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The Norwegian Digital Library – Easy Access to Information and Knowledge Sources

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Abstract

The Norwegian Digital Library Initiative (NDLI), a 5 year national program at the Norwegian Archive, Library and Museum Authority, has been working actively since November 2003 to fulfill its vision: Give the public easy access to information and knowledge sources.

Activities and projects are currently underway within the areas of digitalization, licensing, portals and user services. This paper briefly describes the Initiative's background, its potential users, and specific project results.

0 Introduction

During the course of the last 45 years, digital technology has been used to rationalize museums', libraries' and archives' (MLA) tools, and to help these institutions effectively perform their traditional tasks: Selection, preservation and facilitation of use. The advent of the Internet in the 1970's and especially the World Wide Web in the 1990's, opened up a new world of exciting possibilities for the way in which these institutions can present their collections digitally, as well as many new challenges like the long term preservation of these materials. Today, the Norwegian Digital Library Initiative is working to establish a common

framework for a digital library, thus facilitating the general public's access to digital content and services from libraries, archives and museums.

1 Background

1.1 *The Norwegian Archive, Library and Museum Authority*

Libraries, museums and archives face similar technological, legal and professional challenges in today's society, and in 2000 the Ministry of Culture and Church Affairs suggested an extended collaboration between these institutions in a report to Parliament¹. As a result, the Norwegian Directorate for Public Libraries, the National Office for Research Documentation, Academic and Special Libraries and The Norwegian Museum Authority merged, and the Norwegian Archive, Library and Museum Authority was established on January 1, 2003². Today, this public institution under the authority of the Ministry of Culture and Church Affairs works to improve the ability of the sectors and institutions to meet these and other challenges. Its main objective is to improve the development, preservation and use of cultural and knowledge-based assets, and it works across departmental and administrative boundaries, promoting partnerships and collaboration between the three sectors and addressing sector specific challenges.

Currently, the Norwegian Archive, Library and Museum Authority also focuses on two major programs: *Culturenet.no*³ and the *Norwegian Digital Library Initiative*⁴. This paper highlights the Norwegian Digital Library Initiative; its vision and ambition, focus areas, potential users, challenges, current activities and specific projects.

2 The Norwegian Digital Library

2.1 *Vision, Ambition and Focus Areas*

The Norwegian Digital Library Initiative (NDLI), a 5 year national program, was started in November 2003. Unlike digital library programs in other Scandinavian countries, e.g. Denmark and Finland, the Norwegian initiative encompasses the participation of *all* types of libraries, not just academic or research libraries⁵. It also includes archives and museums when these institutions find participation in the program natural and useful.

The Norwegian Digital Library Initiative's *vision* is to give the general public's easy access to information and knowledge sources, as well as cultural experiences. Hopefully this can be done in ways that best suit user's individual situations, roles and needs.

¹ The idea of grouping museums, libraries and archives in one sector – a MLA-sector – originated in the European Union. Norway has one of the most developed MLA-sectors in Europe aside from Great Britain, despite the fact that Norway isn't a member state.

² See The Norwegian Archive, Library and Museum Authority [online]. – URL: <http://www.abm-utvikling.no/om/english.html>

³ The goal of Culturenet.no is to present Norway's digital cultural resources to the general public, see the Norwegian pages at <http://www.kulturnett.no>

⁴ See <http://www.norskdigitaltbibliotek.no/englishindex.html>

⁵ Denmark's Electronic Research Library (DEF) gives Danish research libraries access to content via its portal, see <http://www.deff.dk/>. FinELib, Finland's equivalent, strives to support higher education, research and learning in Finland, see <http://www.lib.helsinki.fi/finelib/svenska/>.

The Initiative's *ambition* is to make more digital content available for users by:

- defining selection criteria and guidelines for the digitalization of existing knowledge-, cultural- and experience resources
- finding better ways to negotiate licensing agreements for electronic resources: E-journals, E-books, databases, etc.
- utilizing collections better through the use of systems that communicate via common standards, formats and protocols
- increasing the level of collaboration between those who produce content, metadata and services

Three people from the Norwegian Archive, Library and Museum Authority are engaged fulltime in the Initiative's Core Team or Secretariat and approximately seven more staff members are engaged in the NDLI Team. An external reference group consisting of 4 experts from the MLA⁶-sector has also been established to aid these teams in technological matters. A Program Committee consisting of representatives from central MLA-institutions functions as the Initiative's consensus and policy building body.

The Initiative's ambition and its many underlying goals are reflected in the five major focus areas: Digitalization, Licensing, Portals, Technical Framework and User Services, and projects in all five areas have been started by different types of library institutions with funding from the Initiative. By coordinating existing activities at the national, regional and local levels, as well as by supporting collaboration between MLA-institutions, the Core Team strives to reach the Initiative's vision. So far, it has established working groups within the areas of digitalization and licensing issues, and it is considering the establishment of a group within the area of portals and search tools. A strategic plan is currently being written, and when this plan is finished, it should help the Core Team discover "holes" that must be filled if a sound foundation for a digital library is to emerge.

The promotion of a Norwegian digital library is an additional area of importance, and the Core Team is currently working on a strategy and plan for the dissemination of information about the program, as well as for the necessary communication targets and channels.

2.2 What is a Digital Library?

The Initiative's ambition and goals must result in content and services that meet the needs and expectations of its potential users if they are to be worth the money and effort spent reaching them. When working to establish a digital library, it is therefore important to ask: What is a digital library? Who are its potential users, and what do these users need or expect to find in a digital library?"

A "digital library" can be defined in many ways, and the Initiative has often referred to the definition in a report⁷ advocating the establishment of a Norwegian Digital Library. A rough translation from the Norwegian text follows:

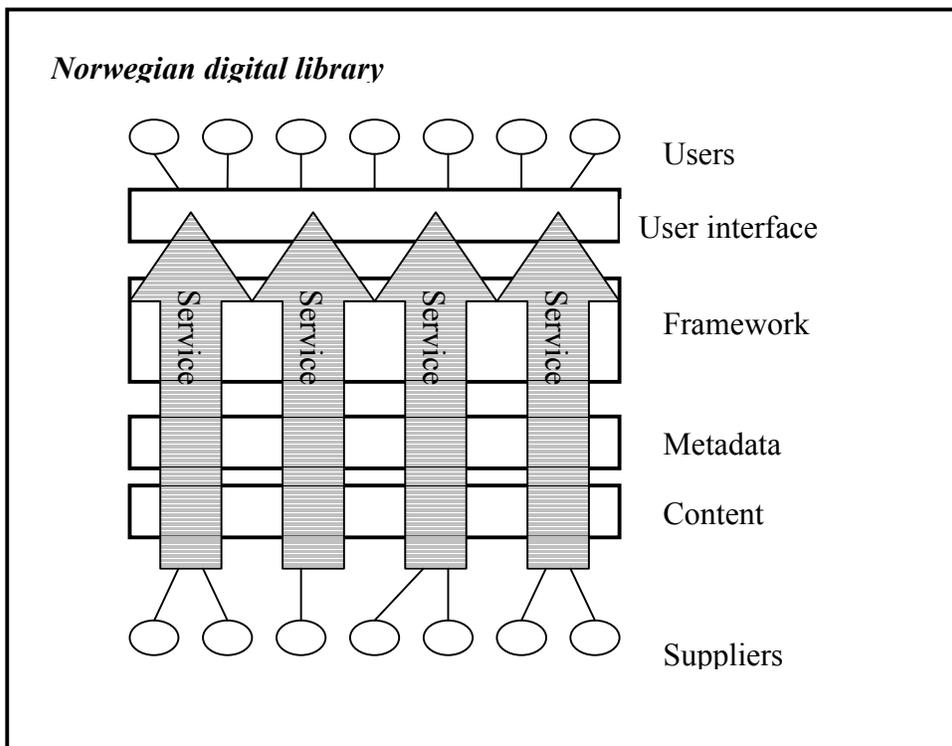
⁶ MLA is an acronym for museums, libraries and archives.

⁷ See Norsk digitalt bibliotek : innstilling avgitt av arbeidsgruppe oppnevnt av ABM-utvikling for å utrede hovedutfordringer for etablering av et norsk digitalt bibliotek 10. februar 2003. - [Oslo] : [ABM-utvikling], 2003. – 30 p.

A digital library is an organized collection of services and content resources that give users access to digital or analogue information via a computer network.

This report also stresses the fact that services and content in a digital library can be distributed among many vendors or organizations, that its services must be interoperable through use of commonly defined standards, and that users should experience the digital library as a holistic system via a simple user interface.

An abstract illustration of a digital library's components is shown in the figure below.



Of course, digital libraries encompass a whole range of aspects not mentioned in this definition, and as new technology continues to change our society and the way in which we live, our ideas of what a digital library is, or should be, will also change drastically in the future.

Today, the Initiative can draw upon the total resources and skills found in Norwegian libraries, archives and museums as it builds a Norwegian digital library: Collections of diverse nature are already available via metadata in online catalogues, and digitalized collections and virtual services already exist. In order to take these existing resources and skills a step further, we need a technical framework to ensure interoperability between systems, collaboration between institutions, as well as conceptual models, e.g. IFLA's FRBR model [1], for organizing information and facilitating its retrieval. We need ways to organize and fund future digital library services, as well as training and research programs to raise the level of understanding for – and use of – digital library services among the MLA and educational sectors, as well as in our society as a whole.

2.3 Content, Services and Access Module Design

The form and shape of the *Norwegian Digital Library* is still being discussed, and basic characteristics that must be taken into consideration are as follows:

- It should contain services and content from libraries, museums and archives.
- It should give all user groups easy access to services and content via user-friendly tools; *whenever* and *wherever* the user needs access.

A Norwegian digital library should facilitate the discovery of old photographs, church records, maps, newspaper articles, books in full text, virtual reference services, sound recordings, etc., as well as metadata that leads users to non-digital materials. Although these digital resources are distributed among library, archive and museum collections, they are presented to users via a computer – hopefully through a user-friendly interface.

A possible example of a user interface is a Norwegian Digital Library Toolbar containing icons that lead to federated search services in various types of digital collections, reference services, etc. Users could easily gain access to the digital library, simply by placing this toolbar on their electronic desk top or by integrating it in their program menus; something like a search engine toolbar. Students and teachers may prefer an interface that easily fits in with their preferred Learning Management System, and other professional groups will undoubtedly have specific needs as well.

One thing is certain: We can not predict the future, not even the very close future, in an adequate manner. This is true both in regard to what type of society will emerge as digital technology continues to develop in leaps and bounds, as well as what type of content and services users will need and want in their work, or in cultural or recreational situations.

2.4 Who are the Norwegian Digital Library's Potential Users?

The number of Internet users found in Norway today would have totally amazed us some ten years ago: Approximately 50% of all Norwegians between the ages of 9 and 66 use the Internet every day, and we can therefore expect the general public to be potential users of a Norwegian digital library. Students at all levels, teachers, as well as library, archive and museum professionals are just a few of the many groups that can be expected to use a digital library on a daily basis.

This assumption is based on several current trends in the Norwegian society today: The Ministry of Modernization is actively encouraging the use of digital content and digital services in public service and governmental offices, and eGovernment and eCitizenship are often topics covered in the media. The Ministry of Education and Research is promoting digital competence at all educational levels, and the ability to select quality sources from the Internet is an important issue for teachers; not just librarians. Finally, if we look at public libraries, we know that a recent doctor thesis in Norway shows that approximately 94% of the Norwegian population is willing to pay tax money for public library services – whether they actually use this type of library or not [2].

2.5 Which Expectations do Users Have?

Most potential users of a digital library are interested in finding materials of all types within a given subject area, and they don't really care if the materials are managed by archives, libraries or museums or if these materials have special characteristics: Unique, mass-produced, master copies, subject to copyright, etc.

Potential users working in the MLA-sector on the other hand, have completely different expectations to a digital library. The Initiative started by measuring the expectations of the library community in 2004, and it may need to survey other user groups, e.g. archives, museums and the educational sector in the future.

The web-based survey conducted among 114 libraries of all types⁸, as well as an in-depth interview with three important library institutions, showed that library professionals expect the Initiative to play an important role in society by letting them give users democratic and easy access to quality-assured information and knowledge sources. Libraries felt that by developing different types of portals, digitalization guidelines, etc., the Initiative could help them to better utilize their collections, and ultimately contribute to the growth of a more homogeneous library sector in Norway.

Libraries also expect the Initiative to establish a national digitalization policy, fund and support digitalization projects of diverse nature, contribute to the establishment of consortia agreements for libraries and more reasonable licenses for electronic resources, develop federated search services for all types of libraries, and finally, contribute to the vision put forth by the Ministry of Culture and Church Affairs, i.e. to establish a seamless library that facilitates user access to collections across traditional library types and administrative boundaries.

Libraries had few negative expectations, but expressed worries of losing their influence on choice of content and services, as well as permission to individualize these services. The future organization, allocation and maintenance of content and services within a Norwegian Digital Library was a more pressing concern according to the results, and one that must be taken under serious consideration by the Initiative.

3 Challenges, Current Activities and Projects

3.1 Funding Challenges

Building a foundation for a Norwegian digital library and giving users the content and services they need in their work, school and recreational activities are important, and one of the major challenges in the Norwegian Digital Library Initiative's current work is to get the necessary governmental funding to accomplish these tasks. According to a Parliamentary report on Norwegian cultural policy toward 2014, new funding⁹ is to be channeled to the MLA-sector: Some of which is to go via the Norwegian Digital Library Initiative. The

⁸ Agenda Utredning & Utvikling conducted this survey for the NDLI in 2004, and 43% of the chosen institutions responded to the survey's questions.

⁹ In 2000 the Ministry of Culture and Church Affairs promised additional funding to MLA-institutions: Approximately 62,5 million dollars was to be used in their further development over a period of 5 years.

Initiative has already waited more than a year for this infusion, and institutions all over the country are having doubts as to whether the Ministry of Culture and Church Affairs will sufficiently support the Initiative in the coming year.

The Norwegian Archive, Library and Museum Authority has come to the Initiative's aid in this difficult situation, and in 2004 and again in 2005 it funded digital library projects with approximately USD 550 000 annually from its own budget. The maintenance of digital library services resulting from Initiative-funded projects falls outside the Authority's designated policy and activities, and the Norwegian Digital Library Initiative is therefore working to ensure permanent governmental support for digital library services that can be of benefit for the general public. Luckily, the Initiative has a broad application area, and if we manage to convince other governmental agencies of the Norwegian Digital Library's value, these institutions may also eventually come to its aid financially.

3.2 Challenges

Legal Challenges

Copyright legislation in Norway is currently being harmonized with the European Union's legislation, and there are still many unanswered questions, especially when it comes to giving access to digital resources. The Norwegian Digital Library Initiative aims to build a legal framework for the digital library in compliance with the new legislation, but in order to do so, issues like giving access to downloaded resources, to digitalized sources from the library's collections, Digital Rights Management, digital interlibrary loan, etc. must be settled.

The Initiative has given the National Library of Norway financial support for the establishment of a national center on libraries and copyright, and this will hopefully be functional in 2005. A national competence center of this type will also aid MLA-institutions in the complex matter of giving users access to electronic resources according to other existing acts, e.g. the Personal Data Act, the Legal Deposit Act, etc.

MLA Challenges

Libraries, archives and museums have developed sector-specific principles, rules and methods for registering or cataloguing their materials, grouping them in different ways in order to facilitate retrieval, etc. A digital library can include millions of electronic resources, and the ways in which the MLA-sector organizes and gives users access to these resources, as well as their different formats and versions, poses many new challenges. The development and use of new conceptual models for structuring metadata and data, as well as new ways of uniquely identifying resources in a digital library is extremely important. Norwegian MLA-institutions all seem interested in developing their own authority records for persons, corporations and subjects, and the possibility for initiating national collaboration across sector boundaries – although a considerable challenge in itself – might prove to be an interesting and worthwhile effort.

Technical Challenges

There are many technological challenges in the digital library field: One is insufficient system interoperability often caused by the use of proprietary standards, formats and protocols. Another is the fact that electronic resources are disappearing daily, and problems connected to the long term preservation of these resources, e.g. format conversion, migration and system emulation, flourish. Luckily, this paper does not need to dwell on these challenges, and

instead, it briefly describes several of the Norwegian Digital Library Initiative's ongoing activities in the following section.

3.3 Current Activities

Electronic Content and Licensing

Academic journal pricing policy often entails a yearly increase in library subscription prices, and today libraries use large percentages of their budgets in order to give users access to electronic resources: Journals, databases, reference works, etc. Libraries often use the services of the Norwegian Archive, Library and Museum Authority's Consortia Team for negotiating their agreements with publishers, and according to a recent survey¹⁰, libraries feel that these negotiations result in cheaper electronic resources.

The Initiative is working to aid libraries in their negotiations with publishers, and a Working Group on Licensing Issues¹¹, as well as a reference group with representatives from different types of libraries, was established in 2004. This working group is currently investigating new forms of consortia collaboration; both national, Nordic and international. This work is important for several reasons: Unlike analogue books and newspapers, electronic resources in Norway are subject to an additional service tax (25%), and as a result, high prices are creating a "digital divide" among libraries. Some libraries have enough money to maintain and increase their electronic journal subscriptions, while others don't. An academic library's portfolio of electronic journal titles often influences teachers' and students' in their choice of university or college, especially in subject areas like science and medicine, and it is a matter of major concern when libraries cancel subscriptions because of high prices and small budgets. Hopefully, Norwegian libraries will be able to reap the benefits of this Working Group's efforts to negotiate better prices for electronic resources in the near future.

Digitalization

There are two main categories of digital material: One category contains material that is born digital, the other contains material that is born analogue and later digitalized. Digitalization of Norwegian material is important in the Initiative's strategy, and in 2004 a Working Group on Digitalization¹² was established. This group consists of experts from MLA-institutions and has its main focus on the use and democratic dissemination of digital materials. Its mandate is large and complex, and one of its many goals is to define general selection principles and criteria that can be used when choosing Norwegian resources for digitalization. Another goal is to see how digital material can be presented to different user groups. Legal and technical challenges connected to the digitalization of analogue media are being considered in other working groups and projects, and these are not a part of the mandate.

The Working Group has started a survey in order to find the status quo of digitalization in Norwegian MLA-institutions, and over 800 institutions will be asked to answer questions via a web-based questionnaire. The results of this survey will be presented in the group's final report at the end of the year, together with their ideas for digitalization policies, guidelines, etc.

¹⁰ This survey was taken for the Norwegian Digital Library Initiative by its Working Group on licensing. See the Norwegian report: Kartlegging av erfaringer med bruk av konsortieavtaler / Siv Hunstad. - Rapport nr. 131303-01/2005.

¹¹ See the Norwegian description of this work at:

http://www.norskdigitalbibliotek.no/archives/cat_ndb_arbeidsgruppe_for_lisensiering.html

¹² See the Norwegian description of this work at:

http://www.norskdigitalbibliotek.no/archives/cat_ndb_arbeidsgruppe_for_digitalisering.html

Portal Tools

The Norwegian Digital Library Initiative hopes to find portal and federated search solutions that fit the needs of all types of libraries, i.e. those libraries with smaller budgets and less content to manage than, e.g. Norwegian university libraries¹³. By promoting cooperation between libraries, as well as between archives, museums, libraries and the educational sector, the Initiative hopes that these institutions can gain a higher degree of interoperability between portal systems in the future.

3.4 Specific Projects

The following section gives an idea of the types of activity being funded by the Initiative. The list is not complete, and those who read Norwegian, can find more information on the Initiative's blog¹⁴.

The Digital Library Framework Project

The Norwegian Digital Library Initiative funded the first phase of the National Library of Norway's *Digital Library Framework Project* in 2004, and people with specific skills – mostly from the library community – worked together to define a technological framework for the digital library.

The project consisted of seven work packages: Metadata, Digital Document Production and Publishing, Solutions for Federated Search, Authentication and Authorization, Copyright clearance, digital rights management and payment methods, Other Services, as well as Infrastructure and System Architecture. The results from the first phase of the project will soon be made available, and hopefully libraries will build systems that follow the recommended standards, protocols and formats. The Initiative will be funding a second project phase in the coming year, and archives and museums will then have a better chance to participate in this important work. The results from the EU-projects, CALIMERA¹⁵ and MINERVA¹⁶, will undoubtedly be useful guidelines in this area.

Historical Photos and Images from Trondheim (Trondheimsbilder.no)

*Trondheimsbilder.no*¹⁷ is the official website and portal to historic photos and images of places, people and events related to the Norwegian city of Trondheim. The project was a collaborative effort between the City Archive of Trondheim, the Trondheim Public Library, the Norwegian University of Science and Technology and Sverresborg Trøndelag Museum. Library and museum system vendors have also been involved in this work, and today the portal allows a seamless search and retrieval in approximately 45 000 images and reference materials from these institution's databases.

Ask the Library (Biblioteksvar)

Personnel from approximately 31 libraries throughout the country help users find the information they need – when they need it. The virtual reference service *Ask the Library*¹⁸ lets

¹³ Four Norwegian university libraries, as well as 23 public libraries and 15 high school libraries in Oppland County, have recently invested in ExLibris' MetaLib/SFX¹³ and these are currently implementing the system in their local environments.

¹⁴ See the English pages at <http://www.norskdigitalbibliotek.no/englishindex.html>

¹⁵ See <http://www.calimera.org>

¹⁶ See <http://www.minervaeurope.org/>

¹⁷ Search the photo database via an English interface at: www.trondheimsbilder.no/cgi-bin/samsok-bilder?&spraak=eng

¹⁸ See the English page at <http://biblioteksvar.no/en/>

users contact librarians at public, as well as special libraries, by chat, E-mail (answers are guaranteed by E-mail in the course of the next business day) and finally, by SMS. The SMS service lets users ask their questions directly by cell phone, and library personnel send answers to short, fact-based queries. *Ask the Library* is managed by the Oslo Public Library, and it hopes to initiate cooperation with academic libraries in the course of the year.

Joint Library Card (Felles lånekort)

The Project *Joint Library Card*¹⁹ was initiated by a group of library vendors and the National Library. By developing a national register of library users, library patrons can now borrow media from participating libraries all over the country using just one library card. 15 libraries in Oppland and Østfold counties have recently completed an evaluation of the resulting service, and it will be promoted for extended use in the time to come. A more detailed description will be published in *Scandinavian Public Library Quarterly* in September 2005.

Giving Access to Cultural and Educational Resources (Tilgjengelig)

The *Tilgjengelig Project*²⁰ is a collaborative effort between the Norwegian Archive, Library and Museum Authority/the Norwegian Digital Library Initiative, the National Library of Norway, Utdanning.no (i.e. Education.no) and the eStandard Project. The project has two main objectives: To investigate ways in which the cultural and educational sectors can collaborate on the use of standards, formats and protocols, and to develop a learning resource prototype for use by students, teachers and researchers. Henrik Ibsen's manuscripts are available in digital form, and selected material from this collection will be used in a case study. Hopefully, collaboration between libraries, archives and museums on one hand, and schools on the other, can result in better ways to produce digital learning resources, and use them in learning environments.

NORA – Norwegian Open Research Archives

Four university libraries and five college libraries are working to develop a federated search for giving users access to the academic papers found in their separate open archive systems. By using OAI-PMH and a common OAI-metadata model, these institutions hope to promote open archives in Norway.

FRBR in Library Catalogues

In this project, the library vendor BIBSYS is collaborating with the National Library of Norway, the Norwegian University of Science and Technology and OCLC in order to reach project goals, e.g. the recommendation of a methodology for the automatic extraction of entities, relationships and attributes, as well as the development of strategies and guidelines for implementation of systems based on the IFLA's model: Functional Requirements for Bibliographic Records (FRBR)²¹.

Experimentation for the use of FRBR in library systems, as well as in digital libraries and Web archives, is extremely important; especially as the number of electronic resources increases dramatically [3, 4].

¹⁹ See the Norwegian project page at <http://www.nb.no/biblev/laanekort/>

²⁰ See <http://laringsressurs.norskdigitalbibliotek.no>

²¹ See <http://www.ifla.org/VII/s13/frbr/frbr.htm>

4 Conclusion

The Norwegian Digital Library Initiative has existed since the end of 2003, and although the program faces several challenges, it is still forging ahead in areas concerning digitalization, licensing and portal tools. NDLI-projects are starting to result in exciting services and more digital content, and new and necessary projects will be initiated in the coming years. Issues concerning the Norwegian Digital Library's future organization and funding are on the program agenda, as are efforts to initiate collaboration on issues like long term preservation and the development of authority records.

The Initiative is an important tool in the establishment of the Ministry of Culture and Church Affairs' vision of a seamless library, and the Norwegian Digital Library will let the general public; students, teachers, researchers, etc. use its many digital collections and services to facilitate access to information, knowledge and learning resources, as well as cultural experiences. Hopefully, governmental funding will arrive from several ministries, and Norway's version of a digital library will emerge full-fledged via a user-friendly interface around 2008.

Selected Reading

(All URLs were accessed on June 12, 2005)

[1] IFLA Study Group on the functional requirements for bibliographic records. Functional requirements for bibliographic records : final report [printed text]. Munich, Germany : K.G. Saur, 1998. Also available from the World Wide Web:
<http://www.ifla.org/VII/s13/frbr/frbr.pdf>, or: <http://www.ifla.org/VII/s13/frbr/frbr.htm>.

[2] Aabø, Svanhild. The Value of public libraries : a methodological discussion and empirical study applying the contingent valuation method / Svanhild Aabø. – [Oslo] : Faculty of Arts, University of Oslo Unipub, 2005. – 270 p. – (Acta humaniora (Oslo) – no. 222). – 82-7477-209-1 h.

[3] Van Nuys, Carol, et al. The Paradigma Project and its quest for metadata solutions and user services [online]. Available from the World Wide Web:
<http://www.ifla.org/IV/ifla70/papers/009e-Nuys.pdf>, or in: *International Cataloguing and Bibliographic Control*. – Vol. 34, No. 2, April/June 2005. – Pp. 29-35

[4] Albertsen, Ketil and Van Nuys, Carol. PARADIGMA : FRBR and digital documents. In: *Functional requirements for bibliographic records (FRBR) : hype, or cure-all?*, Haworth Press Inc., see <http://www.haworthpressinc.com/store/product.asp?sku=5509>, or in: *Cataloging & Classification Quarterly*. Vol. 39, No. 3-4, 2004