

SOME PRACTICAL POINTS ON ORGANIZING ETD CONSORTIA

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ABSTRACT

Electronic Thesis and Dissertation (ETD) digital libraries are being developed worldwide. Higher education organizations commonly collaborate in these efforts by forming consortia. Some of the existing consortia are at the national level while others are at regional levels. NDLTD (Networked Digital Library for Thesis and Dissertations) is an initiative that is creating an international consortium which includes organizations or other ETD consortia in various countries.

Consortia are important because they create an opportunity to collaborate, to share experiences, and to establish or adopt standards that guarantee interoperability among participant ETD digital libraries. However, developing consortia is challenging since it requires a strong degree of coordination while at the same time preserving existing organizational identities and functions. This makes the role of consortium coordinator complex. Implementation and operation of information services that integrate the participants' initiatives are the ultimate goal of a consortium. These services are of paramount importance and need to be clearly established in order to operate effectively.

This paper addresses some of the issues mentioned above including solutions that have been implemented. It also points to problems that might occur during the organization and operation of consortia.

Keywords: **ETDs; consortia; union catalog; digital library**

I. INTRODUCTION

Humankind's desire to access universal information and knowledge is not new. In the 3rd century BC, King Ptolemy I Soter decided to assemble a comprehensive repository of the books of his time. The efforts were of many types ranging from requests to outright confiscation of scrolls and manuscripts. The items were collected in Alexandria where they numbered approximately 700,000. A classification system was adopted to organize the collection [01, 02]. As libraries evolved they required a means to integrate existing collections using a common method of recording and classification. The first known union catalog dates back to the 13th century. It began as a listing of all the manuscripts of British monasteries but was never completed [03].

Six centuries later, in 1895 in Belgium, Paul Otlet and Henri La Fontaine started a project called Mundaneum. The objective was to assemble records of all the printed documents existing in the modern world. Their stated objective was to achieve universal peace through the project. The Mundaneum hosted approximately 12 million bibliographic records (cards), an international library, a universal university, and a world museum among other organizations initiatives. The Institut International de Bibliographie was then created. While Otlet and La Fontaine were not able to achieve universal peace, they did produce an important classification tool: the Universal Decimal

ETD 2004

Classification (UDC). Some have referred to Otlet and La Fontained as the inventors of the Internet on paper: the Mundaneum [04, 05].

These as well as other initiatives have generally fallen short of their desired objectives but, nevertheless, stand as important markers in the historical effort to achieve a universal knowledge base of documents. Clearly, advances in information and communication technology (ICT) have not only prompted great leaps in the goal of assembling and distributing information on a worldwide basis, but it has also created opportunities for collaboration among the community of information professionals who have contributed to this work. Using ICT as a tool, consortia is a means for promoting collaborative work for information sharing.

Currently there are many consortia of ETD digital libraries in the world. These include national libraries like the Australian Digital Theses Program [6], Vidyanidhi – the Indian consortium [7] and the Biblioteca Digital de Teses e Dissertações in Brazil [8]. There are also regional initiatives like the Appalachian Regional ETD Consortium and Tésés Doctorals de Catalunya [15]. In the ETD world there is a third level consortium – the international consortium. The Networked Digital Library of Theses and Dissertations [10] is an international consortium of different types of institutions, ranging from individual universities to other consortia, national libraries and businesses.

All ETD consortia have a common goal: to make ETDs available through digital libraries connected to a network (Internet). In order to achieve this goal, these consortia share some common objectives:

- To help institutions start projects by raising the awareness on the importance of ETDs and by tutoring the first steps on implementing local ETD digital libraries
- To discuss and create standards to allow interoperability
- To share SW solutions
- To offer training activities
- To build union catalogs

The results of creating a consortium are beneficial to the geographical area it covers, whether a region, a country, or a segment of, or the entire, world. Four components are essential for establishing a consortium:

- ETDs – higher education organizations that host graduate programs are the main participants in a consortium since ETDs are repositories of work produced by university graduate students
- Coordination – efforts must be aligned to achieve a common goal; tasks must be assigned to and completed by participants; and information services must be offered having both quality and reliability
- Cooperation – a consortium presupposes that its members would share their resources – technology, services and knowledge – so that participants benefit from each other's experiences in providing access to their own ETDs
- Integration – a consortium does not require that all members adopt a common technological solution to implement their local ETD digital libraries. However, regardless of the solution adopted, these digital libraries must be integrated. Integration is reached through the definition and adoption of standards for interoperability which allows local system characteristics to be preserved. The adoption of interoperability standards is essential for creating national and international ETD information services.

Of course, one must add to this mix a strong element of (collaborative) work!

ETD 2004

The following sections expand on these four components: ETDs, coordination, cooperation and integration.

II. ETDs

Institutions that join an ETD consortium must make their own ETDs available for access through a network. In order to do so, the institution must either develop an ETD project to make its own ETD digital library compliant with the standards of the consortium or, alternatively, it must create its own ETD digital library. In either case, there is a series of decisions that need to be made and actions that need to be taken in order to create functional interoperability with the consortium of which it is a part. Below are a list of actions one might assume would be necessary for participation.

- The institution would have an ETD digital library or be willing to create one – internal issues concerning integrating graduate programs, libraries and IT groups must be addressed.
- Processes and technologies must be developed for e-publishing theses and dissertations. This includes every element involved in the process. Moreover, graduate students as well as graduate school deans must develop competencies for participation in the process.
- The problems of authors' rights and copyrights must be addressed. Anecdotal evidence suggests that it is not uncommon for institutions to have not discussed this issue prior initiating an ETD project.
- Workflows for processing theses and dissertations must be redesigned in order to accommodate the new media. If faculty and administration are not committed to the ETD project, students will have difficulties on finding support and consequently on complying with the process. Since the range of participants in the process crosses organizational boundaries (including the author), there may be an expectation that change management initiatives (including agents of change) for overcoming resistance will be critical for successful ETD implementation.
- Related to the previous point, there may be issues of whether there is a need for both paper and digital versions of theses and dissertations vs. requirement of digital versions only. Following on this issue, digital preservation needs to be addressed before decisions are made on eliminating paper versions – the content as well as the organizational memory of graduate programs are at stake.
- Metadata element sets must be defined in order for the local digital library to maintain compliance with national and/or international standard(s). This task is facilitated by the institution's decision to become a member of an ETD consortium. Such decision also guarantees compatibility with national or international metadata standards. When implementing an ETD digital library, a complete set of metadata must be captured for each ETD since trying to fill missing elements later on may prove either impossible or very expensive.
- An interface between the ETD digital library and the existing OPAC must be defined and implemented. Incompatibility between the metadata set adopted for ETDs and the one adopted for the OPAC may occur. For example, if the etd-ms¹ standard is being adopted for ETDs, a few of its elements are not present in traditional OPACs. Therefore, if a retrospective digitization is being implemented, old records would not contain all the elements required for the ETDs. The same situation may also happen when universities do not want to run a digital library but just add hyperlinks in the OPAC to the electronic version of the documents using the 856 MARC field. Compatibility of language codes is another potential problem.
- Staff competencies for building and managing digital libraries and processing ETDs must be either developed or imported.

¹ Etd-ms: electronic thesis and dissertation metadata set. See www.ndltd.org

ETD 2004

- A cross-functional project team needs to be created, led by a strong leader who is able to marshal high-level administrative support.
- A service to support students on formatting the electronic versions of their theses and dissertations must be established.
- Support for the project must include a budget for hardware - e.g., computers for students and a server(s) for the digital library.
- The network infrastructure within the campus must support a high-speed connection to the Internet.

In sum, there should be no doubt that universities face significant work and multiple challenges in successfully implementing ETD digital libraries.

III.COORDINATION

In most ways a consortium project has the same set of issues as any other ICT project except that the degree and importance of coordination is much greater. Therefore, as a first step, it is necessary to have a coordinating institution. The Australian Digital Theses Program is coordinated by CAUL – Council of Australian Librarians (<http://www.caul.edu.au/>). In the case of Chile, the Universidad de Chile (<http://www.cybertesis.cl/>) is the leader. In Brazil, IBICT – the Instituto Brasileiro de Informação em Ciência e Tecnologia (<http://bdt.d.ibict.br.bdt.d/>) took the leadership in creating and managing the consortium. In Venezuela ANABISAI – the Asociación Nacional de Bibliotecas de Sector Académico y de Investigación (<http://anabisai.org.ve/>) has a similar role.

In the cases of Australia and Venezuela, non-governmental organizations manage the projects. In Chile it is a university that manages the consortium and in Brazil it is a federal government agency. There is a wide variety of possibilities and no universal solution, except that a consortium needs good coordination and management.

The main activities of the coordinating institution include the following:

- Developing a model for cooperation establishing responsibilities of all parties involved in order to make it clear who the participants are and how they are expected to cooperate. For example, the coordinating institution might have the responsibilities for developing and maintaining a union catalog, implementing mechanisms for metadata harvesting, offering a technical support service to local institutions, developing and maintaining software solutions for submitting ETDs, etc.
- Coordinating the development of a metadata standard to be adopted by participants. In developing a metadata standard it is necessary to: maintain compatibility with existing standards in order to participate in national and/or international initiatives and to take into account the particular needs of the institutions as well as national/regional demands.
- Negotiate service operation agreements with institutions in order to achieve good information service quality - e.g., running servers 24/7.
- Developing relationships with funding agencies, national libraries and commercial initiatives. Support from these other institutions insures continuing authority and support for the consortium.
- Establishing a training program for partners so that participating institutions have requisite levels of knowledge and can fully cooperate with consortium initiatives.
- Developing software solutions that can be used by participating institutions that do not have the resources to develop their own systems. This will help include institutions that do not have digital libraries and also add economies of scale.

ETD 2004

- Locating funding sources for the creation and the maintenance of the consortium. Establishing a fee for consortium membership is an additional possibility.

Clearly, coordination is a critically important aspect in the organization of a consortium. Poor coordination may lead to a diminishing commitment to the consortium on the part of user organizations. Therefore, a strong, knowledgeable and committed coordinating institution is a vital element.

IV. COOPERATION

Institutions that produce ETDs must perceive the advantages of joining a consortium. That is, they must believe in the advantage of building an ETD cooperatively, versus independently. Once they have performed most or all the tasks listed in section II, they are ready to join a consortium. But joining the consortium implies that they will undertake the following activities, each of which implies a cooperative relationship with external organizations. They must:

- Implement the metadata standard defined for the consortium.
- Allow their metadata to be transferred to a union catalog, either by harvesting or by file transfer.
- Cooperate with other institutions in terms of sharing their knowledge, for example participating in training sessions, or by sharing experiences.
- Agree with the terms of local information services, for example, by guaranteeing the 24/7 operation of servers both for metadata harvesting and access to ETDs.
- Allow their staff to participate in committees to help run the consortium.

If members do not cooperate, the consortium may become a kind of bureaucratic institution that, at an administrative level, is out of touch with the needs of the user community.

V. INTEGRATION

As the prior sections illustrate, the building of an ETD consortium is a blend of technical and social elements. Technical aspects of ETD systems are undoubtedly critical elements for success, and therefore some degree of technical integration of hardware, software, and standards is clearly necessary. However, perhaps to a greater degree in consortia than in intra-organizational ICT projects, a level of social integration is an equal, or perhaps greater ingredient for success. The following list provides examples of such technical and social integration issues.

Technical elements	Social elements
Interoperability standards	Coordination/governance
Harvesting mechanisms	Communication
ETD submission applications	Collaborative initiatives
Hardware and software	Change management
	Service agreements

VI. CONCLUSIONS

An ETD consortium is a product of collaboration among institutions. In the process of making decisions and implementing solutions it is the work of the members collectively rather than

ETD 2004

individually that lead to successful outcomes. We have emphasized that the nature of the elements in generating solutions is as much or more a matter of achieving social integration among participating members of the consortium as it is a matter of achieving integration among the various technologies, standards and protocols that may be adopted in the building of the ETD digital libraries. Following on this point, we further emphasize that it is inevitable that in the future the various ETD projects around the developed and developing world will converge, and hopefully not conflict. In this context there will be the additional concern that as projects converge across geographic and political borders, there will be a need for facilitating an open and productive collaboration among participants with differing cultures as well as uneven or unequal resources for participation. Such a democratized form of consortia will be critical in achieving the goal of universal access to the scholarly documents of the world for all.

VII. REFERENCES

- [01] Book Information Website
<http://www.xs4all.nl/~knops/index3.htm/>
- [02] Manguel, Alberto
Uma História da Leitura
Companhia das Letras
Brasil, 1998
- [03] Mey, Eliane Serrão Alves
Introdução à Catalogação
Briquet de Lemos/Livros
Brasília, Brasil, 1995
- [04] Mundaneum
<http://www.mundaneum.be/>
- [05] UDC Consortium
<http://www.udcc.org/announcement.htm>
- [06] Australian Digital Theses Program
<http://adt.caul.edu.au/>
- [07] Vidyanidhi
<http://www.vidyanidhi.org.in/>
- [08] Biblioteca Digital de Teses e Dissertações
<http://bdt.ibict.br/>
- [09] Tésés Doctorals de Catalunya
<http://www.tdcat.cbuc.es/>
- [10] Networked Digital Libraries of Theses and Dissertations
<http://www.ndltd.org/>
- [11] Council of Australian University Librarians
<http://www.caul.edu.au/>
- [12] Universidad de Chile Cybertesis
<http://www.cybertesis.cl/>
- [13] Instituto Brasileiro de Informação em Ciência e Tecnologia
<http://bdt.ibict.br/bdt/>
- [14] Asociación Nacional de Bibliotecas de Sector Académico y de Investigación
<http://anabisai.org.ve/>
- [15] Tésés Doctorals de Catalunya
<http://www.tdcat.cbuc.es/>