection of the appropriate technology necessary for the creation of an IR.
- The development of a concrete content management policy answering issues like what kind of content should be collected, in which format, what metadata should be extracted.
- The promotion of the Institutional Repository aiming to gain acceptance by both scholars and users and at the same time to bestow respect and prestige.

- The cost-free usage of content or with a minimal fee.
- The adoption of all necessary measures to ensure long-term preservation of archived digital material.

If these parameters are fulfilled then the emerging benefits of Institutional Repositories can be summarized in the following: [Dill and Palmer, 2005]

- Create a functional framework appropriate for the collection, dissemination and preservation of scientific information.
- Form a unique place where all scholarly content is gathered and can be available and accessible cost free to a worldwide audience.
- Have a decisive contribution to the preservation of the institution's digital capital.
- Reduce the cost of accessing and/or obtaining scientific information.

Some of the best examples of Repository applications can be found in the Directory of Open Access Repositories (OpenDOAR). Developed by the University of Nottingham UK and the University of Lund, Sweden its goal is to achieve Open access for all research information. DOAR provides a comprehensive and authorative list of institutional and subject based IR. Users on the other hand have the ability to browse by location, type or even material they obtain. In reality it is a search engine or alert service with easy to use tools tailored to fulfill the specific needs of user communities [www.opendoar.org]. Another such service is provided by the Biomed Central and it is called Open Repository. The purpose of its creation is to build, host and maintain IR for Organizations who do not have either the appropriate staff, or the necessary means to develop and host an IR [www.openrepository.com].

The National Documentation Centre of Greece is currently in the process of creating an environment where it can host an Institutional Repository containing the scientific information produced by the National Research Institute integral part of which is the Documentation Centre itself. At the same time it aims to act as a point where scientific information produced in Greek language by collaborating institutions(such as research centres) can be deposited, processed to produce bilingual (English- Greek) metadata and be made available to the international scientific community. This way it is expected that the National Documentation Centre's Repository can also act as an e-content management centre and at the same time an outlet for overcoming language barriers giving researchers a link to their international counterparts.

The changing role of Libraries

If libraries want to stay competitive in the informational market have to move forward in broadening their horizons towards the new ways developing in information management. Diverse media of recording and transmitting information have produced new ways of information processing and had resulted in new informational products. Repositories are just but another medium of such sort. However libraries, have to develop the infrastructure to support the new services. Policies, regarding e-content deposit, evaluation, processing, retrieval and dissemination have to be carefully formulated. Standards and procedures have also to be either revised, or expanded or restated. The possibilities of new informational products have to be explored and assessed for their added value capacity. Technology has to be fully utilized.

At the same time one has to point out that libraries have traditionally managed information resources of the institutions they belong to. Acquiring, creating and making available electronic resources are an extension of a library role already well established for the print material (Horwood et al., 2004). Apart from that, there is no doubt that libraries are no longer simply consumers or just managers of information, no matter where this information comes from. It is evident that the idea of libraries developing and offering free/ open information services or becoming digital publishers has recently received much attention within the Information Science community, across European Information Society and throughout the scholarly publishing industry. It is indicative that EBLIDA (European Bureau of Library, Information and Documentation Associations), welcoming the Commission's Initiative on the economic and technical evolution of scientific publications market in Europe, had expressed its full support for the library's new role.

The idea of creating Institutional Repositories is not new. The idea of libraries taking the responsibility of establishing the IRs while in US was almost a natural evolution of the library's role, in Europe is still under discussion. We strongly believe that libraries should be the leaders in the issue and the adoption of common policies of all European state- members is of great importance. We also believe that the development of Institutional Repositories will enhance e-content production much needed by all information organizations. At the same time this practice will lead libraries to take over grounds traditionally belonging to the publishing industry. Libraries by playing a leading role in the formation and operation of institutional repositories, by relaying on their information handling expertise can act as their promoting agents. In this case research communication will be happening via library infrastructures, and the economics of information will be reevaluated into the European Information Society.

The advantages of Institutional Repositories that are affecting the publishing industry and consequently are shaping the information market can be summarized in the following points:
Institutional repositories can:

- give easy, rapid, long- term access to information
- give access to evaluated, organized and filtered information
- increase readership and usage of scientific research
- offer new ways for information to be linked and produce new informational products
- manage and preserve e-content
- measure the Institutional output and scientific research production
- provide a tool for research funding
- operate in a parallel way to traditional publication industry while the transformation period is taking place and manage not to affect the current research publication process.

As a result added value services and products may include:

- The development of a core information management system
- The selective dissemination of high quality scientific information
- The deliverance of personalized information services according to the users needs.
- The integration of information according to its scope (ie research, teaching or simply informative) and corresponding to user's needs

- The supply of location-specific or subject-based search services to a wide range of informational resources and access to other IR

An Institutional Repository can be developed by libraries individually or in consortium. From our point of view the consortial licensing approach will play a key role in the future. Consortia aim to facilitate access to research publications through collective negotiations. In the mid- 1990s, the consortial movement became widespread, mainly in response to the increased cost of serials subscriptions, but also due to the emergence of new business models made possible by Information Technologies (Kirshop and Chan, 2005). The question to be answered by libraries is whether consortial IR make sense or not and if they really present near- term/ long-term advantages over "mere" IR (Peters, 2002).

The more enthusiastic support that "developing IR does not require that each institution acts entirely on its own. For many colleges and universities, existing state or regional institutional or library consortia will provide a logical infrastructure for implementing IR via collective development. Such cooperation could develop economies of scale and help institutions avoid the needless replication of technical systems. Indeed, consortia might well prove the fastest path to proliferating IR and attaining a critical mass of open access content" (Crow, 2002).

We believe that libraries developing IR through consortia as a way of helping their members to cut costs and augment the value of their investments in technology and content are in the right track. Especially European libraries could create dynamic affiliations in order to fulfill their mission in providing quality information services and products. Repositories can be national, consortial or simple institutional ones. However, compared to institutional and national options, a consortial effort involving a great range of different types of institutions that more or less cover the waterfront of academic faculties seems to be a route good enough to pursue (Van Bentum Marten et al., 2002).

Another aspect of regarding Consortial Institutional Repositories is the interdisciplinary crossings that can be formulated. These will lead to the evolvement of new methods for filtering and disseminating information, of handling raw research data and creating valuable metadata. Elements such as semantic organization, access points and authority control can be some of the issues arising.

At the same time Information Technologies provide libraries and their Institutional Repositories with the means for technical compliancy, cooperation and interoperability which is supported by the relevant standards and authorities.[1] Producing metadata is not just an important element for repositories but a central goal. The generation of metadata secures the retrieval via search engines. It is and has been the key to access and disseminate information, in the repository's case today to a worldwide audience. This has a great impact on the institutions promotion and establishment within the research community.

The emerging role of Information Professionals

[1] The Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) defines a mechanism for harvesting XML formatted metadata. A key component of the interoperability architecture is the use of unqualified Dublin Core (DC) (Horwood et al., 2004).

The final issue we would like to address is the changing role of information professionals and the need to look back and reevaluate the existing curricula in our corresponding schools educating librarians and information specialists.
Open Access movement and the development of Institutional Repositories' specifically had posed several questions about the role and skills required by Information Professionals. It is quite evident that understanding new technologies is just but one of the emerging issues. Understanding the environment that actually produces research and their needs to both access and disseminate work is also essential. Educators should focus now more than ever before to the fact that libraries are knowledge management institutions, and in order to fulfill their role they should understand both the mechanics of knowledge production and the values of managing it successfully. Librarians as knowledge keepers cannot stay in the forefront of development. The information profession is also fast developing specialties within its own boundaries. Reference librarians with a strong background in information retrieval, data mining skills, ability to understand and use of semantic techniques to access information will be a good profile.

To understand this we point out some of the tasks and responsibilities assigned to information professionals in relation to repositories.

Specifically, they will be asked to:

- set policies and procedures for e – content management and repository operations
- cooperate with computing scientists in the designing of both the repository subsystems and the users interface
- develop subject- based portals
- decide what metadata to store and present
- understand copyright issues
- select, organize and filter the repositories e-content quality
- create metadata, controlled vocabularies and thesauri
- develop quality control management
- create preservation methods and techniques
- promote the project using public relations and marketing techniques
- prepare the scientific community to accept the coming changes in the publishing industry
- train users in IR deposit and searching procedures

However we have to point out here that setting an Institutional Repository is teamwork. Technical experts, reference librarians, electronic resources librarians, archivists, collection development specialists, cataloguing staff, collection maintenance specialists and preservation project managers are required.

Conclusion:

In summarizing, Information Organizations are in the process of developing repositories either as part of their corresponding institutions or as open repositories to the scientific community. Repositories have emerged as a result of acquiring through open access procedures scientific information. The need to handle, preserve and manage scientific information in an information oriented environment and offer it as a service to its users had made libraries the designated points for the creation of such projects. The whole movement of securing freely and openly to all users scientific

information in an organized way, fully accessible through the production of metadata and high quality services we believe that is going to affect the publishing industry and information brokerage houses.
Libraries are now faced with the demands and necessities of their own new developments. Policies, attitudes and services have to be revised and follow the new trends. Furthermore, European libraries and information centers need to cooperate and develop common policies in order to face the global information market.
Information science education should also play a key role in preparing the information professionals of the future. It has to incorporate not only the new educational elements of new technologies, copyright issues and knowledge management but most of all should create the open minds to face all the new developments that might arise in the future. It also has to prepare people with free minds to create new informational products based on technology and even demand and shape new technologies according to the information needs of the future.

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