The research of institutional repository librarians

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Abstract. Institutional repositories play an important role in protecting and disseminating scholarly contents of universities, and the librarians have been the actually leaders and managers of institutional repository. Through examining the research status of abroad institutional repository librarians, this paper analyses the roles, responsibilities, skills demand of institutional repository librarians.

1.   Introduction

Institutional repository (hereafter referred to as IR) is digital collection capturing and preserving the intellectual output of a single or multi university community, created by academic institution staffs, researchers and students, and showcase scholarly research locally and globally [1]. With the development of the open access movement, IR becomes a new scholarly communication method, and plays an important role in scientific research. Nowadays, funding bodies and governments are now seeking an improved return on investment for funded research, so institutional repositories meet the need by preserving the intellectual, data storage and Open Access [2].

In recent years, under the widely implement of CALIS, the university library of mainland china has started the comprehensive attempt and practice of IR, taking Xiamen University Library and University of Science and Technology Beijing Library as representative, some libraries have established their own institutional repository and showcased Open Access documents [3]. Currently, the institutional repository librarian in mainland china (hereafter referred to as IR librarian) is still relatively weak, the theoretical researches on IR are mainly focused on resource construction strategy, investigation and comparison, legal policy issue and technical agreement, however IR librarian is rarely mentioned [4]. Through introducing the status of abroad IR librarian, this paper provides guidance for the establishment of IR in mainland china, especially about librarian staff, responsibility requirement, education and training.

2.   Construction of Institutional Repository of University Library

Because of these factors, IR becomes the new mission and responsibility of University Library. Firstly, recently academic institutions have been grappling with how to manage the digital intellectual output they produce including journal articles, conference papers, reports, theses & dissertation, teaching materials, artwork, research notes, and research data. Clearly, technology has made it easy to create, store and access digital material. Paradoxically however, while there is potential for instantaneous access, all too often many materials are not usually made accessible to many users and they remain marooned in the authors' computers. About 80-85% of digital intellectual output of universities is never made accessible to the public [5]. Secondly, Subscription fees for academic journals are growing, university urgently need to solve the problem how to preserve the academic achievement in the long term, safely and freely. Furthermore, foundation and government are also seeking an appropriate return on its sponsored fund. Driven by above factors, IR helps the universities to preserve digital outputs for a long period, also enhance the impact of academic institutions and researchers. IR is the way of Open Access to university research achievements.

3. Research of Institutional Repository Librarian

With the development of IR, more librarians are needed for IR. Compared with the traditional role of the library, the IR librarian not only have special knowledge and skills, but also really understand library. Therefore, it's difficult to find appropriately qualified staff [6]. In the development of IR, the shortage of professional staff is increasingly prominent and become the limitative factor that IR develops further.

2.1 Role of Institutional Repository Librarian

One role is defined according to the job which the librarians play in the construction and maintenance of IR. Jain. P and others believe IR librarian plays four kinds of roles in the construction of IR: (1) IR manager- managing the repository policies, strategic and financial management, advocacy and communication, staff and project management, expert advice to the institution; (2) IR builder- collecting more research outputs from university researchers, promoting the growth of IR documents; (3) Metadata standards expertise, quality control of content and metadata consistency; (4) Trainer-author training, and helping them to preserve the digital outputs.

The other role is defined according to the scope of responsibility which the librarians take in the IR team. In the survey of Italian IR librarians, Cassella. M found that 64% of the respondents (21 responses) to the survey identified themselves as repository managers and only 9% indicated they were repository administrators (3 responses). [7]. In the survey of librarians working in the Universities of Australia and New Zealand, Simons. N defined them into four roles: repository administrator, repository manager, technical support, general knowledge base support, see Table 1.

Table 1 IR Librarian Role Definition

Role	Definition
Repository administrator	Take full responsibility for IR, including policy development, project promotion, software selection, contact stakeholder and team leadership
Repository manager	In charge of managing the implementation of IR technology, including software customization, metadata management, project report, tracking statistics and customer training
Technical support	In charge of updating IR technology, including programming, software update, patching and fix defects
General knowledge base support	In charge of data input and general supporting

In practice, according to the data structure of DSpace, the University of Texas library define three administrative roles: IR guardian, responsible for managing all aspects of IR, coordinating different communities and collections; community manager, responsible for managing all aspects of one community in IR, working out special procedures and guidelines; collection guardian, responsible for managing one collection in community [8].

2.2 Responsibility of Institutional Repository Librarian

Through literature survey [9] - [10] and job requirement of parts of university library IR librarian (Table 2), the responsibilities include below five basic areas:

(1) Overall plan and management of IR. Lead the planning, implementation, monitoring and evaluation of IR, design the construction plan, choose the software platform, set up the standard, organize the project implement, define the construction guideline and evaluate the progress of project.

Technical--knowledge and experience of software platforms and the main repository software and its lifecycle of deployment, testing, upgrading and development.

Making the metadata plan. Set up metadata standard for every self-archiving authors.

(2) Promote and assist content submission. Establish close relationship with subject librarian, academic department and teacher, promote the IR benefit to teacher, assist staff to submit the content to IR as required, review the quality of submitted content and metadata consistency, analysis of data statistics.

(3) Reference and user training. Promote the related IR policies, such as creative commons and e-print. Promote teachers and students' understanding on IR, answer the questions which the user encounter when preserving and access IR.

Table 2 Responsibility of Institutional Repository Librarian in four Universities

University Library	IR Librarian	Responsibility
California State University, San Marcos Library	Institutional Repository Librarian	① Project management responsibilities include leading the planning, development and supervision of the repository, providing services including drafting policies and procedures, user support and training, conducting user-centered evaluations, and ongoing program and policy analysis. ② Liaison/outreach responsibilities include advocating and promoting use of the library's institutional repository, seeking out contributors, and serving as spokesperson to publicize the institutional repository's benefits and uses. ③ Content management responsibilities include defining and managing the digital collections, working collaboratively with IITS on system and academic technology issues, and collaborating with library staff on metadata schemes appropriate for digital information. ④ The successful candidate will also provide vision and direction for a growing suite of services supporting scholarship and will maintain a strong level of competence in scholarly communication issues such as open-access initiatives, intellectual property, data curation, and new forms of publication and research/creative activities [11].
Western Oregon University Library	Institutional Repository & Systems Librarian	① Promoting and growing IR collections through collaboration with library staff and the broader campus community, as well as advising the campus community about authors' rights and other issues related to scholarly communication. ② Managing the daily operation and website maintenance of the IR, including developing and updating appropriate policies, procedures, workflows, and standards for cataloging, metadata, and other issues relating to supporting databases. ③ Maintaining and developing new partnerships with library subject liaisons, faculty, departments and research units, and journal editors for adding content to the repository. ④ Collaborating with colleagues in investigating, evaluating, recommending, and implementing technologies to improve service and optimize the information technology resources. ⑤ Assisting in planning, organization, and management of transition from the current Innovative Interfaces, Inc. integrated library system (ILS) to the new Ex Libris ILS to be shared by the libraries of the Orbis Cascade Alliance [12].
University of Waterloo Library	Digital Repository Librarian	① Leads projects which design and develop technologies supporting the capture, description, delivery, and preservation of digital objects ② Serves as a technical resource to liaison librarians and others across the Library to facilitate the Library's role in establishing and advancing scholarly communication, digital repositories, and publishing platforms

		③ Provides ongoing development and support of repository infrastructures for digital collections ④ Assesses the technical requirements for digitization projects and drafts appropriate specifications and procedures ⑤ Facilitates research and educational uses of local digital collections ⑥ Provides leadership in the development of the Library's open access scholarly communications services, working closely with liaison librarians, Library Managers, and others across campus, as appropriate ⑦ Takes an active role in the development of digital preservation policies and practices, in collaboration with library staff [13]
The University of Chicago Library	Institutional Repository Manager	① Work with Library divisions and campus IT Services and the Research Computer Center to plan, implement, and evaluate sustainable IR technologies, services, and policies that support data management, long-term archiving, and appropriate sharing of research, teaching, and administrative materials; ② Research, recommend, and test new technology; ③ Participate in local, regional, national, and international discussions and initiatives regarding standards, best practices, cooperative data curation, and data life cycle management activities and services; ④ Advise and train faculty, graduate and post-doctoral students, and administrators in writing data management plans in collaboration with RCC and IT Services; ⑤ Work with faculty, graduate students, academic and administrative units, and research centers to enable them to better manage, describe, archive, preserve, and make available their data; ⑥ Conduct user needs analysis, product evaluation, selection, customization, testing, implementation and support [14].

2.3 Vocational skills of Institutional Repository Librarian

Institutional Repository Librarian need new professional roles and skills. In 2011, Simons. N and others made a survey of 85 IR librarians from 45 universities in Australia and New Zealand, defined the four kinds of knowledge and skills required as IR librarian: special knowledge, technology, repository administrator and management. In the survey of Italian IR librarians, Cassella. M found the most important skills for IR librarian are increasing the amount and quality of items deposited and resolving the copyright issue. Other skills, such as metadata standards, project management, workflow of IR, are highly required. In addition, it needs the skills of interaction standard and agreement. British SHERPA IR also released the document of IR librarian skill [15], list the skills as required as IR librarian, reference for IR librarian recruitment.

As the role in IR is different, there are big differences on the knowledge and skills which required as IR librarian. Overall, managing a successful IR, IR librarians need to have five aspects of knowledge and skills: management, software, content, professional IR knowledge, communication.

Management: develop workflows to manage the capture, description and preservation etc. of repository outputs; manage the day-to-day running of the repository including any mediated-deposit service (if required or possible) or self-archiving by authors; manage the repository budget, source funding opportunities, both internal and external, for repository projects where appropriate; coordinate and manage activities of repository personnel and coordinate repository development with associated departments; set up test collections and user satisfaction surveys; monitor deposit, produce

usage reports where appropriate, manage user expectations; handle comments, complaints and relationships.

Software: standard web-based software systems including (but not limited to) Unix, Linux, SQL Server, MySQL, SGML, XML, PHP, JAVA, PERL, Apache; at least one major repository software including (but not limited to) EPrints, DSpace, Fedora, OPUS; web-based software and services including web 2.0 services such as del.icio.us and statistics tools such as Google Analytics or AWStats; standard protocols, such as OAF-PMH, OAJ-ORE, CER-IF etc; system testing and evaluation; web design.

Content: develop a content policy for the repository, included the types of materials and management method; increase the amount and quality of items deposited in the repository by identifying suitable publications for deposit, encouraging authors of suitable publications to deposit their work; asking authors for files and converting them to appropriate formats for deposit (e.g. Word to PDF); harvesting /downloading bibliographic data from external systems into a repository or CRIS.

Institutional repository knowledge: IR construction knowledge, such as knowledge of intellectual property in the digital environment, checking copyright, author's privacy and other legal issues; understand the related terms of Open Access and self-archiving license.

Communication: promote the repository outside the institution as a showcase of the institution's work; organize training of IR knowledge; answer user consultation; liaise with external stakeholders in open access and repository development, including (but not limited to) funding agencies; publishers; repository groups or federations; service providers; learned societies; international peers and related organizations; liaise the fund offices in order to get sponsorship information.

4. Education of Institutional Repository Librarian

According to Simons N's survey, 17% of IR librarians in Australian institutional repositories had received formal training, and 81% of the rests had received informal training. Cassella. M introduced that in Italy 55% of IR librarians had received special professional training before participating in IR construction. The training has these characteristics: (1) training courses are close to the realistic needs of IR librarian, make adjustment throughout the IR construction as technical structure and requirements; (2) training methods are mostly informal, most of the skills and knowledge which IR librarian required are obtained through vocational training, webinars, blogs, reports, articles. Also this is a good way for IR librarians to keep updating knowledge.

As you can see, in the articles from Cassella. M, Simons N and Zuccala A, so far there is no traditional library or information courses can meet the basic needs of IR management. About this issue, Zuccala A proposed a new IR management course system, the main components of the course include at least: constantly changing environment of electronic publishing, storage knowledge, management knowledge, librarianship, technical tools and legal issues [16].

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