Digital Dissertations at Aalborg University Library

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STATUS IN DENMARK

At present, digitization of Ph.D. theses occurs on a very limited basis in Denmark. Until recently the emphasis has been exclusively on creating and maintaining bibliographic databases containing references to published research literature, descriptions of research projects, and research profiles of institutes, laboratories or departments. The principal vehicle for this information in Denmark is the Danish National Research Database, <http://www.forskningsdatabase.dk/uk/indexuk.htm>, established by the Ministry of Research and Information Technology. The database, which is part of Denmark's Electronic Research Library, presently contains about 150,000 research references.

Recently Danish universities, mainly university libraries, have been taking steps toward adopting the role of electronic full text publisher.

Roskilde University Library is currently in the process of building a full text archive of dissertations, which will be available as soon as the software management system is completed.

The Library of the Aarhus School of Business has established a database where researchers register their research themselves, and if they desire, are invited (not required) to enclose the full text of their articles, conference proceedings, dissertations, etc. However, this is not obligatory and consequently is not often done, even though the option of enclosing full text is defined as a default feature. At present, the base remains primarily a bibliographic database. The Library of the Aarhus School of Business is collaborating with the Danish Veterinary and Agricultural Library on developing the former's research registration system and examining the possibility of deploying the concept in the Danish National Research Database.

Some departments of the Technical University of Denmark publish dissertations electronically, some of which can be accessed via the library.

AALBORG UNIVERSITY LIBRARY

Aalborg University Library has already had some experience in publishing digital dissertations and is currently in the process of developing a more comprehensive and technologically state-of-the-art solution.

In 1998 the library established a collection of electronic dissertations produced at Aalborg University, called *Aalborg University Electronic Library,* on the library's server at <http://www.aub.auc.dk/phd/>. As part of the project the library experimented with incorporating two working paper series into the collection. The interface is in English, as are most of the dissertations, which are available in PDF (Portable Document Format). Although successful as a first step, this solution does not sufficiently open the
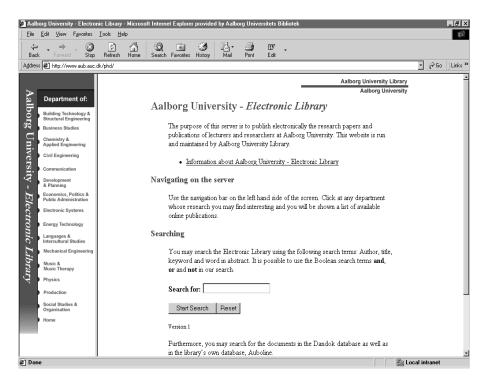

Figure 1: Aalborg University Electronic Library

collection to the rest of the community and beyond, as it must be accessed via the library's web pages. Furthermore, since the documents are submitted voluntarily, Electronic Library by no means constitutes a complete collection of the university's dissertations. At present there are 24 dissertations in the Electronic Library.

Aalborg University Library is currently designing a new, more comprehensive research database which will be a part of the Knowledge Base North Jutland (*Videnbase Nordjylland*, VBN) created in a collaboration between Aalborg University and the University Library and supported by the European Union. VBN's goal is to facilitate access to and dissemination of research and information on research produced by Aalborg University for industry and business in the region of North Jutland.

Research is one of the university's foremost products, and there is growing interest in profiling the university through its research. In 1999 the university management decided to electronically register all research done at the university and designated the library as responsible for establishing and maintaining a system containing extensive information on the research publications produced. This will be a large database on a separate server providing access to the university's dissertations (full text), ongoing research (full text working papers) as well as research projects (bibliographic references or abstracts). The research database will have an English as well as a Danish user interface. The database will constitute the core of a management system for collecting information on the university's research, making it available via search software and links to full text, and reporting it to the national research database as well as the statutory delivery of publications to the Royal Library.

The system will provide an overview of each individual researcher's work and work-in-progress as well as the research done at the various departments of the university. It will serve as a pre-print service with a large collection of forthcoming articles in scholarly journals. It will also provide the profiles of research projects and the researchers associated with them.

The emphasis on full text documents will increase the availability of the university's research and to a greater degree „open" the university and its products to business and industry.

In addition, information from the research database will be channelled directly from the research database to the Danish National Research Database, thus simplifying the process of reporting research to the central national authority.

RESTRUCTURING WORK FLOW

Our present work flow with Electronic Library is as follows: Each department secretary is responsible for taking the initiative when a member of her department produces a dissertation. She sends a contract to the researcher in which he grants the library permission to publish the dissertation. He signs the contract as well as filling out a form with key words and an abstract. He sends the contract and form (both in paper) as well as an electronic file containing the dissertation to the library's webmaster, who converts it to PDF. The library is responsible for checking the bibliographical information, reporting the dissertation to the Danish National Research Database as well as cataloguing the dissertation in the library's own holdings database and providing a link to the full text electronic version.
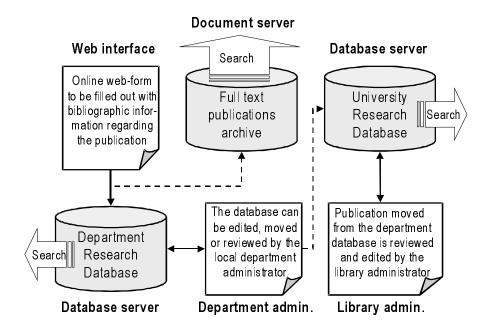

Figure 2: Work flow in new system[1]

The work flow in the new system will more efficiently exploit the potential of information and communication technology to rationalize and streamline the process. Fortunately, thanks to an important university policy decision, reporting research projects and information about dissertations will be mandatory to ensure that the system be as complete a collection as possible.

This will entail work processes on a much larger scale and necessitate even greater efficiency. The new system allows for a greater degree of de-centralization and delegation of separate work processes and reduces redundance. Research information will continually be supplied to the system at the appropriate sources, with deadlines to ensure timely delivery. For example, the faculty office will provide information on Ph.D. and doctoral degrees granted. Each researcher will personally type bibliographical and descriptive information into the system via web forms, and the information will then be controlled by software and transmitted to a special database, where a librarian will review and edit the data before releasing it to the research database. The researcher will also send the full text file of his research document, i.e. he is responsible for the authenticity of his document. Access to the system will be controlled by password. The researcher will no longer have to sign a contract granting permission for electronic publication, as this is implicit in the act of his sending the document for publication. In accordance with Danish law[2] the copyright belongs to the individual researcher unless, for example, he enters an agreement with a publisher stipulating the transferral of the copyright to the publisher. This is a potential barrier to electronic publication as some publishers require sole rights to publication, and consequently, that the document be removed from the university's server. I will shortly return to the subject of barriers to electronic publishing.

Since the library is responsible for maintaining the system, we must also plan for preservation to ensure long-term availability, which entails the capability for migration to future technology. This is one of the reasons why we chose PDF, as it is a standard format. PDF also protects the intellectual integrity and authenticity of the dissertations, as documents converted to this format remain true and inalterable copies.

Furthermore, we consider it important to enrich each record or document with appropriate metadata so that search engines such as Alta Vista can effectively retrieve dissertations and other research information by distributing parts of the database directly to the web.

BARRIERS TO ELECTRONIC PUBLISHING

Although making research material available is technologically feasible, our current research database project proves it to be a complicated process. Creating an efficient solution based on state-of-the art soft- and hardware requires a considerable investment of time and money. In addition to these impediments, there remain psychological and legal barriers to electronic

publishing. The printed version may still seem, in conservative circles, to denote a greater degree of academic credibility with regard to promotion and tenure. To some, the web is relatively unfamiliar as a publishing medium. One of the consequences of this is that researchers are not always sure when a dissertation can be regarded as officially published, even though the Danish copyright law of 1995 confirms in § 8, that electronic publication, with the copyright owner's permission, in a publicly available medium, constitutes valid publication[3].

Financing is another consideration. Researchers who publish paper versions of their dissertations, sometimes at their own expense, may be reluctant to make digital versions available free of charge. Some may fear that a digital copy may undermine the already fragile economy of publication, so fewer copies would be sold and the profit reduced accordingly. Fortunately, many publishers believe that electronic publishing can actually function as an advertisement for the paper product, not necessarily discouraging sales, but actually promoting them. Examples of this promising trend are the free electronic editions of the *Encyclopaedia Britannica* and *Merck Manual.*

There may be other examples of a conflict of interest between print and electronic publishing. Pioneer research within the technical or medical disciplines can normally only be published once[4]. Most scientific journals will refuse to publish previously published works. So it is understandable if some scholars show concern that publishers might regard electronic publishing as „prior publication" and refuse to consider their work for inclusion in scholarly journals. As mentioned above, some publishers require the sole rights to publication, and consequently that all published electronic editions be deleted. Thus, to make electronic publishing attractive, there should be an „escape clause" for scholars who submit documents for electronic publication, to the effect that they may be deleted should a commercial publisher require it. However, I am not convinced that this is really the most desirable long term solution. One hopes that universities' web publishing will soon achieve status as the full equivalent of paper publishing, and thus be regarded as a competitive alternative to commercial publication.

Another barrier to electronic publishing is that researchers may not feel inclined to reserve the time necessary to publish their results electronically; indeed, there may not be sufficient incentive for them to do so. It is therefore of critical importance that the management of the university supports the endeavor, and strongly encourages all scholars to report their research and, if they are not bound by other agreements, submit their dissertations for electronic publication.

THE NEAR FUTURE

Information technology is rendering bibliographical databases increasingly anachronistic. Today users require one-stop shopping. They demand direct access to the entire body of information available online and are no longer content with a mere abstract or a few key words. The seamless ease of full text electronic journals has led us to expect the entire text to be available immediately. A bibliographic reference instead of the full text is frustrating and out of pace with current technology. Nor do users wish to search each library site separately to view its research documents. A better solution is a portal or gateway incorporating these collections into one virtual library.

Ideally, Z39.50 protocol compliance would allow the Danish National Research Database to function as a portal leading seamlessly to the collections of digital dissertations placed on Danish research libraries' servers. This way there would only be one record to maintain, so that at all times the Danish National Research Database would be the definitive up-to-date gateway to Danish research, decentrally stored and maintained at university libraries. The next step might be to transcend the vision of the national research portal and create international portals based on research profiles rather than institution or country.

In any event, electronic publishing of dissertations will open significant research areas to a wider public. This knowledge will be used in new ways by a new market segment. Monitoring software can already provide valuable information on who constitutes the new market for interest in research. In Denmark, for example, we have observed that journalists are frequent visitors to research databases. In the next few years the opening of the university's research to business and industry will offer a promising new perspective of potential partnerships and development opportunities, as well as profiling and differentiating the universities.

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