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LIBRARIES in the INFORMATION SOCIETY



State-of-the-art of information technologies in libraries in the Nordic countries



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Preface

In 1995, the Unit of Electronic Publishing and Libraries under the Directorate-General DG XIII/E commissioned a "state-of-the-art" study of information technologies in libraries in the Nordic countries. The study was carried out under EC-contract PROLIB/NORDIC 10288 by the five countries in collaboration with NORDINFO, the Nordic Council for Scientific Information. NORDINFO is an institution under the Nordic Council of Ministers.

The purpose of the study was to provide an overview of the situation in the mid-1990s and recent developments regarding information technologies in libraries in the Nordic countries. The Nordic countries include Denmark, Finland, Iceland, Norway, and Sweden. Research libraries, public libraries as well as school libraries were included in the study in order to provide a comprehensive view of the situation in each country.

This report consists of five survey reports, each prepared by an author representing one of the Nordic countries, a summary where some of the survey results are described and compared, and an overview of Nordic cooperation initiatives concerning information technologies in libraries. The summary and overview were prepared by NORDINFO.

We hope that this report will provide interested parties with useful background information about the IT-situation in libraries in the Nordic countries. Although some of the data gathered for this report may soon be out of date because of the rapid changes in the field of information technology, we believe that this volume will provide a unique profile of a very exciting time in the development of information technologies in libraries.

Esbo, September 1996

Ylva Lindholm-Romantschuk
Secretary General
NORDINFO, The Nordic Council for Scientific Information

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Part A
State-of-the-Art of Information
Technologies in Nordic Libraries

Ylva Lindholm-Romantschuk
NORDINFO Secretary General

Espoo 1996

Part A

State-of-the-Art of Information Technologies in Nordic Libraries

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1 Background of the study

In 1995, the Directorate General DG XIII/E/4 of the European Commission in Luxembourg commissioned a “State-of-the-Art Study” of information technologies in libraries in the five Nordic countries. The Nordic countries include the two new EU member countries Finland and Sweden, Denmark, which has been a member of the EU for more than twenty years, and the two non-member countries Iceland and Norway.

The purpose of the study was to provide an overview of the situation in the mid-1990s regarding information technologies in libraries in the five Nordic countries, Denmark, Finland, Iceland, Norway, and Sweden. The study in its present form consists of five survey reports, prepared by five authors representing each of the Nordic countries, a summary where some of the survey results are described, and an overview of Nordic cooperation initiatives concerning information technologies in libraries, prepared by NORDINFO, the Nordic Council for Scientific Information. The study was commissioned by the European Commission DG XIII and carried out under contract with the EC by the five countries in collaboration with NORDINFO.

A Nordic working group planned the survey. The group met in 1995 in order to prepare the survey and standardise the survey questionnaire. The questionnaire was then translated into the five languages concerned. The individual country surveys, including data collection and analysis, as well as the preparation of the reports, were carried out separately by five authors in the autumn of 1995. Each country report explains in more detail the procedures for data collection and analysis. The group of authors met again in order to compare notes and streamline their respective reports. Drafts were submitted and commented upon during the spring of 1996, and the final country reports were submitted in May/June of 1996 to NORDINFO, where the summary and the Nordic overview were produced.

2 Overall summary on the Nordic level

2.1 Background

This summary will provide a brief overview of the results of the Danish, Finnish, Icelandic, Norwegian, and Swedish surveys of the state-of-the-art of information technologies in libraries. Although the five Nordic countries are similar in many ways, and have a long common history that is reflected in, for instance, many shared political and cultural values, there are also noticeable differences among them. These similarities and differences are reflected on many levels, and the individual country reports that represent the bulk of this report give an indication of the wide range of policies, approaches, and solutions that form the background for the IT development in the libraries in the Nordic countries. The total population of the Nordic countries is about 23 million, but the individual countries vary in size, from Iceland’s 265,000 people to Sweden’s nine million, with Denmark and Finland each representing a population of about five million, and Norway about four and a half million people.

The study and the five individual reports are based on questionnaire surveys carried out in the five Nordic countries in 1995, as well as on a range of additional information

The study and the five individual reports are based on questionnaire surveys carried out in the five Nordic countries in 1995, as well as on a range of additional information sources ranging from official statistics to books, articles, and reports. Although the working group tried to ensure that the same kind of data were collected and used in the survey it did not entirely succeed. The definitions vary somewhat in each country report as to scope and interpretation. The tables in this summary are therefore only indicative and should be treated as such. We refer the reader to the country reports for a more complete picture of the situation in the countries concerned.

The survey covers the whole library sector, that is, research libraries, public libraries and school libraries. The definitions of research libraries vary from country to country, and again, the reader is referred to the individual country reports for further elaboration and explanation of these issues. School libraries represent a special problem when it comes to data collection. Statistics on school libraries are not collected regularly and systematically in all the five countries, and information gathering through questionnaires is not feasible due to the large number of schools. In most cases the information on school libraries is based on earlier surveys, apart from Iceland, where an additional telephone interview was carried out in selected regions.

2.2 Survey results

As indicated by Table 1, there is some variation among the countries studied as to the sample of libraries that were surveyed, as well as in response rates achieved. In some cases, all libraries in the target group were surveyed, in others again only a select sample. In some cases, additional telephone interviews were carried out with the libraries in order to clarify the replies. In general, the response rates were fairly high, in several cases more than 90 %. Considering the length and complexity of the questionnaire, the response rates can be considered satisfactory.

2.2.1 Libraries and IT

Table 1 also shows the proportion of IT-users among the libraries in the Nordic countries, and we can conclude that the level of information technology utilization in the research library sector is very high, as only a very small minority of the libraries are not yet IT-users. In the public library sector the numbers are somewhat lower than in the research library sector, but also the public libraries are well on their way to becoming integrated into the world of information technology. Seventy to one hundred percent of the Nordic public libraries use information technology today. As to school libraries, they have yet to become full-fledged members of the information society. Denmark appears to be on the forefront, with almost all school libraries being IT-users, while others are still lagging behind. However, in all Nordic countries information technology in schools has become a matter of high priority, and it is only a question of time when all schools will be part of the communication and information networks.

Table 1. Survey questionnaire: distribution and responses

	Type of library	Number of libraries, n	Questionnaires distributed, n	Responses received, n (%)	IT-users (%)
Denmark	Research	56**	56	55 (98 %)	100 %
	Public	249	249	248 (99 %)	100 %
	School	1698	n.a.***		almost 100 %
	Total	2003	305	303 (99 %)	
Finland	Research	71**	71	51 (72 %)	90 %
	Public	439	370	252 (68 %)	84 %
	School	5148	n.a.*		<5 %
	Total	5658	441	303 (69 %)	
Iceland	Research	50	50	20 (40 %)	85 %
	Public	42	37	18 (49 %)	
	School	109	28	16 (57 %)	50 %
	Total	201	115	54(49 %)	
Norway	Research	179	93	59 (63 %)	95 %
	Public	435			70 %
	School	3700	n.a.***		
	Total	4314	93	59 (63 %)	
Sweden	Research	84**	42	37 (88 %)	90 %
	Public	288	288	224 (78 %)	77 %
	School	4124	425	204 (48 %)	20-60 %
	Total	4494	755	465 (62 %)	

* questionnaires distributed via the public libraries

** libraries with more than three full-time staff

*** based on data collected by separate survey in 1995

2.2.2 Automated library systems

An important part of the survey was to find out what types of automated library systems are being used locally in the Nordic libraries. Table 2 gives an indication of the wide range of systems that have been implemented in the libraries. The table lists the three most popular local library systems in each country and library type. However, due to inconsistent data, the table does not give any information about the number of libraries actually using these systems, but only a rank order of the various systems. MikroMARC, a Norwegian PC-based system that was launched in the late 1980s, appears to be one of the most popular systems on the Nordic level, widely used in Denmark, Norway, Sweden, and Iceland. In Finland, the American VTLS system is used in almost all research libraries. In Iceland, several local applications have been developed, and in Sweden, public and school libraries are mostly using Swedish systems such as BTJ 2000 and BIBS.

Table 2. Local library systems: the three most commonly used, by type of library

	Research libraries	Public libraries	School libraries
Denmark	MikroMARC	Supermax	MikroMARC
	DCBib	DCBib	DCBib
	ALEPH	Cicero	ALEPH
Finland	VTLS	Kirjasto 3000	in-house appl.
	PrettyLib	Primas	Kirjasto 3000
	Pallas	Pallas	Pallas
Iceland	Gegnir/Libertas	MikroMARC	Metrabok
	EMBLA/Oasis	Bokver	Gegnir/Libertas
	Metrabok	Metrabok	MikroMARC
Norway	MikroMARC	MikroMARC	MikroMARC
	BIBSYS	Bibliofil	
	SIFT Bibl	MEDIA	
Sweden	MikroMARC	BTJ 2000	BTJ 2000
	TINLIB	BIBS	BIBS
	LIBERTAS	LIBRA	BiblioMatik

2.2.3 National coordinated library systems

As to the national coordinated library systems, Table 3 gives an overview of the various catalogues and national bibliographies that have been developed on the national level in the five countries. These catalogues are all based on national or system-specific MARC-formats. Denmark and Norway have only one union catalogue/national bibliography, DanBib and UBO: BOK, respectively, while in the other countries the research libraries and the public/school libraries have developed separate catalogues.

2.2.4 Document ordering and delivery

Electronic document ordering and delivery systems are an essential aspect of the information technology environment in the libraries. Being able to order and deliver documents electronically greatly improves the speed and efficiency of document handling. However, not all libraries have as yet installed electronic systems. Table 4 gives an indication of the variation among the countries and the libraries surveyed. In general, ordering documents electronically is more common than delivering and receiving documents electronically. For instance, although 80–90 % of document ordering is performed electronically in Norwegian and Swedish research libraries, document delivery is still mostly performed manually and through the mail.

Table 3. National coordinated library systems

	Type of catalogue	Name	Format
Denmark	The union catalogue for public and research libraries, the Danish national bibliography	DanBib	danMARC
Finland	The union catalogue of the public libraries	MANDA	FINMARC
	The union catalogue of the research libraries	LINDA	FINMARC
	The national bibliography	FENNICA	FINMARC
Iceland	The union catalogue, used as basis for the printed national bibliography	Gegnir	MARC (Icelandic version)
	The catalogue of the City library of Reykjavik and other libraries	Fengur	MARC (Icelandic version)
Norway	The union catalogue and the national bibliography	UBO: BOK	NORMARC
Sweden	The union catalogue and the national bibliography	LIBRIS	LIBRISMARC
	Bibliographic database for public and school libraries	BURK	BURK-format (MARC)

Table 4. Electronic document ordering and delivery systems

	Research and public libraries		Research libraries		Public libraries		All library types	
	Ordering	Delivery	Ordering	Delivery	Ordering	Delivery	Ordering	Delivery
Denmark			69 %	69 %	52 %	78 %		
Finland	34 %	8 %						
Iceland							41 %	30 %
Norway			90 %	most manually				
Sweden			85 %	most manually	60 %	most manually		

2.2.5 Access to online databases

According to the data in Table 5, access to online databases is a widely offered service in the Nordic libraries. Between 60 and 87 percent of all research and public libraries offer access to online databases.

2.2.6 Online databases: charging policies

As to charging policies, it appears that it is more common in Nordic libraries to offer access to online databases free of charge than to charge for these services. Especially in the public library sector, free access is widely offered. For instance in Denmark, two thirds of the public libraries and in Sweden nine out of ten public libraries offer access to online databases free of charge. See Table 6 for details.

Table 5. Access to online databases

	Research libraries	Public libraries	School libraries
Denmark	87 %	85 %	n.a.
Finland	75 % (research and public)		n.a.
Iceland	60 % (research and public)		n.a.
Norway	n.a.	n.a.	n.a.
Sweden	88 %	66 %	40 %

Table 6. Online databases – charging policies

	Research libraries		Public libraries		Research and public libraries	
	Free (%)	Charge (%)	Free (%)	Charge (%)	Free (%)	Charge (%)
Denmark	60 %	40 %	66 %	34 %		
Finland					68 %	32 %
Iceland					83 %	17 %
Norway	n.a.	n.a.	n.a.	n.a.		
Sweden	48 %	52 %	90 %	10 %		

2.2.7 CD-ROM

The survey shows that CD-ROM technology is quite common in the Nordic libraries (Table 7). Apart from Iceland, where only a third of the research libraries offer access to CD-ROMs, a great majority of the research libraries in the other countries offer CD-ROM access. In public libraries this technology is not as prevalent, but nevertheless, around half of all public libraries do offer their patrons access to CD-ROMs.

Table 7. Access to CD-ROM

	Research libraries	Public libraries	School libraries
Denmark	76 %	48 %	n.a.
Finland	82 %	51 %	n.a.
Iceland	32 %	53 %	54 %
Norway	88 %	40 %	17-70 %
Sweden	100 %	65 %	73 %

2.2.8 Access to the Internet

Ever since the Internet entered public consciousness on a more serious level at the beginning of the 1990s, the number of Nordic libraries with an Internet connection has been growing steadily. The figures presented in Table 8 show that most of the research libraries are now connected, while the level of connectivity is somewhat lower in the public libraries. However, the number of Internet connections is constantly growing, and the figures reported here will most likely be a great deal higher within a year. Data for the school libraries were not available for all countries.

Table 8. Access to the Internet

	Research libraries	Public libraries	School libraries
Denmark	82 %	29 %	n.a.
Finland	100 %	35 %	n.a.
Iceland	100 %	63 %	28-100 %
Norway	83 %	8 %	n.a.
Sweden	100 %	44 %	43 %

2.2.9 Use of the Internet

The question of what the Internet is used for in the Nordic libraries was also addressed in the survey. However, the data were not complete for all countries concerned, which is why we present only the results from Denmark, Finland and Iceland in Table 9.

Overall, information retrieval via Gopher and the World Wide Web seems to be the most popular form of Internet use in all three countries and in all types of libraries studied. A majority, or more than 60 %, and up to 95 % of both library staff and users have answered yes to the question of whether they use the Internet for information retrieval. As can be expected, the library patrons use the Internet more for exploration and pleasurable ends than the library staff, who tend to use it more for professional networking, such as e-mail and e-conferences. Interestingly, patrons use the Internet more for downloading of documents than staff in all library types. In all three countries there are still library staff who do not use the Internet regularly, or about one in ten of those surveyed.

Table 9. Use of the Internet by staff and users in libraries with access

Type of use	Denmark				Finland		Iceland	
	Research libraries (n=24)		Public libraries (n=25)		Research and public libraries (n= 170)	Research and public libraries (n= 103)	Academic, public and special libraries (n= 43)	Academic, public and special libraries (n= 23)
	Staff	Users	Staff	Users	Staff	Users	Staff	Users
Information retrieval via Gopher and WWW	60 %	88 %	46 %	60 %	78 %	83 %	95 %	83 %
E-mail	58 %	29 %	32 %	44 %	73 %	60 %	93 %	61 %
Exploring/ pleasure	36 %	58 %	35 %	60 %	65 %	80 %	47 %	57 %
Professional discussions	n.a.	n.a.	n.a.	n.a.	45 %	n.a.	81 %	n.a.
E-conferences	31 %	n.a.	23 %	n.a.	n.a.	n.a.	n.a.	n.a.
Downloading of documents	24 %	67 %	17 %	56 %	36 %	42 %	47 %	61 %
Other	0 %	1 %	0 %	1 %	7 %	16 %	7 %	30 %
Not used regularly	9 %	n.a.	11 %	n.a.	12 %	0 %	14 %	n.a.

2.2.10 Nordic libraries in the national information policies

In all the Nordic countries information technology policy has been on the agenda during the 1990s. Libraries have not necessarily always been a highly visible part of this discussion, but there seems to be a growing realisation that libraries are an essential part of the information environment.

In **Denmark**, the government published the report "Info-Society 2000" in 1994. In March the following year the Ministry of Research & Information Technology issued a Statement to Parliament report called "From Vision to Action – Info Society 2000" (<http://www.fsk.dk/fsk/publ/it95-uk/>). This document outlined a Danish Political Action Plan, which came into force in 1995. A new follow-up to this plan was launched in 1996, "The Info-Society for All – the Danish Model" (<http://www.fsk.dk/fsk/publ/1996/it96-uk/>).

In **Finland**, the Ministry of Education (<http://www.minedu.fi>) has presented two scenarios, which are the first ones to contain a satisfactory discussion on the role of libraries in the information society. The ministry also has presented several concrete propositions for action and has also funded library related IT projects, for instance the House of Knowledge project, which aims at coordination and development of Internet activities in public libraries (<http://www.kaapeli.fi/tiedotalo/english/proj-gen.html#1996>). Moreover, the public libraries and the research libraries are jointly creating an IT scenario for the next decade. The main purpose of the document, which is to be completed by the end of October 1996, is to point out the most promising or urgent areas in terms of IT activities in libraries.

There is currently no overall national library policy or strategy in **Iceland**, nor any generally accepted documents or statements about the place of libraries in Icelandic society. However, under the present government committees have been formed with a mandate to look into the national information policy. One of these committees deals with libraries as part of the national information network. The committees' reports were presented to the Minister of Education in early 1996.

In January 1996, a report was issued in **Norway** by the Committee of State Secretaries for IT. The report was called "Den norske IT-veien: bit for bit" [The Norwegian IT Road: Bit by Bit] (<http://odin.dep.no/html/nofovalt/offpub/utredninger/it/it-veien/>). It is to form the basis for a coherent Norwegian IT policy. In particular, it offers the public libraries a great challenge in terms of future tasks.

At the beginning of 1996, the government in **Sweden** presented a national information technology policy, "Regeringens proposition 1995/96:125: Åtgärder för att bredda och utveckla användningen av informationsteknik" [Government proposition 1995/96:125: actions to broaden and develop the use of information technology] (http://www.sb.gov.se/info_rosenbad/sb_itprop_9596/index.html). As to libraries, it proposes that the Royal Library develop an IT-based national library system and that a special development grant for library automation should be considered. In addition, a new library law is under preparation, which is a part of the on-going work to create on a coherent view of libraries and IT.

3 Overview of Nordic IT cooperation in libraries

This section will cover the Nordic cooperation projects and initiatives involving information technology in libraries financed by the Nordic Council of Ministers or through NORDINFO, the Nordic Council for Scientific Information.

3.1 The Nordic Council of Ministers

The Nordic Council of Ministers was established in 1971. This body submits proposals on cooperation between the governments of the five Nordic countries to the Nordic Council, implements the Council's recommendations and reports on results, while directing the work carried out in the targeted areas. The Prime Ministers of the five Nordic countries assume overall responsibility for the cooperation measures, which are coordinated by the ministers for cooperation and the Nordic Cooperative Committee. The composition of the Council of Ministers varies, depending on the nature of the issue to be treated. In 1992 the Council's budget was 700 million DKK (about 96 million ECU).

For several years, the Nordic Council of Ministers has directly and indirectly through its various bodies and institutions funded a number of projects dealing with information technology. In May 1996 the Nordic Council of Ministers decided to establish a special IT group with representatives from all the Nordic countries.

In the following sections some of the ongoing information related projects that are financed directly by the Nordic Council of Ministers will be described briefly.

3.1.1 The Nordic School Data Network – ODIN

Introduction

Since the beginning of the 1970s, the Nordic Council of Ministers has examined and developed various methods for school cooperation, among others, networking. The word "network" in this connection refers to personal networking, in other words systematic cooperation between teachers, students, administrators, teacher trainers, researchers, and institutions.

In 1991 and 1992, the Nordic Council of Ministers began investigating whether the new information technology was an adequate tool for those involved in inter-Nordic school cooperation. A large number of data and telecommunication projects previously carried out in the Nordic region and the rest of Europe, a rich flora of educational experiences and a host of technical solutions formed the basis for the decision to create the Nordic school data network. The ministers of education and research made the decision to create the network in November 1993. Four months later, in March 1994, ODIN – the Nordic school data network – was inaugurated by the prime ministers in connection with the Nordic Council's meeting in Stockholm. The Nordic education and research ministers have given high priority to IT, data networking, training and research, and are actively following these issues within the framework of the European Union and European Economic Space cooperation.

The development itself also opens up for interesting contacts and links between the Nordic school data network and associations, organisations, companies, and authorities in society in general.

Aims and visions

The ODIN network can provide schools with various new possibilities and methods. The network can, for example, be used for:

- stimulating the students' own search for knowledge
- retrieving facts directly from the outside world
- using various materials from the mass media
- participating in international school-projects
- furthering inter-cultural understanding
- developing new methods in language teaching
- working with the writing process
- simulating procedures in international trade.

The capacity of the data networks will increase considerably in the near future. This will give access to a wealth of material: not just texts, documents and graphic images, but also speech, music and film – all in digital formats. We have already seen how the computer industry, mass media, and network operators are preparing themselves for the new possibilities this will bring. The Internet currently offers vast amounts of information, but it is neither possible, nor desirable, to attempt central and overall management of the Internet. There are links on the ODIN network to other menus and texts which in turn have their own pointers and search functions, which enables the visitor to surf on other information waves both inside and outside the Nordic region. These links are valuable in view of the fact that the ODIN Network should guide the user to academically interesting sections of the Internet.

Contact person for the entire ODIN-project is:

Erla Sigurðardóttir

ODIN – Nordisk skoledatanet

Nordic Council of Ministers, Store Strandstræde 18, DK-1255 Copenhagen K

Phone: +45 33 96 03 85. Telefax: +45 33 93 35 72. E-mail: es@nmr.dk

What is the Nordic school data network?

The school data networks are not physical networks, but must be perceived as logic/virtual information networks on the Internet experienced by the user as comprehensive information systems. This despite the fact that the information is physically stored and updated in systems located in different Nordic countries and the rest of the world. It can also be compared to a menu system in which the ODIN menu guides the user to the information systems of the Nordic countries, and the national school data networks point to further information.

The schools pay a subscription fee for the Internet service, but have free access to information both at a Nordic and at a national level.

Electronic mail

The Nordic Council of Education and Research Ministers is giving high priority to efforts to achieve correct digital representation of the Nordic languages on the networks. The choice of programmes for mail exchange is very important. In order to receive the Nordic characters properly, the following standards must be installed both at the sender and recipient ends:

- MIME (Multipurpose Internet Mail Extensions). The standard details, among other things, how the document which includes special characters should be sent on the Internet.
- Latin 1 (ISO 8859–1) character set. This character set is a Windows standard. The set includes all special characters in all European languages.
- Quoted Printable (QP) enabled. This regulates the method of transmitting the special characters.

Denmark

<http://www.uvm.dk/>

From 1996 to the year 2000, the Ministry of Education will establish a nationwide school network, giving schools access to the Internet. The network will provide access to the services offered by the Danish section of the Nordic School data network, including information from the Ministry of Education.

The schools can also access SKODA, the School Database Service, and search in the following external databases:

- ABBA, the Labour Market Statistics database
- Account Data with information on Danish companies listed Copenhagen Stock Exchange
- BASIS, library catalogue
- DanBib, library catalogue
- Danish Article Index Online, with information on articles in Danish journals
- Diane Online
- ESDB, the Business statistics database
- KSDS, with statistics on Danish municipalities
- Polinfo, with articles from Danish newspapers, magazines and newswires.

Faroe Islands

<http://www.sleipnir.fo/>

In the autumn of 1993, school authorities and cultural institutions in the Faroe Islands took a joint initiative to establish a permanent data link to the outside world, and to improve school access to, for example, data communications and information searching. The project was supported by the West Nordic cooperation. Thanks to the goodwill of the Danish Ministry of Education, a permanent Internet connection (64 kbs) was established at the beginning of 1995. This reached from UNI-C in Denmark to the network administration on behalf of the cultural institutions of the Faroe Islands.

The school data network makes Faroese databases accessible, provides inexpensive and fast communication with the rest of the world and gives users an economically reason-

able way of retrieving information from foreign databases. It also promotes Nordic cooperation, develops the Faroese school system, including service courses, and finally, accustoms students to a technology that is of growing importance for schools and the economy of the future.

Finland

<http://www.edu.fi/>

Activities on the School data network started in 1993. The National Board of Education is responsible for maintaining the domain edu.fi which holds all available information from the educational sector in Finland, and constitutes the gateway to the outside world. The edu.fi domain is linked to home pages of individual schools; to the university domain (funet.fi), the Ministry of Education's school experiments (Freenet), to the Baltic states (Baltnet), and so on.

The idea of the network is to increase opportunities for schools to communicate. Several Nordic and international school development projects function solely through Internet contacts. Furthermore, it is the intention to develop education in various subjects, to offer multi-disciplinary instruction and to give access to global information. In the government programme of spring 1995, high priority is given to the development of computer skills throughout the educational sector. The goal is to link all schools and vocational colleges by the year 2000.

Greenland

<http://pil.ki.gl>

On August 1, 1995, Greennet, the Greenland part of the Internet, was commissioned as a pilot project. On January 1, 1996, access to the Internet became public and was offered nation-wide by TELE Greenland.

Greenland does not have any national school data network, and it has not yet been decided how a future school data network will be organised in the country.

Since the Internet is quite new to Greenland, there are still very few suppliers of information about Greenland. By indexing the home page of Inerisaavik/Pilersuiffik (<http://pil.ki.gl>) it is possible to proceed to KANUKOKA (the National Association of Municipalities), TELE Greenland and the Greenland Homerule authorities.

Iceland

http://www.ismennt.is/Welcome_uk.html (English)

When the ODIN network started, Icelandic schools were already linked to the Internet, thanks to Ísmennt, the Icelandic Network for Education and Culture. Therefore, it seemed natural for the Ministry of Education to commission Ísmennt to develop the Icelandic part of ODIN. Ísmennt was founded privately in 1992 and was funded by both public and private organisations. This means that the operation and development of The Icelandic Network for Education and Culture is in private hands, whilst the responsibility for ODIN lies with the Ministry of Education. The first Icelandic schools were connected to the Internet as early as in the mid-80s, but developments only gained

momentum after IMBA (the School Data Centre) was founded in 1988. IMBA later developed into the Icelandic Network for Education and Culture. More than 90 % of schools are currently connected to the network.

The objectives of the Icelandic Network for Education and Culture are as follows:

- connecting Icelandic schools and other educational institutions to the Internet
- assuring an inexpensive gateway for all educational and cultural institutions
- enabling students, teachers, and others within the school to cooperate regardless of their geographical position
- developing a web server with information on education and culture at home and abroad
- promoting educational opportunities through distance teaching
- strengthening the professional awareness of teachers through improved communication
- transmitting data from schools to the ministry with a view to providing statistical material
- giving Icelandic students and teachers an opportunity to communicate in an international environment.

Norway

<http://www.nls.no/nsdn/nsdn.htm/>

Since 1994, the schools have been able to use the UNINETT access to the Internet. The decision to establish a Norwegian school data network was made in connection with the establishment of the Nordic ODIN network.

The objective of the Norwegian school data network is, through the ODIN Network, to make information on Norway and the Norwegian educational system available to other Nordic countries and the rest of the world.

The NLS, the National Centre for Educational Resources, has been commissioned to operate and develop the Norwegian school data network. The main tasks for the time being are to design a better menu structure, and to introduce more information on Norway and the educational system. The idea is also to present different aspects of environmental education and special training. This part of the network is to be operational by August 1996. The educational syllabus for the 16–19 age group has already been made available on the Internet by NLS. The new elementary school syllabus will be made available in 1996. The work with the Norwegian School data network is a part of the implementation for the Action Plan for Information Technology in Norwegian Education, and it will be linked with several of the initiatives in the plan of action, which will run until 1999.

Sweden

<http://www.skolverket.se/skolnet/>

On March 14, 1994, the government commissioned the National Agency for Education to develop and operate a Swedish school data network.

The main objective of the School data network is to create the conditions for, and to stimulate a broad and long-term development and application of information technology in the schools by:

- improving methods of communication between schools, students and teachers
- giving schools, students and teachers wide access to sources of information to be used in the classroom
- becoming one more IT tool to be used in school activities
- stimulating local IT development
- initially being the schools' guide on the Internet.

Ongoing development work is focusing on:

- general information efforts, directed at municipalities and schools
- the development of basic functions such as an address register and register of schools with WWW information, information retrieval and descriptive examples
- pilot projects at various schools on the use of the Internet.

Åland

<http://www.atc.aland.fi>

Åland is both small and small-scale, and geographically it is a community of islands. Åland is an autonomous part of Finland, and the community is responsible for its own education, commercial life and employment. It is therefore important to develop well-functioning and flexible forms of communication and cooperation between the educational system and working life, between the public and private sectors, and between the central town, the villages and the archipelago.

In its action programme of November 24, 1995, the government of Åland listed the following priority areas under Education and Culture: Wide-ranging implementation of information technology and computer application, and coordination of commercial and educational policies in order to secure lasting employment.

A school data network will be a natural part of the Åland data network, with linking options to the Nordic school data network ODIN, and other national and international networks.

3.1.2 IDUN – Information Technology and Computer Pedagogy in Education

<http://sofie.tic.dk/projekt/idun/>

This initiative, which aims at improving educational use of information technology, was brought forward at the Nordic Council of Ministers in 1995, following the dissolution of the Working Group for Computer Programs at the end of 1994. The mandate for this work includes the whole educational sector from primary education to vocational, university, and adult education. During 1995 and 1996 priority has been given to the following areas:

- distance learning
- research and teaching
- implementation
- teaching aids, software

Several conferences and meetings have been held, and a number of reports have been published during 1995 and 1996. Working groups with members from all Nordic countries have been formed in the following areas:

- pedagogical/didactic thinking in distance teaching
- network course for teacher educators
- information technology and education
- the library's new role in primary and secondary education
- model courses for teacher educators on IT and education
- multimedia design workshop
- educational IT tools for special education – software exchange
- editors
- copyright

The copyright group has also agreed to serve as a general reference group for the Nordic Council of Ministers in questions relating to copyright.

The secretariat for IDUN is placed at the Center for Technology and Information (TIC) at the Copenhagen School Authority in Denmark.

Contact address:

IDUN, Nordic Council of Ministers, Ravnsborggade 11, DK-2200 Copenhagen N
 Phone: +45 31 39 55 00, Fax: +45 31 39 51 12, E-mail: idun@uvnet.uni-c.dk
 Project leader: Ulf Vasström
 Secretary: Connie Lind Hansen

3.1.3 The Scandinavian Book House Project

Subject Access to Scandinavian Fiction Literature: the Development of Common Indexing Principles

Project summary

The current provision of automated library systems and library networking in Scandinavia has created the opportunity to offer improved access to fiction across national and local online catalogues. Subject indexing of fiction has attracted renewed attention from Scandinavian library services and public libraries. However, both the subject data, offered by the data producers, and the search tools to access these subject data, show great diversity, resulting in uneven utilization of fiction literature in Scandinavian public libraries.

The early fiction classification schemes have been evaluated and found inadequate for today's dissemination of fiction, and a new multidimensional classification scheme is proposed. On-going indexing projects for fiction in each of the Scandinavian countries

show great promise for improving subject access, but there is great diversity in indexing methods and indexing depth as well as problems with vocabulary control. A new theoretical framework, implemented in the Book House OPAC, for indexing, classification, and searching fiction, is introduced as an alternative philosophy for subject access to fiction and OPAC design. The Book House can support the users' tasks and needs in access to fiction by offering a uniform interface based on visualisation of information as an overall organizing principle for all aspects of subject access in the domain. Such aspects include: different kinds of human-computer interaction, search strategies, concept structures, subjects of fiction works, types of narratives, etc.

A survey of library automation and OPAC development for fiction in Scandinavia shows how library automation and networking provide new tools for information dissemination. However, users' application of current information technology in libraries is constrained by the lack of an integrated and uniform design philosophy for current OPACs. At the same time, an increasing interest in improving subject access to fiction literature in each Scandinavian country has been found, based on the identification of many new national and local projects in the area. For instance, the national library services in the Scandinavian countries are engaged in various initiatives in this area, including enlargement of records to fiction literature for both adults and children with indexing terms and abstracts, as well as experiments with subject analysis and indexing dedicated to fiction, and compilation of special thesauri for fiction. Further, library automation has recently encouraged many local experiments on fiction indexing in public libraries.

Conclusions

The conclusion of the project so far has been that it will be feasible to integrate the efforts in each Scandinavian country in order to achieve a common methodology for subject access to fiction, including a common set of indexing rules, a common framework for thesaurus construction and a common, uniform approach to OPAC design, supporting both librarians and library users in subject access to fiction. The project does, however, not advocate a centralist approach. Rather, the common methodology should encourage local variations in order to accommodate the needs of users of individual libraries, in addition to functioning as a standard framework to be applied for fiction indexing by, for instance, national library services.

Starting and completing dates:

October 1994–June 1995:	Feasibility study and development work
April 1995:	1 day seminar The Royal School of Librarianship, Copenhagen
January 1996–December 1996	Arrangement of Nordic seminar on electronic access to fiction and other works of art, 3 days (Call for papers appended)

Contact person/project manager:

Hanne Albrechtsen, Associate Professor, ‘
The Royal School of Librarianship, Birketinget 6, DK-2300 Copenhagen S, Denmark

Selected publications

Pejtersen, Annelise Mark (1994). A Framework for Indexing and Representation of Information Based on Work Domain Analysis: A Fiction Classification Example. In: *Knowledge Organization and Quality Management*/edited by Hanne Albrechtsen and Susanne Ørnager. Proceedings of the 3rd International ISKO Conference, 20–24 June 1994, Copenhagen, Denmark. Frankfurt: Indeks Verlag, pp. 251–263.

Pejtersen, Annelise Mark; Albrechtsen, Hanne; Lundgren, Lena; Sandelin, Ringa and Riitta Valtonen (1995). *Subject Access to Scandinavian Fiction Literature: Indexing Methods and OPAC Development*. The Royal School of Librarianship: The Scandinavian Book House Consortium. –81 p. + 3 appendices (to be published by the Nordic Council of Ministers, 1996; preprint available from Hanne Albrechtsen, The Royal School of Librarianship).

Pejtersen, Annelise Mark; Albrechtsen, Hanne; Sandelin, Ringa; Lundgren, Lena and Riitta Valtonen (1995). The Scandinavian Book House: Indexing Methods and OPAC Development for Subject Access to Scandinavian Fiction Literature. In: *Proceedings of the 6th ASIS SIG/CR Classification Research Workshop*, held at the 58th ASIS Annual Meeting, October 9–12, 1995/edited by Raymond P. Schwartz et al., pp. 95–110 (working copy of contributions)

3.1.4 NORDBIBIT

Nordbibit is a forum for electronic discussions about IT issues in the public libraries established for the Nordic public libraries. The email-list was planned in September 1995 during the conference *Electronical Networks and Information Services – Development Possibilities for Nordic Public Libraries* in Tampere, Finland. In October 1995 in Reykjavik it was agreed that the public libraries in the Nordic capitals should establish this list. During the first year NORDFOLK will finance the email-list. Subscription to the list through **<majordomo@kaapeli.fi>**.

3.2 NORDINFO

<http://www.hut.fi/NORDINFO/>

NORDINFO, the Nordic Council for Scientific Information, is a Nordic institution under the Nordic Council of Ministers. NORDINFO's main purpose is to promote Nordic cooperation within the field of scientific information and documentation, principally in connection with the research library systems of the Nordic countries.

The rapid technological development within the information sector has compelled NORDINFO to move from the traditional library sector towards sponsoring development projects using and implementing advanced technologies for development of storage and dissemination of information. An example of this trend can be seen in the three "Centres of Excellence" sponsored by NORDINFO. Further information on the Nordic Centres of Excellence can be found below in section 3.2.2.

3.2.1 Completed projects

NOSP

http://www.nbo.uio.no/marcposten/marcposten20/mp20_6.html

NOSP, the Nordic Union Catalogue of Serials, is a joint cooperative venture of the five Nordic countries: Denmark, Finland, Iceland, Norway and Sweden. It started in 1977 as a project financed by NORDINFO.

NOSP was the first union catalogue based on bibliographical records derived from the International Serials Data System. Data exchange and processing in NOSP are based on the ISSN, the unique identifier of the serial title. The ISSN is mandatory for serials registered in NOSP. In 1993 the responsibility of NOSP moved from NORDINFO to the Bibliographic Services Division at the University of Oslo Library.

Document delivery

Interlibrary loan requests and document delivery are significant parts of Nordic library cooperation. NORDINFO has sponsored several projects aimed at improved document ordering and delivery.

The Information Service of the Technical Research Centre of Finland (VTT) has carried out some projects for NORDINFO concerned with new possibilities in document delivery.

A desk study on the use of satellites in document delivery was completed in 1992. In addition to some technical problems, the costs associated with satellite technology appeared to be still too high for document delivery.

The project concerning the use of Group 4 facsimile for transmission of documents involved the VTT Information Service, the British Library Document Supply Centre and the Chalmers University of Technology Library in Sweden and was completed in September 1992. Group 4 facsimile was found to be a good method for fast and reliable transmission of documents of high quality. However, high equipment costs, some incompatibility between different suppliers' equipment, the need for 64 kb/s digital networks and also the widely used Group 3 facsimile will probably delay a more general use of Group 4 facsimile.

The project "Document Transmission via Internet Based on the Software Ariel" ran between 1992 and 1993. Ariel was developed by the Research Libraries Group in the US. Ariel was successfully installed and worked in seventeen university libraries in the five Nordic countries. More than one thousand documents were transmitted during the project period. A survey of technical and other problems, faults, strong points and user opinions was carried out. The rather slow scanning process seems to be the biggest obstacle for wider use of Ariel in the Nordic countries.

Several projects in the field of electronic document storage and delivery are going on around the world. However, Ariel is the first PC product for scanning and sending documents over the Internet.

Monitoring OPACs in the Nordic Technological University Libraries

The project was carried out by the National Technological Library of Denmark (DTB), the Helsinki University of Technology Library (TKK) and the Technical University Library of Norway (NTUB) and was concluded in 1993. The Chalmers University of Technology Library in Sweden participated with a view of system implementation.

The aim of the project was the promotion of end-user accessibility to information in OPACs by gathering valid information about the user interaction with these systems. The main emphasis was on finding out how different types of users actually carry out their searches. Moreover, the special factor that all participating OPACs have in common, i.e. multilingualism, was of interest. The local results all conclude that in general the users do not utilize nearly all the sophisticated facilities that all three OPACs offer. Not surprisingly, it was found that users with a bibliographic background are able to utilize the system's capabilities more efficiently and skillfully than inexperienced users.

Publishing on CD-ROM

The project was carried out at VTT information service in 1992 and 1993. The basics of electronic publishing were inspected, a demonstration disc was produced, and practical steps for publishing on CD-ROM were presented (NORDINFO-Nytt 1995:1-2, p. 32-40). The main phases in producing a CD-ROM publication are: collection of data, data preparation, designing the database, indexing, linking, formatting, pre-mastering, mastering, and replication. CD-ROM discs are manufactured industrially but may in small series also be individually recorded.

The multilingual material for the experimental phase of the project was acquired from the Nordic Council and the Nordic Council of Ministers. The test documents from each organisation were processed with four different publishing programmes (Acrobat, DynaText, Folio Views and WordCruncher). A small-scale experiment on multilingual searching was implemented using the embedded thesaurus of WordCruncher software and the Nordisk förvaltningsordbok (the Nordic multilingual administrative dictionary).

Nordic SR-Net

The project Nordic SR-Net started in October 1991 and was completed in February 1994. The project partners were the union catalogue hosts in the Nordic countries and BRODD, the research unit of the Norwegian library school. The most important aim of the project was to implement the Search and Retrieve (SR) protocol and thus connect the Scandinavian union catalogue databases to one another and to Z39.50 based systems in such a way that the users could easily search remote databases with their own system's OPAC.

The secondary aims were:

- to increase the awareness of the use of library OSI protocols in the Nordic countries
- to influence further development of the library OSI protocols

- to prepare a basis for the general use of SR in academic networks and in the library community, by making a general implementation of SR available and by reporting experiences gathered during the project.

The conclusions were:

- it is possible to implement the SR protocol as it is, and such implementations offer better services to end-users (librarians and library users) than other methods of connecting to the same remote databases.
- more services are needed within the SR protocol, or to be used in connection with the SR protocol, before this way of communication between systems may be used by the library users in general. The services SCAN (scanning indexes) and EXPLAIN (information about the remote system) in particular, are necessary
- several tasks outside the scope of the protocol need to be addressed before different implementations will give interoperability between systems. Two of these tasks are MARC format conversion and character set conversion.
- versions 7 and 8 of ISODE (ISO Development Environment) tool set were used in the project. The use of ISODE made it easier, and quicker, to implement the network access module for the OSI stack.

The ASN.1 (Abstract Syntax Notation One, machine independent encoding system applied in the OSI protocols) compiler from ISODE was also used when implementing the network access module for the TCP/IP stack.

Technical limitations of the ISODE versions applied in the project caused some performance problems. These limitations do not exist in other similar applications or in later versions of the ISODE package. Running on later versions of ISODE with the SR-Net application should not cause any problems, due to modularity of the SR-Net application. Due to the lack of suitable OSI tools, and the unwillingness of the implementers to use any OSI features in their application's network stack, the North-American Z39.50 implementations are running directly on top of TCP/IP.

In order to interoperate with the US Z39.50 implementations, the capability to run the SR protocol directly on top of TCP/IP was added to the SR-Net application. However, there was no time to test the SR-Net application properly against any SR/Z39.50 application running directly on top of TCP/IP.

In 1994 it seemed possible that the use of mOSI (minimal OSI) or tOSI (thin OSI) would bring TCP/IP-based and OSI-solutions together. However, during 1995 the popularity of mOSI has not grown at all – all Z39.50 applications, including that of the ONE project, will run directly on top of TCP/IP.

The lower layers (1–3) of the TCP/IP protocol suite did not cause any problems during SR-Net interoperability tests. In order to be able to use the software developed within the Nordic SR-Net, it is necessary to enable communication between the SRPM (SR Protocol Machine) and the local system. The SRPM and the local system may reside on different machines or on the same machine.

To run the SR-Net software one needs:

- ANSI C-compiler

- TCP/IP SOCKET library
- the local system software must be able to call, and be called by, C-procedures.

The communication between the SRPM and the local system will be handled by the SR-Net software package, thus making available the high-level API on the local system machine. The extra resources needed to run the software depends on which tools are already available. The problem of different character sets was not studied. This is an area that must be addressed. It is not handled properly today. The identification of character sets could be included in the SR protocol. – Experiences, and some of the technical solutions of the Nordic SR-Net project have been utilized in the EU project OPAC Network in Europe (ONE).

JUKEBOX

<http://www.sb.aau.dk/Jukebox.edit-report-1.html>

JUKEBOX was one of the first projects in the Libraries Programme of the European Commission launched in 1991. It was finished in April 1996. NORDINFO has contributed to the project by giving financial support to the Nordic members of the reference group and the Nordic project partners (Denmark and Norway) to safeguard the Nordic interests in the project and to enable wide dissemination of project results.

The Nordic WAIS/World Wide Web Project

<http://www.ub2.lu.se/w4.html>

The project was carried out by the National Technological Library of Denmark and Lund University Library, UB2 from 1993 to 1994.

As a solution to correct some of the weaknesses of the most important NIDR (Networked Information Discovery and Retrieval) tools, the Nordic WAIS/WWW Project started to explore the possibilities of improving navigation and searching on the Internet. The main approach has been to combine and in this way further develop the strength of two of the most important tools, WWW (World Wide Web) and WAIS (Wide Area Information Server). The project has accomplished the following results:

- a model integration of a library system into WWW
- an experimental system for automatic detection and classification of WAIS databases, featuring a WWW front-end
- an experimental system for automatic detection and indexing of Nordic WWW pages
- an improved gateway between WWW and WAIS, supporting multi-database searching and relevance feedback
- several pilot services offering the possibility to try out these project results.

The results and experiences from The Nordic WAIS/WWW project have been used in the project called Nordic Web Index which was launched at the beginning of 1996 and is running at the Nordic centres of excellence for Networked Information Services (NNC).

3.2.2 Nordic Centres of Excellence

Background

During 1992/93 Scandinavian library professionals engaged in IT and networking activities started the planning of common projects and discussed how to encourage not only Nordic inter-library contacts, but also contacts between librarians and scientists dealing with networked information as producers and consumers.

Based upon a proposal from a workshop in Lund, in the fall of 1993, NORDINFO decided to sponsor the initiative *Nordic Forum for Networked Information*, acting on the following goals and purposes:

- to encourage contacts between scientists, libraries and networking organisations and, in a later stage, also commercial producers (publishers, database hosts, etc.)
- to encourage the use of networked information services in Nordic libraries and inspire participation in the development of new products and services, including the development of standards, among others for the description of full text electronic documents
- to foster cooperation on projects, continuous dissemination of information and educational activities oriented towards the libraries and involving the interested parties mentioned above
- to follow and participate in international research related to networking
- to advise NORDINFO in connection with planned projects related to networking.

A committee consisting of network specialists, persons involved in library oriented development of new technologies and library managers responsible for projects was established.

A group of contact persons within the same field of interest participated regularly in meetings and other activities when participating was deemed relevant and economically feasible.

Proposals

The committee addressed a number of proposals to NORDINFO.

First, it was obvious that the existence of a centre, offering direct network technology support to libraries and other organisations dealing with information services, would be of great help. The wider scope of such a center should be to support and promulgate the use of communication through global networking and to strengthen cooperation between libraries, information centres and people from the networking sector. The overall goal is to support the development in these fields in the Nordic countries.

In response to a proposal along those lines, NORDINFO decided to establish such a support centre in the Öresund region from 1995: The *Nordic Net Centre* (NNC) – as a joint venture between the *Technical Knowledge Center & Library of Denmark* (DTV) and *Lund University Library* (LUB) and encompassing a comprehensive network of Nordic specialists.

However, two related areas needed specific attention: *Electronic Publishing* and *Digital Handling of National Library Collections*. Therefore it was suggested to establish two more Centres of Excellence, and NORDINFO decided to support them during a three year period in parallel with the above Nordic Net Centre:

The *Nordic Centre for Electronic Publishing* aims at following the development of electronic publishing from the perspective of Nordic libraries, information services and publishers. Furthermore, it aims at increasing and promoting knowledge on electronic publishing and applications among Nordic libraries, information services and publishers. The Centre is located at the VTT Information Service in Espoo, Finland.

The *Nordic Centre for Digital Handling of National Library Collections* aims at achieving a better understanding of the potential of digital representation of audio-visual information and investigating how high-speed wide area networks might offer Nordic libraries new options. The Centre is located at the National Library of Norway, at the library's Mo in Rana Branch.

Nordic Centre of Excellence for Networked Information Services (NNC)

<http://www.nnc.dk/>

The Nordic Net Centre is a centre of knowledge about networked information services. NNC aims at supporting and inspiring applications of information and networking technology in libraries and other organisations that deal with managing information. NNC promotes cooperation between libraries and units within networking and related technologies and can initiate and support joint cooperative projects and other development activities in the Nordic area.

The Centre is a joint venture between Lund University Library and the Knowledge Center & Library of Denmark and is located at the premises of the latter. Staff members from both Denmark and Sweden participate in the activities depending on type of activity. At DTV a public show room is available for demos and testing of new networked services.

The main fields of activity are related to the Internet and its client/server technologies, foremost the World Wide Web, Gopher, WAIS, electronic conferences, etc. NNC offers consultancy services, courses, seminars and workshops and assists the Nordic network organisations with the arrangement of the NORDUNET conferences. The courses offered so far have focused on the use of networking tools for information retrieval and publishing and the level ranges from basic to advanced. NNC has also arranged customized courses for staff from organisations on a consultancy basis.

The consultancy service deals mainly with the setup, operation and maintenance of WWW servers and other Internet based services, and the centre offers assistance to the customers' own net based projects as to analysis of needs, design of solutions, and guidance and support during the implementation phase. NNC has developed procedures for designing and implementing Web-sites for both private and public organisations.

NNC has set up the web site for PUF, the Department for EU research funding, at the Danish Ministry of Research (<http://www.nnc.dk/puf//>). The PUF web site offers a variety of EU-information; some of it edited by PUF staff, and some of it with links directly to EU sources of information. This site is still being developed, and one of the major expansions will be the establishment of PUF's newsletter as an electronic journal.

Another customer within the same line is NTF, the Nordic Transport Research. The aim of the NTF cooperation is to promote transport research in the Nordic countries. This web site offers a variety of information services, targeting Scandinavian research environments (http://nnc.dk/ntf/index_e.html).

NNC is currently involved in a variety of development projects. The Nordic Web Index aims at creating a distributed and searchable database of WWW-pages in the Nordic countries. The project is an extension of the Nordic WAIS/WWW project and is sponsored by NORDINFO and the Swedish information service vendor Bibliotekstjänst AB.

The electronic information service of NNC is available via the NNC home page (<http://www.nnc.dk/>). The service presents information about services, calendar and announcement of courses, workshops and other events. It also contains software evaluations, guides and pointers to related newsgroups.

The NNC Internet guide is a collection of Internet resources, divided into three areas: Internet and WWW help and training resources, "How-To"-guides, and Software for networked information.

The Nordic Centre of Excellence for Electronic Publishing (NordeP)

<http://www.vtt.fi/inf/nordep/>

VTT Information Service acts as the Nordic Centre of Excellence for Electronic Publishing (NordeP). The centre is jointly financed by NORDINFO and VTT Information Service.

VTT has carried out a number of R & D projects with an emphasis on the applications and potential of new information technology. Among the projects, several focused on electronic publishing and dissemination, for example optical character recognition in microfilm newspaper library collections, and publishing on CD-ROM. The centre has expertise in most areas of electronic publishing: hypertext/hypermedia applications, international standards related to structured documents and publication databases, electronic document viewers and the transformation of data from paper or microfilm to digital form.

NordeP participates in relevant projects, disseminates information and arranges seminars on these and other related topics. The centre also acts as an advisory body in technical matters and in project management issues related to electronic publishing.

The project "Electronic publishing and dissemination through networks" is carried out at The Nordic Centre of Excellence for Electronic Publishing (NordeP) together with some

Scandinavian publishers. The project started at the beginning of 1995 and the final report was submitted at the end of March 1996.

In the project, the current situation of electronic publishing and dissemination in the Nordic countries are reviewed, characteristics of a generic publication database and applicability of related standards are assessed and recommendations for possible solutions are presented.

The main part of the project will concentrate on practical experiments carried out by NorDEP in cooperation with two Nordic publishers: Scandinavian University Press (Oslo, Norway; <http://www.scup.no/>) and the Nordic Council of Ministers (Copenhagen, Denmark). Especially, the HTML and SGML mark-up languages and the Acrobat PDF file formats are of interest.

As a pilot test, the journal "Fokus på Familien" (<http://www.scup.no/journals/en/j-225.html>) by Scandinavian University Press was converted to both HTML and Acrobat PDF formats and placed available on the WWW (<http://www.vtt.fi/inf/nordep/projects/scup/fokus.htm> or <http://www.scup.no/journals/fokus/fokus.html>). The opinions of the readers of the journal will be surveyed by a questionnaire placed on the same web page as the journal issue.

The project has produced practical recommendations for how to organise the publishing process for electronic distribution of publications. A generic, step-by-step guideline – a "cookbook" – on what is needed for producing a network publication has been compiled (<http://www.vtt.fi/inf/nordep/projects/webpilot/cookbook/>). This guide can be used by any organisation planning to publish through the Internet.

The Nordic Digital Library Centre (NDLC)

<http://www.nbr.no/ndlc/>

The most recent centre to be established by NORDINFO is the "*Nordic Centre of Excellence on Digital Handling of Collections in National Libraries*", NDLC, at the Norwegian National Library's branch in Mo in Rana. In addition to its responsibilities for keeping all kinds of information in Norway in suitable stores, the Rana Branch has been working with networked systems for various kinds of information retrieval. During the last two years the emphasis has been on records of sound, photographs and video. All of these information types are represented digitally and ready to be processed by computers and transferred to electronic networks.

Access to information is based on Internet and ATM networks. NDLC is participating in the Norwegian ATM test network, which represents an excellent test environment for network based access to digital audio-visual information.

The goals of the centre are initially: to achieve a better understanding of the potential of digital representation of audio-visual information, to investigate in what ways high speed wide area networks can give the Nordic libraries new opportunities, to increase the general level of competence regarding digitisation in Nordic libraries, archives and museums, and to act as a resource for the Nordic library community. These goals will be

met through close cooperation with other interested communities in the Nordic and other countries through projects and seminars.

The first task of the centre is to set up experiments on new ways of making information digitally available through computer networks. Such experiments will mainly be carried out in the course of projects. In addition to ordinary "reports on paper", projects in this area should to a large extent result in prototypes suitable for demonstrations. In the programme planning process and the projects themselves the centre brings together people from different organisations and thereby also enhances the dissemination of new knowledge to other Nordic organisations.

The existing competence, laboratories and other facilities and capabilities at the Norwegian National Library as well as other institutions provide a good basis for various current and future projects.

Examples of projects that have begun already are the Networked Video, the Nordic Poem and the Historical Digital Map.

In the Networked Video project, a prototype of a library service providing access to video information via data networks will be developed. The collaboration partners of this project are the Norwegian National Library, Rana (NBR), the Norwegian Telecom Research (NTR), the Danish State Media Archive (SM), and the Swedish Sound and Image Archive (ALB). The goal of this project is to develop a pilot system that will demonstrate the essential concepts of a video server. The pilot system will enable external users to access a multimedia information server storing video material, and the user will be able to view/play a video document at a remote location.

The Nordic Poem is an Internet gathering site for poetry from the Nordic countries. The Norwegian National Library has created a prototype (<http://www.nbr.no/ndlc/sound/poetry/index.html>) and local libraries in the Nordic countries will have an opportunity to send recordings of local poets to NDLC. The selection of the material will be made by the local partners. Both text versions and voice recordings of the poems will be made accessible at the site.

The National and University Library of Iceland has initiated the project Historical Digital Maps in collaboration with NDLC. All Icelandic maps produced before the year 1900 will be made accessible via data networks and a catalogue of these 300 maps will also be produced.

Coordination between the centres of excellence

The establishment of the three centres of excellence was a milestone in NORDINFO's strategic work. It aims at the strengthening of Nordic libraries' application and development of networked information services and other technologies related to information dissemination. Since many new projects will be initiated through the three centres and additional information on new activities and development will be channeled through them, NORDINFO has decided that a body with the profile of NFNI (Nordic Forum for Networked Information) is no longer needed. Since the objectives of the three centres are closely related and they have a mutual interest in coordinating their activities,

NORDINFO has invited the centres to establish a platform for such umbrella work and for joint information to the public.

Thus, *NordELIB* (Nordic Electronic Library Projects) has been set up as a common label and framework for collaboration including joint development projects. Information on current activities is distributed through an electronic conference. The "NordELIB-conf" (<http://www.ub2.lu.se/NNC/email-conf/>) is conceived as an unmoderated electronic list inviting all types of news and discussion focusing on networked information services in the Nordic library community. The newsletter NordELIB is available in print as well as on the Internet (<http://www.nnc.dk/nordelib/>).

3.2.3 NORDGUIDE

<http://info.rbt.no/nordguide/nordguide.html>

NORDGUIDE is the Nordic database cooperation project. The first inventory of Nordic online databases started in 1984 and was financed by NORDINFO. Since 1988 national I & D bodies have financed the inventory in each Nordic country, while NORDINFO has financed the coordination and publication of the guide. The data are collected by INFOSCAN in Denmark, by VTT Information Service in Finland, by the National Office for Research Documentation, Academic and Professional Libraries in Norway, and by the Information and Documentation Center of the Royal Institute of Technology Library in Sweden.

The guide to Nordic databases has been available online in the Nordic countries since 1988. Since 1994 it is also available through the WWW.

NORDGUIDE is updated online once a year, and contained in 1995 information on 766 Nordic databases. The 1996 printed version is scheduled to be published in the summer of 1996 and will contain information on about 830 databases.

3.3 NORDUnet

<http://www.nordu.net>

Network connectivity is in the Nordic countries offered on a national basis by the national research networks. In Denmark the research network is called DENet (<http://info.denet.dk/>), in Finland FUNET (<http://www.funet.fi/>), in Iceland ISnet, (<http://www.isnet.is/>), in Norway UNINETT (<http://www.uninett.no/>), and in Sweden SUNET (<http://www.sunet.se/>). Appendix 1 shows a map of the Nordic network connectivity.

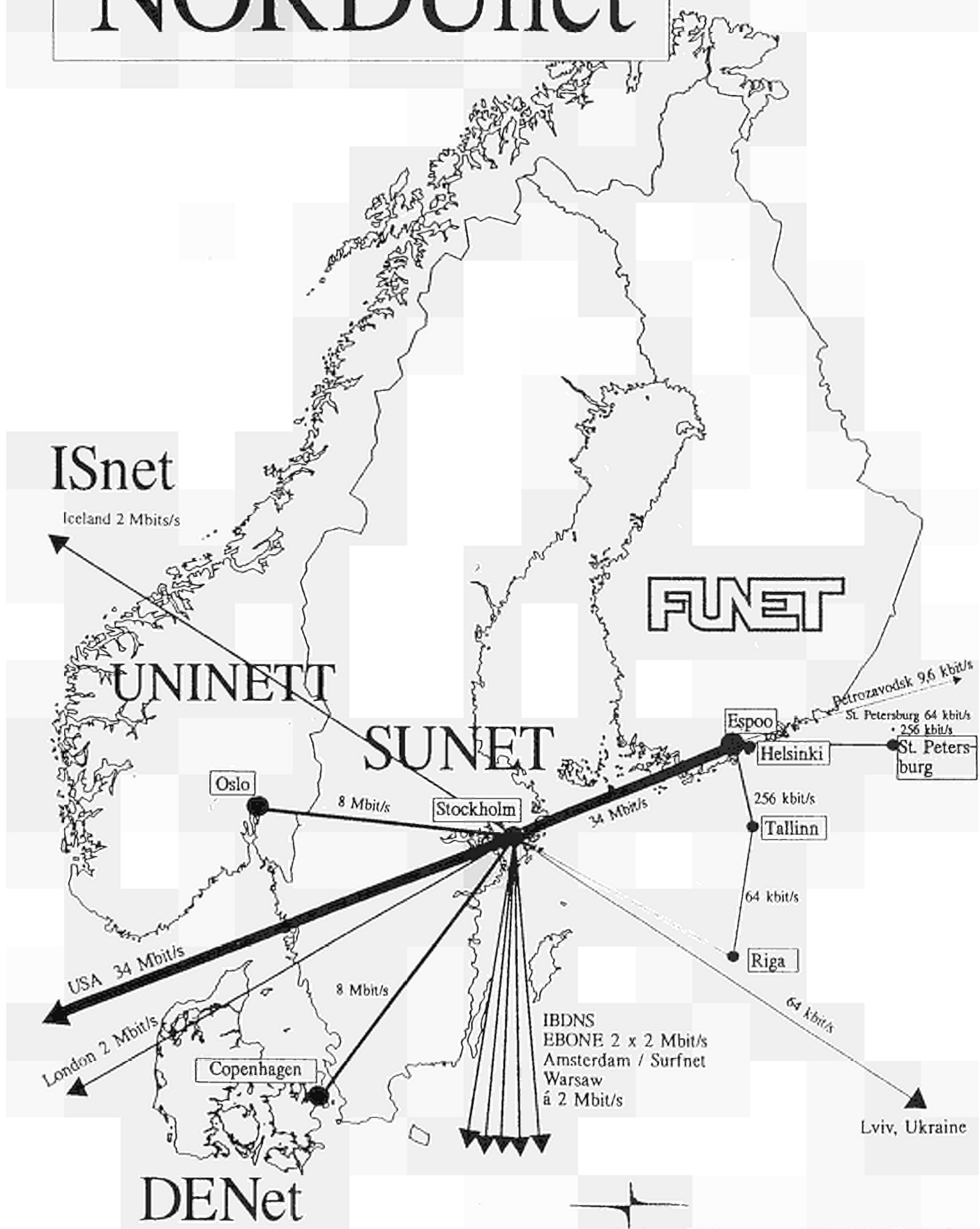
International connectivity is provided by NORDUnet, which is an international network operator. NORDUnet has connections to the US and European backbones and to networks in central and eastern Europe.

Historically, NORDUnet is a multiprotocol network carrying every protocol the user needs. Today TCP/IP is the only transport service offered outside the Nordic countries, and other protocols are tunneled through TCP/IP. However, in the Nordic countries, DECnet phase IV is still routed.

Legally, NORDUnet is a limited company (A/S) based in Denmark, and the NORDUnet shareholders are UNI-C (the Danish Computing Centre for Research and Education), the Finnish Ministry of Education, SURIS (The Association for Research and Networking in Iceland), UNINETT A/S in Norway, and the National Agency for Higher Education in Sweden.

NORDUnet

APPENDIX 1



CSC

Punkaen3.ged 18.3.96 Ilkka Siissalo/Funet

State-of-the-Art Study of Information Technologies in the Nordic Libraries

»Survey of public libraries, academic libraries and major research libraries«

Section A: The Automated Library System

- A 1 Does the library have a local library system for its local housekeeping functions?
- Yes, own local system since year: _____
- Yes, shares the system with: _____
- No, but we have decided to purchase a system
- No (go direct to section B)

- A 2 Description of the system (answer as much as possible)
- A 2.1 Name of the system: _____
- A 2.2 Name of supplier/agent: _____
- Address: _____
- Telephone: _____
- A 2.3 Name and type of hardware: _____
- A 2.4 Operation system (DOS, MAC., WINDOWS, UNIX, VMS etc.): _____

A 2.5 Give figures for the number and type of workstations for the staff and the users:

Type	PC	MAC.	Terminals(VT1000 or similar)	Other
Staff				
Users				

- A 2.6 The OPAC (public access catalogue or public searching module) of the library system:
- Is character based only Has a graphical user interface
- A 2.7 If the OPAC has a Graphical User Interface (GUI), this is:
- A standard GUI (=developed by systems supplier)
- Developed locally
- A 2.8 Who is responsible for maintenance of your library system?
- The library staff Host institution Local community's computer dept.
- The library systems supplier Service bureau
- Other _____
- A 2.9 How many man days per month does the library staff spend on systems maintenance?
- Our library spends app.: _____ man days per month on systems maintenance.

- A 2.10 Do you have additional databases in the local system (other than the local library catalogue)?
- No Yes. If yes, give further details:
- Name of database: _____
- Content/coverage: _____
- Number of records: _____
- Name of database: _____
- Content/coverage: _____
- Number of records: _____

(if you need more space, please use a separate sheet of paper)

- A 3 Description of the way the system functionalities are used in your library:
- A 3.1 The OPAC is available to the users:
- Within the library only Via remote access(Internet/dial-up modem)
- Through the local network Also in the bookmobile
- A 3.2 Do you use the cataloguing module in your system?
- Yes No
- A 3.3 How many percentages of the new records do you create by copying (downloading) from external record resources?: _____ %
- A 3.4 Circulation functions (check out/returns, etc.) are carried out
- by the library staff only also by self-service
- A 3.5 If self-service, which percentage of the check-out function is carried out by users themselves?: _____ %
- A 3.6 Are the user allowed to make reservations or renewals?
- Yes No
- A 3.7 Are the users allowed to use the electronic reservation and renewal funtions?
- Yes No
- Does the library use the following house-keeping modules:*
- A 3.8 Acquisition module:
- Yes No, we have separate system for acquisition
- No, acquisition routines are carried out manually
- A 3.9 Periodicals control:
- Yes for: registration budgeting accounting
- No, we have a separate system No, periodicals control is handled manually
- A 3.10 Periodicals circulation:
- Yes No, we have a separate system for periodicals circulation
- No, periodicals circulation is organised manually No, we do not circulate periodicals

A3.11 How do you handle interlibrary loans (the local routines)?

- ILL routines are integrated in the system ILL are handled by a separate database system
 ILL routines are handled manually

A 3.12 The Statistics module.
Are you using this module for library management?

- No No, the system has no statistics module
 Yes, we use the system for library management (give examples): _____

A 3.13 If your system has a report generator, is this regularly used for productions of acquisitions lists, selected bibliographies, etc.

- No, we don't use the report generator. Yes. (if yes, give examples of use): _____

A 4 Development plans.

A 4.1 Does your library plan to purchase a (new) system?

- Within 1 year Within 3 years No plans

A 4.2 What are your plans for the further development of your local system and the level of service of the system,

Within 1 year: (Indicate areas of further development): _____

Within 3 years: (Indicate areas of further development): _____

A 4.3 Give the total figures for the library's investments in the local library system in the last budget year (excl. salaries). The figure should include: new purchases, cost of maintenance, service fees and licences, cost of extension of hardware and software, etc.

Our library invested last financial year: _____ Kr.

A 4.4 Give the total figures for the library's investments in the local library system in this present budget year (excl. salaries). The figure should include: new purchases, cost of maintenance, service fees and licences, cost of extension of hardware and software, etc.

Our library invests the present financial year: _____ Kr.

A 4.5 Is the Automated Library System purchased, leased or rented?

- Purchased Leased Rented

Comments

Comments on all questions in section A can be given here. Indicate the question.

Section B: Electronic Document Ordering (ILL)

B 1 By electronic ordering is meant that the library is able to use electronic routines for interlibrary loans (ILL) either in its own local system or through other systems and send electronic messages/orders to an external receiver.

B 1.1 Does the library use electronic ordering facilities?

- No (go to Section C.) Yes

B 1.2 Are the users allowed to order documents themselves?

- No Yes

B 1.3 Which proportion of the library's interlibrary loans requests is carried out electronically?

- < 25% < 50% < 75% > 75%

B 1.4 The library's total number of interlibrary loan requests in 1994: _____

B 2 Which types of documents are ordered electronically?

- Books (includes all types of monographs) Articles

Other materials (specify): _____

B 3 Where do you order from:

Other libraries within the same local Automated Library System

Central systems and services within the country (DANBIB, etc.): _____

Nordic central systems or services (LIBRIS, UBO:BOK, etc.): _____

Central systems or document suppliers outside the Nordic countries (such as Uncover, OCLC, EBSCO): _____

B 4 In which formats is the library able to receive electronically ordered documents?

- By fax By e-mail Via FTP Other methods (specify): _____

Section C: Electronic Document Delivery (ILL)

By electronic document delivery is meant that the library either provides access to documents in electronic form to remote users e.g. via networks or transmits the documents in electronic form to receiver.

C 1 Does the library deliver documents in electronic form?

- No (go to section D) Yes

C 2 If yes, in which forms are documents delivered?

- By fax On floppy discs Via FTP

Via e-mail Other methods (specify): _____

Section D: Access to external database (online/CD-ROM)

Information retrieval online

D 1 Does the library offer information retrieval services to the users?

No, we do not do online searches for library users, because, (reason): _____

(if no, go to question D4)

Yes, we offer online searching to the users: free of charge sometimes free of charge

the user pay for the service Yes, we offer online searching to the users. The users pay for the services.

D 2 How many online/services does the library subscribe to?

(write the number): _____

D 3 The 5 most frequently used online hosts/services in this library are (specify):

1	
2	
3	
4	
5	

Information retrieval CD-ROM

D 4 Does the library offer information retrieval services on CD-ROM?

No, (reason): _____

(if no, go now to section E)

Yes, the library has databases on CD-ROM, but our collection of CD-ROMs is used by the staff only.

Yes, the library has databases on CD-ROM and these are available to the users.

(public libraries are asked to answer question D5 and D6. Research libraries can go to question D7)

D 5 The library has databases on CD-ROM in:

Adults department Reference department

Children's department Music department

Other

D 6 CD-ROM databases are available:

In the main library in branches Also in the bookmobile

D 7 The CD-ROM's are installed:

On "stand-alone" PC-workstation(s) In a network

Some on "stand-alone" PC-workstation(s) and some on network

Section E: Local IT-Applications

By local IT-applications is meant a large variety of services and products, such as multimedia systems, image banks or databases, in-house developed either by the library itself or on the initiative of the library.

E 1 Has the library developed any local IT-applications?

No, and we have no plans for own development of IT-application. (go to Section F)

No, but we are planning to launch new IT-services within the next 12 months (*indicate area below*)

Yes, we have in-house developed IT-applications (*indicate area below*)

We have (or plan) local user oriented IT-applications within the area of:

Type of application	Developed	Planning	The IT-products/services are made available:		
			on a local PC-work-station only	as a CD-ROM applica-tion	via public network
Library guide					
User training					
Community information					
Local history					
Local image collection					
Local music collection					
Other, (specify): _____					
Other, (specify): _____					
Other, (specify): _____					

Comments:

Section F: Internet

F 1 Does the library have access to Internet

- No (go to Section G) Yes

F 2 Internet is used by the staff for the following tasks:

- For e-mail For professional discussions (newsgroups, listserv, etc.)
 For information retrieval via Gopher or WWW For downloading of documents
 For exploring/pleasure Other, (specify): _____

Not used regularly

F 3 Does the library provide Internet access for the users?

- No (go to Section G) Yes

F 4 Internet is used by the users for the following tasks:

- For e-mail For downloading of files For information retrieval via Gopher or WWW
 For exploring/pleasure Other (specify): _____

F 5 Has the library created its own homepages?

Yes

The WWW/Gopher-address of our homepages is: _____

No, but the library expects to have its own homepage within:

3 month 6 month 12 month

No (go to Section G)

F 6 The homepages provide access to:

- Links to selected resources on the Internet Information retrieval in the library's catalogue
 General information about the library Electronic bulletin board
 Full-text documents (made available either by the library or host institution). Mention some examples:

F 7 The homepages are developed and updated by:

- The library staff Host institution External consultant
 Other (specify): _____

Comments:

Section G: Other use of IT

G 1 Does the library make use of Information Technology (IT) (in any user-oriented function or service) in a way, which is not covered by this questionnaire?
 (here you may also give references to any Nordic or International IT-projects in which the library is involved)

Examples:

This questionnaire was completed by:

Name: _____ E-mail-address: _____

Library: _____ Telephone: _____

Part B
State-of-the-Art of Information
Technologies in Danish Libraries

Gitte Larsen
Library Advisory Officer

Copenhagen 1996

Preface

The present report has been prepared for the European Commission, DG-XIII/E/4 in Luxembourg under the contract PROLIB/NORDEN by the National Library Authority.

The Danish study is part of a wider Nordic study on the use of information technologies in Nordic libraries. The study has been planned by a project team with representatives from the Nordic countries and NORDINFO. Ms Gitte Larsen of the National Library Authority was the Danish member of the Nordic project team and is responsible for work carried out under the Danish contract awarded by the European Commission.

The project has been carried out by a team of staff members in the National Library Authority, and the author wishes to thank all colleagues, who have worked hard to complete the study. I am also very grateful for the useful comments and feedback kindly provided by subject specialists in the National Library Authority.

The author also wishes to thank all the people, who completed the survey questionnaire or responded to telephone interviews or otherwise contributed to the data collection.

Copenhagen, May 1996

/Gitte Larsen
Library Advisory Officer

Part B

State-of-the-Art of Information Technologies in Danish Libraries

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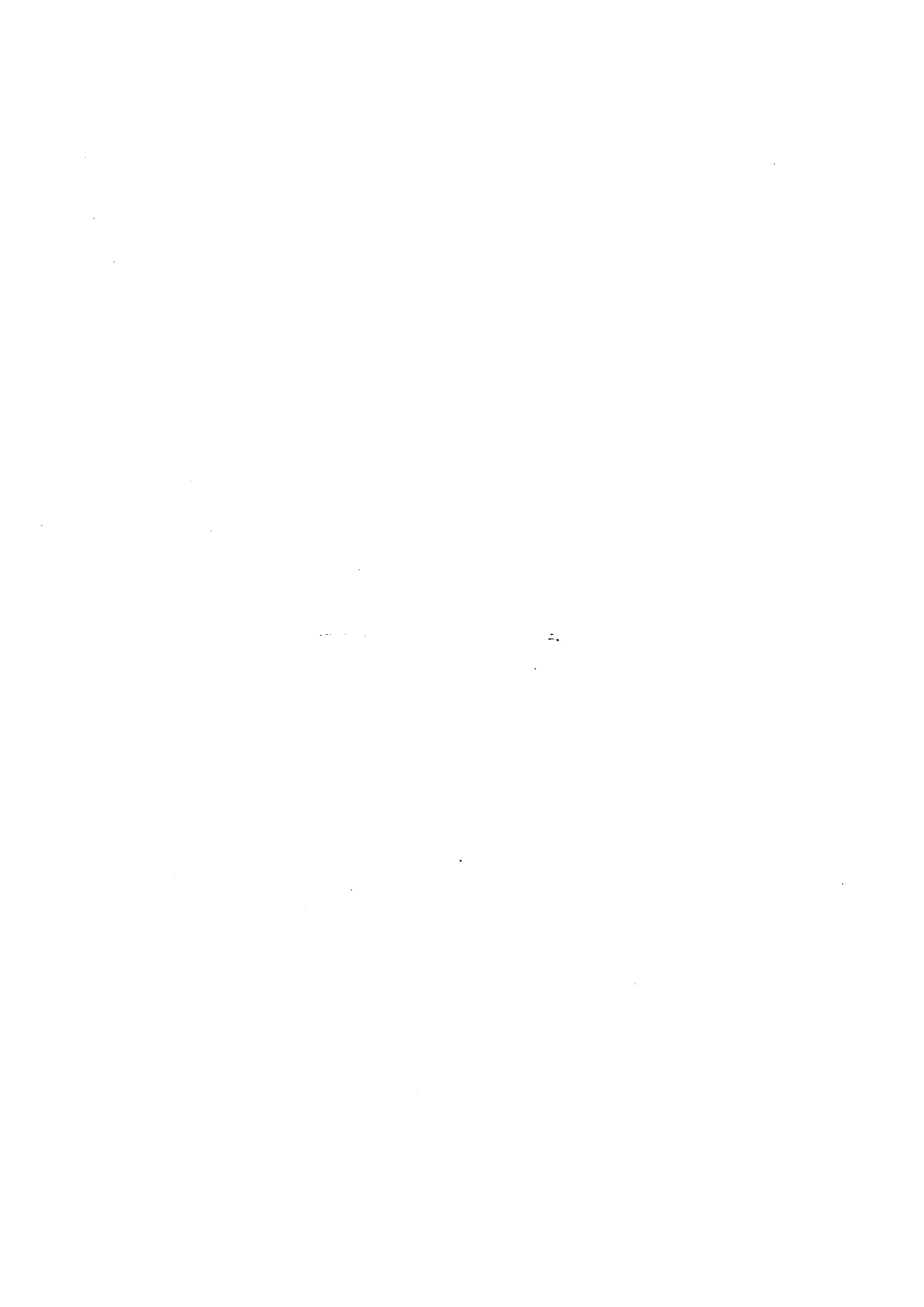
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Appendices

Appendix 1	Research Libraries Selected for the Questionnaire Survey
Appendix 2	Profile of Library Systems Suppliers in Denmark Dansk Data Elektronik A/S (Supermax) Kommunedata I/S (MikroMaster) ICL DATA A/S (Aleph) Dantek A/S (BiblioMatik+Cicero) Datacentralen (DCBIB) Axiell A/S (BIBS, BIBDIA, TINLIB) (missing: MicroMarc)
Appendix 3	Questionnaire form in Danish



Introduction

Background

In 1995, a “State-of-the-Art Study“ of Information Technologies in Nordic Libraries was commissioned by the Directorate DGX-III/E/4 of the European Commission in Luxembourg (the Unit of Libraries Networking and Services) to provide an overview of the two new member countries Sweden and Finland the the EØS countries Norway and Iceland. Denmark was reviewed in order to provide an up to date picture of all the Nordic countries. The Nordic library society has a long tradition of cooperation. This cooperation also includes many common IT-projects carried out by Nordic research libraries coordinated via NORDINFO. The Nordic Council of Ministers supports important IT-projects, such as the Nordic School Data Network project. Such Nordic initiatives are not included in the present report covering Danish libraries, but are described in a separate report, prepared by NORDINFO’s Secretariat.

“State-of-the-Art Studies“ were carried out in Denmark in 1986 (the LIB2-study) and in 1990/91 (LIB2-Update) under contracts awarded by the European Commission, DG-XIII in Luxembourg. The present report, therefore, concentrates on new IT initiatives in Danish Libraries after 1991 with an emphasis on the most recent initiatives. The report is not attempting to give exhaustive or in-depth details on the use of IT in Danish libraries, but aims to focus on issues of general interest to the library professionals and interested bodies in other European countries, who want recent information on, Danish Libraries in the Information Society.

Data Collection Methods

Data on the use of information technology in Danish libraries have been collected in different ways: via consulting printed materials, via personal communication, and by visiting many home pages on the Internet. The proportion of information, which had to be collected from electronic source, was remarkable – and actually not easy to describe in a comprehensive form in a printed report. Consequently, the URL addresses are provided when available as the data source for further reading.

For the desk research data material from various sources has been available, such as the Official Statistics for academic, public and school libraries. Danish library statistics comply with the UNESCO principles. Not all libraries, unfortunately, have submitted full statistics. During the past few years some of the public libraries have experienced reporting problems due to the change from manually based circulation procedures to computerised circulation.

As the figures for 1995 were not available at the time of data compilation, the Official Statistics for 1994 have been used.

Information on the use of IT in school libraries is based on data collected by the Association of School Librarians (*in Danish: Skolebibliotekarforeningen*). At the

beginning of 1995 this organisation collected data on library systems available in the local authorities (not in every primary and secondary school, of which there are some 1700 in Denmark).

Those local authorities, who had no library automation according to the data collected by the Association of School Librarians in 1995, were contacted by phone and asked whether they had in the meantime purchased any library housekeeping system for the school libraries. Further details were provided by the library systems suppliers and supplemented by desk research.

Information on the use of IT in the public libraries and research libraries has been collected via a questionnaire survey. The questionnaire form is included in this report as *Appendix 3 (Danish version) and Appendix 4 (English version)*. In the Danish version some supplementary queries were added, concerning, registration of personal data'.

The content of the libraries survey was prepared by the steering group of the Nordic study. The questionnaire was initially prepared in English in order to help ensure that the same kind of data were collected in the 5 countries. This could be regarded as an unnecessary extra workload, but it turned out to be a useful methodology, as it actually helped to define the questions and to reach a common understanding of what data exactly we wanted to collect. Working in a project group with five different mother tongues it became obvious that we did not always put the same interpretation on terms and phrases in one of the other languages even if it seemed understandable at first glance. The translation into English made the project team reach a common agreement on how we wanted to put the questions. Moreover, one member of the Nordic project team is Australian and does not communicate in any Nordic language. The questionnaire form was translated into Danish before dissemination by the National Library Authority.

Selected interviews were carried out to gather more details. Mrs Heddi Mortensen, the Danish Library Centre Ltd. has been interviewed on products and services and Mr. Per Mogens Petersen, Head of the DanBib System has been consulted on chapter 3 (networking issues).

Details on, Culture Network Denmark' have been collected by consulting members of the Coordination Group of , Culture Network Danmark'.

The library systems suppliers have been asked for supplementary information in some cases.

Contribution from the Library Systems Suppliers

Library systems suppliers operating in Denmark have been contacted in January 1996 and asked to prepare a brief overview on their company, their integrated library system and customer base. They were provided with a copy of the data entry format, which is being used in this report to present the supplier profiles. The content of Appendix 2 was the result of the contributions from the suppliers, who delivered the text in English. Appendix 2 has not been corrected for spelling mistakes or linguistic errors.

Only suppliers of fully integrated systems were asked to provide a profile.

Some research libraries have a non-integrated system solution for library housekeeping, e.g. using BRS/Search for cataloguing/retrieval and a stand-alone system for periodicals management. These products are not described in this report.

Counting the number of customers may be done in many different ways (e.g. one central system with 5 connected libraries may be counted as one or five). It has, therefore, been recommended to the library systems suppliers that they count the number of customers as number of contracts signed for local library systems.

The Questionnaire Survey

The survey was conducted in the period October to December 1995 with a very good response rate. Many libraries, however, did not answer the questions in full, which affects the interpretation of the data. Should a, no answer' be calculated as a, yes' or, no'? In the tables and figures presenting the results of the survey, we have included only statements, which could be extracted from the questionnaire form. Therefore the *Grand Total* is not necessarily equal to the figures of the total number of public and research libraries, which participated in the survey.

The Public Libraries

The questionnaire was mailed to all the public libraries, a total of 249 library, systems'. Denmark is divided into 275 local authorities. Some local authorities have a formal agreement of collaborating on the provision of a local library service, and the total number of public library administrative units are therefore only 249.

At the deadline for returning the questionnaire 248 library systems had responded. Some 170 forms were returned on time by the public libraries, some other 50 libraries reacted upon a reminder mailed by post or upon a second reminder by phone. Collecting the last responses required additional measures. The remaining libraries were contacted by telephone and interviewed, so the project team could fill in the forms on their behalf.

Research Libraries Included in the Survey

During the preparation of the survey, the steering group for the Nordic parallel studies realised that it was impossible to reach a common agreement on the categorisation of various types of research libraries, which would apply in all the Nordic countries. Therefore, the term, research library' have been chosen to cover: the national library, university libraries, other academic and research libraries included in the survey. Using the term, research library' solves the problem of deciding which libraries should belong to which category.

Not all research libraries were surveyed by questionnaires. In the planning phase of the study it was agreed that all the Nordic countries should cover detailed information on

research libraries of a certain size only. In the Danish case the limit was set at 3 or more members of staff (full-time equivalent). This decision was made taking the large number of very small research libraries into account.

The research libraries included in the survey (listed in Appendix 1) are divided into the four categories A, B, C, D described below. The libraries in those four categories are the research libraries, which according to the Official Statistics are categorised as, larger research libraries' in Denmark.

Group A: *The National library, university libraries and large research libraries within humanities and social sciences with a staff of more than 20 FTE (full-time equivalent), which make available materials for loan and inter-library loan with no restrictions other than those, which might be due to type of material, which furthermore have fixed opening hours, and which are run by a professionally qualified person (research librarian, librarian, documentalist).*

,Group A' consists of eight research libraries. All eight libraries from, Group A' returned the questionnaire.

Group B: *Large research libraries within science, medicine and technology, which fulfil the same criteria as mentioned under Group A*

,Group B' consists of five research libraries. All five libraries from, Group B' returned the questionnaire.

Group C: *Research libraries within humanities and social sciences with a staff of between 3–20 FTE (full-time equivalent), which make available materials for loan and inter-library loan with no restrictions other than those, which might be due to type of material, which furthermore have fixed opening hours, and which are run by a professionally qualified person (research librarian, librarian, documentalist).*

,Group C' consists of 24 research libraries. 23 libraries from, Group C' returned the questionnaire.

Group D: *Research libraries within science, medicine and technology, which fulfil the same criteria as mentioned under Group C*

,Group D' consists of 19 libraries. All 19 libraries from, Group D' returned the questionnaire.

1 Danish Libraries in the Information Society

The first part of the 1990s has in Denmark been a period of strong political focus on cultural policy and marked by intensive political efforts regarding the establishment of a new national IT policy. Both policy areas have had an impact on the libraries. In this chapter some of the more significant initiatives will be described in brief.

1.1 A Review of the Danish Cultural Policy

In 1993 the Danish Minister of Culture launched a large scale project to review the state-of-the-art of the Danish cultural policy. The overall goal of this review was to prepare for new initiatives or the revision of implied legal issues when needed.

The review covered all cultural areas, including film, sport, theatre, literature and museums, and developed into a series of 16 volumes. Two publications in this series focus on issues relevant to libraries. One deals with copyright issues (Schønning, 1994), and formed part of the preparatory work for the new Copyright Act, which came into force in 1995 (see section 1.8). Another volume covers libraries in the cultural and IT-policy (Thorhauge, 1994) and might well have investigated some of the issues concerning libraries as formulated in the governmental initiative, Info-Society 2000'.

1.2 Info-Society 2000

In 1994 the Danish government published the report, Info-Society 2000' (*in Danish, Infosamfundet år 2000'*). The aim was to start a debate at all levels of society. This report was widely discussed, and in March 1995 the Ministry of Research & Information Technology published a follow-up called, From Vision to Action' (*in Danish, Fra Vision til Handling'*). This document outlined a Danish IT Political Action Plan, which came into force in 1995. The Action Plan has been adopted by the government. A new follow-up IT Political Action Plan is to be launched during 1996.

The, Info-Society 2000' Action Plan is very important to Danish libraries, because of the strong political attention focused on them. Libraries are dealt with in a separate chapter entitled, Libraries in the Age of IT', but are mentioned in several contexts.

The Info-2000 report predicts the following on the overall important role of libraries:

„The libraries of the future should have a central position in a society where electronic publications increasingly take over the role of magazines and books. The libraries should maintain a major, intermediary function as far as published information is concerned and be active in helping all citizens to navigate through the rising flood of information. Electronic communication of culture should supplement and increase the dissemination of cultural experience and knowledge.“

1.2.1 Libraries in the Age of IT

The report, From Vision to Action' from 1995 suggests a number of more specific roles for the libraries to fulfil, the most important being to underpin the democratic process in society.

The report says:

„Seen from a democratic point of view this intermediary function of the public library is very important, and the public libraries have a central role in order to secure that the

Danes will not become divided into an A-team and a B-team in terms of information technology“.

The expressions „A-team“ and „B-team“ have become a Danish metaphor for, the information rich and the information poor‘ but include the extra facets of the individual to *have access to equipment and to have sufficient skills to use the advanced technology.*

Another important role is to ensure access to electronically published works and to provide access to advanced equipment for this purpose. This role as, the local community’s computer workshop’ is meant in particular as a support to those users, who have no access to advanced equipment in their job or at home.

The report says:

„One may also envisage new electronic forms, where books and articles are printed locally („Publishing-on-Demand“) – possibly with advanced equipment that can make nice editions with e.g. colour pictures. This form of publication will also be applicable for individual selections of articles, chapters etc. – or for the current up-date on information and editions etc.

The overall development will change the basic conditions for public libraries, school libraries and research libraries in important ways; an increasing amount of the libraries’ users will find it possible to establish contact to relevant bases and networks from their homes or work places and thereby gain direct access to the „electronic library“ bypassing the libraries.

But many users of especially the public libraries will not have this possibility. For them the public library will remain an important place to get information – from now on not only on paper, but also electronically. Compared to the commercial market the libraries ensure the widespread access to all published Danish material – because of the legal deposit – also when it is no longer available at the market.“

The Danish IT Political Action Plan has already had an impact on libraries. Some larger academic libraries, such as the Royal Library, have played a very active part in the establishment of the, Cultural Network Denmark‘ (see section 1.2.3). some large academic libraries have also participated in experimental work on, publishing on demand‘ of research publications (see section 1.5).

The IT Political Action Plan has been particularly important to the public libraries. Already at their spring meeting in 1995 the library directors of the public libraries agreed to commit themselves to the goals and objectives of the plan. They outlined their working plan in a so-called, Library Directors‘ Action Plan’ (in Danish , *Håndslag til Informationssamfundet*‘).

1.2.2 The Library Directors’ Action Plan

In order to contribute to the realization of the above goals and values, public library directors of Denmark undertake to:

- * work to ensure that the main public libraries of all local areas have access to networks before the end of 1996.
- * work to ensure that the main public libraries of all local areas have an Internet address before the end of 1996.
- * work to ensure that Internet is placed at the disposal of users before the end of 1996.
- * work to ensure the establishment of intensive staff training in multimedia and networks before the end of 1995.
- * work to ensure that the national library agencies develop expert advisory services to assist libraries in the process of acquiring new media and networks. This task begins now.
- * work to ensure an increase in the part of the library materials budget spent on non-printed materials before the end of 1996.
- * work to ensure that the local public library initiates the development of local networks in accordance with the needs of the local community.
- * work to ensure that overall municipal communication and computer strategies are tailored to meet the requirements of the citizens.
- * work to ensure that public terminals are installed in public libraries.
- * work to ensure the economic basis for the above. Investments at present outside the scope of most public libraries are required. This task begins now.

1.2.3 Cultural Network Denmark

The Ministry of Culture is currently examining the possibilities of the public libraries, archives and museums, and other cultural institutions becoming part of a „Cultural Network Denmark“ (URL: <http://www.kulturnet.dk>).

The overall purpose of establishing such a network is, according to the IT Danish Political Action Plan, to give the citizen electronic access to registers, texts, sound and pictures in the collections of these institutions. The idea is that electronic communication of culture should supplement already well-known channels of dissemination of cultural experience and knowledge.

The goal is that cultural institutions should gradually join the Internet with access for the citizen via the World Wide Web to obtain information on culture by electronic means. To get this action off the ground, some 50 institutions belonging to the Ministry of Culture have been invited to participate in, knowledge exchange groups' dealing with the preparation of text, images and sound for dissemination on the Internet. Finally a call for pilot projects was launched in November 1995.

In 1996, pilot projects (some 7–8 projects) will be carried out by for instance the national archives, museums and large academic libraries to gain experience of the potentials of public access. The National Museum of Art is going to publish, 'Art Index Denmark' on the Internet.

The Royal Library has received grants for a project on making Danish cultural journals published from 1918 to 1940 available in electronic form on the WWW, and the State and University Library in Århus is going to launch a pilot project called, 'Danish Sound History' in collaboration with the Royal Academy of Fine Arts.

New calls for projects to be conducted in 1997 and 1998 are foreseen by the Ministry of Culture.

1.2.4 Committee on the Future of Libraries

In the publication, 'From Vision to Action' it is suggested that the libraries' roles and working conditions should be re-examined in the light of a development, whereby electronic publications gradually are taking over an important part of the role of reference materials and other publications.

Consequently, in June 1995 the Ministry of Culture initiated a review and a re-evaluation of the functions and conditions of the libraries. These were to be considered in relation to the development of electronic publications and the subsequent effects on communication to all citizens in the areas of information and culture.

The review is carried out by a committee appointed by the Minister. The committee, called, 'UBIS' (*in Danish an abbreviation of, Udvalget om Bibliotekerne i Informations-samfundet*) represents both public (municipal) libraries, and academic and special libraries open to the public, and its final report is to be submitted in the summer of 1997.

The committee is to produce among other things recommendations concerning:

- 1) possible amendments to the Copyright Act to support access through libraries to electronic publications and other forms of publicly available electronic information;
- 2) revision of the Legal Deposit Act¹ to incorporate electronic publishing and other new media, and
- 3) the possibility of financing new services in libraries by an extension of fee-covered services².

The National Library Authority hosts the committee and provides the necessary secretarial assistance, background research etc.

¹ The proposal for a new Legal Deposit Act is expected to be presented to the Minister of Culture in the autumn of 1996. This will replace the present Act from 1926.

² The committee discusses possible fees for all kinds of library services, not IT-based services only.

1.3 The Danish Board of Technology Focuses on the Public Libraries

A project on the role of the public libraries in a future society with special focus on possibilities and problems related to citizens' access to information and communication is currently being carried out.

The project method is the scenario workshop. This method has been developed by the Danish Board of Technology in a project on sustainable urban living. The European Commission (the Interface Initiative on the Value II Programme) has recently implemented this workshop methodology for projects in European cities.

The scenario workshops, which took place in the spring 1996, constituted a framework for a process, in which citizens, policy makers, experts, and private sector representatives met and discussed: what will, universal access' be like in a large suburban library near Copenhagen?.

The preparation of the scenarios started with two projects: a Delphi study carried out during the summer 1995, where 30 experts in different fields were asked to predict the state of IT-development in 2001 and an Electronic Conference running from 11th to 29th September 1995 on the subject, universal access' with some 550 participants (Qvortrup, 1995).

The Danish Board of Technology has received financial support for this project from the Ministry of Culture and the Ministry of Research and from the National Association of Local Authorities (*in Danish, Kommunernes Landsforening'*) and the project will wind up with a final conference in June 1996.

1.4 National Information Policy

In recent years (1995 and 1993) two documents on a *National Information Policy* were produced in Denmark. One of them was prepared by the National Library Authority. The final version entitled, National Information Policy – with special regard to libraries and documentation centres' (*In Danish: Informationspolitik – med særligt henblik på biblioteker og dokumentationscentre*) was published in 1995 (Wille, 1995). It concentrates mainly on the role of academic and special libraries, as well as public libraries, of providing information for a wide range of purposes, including research, education, industry, public administration, participation in political decisions and general interest. After a general discussion period this document was presented to the Minister of Culture in the spring 1994.

The other publication by DANDOK (the Danish Committee on Scientific and Technical Information and Documentation) (DANDOK, 1993) is concerned mainly with the provision of information to research and industry, and includes proposals for a policy on information produced by government agencies. This was presented to the Minister for Research and Technology in May 1993.

The two documents have been compiled in close cooperation and share a set of general principles for a Danish National Information Policy.

A Committee to prepare a Danish national information policy will be established in May 1996.

1.5 Electronic Research Publications

In 1995 there arose a need for an examination of the national future policy on electronic publishing of research publications.

A working group set up at the Ministry of Research and Information Technology, is currently examining the possibilities for increasing the dissemination of electronic research publications. A development project was launched on new electronic forms of publication and increased access to electronic publications. This work involves participants from the large libraries, research institutions, and the publishing trade. Experiences of online publishing and registration of PhD. theses have recently been published by Aalborg University Library. (Digitale PhD. Afhandlinger og DANDOK, Feb. 1996).

1.6 Publication-on-demand of Fiction

In the context of Danish libraries publication-on-demand has so far been connected with the publication of scientific works.

In February 1996, however, the Minister of Culture (Politiken Feb 2, 1995) awarded financial grants to a publisher for a project on publication of Danish fiction on-demand. Fees for printing have been negotiated with some 100 Danish (professional) authors on making their works available for downloading online or for dissemination on disk. The titles to be disseminated electronically only, are the, less popular' fiction ones which experience difficulties in getting published, due to the very small number of copies normally being purchased by libraries and private customers. The limited number of potential customers for e.g. Danish poetry make the book prices for fiction very high in Denmark. Public libraries have been invited to subscribe to this fiction-on-demand service at a very reasonable price.

This new initiative is mentioned, because it heralds a new era for the publication of fiction in small countries with a small population reading the native language. Marketing fiction in this form will become an important challenge to the public libraries.

1.7 New Public Libraries Act

The new Danish Public Libraries Act was signed by the Queen on 22nd December 1993, and was passed into law on 1st January 1994.³ In the chapter, Objectives and choice of

³ The Danish Public Libraries Act has been translated into the following languages: English, German, French, Spanish and Russian and is available through the National Library Authority

materials in the public libraries' there is a paragraph on new information technology, stating: „The public libraries shall endeavour to make available computer programmes and other electronic materials“.

All basic services have to be provided by the libraries free of charge to the users. Providing user access to the Internet is not mentioned as an example in the annotations to the Act. It is, however, the opinion of the Minister that as Internet should be regarded as any other basic service, consequently the libraries are not allowed to charge for Internet access to the users.

1.8 New Copyright Act

The new Danish Copyright Act came into force in June 1995. Despite strenuous efforts by the library community the new law contains a number of articles, which have a hindering effect on the libraries' services. According to the new Act photocopying of for instance printed music sheets is prohibited.

All types of electronic media are allowed to be displayed and used (on location) in any library. Data in machine-readable form are not allowed to be copied, not even for private use, and the new law on copyright extends this prohibition to include all works in digital form, but a printed paper version is allowed.

If electronic publications are to be made accessible through libraries in the same way as books it is essential to secure the necessary agreements. The legislation lacks instruments for the simple and efficient establishment and administration of those multitudes of individual agreements we are dealing with. There is also a need to establish a mutual understanding between libraries, publishers and copyright holders regarding the handling of these problems in the best possible way and in the interest of all parties.

Denmark has a tradition for so-called „collective licence agreements“, but particularly within the electronic area this may give rise to problems, e.g. in relation to the obligations within EU. A closer examination of what can be done in this country to facilitate the clearance of rights in connection with the libraries' use of electronic publications is therefore necessary.

1.9 DanBib

One of the major initiatives with an impact on libraries in Denmark since 1991 is the creation of the DanBib organisation.

1.9.1 The Ownership of DanBib

DanBib, the new Danish union catalogue system for both public and academic libraries, was implemented as a result of the joint effort between FEK, the computer department of the Danish National Library Authority and the Danish Library Centre Ltd. (in Danish *Dansk BiblioteksCenter a/s*) former the Danish Library Bureau, which closed down in 1991 due to business troubles.

The Danish Library Centre Ltd. founded in 1991 is owned by the Danish state (29 % of the shares) and the National Association of Local Authorities (*in Danish Kommunernes Landsforening*) (46 % of the shares), the Municipality of Copenhagen (*in Danish Københavns Kommune*) (11 % of the shares) and the large Danish Publisher (Gyldendal) (14 %). The share capital is approximately 1,2 MECU (DKK 8,5 million) and the annual turnover is approximately 11 MECU (DKK 80 million).

At the end of 1993 the tasks of FEK were transferred to the Danish Library Centre Ltd. along with most of the staff of FEK.

1.9.2 The Objectives of DanBib

The goal of the DanBib system was in the first place to merge the ALBA/SAMKAT databases and the BASIS database and establish a joint library system for public and academic libraries. Before the establishment of the DanBib organisation the ALBA/SAMKAT databases were hosted by UNI•C, the Danish Computing Centre for Research and Education. The conversion into the DanBib system was finalised in 1994.

ALBA originally covered the union catalogue for Danish research libraries while SAMKAT covered a central catalogue for shared cataloguing for research libraries.

BASIS is the union catalogue for public libraries and the Danish national bibliography, including record enhancements for public and school libraries. This database was hosted by Kommunedata I/S. The conversion of BASIS into the DanBib system was finalised during the Summer 1995. Kommunedata I/S still hosts a copy of BASIS for those libraries, who have no access to DanBib yet.

Another major task for the Danish Library Centre Ltd. is the maintenance of the Danish national bibliography.

The content and services of DanBib will be described in more detail in Section 2.2 on , National Coordinated Systems‘.

1.10 Key Statistics on Danish Libraries

The following section forms a brief introduction to Danish libraries and library activities presented via key statistical figures. The purpose is to provide a picture of the Danish library society and its ongoing activities. The figures are based on the Official Library Statistics 1994.

Statistics 1994. Denmark. Research Libraries

(The figures cover 50, larger research libraries, according to the Official Library Statistics.)

Staff: 1,323

Research librarians: 209

Librarians: 408

Clerical staff: 520

Other staff: 185

Stock: 33,325,449

Books and periodicals: 14,999,410

Manuscripts: 245,666

Music (printed music, recorded music): 449,235

Microforms: 2,012,679

Audio visuals: 893,457

Graphics: 11,233,792

Cartographics: 342,491

Electronic documents: 3,889

Other materials: 3,235,310

Acquisition in 1994: 104,035

Books: 30,217

Periodicals: 64,990

Other Materials: 8,827

Circulation in 1994: 4,285,370

Direct loans (original/photocopies) 3,812,145

Interlibrary loans: 473,225

In-house activities

Periodicals circulation: 354,567

Online searches (by staff): 12,417

CD-ROM searches (by staff): 6,315

Current SDI-Profiles: 11,223

Indexing to external databases: 18,262

Photocopies (by staff): 3,462,894

Statistics 1994. Denmark. Public Libraries

Population: 5,215,605

Number of administrative units: 249

Number of county libraries: 14

Number of service points: 900 (main libraries + branches)

Number of bookmobiles: 56

Staff: Librarians: 2,230

Non-professional librarians: 69

Clerical staff: 2,371

Other staff: 490

Expenditures in total: 2,247,769,031 DKK

Local Authorities: 2,024,291,000 DKK

Contribution from the Government: 88,600,000 DKK

Public Lending Right
(paid by government) 134,878,031 DKK. (in 1995)

Public Libraries – Stock – Acquisitions – Circulation 1994

Stock

Books: 29,316,666

Talking books: 564,787

Music (music records, CD's and cassettes): 1,710,096

Video and film: 32,888

Acquisitions in 1994

Books: 1,980,322

Talking books: 44,978

Music (music records, CD's and cassettes): 169,334

Video and film: 13,875

Circulation in 1994

Books: 71,996,545

Talking books: 2,587,371

Music (music records, CD's and cassettes) 6,370,622

Video and film: 510,594

Circulation of books per capita: 13,8

Circulation of books per adult: 9,34

Circulation of books per child: 37,01

School Libraries – Stock – Acquisitions – Circulation 1994

Number of school libraries: 1698

Number of school classes: 27,398

Number of pupils: 516,647

Stock

Basic collection (books): 18,741,018

Audiovisual materials: 39,525

Set of teaching materials (copies for all pupils in the class): 970,258 sets

Acquisitions in 1994

Basic collection (books): 791,888

Audiovisual materials: 3,118

Set of teaching materials (copies for all pupils in the class) 70,389 sets

Circulation in 1994

Circulation in the, basic collections': 28,444,492

Expenditures on school libraries (global figure): 204,533,000 DKK.

Expenditures books and other materials: 94,879,000 DKK.

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Biblioteksårbog '94: Statistik for folke- og skolebibliotekerne. Udarbejdet af Statens Bibliotekstjeneste. Dansk BiblioteksCenter 1995. 146 p.

2 The Local Library Systems and the National Coordinated Systems

2.1 Local library systems

2.1.1 The Danish Library Systems Market

In Denmark there are currently eight suppliers, who have installed more than five systems, which were the criteria for being included in this report. A brief profile on each system is included in Appendix 2. Separate profiles have been prepared for those systems, where features and functionalities differ significantly in the DOS and UNIX-version (BiblioMatik and CICERO). The supplier Axiell is mentioned under three different systems, because they are the main supplier of Bibs and the Danish agent of Bibdia and TinLib.

Apart from the systems described, there are no other significant systems on the Danish market.

Some smaller research and special libraries have no need for housekeeping modules and have only text retrieval packages, such as BRS/Search, Bibilation (Norwegian) Polydoc Mikro (Norwegian) or CDS/ISIS.

RC-LIB

The old mainframe based RC-Lib system developed back in the late seventies by Regnecentralen (maintained by ICL DATA A/S) is still in use in three important libraries, namely The Royal Library, The State and University Library and Odense University Library. The RC-Lib systems are expected to be replaced in the near future.

Supermax

The Supermax system is developed by the Danish computer company Dansk Data Elektronik A/S.

Supermax has some larger research libraries as customers, such as Roskilde University Library, Copenhagen Business School and The National Library of Education.

In the public libraries, the Supermax system was from 1991-1995 also sold via Kommunedata I/S under the name Uni-Master. Kommunedata I/S supports and maintains current customers of the Uni-Master solution. In the tables in this report on library systems installed in Danish libraries, a Uni-Master installation is counted under the name 'Supermax'.

Silkeborg public library has developed an OPAC client under WINDOWS called BASILLE. The interface is icon based with a touch screen. BASILLE is sold via Dansk Data Elektronik A/S. Supermax supports the Z39.50 protocol.

Aleph

The Israeli Aleph system (sold in 21 countries) is marketed in Denmark via ICL DATA A/S, and has achieved a solid customer base, such as Aalborg University Library, The

Århus School of Business, The Technical Knowledge Centre & Library and the National Library of Medicine.

Aleph is also installed in larger public libraries. Some installations serve more than one library, such as the Aleph installation in Rønne (Bornholm county library), where all the small local authorities on the island share one system. The most advanced installation is in the Technical Knowledge Centre & Library including the OPAC on the web with new navigation tools. Aleph supports the Z39.50 protocol.

MikroMaster

MikroMaster is developed by the Danish company Kommunedata I/S and suitable for smaller public libraries and school libraries. Has a large customer base in school libraries. Runs under DOS and Windows. Languages supported: Danish.

BiblioMatik

Bibliomatik is developed by the Danish company Danték and has its main customer base in school libraries, but has also customers in smaller public libraries. The system is also installed in several high schools (gymnasier) and other central institutions supporting school libraries (*in Danish: Amtscentraler, Pædagogiske Centraler*). The system runs under DOS and Windows. In the OPAC of BiblioMatik the bibliographic record of book material is linked to an image bank with front pages of the books.

Danték has an increasing export of BiblioMatik to German and Norwegian schools and public libraries and has installed a few systems in school libraries in Poland.

CICERO

CICERO is developed by the Danish company Danték and is the UNIX alternative to a BiblioMatik system. CICERO is running under UNIX. In Denmark the system is typically installed in smaller public libraries. It has been translated into Lithuanian and installed in 2 university libraries in Lithuania.

DC-Bib

DC-Bibliotekssystem (DC-Bib) is developed by the Danish company Datacentralen A/S. It is a PC-based system running under DOS and Windows. All standard modules are available. DC-BIB has its primary customers base in smaller public and school libraries.

BIBS

Bibs is developed by Axiell originally for the Swedish market. The system is running under UNIX. Standard library housekeeping modules are available. The bibliographic records are not stored in Marc format.

BIBDIA

BIBDIA is originally a German system, owned by the German company BiBer GmbH. New developments on BIBDIA take place in Germany, but the marketing and sales in Scandinavia take place via the agent Axiell. Modifications according to requirements in the Scandinavian countries are carried out in Denmark by Axiell.

BIBDIA is running under UNIX. All standard library housekeeping modules are available.

TinLib

TinLib is developed by the UK company IME (now merged with the US company Data Trek). Tinlib is installed world-wide and is marketed in Denmark via the agent Axiell. The majority of TinLib customers in Denmark are special libraries, but also a few research libraries have TinLib. Most of the modifications according to requirements in Denmark have been carried out by the Danish agent (it was for many years an up until 1995 the company Mentor Informatik).

The largest TinLib customer in Denmark is the library of the Royal School of Librarianship with more than 120 connected work stations (running under DOS).

MicroMARC

MicroMarc is developed by the Norwegian company Norsk Systemudvikling A/S. In Denmark it is marketed via a subsidiary company. The majority of installations are in smaller research or special libraries.

Modules available: Cataloguing, OPAC, acquisition, CCL-module, circulation, multimedia. Languages supported: Danish, Norwegian, Swedish, Faroese, Icelandic, English, German. (supplier profile is missing in Appendix 2).

<i>Name of system</i>	<i>Operating systems</i>
Aleph	DOS, OSF/1, UNIX, Windows, VMS
Bibdia	UNIX, Windows 95
BiblioMatik	DOS, Windows
Bibs	UNIX, Windows
Cicero	UNIX
DC-Bib	DOS, Windows
MicroMarc	DOS, Windows
MikroMaster	DOS, Windows
Supermax	UNIX, Windows
TinLib	DOS, Windows, UNIX

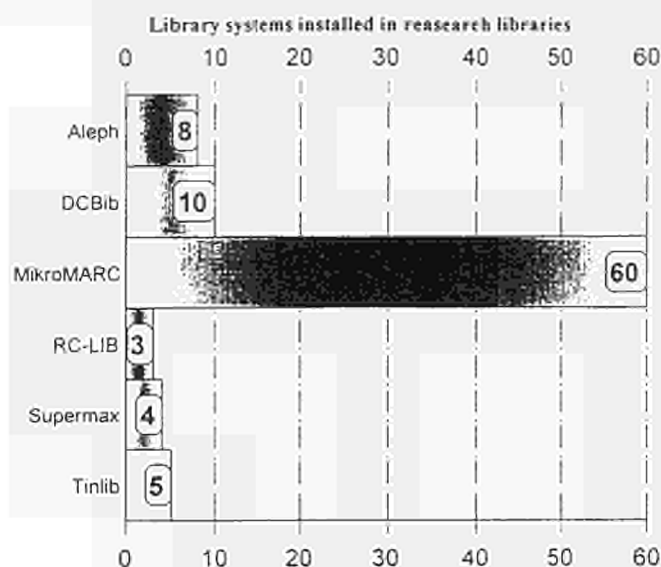
Library Systems in Research Libraries

Automation of Danish research libraries started already some 25 years ago with first generation systems, such as ALIS at the Technical University. Local systems providing online cataloguing and OPAC search started in the university libraries back in the seventies (Roskilde 1972, Aalborg 1974, followed by the RC-LIB libraries the Royal Library, the State and University Library, Odense University Library a couple of years later).

The second generation systems came onto the Danish market with the development of Supermax (1987-) at Roskilde University Library and the Library of the Business School of Copenhagen and with the shift to Aleph by a group of larger research libraries some 5 years ago.

New developments towards a third generation systems seem to be very dependent on local IT-resources and know-how, and the most interesting enhancements are not initiated by the systems suppliers but by the research libraries themselves. Enhanced and enlarged OPACs,

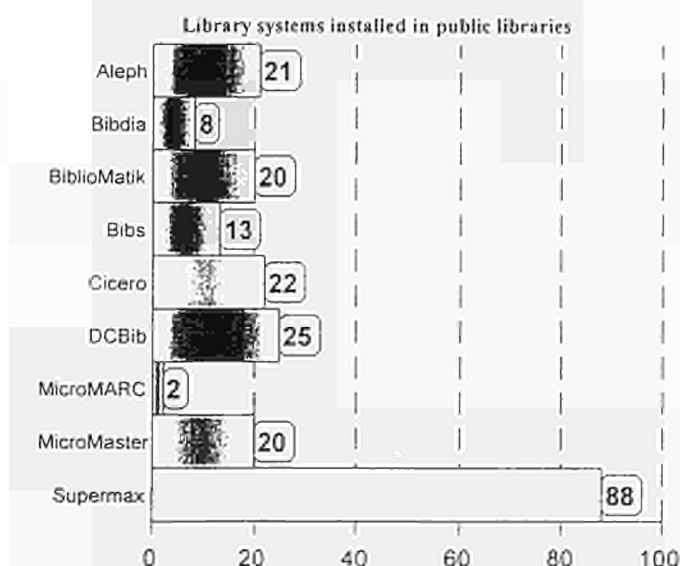
including electronic full text documents, implementation of SR/Z.39.50 and installation of web-servers are appearing in the research libraries due to high inhouse technical expertise.



Library Systems in Public Libraries

The library systems market in public libraries is spread on many different suppliers of which several are Danish computer companies or Danish software houses. A map illustrating this is attached at the end of chapter 2.1. Only in a few counties (Ringkøbing and Bornholm) the libraries have decided to buy the same system. In most cases the decision on purchase is based on the prices of a system and on the existence of a user group in Denmark.

Most public libraries have purchased their own local system, but in small local authorities there are examples of the public library sharing a system with the school library. In some cases, small public libraries are sharing a system with a larger public library in the neighbouring local authority (the larger library hosts the holding database of the small library in its system).



2.1.2 Use of Modules and Functionalities:

Online Catalogues

Many libraries – both research and public libraries – have installations with a mix of dumb terminals and PCs. The presence of VT100 terminals (or similar) is an immediate obstacle to the implementation of graphical user interfaces. Many libraries are gradually shifting to PCs in order to benefit from the Windows environment.

The OPACs of some 20 larger research libraries offer remote access via the Find-Menu (*see Section 2.2.5*) and via WWW.

Remote access via public networks to public library catalogues are offered in some 15 local authorities. Access for private citizens or institutions has only recently been expressed as a user need in connection with the increased use of the Internet and with the increased number of PCs and modems in private households.

OPAC access via WWW has recently been launched in a few public libraries. In some local authorities, where the library is network-connected to the town hall, it has been a requirement that (expensive) firewall software were installed for security reasons in order to make sure that remote users cannot access internal administrative parts of the network.

Cataloguing

The majority of the public libraries buy records as a data exchange service from the Danish Library Centre and titles catalogued locally are on average less than 5 % of the acquisitions.

Many research libraries reuse records from DanBib (*see Section 2.2.*) and on average some 65–70 % of the new records are created on the basis of imported records. To explain this figure, one has to bear in mind that the majority of titles held in Danish research libraries are in languages other than Danish. Therefore, reuse of bibliographic record resources from DanBib depends on availability of the records in the pool of Multi-MARC records. The figures of imported records from the legal deposit libraries are 65 % import for the Royal Library and 35 % for the State and University Library.

Circulation

Standard housekeeping facilities are available in all systems installed in Danish libraries and loan status can be displayed with the bibliographic record. Limitations in user services in connection with circulation, such as not allowing users to order, make a reservation, or a renewal themselves, are not due to technical obstacles but depend on local decisions. Only 15 research libraries and 11 public libraries allow the users to make a reservation from the OPAC.

Check-out is offered as a self-service in seven research libraries and eight public libraries. In Herning County Library, which has experimented with advanced counters (i.e. chip-card technology) more than 60 % of loans are carried out by self-service.

Acquisition/Periodicals Control

Some Danish systems suppliers have developed the acquisition and periodicals control as the last modules of the integrated system, contrary to other countries, where housekeeping

modules were developed before advanced retrieval engines. In some systems acquisition and periodicals control is integrated in the same module (e.g. Supermax).

The late introduction of good quality acquisition and periodicals modules might explain the figures showing that many libraries handle acquisition and periodicals control manually.

27 research libraries use acquisition modules, 3 use a stand-alone software and 19

handle acquisition manually. 114 public libraries use acquisition modules, five use a stand-alone software and 76 use manual routines.

EDI-communication with the publishing sector is not an option in any of the library systems currently installed in Denmark.

Statistics

The survey aimed to identify libraries, who used their statistics module for strategic planning, decision making or administrative purposes.

20 research libraries indicate that they use the statistics module in their system, nine say they do not use the statistics module, and 17 libraries do not have a statistics module with their system.

98 public libraries reply that they use the statistics module, 79 say no and 12 have no statistics module.

The libraries were asked to give examples of the use of the statistics module. Amongst the examples were:

- collection management (use/non-use of titles, subjects)
- planning of staff schedules (busy hours)
- monitoring needs for changing the opening hours
- number of issues/returns during the opening hours
- user categories and their use of stock
- top ten of reservations

2.1.3 Maintenance Costs

In the questionnaire survey, the libraries were asked to give a global figure for the annual costs linked to running their local system (exclusive staff salaries) for 1994 and 1995. It would not be fair or even make sense to compare the cost figures of different libraries, since they were not asked to break down the global cost figures (new purchases, licences, service fees, telecommunication costs, VAT etc). Some figures might include the costs of CD-ROM network.

Looking at the figures provided by the larger research libraries, maintenance costs seem to increase of almost all installations regardless of age of the current library system and regardless of it being first or second housekeeping system.

The table below show some examples:

Name of library	Current system	Automated since	Costs 1994 (DKK)	Costs 1995 (DKK)
The Royal Library	RC-LIB	1987	5,000,000	5,000,000 ⁴
The State and Univ. Library	RC-LIB	1981	5,000,000	6,000,000
The Technical Knowledge Centre & Library	Aleph	1979	1,400,000	1,800,000
Odense University Library	RC-LIB	1987	603.,000	1,033,000 ⁵
Roskilde University Library	Supermax	1988	1,100,000	1,300,000
Aalborg University Library	Aleph	1983	1,400,00	3,300,000
The Nat. Libr. of Education	Supermax	1990	1,000,000	700,000
Copenhagen Business School	Supermax	1988	1,500,000	2,500,000
School of Business, Aarhus	Aleph	1992	500,000	920,000

A similar trend can be seen from the figures provided by the public libraries. Librarians (personal communication with the author) explain that over a period of five years they typically have to upgrade their systems entirely (new releases, new modules, more disk capacity, more modern peripheral units, networking access, etc.). So even if they still stick to the same supplier the systems change organically.

2.1.4 The Enlarged OPACs

It is difficult to get an overview of information resources stored in local databases eg. available as part of the OPAC, if the OPAC is not accessible for remote users via public networks.

The survey conducted for this report identified many bibliographic databases included in the local systems in addition to the library catalogue. Public libraries typically create small databases on local history, local events, local clubs and associations. These types of community databases will probably be replaced in a few years by the local authorities' "city home page" created by collaboration between the library and eg. the town hall.

Selected examples of local databases created in research libraries are mentioned in chapter 4, in the section on, Local IT-Applications' (section 4.5).

Another type of, inhouse databases', has recently been established in some of the university libraries, namely databases, which help provide better access to information in periodicals held in the library.

One example, is the database of Danish articles, 1981- (and updates) which has been purchased by some research (and larger public) libraries and integrated in the local library OPAC (app. 500,000 records). These libraries have matched their journal titles from the database of Danish articles against their own periodicals holding. In the OPACs of these libraries the display format shows, if the retrieved journal article can be found in a journal in the library stock.

Herning county library hosts a full copy of the database on the materials in the public libraries (appr.1 million records) (the former BASIS) in an attempt to find a cheap(er) solution for identifying materials.

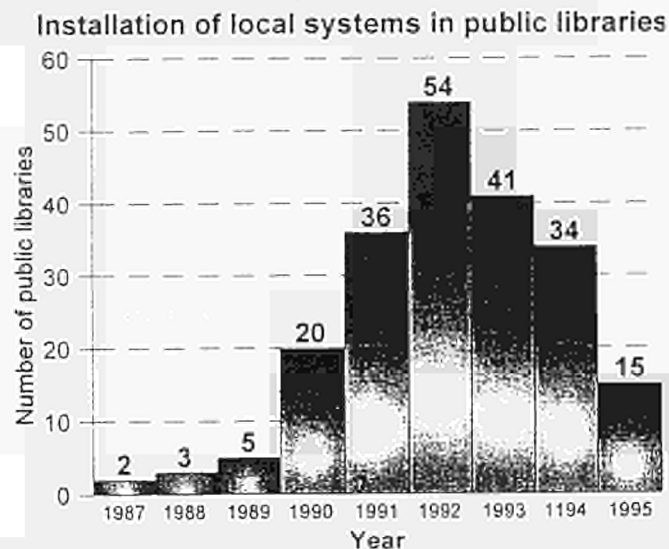
⁴ This figure covers: maintenance of the central REX system, peripheral units and data communication costs

⁵ OUB indicates that the figures do not include VAT

Another example is databases in research libraries based on weekly import of journal content pages from services such as SWETSCAN (a service from Swets). Aalborg University Library reports, for instance, that they import content pages of some 140 key journal titles in the stock at the moment and expect to increase the number to 300 titles soon. This database grows by appr. 500 new content pages per week. Other libraries, such as the Library of Aarhus Business School and the Technical Knowledge Centre & Library have built up similar databases on the basis of data import from Swets.

2.1.5 Automation in the Public Libraries

Automation of library housekeeping routines in Danish public libraries started 10 years ago (except from an off-line circulation system in Ølstykke from 1977). The first integrated library systems were installed in 1987, but the majority of public libraries have purchased their first system over the past five years.



The National Library Authority administers on behalf of the Ministry of Culture some 16 million DKK. annually dedicated to, stimulation of further development of public and school libraries'.

In the period from 1991-1996, a large proportion of the grants was reserved for basic library automation in order to stimulate and speed up the automation of library housekeeping routines.

The public libraries, which received support, were selected on the basis of the smallest libraries having first priority and received 50 % co-funding from the Ministry.

Later on, the support decreased to 35 % of the costs as the size of the libraries fulfilling the formal criteria for the grants increased. The last opportunity for applying for state grants for public library automation was in 1995 (for systems to become installed in 1996). Only five smaller local authorities did not take this opportunity to purchase a library system. School libraries are still not automated in full. Therefore state grants for school library automation will continue for a limited period of time.

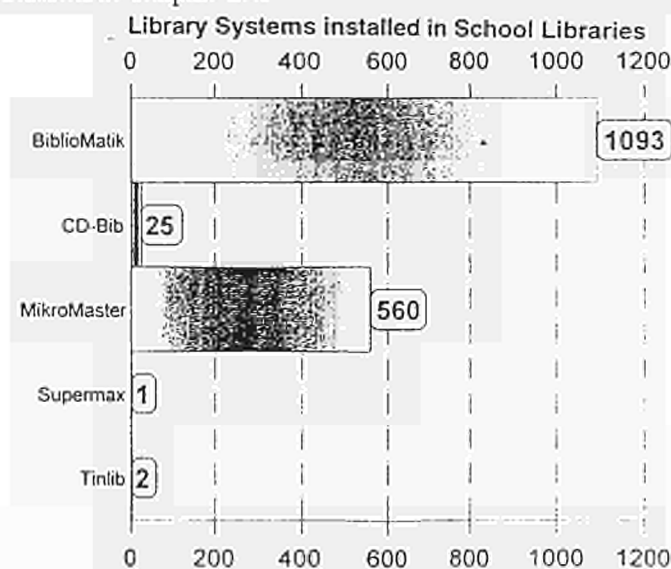
As the basic automation of the public libraries is now completed, the National Library Authority has reserved 6,5 million DKK. in 1996 and 1997 to support network connections in public libraries. Connection via public networks will provide full

Internet functionality: terminal connection, file transfer, e-mail, World Wide Web and Gopher and includes access to DanBib.

The library automation action in public and school libraries has had a useful spin-off effect. According to the Danish Public Lending Right Act, the school libraries and public libraries have to report annually on the actual presence of items in their library. The National Library Authority is responsible for the administration of the Act, which means paying annually some 15,000 authors Public Lending Right remuneration. The remuneration is calculated according to the number of individual authorships represented in the libraries. Authorship includes co-authors, editors, translators, illustrators, and for music scores text writers, musicians, etc. The statistics module in the local library systems is counting this information automatically. From 1994 it became mandatory for the libraries to deliver the figures concerning the Public Lending Right in electronic form to the National Library Authority.

2.1.6 Automation in School Libraries

There are some 1700 schools in Denmark with a school library. Two suppliers share this market, namely Danték and Kommunedata I/S. As mentioned above, the school libraries are not 100 % automated and will still be seeking state grants over a limited period of time. A map showing purchase of systems for school libraries divided by local authorities is attached at the end of chapter 2.1.














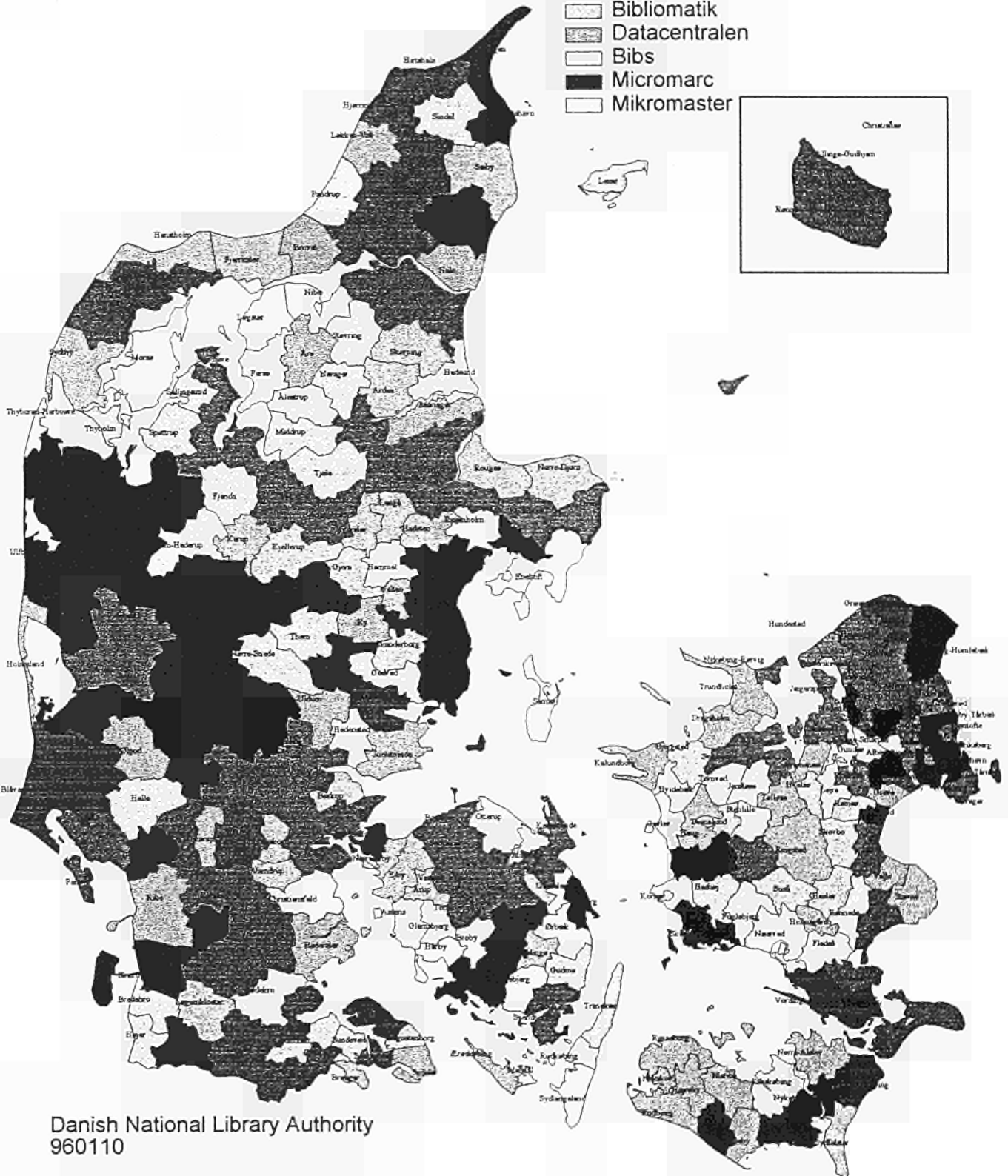
2.2 National coordinated systems

2.2.1 DanBib

The DanBib database system (version 2.0) released in July 1995 covers some 8,2 million bibliographic records. This pool of record resources is held in a number of different databases, which can be searched separately or simultaneously.












Public libraries

-  Tilskud 1996
-  Cicero
-  Igang
-  Unimaster
-  Supermax
-  Aleph
-  Bibdia
-  Bibliomatik
-  Datacentralen
-  Bibs
-  Micromarc
-  Mikromaster



Danish National Library Authority
960110

School libraries

-  Tilskud 1996
-  Igang
-  Unimaster
-  Supermax
-  Aleph
-  Bibdia
-  Bibliomatik
-  Datacentralen
-  Bibs
-  Micromarc
-  Mikromaster



Danish National Library Authority
960110

2.2.2 The Pool of Bibliographic Records for Shared Cataloguing

The Danish National Bibliography

The online version of the Danish National Bibliography⁶ covers:

- Danish books: 1970–
- Danish periodicals: 1976–
- Danish recorded music: 1987–
- Danish sheet music: 1987–
- Danish recorded sound: 1982–
- Danish maps: 1990–
- Danish images: 1984–
- Danish articles: 1981– (*see 5.5.1*)
- Danish reviews
- Dania Polyglotta⁷
- Impressa Publica
- Index Translationum

The Danish National Bibliography follows the Danish cataloguing rules based on AACR2 and uses danMARC as cataloguing format. A revised version of the format, danMARC2 is available in a provisional printed edition (danMARC2,1995) and in electronic form on a disk. This revised version will be implemented into the DanBib system by the end of 1997. The danMARC format from 1979 was based on BNB MARC. A recent decision indicates an approximation to USMARC for future changes and additions to the format.

The Danish National Bibliography is available in printed form, online via DanBib and BASIS, on CD-ROM (updated quarterly) and as a data exchange service⁸.

All new titles in the Danish National Bibliography are offered as a data exchange service from the Danish Library Centre Ltd. (*Dansk BiblioteksCenter A/S*) to the libraries on a weekly basis. The standard bibliographic registration is paid by the Danish State and can be reused by the libraries free of charge. The records can be downloaded into the local library systems via file transfer or delivered on a disk. The expenditure on data exchange services varies, of course, differing from one library to another, but as an example, the County Library in Viborg mentions in the survey that their costs in 1994 were 285,888 DKK on data exchange services.

Records for public and school libraries are offered with content notes and keywords at an extra fee. Keywords have to date been added to non-fiction records only, but from 1996 fiction too will be enhanced by subject indexing.

Other MARC files

In the pool of bibliographic records for shared cataloguing, also other MARC files are available for downloading by libraries, who wish to reuse a MARC record of foreign literature. The files are:

⁶ From 1996–, The Danish National Bibliography includes documents (monographs and periodicals) published in electronic form.

⁷ Dania Polyglotta, Impressa Publica and Index Translationum also available via REX (The OPAC of the Royal Library)

⁸ Records of "Danish recorded sound" and "Danish images" only available in the printed version

- British National Bibliography: 1981-
- Library of Congress: 1981-
- The ISSN Network, total

2.2.3 Union Catalogues, etc.

FORSK (The research libraries)

- The Union catalogue of monographs in foreign languages in the research libraries: 1981–
- The acquisition and holding information for some 20 larger academic libraries and some 100 minor special libraries. 1979–⁹
- The Danish union catalogue for periodicals.
- NOSP (the union catalogue for periodicals in the Nordic countries, established in 1984).

FOLK (the public libraries)

Holding information of most of the acquisition in the public libraries. Holding details are provided for monographs, periodicals, music and audio-visual materials.

2.2.4 Creation/Reuse of Cataloguing Records

Cataloguing into the DanBib system is in the larger research libraries carried out by the local system and the bibliographic record or holding information is transferred into DanBib via the network.

Bibliographic records from the pool are often reused or form the basis for the creation of new records by the academic libraries (file transfer into local systems). In the survey for this report the larger research libraries indicated that some 50–85 % of new records are reuse: The Royal Library: app.70 %; Odense Univ. Library app. 60 %; Aalborg Univ. Library app.75 %; The National Library of Medicine: 85 %.

As regards the public libraries, on average 90 % of new records are imported from central sources.

Some 70 smaller research libraries do the cataloguing directly into a separate database in DanBib. This is called the FELIX solution (FELIX is the name of the cataloguing software). From this database records can be copied into a local library system and holding information transferred to the database of holding information in DanBib. Very small research libraries that have no local system use the FELIX database as a kind of OPAC to search their own collection.

2.2.5 Document Ordering via DanBib

DanBib has a mailbox system, which is currently used for interlibrary loan orders. Some 200.000 documents were in 1995 ordered via DanBib by e-mail or fax. This figure represents approximately 20 % of the Danish interlibrary loans.

⁹ Records before 1981 are available online for som larger academic libraries, who have conducted retrospective conversion. Among those libraries are the Royal Library and the State and University Library

SR Search and Document Order

A project implementing Z.39.50 version 3 between the DanBib system and the local library system will take place in 1996–97 in order to transfer searches, records, loan status and interlibrary loan orders between the systems. In addition a Net-client will be implemented (DanBib Network Service Point) to provide users without local systems with similar access facilities.

In 1996 a project on access to DanBib and some local library systems on the World Wide Web is being carried out. Roskilde University Library is one of the test sites. The aim is to integrate systems functionalities to make smooth shifts between the systems possible and to reuse search strings from system to system.

The DanBib system is available via the, FindMenu' only. Therefore, a subscription to the FindMenu is a prerequisite for access.

2.2.6 The FindMenu

The FindMenu can be accessed via BibNet (the public libraries) or KMD-Net (the network of local authorities), DeNet (the research libraries), x.25, ISDN, Internet and telephone/modem call.

Library networking in Denmark is described in more detail in chapter 3.

The FindMenu is an access point not only to DanBib, but also to a wide range of library catalogues and bibliographic databases, such as BIBSYS, LIBRIS, CARL, OCLC, BLAISE, DIALOG, DIMDI, ESA and ECHO. Amongst Danish databases on the FindMenu, you will find the Danish telephone directory, the legal database (*in Danish: Retsinformation*) and time series from Danmarks Statistik (the national statistical office). Some frequently used databases available on the FindMenu will in the following be mentioned in brief.

The Database of Danish Articles and Reviews (Artikelbasen)¹⁰

The Danish Library Centre Ltd. has since 1981 provided a bibliography of Danish Articles and Reviews as part of the Danish National Bibliography. Presently the online version is not included in the DanBib system, but the conversion of the records is scheduled to start in autumn 1996. Part of this project is to harmonise and merge the keywords used in the Article Database with those used for monographs in the indexing service provided by the Danish Library Centre Ltd.

The database covers some 500.000 bibliographic references to Danish articles in 750 Danish journals and eight major newspapers. The database is updated on a daily basis.

Articles retrieved in the database can be ordered online (or by fax) via the State and University Library., Urgent' orders are delivered within one hour;, normal' orders are delivered within five working days.

¹⁰ The database of Danish Articles (Artikelbasen) is also available on CD-Rom. The CD-Rom version does not include reviews. Updated quarterly

Copies of the entire database of Danish articles, 1981- (and updates) have been purchased by some research and public libraries and integrated in the local library OPAC. These libraries have matched their journal titles from the articles against their own periodicals holding. In the OPACs of these libraries the display formats include a message to the user, if the journal article can be found in a journal in the library stock.

BookData

The Danish Library Centre Ltd is supplying a copy of the database BookData covering some 300.000 records of English books from 1987- and CIP records are available via the FindMenu. The database has been set up by the Danish Library Centre with the same retrieval facilities as in the DanBib, version 2. The records from BookData are of particular interest, because the bibliographic descriptions are enhanced with abstracts, content pages, keywords and indication of target groups.

Records from Bookdata may be downloaded into local library systems at a fixed price per record.

DBC UnCover

The Danish Library Centre is cooperating with the American UnCover Company (a collaboration between Blackwell's and CARL Systems Inc.) The UnCover database covers content pages of 17.000 periodicals in English from 1989-.

The DBC UnCover-version provides holding information about the majority of periodicals in English held in Danish libraries. This means that it is possible to identify whether a journal searched in UnCover is available in Denmark. If a journal can be located to a Danish research library, articles can be ordered via e-mail. At the moment (January 1996) the 16 largest research libraries in Denmark participate and agree to receive document delivery requests via e-mail.

If the article is not available in a Danish library, the document is ordered electronically via UnCover (for 24 hours delivery service by fax).

In the long term all the periodicals from NOSP (the Nordic Union Catalogue of Periodicals) will be matched against the UnCover titles and marked up in the database.

References:

Abonnementer og servicetilbud 1996. Dansk BiblioteksCenter, november 1995. 68 p.

Bibliotekernes Internet Vejviser.

[an electronic guide available free of charge in a test period until 30 June 1996 via DBC's WWW-home page].

URL: <http://www.dbc.bib.dk>

danMARC2: Edb-format til inddatering og udveksling af bibliografiske data i maskinlæsbar form. Udarbejdet af Katalogdatarådet. Dansk BiblioteksCenter, 1995. 297 p. [diskette-version medvalgt i den trykte version].

VIDEN OM. 1995-, vol.1-.

3 Networking (Technical/Telecom Aspects)

3.0 Current Data Communication

The use of data communication is rapidly increasing in Denmark, demanding more access points and wider broadbands. Traditionally, the TCP/IP protocol has been used in universities and the world of education, whereas the local authorities have been using the IBM developed SNA-protocol.

The use of the SNA-protocol has been widespread due to the fact that most local authorities are connected to the mainframe world at Kommunedata I/S, the computer company owned by the Danish local authorities.

As in most European countries, the Danish telecommunication sector has been characterised by heavy monopoly. This monopoly is now being removed; the residual part of the monopoly, the right to transport voice across the borders of local authorities is expected to be removed mid-1996.

Some local authorities are planning or establishing WANS, typically based on 2 MBit/s fiberoptic cables connecting major institutions within the local authorities. The Ministry of Education is establishing a network called, Sectornet' connecting every publicly run educational institution including public primary schools. Sectornet was originally meant for administrative purposes, but is now also supposed to be used for educational purposes and by the library of the institution.

3.1 National Networks

In the context of Danish libraries there are three major providers of full TCP/IP protocol and Internet connection.

3.1.1 DENet

The Danish Educational Network, DENet is provided by UNI•C. Through the DENet, the majority of the Danish academic and special libraries are connected to each other and to the Internet through their mother institutions.

The DENet is about to be moved to 34Mbps based on the ATM technology. This ATM network will connect the five largest universities and act as the backbone for the rest of the research and educational institutions of the present DENet (until 1998).

The DENet is connected to NORDUnet, at the moment 8M Bit/s, and through NORDUnet to the rest of the Internet world.

As a commercial service UNI•C also provides Internet-access to private homes and business customers. This commercial service is now going to be run as a separate part and network on its own backbone (the old DENet backbone on 2M Bit/s).

Further information on DENet can be obtained via URL: <http://info.denet.dk/>

3.1.2 BibNet

The Danish Library Centre Ltd., has made great efforts to create different solutions matching the different sizes of public libraries wherever they may be located in the country.

Among the possible solutions are 64KBit/s ISDN to either a single PC or at local network, and the capacity ranges from 64 KBit/s to 2048KBit/s (=2 M Bit/s) Frame Relay based connections. This way of connecting to the DanBib system is called, BibNet6'. At the beginning of 1996, some 30 public libraries have decided on a Frame Relay based connection.

The Danish Library Centre cooperates with UNI•C and Kommunedata I/S by selling connections going through DENet or KMDNet (*KMDNet: is described in section 3.1.3*).

The Danish Library Centre uses UNI•C as its Internet provider. There are 2MBit/s connections to both DENet and KMDNet.

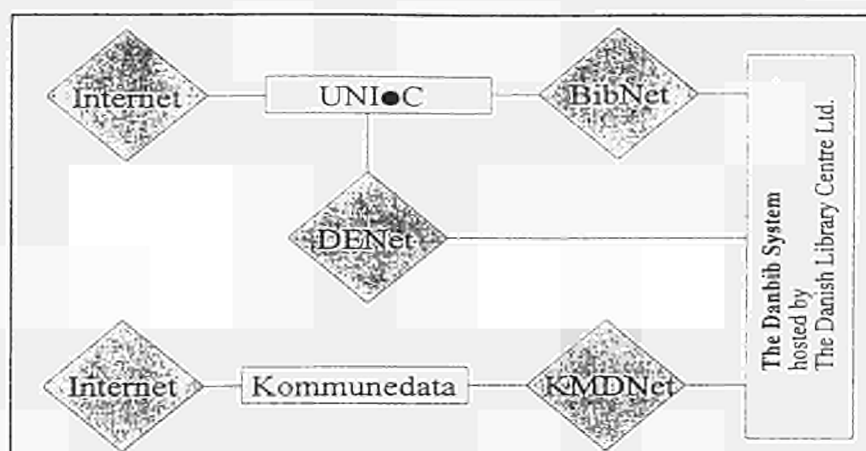
3.1.3 KMDNet

Kommunedata I/S has leased lines to most of the Danish local authorities.

These lines are used by the local administrations to exchange data with the mainframe systems run by Kommunedata and are presently based on the SNA-protocol, but are about to be replaced by TCP/IP based leased lines at 64KBit/s. These lines will connect to the regional centers backboned with 2MBit/s lines.

Networking in Danish Libraries

It is possible for the public libraries to connect to the KMDNet either directly or indirectly through the the local municipality's WAN and its connection to KMDNet.



Networking in Danish Libraries

Kommunedata I/S uses DKNet, owned by Danish Telecom, as Internet provider. DKNet is connected to EUnet and DKNet has recently been connected to DENet.

Internet access is also offered by Danish Telecom and many other private companies. At the beginning of 1996 an Association of Internet Providers in Denmark was established with more than 30 companies registered as members.

3.1.4 State-of-the-art of the Public Libraries' Network Access

During 1996 and 1997 most of the public libraries are expected to be connected to one of the public networks. This should be a realistic assumption, not least due to the state financial support for networking provided by the National Library Authority.(1,5 million DKK in 1996 and 5 million DKK in 1997).

3.2 Participation in Nordic Library Networking Projects

As a concrete outcome of the Nordic SR-Net project (outlined in more detail in the report prepared by NORDINFO on Nordic libraries' cooperation within the IT), it is now possible to search simultaneously in the three Nordic Union catalogues DanBib, BIBSYS and LIBRIS. The experiences gained from this project are for the Danish partners being re-used in EU-projects supported by DG-XIII/E/3, such as SOCKER and ONE. Simultaneous search can be carried out via the home page of the Danish Library Centre Ltd.

3.3 Participation in International Library Networking Projects

The Danish research libraries and central agencies are active partners in international networking projects, financially supported by the European Commission, DG-XIII/E/3, such as projects testing standards for search and retrieval or digitisation, compression and transmission of sound.

SOCKER

The SOCKER project (to be finalised in 1996) mentioned above has two Danish partners UNI•C and the Danish Library Centre Ltd. The aim of this project has been to demonstrate that the ISO standard for SR – Search and Retrieve – can be implemented on a distributed platform to access library catalogue systems.

In spring 1996, an open pilot test of the user work station developed by UNI•C called ISW ('*SOCKER Intelligent Workstation*') will be carried out. The necessary ISW software is available via the Internet. Further details on the SOCKER project can be obtained via URL: <http://mediator.uni-c.dk/socker>.

ONE

Project ONE, supported by DG-XIII/E/3 aims to interconnect the catalogues of national libraries in eight countries in order to test the full SR – Search and Retrieve/Z39.50 protocol. The Danish partner in ONE, The Danish Library Centre Ltd build in this project on the outcome of the SOCKER project. Further details on ONE can be obtained via URL: <http://www.dbc.bib.dk/one/2210dbc2.html>.

EUROPAGATE

The Technical Knowledge Centre & Library is a partner in a networking project EUROPAGATE with another focus. The aim of EUROPAGATE is to make possible increased interoperability of library catalogues using the search and retrieve protocols by ANSI (Z39.50) and ISO (ISO-SR). So far interoperability difficulties have been identified for two major reasons: 1) differences in the search and retrieve protocols themselves; 2) different underlying protocol stacks (TCP/IP and OSI). The project attempts to address both these difficulties. Future directions of the project will include developing a web to the SR/Z39.50 gateway. Further details on EUROPAGATE can be obtained via URL: <http://uranus.dtv.dk/egate.html>.

JUKEBOX

Within the area of sound transmission two interesting networking projects are being carried out with Danish participation by the State and University Library and UNI•C, namely JUKEBOX and PARAGON.

The aim of the JUKEBOX project has been to improve public access to audio archives. Recorded music in three sound archives (in Denmark, Italy and the UK) has been digitised and compressed and ISDN network is used for data transmission. A user workstation has been developed for retrieval and transmission of sound. In Denmark a pilot test phase has been carried out successfully in the music department of the public libraries in Herlev and Vejle.

PARAGON

PARAGON is a follow-up project to JUKEBOX and the purpose is to analyse specific problems related to the use of SR target protocol in sound archives. The project is going to install an SR target in connection with the catalogues developed in the JUKEBOX project, including access to the media archives' ordinary catalogues. Further details on PARAGON can be obtained via

URL: <http://mediator.uni-c.dk/paragon/>

COPINET

Further, a project called COPINET should be mentioned, focusing on methods of paying for electronic information. This project aims to investigate a trial payment system that may meet the needs of publishers as well as libraries in connection with electronic document delivery.

The Danish partner is the Technical Knowledge Centre & Library. The project will implement a web-server complex for integrated search, full-text retrieval, charging and billing of registered as well as unregistered users.

Further details on COPINET can be obtained via

URL: <http://venus.dtv.dk/copinet/ndn95/outcome.htm>.

GABRIEL

In the context of international networking cooperation, the European project GABRIEL is an interesting initiative. GABRIEL is the World Wide Web server for the European National Libraries represented in the Conference of European National Libraries (CENL). GABRIEL will help to bring national libraries in Europe closer together by providing a single access point for the retrieval of information about their functions, services and collections. The Royal Library participates in the project and REX (the OPAC system) and other services can be reached from this access point. Further information on GABRIEL is available via URL: <http://renki.helsinki.fi/gabriel>

4 IT-Based User Services

Chapter 4 is a presentation of the results of those sections in the questionnaire survey dealing with 'Electronic Document Ordering and Delivery', 'Online Searching', 'Databases on CD-ROM', 'Locally Developed IT-Applications' and 'Access to the Internet'.

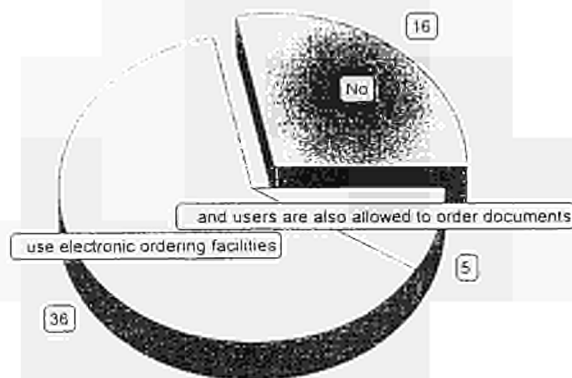
All figures are based on: 248 (of 249 possible) responses from public libraries; 55 (of 56 possible) responses from research libraries.

4.1 Electronic Document Ordering

4.1.1 Electronic Ordering: Research Libraries

52 research libraries answered the question on electronic document ordering. 36 are using online ordering and in 20 research libraries more than 75 % of documents are ordered this way.

Electronic document ordering:
research libraries



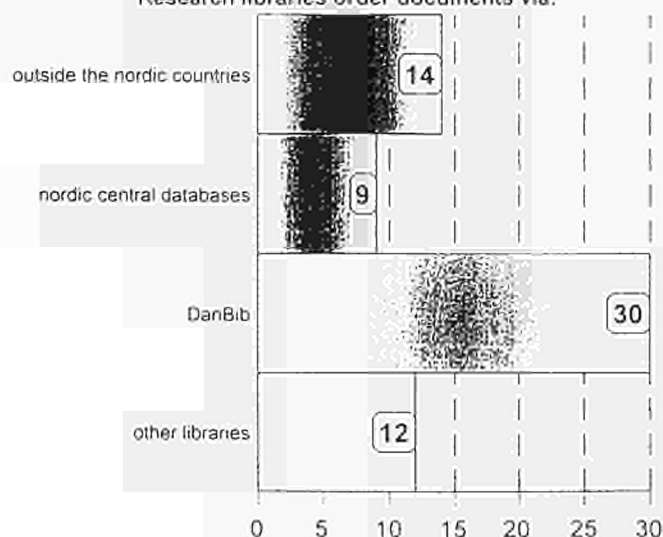
4.1.1.1 Electronic Ordering: Denmark – Nordic Countries – Other Countries

The research libraries place their loan requests in many different systems. The OPACs of the larger research libraries accessible via the FindMenu are used frequently, such as REX, SOL, COSMOS, AUBOLINE, ALIS, RUBICON, HERMES, AGROLINE. These catalogues are used for document ordering, probably because it is possible to see loan status on a document and then make a reservation remotely.

DanBib is used for document ordering by 30 research libraries and other central Nordic systems are supplementing, such as ArtikelSök, LIBRIS, UBO: BOK and BIBSYS.

Outside the Nordic countries, OCLC is used most frequently alongside UnCover. Other systems mentioned were Blaise, Artell, ZDB and DBI.

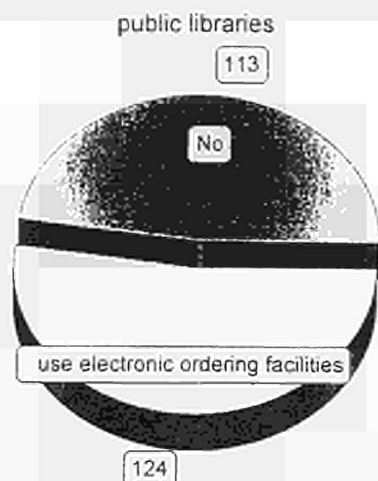
Research libraries order documents via:



4.1.2 Electronic Ordering: Public libraries

Eleven public libraries did not reply. Amongst the 124 libraries, using electronic ordering, 35 carry out more than 75 % of their interlibrary loan orders this way.

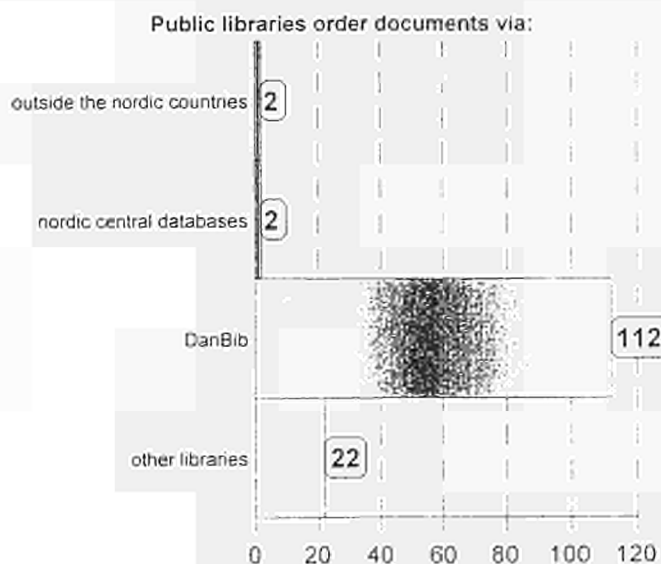
Electronic document ordering:



Public libraries put their loan requests (with very few exceptions) into other systems in Denmark, because the State and University Library in Århus acts as international loan centre for public libraries.

In the category of 'other libraries' there are both other public libraries' OPACs (typically the county library and OPAC of larger research libraries, such as REX, SOL, ODIN, ALIS.

DanBib is by far the most frequently used system for interlibrary loan requests from public libraries and in total 20 % of all interlibrary loans are carried out (e-mail or fax) via DanBib.

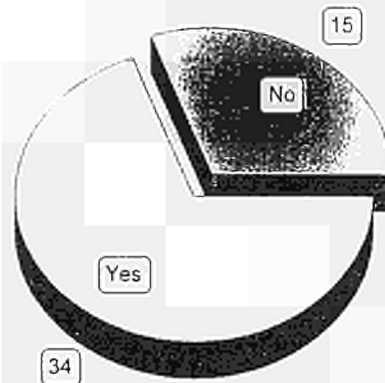


4.2 Electronic Document Delivery

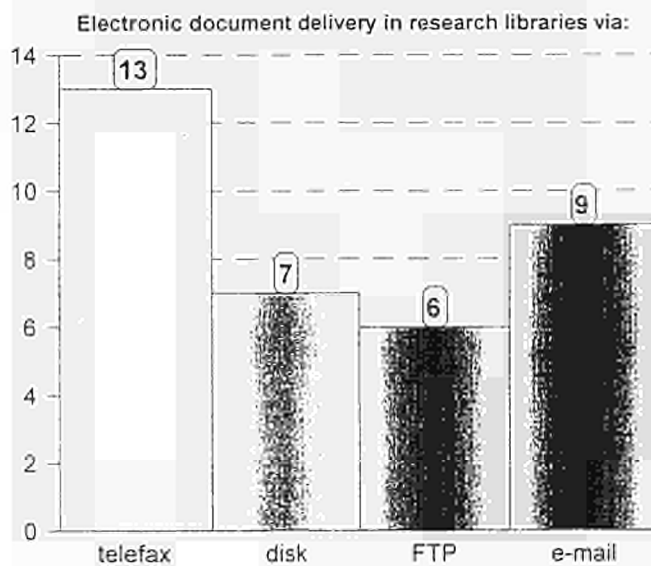
4.2.1 Electronic Document Delivery: Research Libraries

The majority (34) offer delivery in electronic form, and by using different methods, such as telefax, disks, via FTP or electronic mail. Six libraries did not react to this question.

Electronic document delivery:
research libraries



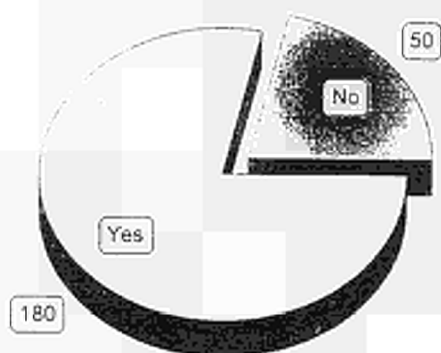
Further, the libraries were asked to indicate, which electronic delivery methods they can offer. The response was rather poor and provides no information on what other methods are used.



4.2.2 Electronic Document Delivery: Public Libraries

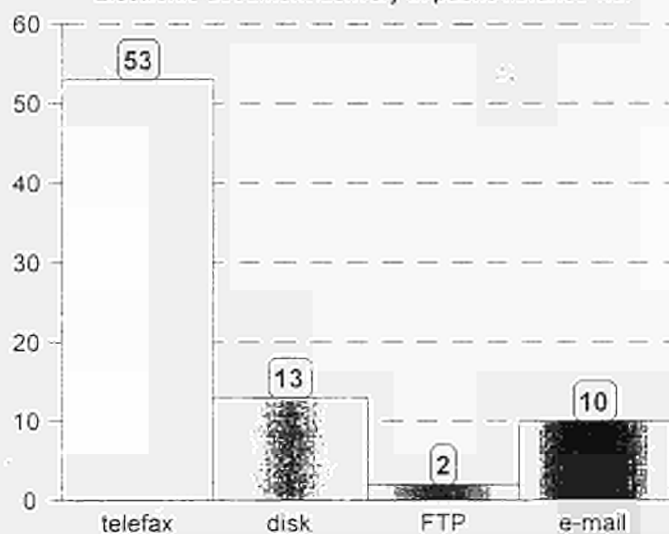
180 public libraries offer document delivery in electronic form, which in most cases means via telefax.

Electronic document delivery:
public libraries



Many public libraries did not answer the question on methods of delivery, and therefore the figures below should only be regarded as a tendency.

Electronic document delivery in public libraries via:



4.3 Online Searching

The questions in this part of the questionnaire aimed to provide information on online searching for users, and in particular whether it is offered as a free of charge based service or whether the users pay for online services.

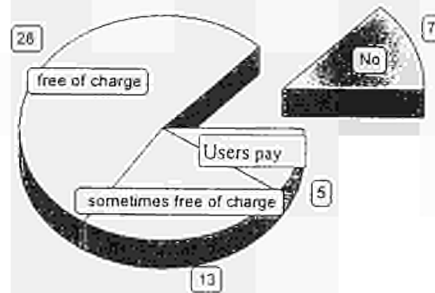
It seems to be a mix, probably depending on the expenditures for accessing various hosts.

According to the Public Libraries Act, online searching in external databases is not regarded as a basic service and might be charged for (i.e. in cases where online searching is offered as part of business information service for private companies).

4.3.1 Online Searching: Research Libraries

Online searching for the library users has been a well-established service in research libraries for more than 20 years. Even if databases on CD-ROM (and the Internet) have replaced part of the need for online searching, in particular for students, online searching is still important to supplement CD-ROM products in research and special libraries. Only seven libraries in the survey said that they do not offer online searching and did not explain the reason.

Online searching for the users:
research libraries

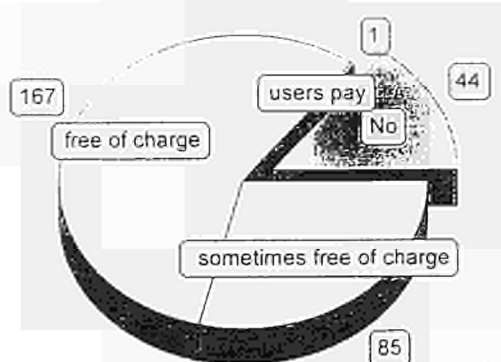


4.3.2 Online Searching: Public Libraries

Online searching is a service offered by many public libraries and some subscribe to many different online hosts. There are a number of larger public libraries with a special department of 'business information service' and such libraries might have access to more than 20 different hosts. Online searching in connection with business information services to private companies is in many cases fee-based.

44 public libraries indicated that they do not offer online searching. Some gave the reason 'lack of financial resources', others that they lack skills or that they had no online access.

Online searching for the users:
public libraries



The libraries were asked to indicate the five databases/hosts most frequently used (in ranked order).

Most frequent	Second:	Third:	Fourth:	Fifth:
BASIS	BASIS	BASIS	BASIS	BASIS
DanBib	DanBib	DanBib	DanBib	DanBib
Find-Menu	Find-Menu	Find-Menu	Find-Menu	Find-Menu
Dialog	Dialog	Dialog	Dialog	Dialog
Ringbib ¹¹	Polinfo	Ringbib	Polinfo	Ringbib
Polinfo ¹²	Ringbib	SOL	Ringbib	SOL
NOBIS	SOL	Polinfo	SOL	Polinfo
Artikel-basen	Polinfo	ODA	Polinfo	ODA
SOL	ODA	ESA/IRS	ODA	ESA/IRS
County library	ESA/IRS	Byggdok	ESA/IRS	Byggdok

The table is created on the basis of answers from both research and public libraries. It shows that library catalogues in larger research libraries and central union catalogues (DanBib) are used most frequently for information retrieval by all libraries.

BASIS (the national bibliography and the holding data of public libraries) hosted by Kommunedata I/S is still the most important online source for public libraries to identify materials held in other public libraries.

4.4 Databases on CD-ROM

The use of CD-ROM in Danish libraries is growing fast. Surveys on the numbers and titles of CD-ROM products have been carried out in 1992 and 1994 by the National Library Authority. In 1992, 24 % of all research libraries had CD-ROM products and in 1994 it had increased to 35 %.

In 1992, 22 % of public libraries had CD-ROM products and in 1994 the percentage had increased to 30 %. The survey made for this report documents the increasing popularity of the media. The survey included questions on where CD-ROM workstations were located in public libraries and whether the libraries had CD-ROM installed in networks or as stand-alone workstations.

The present study did not investigate which products are purchased by the libraries. The most recent information on databases on CD-ROM in the libraries is available in the annual publication 'Danske Databaser' published by Infoscan, and has a chapter showing which libraries subscribe to all CD-ROM titles available in Danish libraries.

4.4.1 Research Libraries

CD-ROM networks have been built up in many research libraries. The Royal Library, for instance, has a CD-ROM tower, which can handle some 700 CD-ROM disks in the network. These are made available to the users from the REX system (the Online catalogue). The annual expenditure on CD-ROM in the Royal Library is app. 1,3 million DKK.

The expenditure for smaller research libraries on CD-ROM services is increasing as well. A library such as the Danish Pharmaceutical Library spent app.135,000 DKK. on CD-ROM services in 1995.

Databases on CD-ROM in research libraries

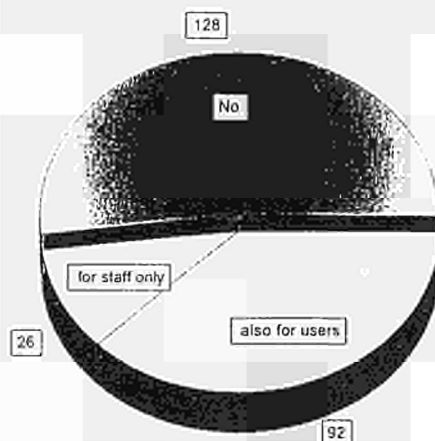


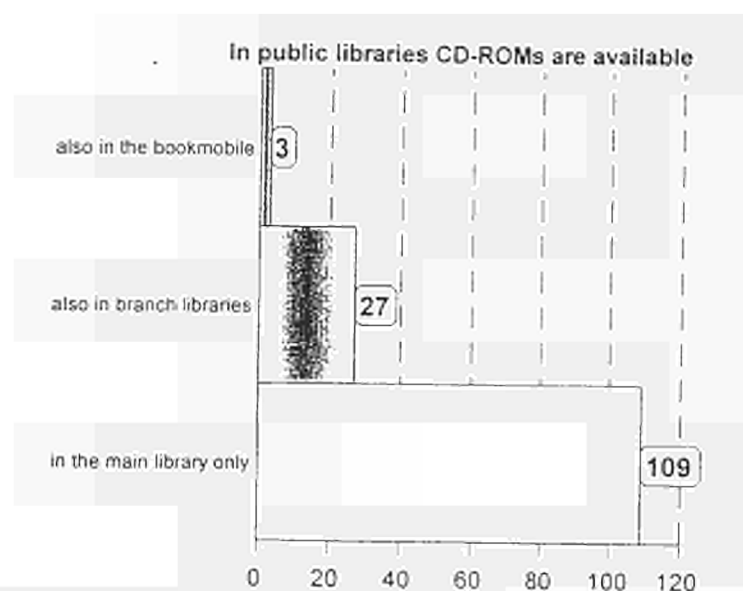
Some CD-ROM products are particularly interesting, such as Social Science Index on Disc available in the State and University Library. The product consists of a number of disks and covers almost 300 core journals in full text within the social sciences. Articles can be printed in the library (free of charge to the users). The library in the Copenhagen School of Business, subscribes to ABI-Inform on disc, which consists of a large collection of full text journals within business and economics. These examples are mentioned, because they are very popular amongst the library users. Within a period of time, these types of disks covering journals in electronic form might replace many subscriptions to paper-based journals.

4.4.2 Public Libraries

Public libraries, which offer CD-ROM products, typically buy encyclopedia and popular titles in the MicroSoft family, such as Cinemania. One major obstacle to a more extensive use of CD-ROM products in public libraries has been the very limited number of quality titles available in Danish. During the last two years the number of Danish produced CD-ROM titles have increased, not least products suitable for teaching purposes in primary and secondary schools.

Databases on CD-ROM in public libraries

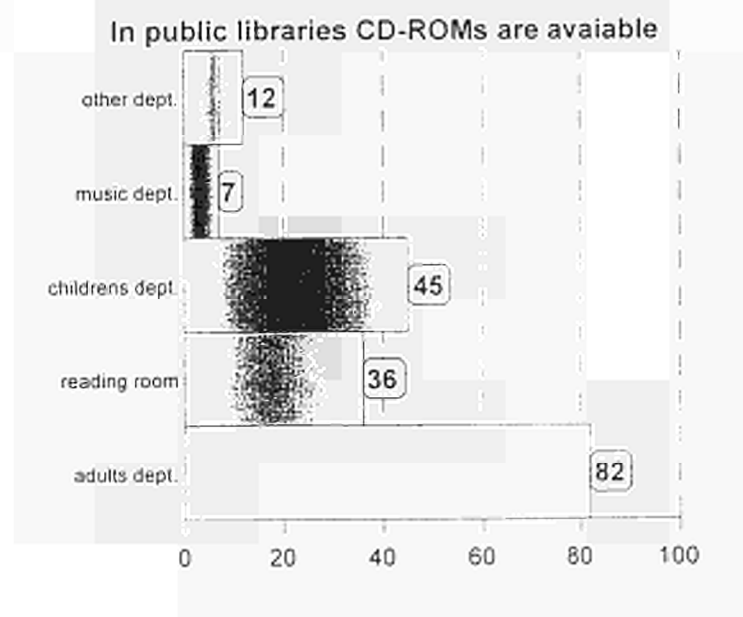


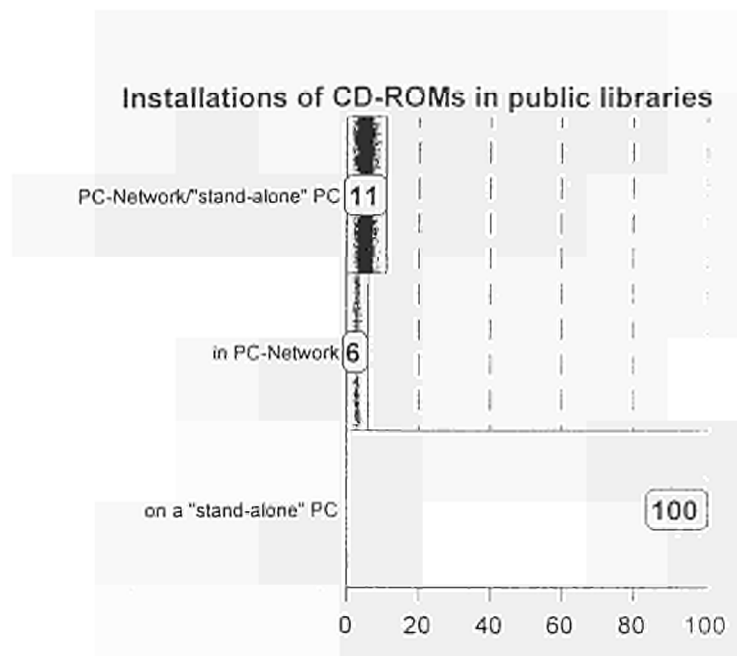


4.5. Locally Developed IT Applications

The number of locally developed IT-applications in all types of libraries is impressive. Most applications, however, are of local interest only and based on well-known technologies. Public libraries have created in house databases, typically 'events calendars', 'local history', 'local community information'. A few public libraries have developed PC-based user guides (e.g. Møns folkebibliotek) or multimedia based library instruction tools (e.g. Hillerød and Silkeborg).

User oriented IT-applications in research libraries are also primarily of local interest, a tendency which might change as more efforts are put into applications, which can be accessed via a web-server. In the following a few examples are mentioned of locally developed databases of more general interest followed by a section on examples of projects on digitisation of existing materials.





4.5.1 In-house Developed Databases

- * Bibliography of Danish Literature on Economy, 1988- (*in Danish: Dansk Økonomisk Bibliografi*) (The State & University Library)
- * Danish Political Parties, 1970- (*in Danish: Danske politiske partier*) (The State & University Library)
- * Danske Kommissionsbetænkninger, 1850- (The State & University Library).
- * NORDICOM: Nordic Literature on Mass Communication, 1995- (The State & University Library)
- * Bibliography on Danish Art (*in Danish: Bibliografi over dansk kunst*) (The Library of the Royal Academy of Art).
- * Nordic bibliography of Librarianship and Documentation (*in Danish: Nordisk BDI-Indeks*) (the Library of the Royal School of Librarianship)
- * The manuscript database – unpublished film manuscripts (1600 records) (The Library of the Film Museum)
- * The movie database. A registration of the first performance of films in cinemas and on TV. (1500 records) (The library of the Film Museum)
- * Immigrant documentation – reports, books, statistics (3500 records)
- * ARTUR: Articles on architecture in international periodicals (15.000 records)
- * Viggo: Video tapes on architecture (800 records)
- * Registration of Karen Brahe's Library (Odense University Library)

4.5.2 Digitisation of Existing Materials

Several projects are currently taking place on digitisation of special collections. Collections, which are not affected by the copyright barriers.

The Royal Library:

The Danish Image Database

The Royal Library started in 1994 to digitise the first part of its image collection (a collection of app.10 million items). The purpose of this digitisation project is primarily to test suitable preservation techniques, whereby scanning is carried out using a camera

technique. The images are stored in a high quality form and compressed according to the JPEG standard.

During 1995 more than 10,000 images were scanned and the description of the images made searchable via REX (the catalogue of the Royal Library). The image bank is also available via a World Wide Web server (URL: <http://www.kb.dk>).

One test project was digitisation of the collection, 'Müllers Pinakotek' (some 4,500 graphics from the eighteenth century). Another project was the scanning of some 8,000 Danish historical images from 1940–1945.

Technical details on these projects are available in a small report from The Royal Library (Duport, 1995).

The Danish Cultural Journals between two World Wars

The purpose of this project is preservation and dissemination combined, and it is one of the projects, which has received grants from, Cultural Network Denmark'.

The journals are scanned using OCR technique and are made available via the World Wide Web server of the Royal Library.

The Danish Hypertext Library and Text Archive

Under this headline on the WWW-server a number of different digitisation projects are under construction, such as:

- Presentation of modern Danish authors
(a project carried out in collaboration with the Danish Authors' Association)
- Danish Contemporary Authors (sample titles in full text);
- Danish Classics (sample titles in full text);
- Classics in Recent Translation into Danish (sample titles in full text)
- Danish Theses (in full text);

The National Library of Medicine

The Ministry of Research has supported the National Library of Medicine in starting a project on digitisation of PhD theses in cooperation with the publisher, Schultz Information'.

Silkeborg Public Library

Image bank in the department for, local history'.

The public library in Silkeborg has digitised more than 12,000 images from its department of local history using camera technique in the scanning process. The bibliographic description of the local historical images is linked to the images.

This database has been created in order to prepare for online public access to the local history collection.

References:

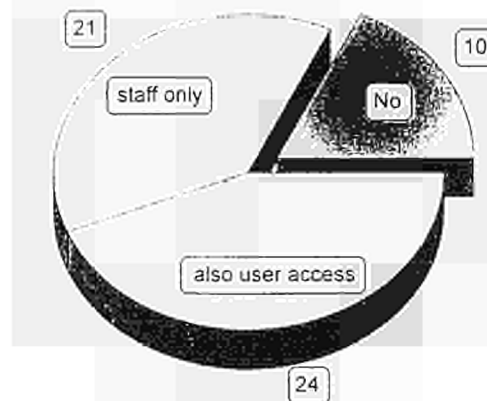
Dupont, Henrik, Ingrid Fischer Jonge and Anders Kragh-Sørensen: Billeddigitalisering: Et projekt i Kort og Billedafdelingen. Kbh.: Det kongelige Bibliotek, 1995- (Forskningsrapporter. Bd.5) [ISBN: 87-7023-140-0] [ISSN:0902-8714]

4.6 Internet in Danish Libraries

4.6.1 Internet Access in Research Libraries

At the time of the questionnaire survey (end of 1995) 10 of the 55 'larger' research libraries had no Internet access. These ten libraries belong to 'Group C' and 'Group D'.

Internet access in research libraries

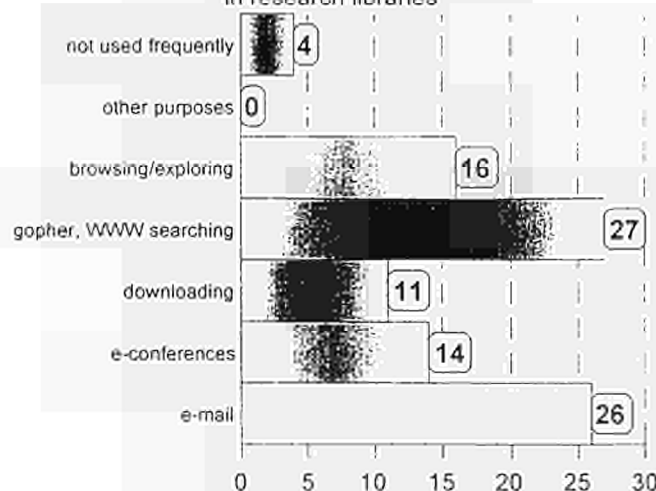


The following two figures illustrate the use of Internet by the staff and the users in research libraries.

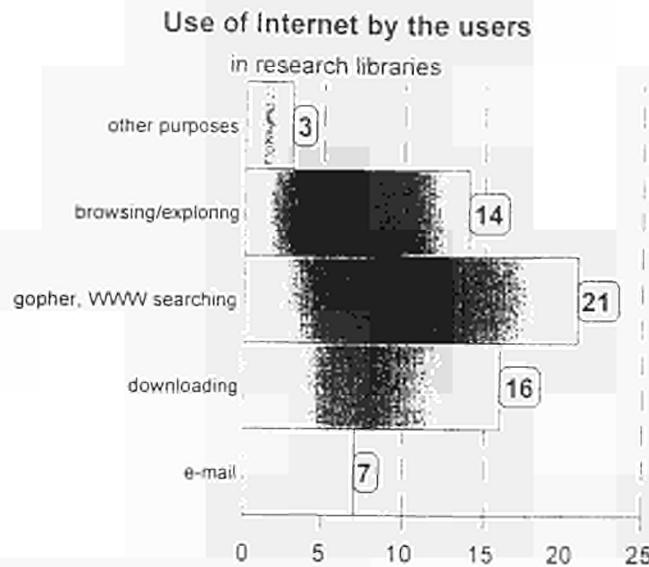
4.6.1.1 Use of the Internet – Research Libraries' Staff

Use of Internet by the staff

in research libraries



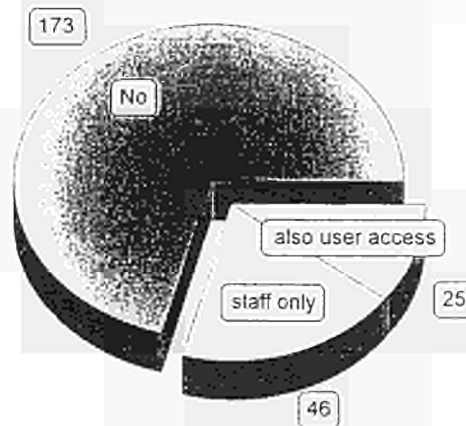
4.6.1.2 Use of the Internet – the Users



4.6.2 Internet Access in Public Libraries

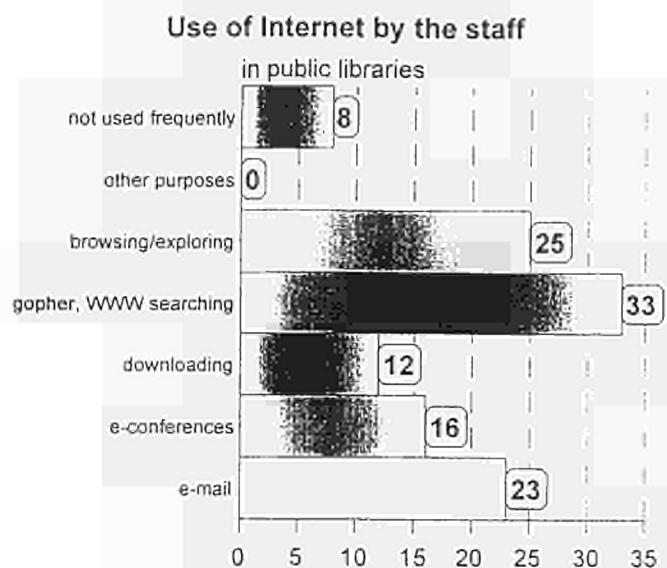
Providing user access to the Internet is not mentioned in the Public Libraries Act. It is, however, the opinion of the Minister of Culture that as Internet is to be regarded as any other basic service, consequently, the libraries are not allowed to charge for Internet access to the users.

Internet access in public libraries



When the survey was carried out, 71 public libraries responded that they have access to the Internet. This figure is expected to increase fast during 1996 and 1997, because many public libraries will get network access to the DanBib system via BibNet or KMDNet and therefore automatically get an Internet connection.

4.6.2.1 Use of Internet – Public Libraries' Staff

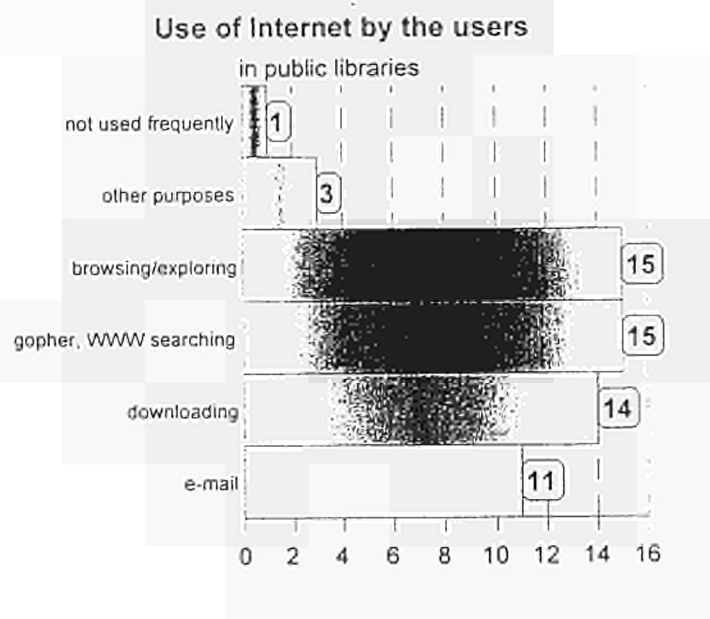


When comparing the figures of the use of Internet by staff in public and research libraries, the tendency is very similar.

Some public libraries mentioned that they had only been linked up to the Internet for a short period, and therefore ticked 'no frequent use'.

4.6.2.2 Use of Internet – Public Libraries' Users

An increasing number of public libraries offer Internet access to their users. The largest public access area has been established in Roskilde country library, with some 40 workstations with full Internet WWW access available to the public. Special staff (students from Roskilde University) are available to assist those users, who are not familiar with how to surf on the Internet. The OPAC of Roskilde library (an Aleph system) is accessible via the web-browser.

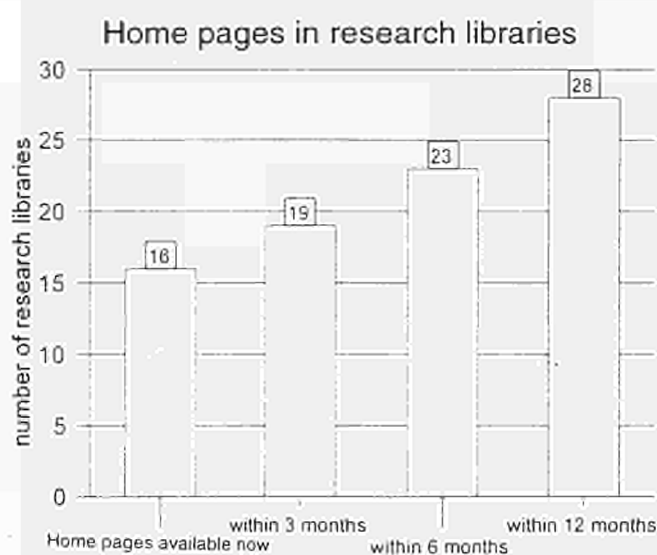


4.6.3 Library Home pages

In the survey the libraries were asked, if they had created a home page on the WWW. If not, whether they had a home page under construction to become publicly accessible within the next 3, 6 or 12 months.

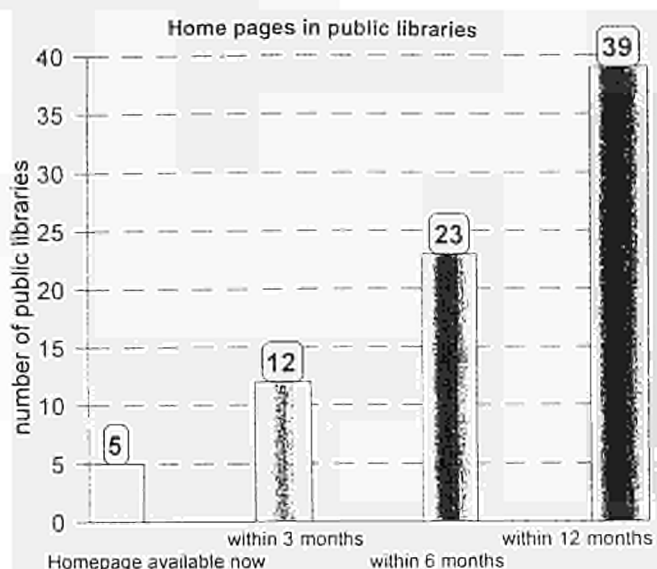
4.6.3.1 Research Libraries' Home pages

The home pages of the research libraries are in the case of the university libraries mostly integrated as one of many resources in a Campus Wide Information System. Several libraries provide access to their OPAC via WWW. Examples of library resources available via WWW, such as image banks, full-text books, journals and research publications are mentioned in section 4.5 'Locally developed IT-Applications'.



The URL addresses are listed in *Appendix 1* under the name of the library (if provided in the survey). The majority of the research libraries in groups A and B have established a home page. From the survey is expected that some 28 of the 55 'larger' research libraries in Denmark will become accessible via WWW during 1996.

4.6.3.2 Public Libraries' Home pages



Silkeborg public library has developed a variety of Internet services available via WWW, such as access to their OPAC, and all departments have created their own web pages to present the staff and collections (URL: <http://www.silkeborg.bib.dk>).

Further, the library hosts tourist information (provided by the tourist office), community information (provided by the local authority, the local newspaper, local associations and clubs) and offers discussion lists (on eg. football) open to the public. Users can have a password via the library, if they want to use the Internet for e-mail.

Similar web services (so far less developed) can be seen from Viborg county library (URL: Viborg: <http://www.dialip.sdn.dk/vibbib/forside.ht>).

Århus public library has recently established a large scale project, where the library is acting as the coordinator for establishing an Århus-home page with all kinds of community information to the citizens in the Århus area.

A number of Danish public libraries have in 1995–96 started projects on Internet access for children, with financial grants from the National Library Authority, and special „kids' home pages“ are under construction. Five public libraries (Copenhagen, Århus, Aalborg, Esbjerg and Randers) work together in a project called, 'Kids on the Net' (*In Danish: Børn på Nettet*). In the five cities 'Kids on the Net' consists of many sub-projects. In Århus, for instance, young immigrant girls are invited to create their own home page and e-mail with girls in their home countries. Another example is Ballerup public library, which has launched a project (*in Danish named: Børnenet Ballerup*), where children are able to contribute to the development of Internet resources in their own language. (URL: <http://www.balbib.balk.dk/>). This project consists of three parts:

1) *The Writers' Workshop*

where children are able to publish their creative writing and artwork and read stories written by other children. The Writers' Workshop area will also provide hints on how to get started writing (theme-based, eg., the spring' or, spooky stories'), and each project will have its own reference area describing books or other resources in the library related to the project topic.

2) *The Authors' Corner*

Each month a different Danish author will be featured, and children will be able to send in their questions using e-mail or by filling in a form on a web page. Popular authors of childrens' books have agreed to participate. The purpose is to give children direct access to authors so they can learn more about how authors work and get ideas.

3) *What do you recommend?*

By filling in a form on the screen, children will be able to leave their recommendations on what's hot and what's not in the latest books, films, music, games and toys.

The examples on the use of Internet are not exhaustive and new user-orientated Internet services are launched in public libraries every week. Some libraries cooperate with other parties in the local community, and Internet access can be combined with training courses or with a café corner separated from other library services.

- ¹ The proposal for a new Legal Deposit Act is expected to be presented to the Minister of Culture in the autumn of 1996. This will replace the present Act from 1926.
- ² The Committee discusses possible fees for all kinds of library services, not IT-based services only.
- ³ The Danish Public Libraries Act has been translated into the following languages: English, German, French, Spanish and Russian and is available through the National Library Authority
- ⁴ This figure covers: maintenance of the central REX system, peripheral units and data communication costs
- ⁵ OUB indicates that the figures do not include VAT
- ⁶ From 1996-, The Danish National Bibliography includes documents (monographs and periodicals) published in electronic form.
- ⁷ Dania Polyglotta, Imprensa Publica and Index Translationum also available via REX (The OPAC of the Royal Library)
- ⁸ Records of 'Danish recorded sound' and 'Danish images' only available in the printed version.
- ⁹ Records before 1981- are available online for some larger academic libraries, who have conducted retrospective conversion. Among those libraries are The Royal Library and the State and University Library.
- ¹⁰ The database of Danish Articles (*Artikelbasen*) is also available on CD-ROM. The CD-ROM version does not include reviews. Updated quarterly.
- ¹¹ Ringbib is a union catalogue for public libraries in Ringkøbing County, hosted by the county library in Herning. A copy of BASIS is also included in Ringbib, which makes searching cheaper for the libraries than searching BASIS via Kommunedata I/S.
- ¹² Polinfo is an online information system including such as the daily newspaper POLITIKEN. Hosted by POLITIKEN.

Appendix 1

Research Libraries Selected for the Questionnaire Survey

Group A: The National Library, university libraries and large research libraries within humanities and social sciences with a staff of more than 20 FTE (full-time equivalent), which make available materials for loan and interlibrary loan with no restrictions other than those, which might be due to type of material, which furthermore have fixed opening hours, and which are run by a professionally qualified person (research librarian, librarian, documentalst).

The National Library of Education (Danmarks Pædagogiske Bibliotek)
URL: http://www.dlh.dk/dpb/dpb_welcome.html

Copenhagen Business School Library (Handelshøjskolens Bibliotek i København)
URL: <http://www.lib.cbs.dk>

The Aarhus School of Business. The Library (Handelshøjskolens Bibliotek i Århus)

The Royal Library (The National Library) (Det kongelige Bibliotek)
URL: <http://www.kb.dk>

Odense University Library (Odense Universitetsbibliotek)
URL: <http://www.ou.dk/oub/>

Roskilde University Library (Roskilde Universitetsbibliotek)
URL: <http://www.ruc.dk/lib/welcome.html>

The State and University Library (Statsbiblioteket)
URL: <http://www.sb.aau.dk>

Aalborg University Library (Aalborg Universitetsbibliotek)
URL: <http://www.aub.auc.dk>

Group B: Large research libraries within science, medicine and technology, which fulfil the same criteria as mentioned under Group A

The Danish National Library of Science and Medicine. Copenhagen University Library 2 (Danmarks Natur- og Lægevidenskabelige Bibliotek)
URL: <http://www.dnlb.dk>

The Technical Knowledge Centre & Library of Denmark (Danmarks Tekniske Videncenter og Bibliotek)
URL: <http://www.dtv.dk>

The Danish Veterinary and Agricultural Library (Danmarks Veterinær- og Jordbrugsbibliotek)
URL: <http://www.dvjb.kvl.dk>

The Danish Patent Office Library (Patentdirektoratet. Biblioteket)

Risø Library. Risø National Laboratory (Risø Bibliotek)
URL: <http://www.risoe.dk>

Group C: Research libraries within humanities and social sciences with a staff of between 3-20 FTE (full-time equivalent), which make available materials for loan and interlibrary loan with no restrictions other than those, which might be due to type of material, which furthermore have fixed opening hours, and which are run by a professionally qualified person (research librarian, librarian, documentalst).

The Administrative Library (Det Administrative Bibliotek)

The Labour Movement Library and Archive (Arbejderbevægelsens Bibliotek og Arkiv)

The Library of the Danish Working Environment Service (Arbejdstilsynets Bibliotek og Dokumentation)

The Library of the Århus School of Architecture (Arkitektskolens bibliotek i Århus)

Centre for Development Research. The Library (Center for Udviklingsforskning. Biblioteket)

The Royal School of Librarianship. The Library (Danmarks Biblioteksskoles Bibliotek)
URL: <http://www.db.dk>

The Danish School of Journalism. The Library (Danmarks Journalisthøjskole. Biblioteket)

The Library of Danish Statistics (Danmarks Statistiks Bibliotek)

Danish Polar Centre. The Library (Dansk Polarcenter. Biblioteket)

The Library of the Danish Film Museum (Det Danske Filmmuseums Bibliotek)

Library of the Museum of Decorative Art (Det Danske Kunstindustrimuseums Bibliotek)

Ministry of Business and Industry. The Library (Erhvervsministeriets Information og Bibliotek)

Library and Information Service of the Danish Parliament (Folketingets Bibliotek og Oplysningstjeneste)

The Library of the Southern Denmark School of Economics and Modern Languages (Handelshøjskole Syd. Biblioteket)

Law Students' Library at the Faculty of Law. University of Copenhagen (Juridisk Laboratorium. Biblioteket)

The Library of the Royal Danish Academy of Music (Det Kongelige Danske Musikkonservatorium. Biblioteket)

The Library of the Royal Academy of Fine Arts (Kunstakademiets Bibliotek)

Danish Association for International Co-operation. The Library (Mellemløkeligt Samvirkes Bibliotek)

The Library of the National Museum (Nationalmuseets Bibliotek)

The National Danish School of Social Work, Århus. The Library (Den Sociale Højskole i Århus. Biblioteket)

The Library of the Danish National Institute of Social Research (Socialforskningsinstituttets Bibliotek)

University Library of South Jutland (Sydjysk Universitetscenter. Biblioteket)

Group D: Research libraries within science, medicine and technology, which fulfil the same criteria as mentioned under Group C

Library of Computer Science and Mathematics. University of Aarhus (Biblioteket for Datalogi og Matematik. Matematisk Institut)
 URL: www.daomi.aau.dk/library/library.html =,

Central Botanical Library of the University of Copenhagen (Botanisk Centralbibliotek)

The Danish National Centre for Building Documentation (Byggeriets Studiearkiv)

The Danish Pharmaceutical Library (Danmarks Farmaceutiske Bibliotek)

Danish Institute for Fisheries Research Library (Danmarks Fiskeriundersøgelser. Biblioteket)

Royal Danish Air Force Library (Flyvevåbnets Bibliotek)

Elsinore Technical Library (Helsingør Tekniske Bibliotek)

Horsens Technical Library (Horsens Tekniske Bibliotek)

Royal Danish Military Library (Det Kongelige Garnisonsbibliotek)

Technical Library of Copenhagen (Københavns Tekniske Bibliotek)

Danish Naval Library (Marinens Bibliotek)

Danish Environmental Protection Agency. The Library (Miljøstyrelsens Bibliotek)

Odense Technical Library (Odense Tekniske Bibliotek)

The Panum Library (Panum Bibliotek)

Psychiatric Research Library, Psychiatric Hospital (Psykiatrisk Hospital i Århus. PSYK-INFO/Patientbiblioteket)

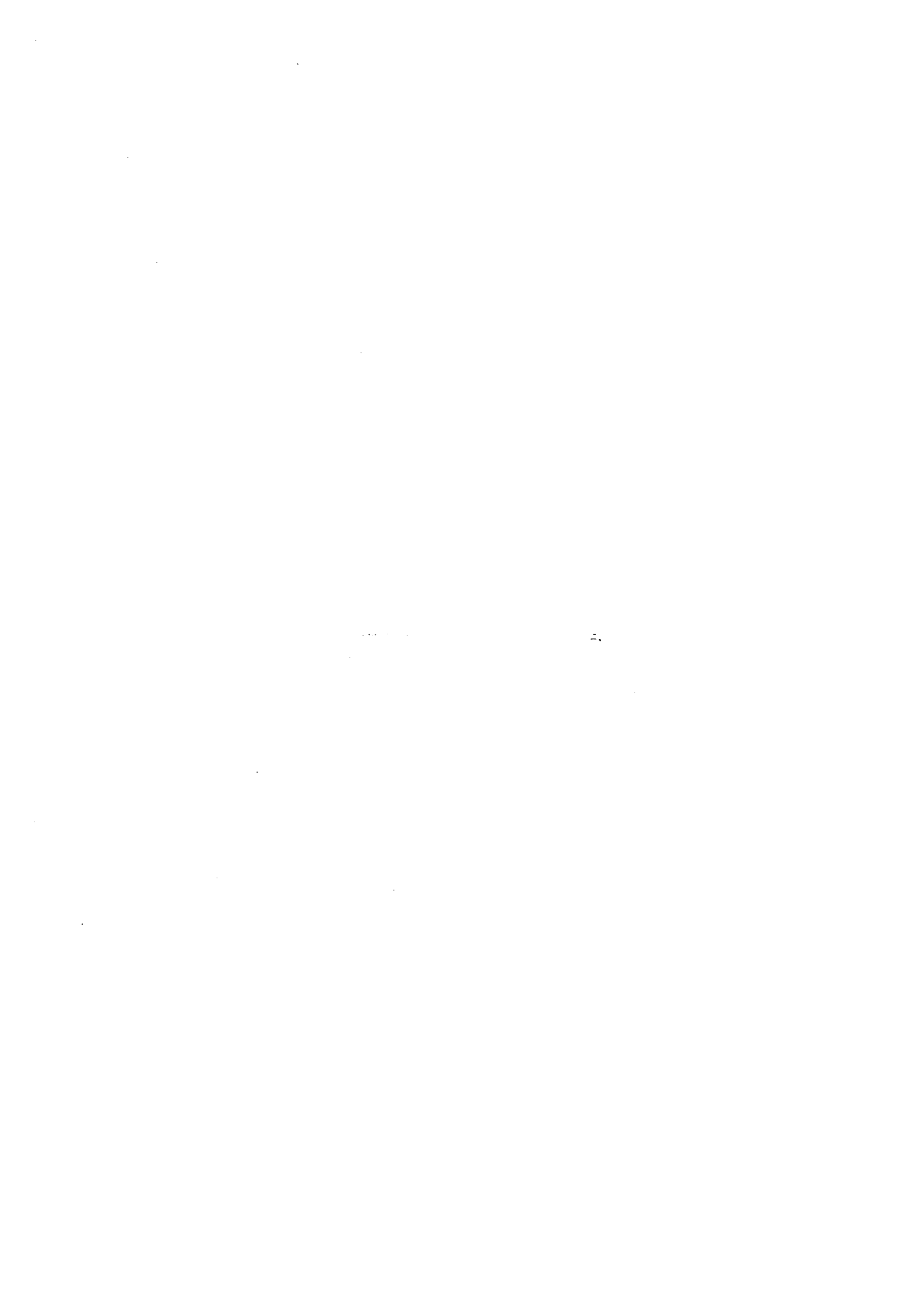
IRCT Documentation Centre (Rehabiliterings- og Forskningscenter for Torturofre)

Medical Library, Rigshospitalet (Rigshospitalet. Medicinsk Bibliotek)

Aalborg University Library, Esbjerg (Aalborg Universitetsbibliotek, Esbjerg)¹

The Technical Library of Århus (Århus Tekniske Bibliotek)
URL: <http://www.aarhus.th.dk> or www.aarhus.in.dk/atb.htm

¹ This library belonged at the time of dissemination of the questionnaires to 'Group D'. It has now merged with Aalborg University Library and has got status as a branch.



Appendix 2

Name of system: »Supermax«

European languages supported	Danish, English, Russian
Main supplier	Dansk Data Elektronik A/S (DDE) Herlev Hovedgade 199 Denmark DK-2730 Herlev
Telephone	+45 4284 5011
Fax	+45 4284 5220
Contact	Mr. Bo Geertsen, Section manager
Supplier profile	<p>DDE is an international information systems supplier based on high-technological know-how. DDE's strategy is to develop and sell complete IT-solutions developed in close cooperation with the users.</p> <p>We have always believed in open, supplier-independent solutions. So, right from the start, DDE has focused on international standards and was the first supplier to realize the perspectives of the open operating system, UNIX. DDE's customers can always be sure that their computer investment will not become obsolete, because the solutions can be fully integrated with other platforms and systems.</p> <p>DDE differs from other computer suppliers in its focus on well-defined segments within which DDE develops and implements complex computer solutions based on considerable know-how. A good example of this strategy is the Supermax Library Solution.</p>
Staff	The company employs approximately 400 people.
European subsidiaries/agents	DDE Belgium DDE Great Britain DDE Italy DDE Norway DDE Spain DDE Sweden

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General overview

Supermax Library Solution is developed by Dansk Data Elektronik A/S (DDE). The development of this advanced library solution started in 1988. All modules have been developed in very close cooperation with customers in the public and academic library sectors. The Library Solution is based on international standards.

Included in the solution are the following modules:

- Information Retrieval;
- Cataloguing;
- Holdings Creation;
- Circulation;
- Online Public Access Catalogue (OPAC);
- BASILLE (OPAC based on touch screen technology);
- Statistics;
- Acquisitions and Serials Control;
- Inter-Library Loan;
- Housebound Service;
- School Library;
- World Wide Web Server.

The WWW server being yet a new graphical interface and at the same time an optional link to the Internet.

The Supermax Library Solution runs on Supermax, IBM, and MIPS ABI compatible hardware under the UNIX operating system. The database system is Oracle and is based on the MARC format. Various national formats can be supported for import, including UKMARC.

The solution is enquiry-driven; all options within an enquiry are displayed at the bottom of the screen on a so-called chessboard. The BASILLE is based on icons and fingertouch and the World Wide Web Server is based on hypertext. All enquiries can be mouse driven.

Customers EU

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark	1	88	4		
Finland					
France					
Germany					
Greece					
Ireland					
Italy					

Luxembourg					
Netherlands					
Portugal					
Spain					
Sweden					
United Kingdom					

Russia

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DDE-Biblioteksbrugergruppen
 Chairman: Mogens Larsen
 Silkeborg Bibliotek
 Hostrupsvej 41A
 DK-8600 Silkeborg
 Denmark
 Tel.:int. +45 86 82 02 33

Other European countries

Total number of customers worldwide

User group

Name of system: »MikroMaster«

European languages supported	Danish
Main supplier	Kommunedata I/S Hadsundvej 184 9000 Aalborg DK - Denmark
Telephone	+45 98 13 55 11
Fax	+45 98 15 75 86
Contact	Jens Hanghøj
Supplier profile	Kommunedata was founded in 1972 by the Association of County Councils and the National Association of Local Authorities in Denmark. All kinds of data processing for the Danish local authorities are concentrated and co-ordinated within Kommunedata. During the last decades Kommunedata has been involved in library automation in Denmark. Kommunedata has developed and implemented a library system named "MikroMaster" for smaller libraries and has until 1995 been distributing another system named "UNI-Master" for larger public libraries.
Staff	Currently Kommunedata I/S has 2000 employees. Approximately thirty of these employees are engaged in the library system area.
European subsidiaries/agents	none

General overview	<p>The MikroMaster system was developed and launched in the mideighties in Denmark.</p> <p>The following modules are available: Cataloguing; WIN-pac, Circulation control; Report generator; Inter-Mikromaster access and transfer (for importing and exporting data from other systems)</p> <p>Currently the developing of a Booking module is in progress.</p> <p>The system runs on PC hardware under the DOS and Windows operating systems in a multi-user client/server environment.</p> <p>The system is DAN-Marc based, records being stored in the DanMarc format.</p> <p>The WIN-pac module has graphic user interface, and the rest of the system has a DOS-based user-interface in a menu-driven and function key manner.</p> <p>To some extent the system is parameterised in some degree allowing the system to be library defined.</p> <p>The system is being used only in Denmark, mainly by school libraries, but also about twenty minor public libraries are customers.</p> <p>Documentation is only available in Danish. The system supports the ISO Latin-1 character set.</p>
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	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark	560	20			
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxembourg					
Netherlands					
Portugal					
Spain					
Sweden					
United Kingdom					
none					
580					
Contact to Danish User Group through Jens Hanghøj					

Name of system: »ALEPH«

European languages supported	English, Spanish, Swedish, Danish, French, Russian, Italian, German, Portuguese, Polish, Czech, Turkish
Main supplier	ICL DATA A/S Library Division Lautrupbjerg 1 DK - 2750 Ballerup DENMARK
Telephone	+ 45 44 89 44 89, or + 45 44 89 43 22
Fax	+ 45 44 89 43 00
Contact	
Supplier profile	<p>ICL DATA supports the libraries in Denmark and Sweden, as an agent for Ex Libris in Scandinavia. ICL DATA supplies our customers with software, hardware and all the implementation work toward complete ALEPH systems.</p> <p>Based on the experience with libraries in Denmark and Sweden in the last 15 years ICL has got extensive knowledge of libraries and software for library automation systems. ICL has 31 ALEPH installations and 6 very big ReLib (an old library system based on RC8000/9000 hardware) installations.</p> <p>ICL DATA works very closely together with Ex Libris, the international support organisation, and has the exclusive rights for ALEPH in Scandinavia. ICL has been using ALEPH since 1991.</p> <p>ALEPH was developed by ALEPH Yissum, Ltd., a private company owned by the Hebrew University of Jerusalem, in the early 1980s. The company gained initial valuable experience by installing its system in the libraries of the Hebrew University of Jerusalem. In 1986 ALEPH Yissum signed a world wide sales and marketing agreement with Ex Libris Ltd. The agreement made Ex Libris the exclusive sales and marketing organisation of the ALEPH software (except for Israel). Ex Libris Ltd established the ALEPH product presence world wide, achieving sales of over 200 library systems in 23 countries to date. The company's revenues comprise sales of new licenses, upgrades and enhancements of installed bases, maintenance and support, staff training, as well as project development of user-specific requirements.</p> <p>The natural and complete synergy between the two companies, the expanding total market for library automation systems, the streamlining of the activities of the two companies, the opportunity for increasing sales and the need to expand marketing and R&D efforts, have resulted in an agreement between the two companies to merge their activities into one company to be called - Ex Libris (1995) Ltd. (EX-LIB). The merger will be effective as of December 31st 1995, in accordance with the Israeli law on company mergers (with no tax effect on the shareholders of both companies).</p> <p>Experience</p> <p>ICL would like to emphasize several points, which will demonstrate ICL, Ex Libris, and ALEPH Yissum's experience and capability to supply, install, train and implement ALEPH:</p> <ul style="list-style-type: none"> • ALEPH systems in 21 countries

	<ul style="list-style-type: none"> • 14 different conversation languages • Five different character sets • Range of applications • Range of sizes • Several local, national and international networks • Total range of communication facilities • Outstanding achievement of swift and successful implementations <p>Variety of Users</p> <p>The variety of the applications, from a straightforward library system to a complex application of images with world wide users' inquiries and download, has conditioned ALEPH Yissum to adapt, develop, improvise, and enhance ALEPH to specific needs all over the world. The basic construction of the ALEPH system is the reason for this unique adaptability and flexibility. It should be quite clear that this same system and code is working both in the smallest and the largest system, in public as well as national and university libraries, in museums and research centres.</p> <p>The international development program, by which ALEPH Yissum and Ex Libris cooperate with their interested clients, leads to serviceable, user defined functions, which are much appreciated by all the users.</p> <p>These include remote Bitnet/Email searches, remote WWW searches based on Mosaic hypertext browse, image handling, Hypertext searches, CCL ISO 8777 and Z39.50 standards, mass periodical handling and other enhancements.</p> <p>ICL DATA A/S Library Division has 16 people working with ALEPH (in Denmark).</p>
Staff	
European subsidiaries/agents	



Customs

ICL

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark		21	8	2	
Finland					
France				1	
Germany			2		
Greece					1
Ireland					
Italy				43	
Luxembourg					
Netherlands				1	
Portugal				1	
Spain				8	
Sweden				1	
United Kingdom					

Bulgaria: 1 Slovakia: 2
 Poland: 2 Turkey: 1
 Romania: 2 Ukraine: 3
 Switzerland: 4 Hungary: 36
 Czech Republic: 10

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The International Consortium of ALEPH Users (ICAU).

ICAU is an independent body initiated, controlled and operated by users. ICAU is managed by a secretary and a managing committee and governed by the users. The ICAU users meet once a year in a chosen country, usually at the institute of the new secretary.

In Denmark 2 groups exist: one for the municipal libraries and one for the research libraries. The two groups co-operate with ICL, especially in developing questions.

In 1995 the contact persons to the user groups in Denmark are:

Municipal: Bente Thernø, Gentofte Bibliotek
 Universities: Ingbritt Butina, Danmarks Natur- og Lægevidenskabelige

Other European countries

Total number of participating countries

Users group

1995

Name of system: »BiblioMatik«

European languages supported	Danish, Swedish, Norwegian, Polish, Italian, English
Main supplier	Dantek a/s Vestergade 41 Dk-8600 Silkeborg Denmark
Telephone	+45 86 80 30 99
Fax	+45 86 80 30 94
Contact	Ole Sloth Carlsen
Supplier profile	<p>Dantek Bibliotekssystemer has been a supplier of library automation products and services for nearly 10 years. Dantek has been focusing on establishing automation tools and services for a large number of organizations in society. Types of organizations cover public schools, high schools and the public libraries. This presentation only deals with the system for the public libraries. The system is named CICERO.</p> <p>Dantek Bibliotekssystemer pays much attention to user cooperation in the development process.</p> <p>In order to address the needs of a modern environment, we deploy the newest research achievements in computer science in our tools. The latest deployments cover an object oriented user interface.</p>
Staff	Dantek employs fifteen people. Everybody in the development division holds a masters degree in computer science. Apart from this we employ the necessary number of library professionals. Due to the large degree of user cooperation in the development process, all developers possess an indepth understanding of professional librarianship.
European subsidiaries/agents	Bibliotekscentrum AB, Växjö, Sweden BibTec, Oslo Norway Rytter ; Kaunas, Lithuania Dantek Bibliotheksysteme, Amsberg, Germany Dantek Sp. z o. O, Poznan, Poland

BiblioMatik and DanKatalog (outside Denmark named 'BibKatalog') represents a library housekeeping solution and an OPAC which were developed for libraries in primary schools, secondary schools, other educational institutions, smaller public libraries and special libraries in that order.

BiblioMatik is a DOS-based multi-user system for the creation of a local catalogue and circulation control. The system offers a number of features particularly suitable for school libraries, such as

- registration and circulation of sets of materials (copies for all
- reservation 18 months in advance;
- recalls for all pupils in a class at the same time;

BiblioMatik offers all standard routines for circulation, recall, statistics, and reservation of materials.

BiblioMatik supports a reduced MARC format with the necessary fields. Import and export of data is possible using comma separated files.

DanKatalog is the OPAC of BiblioMatik, especially designed for children. DanKatalog is WINDOWS-based. DanKatalog can be used as a stand-alone module.

DanKatalog works with BiblioMatik in a LAN. In the display format, loan status is displayed and it is possible to display front pages and content notes of book materials. The pupils' own notes can be displayed separately. Map of the location of library materials can be displayed. Macros for the retrieval modes can be set up by the system administrator.

DanKatalog imports records in danMARC, norMARC, MAB et al.

BiblioMatik and DanKatalog are used in more than 1500 school libraries or institutions.

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark	1093	20			
Finland					
France					
Germany	77	42			
Greece					
Ireland					
Italy					



Luxembourg					
Netherlands					
Portugal					
Spain					
Sweden	379				
United Kingdom					

Poland: (4 school libraries)
Norway: (3 public libraries)

Name of system: »DCBIB - Datacentralens Bibliotekssystem«

European languages supported	Danish
Main supplier	Datacentralen A/S Biblioteksgruppen Oldenburg Allé 1 DK-2630 Taastrup
Telephone	+45 3644 8844
Fax	+45 3644 3312
Contact	Liselotte Astrup
Supplier profile	Since 1978 Datacentralen has been a supplier of integrated library automation services. The very first product was based on a client/server minicomputer system for the Danish technical libraries. For the last 10 years the product range has been based on the Microsoft Windows/Novell Netware PC client/server technology. Today the products are very flexible and can, without any reprogramming, fulfil the requirements of the Danish libraries.
Staff	Datacentralen currently employs nine members of staff and has the possibility to allocate additional resources.
European subsidiaries/agents	None

<p>The library system is a fully integrated on-line library system. The level of user friendliness is high, which means that the system is able to deliver information at your fingertips to experienced users as well as to non-experienced users.</p> <p>The following modules are available: Cataloguing, acquisitions, lending, reservation, interlibrary loan, personal book recording system, external library access, access to internet, access to CD-ROM, statistical analysis, system administration, report generator, virus control, security control, backup functions and mobile library system.</p> <p>The system is multi MARC-based, which means that different MARC formats can be imported. All menus are library-defined. The help system is context specific.</p> <p>Current release 5.10</p>
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CUSTOMERS	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark	25	35	10	5	
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxembourg					
Netherlands					
Portugal					
Spain					
Sweden					
United Kingdom					
Denmark west and Denmark east.					

Name of system: »BIBS«

European languages supported	Danish, Norwegian, Swedish
Main supplier	AXIELL Bibliotekssystem AB, Sweden and AXIELL Danmark aps Roholmsvej 13 DK-2760 Albertslund Denmark
Telephone	+45 43 62 92 92
Fax	+45 43 62 92 94
Contact	Kaj Riis, manager
Supplier profile	<p>AXIELL is a young computer system-house, working primarily in the library sector in the Nordic countries. We install, implement and support three different library systems, each of which is dedicated to a specific customer group.</p> <p>We supply the following systems: BIBS, from AXIELL AB, Sweden, BIBDIA from BiBer GmbH, Germany and TINLIB from IME Ltd., UK.</p> <p>The figures of the installations of the system are only showing our own customers, and not the ones from above partners.</p> <p>The systems are based on UNIX, DOS and Windows. We have implemented a graphic OPAC for local public use and WWW server for outside use. In addition we also offer a modern self-service module, and a full-text databasesystem, which is also used for art registering showing the paintings, sculptures etc.</p> <p>The self-service module is also offered to other suppliers systems installations.</p> <p>Our company was formed by professional librarians and computer people with AXIELL Bibliotekssystemer AB in Sweden as our mother company.</p> <p>Our installed userbase comprises 70 libraries in Denmark, Norway Sweden and Greenland. In addition to these figures, the mother company has an installed base of 155 library systems in Sweden.</p>
Staff	In the AXIELL-group there is a staff of 25, of which 7 are located in Denmark.
European subsidiaries/agents	None.

Compatibility	<p>BIBS is an easy-to-use computer-system, specially designed for small and midsized public libraries, wanting a fast and real-time administration of books, borrowers etc.</p> <p>All modules in BIBS are fully integrated and handle a large number of transactions and records with several simultaneous users.</p> <p>Besides this, BIBS has a very attractive economy for the libraries regarding</p>
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license as well as service and updating.

In all details, it is easy to notice, that the system is designed by skilled librarians with priority in the functions for their every-day job in the library.

BIBS is programmed in "C" and Cobol and has its own designed database, running under UNIX.

The main menu contains these modules as standard: Circulation Control, Catalogue, Reports, OPAC, Kommunikation. In addition to this, we offer a full-text database and a graphic OPAC specially designed for borrowers. Also self-service and a WWW-module are offered.

All modules are integrated. As an example, one can go from catalogue to circulation directly, without using the main menu. Such jumps can be done with no waiting time.

All other institutions in the municipality can use the BIBS-license from the library for free. These are e.g. schools, sporting clubs, city hall, museums etc.

Once a year all users get together for a user meeting to debate new developments and exchange ideas. Based on this, the BIBS-system is always under development in order to match the demands from the users.

Customers	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark		13		1	
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxembourg					
Netherlands					
Portugal					
Spain					
Sweden		72		4	
United Kingdom					

Norway: 3
Greenland: 2



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Contact:

Bo Jacobsen
Løgstør Bibliotek
Fredensgade 7
DK-9670 Løgstør
Phone: +45 98 67 13 22

Name of system: »BIBDIA«

European languages supported	Danish, Norwegian, Swedish, German, English
Main supplier	BiBer GmbH, Germany. Distributor: AXIELL Danmark aps Roholmsvej 13 DK-2760 Albertslund Denmark
Telefon	+45 43 62 92 92
Fax	+45 43 62 92 94
Contact	Kaj Riis, manager
Supplier profile	<p>AXIELL is a young computer system-house, working primarily in the library sector in the Nordic countries. We install, implement and support three different library systems, each of which is dedicated to a specific customer group.</p> <p>We supply the following systems: BIBS, from AXIELL AB, Sweden, BIBDIA from BiBer GmbH, Germany and TINLIB from IME Ltd. in UK.</p> <p>The figures of the installations of the system are only showing our own customers, and not the ones from above partners.</p> <p>The systems are based on UNIX, DOS and Windows. We have implemented a graphic OPAC for local public use and WWW server for outside use. In addition we also offer a modern self-service module, and a full-text databasesystem, which is also used for art registering showing the paintings, sculptures etc.</p> <p>The self-service module is also offered to other suppliers systems installations.</p> <p>Our company was formed by professional librarians and computer people with AXIELL Bibliotekssystemer AB in Sweden as our mother company.</p> <p>Our installed userbase comprises 70 libraries in Denmark, Norway Sweden and Greenland. In addition to these figures, the mother company has an installed base of 155 library systems in Sweden.</p>
Staff	In the AXIELL-group there is a staff of 25, of which 7 are located in Denmark
European subsidiaries/agents	None.

General description

BIBDIA is a complete and very flexible library system for all sizes and kinds of libraries.

BIBDIA has literally all functions for a public library included in its many menus.

BIBDIA is UNIX-based and continuously being developed to fulfil the demands and standards on the market, which is shown by a few examples:

In November 95, a client/server version was released, based on Windows 95 as clients.

In January 96 a selfservice module was released with full functionality for the borrowers' own handling of loans and returns.

Also in January 96, a WWW-server was installed so that BIBDIA-libraries are now able to offer borrowers and other libraries access to the catalogue via Internet.

The standard modules in BIBDIA are: Catalogue, Circulation Control, Serials control, OPAC, Acquisition and Im/Ex-port.

BIBDIA uses the complete MARC-format and most other standards for libraries. DanMARC, NorMARC and SweMARC are all supported.

Further development is done in close co-operation with the BIBDIA usergroup. A new release or version is scheduled to be launched every year.

Customers

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark		8			
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxembourg					
Netherlands					
Portugal					
Spain					
Sweden			2		
United Kingdom					



Norway: 2

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Contact:

Stadsbibliotekar Børge Søndergaard
Horsens Bibliotek
Tobaksgården
DK-8700 Horsens
Phone: +45 75 61 49 99

Name of system: »TINLIB«

European languages supported	Danish, Norwegian, Swedish, English, Czech, Finnish, French, German, Greek, Hungarian, Italian, Polish, Portuguese, Romanian, Russian, Spanish.
Main supplier	Distributor for IME Ltd., UK AXIELL Danmark aps Roholmsvej 13 DK-2760 Albertslund Denmark
Telephone	+45 43 62 92 92
Fax	+45 43 62 92 94
Contact	Kaj Riis, manager
Supplier profile	<p>AXIELL is a young computer system-house, working primarily in the library sector in the Nordic countries. We install, implement and support three different library systems, each of which is dedicated to a specific customer group.</p> <p>We supply the following systems: BIBS, from AXIELL AB, Sweden, BIBDIA from BiBer GmbH, Germany and TINLIB from IME Ltd. in UK.</p> <p>The figures of the installations of the system are only showing our own customers, and not the ones from above partners.</p> <p>The systems are based on UNIX, DOS and Windows. We have implemented a graphic OPAC for local public use and WWW server for outside use. In addition we also offer a modern self-service module, and a full-text databasesystem, which is also used for art registrating showing the paintings, sculptures etc.</p> <p>The self-service module is also offered to other suppliers systems installations.</p> <p>Our company was formed by professional librarians and computer people with AXIELL Bibliotekssystemer AB in Sweden as our mother company.</p> <p>Our installed userbase comprises 70 libraries in Denmark, Norway Sweden and Greenland. In addition to these figures, the mother company has an installed base of 155 library systems in Sweden.</p>
Staff	In the AXIELL-group there is a staff of 25, of which 7 are located in Denmark.
European subsidiaries/agents	None.

Special features TINLIB is a comprehensive library management system and consists of the following elegantly integrated modules: Catalogue and Retrieval, Circulation

Control, Monograph Acquisitions, Serials Management, Interlibrary Loans, Data Formatting and Transfer, and Communication.

The system features both variable records and variable fields. In fact, the only limitations on the system are those imposed by the limitation of the hardware on which it resides. This has resulted in both depth and capability that overwhelm existing alternatives. Since all the application software is written in 4th generation programming language, enhancements can be made fast and with few resources.

TINLIB runs under all versions of UNIX as well as under DOS and Windows. Since the application functionality is identical, smaller libraries that start with a PC-based system can easily grow into a larger UNIX-based system whenever necessary, protecting their investment in their equipment, database, user-training and work flow procedures.

TINLIB's object-oriented entity-relational database management system has been designed expressly for the unique requirements of library and information management. TINLIB's entity-relational structure automatically links authors, titles, subtitles, keywords etc. This linking enables the user to literally NAVIGATE from one entity to another during a search. This utilisation of hypertext techniques is unique within the library market.

TINLIB's portability, growth path and standard operating systems are clear evidence of its open systems architecture. Among other attributes, an open system design provides for maximum protection and return on investment for your software.

CUSTOMERS

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark	2		5	23	
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxembourg					
Netherlands					
Portugal					
Spain					

Sweden	3		15	38	
United Kingdom					

Norway.5

2.600

Contact:

Ivar Hoel
Danmarks Biblioteksskole
Birkeetinget 6
DK-2300 København S
phone: +45 31586066

Status for brug af informationsteknologi i de nordiske biblioteker

Sektion A: Bibliotekssystemet

A 1 Har biblioteket et lokalt bibliotekssystem?

- Ja, eget bibliotekssystem siden år:
- Ja, men deler bibliotekssystem med:
- Nej, men vi har besluttet at købe et bibliotekssystem
- Nej (gå videre til sektion B)

A 2 Beskrivelse af bibliotekssystemet (besvar så mange punkter som muligt)

A 2.1 Systemets navn:

A 2.2 Leverandørens navn:

Adresse:

Telefon:

A 2.3 Navn og type på hardware:

A 2.4 Operativsystem (DOS, MAC, WINDOWS, UNIX, VMS etc.):

A 2.5 Anfør antal og type på arbejdsstationer til brug for personale og lånere:

Type	PC	MAC	Terminal (VT100 eller lignende)	Andre
Personale				
Lånere				

A 2.6 Er bibliotekets online katalog (OPAC):

- Tegnbaseret Med en grafisk brugerflade

A 2.7 Hvis online katalogen har en grafisk brugerflade er den:

- En standard grafisk brugerflade (udviklet af leverandøren) Udviklet lokalt til biblioteket

A 2.8 Hvem vedligeholder bibliotekssystemet?

- Personalet Moderinstitutionen Kommunal edb-afdeling.
- Systemleverandøren Konsulentfirma
- Andre:

A 2.9 Hvor mange arbejdsdage pr. måned anvender personalet på vedligeholdelse af bibliotekssystemet?

Biblioteket anvender: arbejdsdage pr. måned til vedligeholdelse af bibliotekssystemet.

A 2.10 Har biblioteket andre databaser oplagt i det lokale system (udover online katalogen)?

- Nej Ja. Hvis ja, udfyld nedenstående (fortsættes evt. på næste side):

Navn på database:

Indhold/dækning:

Antal poster:

Navn på database
Indhold/dækning
Antal poster.

(yderligere oplysninger kan anføres på et separat papir)

A 2.11 Har biblioteket udarbejdet registerforskrift for data i bibliotekssystemet

- Ja Nej

A 2.11.1 Er registeret anmeldt til Registertilsynet i henhold til bekendtgørelse 872 af 17. december 1991 (Bekendtgørelse om undtagelse af visse typer af offentlige edb-registre fra forskriftskrav m.m.)

- Ja Nej

A 3 Beskrivelse af hvordan bibliotekssystemets funktioner udnyttes i biblioteket:

A 3.1 Online katalogen er tilgængelig for brugerne:

- Kun på biblioteket Via ekstern adgang (offentlige net/modem)
- Gennem lokalt netværk Også i bogbus

A 3.2 Anvender biblioteket systemets katalogiseringsmodul?

- Ja Nej

A 3.3 Hvor stor en andel af nye poster skabes ved at genbruge poster fra eksterne baser?: %

A 3.4 Udlånsfunktioner (udlån/aflevering) udføres af:

- Kun bibliotekspersonalet Også selvbetjening

A 3.4.1 Hvilke type lånerkort er mest benyttet?

- Bibliotekets eget lånerkort Sygesikringsbevis Andet (angiv hvilket):

A 3.4.2 Hvordan benyttes lånerkortet ved udlån? (kun den mest benyttede metode afkrydses)

- Stregkoden aflæses Magnetstriben aflæses Fotonotering Indtastning/skrivning

A 3.5 Hvis selvbetjening, hvor stor en procentdel af bibliotekets udlån udføres af lånerne selv?: %

A 3.6 Tillader biblioteket, at låneren selv reserverer eller fornyer materialer?

- Ja Nej

Anvender biblioteket følgende moduler:

A 3.8 Accessionsmodul:

- Ja Nej, vi anvender et andet edb-system til accession
- Nej, accessionsrutiner udføres manuelt

A 3.9 Tidsskriftmodul:

- Ja, anvendes til: registrering budgetlægning regnskab
- Nej, vi anvender et andet edb-system til tidsskriftstyring Nej, tidsskriftstyring udføres manuelt

A 3.10 Tidsskriftcirkulation:

- Ja Nej, vi anvender et andet edb-system til tidsskriftcirkulation
- Nej, tidsskriftcirkulation udføres manuelt Nej, vi cirkulerer ikke tidsskrifter

- A 3.11 Hvordan håndteres interurbanslansrutiner?
- Interurbanslansrutiner er integreret i bibliotekssystemet Håndteres i et separat database-system
- Interurbanslansrutiner udføres manuelt
- A 3.12 Statistikmodulet:
Anvendes dette modul til administrativ og strategisk planlægning?
- Nej Nej, bibliotekssystemet har ikke statistikmodul
- Ja, vi anvender statistikudtræk til administrativ og strategisk planlægning (giv eksempler).
- A 3.13 Hvis bibliotekssystemet har en rapport generator, bruges denne da jævnligt til produktion af nyhedsli-
ster, udvalgte bibliografier, etc.?
- Nej, vi bruger ikke rapport generator. Ja (hvis ja, giv eksempler på brug)
- A 4 Udviklingsplaner.
- A 4.1 Planlægger biblioteket at indkøbe et (nyt) bibliotekssystem?
- Inden for 1 år Inden for 3 år Ingen planer
- A 4.2 Hvad er bibliotekets planer for den fremtidige udvikling af bibliotekssystemet og serviceniveauet?
- Inden for 1 år (angiv områder for fremtidig udvikling):
- Inden for 3 år (angiv områder for fremtidig udvikling):
- A 4.3 Angiv det samlede beløb for bibliotekets investeringer i bibliotekssystemet for sidste regnskabsår (eks.
løn). Beløbet skal omfatte: nye indkøb, vedligeholdelse, konsulentbistand, licenser og udbygning af
hardware og software, etc.
- Biblioteket anvendte i sidste regnskabsår: Kr.
- A 4.4 Angiv det samlede beløb for bibliotekets investeringer i bibliotekssystemet for indeværende regnskabs-
år (eks. løn). Beløbet skal omfatte: nye indkøb, vedligeholdelse, konsulentbistand, licenser og ud-
bygning af hardware og software, etc.
- Biblioteket anvender i indeværende regnskabsår: Kr.
- A 4.5 Er systemet købt, leased eller lejet?
- Købt Leased Lejet

Kommentarer til alle spørgsmål i sektion A skrives her. Angiv spørgsmålets nummer.

Sektion B: Elektronisk Dokumentbestilling

- B 1 Ved elektronisk bestilling menes at biblioteket kan anvende elektroniske rutiner til interurbanslån, enten
via dets eget system eller via andre systemer og sende elektroniske meddelelser/bestillinger til en
ekstern modtager.
- B 1.1 Anvender biblioteket elektroniske bestillingsmuligheder?
- Nej (gå videre til Sektion C) Ja
- B 1.2 Må lånerne selv bestille dokumenter?
- Nej Ja
- B 1.3 Hvor stor en procentdel af bibliotekets interurbanslansbestillinger udføres elektronisk?
- < 25% < 50% < 75% > 75%
- B 1.4 Bibliotekets samlede interurbanslansbestillinger i 1994: bestillinger
- B 2 Hvilke typer dokumenter bestilles elektronisk?
- Bøger (omfatter alle monografityper) Artikler
- Andre materialer (giv eksempler):
- B 3 Hvor bestiller biblioteket fra:
- Andre biblioteker med samme bibliotekssystem
- Centrale systemer og kataloger i Danmark (DANBIB, etc.) (angiv hvilke):
- Nordiske centrale systemer og kataloger (LIBRIS, UBO:BOK, etc.) (angiv hvilke):
- Centrale systemer og dokumentleverandører uden for de nordiske lande (såsom Uncover, OCLC, EBSCO)
(angiv hvilke):
- B 4 I hvilke formater kan biblioteket modtage bestilte dokumenter?
- Via telefax Som e-mail Via FTP
- Andre metoder (angiv hvilke):

Sektion C: Elektronisk Dokumentlevering

Ved elektronisk dokumentlevering menes at biblioteket enten giver adgang til dokumenter i elektronisk
form eller overfører dokumenterne i elektronisk form til modtageren, uanset hvor denne befinder sig
fysiske.

- C 1 Leverer biblioteket dokumenter i elektronisk form?
- Nej (gå videre til sektion D) Ja
- C 2 Hvis ja, i hvilken form leveres dokumenterne?
- Som telefax På disketter Via FTP
- Via e-mail Andre metoder (angiv hvilke):

Sektion D: Søgning i eksterne databaser (online/CD-ROM)

Informationssøgning i online databaser

D 1 Udfører biblioteket online informationssøgning for brugerne?

Nej, vi udfører ikke online søgning for brugerne, fordi (angiv begrundelse):

(Hvis nej, gå videre til D4)

Ja, vi udfører online søgning for brugerne: vederlagsfrit somme tider vederlagsfrit
 brugeren betaler for ydelsen

D 2 Hvor mange online tjenester (databaseværter) abonnerer biblioteket på? _____ tjenester

D 3 Angiv de 5 online værter/tjenester som biblioteket anvender hyppigst (i rækkefølge):

1	
2	
3	
4	
5	

Informationssøgning på CD-ROM

D 4 Har biblioteket databaser på CD-ROM?

Nej, (angiv begrundelse): _____

(hvis nej, gå videre til sektion E)

Ja, biblioteket har databaser på CD-ROM, men disse anvendes kun af personalet.

Ja, biblioteket har databaser på CD-ROM og disse kan også benyttes af brugerne.

(folkebibliotekerne anmodes om at besvare spørgsmål D5 og D6. Forskningsbibliotekerne kan gå videre til D7)

D 5 Biblioteket har databaser på CD-ROM i:

Voksenafdelingen Læsesalen
 Børneafdelingen Musikafdelingen
 Andre

D 6 CD-ROM databaserne er tilgængelige:

På hovedbiblioteket På filialerne I bogbus

D 7 CD-ROM'erne er installeret:

På "enkeltstående" PC I et netværk Nogle på "enkeltstående" PC og andre i netværk

Sektion E: Lokale IT-Applikationer

Ved lokale IT-applikationer menes forskellige former for services og produkter, såsom multimedia systemer, billed- eller tekstdatabaser, udviklet enten af biblioteket selv eller på bibliotekets foranledning.

E 1 Har biblioteket udviklet lokale IT-applikationer?

Nej, og vi har ingen planer om udvikling af egne IT-applikationer (gå videre til sektion F)

Nej, men vi har planer om at introducere nye IT-applikationer inden for 12 måneder (afkryds i skema)

Ja, vi har lokalt udviklede IT-applikationer (afkryds i skema)

Vi har (eller planlægger) lokale brugerorienterede IT-applikationer inden for:

Applikationstype	Udviklet	Plantagt	IT-produkter/services er tilgængelige:		
			udelukkende på lokal PC	på CD-ROM	via offentligt netværk
Biblioteksvejledning					
Brugerundervisning					
Kommunal/lokal information					
Lokalhistorie					
Lokal billedsamling					
Lokal musiksamling					
Andre, (angiv hvilke):					
Andre, (angiv hvilke):					
Andre, (angiv hvilke):					

Kommentarer:

Sektion F: Internet

F 1 Har biblioteket adgang til Internet?

- Nej (gå videre til sektion G) Ja

F 2 Internet anvendes af personalet til følgende:

- E-mail Faglige konferencer (nyhedsgrupper, listserv, etc.)
 Informationssøgning via Gopher eller WWW Downloading af dokumenter
 Udforskning/underholdning Andet (uddyb nærmere):
 Bruges ikke regelmæssigt

F 3 Giver biblioteket Internet-adgang til brugerne?

- Nej (gå videre til Sektion G) Ja

F 4 Internet anvendes af brugerne til følgende:

- E-mail Downloading af filer Informationssøgning via Gopher eller WWW
 Udforskning/underholdning Andet (uddyb nærmere):
 Bruges ikke regelmæssigt

F 5 Har biblioteket sine egne homepages?

- Ja
WWW/Gopher adressen er:

Nej, men biblioteket forventer at få sine egne homepages i løbet af:

- 3 måneder 6 måneder 12 måneder
 Nej (gå til Sektion G)

F 6 Bibliotekets homepages giver adgang til:

- Links til udvalgte ressourcer på Internet Informationssøgning i bibliotekets katalog
 General information om biblioteket BBS (Bulletin Board System)
 Fuldtæst dokumenter (gjort tilgængelige enten af biblioteket eller moderinstitutionen). Nævn nogle eksempler:

F 7 Bibliotekets homepages opsættes og opdateres af:

- Personalet Moderinstitutionen Eksternt konsulentfirma
 Andre (uddyb nærmere):

Kommentarer:

Sektion G: Anden anvendelse af IT

G 1 IT-udviklingen går hurtigt og det er svært at få komplet overblik over, hvad der foregår i bibliotekerne. Der er givet områder, som dette spørgeskema ikke omfatter eller ikke dækker fyldestgørende. Hvis biblioteket er involveret i IT-forsøg eller projekter, f.eks. lokalt, regionalt, på nordisk eller internationalt plan, som er relevante for denne kortlægning, bedes disse anført i nedenstående rubrik

Eksempler:

Dette spørgeskema er udfyldt af:

Navn:

E-mail-adresse:

Bibliotek:

Biblioteksnummer:

Adresse:

Telefon:

Part C
State-of-the-Art of Information
Technologies in Finnish Libraries

Juha Hakala
Automation Unit of Finnish Research Libraries
Helsinki University Library

Helsinki 1996

Part C

State-of-the-Art of Information Technologies in Finnish Libraries

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- Appendix 2 Questionnaire form in Finnish
- Appendix 3 Questionnaire form to library system vendors
- Appendix 4 Addresses of Finnish library system vendors

1 Introduction

1.1 A review of the Finnish Library Policy

Development of a national information policy in Finland is mainly the responsibility of the government. Primary players in this area are the Ministry of Education, the Ministry of Transport and Communications and Ministry of Finance. The Ministry of Education has been more interested in the information content of the information superhighway, while the two latter ministries have concentrated more on it's technical and economical aspects.

An Expert Committee set up by the Ministry of Education has created A National Strategy for Education, Training and Research in the Finnish Information Society, a report published in 1995 [Education]. The principles presented in this strategy document have been widely accepted by the Finnish government. The Ministry of Education has announced an action programme for the years 1995-1999 which is based on this strategy.

The Expert Committee saw library as a crucial success factor of information society, and it recommends that the whole library system must be rapidly brought within the reach of information network services. Adequate equipment and telecommunication links as well as the existence of necessary expertise in both research and public libraries must be guaranteed. Special attention should be paid to improving network services in public libraries.

During 1996, the Ministry will invest 236 million FIM (1 FIM = 0.174 ECU in 1.3.1996) to foster creation of information superhighway in Finland. 20 million FIM of this sum will be used in library sector. Public and research libraries will receive 10 million FIM each for diverse purposes including training of personnel, hiring of network specialists, purchase of new hardware & software and contents production. In addition, the universities are given 30 million FIM for modernization of computing hardware and network infrastructure.

In order to promote the utilization of the grants, the Ministry of Education has facilitated a call for proposals, which was opened in November '95 and closed by the end of January '96. The evaluation of project proposals will be completed by the end of March '96. The Helsinki University Library (the National Library of Finland) as well as many other academic and research libraries and archives have submitted in all 140 proposals to the call (see chapter 5.4 for further details). Proposals from public libraries had not yet arrived by the end of February from regional governmental organizations that collected them.

The Ministry intends to continue increased funding for information superhighway -related projects at least to the end of this decade. In addition to the investments listed above, the Ministry has since 1995 funded with 1.5 million FIM per year the Finnish Library Association's project House of Knowledge (Tiedon talo), which aims are to coordinate public libraries' Internet-related activities and to support publishing of cultural information in the Internet by libraries. For more information on project (in Finnish only), see <http://www.kaapeli.fi/tiedontalo/ttproj96.html>. A short general description of the Finnish Library Association in English is available at <http://www.kaapeli.fi/~fla/presentation.html>.

The House of Knowledge will fund Internet-related projects in public libraries by 750.000 FIM during 1996. Before the call for proposals closed in 29.2.1996 the Library Association received 75 project proposals; this is a good indicator of how active public libraries are on this sector.

The Ministry of Education set up in November 1994 a group of specialists to review a) the effects of digital technologies on cultural development and b) needs to develop cultural policy in information society. The group's aims were to:

1. Make a state-of-the-art report on development of information technologies relevant to culture policy
2. Assess changes in the means of production and markets of cultural services and technology, and possibilities and threats inherent in these changes
3. Analyse development of multimedia technologies from culture policy's point of view
4. Based on points 1–3, make a proposal for development strategy of cultural policy and for an action plan for development of tasks in this sector

The group published its final report *Kulttuurinen tietoyhteiskunta: strategiset perusteet ja lähtökohdat opetusministeriön toimintaohjelmalle vuosiksi 1997–2000* (Culture in information society: strategic background and starting points for the Action Plan of the Ministry of Education in 1997–2000) in January 1996 [see *Kulttuurinen*]. This report contains several recommendations relevant to libraries. For instance:

1. Library services must remain free and accessible to all citizens
2. Libraries must be physically connected to the information networks, and investments must be made to develop network services in libraries
3. Development of library network must be intertwined to respective developments in museums and archives
4. Legal deposit law must be renewed in such a way that digital documents are included in it

Ministry of Finance has for a long time been interested in Information Superhighway -related developments, and produced a comprehensive scenario, *Suomi tietoyhteiskunnaksi – kansalliset linjaukset* [Finland, Information Society – National Strategies] in December 1994. The text is available in digital form (only in Finnish) at <http://telmo.telmo.fi/tieke/tikas/tikas.htm>. Although this scenario proposes that citizens may access the Internet from public libraries, the Ministry of Education's two scenarios are the first ones containing a satisfactory discussion on role of libraries in information society, and several propositions for concrete action.

Public and research libraries themselves are about to create a joint IT scenario during 1996 to support their decision making on this sector and to make their aims in IT usage better known. In November 1995 a cooperative project to develop a scenario on usage of IT in libraries in 1997-2006 was launched (see chapter 3.2.1 for more details).

1.2 Statistics activities in library sector

Collection of the library statistics for public libraries is the responsibility of the Ministry of Education. Research library statistics are compiled by the Helsinki University Library, Secretariat for National Planning and Coordination. The collective statistics document published once a year by the BTJ-Kirjastopalvelu Oy [see Kirjastot 1994] covers information from 370 out of about 800 research libraries, and from all 998 public libraries in 439 municipalities in Finland.

The yearly statistics does not include data from school libraries. Term “school library” refers in Finland to libraries in primary (classes 1–9) and secondary (classes 10–12, leading to student exam) schools. These libraries are not incorporated into any other national statistics, so it is difficult to find out the status of them. The omission of school libraries from the official statistics is partly due to fact that school library services in Finland are mainly taken care of by public libraries.

Finnish school system is decentralized: there are more than 4000 primary and almost 500 secondary schools, so most of them are very small and have resources for a small reference library only. However, cooperation between public libraries and schools in form of e.g. book mobile visits is well established. According to the Ministry of Education’s survey, the library system is shared between the public and school libraries in 40 municipalities, and about 200 schools can access the public library’s OPAC.

Neither does the yearly statistics contain much information on usage of library automation tools. Therefore the Ministry of Education carried out in Summer 1995 a survey on usage of library automation in public libraries. The Ministry’s survey [see Ylesten] complements in a useful way the survey at hand.

As a rule, use of information technology in public and research libraries is wide-spread. Only the smallest of these libraries do not have an integrated library system or other computer applications in their usage. On the other hand, this survey showed that only a fraction of school libraries in primary and secondary schools have a library system or other IT applications of their own.

1.3 Methodology of the study

1.3.1 Data collection methods

The content of the libraries survey was prepared by the steering group of the Nordic study. The questionnaire initially written in English was translated into Finnish before it was sent to libraries. Helsinki University Library took care of research libraries while the Helsinki City Public Library had the responsibility of sending the query to the public and school libraries.

The libraries participating in the survey were chosen in the following way:

A. All research libraries with more than three full-time employees were included, as agreed by the steering group. According to the information extracted from Sieppo, the Finnish

Research Library database, 71 libraries belonged into this group (see Annex 1), when libraries of private companies were excluded. This omission is also based on the common decision of the project steering group.

The Sieppo database is maintained by the Science Library, Helsinki University, and it contains information on 800 research libraries; only the smallest library units are not represented in it. Printed Guide to Research Libraries and Information Services in Finland [see Suomen] and information presented in Annex 1 are based on this database.

In some cases several questionnaires were sent to one big, de-centralized library's (e.g. Helsinki University Library) different departments, as there was no single authority that would have been able to provide the whole library's replies to all queries. However, if some information was available centrally (e.g. maintenance costs of the library's OPAC), it was only provided once for each library. When the results were analyzed, these departmental libraries were treated as independent entities when there were independent replies available. It should be noted that three of Finland's central research libraries (National Library of Health Sciences, National Library of Agriculture, National Forestry Library) are in fact parts of the Helsinki University library system.

In addition to the initial set of 71 libraries, the questionnaire was later sent to libraries of regional colleges and polytechnics. As this kind of institutions of higher education are relatively new in Finland (though individual colleges participating in regional college may be old) their libraries are just being formed, and we wanted to include them in the survey, even though they did not always fulfill the criteria of employing more than three people. Moreover, college libraries were useful in filling the gap between research and school libraries.

From the first set of 71 libraries, 51 replies (71.8 %) were received. In addition, regional college libraries sent 31 replies (percentage of all such libraries not known). One regional college typically has several libraries, one in each participating organisation.

B. As a result of the Ministry of Education survey done in Summer '95 it was already known that 370 municipalities out of 439 either had computer applications in their libraries or planned to install one during '95. All these 370 municipalities were sent the questionnaire; 252 replies (68.1 %) were received. The answers cover the municipality's whole public library system including main library, branch library & book mobiles.

C. Each public library was sent a copy of the query, which they were asked to deliver to the person/people responsible of municipality's school libraries. In some cases the public library filled the questionnaire by itself; most often it was copied either to each school directly or to the official responsible of schools within the municipality. In all, 325 replies were received; these applied for individual schools, not for all municipality's schools. In 31.12.1992 there were about 4700 primary and 448 secondary schools in Finland, so only 6.3 % of such schools replied to the query.

As regards the research and public libraries, responses were sent actively and percentages (71.8 and 68.1) can be regarded as good. No reminders were sent to those libraries which did not send their replies. School library coverage is not satisfactory, but 325 responses is still a representative sample of all school libraries.

In all, 659 replies were received. Results were loaded into Microsoft Excel by Sanna Haapio from Automation Unit of the Finnish Research Libraries, Helsinki University Library. Four different sets of statistics figures were produced by her: a) for all libraries, b) research libraries including regional colleges, c) public libraries and d) school libraries. Not all this data is represented in the report. These groups differ a lot from one another when it comes to library automation, so differentiation between them was a necessity. Research libraries were further divided in the numerical presentation into university, governmental and college libraries, as these groups again are far from similar.

Some libraries had had difficulties in answering some of the questions. One librarian commented: "you might as well have asked technical details about my car. I only know that it's Citroen and it's colour is green." However, responders have had the time to answer to all questions.

A few questions turned out to be somewhat ambiguous. For instance, maintenance of the library's system was interpreted either as daily maintenance (which is often done by the library staff) or as maintenance of the system per se (changes to the program code & user documentation) which is usually taken care of by the system vendor. In spite of occasional problems libraries' replies were as a rule consistent and of high quality.

Selected interviews were done to gather more details on themes relevant to this query. Ms. Inkeri Salonharju, Secretary General from the Helsinki University Library, Secretariat for National Planning and Coordination has provided information on statistics compilation process and national information policy issues. Mr. Antti Soini, Director of the Helsinki University Library, Automation Unit of Finnish Research Libraries has been interviewed on TKAY activities in general and LINNEA network. Ms. Tuula Haavisto, Secretary General of The Finnish Library Association has provided information about the Association's House of Knowledge -project. Ms. Riitta Valtonen from the BTJ Kirjastopalvelu has informed the author on BTJ Kirjastopalvelu's products and services.

1.3.2 Contribution from the library systems vendors

In addition to the libraries survey questionnaire an another questionnaire for system vendors was designed (see Annex 2). This questionnaire was more technically oriented than the one sent to libraries; for instance, vendors were asked about hardware platforms, operating systems and database management systems (DBMS) supported by their applications. Eight vendors active in Finland sent their responses, which were used to compile information presented in chapter 3.1 (Integrated library systems). Vendors' and libraries' responses were also compared so as to see which services available in their systems the libraries really used.

Vendor address information is available in Annex 3.

1.4 Status of Finnish libraries

Every municipality in Finland is obliged to have a public library. State provides basic funding which is big enough for minimal services (by Finnish standards); most municipalities invest their own money on library to enhance the quality of services.

Public library usage in Finland is very active: 20,2 loans and 12,4 library visits per inhabitant in 1994. Libraries' status in Finnish society is very good: in a Gallup survey done in 1995 libraries were regarded as the most important public service (health services were ranked as second) by a representative sample of Finns. It is therefore natural that Ministry of Education intends to make libraries the place where people can access the Internet services.

In 1994 there were almost 2.490.000 public library users in Finland. As the total population at the end of 1995 was about 5.1 million, almost every second Finn is a (public) library user. University libraries and many other research libraries can be freely utilized by anyone, which makes it easy for Finns to find and use scientific information.

Visits to libraries increased in 1994 by 3.7 % from 1993 to 70.6 million; research libraries's portion of the total figure was 7.9 million. The number of loans was about 108 million (roughly 20 loans per every citizen); yearly growth was 2.9 %. Tables 1.1 and 1.2 describe the change in library visits and loans during the last four years.

1991	1992	1993	1994
53.000	58.000	60.000	63.000

Table 1.1 Library visits 1991-1994, public libraries (in thousands)

	1991	1992	1993	1994
Public libraries	88.300	96.000	99.000	102.000
Research libraries	2.972	3.311	4.430	5.708

Table 1.2 Loan services 1991-1994 (in thousands)

In February 1996 it was already known that the average library usage figure has still grown in 1995 from that of 1994. Unfortunately, in some municipalities growth has stopped or turned into decline as a result of extreme cuts in local funding. These cuts are primarily due to severe depression Finland has undergone in 90's, which has caused major problems to some municipalities. Affected public libraries can purchase less new materials than before, and opening hours have been much reduced.

In research libraries, appropriations for purchasing literature have fallen from 107 million FIM in 1992 to 88 million in 1994. Simultaneously prices of foreign materials rose sharply as as result of devaluation of FIM. The situation has not improved since 1994 – on the contrary, cuts have continued. As a result, research libraries have become more dependent

on ILL services from foreign libraries, although union catalogue LINDA (see chapter 3.2.1) has been used to some extent to coordinate acquisition of new materials.

Compared with the previous year, libraries' running costs fell in 1994 by about 1.6 % in FIM (about 5 % in real terms). Table 1.3 shows the decline of running costs during the last five years. For every citizen the prize of the maintenance of the public library service was in 1994 201 FIM, or 34.6 ECU, which is a bargain – Finnish public library services are produced very effectively.

	1991	1992	1993	1994
Public libraries	1.243	1.154	1.111	1.055
Research libraries		378*	352*	334

Table 1.3 Running costs 1991-1995 (in million 1995 FIMs)

* These figures are estimates based on 1994 and 1993 FIM values given in the statistics.

Due to increased usage and diminished resources Finnish libraries have had problems during '90's to meet the user's requirements. Use of IT is one of the tools with which libraries have applied to cope with the situation. The fact that average usage of libraries is still growing proves that libraries have been successful in utilizing IT and other new strategies.

The state of the libraries in 31.12.1994 can be summed up in a following way:

Library type	Libraries	Collections	Loans	IT-users
Research libraries	370	47.311.241*	5.708.605	ca 90 %
Public libraries	439	39.657.675	101.862.549	84 %**
School libraries	>2500***	?	?	< 5 %

Table 1.4 Overall state of the libraries 31.12.1994

* Library of the National Board of Patents and Registration holds more than 24 million volumes (including patents from 30 countries) in its collections.

** According to the Ministry of Education's survey, 31.12.1995 69 out of 439 municipalities in Finland did not have a library system. If branch libraries are included, there are 991 public libraries in Finland of which 645 (65 %) use an integrated library system. 129 book mobiles (59 %) have been automated as well.

*** This figure is a rough estimate based on the number of primary and secondary schools (5100). Many of them have only a collection of books, not a real library.

1.5 Use of IT in Finnish libraries – background

This chapter describes historical background and gives generic idea of the current status. See chapter 3 for more information on the use of information technology at the moment.

1.5.1 Research libraries

Usage of computer applications began in Finnish research libraries in 1970's. Automation Unit of Finnish Research Libraries (TKAY) was established in the Ministry of Education in 1974. TKAY's primary responsibility was – and still is – to coordinate library automation and provide database services for libraries and other users.

In 1977 TKAY began to use the British Library's LSP (Library Software System Package) application to build MARC databases mainly for university libraries. LSP application ran on State Computer Center's IBM mainframe computers. Various microfiche catalogues, including the National Bibliography and alphabetical & subject union as well as local catalogues for libraries, were produced from these registers by TKAY with LSP. The application was a very flexible tool for database maintenance and catalogue production functions.

For most libraries served by TKAY, the LSP software was the only library system. E.g. circulation and acquisition routines in these libraries were taken care of manually, and user access to collections was through microfiche catalogues. However, in addition to (or instead of) LSP some university libraries purchased or developed by themselves software with which they automatized circulation and other activities not covered by LSP. Three university libraries (Helsinki School of Economics library, Helsinki University of Technology library and Jyväskylä University library) built their own database systems, which still exist alongside the national systems (see chapter 5.4).

The databases of the KDOK databank (see chapter 3.2.2) were also produced using source data from the LSP databases. The National Bibliography database, then called KATI, was the first one to be opened in 1981. It was followed by the National Union Catalogue of Foreign Monographs, KAUKO in 1982. Cataloguing of Finnish articles in KATI begun in 1982. A separate National Bibliography database was created in 1985 by transferring all national bibliographic materials from KATI into database christened KOTI; since then KATI has been an article index database only.

Some governmental, public and research libraries produced bibliographic data to KATI and KAUKO together with the university libraries. Thus cooperative cataloguing in which many different kinds of libraries participate begun in Finland back in the beginning of 1980's.

In 1984 TKAY set out to choose a new integrated library system to replace the LSP software. Riitta Lehtinen from TKAY wrote an insightful plan in which she outlined the main aims of the LINNEA project (see 3.2.1). After a careful assessment of many competitors, the VTLS (Virginia Tech Library System) integrated library system was chosen 1988 to be the system that satisfied best the needs of Finnish university libraries. VTLS software was then excessively modified according to the TKAY's specifications so

as to make it fulfill numerous local requirements. After these changes were complete, TKAY started creation of the library network LINNEA (see chapter 3.2.1).

Usage of domestic and foreign databanks via computer networks – first modem line or X.25 – begun in early 70's. Internet has gained more and more popularity since the beginning of 90's, as FUNET and NORDUnet (see chapter 4.1) have been able to guarantee fast connections to the U.S and other foreign countries.

1.5.2 Public libraries

The usage of IT in public libraries has been less coordinated than in university libraries. Municipalities can decide by themselves which (library) applications they purchase. Therefore a great variety of different local library automation systems was installed during the 80's. These systems were at first not necessarily compatible with common standards like ISO2709 or ISO 6937/2. But new library systems introduced in 90's do support these standards, and as a part of the public libraries' MANDA union catalogue database creation "old" library systems used by regional central libraries have been enhanced with capability to read and write ISO2709 records.

As in research libraries, library automation begun in 70's. The greatest effort was understandably aimed at automatization of circulation activities. Already in early 80's there were some regional co-operative library networks; this trend has become increasingly common later on: by now one third of all municipalities share a library system with other municipalities. Finnish municipalities are generally rather small, and they seek savings by co-operating with one another not only in library automation, but in other kinds of automatisisation activities as well. However, during 70's and 80's there was no national union catalogue of public libraries. The nearest equivalent to such a thing was a database called the National Title Register, which was produced jointly by the Helsinki metropolitan area municipalities.

By the end of 1995 84 % of all municipalities had an integrated library system in it's library. These systems are usually of Finnish origin. The Helsinki metropolitan area libraries use GEACplus, and the Maarianhamina public library in the swedish-speaking Åland archipelago uses a library system BTJ 2000 (see country report from Sweden, Appendix 4) supplied by the swedish Bibliotekstjänst AB.

Usage of databanks via modem line or X.25 networks started already in 70's. By 31.12.1995 66 % of all public libraries used external databanks. These databases are mainly domestic; usage of foreign databases is fairly uncommon. The popularity of the Internet as an access method has increased rapidly, as many municipalities have purchased an Internet connection.

1.5.3 School libraries

Library automation in school libraries (in secondary and primary schools) is not well developed. As these libraries are usually very small, they do not often have resources – economic or otherwise – for automatisisation projects. School library is most often taken

care of by a teacher who works in a library only a few hours a week. These people do not often have a librarian's training. There are only a handful of school libraries which have bought a PC-based library system. However, in some cases the local municipal library cooperates with school libraries. There are also some school libraries which use locally developed system.

Many schools are already connected to the Internet, or have locally mounted CD-ROMs. These activities, however, are usually not coordinated by the school libraries or funded from library's budget.

2 Survey on Nordic cooperation

Cooperation between the Nordic countries in the library sector has been very active for a long time. For instance, a bibliography of Nordic library cooperation from 1974 contains more than 1000 references. NVBF, Nordic Federation of Research Libraries Associations, was established in 1947. See http://www.dlh.dk/dpb/df/nvbf_dan.html for more information on NVBF activities (in Danish; NVBF homepage in English will be available in Spring 1996). Formal and informal contacts between Nordic librarians are very common, and there are a lot of cooperative conferences on varying themes like ILL and Information & Documentation.

Nordic cooperation sponsored by NORDINFO, which forms an essential part of all cooperative work, is discussed in the NORDINFO section of the Nordic report and is not included in Finland's country report. However, Finland has been active partner in many NORDINFO projects including the Nordic SR-net [Hakala], and hosted NOSP (Nordic Union Catalogue for periodicals from 1977 to 1993, when NOSP maintenance work was transferred to the Oslo University Library).

3 Library systems

Most Finnish libraries use library systems developed in Finland. The most important exception from this rule are the university libraries, which have implemented the VTLS integrated library system (developed by the VTLS, Inc, Blacksburg, USA) during the LINNEA project 1988-1993. Many enhancements were made to the VTLS system to make it suitable for the Finnish libraries, including support for the FINMARC format and a multitude of changes in the circulation module.

There are in all 16 integrated library systems used in Finland (in-house developed systems are not included). Of these, BTJ, GEACplus, Tinlib and VTLS are foreign by origin. The most popular domestic systems are PrettyLib, Pallas, Kirjasto3000, Primas and Kitt in this order. The following section contains short descriptions of all systems with more than five users. The information presented here is in part based on the questionnaire sent to the system vendors in October 1995 (see Annex 3).

Almost all library systems support cataloguing in FINMARC format. It is the national MARC format used in Finland, based mainly on UKMARC and USMARC formats.

FINMARC is developed by the Automation Unit of Finnish Research Libraries in the Helsinki University Library. The current FINMARC contains specifications for monographs, serials, maps, printed music, archives and audiovisual materials. FINMARC for computer files is under development. There is also FINMARC format for serials holdings data and FINMARC authority format, which are used by the VTLS system.

3.1 Integrated library systems

In the following list, the most widely used systems are listed first. The information presented comes in part from the vendors themselves; they were sent a modified questionnaire based on the library questionnaire. We have not used in chapter 5.1 (Library systems) the customer information system vendors provided, partly because some vendors did not respond to the questionnaire sent to them.

3.1.1 PrettyLib

PrettyLib is an integrated library system developed by PrettyBit Software Oy. There are two versions of the program: an old DOS-based with about 100 users, and a new Windows-based (which replaces the old one) with 223 users. There are 33 company, 106 school (college and polytechnics) libraries, 84 research and 14 governmental libraries (ministries etc.) among PrettyLib users. PrettyLib can be installed on any PC server on LAN using Novell Netware, LAN Manager or Windows for Workgroups.

The OPAC GUI can be accessed via LAN. Internet access is at planning stage. Cataloguing module can read FINMARC records in ISO 2709 format; production of them is under construction. PrettyLib allows conversion of records to FINMARC format, though it does not use FINMARC internally. Circulation module supports check-out as self-service; users are also allowed to renew loans. Reservations can be made both by the library staff and end users.

PrettyLib has both acquisitions and statistics modules. All functionality related to serials control (serials control, holdings management, serials routing) are included in PrettyCirc program available from PrettyBit Software.

3.1.2 Pallas

Pallas is an integrated library system developed by TT-Tieto, formerly VTKK-Kuntajärjestelmät Oy, a subsidiary of the State Computer Centre. Pallas has 102 users (70 public, 30 school (college and polytechnic) and 2 research libraries). The Pallas OPAC client application runs on Windows 3.1.

The Pallas OPAC is available via LAN or modem line and even from book mobile over NMT/GSM connection or Autonet network. There are both character based and graphical user interfaces available in the OPAC. Cataloguing module is capable of producing and reading FINMARC records in ISO 2709 format. Circulation module supports check-out as

self-service; users are also allowed to renew loans. Reservations can only be made by the library staff.

There are acquisitions and statistics modules in Pallas. Serials control module is under development; it will include serials check-in management but not serials routing. Other plans for the future include Z39.50 server and client development and an ILL module.

3.1.3 Kirjasto 3000 (Library 3000)

Kirjasto 3000 is an integrated library system developed by Akateeminen Tietopalvelu ATP Oy (Academic Information Services ATP Inc.). Kirjasto 3000 has 93 users (82 public, 5 school and 5 research libraries). The software runs currently on DOS and Windows 3.x, but there are plans to port Kirjasto 3000 to UNIX platform as well.

Character-based OPAC is available via LAN, modem line and Internet. OPAC can be used from book mobile too. Cataloguing module is capable of producing and reading FINMARC records in ISO 2709 format. Circulation module supports check-out as self-service; users are also allowed to renew loans. Reservations can be made both by the library staff and end users.

Kirjasto 3000 has acquisitions and statistics modules. Future plans include serials routing and Z39.50 applications development.

3.1.4 Primas

KT-Tietokeskus Oy (KT-Knowledge Center Inc.) has produced Primas, an integrated library system which has 82 users (81 public libraries, one foreign library). OPAC is currently character-based, but GUI will be completed in January 1996. OPAC is available via LAN, modem line and also from the book mobile. Cataloguing module is capable of producing and reading FINMARC records in ISO 2709 format. Circulation module supports check-out as self-service; users are also allowed to renew loans. Reservations can for the time being only be made by the library staff, but end users will get these capabilities in a software version to be released in January 1996.

Primas has acquisitions and statistics modules. Future plans include serials routing and Z39.50 applications development.

3.1.5 VTLS

VTLS (Virginia Tech Library System) is an integrated library system developed by VTLS, Inc. The software is used in all university libraries and in a few governmental libraries including the Library of Parliament and the National Repository Library. The VTLS version used in Finland utilizes the Hewlett-Packard's TurboIMAGE DBMS and runs on HP3000 minicomputers. Both VTLS versions can read and write FINMARC records in ISO 2709 format. Like GEAC, VTLS already sells Z39.50 client and server products, and a WWW Gateway is to be released in Spring 1996.

The VTLS OPAC is available via LAN and also from the Internet. Both character based and graphical user interfaces are available. Cataloguing module can read and write FINMARC records in ISO 2709 format and in ISO 6937/2 character set. Circulation module is heavily modified so as to fit the Finnish University libraries' circulation patterns including e.g. open loans, which the patron may keep as long as he/she wishes provided that nobody else wants to loan the item. VTLS has both acquisitions and statistics modules. Serials control module (including serials check-in control, holdings management and routing) is based on holdings MARC.

VTLS, Inc. will release during 1996 a completely renewed version of the VTLS software called VIRTUA in the U.S Localized versions for European countries using VTLS will be available in 1997. VIRTUA is a client-server application based on the Z39.50 protocol. VIRTUA's primary development platform is Oracle, though the software will also be ported to IMAGE/SQL, latest version of the HP3000's IMAGE DBMS. VIRTUA will contain a lot of new functionality like UNICODE character set and multimedia support not available in the present version of the VTLS software.

3.1.6 Other library systems

Fintek is a library system based on interconnected PC's. The software has OPAC, acquisition, cataloguing and circulation modules, and libraries can produce lists of their acquisitions. The system is used by 25 libraries.

GEACplus is an integrated system used in the Helsinki Metropolitan area library system. The system is shared by four cities (Helsinki, Espoo, Kauniainen, Vantaa) with total population of more than 800.000 inhabitants. More than 550 PC's and terminals have been connected to the central site, and the number is continuously growing. GEAC, Inc. has already developed Z39.50 client & server products and is working with the WWW gateway application. GEACplus cataloguing module is capable of producing and reading FINMARC records in ISO 2709 format.

Gemini is a library system based on interconnected PC's. The system is popular in the swedish-speaking region on the west coast of Finland. In Autumn 1995 Gemini had 19 implementations. There are also a couple of cooperative library clusters using Gemini software. Server software runs on Windows NT 3.x or OS/2 2.x and uses MS SQL server, Oracle or Solid Server. Client application requires DOS 5.x or better, Win 3.x or Windows 95. Gemini is capable of producing and reading FINMARC records in ISO 2709 format. Future development plans include support for circulation self-service, Z39.50 and serials routing.

Kitt library system is used in 39 municipal libraries. The size of the systems used vary from 4 to 27 connected PCs/terminals. Kitt runs on Siemens-/Nixdorf Quattro computer with NIROS operating system or on computers using SCO/Unix or Siemens-Nixdorf UNIX version RM. Systems are usually managed by the municipal computer center. Kitt uses a proprietary record format.

Oominki library system runs on PC's connected over LAN. Most of the 34 installations are quite small (1–3 PC's). Oominki supports a GUI in addition to a traditional character-based user interface.

Riimi library system has 12 users, many of which are fairly large libraries. Originally the system was PC-based, but in the current release server software runs on OpenVMS/VAX and OpenVMS/AXP platforms and is based on RMS/VMS RDBMS. Client software versions require DOS, Windows 3.* or Windows 95. Riimi's cataloguing module is capable of producing and reading FINMARC records in ISO 2709 format. In the future, Riimi's developer, the Inberg Oy, will produce check-out self service support and enhance Riimi's ILL functionality.

3.1.7 Conclusion

There are in all 11 domestic library systems on the market in Finland. Many of them are relatively new, and most have been enhanced actively during the last five years. Almost all vendors have plans to continue the development work. Resources available for enhancements vary according to vendor's statements from 0.5 to 8–9 man years per year.

The table 3.1 summarizes the operating environment of systems (server software) used in Finland as reported by the vendors (those vendors who did not reply our query and vendors with less than five implementations are omitted):

System	Operating system	DBMS
Gemini	Windows NT 3.x OS/2 2.x	MS SQL Server Oracle Solid Server
Kirjasto 3000	DOS 3.3 or better Windows 3.0 or better	
Kitt	NIROS SCO/Unix RM (Siemens-Nixdorf UNIX)	
Pallas	HP-UX 9.0 or better VAX/VMS 5.x SCO/Unix 3.2	Ingres
Primas	VAX/VMS OpenVMS HP-UX	Ingres
Riimi	OpenVMS	RMS/VMS
PrettyLib	Windows 3.0 or better Windows NT 3.51	
VTLS	MPE/iX 4.0 or better HP-UX 9.0 or better OpenVMS	TurboIMAGE Image/SQL Allbase/SQL Oracle

Table 3.1 Operating environments of library systems (server application) used in Finland

Client applications support without exception Windows 3.x or Windows 95 platforms. On the other hand, there was not a single vendor with a client running on top of MAC- or NextStep/OpenStep operating system, although VTLS has plans to provide a simplified client on these platforms too.

With a few exceptions, domestic systems have overcome their (often non-existent) foreign competitors when libraries have chosen applications for themselves. Foreign library system vendors have been notably cautious when trying to enter the relatively small library system market in Finland, as adapting one's system to Finnish requirements (FINMARC, Finnish language and common Nordic "peculiarities" like open loans) is by no means a trivial task. On the other hand, Finnish library system vendors have not been active in marketing their software abroad, because of their concentration on domestic markets. Recently there has been some success in selling Finnish library system software to Estonia, and one English library uses the Gemini library system.

Most widely used domestic systems are well standardized. They use the same character set (ISO 6937/2), FINMARC format and can read and write FINMARC records in the exchange (ISO2709) format. A good basis for national co-operation in the form of e.g. union catalogues therefore exists. Popular Finnish library systems are also fairly complete in the sense that they cover most local library activities. Many vendors are about to start development of Z39.50 functionality into their systems. Plans to implement ILL functionality were more rare. Applications based on Z39.50 will in the future have an essential role in library networking in Finland.

VTLS, Inc. is for the time being the only vendor with immediate plans to replace their applications' current character set with Unicode or ISO 10646. VTLS is also the only vendor who intends to implement conversions from FINMARC to other national MARC formats. General availability of MARC conversion software from projects such as USEMARCON and ONE will no doubt change the situation, as these conversion programs can be embedded into Z39.50 client and server applications. However, interoperability of Finnish library systems with non-FINMARC systems abroad may be limited at first as a result of conversion problems.

3.2 National coordinated systems

3.2.1 LINNEA

The Ministry of Education funded during 1988-1993 the LINNEA project. The major aims of this project were to:

- install a local library system in all university libraries
- create a central system which contains union catalogue of the participating libraries
- interconnect library systems and the central system to one another via the academic network, FUNET

The project was managed by the Automation Unit of the Finnish Research Libraries (TKAY), which up to 1993 was part of the Ministry of Education but then became a

department of the Helsinki University Library. In addition to the University Libraries, the Library of the Parliament and the National Repository Library joined the project. As a whole, LINNEA was completed successfully in time and within the project's preset budget (50 million FIM).

Since 1993 LINNEA has become a national information network to libraries, in which almost 100 libraries participate actively as information producers. The LINNEA central system computer (model HP3000 996/100) maintained by the TKAY housed by the end of 1995 the following databases, all of which use the VTLS software:

LINDA	union catalogue of the research libraries	(2.1.1996: 2.465.285 records)
MANDA	union catalogue of the public libraries	(2.1.1996: 1.042.285 records)
ARTO	article index of Finnish periodicals, 1995-	(2.1.1996: 64.846 records)
VIOLA	union catalogue of music materials	(2.1.1996: 14.969 records)
SVEN	a copy of Swedish Nat. bibliography, 1988-	(2.1.1996: 83.291 records)

The LINDA database is the union catalogue of the Finnish University libraries, the National Repository Library, the Library of the Parliament and several other libraries sharing university libraries' local VTLS systems. All these libraries use the database for copy cataloguing, information retrieval and ILL purposes. Copying of MARC records from LINDA to local databases is in the current VTLS version based on proprietary Hewlett-Packard protocols. In the future, these protocols will be replaced by the use of Z39.50 client and server applications.

LINDA is also actively used by public and governmental libraries to information retrieval and interlibrary lending purposes. LINDA has been open for public use since 1994, and its usage has grown continuously since then.

LINDA contains e.g. monograph references, serials references with summary holdings information and references for visual, cartographic and archive materials. Serials data (MARC records and holdings) is received from more than 300 libraries who participated in the production of the Finnish Union Catalogue of Periodicals, which since 1994 has been a part of LINDA. Cataloguing of computer files has been tentative up to the end of 1995, but will become more common during 1996. More information on the database and its usage is available on the European National Libraries' Gabriel information system (see <http://linnea.helsinki.fi/gabriel/en/countries/finland-union-en.html>).

The MANDA database is the union catalogue of the central library of the public libraries (Helsinki City Public Library) and regional central libraries in Finland. Out of 20 libraries, 10 were already represented in the database in January '96. Materials from the nine libraries not yet included in MANDA will be loaded into the database during 1996. Public libraries – and other libraries as well – use MANDA for ILL and information retrieval purposes. The database has been open for public use since 1995; MANDA's test use period ended in July 1995.

MANDA contains all kinds of material types, except serials holdings which have been collected to LINDA. More information on the database and its usage is available on the European National Libraries' Gabriel information system (see <http://linnea.helsinki.fi/gabriel/en/countries/finland-union2-en.html>).

Many public libraries and governmental organization's libraries cooperate – in addition to the university libraries – to create periodicals contents index database ARTO, which listed in January 1996 contents of more than 1000 Finnish periodicals. Cataloguing started 2.1.1995; the database was opened for public use in Autumn 1995.

Old article references will not be converted from the parallel KATI database (see chapter 3.2.2). Coverage will be further enhanced as several new libraries are about to start cataloguing records into the database. There are also plans to link full text of the articles to the references in the ARTO database. More information on the database and it's usage is available on the European National Libraries' Gabriel information system (see <http://linnea.helsinki.fi/gabriel/en/countries/finland-index-en.html>).

VIOLA contains references on foreign and domestic printed music and recordings. Also music contained in recordings and printed music described. The database will be opened to the public during 1996. SVEN contains records from the Swedish National Bibliography converted to FINMARC format. It has been used since 1994 for copy cataloguing purposes by university libraries, but in 1996 the database will be opened for all libraries for search and record copying purposes.

As of yet none of LINNEA databases have been published in CD-ROM format, but TKAY intends to produce CD-ROM versions from at least some of LINNEA databases. For this purpose, CD-ROM production facility will be set up in TKAY during 1996.

The aims defined in the original LINNEA design document back in 1984 have by 1995 been reached. When directors of university and regional central libraries met to discuss IT issues in Summer '95, they decided that a future scenario on the IT in Finnish public and research libraries for the next decade is to be written. The main purpose of this document, which will be complete 31.10.1996, is to point out the most promising or urgent areas on which libraries should concentrate their IT-related activities.

3.2.2 KDOK – Finnish Bibliographic Databank

KDOK databank is a part of the Minttu information system housed in the TT Information Service company's (of which state owns a major share) IBM mainframe computers. TT Information Service is a company that markets and distributes information provided by 20 prominent Finnish information producers. The company also offers access to the databases of the Office for Official Publications of the European Communities. TT Information Service belongs to the Tieto Group. For more information (in Finnish), see <http://www.tietotie.fi/tp/>.

Minttu is a pure IR system developed by TT-Tieto with a rather sophisticated search language. In addition to KDOK, Minttu contains many other widely used services like for example the popular FINLEX databank. FINLEX databases contain Finnish legislation in full-text.

The KDOK databases were originally produced from the TKAY's LSP system, but are nowadays updated with data extracted from the LINNEA databases. The eldest KDOK

database has been operational since 1981. In 1996, The KDOK databank consists of the following databases:

KOTI	The Finnish National Bibliography (1930's-)	1.3.1996: 671.744 records
KATI	Finnish Articles (1977-)	1.3.1996: 565.248 records
KAUKO	Union Catalogue of Foreign Monographs (1980-)	1.3.1996: 728.559 records
KAUSI	Union Catalogue of Finnish and Foreign Periodicals (1970-)	1.3.1996: 175.804 records

Of these databases, KATI and to lesser extent KOTI are by far the most popular. KAUKO and KAUSI have largely been replaced by LINDA and MANDA. Starting year and coverage of articles in KATI varies a lot; in some areas – e.g. archaeology and linguistics – starting year of complete coverage is 1917 and there are even articles from 19th century in some subject areas. In some other areas like biology cataloguing started with the introduction of the ARTO database in 1995.

New records from ARTO are loaded into KATI ten times a year. KAUKO and KOTI are updated ten times a year too. Records of foreign monographs printed since 1980 are extracted from LINDA and added to KAUKO. New national bibliographic records are also extracted from LINDA and loaded to KOTI.

KATI materials not included in ARTO database (1917-1994) are also available as the KATI CD-ROM published in Autumn 1995.

3.2.3 National Bibliography production

Cataloguing for the National Bibliography is organized and partly done by the Helsinki University Library, which is also the National Library of Finland. The Library of the Parliament, Jyväskylä & Turku university libraries and two companies (BTJ-Kirjastopalvelu, Kirjavälitys Oy) share the burden of cataloguing. In addition to cataloguing of new materials, old National Bibliography card catalog is being retrospectively converted; in January 1996 the conversion has proceeded down to 1930's and is expected to reach the beginning of this century before the end of 1996. The aim is to convert the period not yet available in digital form (1828-1929) within the next five years. Helsinki University Library's conversion centre is responsible of the work.

Catalogs from 1488-1827 have been converted as a separate project. This material is not yet accessible for public as an on-line database. "Modern" records are available as the National bibliography database FENNICA and as a part of the LINDA union catalogue database in a slightly edited (simplified) format. The FENNICA CD-ROM has been available since 1990; it was the first National Bibliography CD-ROM in Scandinavia when introduced.

3.2.4 The National Repository Library

The National Repository Library was established in 1989. All kinds of libraries send their less used materials to the repository library, which is well known for it's rapid ILL

services. The library's holdings contained in 31.12.1995 about 460.000 monographs and 29.000 serials, which all are included in the VAARI database, which is one the most popular bibliographic databases in Finland. Library holds also about 650.000 dissertations, of which only a fraction has been catalogued.

3.2.5 BTJ Kirjastopalvelu

Bibliographic records from the National Bibliography are delivered to libraries through different distribution channels. The University libraries can copy these records from the LINDA database (which contains the whole National Bibliography) on-line. The public libraries can purchase all kinds of bibliographic data, including National Bibliography records, from the BTJ Kirjastopalvelu Oy.

BTJ Kirjastopalvelu Oy is a company specialized in providing services, materials and library equipment to libraries. The main owner is swedish Bibliotekstjänst AB. Originally BTJ Kirjastopalvelu was established by libraries – The Finnish Library Association still owns 20 % of the company.

BTJ Kirjastopalvelu has two main databases: Bike and Biitti. Bike contains ca 150.000 bibliographic records of literature, Biitti ca 70.000 bibliographic records of music and audiovisual materials. These records can be downloaded directly to different library systems in libraries, or libraries can get printed catalogue cards from records in both databases. Cataloging services of BTJ Kirjastopalvelu are used by 283 public libraries all over the Finland. Mostly they use records in digital form – 30 libraries still purchase printed catalogue cards by the end of 1995.

BTJ Kirjastopalvelu is producing also an article index database Alekski from Finnish periodical and newspaper articles. In the beginning of 1996, 250 periodicals and 12 newspapers were indexed. Alekski is available as an on-line database, on CD-ROM and as a printed version. The users are mainly public libraries and educational institutions.

3.3 Nordic cooperation in using library systems

The union catalogue LINDA (see chapter 3.2.1) was by the end of February 1996 used by 13 Swedish and Norwegian libraries. Most of these libraries were large university and research libraries in Sweden, who make constantly ILL requests to Finnish libraries. However, more ILL requests are sent from Finland to Sweden than vice versa. Therefore the Swedish National Union Catalogue LIBRIS is widely used among research libraries. Other Nordic union catalogues including BIBSYS, UBO: BOK and DanBib are utilized to ILL purposes as well.

In addition to traditional bibliographic databases there are also other kind of resources that are actively used. The Lund University Electronic Library (<http://www.ub2.lu.se/>) is deservedly famous, and one of the most popular foreign library-related resources in the Internet for Finnish librarians.

The Royal Library, Sweden and the Helsinki University Library renewed their agreement in January 1996 on exchange of their National Bibliographic records in machine readable form. Helsinki University Library makes the Swedish National Bibliography records from 1989 available to Finnish users as database SVEN (see chapter 3.2.1). The Royal Library includes the Finnish National Bibliography records into LIBRIS databank and allows access to it for Swedish users.

As a part of the ONE project (see chapter 3.3.1), the project partners will agree on conditions of use of their databases. This means that e.g. the Helsinki University Library will define conditions of Z39.50-based access to the LINNEA databases.

3.4 International cooperation

Wide-spread use of IT in libraries gives Finnish librarians a good background for participation in international project. Finnish libraries have for a long time been actively involved in the work of international organisations like IFLA and FID. Quite recently there has also been more interest towards participation in EU's Library Program. Domestic contact for the program is the Helsinki University Library, Secretariat for National Planning and Coordination, which has set up a working group which fosters participation in the program and disseminates information about on-going projects within the library program.

The first project funded by this program Finland is involved with is the ONE project (see chapter 3.3.1). There are also Finnish participants in the project CHILIAS (Children in Libraries: improving multimedia virtual library access and information skills). The main goals of the project are to develop a new concept for European children's libraries of the future as a stimulating environment for innovative learning and creative use of multimedia and networked technology. The project will deliver 4 applications of a new children's library service on the WWW, with additional local multi-media applications (see <http://www2.echo.lu/libraries/en/projects/chilias.html> for more information on the project).

Active participation in Bibliotheca Baltica, CENL (Conference of European National Librarians) and LIBER (Ligue des Bibliothèques Européennes de Recherche; <http://www.kb.dk/guests/intl/liber/>) has created skills and knowledge required for participation in various projects (see chapters 3.3.2–3.3.4). Finnish libraries are also participating in the Concerted Action for Public Libraries (Publica) initiative (see <http://www2.echo.lu/libraries/en/publica.html>) and HARMONICA (Harmonised Access and Retrieval for Music-Oriented Networked Information - Concerted Action) project (see <http://www2.echo.lu/libraries/en/harm-wks.html>).

3.4.1 ONE

The OPAC Network in Europe (ONE) project is a cooperative project between 15 institutions in 8 European countries. The project is financed through the EU Library program; it's budget is 2.4 million ECU. ONE started in January 1995 and the project will last until July 1997.

The aim of the project is to simplify the use of the National Union Catalogue databases and other important sources of bibliographic data via implementation of ANSI/NISO Z39.50 protocol. In addition to the technical implementation, the project will provide framework for negotiation of use contracts between partners, and provide user assistance required to master the usage of remote databases involved. Even though the end users may in principle use remote databases as they were local ones, there may be some differences due to differing cataloguing and indexing practices in different countries.

Helsinki University Library's Automation Unit of Finnish Research Libraries (TKAY) is a ONE project partner. As a result of the project, the LINNEA union catalogues will be made more easily accessible to users outside Finland.

The project's coordinator is Oslo College, unit BRODD from Norway. Other partners beside TKAY and BRODD include the British Library, Die Deutsche Bibliothek, National Library of Norway, Royal Library – LIBRIS department (Sweden) and Dansk BiblioteksCenter from Denmark.

See <http://www.bibsys.no/one.html> for more information on the ONE project.

3.4.2 Gabriel

GABRIEL (Gateway and Bridge to Europe's National Libraries) is the World Wide Web - based information system of the Europe's National Libraries. GABRIEL will provide a single access point of access for the retrieval of information about these libraries' functions, services and collections. Gabriel is available at <http://www.bl.uk/gabriel/> (The British Library) and on two mirrored sites: the Helsinki University Library (<http://linnea.helsinki.fi/gabriel/>) and Koninklijke Bibliotheek, the Netherlands (<http://www.konbib.nl/gabriel/>).

The GABRIEL system was originally set up on behalf of CENL (Conference of European National Librarians) by the British Library, Helsinki University Library and Koninklijke Bibliotheek. As of February 1996 Gabriel contains information from 12 National Libraries; 20 libraries which have not yet supplied their information will do so during Spring 1996.

Helsinki University Library made the original proposition of the GABRIEL design and participated in the further refinement of it. Library has already provided all the information required to the system.

3.4.3 CoBRA (Computerised Bibliographic Record Actions)

CoBRA was set up at the end of 1993 by the Conference of European National Libraries (CENL) with funding from the European Commission (DGXIII/E). A forum of senior representatives from eight national libraries was given the responsibility for developing projects within what was then Action Line One of the Commission's Libraries Programme which examined the provision of machine readable bibliographic services.

The membership of CoBRA is drawn from national libraries and other key players such as publishers and bibliographic agencies in Europe. It is steered by a Forum of national libraries which reports to CENL and comprises the following:

The British Library, UK
Die Deutsche Bibliothek, Germany
Bibliothèque Nationale de France
Koninklijke Bibliotheek, the Netherlands
Instituto da Biblioteca Nacional e do Livro, Portugal
Helsingin Yliopiston Kirjasto (Helsinki University Library), Finland
Schweizerische Landesbibliothek, Switzerland
National Library of Ireland
The National Library of Lithuania is invited to attend as an observer.

The key terms of reference for CoBRA are to foster actions that will help to:

- create a European dimension for the provision and exchange of bibliographic data from agencies with established responsibilities at national level
- foster new links between organisations involved in bibliographic record creation at all stages of the publication and distribution process to the mutual benefit of public and private sector organisations
- improve the efficiency and utility of national bibliographic service provision through stimulating the take-up of new technology for service delivery and enhancement
- encourage greater standardisation amongst parties involved in records supply and use

More information on CoBRA and its activities is available at the European National Libraries' Gabriel information system (see <http://portico.bl.uk/gabriel/en/cobra.html>).

3.4.4 Baltic cooperation

Helsinki University Library and several other Finnish libraries have had various cooperative projects with Estonia, to which we have close cultural relations, and other Baltic countries. Libraries have sent to Estonia their less used materials and equipment, and many Estonian librarians have visited and worked in Finnish libraries to study modern librarianship.

Finland has been a strong supporter of the Bibliotheca Baltica initiative, which aims to enhance cooperation between the libraries in countries around the Baltic sea. One result of this initiative will quite likely be a WWW-based regional library information system.

4 Networking

Finland is one of the most advanced countries in the world when it comes to use of networking technology [see Finland]. In October 1995, there were 140.000 computers connected to the Internet via the FUNET network only. 10.000 new computers were connected in Autumn 1995 to the Internet each month via FUNET and other Internet providers, and 8 % of all households already had an Internet connection. With the

exception of Iceland and Australia – two other geographically remote countries – these figures, when compared to the total population, exceed any other country in the world.

4.1 FUNET

Finnish University and Research Network, FUNET, is both the network which connects LANs in Universities and other organizations of higher education to one another, and the organization which runs this network. FUNET network is based on ATM technology as of Autumn 1995, and capacity of trunk lines varies between 34 Mbps – 10 Mbps. There are plans to upgrade to 155 Mbps in the near future. The physical network is provided by Telecom Finland Oy. For more information on FUNET in english, see <http://www.funet.fi/index-en.html>.

FUNET is connected to higher education networks in Nordic countries via NORDUnet. NORDUnet is an international network operator that provides services and international connectivity to the Nordic national research networks in Denmark, Iceland, Finland, Iceland, Sweden and Norway. In many aspects NORDUnet operates as the international branch of these networks. NORDUnet has also connections to the US backbone, the European backbones and to other networks in the nordic region. For more information on NORDUnet, see <http://www.nordu.net/>.

In January 1996 FUNET had 80 members (see http://www.funet.fi/funet/member_en.html). As the membership is limited to organizations involved with research and (higher) education, public and school libraries can not become FUNET members, and they have to use other access providers in order to use the Internet.

4.2 Other Internet access providers

There are several roads to the Internet in Finland. A list of service providers maintained by the University of Turku lists no less than 37 of them (see <http://www.utu.fi/info/yhteydet.html>). Although most of these services are regional, public and school libraries do have many alternatives when they choose a service provider for themselves. The most popular choice for libraries has been the Internet access service provided by the Telecom Finland (see <http://www.inet.fi/telecom/english/>). Other national connectivity providers include EUNET Finland Oy (<http://www.eunet.fi/>) and Finnet company's Kolumbus (<http://www.kolumbus.com/>).

Deregulation of telematics services and competition between providers has brought the prices down to a reasonable level. The end users are still not entirely satisfied: the most common complaint by the active users is that of network congestion: response times are occasionally bad, due to rapid growth of use.

5 Use of IT in Finnish Libraries

5.1 Library systems

Of the 659 libraries that responded to the query, 347 or 52.7 % had an integrated library system. 298 out of 312 non-automated libraries were school libraries: only 27 school libraries (8.3 % of responding school libraries) had a library system. Only nine public libraries had not installed a library system which is not surprising as only those public libraries with some automation – not necessarily a library system – were chosen to this survey. As stated in chapter 1.3.1, those 69 libraries which had reported in the Ministry of Education's survey in Summer '95 as having no IT usage and no intentions to purchase any computer applications during 1995 were not included into this survey.

Of research libraries included in this query, all 29 university libraries (nine of which are departmental or faculty libraries) had an integrated library system (VTLS). Two governmental libraries out of 22 and three regional college libraries out of 31 had not yet purchased such a system.

According to the Ministry of Education's query, 84 % of all municipalities had purchased library systems into their public libraries by the end of 1995. Regional differences were relatively small: at best, 95 % of libraries (in the province of Vaasa in the West coast) had a library system, while at worst (in the province of Turku in South-West Finland) 75 % of libraries were automated. Variation between the provinces is mainly due to varying size of municipalities – in South-West Finland around the city of Turku municipalities are on the average smaller than in other parts of Finland.

The table 5.1 shows the usage of library systems in public libraries 31.12.1995.

	Municipalities	% of all systems
Kirjasto 3000	79	21
Primas	79	21
Pallas	76	21
Kitt	40	11
Oominki	34	9
Fintek	25	7
Gemini	17	5
GeacPlus	4	1
Riimi	4	1
UKAH	4	1
Kilava	3	1
Other	4	1

Table 5.1 Library systems in public libraries

Most library system implementations in public libraries are relatively small (see Fig. 1 for division of systems according to the number of connected PC's and terminals), which reflects well the small size of Finnish municipalities – in 31.12.1992, 78 % (344 of 439) of Finnish municipalities had less than 10.000 inhabitants. However, large systems in public libraries are actually bigger than their counterparts in the university libraries. For instance, Helsinki Metropolitan Area library system which serves an area with more than 800.000 inhabitants has over 500 directly connected PC's and terminals.

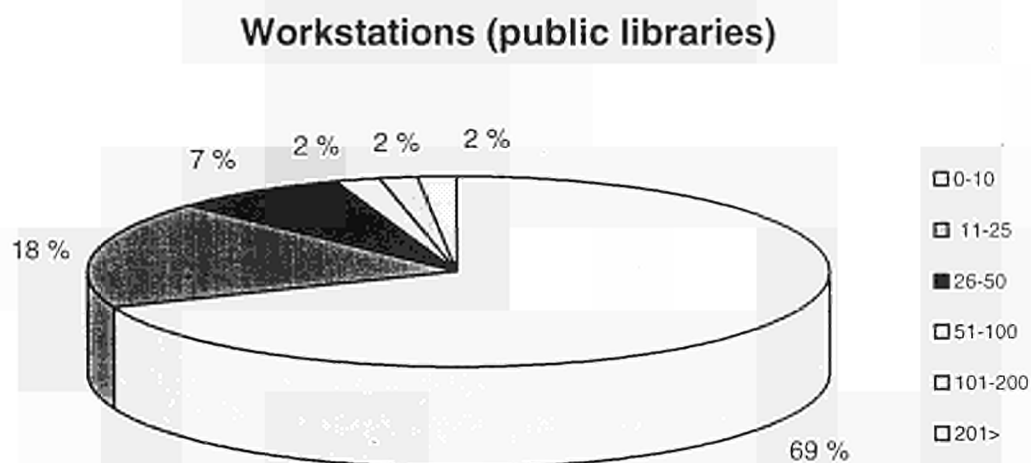


Fig. 1. Division of systems according to the number of connected PC's and terminals

The maintenance of the public libraries' databases is usually delegated in such a way that technical operations are carried out by another organization; only occasionally library staff contains technical personnel who maintains the system. Libraries are of course responsible of the substance; this is obvious for the MARC-based materials database, but the same applies in most cases to the patron databases as well. The systems maintained by the municipal IT centers may use the local resident database directly, but these cases are relatively rare. The public libraries that maintain their own patron databases usually do it manually. It is sometimes also possible to use the national population register to derive new address information for existing patrons.

The public libraries – and all other libraries – act on widely accepted principles of respecting patron's integrity. These include patron's right of access to the data concerning him/her as well as denial of access to any other patron's data.

Fig. 2 shows the division of equipment to PC's, terminals and (virtually non-existent) MAC's. There are still more terminals than PC's (1542/1297) in personnel use, but the number of PC's is growing rapidly. According to the Ministry's survey, at Summer '95 59 % (1194/1787) of all PC's had 286- or 386-processors, and there were only 34 Pentium PC's. In addition to terminal->PC -upgrades, there is therefore also an urgent need to update old PC's to more modern ones. As regards the library patron's, they do have PC's to work with (230 PC's compared with 696 terminals), and rapidly increasing Internet

access and graphical user interfaces will speed up provision of new PC's to patron's use as well.

Workstations (public libraries)

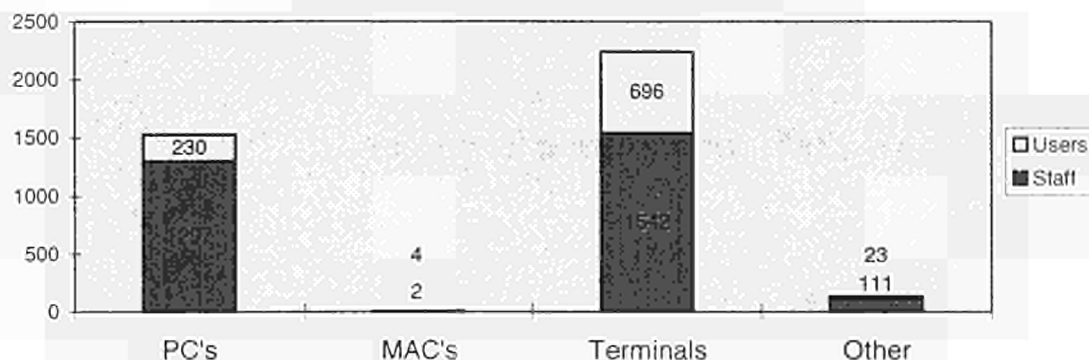


Fig. 2. Division of equipment to PC's, terminals and MAC's

All widely used systems are available on either UNIX or PC platform. VAX VMS is the most popular proprietary environment (a few systems have also a VMS version available), but UNIX is a clear market winner in large and mid-size systems, and Windows in small systems. It is likely that popularity of proprietary platforms will diminish in the future; libraries do not have special performance or safety requirements, because of which for instance banks prefer systems based on IBM mainframes.

The table 5.2 shows the usage of library systems in research libraries according to our survey.

	Libraries	% of all systems
VTLS	33	45
PrettyLib	22	30
Pallas	5	7
Kirjasto 3000	1	1
Tinlib	1	1
Other	6	9

Table 5.2 Library systems in research libraries

Higher education in Finland is decentralized: there are 20 universities, which are geographically dispersed all over the country. It is therefore not surprising that most library system implementations in research libraries are of medium size (see Fig. 3 for division of systems according to the number of connected PC's and terminals). Every second university library has 26–50 PC's and terminals directly connected to the library's computer. Via the university LAN or the FUNET network a lot larger number of users can log on to the OPACs via Telnet.

Workstations (research libraries)

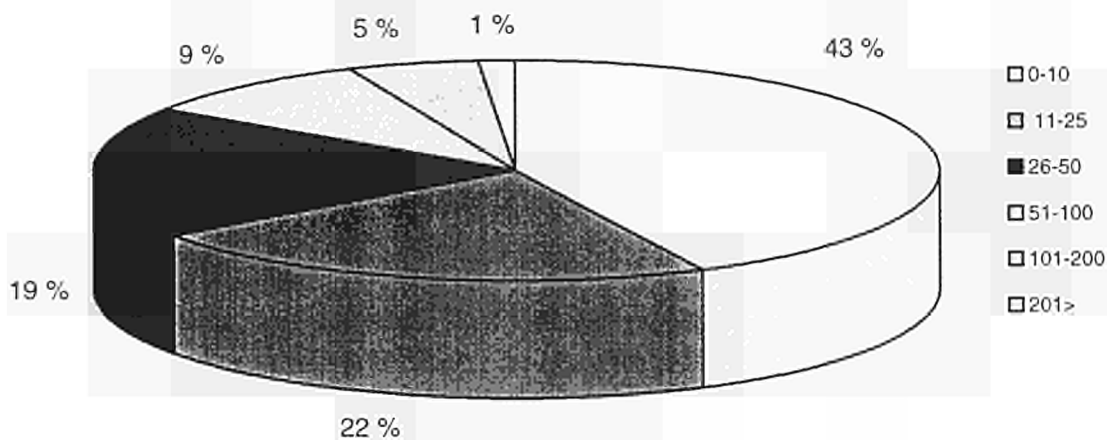


Fig. 3 Division of systems according to the number of connected PC's and terminals

The maintenance of the university libraries' databases is almost always a responsibility of a technical expert (experts) in the library staff. In a few cases several (small) universities cooperate in sharing either the same computer (with two or more databases) or the same database. More than 100 of Helsinki University's departmental, faculty and institutional libraries share the same OPAC. University computer centers assist libraries in tasks related to e.g. networking. In a few universities there is very close cooperation between the computer center and the library – a person working in the computer centre is also responsible of the library's system, and assists library in other IT related tasks as well.

VTLS system managers from different libraries cooperate actively to share their skills; meetings are arranged regularly and there is an email list which is used for discussion on themes like operating system and VTLS updates.

Patron data is extracted from university's student and personnel registers or entered manually for external users. Patron ID's have been divided in such a way that the same library card can be used in all university libraries all over the country.

Fig. 4 shows the division of equipment to PC's, terminals and (almost non-existent) MAC's. There are more PC's than terminals in personnel use (523 vs. 370), and the number of PC's is growing rapidly. Division of these PC's according to the CPU type is not known, but there are good reasons to suppose that majority of them are either 386- or 486-based models. For library user's terminals are still more common choice (241 PC's vs. 411 terminals).

Workstations (research libraries)

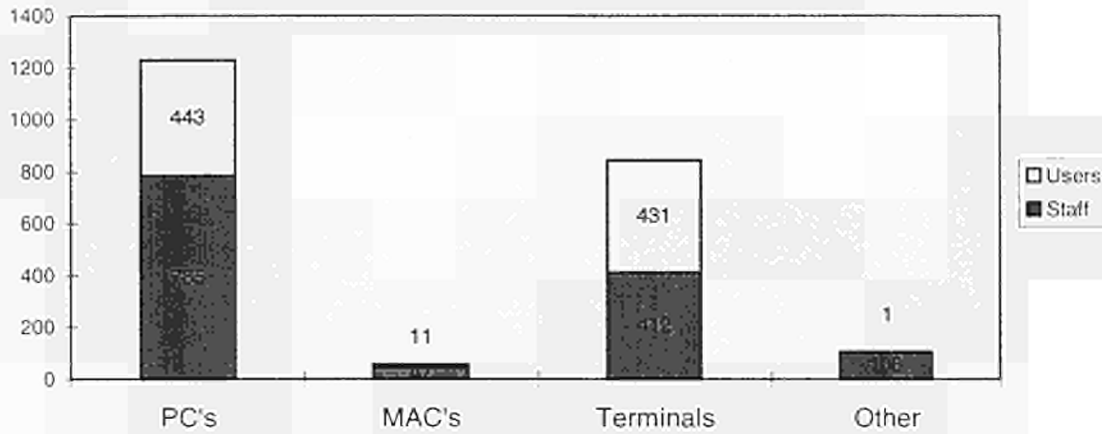


Fig. 4. Division of equipment to PC's, terminals and MAC's

Much of the functionality of the next version of the VTLIS software, VIRTUA, is based on PC clients. All 370 terminals will gradually be removed from personnel use during transition to VIRTUA. It will also be necessary to upgrade many existing PC's to run the VIRTUA client software satisfactorily.

In university libraries, the sole hardware platform is Hewlett-Packard's proprietary HP3000 with the MPE operating system. VIRTUA will support the four most common UNIX brands (Hewlett-Packard's HP-UX, IBM's AIX, Sun's Solaris and DEC's OSF1) in addition to the "traditional" MPE operating system. Some libraries have preliminary plans to switch to UNIX platform familiar to university computer centers, while some others intend to stay true to the current HP3000 platform.

In regional colleges, Windows-based PrettyLib system is a clear market leader. These libraries are usually small and do not require a large UNIX-based system.

The table 5.3 shows the usage of library systems in school libraries according to our survey.

	Libraries	% of all systems
In-house application	9	39
Kirjasto 3000	5	22
Pallas	3	13
PrettyLib	1	4
Other	5	22

Table 5.3 Library systems in school libraries

All school library implementations are small (1–10 connected PC's and terminals). Pallas sites listed above have been born out of co-operation with the local public library. School library's materials are cataloged into public library's OPAC. This kind of cooperation will become more common; however, even more common is looser cooperation in which access from school to the public library OPAC is enabled.

Average system maintenance costs reported by the libraries were in 1994 the following:

University libraries	260.794 FIM	18 responses (out of 20)
Governmental libraries	70.521 FIM	15 responses
Public libraries	153.434 FIM	206 responses
School libraries	16.125 FIM	8 responses
Regional college libraries	64.576 FIM	17 responses

Table 5.4 Library system maintenance costs in 1994

Maintenance costs correlate well with the system's average sizes in different kinds of libraries. In 1995 the overall situation has not changed much from that of 1994:

University libraries	312.200 FIM	16 responses
Governmental libraries	59.266 FIM	16 responses
Public libraries	169.443 FIM	219 responses
School libraries	15.313 FIM	8 responses
Regional college libraries	80.863 FIM	8 responses

Table 5.5 Library system maintenance costs in 1995

In 1994, total costs of the public library network maintenance were 1.055 million FIM. For 370 integrated library systems, if the average maintenance cost was 169.443 FIM, the total system maintenance costs for public library systems were 62,7 million FIM, or about 6 % of total costs.

87 % of 312 libraries that answered to the question about purchase of a new library system had no plans to do it during the next 3 years. 6 % (20 libraries) intended to upgrade during the next year, and 7 % (23 libraries) had plans to change their system during the next three years. Libraries seem to be very satisfied with their current systems! There are at least two good reasons for this satisfaction: a) most libraries have purchased their systems fairly recently, and do not have resources – economical or otherwise – to buy a new system again in near future, and b) all widely used systems are being continuously enhanced by the system vendors. As most library systems used in Finland support FINMARC, ISO2709 exchange format and ISO 6937/2 character set, switchover from one system to another is technically possible, although for example patron and circulation data conversions require extra work.

270 libraries had bought their system (hardware), while 24 public libraries had leased it. 25 libraries, including one university library and 22 public libraries, had rented their systems.

5.1.1 OPAC

Library systems used in Finland don't have identical user interfaces or IR capabilities. Author and title searches are normally used, also in a wider sense co-writers, editors, illustrators etc., but e.g. classification codes can not be used as search terms in all systems. There are also differences as regards as allowing language, year of publication, type of material or other code information for limiting of search. There might also be different search programs for the staff and the public. Most systems support user dialogue in many languages: e.g. VTLS systems in Finland can "talk" Finland's official languages (Finnish and Swedish) and English, and technically the software is capable of supporting up to 12 languages.

Most public libraries allow access to the library's OPAC from the library's premises only (see Fig. 5). As many popular systems do allow Internet access via Telnet, this limitation is quite often due to lack of Internet connectivity to the library. Some libraries have given schools access to the library's database via the municipality's LAN. Book mobiles, which are a central library force in scattered settlement areas, are furnished with connection to OPACs in 30 libraries. According to the Ministry of Education's survey, there are 129 book mobiles (59 % of all book mobiles) which are automated.

The OPAC is available to the users:

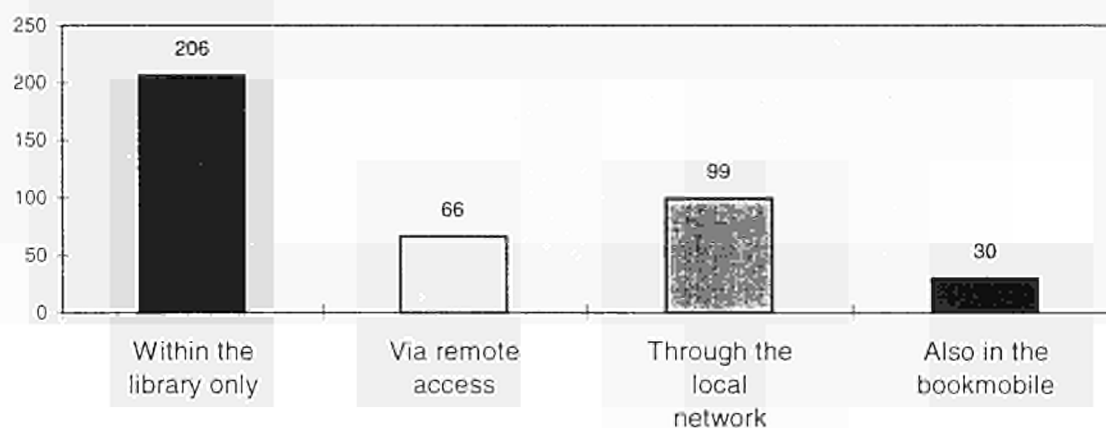


Fig. 5 Access to the library OPAC (public libraries)

Remote access signifies both modem and Internet access.

University library OPACs are accessible either from directly connected PC's and terminals or over the Internet using the Telnet or Hewlett-Packard's VT access protocol. Some systems require user ID and password, but most support anonymous logon (see <http://linnea.helsinki.fi/tkay/vtls/suomvtls.html> for more details).

Graphical user interfaces are still largely missing from Finnish libraries – 15 % of libraries reported as offering this access method. However, relatively many systems do support GUI's already. It's possible that libraries are reluctant to invest on proprietary GUI's provided at the moment, since access to OPAC's based on usage of WWW-browsers like Netscape or Mosaic is becoming more common. On the other hand, it is hardly possible to replace with diminishing economical resources hundreds of terminals still in patrons' use with PC's quickly.

VTLS will provide a WWW-Gateway in the next release of the current software version and also GEAC has a WWW-Gateway prototype running. Finnish library system vendors are likely to start similar development projects in the near future. It seems that WWW is on the way to become a user's network interface to anything, including library OPACs.

5.1.2 Cataloguing module

Almost all libraries use the cataloguing module of their library system. Only three governmental libraries, 17 public libraries, one college library and three school libraries download all their new records from external sources.

Percentage of primary cataloguing depends on a library. All university libraries and a few governmental libraries can download records from LINDA, but depending on how "exotic" the materials are, the percentage of records available for copying varies from over 90 % to below 30 %. Public libraries have more identical collections, so the percentage of downloaded records is on the average higher than in research libraries. However, most libraries do save a lot of time and work by downloading a significant portion of their new records. Average values are the following:

University libraries	53.5 %	23 responses
Governmental libraries	40 %	4 responses
Public libraries	66.9 %	158 responses
School libraries	33.3 %	3 responses
Regional college libraries	37.2 %	9 responses

Table 5.6 Percentage of records downloaded from other systems

Primary cataloguing is a diminishing task, but it will not vanish entirely. Foreign records copied from e.g. the Library of Congress CD-ROM must be furnished with Finnish subject headings (general Finnish Subject Headings List was published in 1994; Swedish version is to be published) and local classification codes.

Source of records to download depends on library type. University libraries download records mainly from the LINDA union catalogue database. Some university libraries are also using the Library of Congress CD-ROM; a simple conversion routine has been developed which converts the USMARC records to FINMARC and modifies the character set of the source records. Libraries from swedish-speaking Åbo Akademi University and

Swedish School of Economics and Business Administration use actively LINNEA's Swedish National Bibliography database SVEN for copy cataloguing purposes.

A few governmental libraries can easily use LINDA database for copy cataloguing as they use VTLS software. Other governmental libraries are using methods like copying from FENNICA National Bibliography CD-ROM. FENNICA is widely used for copy cataloguing purposes, and not only by governmental libraries, but by other kinds of libraries as well.

283 public libraries copy records from the BTJ Kirjastopalvelu's Bike and Biitti databases (see chapter 3.2.5 for more information). Due to current technical limitations, LINNEA databases are not yet available for copy cataloguing purposes for public libraries.

In the near future, availability of Z39.50 applications will eliminate or greatly reduce technical obstacles of copy cataloguing. A library which can use a Z39.50 client for copy cataloguing purposes, can choose between many different domestic and even foreign sources of MARC records, depending on the quality and price of the service.

5.1.3 Circulation module

Circulation routines are taken care of by personnel only in 90 % of all libraries. However, 7 out of 27 university libraries offered end-users a possibility to check out items by themselves. Average percentage of self-service check outs from all check outs in these libraries was 19.6 %. 10 out of 204 public libraries allow check-out as self-service, and there self-service check-out percentage was 10.3 %

12 % of all libraries allow patrons to make reservations and renewals by themselves. Again, 7 university libraries let patrons do these activities (also over the network), while only 16 public libraries are as liberal. In 186 public libraries these tasks are handled by personnel only.

Self-service check-out desks have been developed for e.g. VTLS and Pallas systems. The software and hardware needed is rather expensive, so only large libraries with lots of circulation routines to handle have made investments on these tools.

5.1.4 Acquisitions module

Fig. 6 shows the overall use of acquisition software in 333 libraries that responded to this question. 9 university libraries use the VTLS acquisition module, while 9 use other applications for the job and 11 do the job manually. 174 public libraries utilize their integrated library system for acquisition purposes, while 11 have a separate application and 56 have not automatized their acquisition routines.

Acquisition module

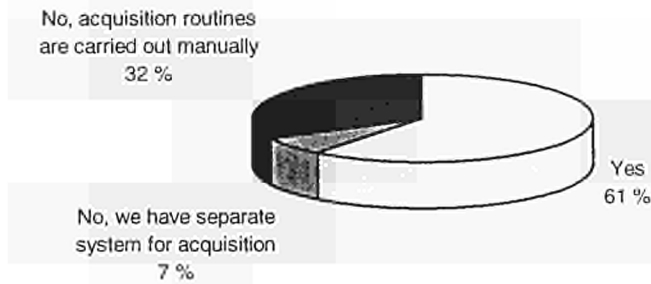


Fig. 6 Acquisition software usage

Acquisition modules of library systems used in Finland do not yet interoperate with automated ordering systems used in bookshops. VTLS has plans to enable such functionality; their message delivery system will be based on ANSI X12 Electronic Document Interchange standard (see <http://enterprise.disa.org/x12/x12home.htm>).

5.1.5 Serials control module

Fig. 7 shows the overall use of serials control software in 330 libraries that responded to this question. 27 university libraries use the VTLS serials control module to manage serials check-in and holdings. 10 out of 20 governmental libraries use the same facilities in their library systems, while 15 out of 231 public libraries take care of these routines with the help of their library system. 13 public libraries have purchased a separate serials control application. 229 libraries, including 197 public libraries, rely on manual serials control management.

Serials control

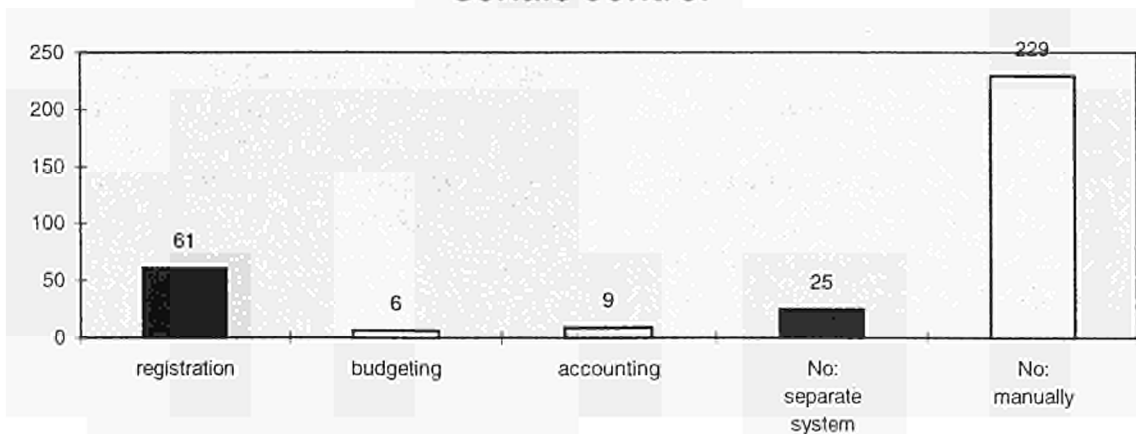


Fig. 7 Serials control software usage

VTLS serials holdings module is based on the USMARC Holdings format. FINMARC Holdings format is basically a Finnish translation of the USMARC Holdings format, although a few minor localizations were required. Serials control modules of Finnish library systems do not yet support FINMARC holdings. Support of MARC Holdings is generally rare in library systems, as implementation of this format is generally regarded as a complex task. Lack of MARC Holdings support does not necessarily make the serials control module's overall functionality worse (or better), but it makes export of holdings data to other library systems more difficult.

5.1.6 Serials routing module

Fig. 8 shows the overall use of serials routing software in 331 libraries that responded to this question. 10 university libraries use VTLS serials routing function. Four university libraries have a separate application, still another four use a manual system. 11 university libraries do not provide serials routing service to their patrons. 14 public libraries use serials routing function of their library system, seven have an another application to this purpose and 57 provide a manual service. 160 public libraries do not provide serials routing services for their patrons.

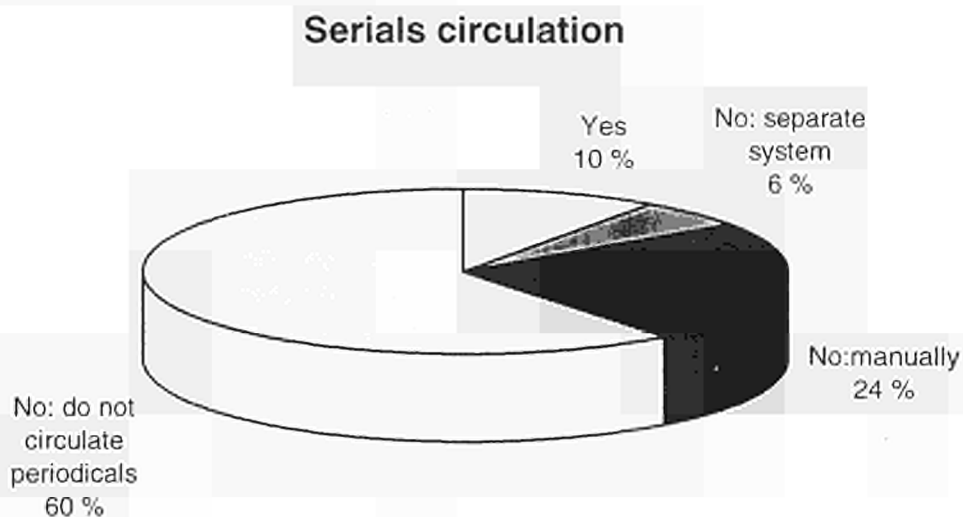


Fig. 8 Serials routing software usage

Serials routing feature is omitted from most library systems used in Finland.

5.1.7 Interlibrary lending

Fig. 9 shows the overall use of ILL software in 317 libraries that responded to this question. 14 university libraries allow usage of the VTLS ILL-related functionality, while 12 take care of these activities manually and 1 library has an independent ILL application. 50 public libraries use the ILL module of their library systems, 17 have a separate ILL software and 173 libraries handle these tasks manually.

Interlibrary lending

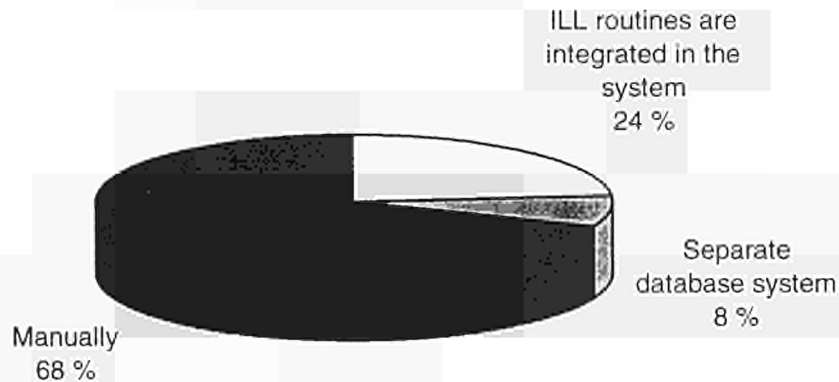


Fig. 9 Interlibrary lending software usage

A majority of public libraries use manual systems for ILL activities. In localizing any document the libraries may use different IT systems like LINDA and MANDA, but in requesting the desired document manual systems come to use. Only 3 % of the requests from the public libraries are sent abroad. This may be explained by the high standard of collections in Finnish libraries; almost all demands can be satisfied without sending requests to foreign libraries. Another explanation is that public library patrons who need foreign resources use research libraries' ILL services.

Ingegerd Nilsson has written a good survey on ILL and document delivery in Nordic research libraries [Nilsson]. She found out that research libraries fairly rarely send request outside Scandinavia. For instance, 83 % of all ILL requests sent abroad from Finland go to other Nordic countries. Services outside Scandinavia are used primarily when document requested was not available at all in Nordic countries. The reasons for preferring other Nordic countries are manifold; quality and swiftness of service are important, as is the easy availability of Nordic union catalogues.

The overall functionality of the existing ILL implementations in Finnish library systems is not very good. VTLS allows for the creation and subsequent printing of requests in target library system. The LINNEA services do not yet include the union catalogue based ILL functionality similar to that in other Nordic union catalogues BIBSYS, DANBIB and LIBRIS. However, LINNEA union catalogues are great tools for localisation of materials within Finland, which is the basic ILL requirement. If the wanted material is not found from Finland, union catalogues in other Nordic countries including NOSP are the most widely used databases, together with the BLDSC services.

There are no ILL implementations based on the ISO ILL protocol in Finland (or in any other Nordic country). Some Finnish vendors intend to enhance their system's ILL functionality, but it is not clear if the ISO ILL protocol will be applied.

5.1.8 Statistics gathering module

77 % of 322 libraries who answered to this question said that statistics are collected from the system to support decision making in the library. 62 libraries do not use this functionality even though the system provides it, and 12 libraries used a library system that actually did not have statistics module at all. Circulation statistics are the ones most commonly extracted from systems.

5.1.9 Report generator

69 % of 297 libraries who answered to this question use a report generator to produce listings and simple printed catalogues including lists of recent acquisitions. Six out of 27 university libraries utilized this feature of VTLS, while 170 out of 215 public libraries did use similar capabilities in their own systems.

5.2 Electronic document ordering and delivery systems

Electronic document ordering has become more common in Finland hand in hand with the increasing usage of the Internet. If school libraries (none of which supported electronic document ordering) are not included, 34.2 % (108/316) of libraries that responded to the question use these services. In every fifth user library, more than 50 % of all ILL requests were carried out electronically (see Fig. 10). Almost all libraries order monographs; 78 libraries order also articles and 38 other materials.

Which proportion of the library's loans requests is carried out electronically?

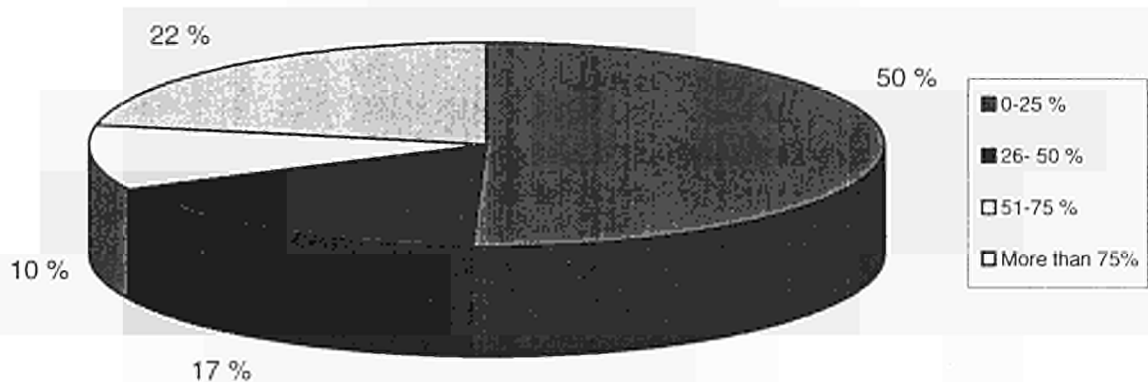


Fig. 10 Proportion of ILL requests carried out electronically

ILL orders are most often sent to central systems and services in Finland or other libraries using the same application. It is a lot less common to use Nordic central systems or services, or central systems and document suppliers outside Scandinavia (see Fig. 11).

Where do you order from?

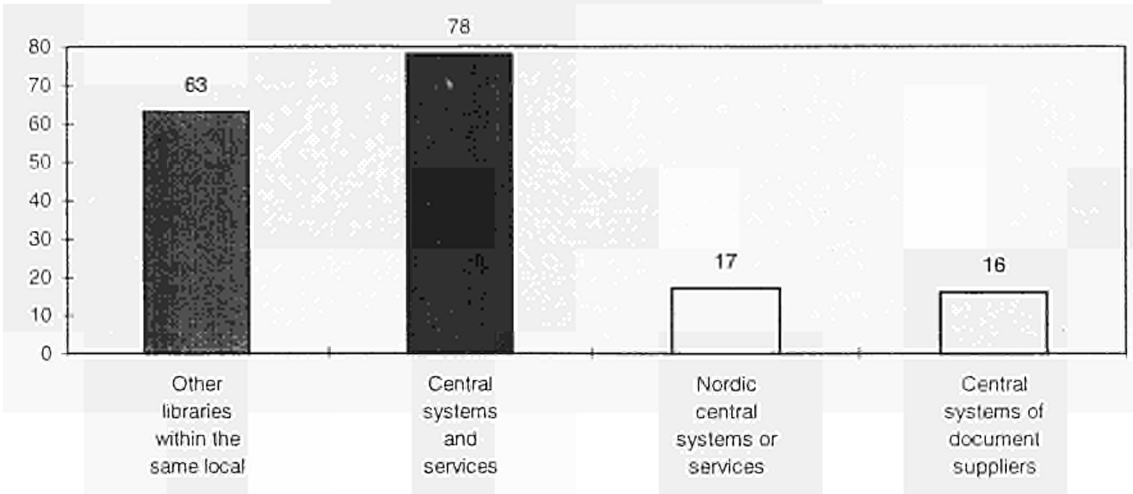


Fig. 11 Targets for ILL requests

Formats in which libraries are able to receive electronically ordered documents are displayed in Fig. 12. Fax and email are the most popular methods.

In which formats is the library able to receive electronically ordered documents?

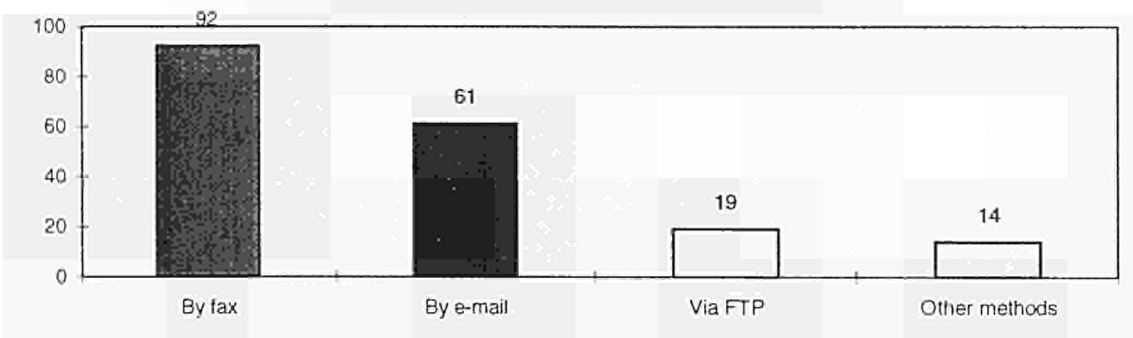


Fig. 12 Formats in which libraries can receive electronically ordered documents

52 (8 % of all respondents) libraries, including 9 university libraries, can deliver documents in electronic form. Formats in which libraries are able to send electronically ordered documents are displayed in Fig. 13. Fax and email are the most widely used methods.

In which forms are documents delivered?

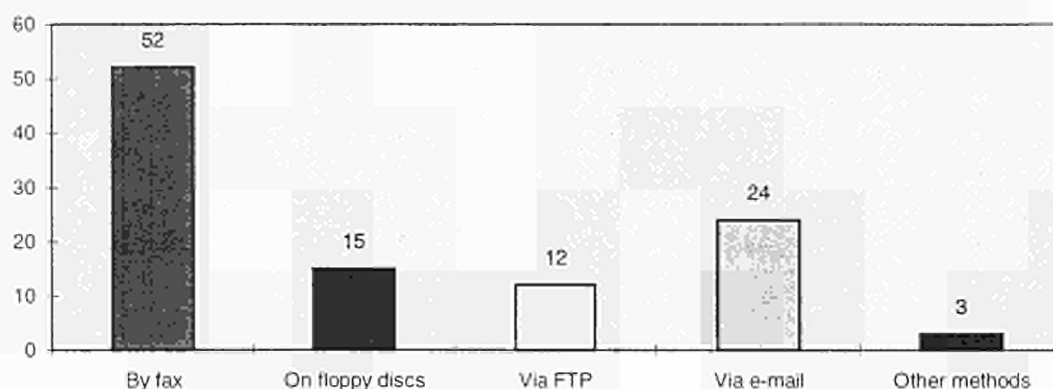


Fig. 13 Formats in which libraries can deliver electronically ordered documents

Libraries are using various applications to carry out ILL-related tasks. VTLS contains functionality required to order books or articles, and this has been taken into use by most university libraries and the National Repository Library. Nordic union catalogues, and especially the Swedish LIBRIS system, are widely used for ILL and DD purposes.

Several important ILL providers in Finland have begun using RLG's Ariel application, with which libraries can both send and receive documents via FTP protocol. Previous version of Ariel used TFTP (Trivial File Transfer Protocol), a simplified version of the FTP. In forthcoming releases Ariel will be capable of supporting also other transfer methods defined in the GEDI (Group on Electronic Document Interchange) specifications (see <http://www.gu.edu.au/alib/iii/docdel/gediv21.htm> for the version 2.1, which was the latest one in February 1996).

5.3 Access to external databases

74.5 % of all public and research libraries that responded to the query offer IR services to the patrons. Of these 240 libraries, 163 tell they provide these services for free, 46 provide it in some cases free of charge and in another 46 libraries the patrons have to pay always for the IR services. The total sum of these replies is 255, because 15 libraries chose more than one option.

Governmental libraries used on the average 12 on-line services. University libraries used 9 and public libraries 6 services, respectively. As might be expected, libraries' favourites were not the same, but depended on the interests of that library. For instance, libraries which had to do with medicine were interested in the Nationale Library of Health Sciences' Medic database.

It is a common library policy in Finland to avoid offering patrons direct access to external databases except to CD-ROMs. Most customers would not be capable of mastering search languages in different target systems, since for the time being there is no standardized interface to them. Library staff will carry out the searches for patrons if they are not

entitled to use the databases by themselves. Trained staff is also capable of doing the searches in the most economic way, and in case of databases liable to a charge this is to be considered. CD-ROMs and other locally maintained databases that are not charged by the use are therefore given to public use more often.

Introduction of Z39.50-based applications and WWW gateways will make use of external databases a lot easier. When such services are widely available, libraries may change their traditional policy and allow direct access to patrons too.

Favourite databases of Finnish libraries are according to this survey the following:

	Public libraries	Research libraries
LINDA	54	39
MANDA	59	1
ARTO	24	11
LINNEA (databank)	14	13
KATI	31	14
KAUKO	14	1
KDOK-MINTTU (databank)	131	29
FINLEX (databank)	6	9
Knight-Ridder (databanks)		5
VAARI	65	1
Dialog (databank)		10
TENTTU (databank)	10	5
Medic	7	2
HELECON (databank)	3	8

Table 5.7 Databases most commonly used in Finnish libraries

Even though the libraries were asked to list databases, 160 libraries reported databank KDOK-MINTTU and 27 LINNEA databank instead of individual databases in them. Therefore it is difficult to say with certainty which database is the most popular. A good candidate is the KATI article index database – which has for many years been the most widely used database in Finland –, followed by LINDA and MANDA. Usage of the two latter databases has been growing rapidly since Summer '95, so the figures presented here are out of date before they were published.

Because libraries were asked to report only the five most actively used databases, some services mentioned by many libraries in the Ministry of Education's IT survey were not mentioned at all in this survey. An example of such a service is the Youth information database, which is available for free from many libraries. Neither were the Nordic Union catalogue databases like LIBRIS or BIBSYS mentioned, although they are quite widely

used by Finnish libraries. Of other foreign databases, only Dialog and Knight-Ridder database products (including Dialog) were included in the favourite list.

OPACs of regional central libraries are an important source of information to public and other libraries on that region. However, MANDA, union catalogue of regional central libraries, makes it possible for public libraries to easily make ILL localization by themselves, instead of sending the ILL requests to the regional central library for analysis and delivery to holding library. VAARI (OPAC of the National Repository Library) is very popular among the public libraries, since the library's ILL service is free (contrary to other libraries' ILL services) and of high quality.

Public libraries have not included the widely used databases of BTJ-Kirjastopalvelu into their replies. This omission is very likely due to the fact that these databases are not used for information retrieval or ILL localization purposes, but for copy cataloguing only.

CD-ROMs have rapidly become very popular in all kinds of libraries. 81.5 % of all research libraries that responded to this question (n = 81) had CD-ROMs, and 60 of these 66 libraries made their databases available to the public as well. In public libraries, 51 % of all responding libraries (n = 247) had CD-ROMs. 45 of these 126 libraries allow patrons to use these databases as well. According to the Ministry of Education's IT survey, 21 public libraries also let users to lend CD-ROMs which did not have copyright preventing such activity.

CD-ROMs are usually implemented on individual PC's only. 51 libraries have installed disks in a network only or on both PC's and network. In public libraries the CD-ROM databases are usually available on main library's different departments. 13 large public libraries have installed them in branch libraries as well.

5.4 Local IT applications

75 libraries have either developed or will soon develop their own IT applications. The scope of these applications varies a lot. Many libraries reported having locally developed systems related to end user training and guidance on how to use the library. Some public libraries have built community and local history information systems (11 and 5 systems, respectively). Though these data systems are very important from the local point of view they will not be discussed here; instead we will concentrate on databases which are relevant from the (inter)national point of view.

Three university libraries (Helsinki School of Economics Library, Helsinki University of Technology Library, Jyväskylä University Library) have built their own database systems which complement the national services like LINDA and ARTO. The Library of Parliament has also built several local databases including a database of Finnish official publications, VILLE (1984-).

Medic, the Finnish medical online reference database is produced by the National Library of Health Sciences (TerKko). Medic is one of databases in the HELECON databank.

Helsinki University Agricultural library maintains AGRI-databases. They are reference databases covering agriculture, food, nutrition, household sciences, consumer research, rural development, forestry and environmental sciences. AGRI-databases are:

ARTIKKELI

– Finnish periodical articles since 1983 (about 21 000 references)

KIRJA

– Finnish monographs since 1986 and foreign monographs since 1987 in the
– Agricultural Library and the department libraries in Viikki (about 24 000 references)

AGRISANASTO

– Finnish thesaurus of agriculture, nutrition, household sciences, consumer research
– and environmental sciences. Agricultural Library 1992.

ForesTree is the bibliographic database of the Helsinki University Library of Forestry. It contains all references which the library has entered into databases HELKA, LINDA, ARTO and KATI/FINFOR. ForesTree's subject matter is forestry, and it contains over 45,000 references to articles, books, serials etc. since 1945.

HELECON is a databank produced by the Helsinki School of Economics Library. It includes e.g. the following reference databases:

ATK – Finnish books and articles on electronic data processing, 1989–, 10.000 records

BILD – acquisitions of the HSEL, 1981–, 77.000 records

FINP – Finnish periodical articles on business and economics, 1980–, 50.000 records

RESCAT – ongoing research in the HSE, 1988–, 2200 records

SCANP – Scandinavian periodical articles and research reports, 1977–, 43.000 records

SCIMA – European and international periodical articles, 1978–, 140.000 records

THES – masters' theses from universities in Finland 1980–1994, 1995– only HSE, 13.000 records

and the following full text databases:

EUROPEAN COMMUNITY DATABASE - reports produced by Deloitte & Touche

EASTERN EUROPEAN DATABASE - business handbooks produced by Deloitte & Touche

KAUPPIS - the daily newspaper Kauppalehti since 1988, references to articles in Optio since 1991

Library produces also several CD-ROMs (HELECON International, HELECON Nordic, HELECON International) in cooperation with Nordic & European libraries and enterprises.

TENTTU is a databank produced by the Helsinki University of Technology Library. In January 1996 it ran on DEC Alpha server with OSF/1 operating system. TENTTU includes e.g. the following reference databases:

TALI - Finnish periodicals articles on technology, 1980–, more than 160.000 records

INSSI - Master's theses from the HUT, 1978–, more than 11.000 records

TKKTUTKII - ongoing research in the HUT

TENTTU databases are also available on CD-ROM.

Jyväskylä University Library is the producer of the JYKBIB database, which contains e.g. the following subdatabases:

KASGRA – Finnish theses in Education

KESKI – Literature related to the Province of Central Finland, about 10.000 records

MUSTI – Finnish Sound Recordings, about 15.000 recordings & 110.000 items included in them

PERHE – Articles & Theses in Family Studies, about 1.500 records

SPORT – International Sport Database, 75.684 records

The library participates in production of the Nordic database on pedagogics, PEPSY, and EUDISED (European Documentation and Information System for Education), which contains information on 13.000 research projects in Education.

Many local database systems (e.g. Tenttu, JYKBIB, Agri, ForesTree) are based on the TRIP information retrieval system. A conversion program has been developed which enables libraries to extract FINMARC data in exchange format and load it into the TRIP database. There is also a WWW Gateway to TRIP; this of course simplifies the use of TRIP-based system a lot.

Helsinki University Library has had two image database projects during 1994-1996. The first project included evaluation of Finnish image database systems and creation of a test database using one of these systems. Scanning and image handling methods were assessed as well. In the beginning of the second project a decision was made to use library's VTLS system instead of a dedicated image database system, since cataloguing of audiovisual materials and usage of MARC 856 tag (Electronic Location and Access) were then possible in the VTLS system as well. More than 100 images were scanned, modified, stored on library's UNIX workstation and then catalogued using VTLS and FINMARC format. End user testing was done using VTLS's PC-based EasyPAC GUI, which can use WWW browsers to fetch and present resource identified with an URL code stored in the 856 tag of a bibliographic record.

Funding from the Ministry of Education and the Finnish Library Association's House of Knowledge -project will help libraries to launch many local IT projects, although it is clear that not all project proposals can be accepted – the funding required by all proposed projects exceed the funds available more than 10 times. Since decisions as to which project proposals will be supported have not been done yet it is not possible to list the projects that will be realized.

The themes of project proposals can be roughly grouped into (network) training, document delivery, content production and enhancement of existing & creation of new subject headings lists. For example, Helsinki University Library has proposed two projects related to contents provision, namely ELEKTRA and MUISTI. ELEKTRA (Electronic publishing and delivery of documents in the Internet) aims to foster electronic publishing of articles and other materials such as university theses. These materials will be catalogued in relevant VTLS databases (OPACs, LINDA, ARTO) and a URL link from the bibliographic record to the resource will be established. The project will also analyze

copyright and billing issues – among the project partners there are two commercial publishers.

Project MUISTI intends to digitize National Bibliographic materials like images and full text of rare materials free of copyright in the University Library's collections. The digitized collections will be made available to end users via the Internet.

5.5 Access to Internet services

According to the Ministry of Education's IT survey, in Summer 1995 68 municipalities had an Internet connection. But 102 municipalities intended to open such a connection before the end of 1995, so by the end of '95 39 % of Finnish municipalities had an Internet connection if everything went according to the plans. Of these 170 municipalities, 74 intended to open Internet access to citizens from the public library during 1995. In our survey, 87 public libraries said that they already had (personnel) access to the Internet.

All universities and some governmental organizations can use FUNET to access the Internet. Many other governmental organizations like the ministries are connected to the Internet via commercial Internet access provider's services. 17 out of 22 governmental organization libraries could use the Internet; similarly, 24 out of 31 regional college libraries had an access to the Internet.

In Autumn 1995 170 libraries reported as being able to use the Internet services. Traditionally email has been the most widely used Internet service, but not so in Finnish libraries: 133 libraries seek information from the Internet, while 124 use it for email delivery (see Fig. 14 for staff use of the Internet). However, email is more and more often used to ILL purposes.

Internet is used by the staff for the following tasks:

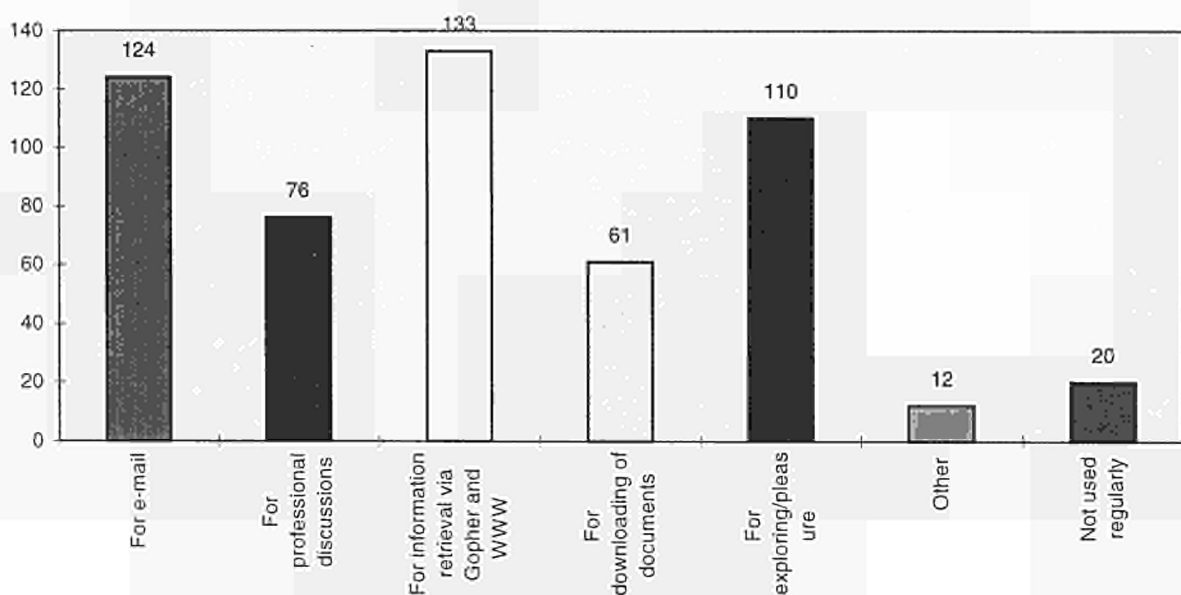


Fig. 14 Staff use of the Internet

The relative popularity of various Internet IR methods is not known, but it is likely that WWW has rapidly become the favourite service. WWW traffic in the Internet is generally increasing exponentially, while for instance Gopher traffic has experienced only linear growth, and is becoming more or less stable by 1996.

There are many subject-related discussion groups based on email aliases. For instance, university libraries have groups which discuss ILL and cataloguing issues. The existence of these highly relevant lists explains the fact that 76 libraries use the Internet for professional discussions. Many librarians have also joined international lists such as PACS-L, but most of these library-related lists are too US-centered to be of major interest for Finnish libraries.

Only 20 libraries with Internet access do not use it regularly. Most libraries have obviously found the Internet useful and are capable of finding relevant information from there. The reasons for non-use are not known, but lack of time or funding may prevent some libraries from utilizing the Internet.

103 libraries including 20 university libraries and 51 public libraries allow Internet access to the library patrons as well. As a result of the Finnish Library Association's House of Knowledge project and additional funding from the Ministry of Education, the number of public libraries with Internet services is likely to grow very rapidly. Provision of Internet services for all Finns from the public library is indeed one of the cornerstones of Finnish library policy.

In some libraries provision of Internet access is very well organized: for instance, in the Jyväskylä University Library there are over 40 terminals and PC's in the main library only from which the library users can access the Internet services. In public library sector, the Helsinki City library's Kaapeli branch library was the first one in the world with a home page in the Internet (see <http://www.kaapeli.fi/knot-at-cable.html>); the library also begun to provide Internet access to patrons very early.

Especially in public libraries Internet access services have rapidly become enormously popular, and patrons have to make reservations in advance to be able to use the Internet. It is not known if and how (public) libraries control the Internet usage by patrons.

Internet is used by the users for the following tasks:

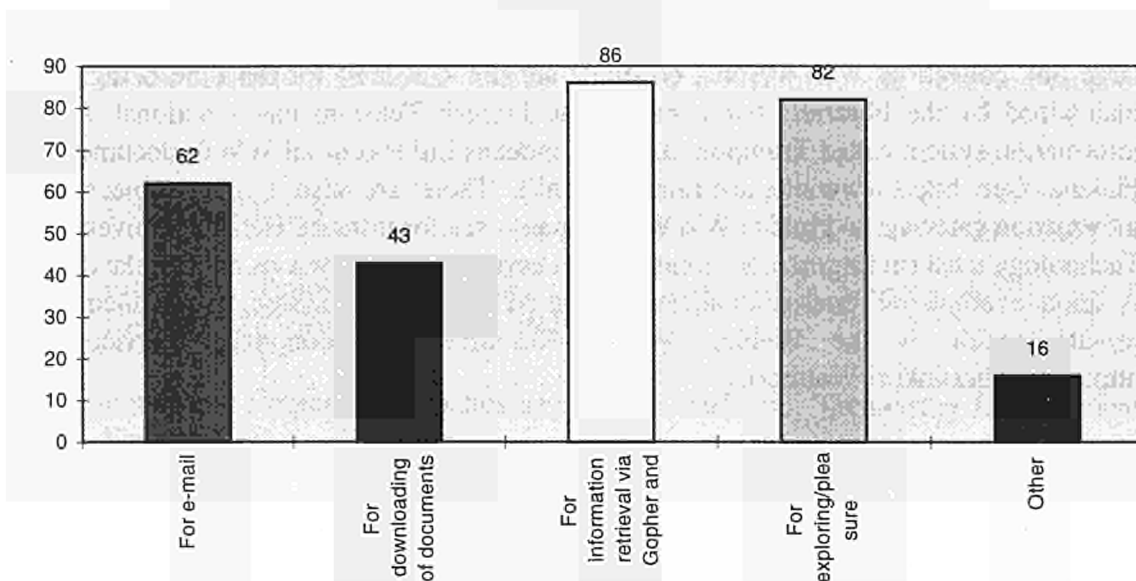


Fig. 15. Patron use of the Internet

Patrons use the Internet mainly for IR or "surfing" purposes. The users are primarily boys and young men, although some girls and young women are also active Internet users. Use of the Internet for "serious" purposes is increasing as more and more relevant information is available in the net. New users seem to rely mainly on serendipidity when searching for data, but seasoned users know already where to get things that they need or how to search for it. Some university libraries are arranging courses on Internet use to students; it is not known how much public libraries have resources for assisting their Internet users.

Libraries which started by making information available in the Internet via Gopher back in 1993-1994 have largely deserted the already old-fashioned Gopher technology and have instead or in addition begun to provide WWW-based services. In universities this change is related to overall change from Gopher to WWW.

56 libraries reported that they had a WWW homepage in the Internet. 54 libraries had plans to provide one during the next 12 months (October '95 – October '96). Almost all libraries provide access from their server to general information about the library itself, and links to selected resources in the Internet. Usually it is the library personnel's responsibility to maintain the library's WWW pages – in 20 % of all cases it is the parent organization's task to maintain the library's server.

Helsinki City Public Library has built the National Public Library Homepage which is available at <http://www.lib.hel.fi/syke/>. The library has also compiled a page (see <http://www.lib.hel.fi/syke/wwwkirjastot.html>) which contains links to all public libraries that have a homepage; 29.2.1996 this page contained links to 49 libraries. Helsinki University Library has built a similar link page to home pages in 45 university, college and governmental libraries (see <http://linnea.helsinki.fi/tkay/kirjpalvelut/suomkirj.html>). So, by the end of February '96 almost 100 Finnish libraries have built a homepage and made it available via WWW. Quality of these services varies, but some (like The Helsinki City

Public Library's server at <http://www.lib.hel.fi/englanti/english.html>) contain a lot of useful, up-to-date information on the library and it's activities.

The public libraries' National Homepage and the Helsinki University Library's server contain also links to other useful Internet resources. However, WWW indexes and really large link collections with national coverage are not – at least for the time being – not maintained by the libraries. For instance, the Finnish Telecom has a national WWW information system called Trampoliini, which indexes full text of all WWW documents in Finland (see <http://www.inet.tele.fi/trampoliini/>). There are also a few subject-based information gateways to Finnish WWW resources – see for instance Helsinki University of Technology's list (in English) of Finnish Web Servers at <http://www.cs.hut.fi/finland.html>. A good example of international, subject-based information system maintained by a private person is the WebEc, WWW Resources in Economics -service (see <http://www.helsinki.fi/WebEc/>).

There have been discussions on whether libraries should provide subject-based information services on the area of e.g. culture, but for the time being there is no activity in this area. A useful model for such activity is the Danish CultureNet project managed by the Royal Library (see <http://www.kulturnet.dk/>).

6 Conclusion

Finnish libraries are active users of information technology. Only the smallest libraries do not have an integrated library systems, roughly two out of three libraries already provide access to external databases and a large number of libraries is already connected to the Internet.

Good higher education system of librarians – there are three university institutions responsible of librarians' training – guarantees excellent basic professional skills for future librarians, also in the area of use of IT. Extension studies on IT for librarians already working in libraries are also widely available; one of the organizers of such courses is the Institute for Extension Studies at the University of Tampere (TYT).

As every second Finn is a public library user, the public library is a natural choice to become an Internet center to all citizens. Funding from the Ministry of Education and increasing usage of IT will help the libraries to fulfill this new task as well as the more traditional ones which will remain. Those libraries who already provide Internet services have reported that they are extremely popular. As a result of Internet access services libraries have got a lot of new users (especially boys and young men) who previously were not among the most active library users. Although libraries' economic status has not improved during the last five years, their already very good status in Finnish society seems to be getting better still.

In addition to providing Internet connections to patrons, libraries will in the future become publishers by converting printed materials in their collections to digital form. This, along with increasing popularity of electronic publishing in general, will change the current usage pattern of libraries to some extent, especially in research libraries. In 80's the patrons had to access the library to use the card catalog; since the beginning of 90's they have been

able to use the libraries' OPACs via the LAN or FUNET, but the patrons still have to visit library to get the material they need in printed form. In the future, the patrons get quite often also the documents directly from the Internet; it may also be that they do not need the OPAC to localize the documents they need. Instead, services like WWW indexes not necessarily maintained by libraries can be used. Libraries in Finland and elsewhere must assess carefully what they should do to best cope with the rapidly changing situation.

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Basic statistical information on public library activities for 1988-1994 is available in English in the Internet (see <http://www.kaapeli.fi/~fla/statistics.html>). A lot of other information, including additional statistics, is available in Finnish from the public libraries

home page in the net (see <http://www.lib.hel.fi/syke/index.html>). There is as of yet no similar data available in the Internet for the school and research libraries.

The Finnish Library Association's House of Knowledge -project provides statistics about the Internet use in the public libraries (see <http://www.kaapeli.fi/tiedontalo/tt-til.html>). The information is extracted from the Ministry of Education's IT survey made in Summer '95 [see Yleisten].

General information about the LINNEA library network (see chapter 3.2.1) is available in English at <http://linnea.helsinki.fi/enindex.html>.

Appendix 1

Research Libraries Selected for the Questionnaire Survey

ALKON TIETOPALVELU

Alko Ltd. Information Service
Porkkalank. 52 A, 4. krs, 00180 Helsinki
PL 350, 00101 Helsinki

MUSEOVIRASTON KIRJASTO

Library of the National Board of Antiquities
Nervanderink. 13
PL 913, 00101 Helsinki

TILASTOKIRJASTO. TILASTOKESKUS

Library of the Statistics Finland
Annank. 44
PL 504, 00101 Helsinki

KANSALLISARKISTO. KIRJASTO

The National Archive of Finland. Library
Rauhank. 17
PL 258, 00171 Helsinki

DEUTSCHE BIBLIOTHEK - SAKSALAINEN KIRJASTO

German Library
Saksalainen kirjasto - Tyska biblioteket rf
P. Makasiinik. 7
00130 Helsinki

EDUSKUNNAN KIRJASTO

Library of Parliament
Aurorank. 6
00102 Helsinki

HELSINGIN YLIOPISTO. ELÄINLÄÄKETIETEELLISEN TIEDEKUNNAN KIRJASTO

Helsinki University. Faculty of Veterinary Medicine Library
Hämeent. 57
PL 6, 00581 Helsinki

TURUN KAUPPAKORKEAKOULUN KIRJASTO

Library of the Turku School of Economics
Rehtorinpellonk. 3
20500 Turku

MAANPUOLUSTUSKORKEAKOULUN KIRJASTO

National Defence College Library
Puolustusvoimat
Maurink. 1
PL 266, 00171 Helsinki

GEOLOGIAN TUTKIMUSKESKUKSEN KIRJASTO

Library of the Geological Survey of Finland
Betonimiehenkuja 4
02150 Espoo

HELSINGIN YLIOPISTON KIRJASTO. PÄÄKIRJASTO

Helsinki University Library
Helsingin yliopisto
(Unionink. 36)
PL 15, 00014 Helsingin yliopisto

SLAAVILAINEN KIRJASTO

Slavonic Library. University of Helsinki
Helsingin yliopiston kirjasto
(Neitsytpolku 1 b)
PL 37, 00014 Helsingin yliopisto

OPISKELIJAKIRJASTO

Undergraduate Library. University of Helsinki
Helsingin yliopiston kirjasto
(Leppäsuonk. 9 E)
PL 53, 00014 Helsingin yliopisto

LUONNONTIETEIDEN KIRJASTO

Helsinki University. Science Library
Helsingin yliopisto
Matemaattis-luonnontieteellinen tiedekunta
(Teollisuusk. 23)
PL 26, 00014 Helsingin yliopisto

MAATALOUSKIRJASTO

Agricultural Library. University of Helsinki
Helsingin yliopisto
Maatalous-metsätieteellinen tiedekunta
(Viikki, A-rakennus)
PL 27, 00014 Helsingin yliopisto

METSÄKIRJASTO

Library of Forestry. University of Helsinki
Helsingin yliopisto
Maatalous-metsätieteellinen tiedekunta
(Unionink. 40 B)
PL 24, 00014 Helsingin yliopisto

HISTORIAALLIS-KIELITIETEELLINEN KIRJASTO

History and Philology Library. University of Helsinki
Helsingin yliopisto
Humanistinen tiedekunta
(Hallitusk. 11 (Porthania))
PL 4, 00014 Helsingin yliopisto

KASVATUSTIETEELLISEN TIEDEKUNNAN KIRJASTO

Education Library. University of Helsinki

Helsingin yliopisto

Kasvatustieteellinen tiedekunta

(Bulevardi 18)

PL 39, 00014 Helsingin yliopisto

TERVEYSTIETEIDEN KESKUSKIRJASTO

The National Library of Health Sciences. University of Helsinki

Helsingin yliopisto

Haartmanink. 4

00290 Helsinki

OIKEUSTIETEELLISEN TIEDEKUNNAN KIRJASTO

Law Library. University of Helsinki

Helsingin yliopisto

Oikeustieteellinen tiedekunta

(Fabianink. 24 B)

PL 4, 00014 Helsingin yliopisto

TEOLOGISEN TIEDEKUNNAN KIRJASTO

Theology Library. University of Helsinki

Helsingin yliopisto

Teologinen tiedekunta

(Neitsytpolku 1 b)

PL 37, 00014 Helsingin yliopisto

VALTIOTIETEELLISEN TIEDEKUNNAN KIRJASTO

Social Science Library. University of Helsinki

Helsingin yliopisto

Valtiotieteellinen tiedekunta

(Aleksanterink. 7)

PL 33, 00014 Helsingin yliopisto

ILMATIETEEN LAITOKSEN KIRJASTO

Finnish Meteorological Institute Library

Vuorik. 24

PL 503, 00101 Helsinki

JYVÄSKYLÄN YLIOPISTON KIRJASTO

Jyväskylä University Library

Jyväskylän yliopisto

Seminaarink. 15

PL 35, 40351 Jyväskylä

JOENSUUN YLIOPISTON KIRJASTO

Joensuu University Library

Yliopistok. 2

PL 107, 80101 Joensuu

HELSINGIN KAUPPAKORKEAKOULUN KIRJASTO

Helsinki School of Economics Library

Chydenia, Runebergink. 22-24

KANSANELÄKELAITOKSEN TIETOPALVELU

Information Service of the Social Insurance Institution

Nordenskiöldink. 12

PL 450, 00101 Helsinki

KANSANTERVEYSLAITOS. KIRJASTO- JA TIETOPALVELUTOIMISTO

National Public Health Institute. Library and Information Service

Mannerheimintie 166

00300 Helsinki

KUOPION YLIOPISTON KIRJASTO

Kuopio University Library

Kuopion yliopisto

Savilahdent. 9

PL 1627, 70211 Kuopio

LAPPEENRANNAN TEKNILLISEN KORKEAKOULUN KIRJASTO

Lappeenranta University of Technology Library

Skinnarilankatu

PL 20, 53851 Lappeenranta

MERENTUTKIMUSLAITOKSEN KIRJASTO

Finnish Institute of Marine Research. Library

Lyypekinkuja 3 A

PL 33, 00931 Helsinki

METSÄNTUTKIMUSLAITOKSEN KIRJASTO

Library of the Finnish Forest Research Institute

Rillitie 8

PL 18, 01301 Vantaa

VENÄJÄN JA ITÄ-EUROOPAN INSTITUUTIN KIRJASTO

Library of the Institute for Russian and East European Studies

Armfeltintie 10

00150 Helsinki

OULUN YLIOPISTON KIRJASTO

Oulu University Library

Oulun yliopisto

Linnanmaa

PL 450, 90571 Oulu

OULUN YLIOPISTO. SNELLMANIAN KIRJASTO

Oulu University. Snellmania Library

PL 150

90571 OULU

OULUN YLIOPISTO. LÄÄKETIETEELLISEN TIEDEKUNNAN KIRJASTO

Oulu University. Library of the Faculty of Medicine

Kajaanintie 52 A

90220 OULU

TEKNILLISEN KORKEAKOULUN KIRJASTO
Helsinki University of Technology. Library
Otaniementie 9
02150 Espoo

LAPIN YLIOPISTON KIRJASTO
Lapland University Library
Lapin yliopisto
Yliopistonk. 8
PL 122, 96101 Rovaniemi

PATENTTI- JA REKISTERIHALLITUS. KIRJASTO JA TIETOPALVELU
The National Board of Patents and Registration. Library and Information Services
Albertink. 25
00180 Helsinki

SUOMALAISEN KIRJALLISUUDEN SEURAN KIRJASTO
Library of the Finnish Literature Society
Hallitusk. 1
PL 259, 00171 Helsinki

SIBELIUS-AKATEMIAN KIRJASTO
Sibelius Academy Library
Töölönk. 28
PL 86, 00251 Helsinki
*90-405441/lainaus 541, kirj.hoit. FK Irmeli Koskimies 539
90-4054542

SÄTEILYTURVAKESKUKSEN KIRJASTO
Finnish Centre for Radiation and Nuclear Safety. Library
Laippatie 4 A, 3. krs
PL 14, 00881 Helsinki

SUOMEN RAKENNUSTAITEEN MUSEON KIRJASTO
Library of the Museum of Finnish Architecture
Kasarmik. 24
00130 Helsinki

SOSIAALI- JA TERVEYSMINISTERIÖN KIRJASTO
Ministry of Social Affairs and Health Library
Snellmanink. 4-6
PL 267, 00171 Helsinki

TURUN YLIOPISTON KIRJASTO. YLEINEN KIRJASTO
Turku University Library
Turun yliopisto
Yliopistonmäki
20500 Turku

TURUN YLIOPISTON KIRJASTO. HUMANISTINEN TIEDEKUNTAKIRJASTO
Turku University. Library of the Faculty of Humanities
Henrikink. 2
20500 TURKU

TURUN YLIOPISTON KIRJASTO. LÄÄKETIETEELLINEN TIEDEKUNTAKIRJASTO
Turku University Library. Library of the Medical Faculty
Kiinamyllynk. 10
20520 TURKU

TAIDETEOLLISEN KORKEAKOULUN KIRJASTO
The University of Industrial Arts Library
Hämeentie 135 C
00560 Helsinki

TEATTERI- JA TANSSIALAN KESKUSKIRJASTO
Central Library of Theatre and Dance
Teatterikorkeakoulu
Tehtaank. 27-29 K
PL 340, 00151 Helsinki

TYÖMINISTERIÖN KIRJASTO. TAMPEREEN YKSIKKÖ
Ministry of Labour Library, Tampere
Uimalank. 1
PL 536, 33101 Tampere

TAMPEREEN TEKNILLISEN KORKEAKOULUN KIRJASTO
Tampere University of Technology Library
Korkeakoulunk. 6, Hervanta
PL 537, 33101 Tampere

TYÖTERVEYSLAITOKSEN TIETOPALVELUKESKUS
Institute of Occupational Health Information Service Centre
Topeliuksenk. 41 a A
00250 Helsinki

ULKOASIAINMINISTERIÖN KIRJASTO
Library of the Ministry of Foreign Affairs
Merikasarmi
PL 176, 00161 Helsinki

VAASAN YLIOPISTON KIRJASTO
Vaasa University Library
Vaasan yliopisto
Raastuvank. 33
PL 331, 65101 Vaasa

SUOMEN YMPÄRISTÖKESKUKSEN KIRJASTO
Finnish Environmental Agency. Library
Kesäkatu 6
PL 140, 00251 Helsinki

VALTION TEKNILLINEN TUTKIMUSKESKUS. INFORMAATIOPALVELULAITOS
Technical Research Centre of Finland. Information Service
Vuorimiehentie 5
PL 42, 02151 Espoo

VARASTOKIRJASTO
The National Repository Library
Päivärannantie 10
PL 1710, 70421 Kuopio

TAMPEREEN YLIOPISTON KIRJASTO. PÄÄKIRJASTO
Tampere University Library
Tampereen yliopisto
Yliopistonk. 38
PL 617, 33101 Tampere

KASVATUS- JA KIELITIETEIDEN OSASTO
Tampere University Library. Department of Education and Philology
Tampereen yliopiston kirjasto
Pyynikintie 2
PL 607, 33101 Tampere

LÄÄKETIETEELLINEN OSASTO
Tampere University Library. Department of Medicine
Tampereen yliopiston kirjasto
Päätoimipiste: Biolääketieteen laitos, Lääkäriä. 3
PL 607, 33101 Tampere

SVENSKA HANDELSHÖGSKOLANS BIBLIOTEK
Swedish School of Economics and Business Administration. Library
Anneg. 44 A, 3. vån.
PB 479, 00101 Helsingfors

ÅBO AKADEMIS BIBLIOTEK
Library of Åbo Akademi University
Åbo Akademi
Domkyrkog. 2-4
20500 Åbo

KOTIMAISTEN KIELTEN TUTKIMUSKESKUS. KIRJASTO
Finnish Research Center for Domestic Languages. Library
Sörnäisten rantatie 25
00500 Helsinki

NÄKÖVAMMAISTEN KIRJASTO
Library for the Visually Handicapped
Mäkelänk. 58-60
00510 Helsinki

PORIN TEKNILLINEN KIRJASTO
Technical Library of Pori
Satakunnan va. ammattikorkeakoulu (Porin teknillinen oppilaitos &

TTKK/Tietotekniikan laitos, Porin toimipiste)
Korventie 50
28600 Pori

STAKES, SOSIAALI- JA TERVEYSALAN TUTKIMUS- JA KEHITTÄMISKESKUS.
TIETOPALVELU
STAKES, National Research and Development Centre for Welfare and Health. Information
Service
Siltasaarenk. 18 A, 3 krs
PL 220, 00531 Helsinki

SUOMEN PANKIN KIRJASTO
Library of the Bank of Finland
Rauhank. 19
PL 160, 00101 Helsinki

TYÖVÄENLIIKKEEN KIRJASTO
Library of the Labour Movement
Työväenperinne - Arbetartradition ry
Paasivuorenk. 5
00530 Helsinki

VALTION TAIDEMUSEON KIRJASTO
The Finnish National Gallery. Library
Valtion taidemuseo
Kuvataiteen keskusarkisto
Kaivok. 2-4
00100 Helsinki

State-of-the-Art Study of Information Technologies in the Nordic Libraries

»Kysely yleisille ja korkeakoulukirjastoille sekä keskeisille virastokirjastoille«

Osa A: Kirjastojärjestelmä

A 1 Onko kirjastolla oma kirjastojärjestelmä paikallisten toimintojen automatisoimiseksi?

- Kyllä, vuodesta
 Kyllä, yhteinen järjestelmä:
 Ei, mutta olemme päättäneet hankkia ohjelmiston
 Ei (mene suoraan osaan B)

A 2 Ohjelmiston kuvaus (vastaa niin tarkoin kuin mahdollista)

A 2.1 Ohjelmiston nimi:

A 2.2 Ohjelmistotoimittaja:

Osoite:

Puh. no & FAX:

A 2.3 Laitteistoympäristö:

A 2.4 Käyttöjärjestelmä (DOS, MAC, WINDOWS, UNIX, VMS etc.):

A 2.5 Anna henkilökunnan ja yleisön käytössä olevien laitteiden määrät

Laji	PC	MAC	Päätteet (VT 100 tai vastaava)	Muu
Henkilökunta				
Yleisö				

A 2.6 Kirjastojärjestelmän näyttöluettelo:

- on ainoastaan merkkipohjainen omaa myös graafisen käyttöliittymän

A 2.7 Jos näyttöluettelossa on graafinen käyttöliittymä, se on:

- ohjelmistotoimittajan kehittämä
 kirjastossa rakennettu

A 2.8 Kuka vastaa kirjaston järjestelmän ylläpidosta?

- henkilökunta isäntäorganisaatio kunnan atk-osasto
 ohjelmistotoimittaja palvelutoimisto
 muu _____

A 2.9 Miten monta työpäivää kirjaston henkilökunta käyttää järjestelmän ylläpitoon?

Kuukaudessa noin: _____ pv.

A 2.10 Onko kirjastolla muita tietokantoja paikallisjärjestelmässä oman tietokannan lisäksi?

Ei

Kyllä (anna lisätietoja seuraavalla sivulla)

Tietokannan nimi

Kate/sisältö

Tietu määrä

Tietokannan nimi

Kate/sisältö

Tietu määrä

(jos tarvitset lisätilaa, käytä erillistä paperia)

A 3 Ohjelmiston toimintojen käyttö kirjastossa

A 3.1 Näyttöluettelo on käytettävissä:

- vain kirjastossa Internetin/modemin välityksellä
 paikallisverkon kautta myös kirjoitustulosta

A 3.2 Käytättekö ohjelmiston luettelointiohjelmää?

- Kyllä Ei

A 3.3 Miten suuri osuus uusista tietueista hankitaan kopioidulla (downloadaus) ne muista bibliografisista tietokannoista? _____ %

A 3.4 Lainaustoimintoja (lainaukset, palautukset etc.) hoitaa

- vain henkilökunta myös asiakkaat itsepalveluna

A 3.5 Jos itsepalvelu on käytössä, mikä on itsepalvelulainauksen osuus kaikista lainoista? _____ %

A 3.6 Saavatko asiakkaat lehdä itse varauksia tai uusintoja kirjastossa?

- Kyllä Ei

A 3.7 Saavatko asiakkaat käyttää automaattista varaustekniikka- ja uusintoaohjelmaa etäkäyttönä?

- Kyllä Ei

Käytetäänkö kirjasto seuraavia ohjelmamoduleita

A 3.8 Hankintaohjelmisto:

- Kyllä Ei, kirjastolla on erillinen hankintaohjelma
 Ei, aineiston hankinta hoidetaan manuaalisesti

A 3.9 Kausijulkaisujen saapumisvalvontaohjelmisto

- Kyllä saap valvontaan budjettiin määrärahaseurantaan
 Ei, kirjastolla on erill. ohjelma Ei, saapumisvalvonta hoidetaan manuaalisesti

A 3.10 Lehtikierto:

- Kyllä Ei, kirjastolla on erillinen lehtikierto-ohjelma
 Ei, lehtikierto hoidetaan manuaalisesti Ei, kirjastossa ei ole lehtikiertoa

A 3.11 Milen kirjasto hoitaa kaukolainauksen (paikalliset rutiinit)?

- Kaukopalvelu on osa kirjastojärjestelmää Kirjastolla on erillinen kaukopalvelusovellus

A 3.12 Tilastointimoduli:
Kootaanko tilastointiohjelmalla tietoja kirjaston hallinnon avuksi?

- Ei Ohjelmistossa ei ole tilastointimodulia
 Kyllä, ohjelmalla kerätään tietoja (antakaas esimerkkejä):

A 3.13 Jos järjestelmässä on raporttgeneraattori, käytetäänkö sitä säännöllisesti valikoimaluetteloiden tai hankintalistojen tuottamiseen?

- Ei, kirjasto ei käytä tätä ominaisuutta Kyllä (antakaas esimerkkejä):

A 4 Tulevaisuuden suunnitelmat

A 4.1 Aikooko kirjasto hankkia (uuden) kirjastojärjestelmän?

- Vuoden sisällä 3 vuoden sisällä Ei suunnitelmia

A 4.2 Millaisia suunnitelmia kirjastolla on oman järjestelmänsä ja sen palvelutason kehittämiseksi,

Seuraavan vuoden aikana (kerro painopistealueet):

Seuraavan 3 vuoden aikana (kerro painopistealueet):

A 4.3 Mitkä ovat kirjaston oman kirjastojärjestelmän kokonaiskustannukset viime vuonna (poislukien palkat). Summaan pitäisi sisällyttää uudet hankinnat, ylläpitomaksut, palvelu- ja lisenssimaksut, laitteiston ja ohjelmiston päivityskustannukset, jne.

Kirjasto investoi viime vuonna: mk.

A 4.4 Anna kirjaston oman kirjastojärjestelmän kokonaiskustannukset kuluvana vuonna (poislukien palkat). Summaan pitäisi sisällyttää uudet hankinnat, ylläpitomaksut, palvelu- ja lisenssimaksut, laitteiston ja ohjelmiston päivityskustannukset, jne.

Kirjasto investoi tänä vuonna: mk.

A 4.5 Onko kirjastojärjestelmä ostettu, liisattu vai vuokrattu?

- ostettu liisattu vuokrattu

Kommentteja

Osan A kysymyksiä voi kommentoida tässä tai liitteessä. Kerro myös, mitä kohtaa kommentoit.

Osa B: Automaattinen dokumenttien tilaus (ILL)

B 1 Automaattisella tilaamisella tarkoitetaan tässä sitä, että kirjasto voi käyttää ohjelmia kaukopalvelutilausten ja -viestien luontiin ja lähettämiseen vastaanottajakirjastoille. Ohjelmat voivat olla osa omaa kirjastojärjestelmää tai muuta ohjelmistoa.

B 1.1 Käyttääkö kirjasto automatisoituja tilausjärjestelmiä?

- Ei (mene osaan C) Kyllä

B 1.2 Voivatko asiakkaat tilata julkaisuja itse?

- Ei Kyllä

B 1.3 Milen suuri osa kirjaston kaukolainatilauksista on automatisoitu?

- < 25% < 50% < 75% > 75%

B 1.4 Kirjaston kaukolainatilausten kokonaismäärä 1994:

B 2 Millaisia dokumentteja tilataan automatisoidusti?

- kirjoja (kaikenlyyppiset monografiat) artikkeleita
 muita aineistoja (tarkenna):

B 3 Minne tilauksia lähetetään:

- muihin samaa ohjelmistoa käyttäviin kirjastoihin
 yhteisluetteloihin omassa maassa (LINDA, etc.):

pohjoismaisiin yhteisluetteloihin (LIBRIS, BIBSYS, etc.):

yhteisluetteloihin tai dokumentinvälityspalveluihin Pohjoismaiden ulkopuolella (esim. Uncover, OCLC; EBSCO):

B 4 Millä menetelmillä kirjasto pystyy vastaanottamaan elektronisesti tilattuja dokumentteja?

- FAX sähköposti FTP muu (tarkenna):

Osa C: Automaattinen dokumenttien välitys (ILL)

Automaattisella dokumenttien välityksellä tarkoitetaan tässä joko sitä, että kirjasto tarjoaa elektronisia dokumentteja suoraan etäkäyttäjille tietoverkkojen välityksellä, tai sitä, että kirjasto lähettää aineiston tilaajakirjastoille elektronisessa muodossa.

C 1 Välittääkö kirjasto elektronisia dokumentteja?

- Ei (mene osaan D) Kyllä

C 2 Jos kyllä, millä menetelmillä kirjasto pystyy lähettämään dokumentteja?

- FAX levyke FTP
 sähköposti muu (tarkenna):

Osa D: Ulkoisten tietokantojen käyttö (online/CD-ROM)

Online tiedonhaku

D 1 Tarjoaako kirjasto online tiedonhakupalveluita asiakkaille?

Emme tarjoa näitä palveluja kirjaston käyttäjille, koska (syy):

(jos ei, mene kysymykseen D4)

Kyllä, tarjoamme tiedonhakupalveluja: maksutta maksulla (joistakin kannoista)

maksullisena palveluna

D 2 Miten monia online-palveluita kirjasto käyttää?

(anna lukumäärä):

D 3 5 eniten käytettyä palvelua (tietokantaa) tässä kirjastossa ovat (täsmennä)

1	
2	
3	
4	
5	

CD-ROM tiedonhaku

D 4 Tarjoaako kirjasto CD ROM tiedonhakupalveluita?

Ei (syy):

(jos ei, mene osaan E)

Kyllä, kirjastolla on CD ROM -tietokantoja, mutta vain henkilökunnan käytössä

Kyllä, kirjastolla on CD ROM -tietokantoja myös asiakaskäytössä.

(Yleiset kirjastot: vastatkaa kysymyksiin D5-D7. Korkeakoulukirjastot: vastatkaa kysymykseen D7)

D 5 Kirjastolla on CD ROM -tietokantoja:

aikuisten osastolla käsikirjastossa

lastenosastolla musiikkiosastolla

muualla (missä):

D 6 CD-ROM -tietokannat ovat käytettävissä:

pääkirjastossa sivukirjastoissa myös kirjastoautossa

D 7 CD-ROMeja on asennettu:

PC:ille verkkoon

PC:ille ja verkkoon

Osa E: Paikalliset IT-sovellukset

Paikallisilla tietotekniikkasovelluksilla tarkoitetaan tässä erilaisia palveluita ja tuotteita, kuten multimediajärjestelmiä tai kuvatietokantoja, jotka on kehitetty joko kirjastossa tai kirjaston aloitteesta

E 1 Onko kirjasto kehittänyt omia IT-sovelluksia?

Ei, eikä meillä ole suunnitelmia omaan ohjelmakehitykseen (mene osaan F)

Ei, mutta aiomme käynnistää omia sovelluksia seuraavan vuoden aikana (anna lisätietoja alla)

Kyllä, meillä on oma tietotekniikkasovellus/sovelluksia (anna lisätietoja alla)

Meillä on tai aiomme kehittää sovelluksia seuraavilla alueilla:

Sovellus	Valmis	Suunnit.	Sovellukset ovat käytettävissä:		
			PC:lla	CD-ROM levyllä	verkon kautta
Kirjaston opas					
Käyttäjäkoulutus					
Kunnallistietojärjestelmä					
Paikallishistoria					
Kuvatietokanta					
Musiikkietokanta					
Muu (tarkenna):					
Muu (tarkenna):					
Muu (tarkenna):					

Kommenteja:

Osa F: Internet

- F 1 Onko kirjastolla pääsy Internetiin
 Ei (mene osaan G) Kyllä
- F 2 Henkilökunta käyttää seuraavia Internetin palveluja:
 sähköposti uutisryhmien seuranta (newsgroupit, listserv, jne.)
 tiedonhaku (Gopherista tai WWW:stä) dokumenttien siirto (FTP yms.)
 "surffaus" muu (täsmennä):
- Internetiä ei käytetä säännöllisesti
- F 3 Tarjoaako kirjasto Internetin käyttömahdollisuuden asiakkaille?
 Ei (mene osaan G) Kyllä
- F 4 Asiakkaat käyttävät seuraavia Internetin palveluja:
 sähköposti dokumenttien siirto tiedonhaku (esim. Gopherista tai WWW:stä)
 "surffaus" muu (täsmennä):
- F 5 Onko kirjasto rakentanut oman kotisivun/palvelimen?
 Kyllä
 Kotisivun/palvelimen URL-osoite on:
 Ei, mutta kotisivu aiotaan rakentaa :
 3 kk 6 kk 12 kk kuluessa
 Ei (mene osaan G)
- F 6 Kirjaston sivuilla on pääsy:
 valikoituihin Internet-resursseihin kirjaston näyttöluetteloon
 kirjaston yleisopasteeseen kirjaston elektroniseen ilmoitustauluun
 kirjaston tai sen isäntäorganisaation elektronisiin dokumentteihin. Anna esimerkkejä:
- F 7 Kirjaston sivuja/palvelinta ylläpitää:
 henkilökunta kirjaston isäntäorganisaatio ulkopuolinen konsultti
 Muu (täsmennä):

Kommenteja:

Osa G: Tietotekniikan muu käyttö

- G 1 Hyödyntääkö kirjasto tietotekniikkaa jossakin asiakkaille suunnatussa palvelussa tavalla joka ei vielä ole tullut esille tässä kyselyssä?

(tässä voidaan esimerkiksi kertoa Pöytäkirjoista tai kansainvälisistä tietotekniikkaprojekteista, joihin kirjasto osallistuu)

Esimerkkejä:

Kyselyn täytti:

Nimi: _____ E-mail -osoite: _____

Kirjasto: _____ Puh. no: _____

Appendix 3

State-of-the-Art Study of Information Technologies in the Nordic Libraries

Questionnaire to system vendors

A General description of the application

If the same vendor has several products, copy the questionnaire and duplicate relevant information.

A 1 Name of the system

A 2 Name of supplier/agent

Address

Contact person

Telephone

Fax

Email

A 3 Name and type of hardware platform(s):

A 3.1 Server application

A.3.2 Client application

A 4 Operating systems supported (including version data, e.g. Windows 3.x and Windows 95)

A 4.1 Server application

A 4.2 Client application

A 5 Database management system (e.g. Oracle, Ingres, etc.)

A 6 Supported record formats (e.g. FINMARC, own)

A 7 Supported character sets (e.g. ISO 8859-1)

A 7.1 Internal character set (in the database)

A 7.2 External character set (in the client application)

A 8 Cooperation

Do you work together with third parties in software development projects

B. Functions of the application

B 1 OPAC

Te OPAC is available to the users:

within the library only

through the local area network

via remote access (Internet/dial-up modem)

also in the book mobile

Is the OPAC character based only, or does it have a GUI as well?

B 2 Other functions

Does your application have

B 2.1 Cataloguing module

if it does, is the application capable of reading/writing bibliographic records in ISO 2709/SFS 3494 exchange format

B 2.2 Circulation module

if it does, is self-service check-out/check-in supported

B 2.2.1 Are electronic reservation and renewal functions available

if it does, are these functions supported as self-service

B 2.3 Acquisition module

B 2.4 Periodicals control and serials holdings management modules

if it does, are these functions based on the FINMARC Holdings format

B 2.5 Serials routing module

B 2.6 Statistics module

B 2.7 Z39.50-server or client application

B 2.8 ILL module

B 2.10 Other functions

C Software development

C 1 What modules/functions will be added to the application during

the next 12 months

the next three years

C 2 Resources available to the development work (man years)

D. Users of the application

D 1 Number of users in all

of which foreign libraries

D 2 Division of domestic users (give number of users in each category):

public libraries

research and governmental libraries

school libraries

Number of users should represent user libraries, not databases which may be shared by several libraries. If possible, include a list of user libraries.

Appendix 4

Addresses of Finnish library system vendors

Only those vendors which a) replied to our query and b) have more than 5 users are included.

Gemini

Address:
Open Software Solutions AB
PB 133
FIN-68601 JAKOBSTAD
tel. 358 67 7237 690
fax. 358 67 7244 101
Contact:
Tommy Sjöholm

Kirjasto 3000

Address:
Akateeminen tietopalvelu ATP Oy
Kirkonkyläntie 101
FIN-00740 HELSINKI
tel. 358 0 347 1377
fax. 358 0 347 1355
Contact:
Janne Rouhiainen

Kitt

Address:
Siemens-Nixdorf
PL 1
FIN-02601 ESPOO
tel. 358 0 50 731
fax. 358 0 50731 5500
Contact:
Helena Arponen
Helena.Arponen@sni.fi

Pallas

Address:
TT-Kuntapalvelut Oy
PL 203
FIN-40101 Jyväskylä
tel. 358 41 637 106
fax. 358 41 637 440
Contact:
Eeva Paananen

PrettyLib

Address:
PrettyBit Software Oy
Pyhäjärvenkatu 5 B

FIN-33200 TAMPERE
tel. 358 31 2130 600
Contact:
Juha Tenhunen
Juha.Tenhunen@pbit.fi

Primas

Address:
KT-Tietokeskus Oy
Hämeenkatu 10
FIN-11100 RIIHIMÄKI
tel. 358 14 747 311
fax. 358 14 721 421
Contact:
Tarja Kulmala

Riimi

Address:
Inberg Oy
Kaisaniemenkatu 4 A
FIN-00100 HELSINKI
tel. 358 0 661 800
fax. 358 0 656 801
Contact:
Raimo Inberg
Raimo.Inberg@inberg.fi

Part D
State-of-the-Art of Information
Technologies in Icelandic Libraries

Laurel A. Clyde
Faculty of Social Science
University of Iceland

Reykjavik 1996

Part D

State-of-the-Art of Information Technologies in Icelandic Libraries

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This research report describes a 1995 study of the “state of the art” of information technology in libraries in Iceland, part of a wider NORDINFO study of information technology in libraries in the Nordic countries. This study was planned by a project team with representatives from Norway, Sweden, Finland, and Denmark, plus Iceland, and carried out on behalf of NORDINFO by local consultants. Funding was provided by the European Commission through the Directorate DGXIII/E/3 (the Unit of Libraries Networking and Services).

The questionnaire for the survey of academic, public, and special libraries was translated from English into Icelandic by **Dr Sigrún Klara Hannesdóttir**. Data entry and data analysis of the quantitative data in the returned questionnaires was undertaken by **Heiðrún Sigurðardóttir**.

The telephone interviews for the survey of elementary school libraries were carried out by **Sveinn Ólafsson**, who also translated the questions from English to Icelandic, undertook the preliminary analysis of the data, and translated responses from Icelandic to English.

The online searches that identified the Icelandic legislation related to libraries were done by **Heiðrún Sigurðardóttir** and **Sveinn Ólafsson**. Sveinn also translated the titles of the laws. **Hallgrímur Indriðason** and **Ösp Viggósdóttir** translated relevant articles and reports from Icelandic into English for the study.

Dr Sigrún Klara Hannesdóttir made available the raw data that was collected through her 1990 survey of school libraries in Iceland, and additional data for the schools came from the 1993/1994 and 1994/1995 annual statistical compilations of the Director of Public and School Libraries (**Bókafulltrúi ríkisins**) in Reykjavík (**Póra Óskarsdóttir**).

The author wishes to thank all the people who completed the survey questionnaire or responded to the telephone survey, and the people who provided information by letter, fax, and electronic mail about the library automation systems, networks, online information services, and CD-ROMs that are discussed in this report.

Introduction

I.1 The Country Study for Iceland

The country study for Iceland was carried out by Dr. Laurel A. Clyde over a three-month period at the end of 1995, and completed in January 1996. Information and data came from statistical publications, searches of local online databases (including online news services), an electronic version of the Icelandic Lawbook (Lagasafn), research reports, and articles in professional and other periodicals. Information and documentation were collected from automated system vendors, online service providers, and other personnel in libraries and other organisations in Iceland. In addition, two separate surveys were undertaken to collect current information from libraries throughout the country.

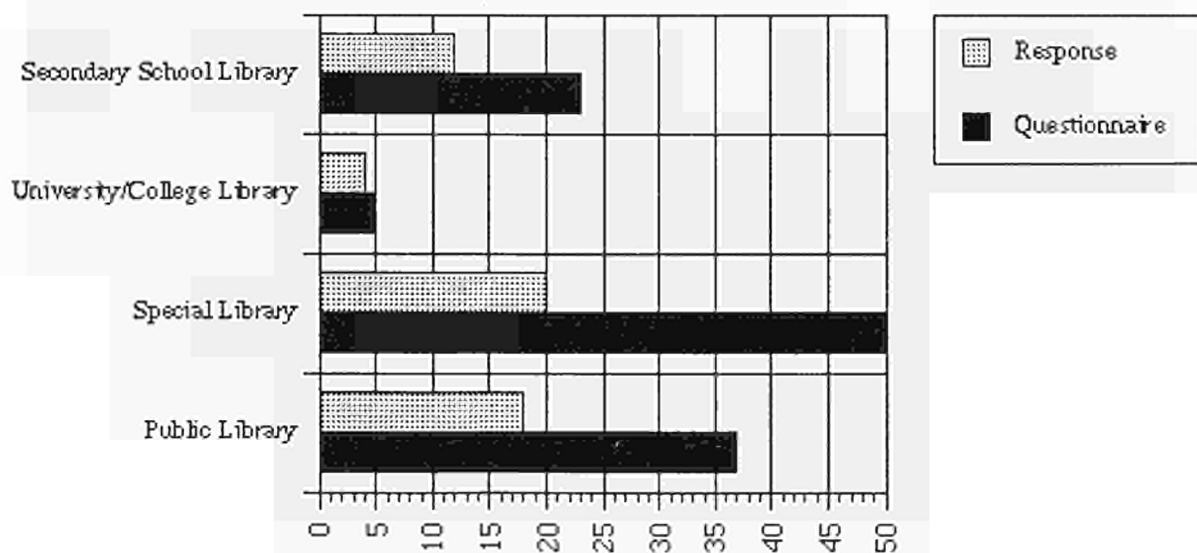
Survey of Public, Special, and University/College Libraries

The first survey was a questionnaire survey of public libraries, research or special libraries, and libraries in educational institutions and secondary schools. The questionnaire used was an Icelandic translation of the English-language questionnaire developed by the Nordic Working Group for the "State of the Art Study" of Information Technology in the Libraries of the Nordic Countries.

First, the English-language questionnaire was trialled with a group of 21 students in the Library and Information Science Programme at the University of Iceland, some of whom were already working in libraries. These students were all studying a final-year research course which was taught in English, and so they could be expected to have the professional knowledge, understanding of research questionnaires, and knowledge of professional English necessary to work with the questionnaire. Their experience with the questionnaire, and subsequent group discussion, indicated that the original questionnaire would take a very long time to complete, that some of the questions required information that was not likely to be readily available in many Icelandic libraries, and that there were difficulties of interpretation with several of the questions. The comments of this group were taken into account, and some adaptations were made, when the questionnaire was translated into Icelandic. The translation was done by a Professor of Library and Information Science at the University of Iceland (Dr Sigrún Klara Hannesdóttir) who is also a state registered translator. A copy of the Icelandic questionnaire is attached to this report as Appendix I.

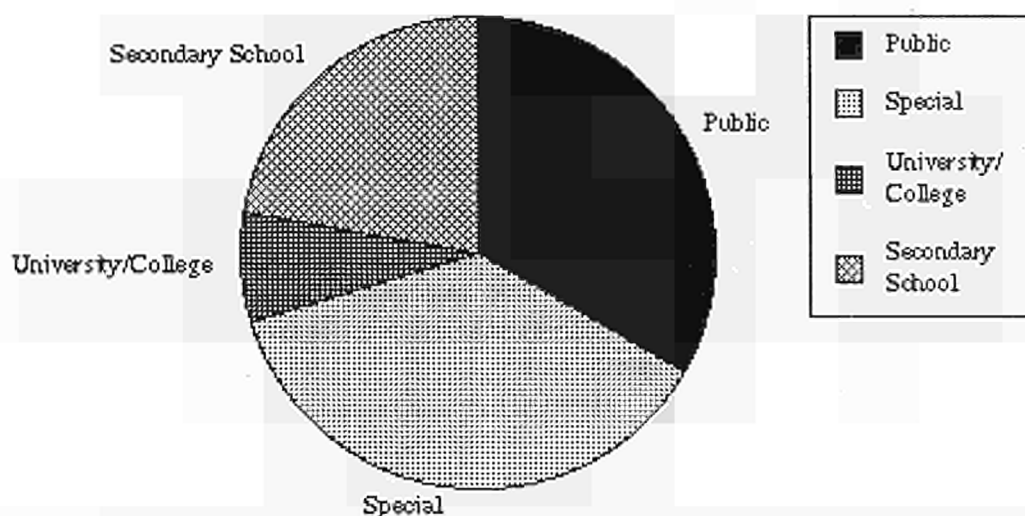
The questionnaire was mailed in October 1995, with a covering letter (in Icelandic) that explained the project. After checking the entries for currency, a mailing list was compiled from *Skrá um Íslensk bókasöfn/A Directory of Icelandic Libraries*, which lists research and special libraries, public libraries (but not branch libraries), and libraries in educational institutions (including the secondary schools), and from *Skrá um almenningubókasöfn* (Directory of Public Libraries, 1995). The list was then checked against other lists, and libraries that had been established since one of the directories was published were added. In all, 115 questionnaires were distributed. Figure I.1 shows distribution of questionnaires and responses by type of library.

Figure I.1
Distribution of Questionnaires and Responses
(by Type of Library)



Only 54 responses were received in time to be included in the statistical analyses. A further two questionnaires arrived after the statistical work was done, and while the responses in these questionnaires have not been tabulated with the others, the comments provided by these two librarians have been taken into account in the discussion of the results. The 56 responses represent a rather poor response rate of 48.7 per cent. Comments from local librarians who completed the questionnaire, or who telephoned about it, indicate that

Figure I.2
Questionnaire Responses by Type of Library
n=54



issues raised by the students who trialled the English version were valid. There was concern that the questionnaire took a considerable time to complete, that some of the questions required information that was not easy to produce, and that some local conditions were not reflected in the questionnaire. It was also clear that many librarians found the short time frame for responses to be a difficulty, especially as the questionnaire involved a considerable amount of work.

The SPSS statistical package was used on a PC machine for analysis of the quantitative data. Because of the small number of responses, it was not possible to carry out sophisticated analyses, nor to make many comparisons across library sectors. The DeltaGraph display package on an Apple Macintosh computer was used to prepare the figures for this report.

Telephone Survey of Elementary Schools

Although basic school library data is collected by the Director of Public and School Libraries (Bókafulltrúi ríkisins) for an annual statistical compilation, this does not include data on some of the aspects of the use of information technology that were required for this Nordic study. In order to collect information from elementary schools, it was decided to carry out a telephone survey, using an interview schedule. The interview schedule was much simpler than the questionnaire used for the other library sectors, and it was designed so that questions were asked in a sequence that was logical for an interview. The decision

to use telephone interviews rather than a mailed questionnaire was made after it became clear that the time constraints surrounding the mailed questionnaire were discouraging responses from public and research libraries. However, the use of telephone interviews made it imperative that the questions asked mostly be ones that the librarian could answer without reference to files or reports, and in part this dictated the simplified form of the schedule.

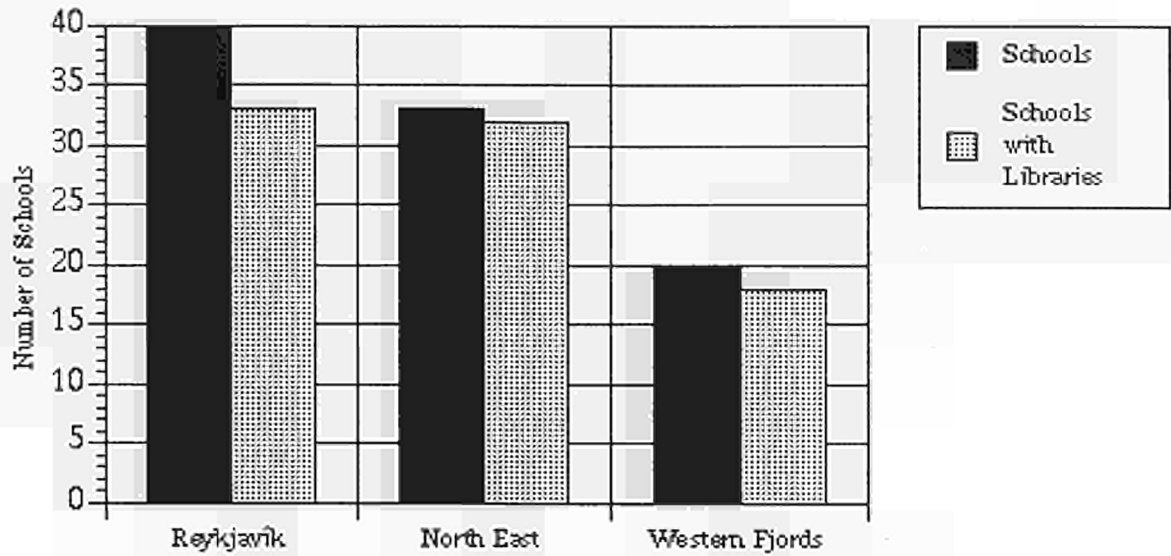
The interview schedule was developed by the Local Consultant for Iceland, using as a basis the questionnaire, the project documentation, and also a survey that the Consultant had completed in 1994/1995 of the use of information technology in Australian school libraries. A Library and Information Science student at the University of Iceland, who has excellent English and some experience of telephone interviewing, agreed to conduct the survey. He translated the questions into conversational Icelandic with which he felt comfortable, while taking care to preserve the professional context and concepts. He then practised working with the text so that he would sound relaxed and friendly rather than formal on the telephone. All of the telephone interviews were carried out within a two-week period; if the librarian was not available when the first call was made, then arrangements were made to call back at a suitable time.

It would have been impossible to do a telephone survey of all 215 elementary schools in the country within the time available for the project. Since Iceland is divided into eight administrative regions, a decision was made to survey all schools in three of these administrative regions; in all, this involved 93 schools. (See Table I.1 and Figure I.3) The three regions were selected after inspection of the data from Dr Sigrún Klara Hannesdóttir's 1989/1990 questionnaire survey of all elementary school libraries in Iceland.

Table I.1
Number of Elementary Schools in Each Region

REGION	NUMBER OF SCHOOLS
Reykjavík	40
The North East	33
Western Fjords	20
TOTAL	93

Figure I.3
Elementary Schools in Each Region Reporting a Library



The Reykjavik region was selected as the metropolitan region and the one in which school libraries had been most developed in 1989/1990. The Western Fjords region was selected as a rural region of small (and often remote) towns and villages, the region where school libraries were least developed (on many counts) at the time of the 1989/1990 survey. The North East region was selected as being something in between - a region with a large and progressive town (Akureyri) but many small villages, and a region whose school libraries presented a very mixed picture in the 1989/1990 survey. Personnel in all of the schools in the three regions provided information for the survey.

Responses to the interview questions were recorded on the interview forms, with one form being used for each school. The form had been designed to make the recording of responses easy for the interviewer – for many questions, this involved simply marking the appropriate box. (A copy of the interview schedule is provided as Appendix II). Responses were checked where possible, and the interviewer followed up on any responses that needed clarification. Many librarians provided additional information or responses that were useful in the context of the study, and these were summarised and later translated into English. Much of the data analysis was carried out manually, and tabulated in various ways. Where necessary, both SPSS and DeltaGraph were used to prepare Tables and Figures for this report.

I.2 The Report for Iceland

A draft country report was prepared by the Consultant for Iceland in December/January. It was made available for discussion at the Project Team meeting in Helsinki, Finland, on 26 February 1996. This present document is a revised version of that report. It incorporates changes made as a result of discussions with members of the Project Team. In addition, Chapter Three, which was incomplete at the time of the Helsinki meeting, has been finished and material has been added to three of the Appendixes.

I.3 References and bibliography

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(1995), *Skrá um almenningsbókasöfn, Bókafulltrúi ríkisins - Menntamálaráðuneytið*, Reykjavík.

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1 Information Technologies in Iceland: The Background

1.1 Iceland as an information society

Iceland is a country of only 265,000 people (as of January 1994). Of these people, 102 000 live in the city of Reykjavík itself, and a total of 155 000 (58.5 per cent) live within Reykjavík and the surrounding urban areas. Akureyri in the north, with a population of 16,000 in 1994, is the second main urban area. Other significant towns include Borgarnes, Keflavík, Höfn, and Egilsstaðir, though their population is small when compared with the provincial towns of most other Nordic countries. In fact, Iceland is the most sparsely populated country in Europe, with an average population density of only 2.5 inhabitants per square kilometre. It is also the most isolated country in Europe, being farthest from its nearest neighbours.

The economy is essentially based on one main industry, fish and fish processing, although there is a local livestock industry and some manufacturing, as well as service industries. There are important resources of hydro-electric and geothermal power. While the size of the national economy as a whole is small in absolute terms, the per capita GDP (Gross Domestic Product) "is among the highest in the world, just over \$25 000 in 1991." (Central Bank of Iceland, 1992, p.9). The standard of living is high, life expectancy is amongst the highest in the world (75.0 years for men and 80.1 years for women), literacy rates are also very high (as is the general educational level of the population), and there is considerable interest in, and use of, new technology.

The original language of the Vikings is largely preserved in modern Icelandic, a complex, highly-inflected language that, while related to Danish, Norwegian, and Swedish, cannot be understood by speakers of those languages. The Icelandic alphabet includes two characters, the eth (ð) and the thorn (þ), that are not found in any other modern languages except Faroese. Despite the fact that they lived in relative poverty in the harsh conditions of their infertile northern land, the early Icelanders produced a considerable body of written literature (including the Sagas and the Eddas) in the vernacular, Icelandic, at a time when literature and literacy were largely the preserve of the educated classes and the monasteries in the rest of Europe, where Latin was still the major language of literary output. Universal literacy was achieved in the Middle Ages, and though this was lost for some centuries under Danish rule, respect for language, literature, literacy, and reading are still characteristics of modern Icelandic life.

Perhaps because of the relative isolation of the country, the need for current information is appreciated and is reflected in the four daily newspapers that are published and distributed nationally; in addition, there are local and weekly newspapers. The major daily morning newspaper, *Morgunblaðið*, sells in more than 55,000 copies, that is one copy for every five people in the country. In addition, it is available in full text on the Internet for a fee. Most local publishing is in Icelandic, though there are also Icelandic publishers who produce books in other languages for tourists or for foreign markets. The local publishing output is rated among the largest in the world on a per capita basis, and statistics show that more books are bought per head of population than anywhere else in the world. Nevertheless, the local market is small and the Icelandic language is seldom spoken outside Iceland. This means, then, that only around one thousand to fifteen hundred new book titles are published each year, including translations, textbooks, and children's books. Table 1.1 illustrates this for the six-year period to 1994.

Table 1.1
Book Publishing in Iceland, 1989–1994
Information from Gagnismál, 3, November 1995

YEAR	NUMBER OF BOOKS
1989	1340
1990	
1991	
1992	1695
1993	
1994	1429

Access to publications in Icelandic is improving. There are some important bibliographic tools, including the national bibliography, *Íslensk bókaskrá*, though this is not complete in published form. There are two major national computer-based catalogues of library materials, a published union list of foreign journals in Icelandic libraries, and a range of bibliographies on particular topics, but it is only in the last few years that indexes of Icelandic journals have been developed, and these are comprehensive only for a three-year period 1991-1993.

Reflecting the relatively high levels of education and literacy, and the high standard of living, the levels of computer use in homes and businesses are also high. In 1994, 53 per cent of all homes had at least one personal computer, and a recent pan-Nordic study showed that students in Iceland's schools had the best access to computers and to the international networks of any of the Nordic countries ("Schools score highest...", 1994). A survey conducted for the newspaper *Morgunblaðið*, and reported in January 1996 (Today's News Headlines, 5 January 1996), showed that almost a quarter of all Icelanders aged between 15 and 75 had Internet access, either at work or at home or both. The proportion of people with access varied with geographic location, education, occupation, income, and age, with high-income professionals in Reykjavík being most likely to have access,

followed by students, white collar workers, and public servants. For people aged between 15 and 24, the rate of access to the Internet was 32.6 per cent. A particularly interesting finding of this survey was that in Iceland (in contrast with the situation in Europe as a whole), access to the Internet is fairly evenly distributed between the sexes, with 20.4 per cent of women respondents and 23.1 per cent of the men having access.

All students in elementary schools in Iceland learn Danish (from the age of eleven) and English (from the age of twelve), as well as Icelandic, and literature and textbooks in other languages (particularly the Nordic languages and English) are widely read. Most professionals are accustomed to reading professional literature, journals, manuals, and textbooks in other languages; indeed many professionals have overseas postgraduate qualifications and experience. In consequence, online information services in English, in the Nordic languages, and in other European languages, are used in libraries, research centres, and elsewhere. However, these databases and services, understandably, have very little Icelandic information, and they present a world view that is not always in sympathy with the views and aspirations of Icelanders. In addition, English language services cannot be used by most younger children, by older adults who would have learned no English at school, or by people who either have little formal education or few opportunities to practise their language skills. Yet the small population of the country, the relative isolation of the country itself and of many settlements within the country, the need for materials in Icelandic and for materials that reflect Icelandic ideas and preoccupations, have resulted in problems in relation to both the development of local computer-based information services, and the use of services created in other countries.

1.2 Education in Iceland

At the elementary level (for children aged six to 16), education is compulsory. Schools are provided even in the smallest centres of population: the minimum number of students required for a school is five, much fewer than in most other countries. Just on half of all elementary schools (49.3 per cent) have fewer than one hundred students. See Table 1.2 for an indication of the size of the schools. Inevitably, this means that some of the smaller schools have relatively few resources when compared with the large city schools, and it can be difficult for the schools in the smallest villages to develop school libraries, for instance, unless the local library is a joint-use school/community library. However, it is also true that some of the very small schools have managed to develop very good facilities.

Table 1.2
Size of the Elementary Schools
(in terms of student numbers) 1994

NUMBER OF STUDENTS	NUMBER OF SCHOOLS
2-50	74
50-100	32
100-500	85
500+	24
TOTAL	215

The secondary schools provide education for students aged 16 to 20 years, and in some cases for adults as well. There are some 48 schools and colleges throughout the country that provide education at this level (depending on how the institutions are counted), including the menntaskóli (the grammar schools), the fjölbrautaskóli (the comprehensive colleges), and institutions such as the Commercial College of Iceland (Verzlunarskóli Íslands), the Agricultural College of Hvanneyri (Bændaskólinn á Hvanneyri), the Icelandic College of Engineering and Technology (Tækniskóli Íslands), and colleges of navigation, hospitality, and art. These schools and colleges range in size from the metropolitan Fjölbrautaskólinn í Breiðholti with 2351 students in 1994/1995, to small specialist institutions with fewer than 50 students.

University education (undergraduate and graduate level) is provided by the University of Iceland (Háskóli Íslands), the University of Akureyri (Háskólinn á Akureyri), and the University College of Education (Kennaraháskóli Íslands) in Reykjavík. The University of Iceland, with 5700 students in 1995/1996, (*Morgunblaðið*, 7 January 1996, p.11) is the oldest and largest of the universities. It was founded in 1911, though some of the Faculties are older, having been established in the nineteenth century. The University of Akureyri was established in 1992, and by 1995/1996, when it began to move into its permanent facilities, it had 396 students. (*Morgunblaðið*, 7 January 1996, p.11) It offers courses and programmes in the fields of teacher education, nursing, business, and fisheries management, with new developments in the planning stages. Other institutions that offer some programmes of degree level education include the Co-operative University College of Bifröst (Samvinnuháskólinn á Bifröst), which has a BSc in Business programme, and the Icelandic College of Engineering and Technology (Tækniskóli Íslands).

Table 1.3

Size of University-Level Institutions (student numbers) 1994/1995*(From figures given in Morgunblaðið, 7 January 1996, p.11, for 1990-1996)*

INSTITUTION	NUMBER OF STUDENTS
University of Iceland	5692
University of Akureyri	385
University College of Education	642
The Icelandic College of Engineering and Technology	441*
Co-operative University College of Bifröst	95*
The Icelandic College of Art and Crafts	201
Dramatic Academy of Iceland	21

* Note that both of these institutions have students in university level courses and students in secondary school level courses, and these figures include both groups.

1.3 Libraries in Iceland

Key statistical information for libraries in Iceland is collected by two organisations: the Director of Public and School Libraries (Bókafulltrúi ríkisins) who collects information from public and school libraries; and the Statistical Bureau of Iceland (Hagstofa Íslands), which collects information from the national, university, and research libraries. While the Statistical Bureau follows the requirements of the International Federation of Library Associations and Institutions (IFLA) and ISO standard 2789 (International Library Statistics), the Director of Public and School Libraries collects statistical information in the format required for the Ministry of Education and Culture. (Þóra Gyldadóttir, 1994, pp.44-45) There are, however, libraries that are not covered through either of these statistical collections. In addition, these statistical compilations do not always cover more than the information that is required for the institution, and so it is often the case that the statistical information needs to be augmented from other sources to give a better picture of library provision in Iceland.

In December 1994, the two largest research libraries in the country, the National Library of Iceland (Landsbókasafn Íslands) and the University of Iceland Library (Háskólabókasafn), were amalgamated, fulfilling a political decision made many years earlier in 1957. The combined library, known as Landsbókasafn Íslands - Háskólabókasafn (the National and University Library of Iceland) occupies a new building in the centre of Reykjavík, adjacent to the University of Iceland campus. The National Library had been established on 28 August 1818; the University Library in 1940 (when several faculty or department libraries were combined). By December 1994, the National Library had a collection of 450,000 volumes plus 14,000 manuscripts, while the University Library had 340,000 volumes.

The University of Akureyri (Háskólinn á Akureyri) and the University College of Education (Kennaraháskóli Íslands) in Reykjavík are other university-level educational institutions with research libraries. The 1987 publication *Skrá um Íslensk bókasöfn/A Directory of Icelandic Libraries* lists 83 "research and special libraries", several of which

are very small and have no special staff. The inclusion of the university libraries in the number makes this sector seem more significant. In the eight years since this directory was published, some of the libraries have closed or been amalgamated with others; on the other hand, a small number of new libraries have opened. The 1994 figures from the Statistical Bureau of Iceland (Hagstofa Íslands) show that there are altogether some 50 research and special libraries throughout the country (including the National and University Library of Iceland and six university/college institutions), though not all respond to the annual surveys of the Bureau. These libraries vary in size and importance, but some, like the Library of the National Hospital (Landspítalinn) have significant collections in their fields. Others are very small and exist primarily to meet the day-to-day needs of their own organisations.

The 1995 directory of public libraries (*Skrá um almenningsbókasöfn*) produced by the Director of Public and School Libraries (Bókafulltrúi ríkisins) lists 42 town or regional libraries, comprising:

- 17 city or town libraries (bæjarbókasöfn), some of which have several branches,
- 14 town and regional libraries (bæjar- og héraðsbókasöfn), some of which, again, have branches, and with some smaller libraries in the region,
- 11 regional libraries (héraðsbókasöfn), usually with several smaller libraries in the region.

The 1993 statistical report of the Director of Public and School Libraries, *Ársskýrsla almenningsbókasafna 1993*, lists 197 public libraries of all kinds in the country in 1993, including hospital and prison libraries. The City Library of Reykjavík (Borgarbókasafn) is the largest of the public library services, with its main library in the centre of Reykjavík, branches in suburban areas of the city, bookmobile services, and services in hospitals and other institutions. Outside of Reykjavík, Akureyri, and the main towns, libraries are generally small, and the smallest libraries are not staffed by professional librarians.

The statistical compilation for secondary school libraries, produced by the Director of Public and School Libraries (Bókafulltrúi ríkisins), covers 42 secondary schools of different types around the country, 26 of which return information about a school library. Depending on how these institutions are classified, the number of schools (and libraries) at this level varies in the different publications that list libraries. The 1987 publication, *Skrá um Íslensk bókasöfn/A Directory of Icelandic Libraries*, for instance, lists 37 libraries in institutions that have been classified as schools (if the University College of Education and organisations like the National Centre for Educational Materials are excluded from the count).

In 1994, there were 215 elementary schools in the country (see above); however, many of these schools were very small. Although the elementary school legislation of 1974 had specified that there should be a library in every school, there were many reasons why this did not happen, including the size of some of the schools, the absence of regulations to support the legislation, and the fact that in one-teacher and two-teacher schools the teachers may not always have acquired the skills to organise a library. The elementary school statistics produced by the Director of Public and School Libraries (Bókafulltrúi ríkisins) are based on 108 school libraries around the country.

A national survey of elementary school libraries was carried out by Dr Sigrún Klara Hannesdóttir in 1989/1990 through a mailed questionnaire to all the 213 schools in the

country in that year. The results indicated that 109 schools (64.12 per cent of the 170 schools that responded) had a designated school library. (Sigrún Klara Hannesdóttir, 1994, p.27) However, the provision of school libraries in the elementary schools was not evenly distributed around the country; there was considerable variation from region to region, with schools in Reykjavík and the nearby administrative region of Reykjanes being more likely to have school libraries than schools in the more remote Western Fjords and the East. Figure 1.1 illustrates this situation. In addition, as Figure 1.2 shows, larger schools were more likely to have a school library than smaller schools.

A more encouraging picture of school library provision emerges from the telephone survey of schools in three of the eight administrative regions of Iceland at the end of 1995 for this "State of the Art" study, though this is not really reflected in the official statistics that are collected each year. It is certain that school library provision has indeed improved in the five years since Dr Sigrún Klara Hannesdóttir's survey. However, it is also probable that part of the apparent improvement is due to differences in views about what constitutes a library – and the desire to present the school well in a telephone interview in which the respondent is identified.

Figure 1.1

Elementary Schools With a School Library (by Region)

(Data from Dr Sigrún Klara Hannesdóttir's 1989/1990 National Survey)

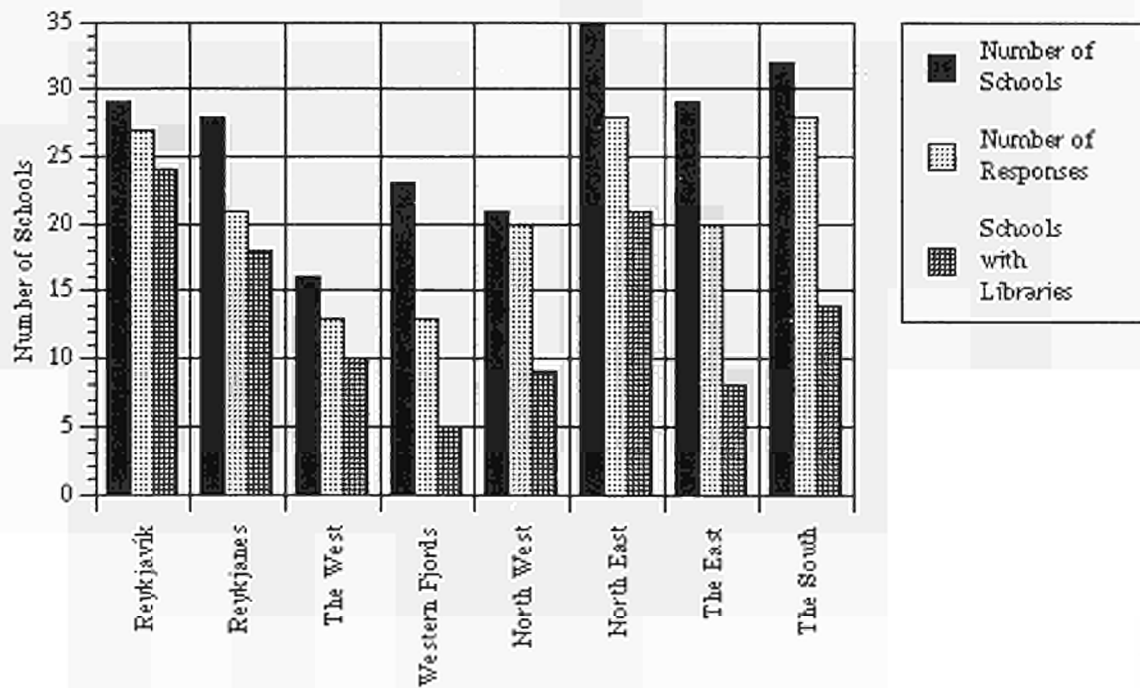
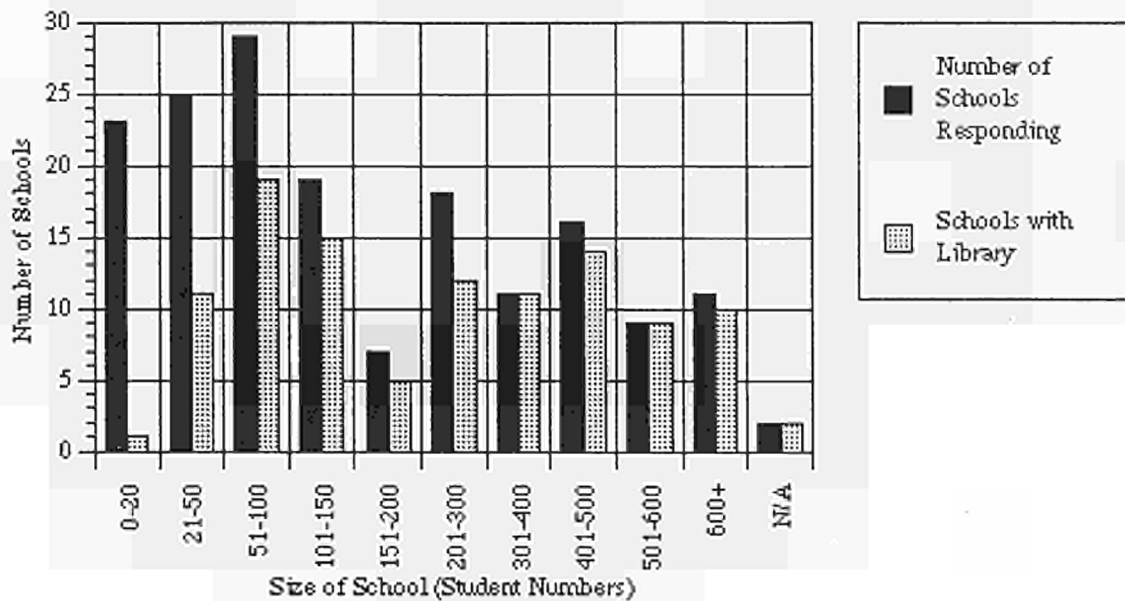


Figure 1.2

Elementary Schools With a School Library (by Size of School)

(Data from Dr Sigrún Klara Hannesdóttir's 1989/1990 National Survey)



The different ways in which the information was collected for the various surveys and statistical compilations that are mentioned in this report, and the different ways of defining or categorising libraries for those purposes, makes it very difficult to compare the results of surveys or data collection exercises. Attention will be drawn again to this problem in other chapters of this report, since it is a problem that has a bearing on the ways in which the information should be interpreted.

Education for librarianship has only been provided at the University of Iceland as a full major in the BA programme since 1964. There are also courses and 30-credit (one-year) programmes in school librarianship and records management. While some librarians have undergraduate qualifications and masters' degrees from foreign universities, a masters' degree programme in library and information science only commenced at the University of Iceland in 1993. The Association of Professional Librarians (Félag bókasafnsfræðinga) has 195 full members throughout the country (plus around 30 student members). This is small when compared with other similar associations elsewhere, yet it holds regular conferences, sponsors other professional activities, and is co-publisher of the national library journal, *Bókasafnið* (The Library).

1.4 Information Policy

As of December 1995, Iceland had no national information policy or national information technology strategy, though the Ministry of Education and Culture had formed committees to investigate policy issues in these areas and make recommendations. While matters concerning libraries in general come under the Ministry of Education and Culture, there is currently no overall national library policy or strategy, nor any generally-accepted documents or statements about the place of libraries in Icelandic society. In general, according to a pre-election policy statement, the present government aims to ensure that new information technologies will be used to enhance economic progress and to promote scientific endeavour, research, and culture; to provide better access to education and the

means to develop an information literate population; to provide better access to government information for all citizens; and to enhance the productivity and competitiveness of Icelandic companies. Committees have been formed in the areas of information policy in education; information policy and culture; management of information and databases within the Ministry of Education and Culture; and libraries in Iceland as part of a national information network. The various committees were to report to the Minister early in 1996.

While these initiatives date from 1995, there has been some professional discussion of issues associated with information policy at least since the late 1980s. In 1989/1990, reports were produced by two committees commissioned by the government of the day (one chaired by the Head of the then University Library, Einar Sigurðsson, and the other chaired by the head of the Library and Information Science Programme at the University of Iceland, Dr Sigrún Klara Hannesdóttir). The work of both committees was discussed during a national meeting of the Icelandic Library Association (Bókavarðafélags Íslands) in Akureyri in September 1990. Neither report was published, but the draft of the report produced by Dr Sigrún Klara Hannesdóttir's committee (Stefnumörkun í bókasafna- og upplýsingamálum til aldamóta/A Proposal for a National Information Policy) was circulated widely at the conference for discussion and comment, before the final version was forwarded to the Minister in November 1990. No public action was taken on either report.

In some areas of information policy, legislation has been in place for some time. Copyright is an important subject in the Authors Act (Höfundalög) of 1972, where it is dealt with particularly in chapters I, IV, and VIII. The Bern Convention on Copyright (24 July 1971) was confirmed by the Icelandic government on 31 May 1972 (80/1972). Copyright is also covered by more recent amending legislation dating from 1992 (57/1992, see 80/1972) and by regulations 141/1985 and 177/1989. Legal deposit requirements are covered by a Statutory Deposit Act (Lög um skylduskil til safna) of 1977, under which printers are required to deposit four copies of each edition of each book published in the country, with the National Library. Of these copies, one is available for loan or use in the National and University Library, one is kept in storage as a depository copy, one goes to the Public Library of Akureyri (Amtsbókasafnið á Akureyri), and the other to the City Library of Reykjavík (Borgarbókasafn Reykjavíkur).

1.5 The Legal Framework

Libraries and librarians in Iceland operate within the context of various pieces of legislation that cover the different kinds of libraries, professional librarians, copyright, and legal deposit. In addition, some libraries, such as the libraries of the National Art Gallery (Listasafn Íslands), are covered by the special legislation that governs their parent institution. Through a regulation confirmed by the President of Iceland in December 1969, the Ministry of Education and Culture is the ministry responsible for libraries in Iceland, and the Director of Public and School Libraries (Bókafulltrúi ríkisins) in Reykjavík produces the annual reports on school and public libraries for the Ministry.

The National and University Library of Iceland (Landsbókasafn Íslands/Háskólabókasafn) is covered by its own Act (71/1994), which was passed several months before the formerly separate National Library and University of Iceland Library were amalgamated in their

new building in December 1994. This legislation among other things outlines the functions of the library, which include the obligation to collect all possible Icelandic materials (including through statutory deposit), to preserve the manuscript collection, to prepare the national bibliography, to operate the national office for international standard book numbers (ISBN), to operate a union catalogue for Icelandic libraries, to be the national centre for inter-library loans, to co-operate with other libraries at the international level, to support teaching and research at the University of Iceland, and to support scholarly and cultural activities.

The libraries of other university and college level educational institutions are covered by the Acts related to the institutions themselves. Thus, for instance, the Library of the University of Akureyri (Háskólinn á Akureyri) is covered by the University of Akureyri Act of 1992. Other relevant Acts related to specific institutions are the Icelandic College Of Preschool Education (Fósturskóli Íslands) Act of 1973 and the University College of Education (Kennaraháskóli Íslands) Act of 1988.

At the secondary school level, school library provision comes under the Secondary Schools Act (Lög um framhaldsskóla) of 1988 (amended in 1989), and the school library provisions of the Act are supported by regulations for secondary school libraries. Article 29 of this Act states that “There shall be a library in every secondary school. The function of the library is to serve as an information centre for students and teachers. The library shall be equipped with books and newer sources of information in addition to other materials related to the subjects taught in the school.” The regulations specify that the person in charge of the school library will be a professional librarian who will, among other things, maintain a library catalogue, work with students and teachers in the school, promote the development of skills needed for the use of libraries and information, and keep appropriate records of library activity.

At the elementary school level, school library provision comes under the Elementary School Act (Lög um grunnskóla) of 1995. This Act replaces the Elementary School Act (Lög um grunnskóla) of 1974, which specified that every school should have a school library. However, although the 1974 Act was in force for 21 years, regulations were never created to support the school library provisions of the Act, and this limited its effectiveness in ensuring that adequate library services were available in all elementary schools. Regulations for elementary school libraries have not yet been created to support the 1995 legislation.

Public libraries are provided by the local government authorities, under the twenty-year-old Public Libraries Act (Lög um almenningsbókasöfn) of 1976. Public libraries are also mentioned in the Local Government Act (Sveitarstjórnalög) of 1986, the Hygiene and Sanitary Inspection Act (Lög um hollustuhætti og heilbrigðiseftirlit) of 1988, and the Local Government Source of Revenue Act (Lög um tekjustofna sveitarfélaga) of 1990. The Library for the Blind (Blindrabókasafn), which serves visually impaired people throughout the country from premises in Kópavogur near Reykjavík, operates as a public library under its own Act, the Library for the Blind Act (Lög um Blindrabókasafn) of 1982. Appendix V provides a full list of the Icelandic legislation related to libraries and librarians that is currently in force, with the name, number, and date of each Act.

1.6 Nordic co-operation

Nordic co-operation has been important in many different fields, not least librarianship; to an outsider, this is one of the most striking aspects of professional life in this part of the world. Iceland has participated in a number of co-operative Nordic projects in the field of librarianship and information science/information technology over the years. The following projects or developments were mentioned in the questionnaire returns of librarians, or are described in current brochures and/or articles in professional journals.

NOSP (Nordisk samkatalog for periodika), the Nordic Serials Union Catalogue, contains information from more than 700 libraries in the Nordic countries, including Iceland. Libraries in Iceland have participated in NOSP from its beginnings in 1978. Information about periodicals in Icelandic libraries is pulled from Gegnir (the computer-based catalogue of the National and University of Iceland Library and other libraries) twice a year for inclusion in the NOSP database. The NOSP catalogue is now available on CD-ROM as well as on microfiche and electronic form. It is anticipated that CD-ROM will gradually replace microfiche as a medium of distribution for the catalogue.

On another level, the Library of the Icelandic College of Art and Crafts (Myndlista- og handíðaskóli Íslands) participates in **ARLIS/NORDEN**, the Art Libraries Societies NORDEN (Samband listbókasafna á norðurlöndum), as does the Library of the National Museum of Iceland (Þjóðminjasafn Íslands). In other fields, such as agriculture, the specialist libraries in Iceland also make a contribution to the Nordic and European organisations which operate in their subject fields.

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2 Automated Library Systems

2.1 Introduction

Patterns of library automation in Iceland have been influenced by the demographic, economic, social and cultural conditions outlined in the previous chapter. While there are some large libraries, most libraries are relatively small. In addition, the total number of libraries in the country is small, so that the market for any automated system is limited. Characteristics of the Icelandic language mean that foreign systems have to be adapted for use in Iceland, as well as having their screens and manuals translated, and this represents an added cost. Yet libraries in Iceland have differing needs in terms of library automation, just as they do in larger countries, so that having a choice of systems is important.

There are two large, multi-library systems in Iceland, Fengur (based on DOBIS/LIBIS) and Gegnir (based on Libertas). Both are described below. In addition, a number of other library automation systems are available and have been purchased by individual libraries; in some cases a system is used by two or more small libraries working in co-operation. These other systems include MikroMARC (an Icelandic version of a Norwegian/international system), EMBLA (an Icelandic version of an Australia/international system), Squirrel (a small system for BBC microcomputers), and systems which have been developed in Iceland (Metrabók, Bókver, and BókasafnsKORN). LOOK (SPJALD) was being used by one library, and, in addition, a small number of libraries are using bibliographic or database management software (such as Pro-Cite, FileMaker Pro, and PlanPerfect) for cataloguing and some other library functions.

Catalogue records from outside sources such as OCLC are used by some libraries regardless of the automated system they have. In addition, Icelandic catalogue records can be imported into local systems to create a catalogue; for example, users of the EMBLA system can load Icelandic and other catalogue records from Fengur (DOBIS/LIBIS). Thus in terms of automated systems, library co-operation can take many different forms and occur at many different levels, from full joint use of the one automated system to sharing catalogue records between automated catalogues that are based on different hardware and software.

In this chapter, the library automated systems that are in use in Iceland are described, beginning with the large co-operative and shared systems, followed by the systems that are used in individual libraries. The next section, "What Systems Are Used by Libraries?", presents the results of analyses of the survey data and other information related to the various systems that are in use in all types of libraries in Iceland. Later sections of the chapter cover details of system implementation in the academic, special and public libraries, followed by the library functions that are automated in those libraries.

2.2 Gegnir

Gegnir is the automated library system of the National and University Library of Iceland (Landsbókasafn Íslands – Háskólabókasafn); it is also used by an increasing number of research and special libraries in Iceland, either as a full shared system or on a more limited basis. The joint automation project commenced before the National Library and the University Library were amalgamated in the one building. The Libertas software (from

SLS Information Systems Limited in the United Kingdom) which is the basis of the system came into use in 1990, with Icelandic screens and Icelandic bibliographic conventions supported. In the beginning, the system was running on a MicroVAX 3900 computer, but as both the database and usage increased, this computer became too small. When the two libraries were combined in December 1994, a new computer was brought into service to run the system, an Alpha 3000-600 from Digital Equipment Corporation. This currently supports up to one hundred users at any one time.

The system comprises two separate databases, Gegnir itself and Greinir. Gegnir is the catalogue of books, serials, and other materials held by the National and University Library and by the other libraries that use the system as their catalogue; it also includes the union catalogue of foreign periodicals held by around 60 Icelandic libraries. The retrospective cataloguing of Icelandic books is under way, with some broad Dewey subject classes finished by 1995 (000, 100, 500, 700, 800, and 900), and the retrospective cataloguing of rare books has begun. Gegnir is now being used to produce each year's printed publication of the National Bibliography (*Íslensk bókaskrá*).

Greinir is an index to periodicals, commenced in 1993. It contains records for articles in Icelandic periodicals, and also articles published in foreign periodicals that deal with Iceland or are written by Icelanders, whether or not the material is held by the libraries that have their collections recorded in Gegnir. Greinir is maintained by the National and University Library, which makes decisions about the form of the catalogue entries and the type and level of indexing. The Library of the University College of Education (Kennaraháskóli Íslands) and the Library of the Central Bank of Iceland (Seðlabanki Íslands) also supply records for this database. By September 1995, some 80 periodicals were being catalogued into the database, though not all articles are yet being indexed. The database is to be expanded over the coming years, and its usefulness will increase as more material is fully indexed.

The circulation module of Gegnir has been used in the National and University Library, and it was introduced at the University College of Education in 1993. At the end of 1993 and the beginning of 1994, the acquisitions module was implemented at the University Library, and at the University College of Education in the middle of 1994. In May 1994 the Inter-Library Loans module came into use in these libraries, and all inter-library loan requests now go through Gegnir. Users can place their inter-library loan requests online; in 1995, almost half of all inter-library loan requests were placed this way. Requests to the British Lending Library are transmitted by electronic mail from the system.

Gegnir can be accessed in a variety of ways for searching. It is accessible through terminals in all the libraries that are members of the Gegnir system. An X.25 connection is available, as is modem access (with a number for normal modems and one for high-speed modems). Gegnir is available through the Internet via telnet and gopher (for instance from the University of Iceland gopher and the ISMENNT gopher). Z39.50 access is in the process of implementation; this will allow the Library to make the catalogue available for searching on the World Wide Web with a graphical user interface.

Libraries that are currently full users of Gegnir are:

- the National and University Library of Iceland (Landsbókasafn Íslands – Háskólabókasafn)

- the University College of Education (Kennaraháskóli Íslands)
- the Central Bank of Iceland (Bókasafns Seðlabanka Íslands)
- the National Museum of Iceland (Þjóðminjasafn Íslands)
- the Ministries of the Government of Iceland (Stjórnarráðs Íslands)
- the Icelandic College of Art and Crafts (Myndlista- og handiðaskólans)
- the University of Akureyri (Háskólinn á Akureyri)
- The Arnarnagæan Institute in Iceland (Bókasafns Stofnunar Árna Magnússonar)

2.3 Fengur

DOBIS/LIBIS was developed originally for the university libraries of Dortmund in Germany and Leuven in Belgium; as of 1995, it was used by more than 800 libraries in 30 countries. In 1992, IBM transferred the rights for DOBIS/LIBIS to a new company called Extended Library Access Solutions (ELIAS), which is based in Belgium. In Iceland, where it is known as Fengur, an Icelandic version of the system is made available as a service through SKÝRR (Skýrsluvélar ríkisins og Reykjavíkurborgar, the State and Municipal Data Processing Authority), which now operates as a company.

DOBIS/LIBIS or Fengur is a large, integrated system with cataloguing, searching, acquisitions, circulation, serials control, catalogue card printing and COM production capabilities, electronic mail. It can be used by an individual library for full library automation, or, as it is in Iceland, used as the basis for a multi-library system. Full MARC records can be imported and exported, and so records from SKÝRR can be used by libraries that are automating with smaller local systems, if those systems can load MARC records on disc.

The first libraries in Iceland to use Fengur were the Reykjavík City Library (Borgarbókasafn Reykjavíkur) and the Library of the National Hospital (Landspítalinn), with the process of automation commencing in 1987-1989. In the branches of the Reykjavík City Library, it is used for catalogue searching and circulation and collection control functions. It is now in the process of being implemented in the elementary schools of the City of Reykjavík, with cataloguing still being completed as this report was being written.

Many libraries in Iceland have search access to Fengur, including the University of Akureyri (Háskólinn á Akureyri), the Akureyri Central Hospital (Fjórðungssjúkrahúsið á Akureyri), the Comprehensive College of Garðabær (Fjölbrautaskólinn í Garðabæ), several other secondary schools and colleges, and government agencies.

2.4 Local systems

In addition to the two large systems (Gegnir and Fengur), there are several other library systems in use within individual libraries, as mentioned above, including Metrabók, MikroMARC, EMBLA, Bókver, BokasafnsKORN, and Squirrel. The most commonly-used of these systems are briefly described below.

Metrabók

Metrabók was developed in Iceland, originally as a school library system, by Ásmundur Eiríksson of Selfoss. Work commenced on what became Metrabók in 1987, and

development of the system has continued to this day. It operates on IBM PC and compatible computers, under either DOS or Windows, and it can be set up on a local area network. The major library functions of cataloguing, searching, circulation, reports, and bibliography production are carried out by the system. The catalogue handles books, periodicals, and all the media formats likely to be found in a school library, and catalogue records can be accepted in MARC format from other sources. This system has had strong support from secondary school libraries, and this is evident in the survey results. A demonstration of the DOS version of the system is available on the World Wide Web at <http://www.prim.is/Metrabok>

MikroMARC

MikroMARC was developed in Norway, and is now in use in libraries in a number of other countries, including Sweden, Denmark, the United Kingdom, Egypt, Germany, and Hungary. An Icelandic version is marketed in Iceland by Andrea Jóhannesdóttir and the Library Service Centre (Þjónustumiðstöð bókasafna). It provides for the major library functions of cataloguing, a public access catalogue (OPAC), circulation, reporting, and other functions. A graphical user interface is available for the OPAC. The catalogue uses MARC format, and records can be loaded from MARC cataloguing sources such as the Library of Congress. MikroMARC operates on IBM PC and compatible computers, under either DOS or Windows, and can be set up on a local area network. MikroMARC is used in academic, research, public, and school libraries in Iceland, in the National Centre for Educational Materials (Námsgagnastofnun), and in the Library Service Centre (Þjónustumiðstöð bókasafna).

Embla

EMBLA is an Icelandic version of the OASIS integrated library automation system that was developed in Australia by Softlink International, commencing in 1984. After winning several state government contracts for school library automation in Australia, Softlink has been selling the system in other countries, including New Zealand, the United Kingdom (where the system is known as Alice), the United States (where it is known as Annie), Singapore, Israel. Softlink has offices in Australia, the United States, and the United Kingdom. In Iceland, the system has been marketed by Lindin hf. EMBLA is an integrated system with modules for cataloguing, public access, circulation, serials management, acquisitions, stocktaking, communications, management and reports, and other functions. It operates on IBM PC and compatible machines under DOS, and a Windows version has just become available (February 1996). EMBLA can be set up as a single-user system, or as a multi-user system on a network. The catalogue is based on MARC format, and catalogue records can be loaded from other sources, including DOBIS/LIBIS. EMBLA is in use in public, school, and special libraries in Iceland.

Bókver

Bókver is an Icelandic system that was developed for the Public Library of Kópavogur (Bókasafn Kópavogs) and is now in use in other public libraries in Iceland, and some schools have access to public library systems. It operates on IBM hardware, including the IBM S-36 and the IBM AS400. It provides for cataloguing, catalogue enquiry, circulation. It is marketed by AKS (Almenna kerfisfræðistofan) through Eiður Arnarson.

2.5 What systems are used by libraries?

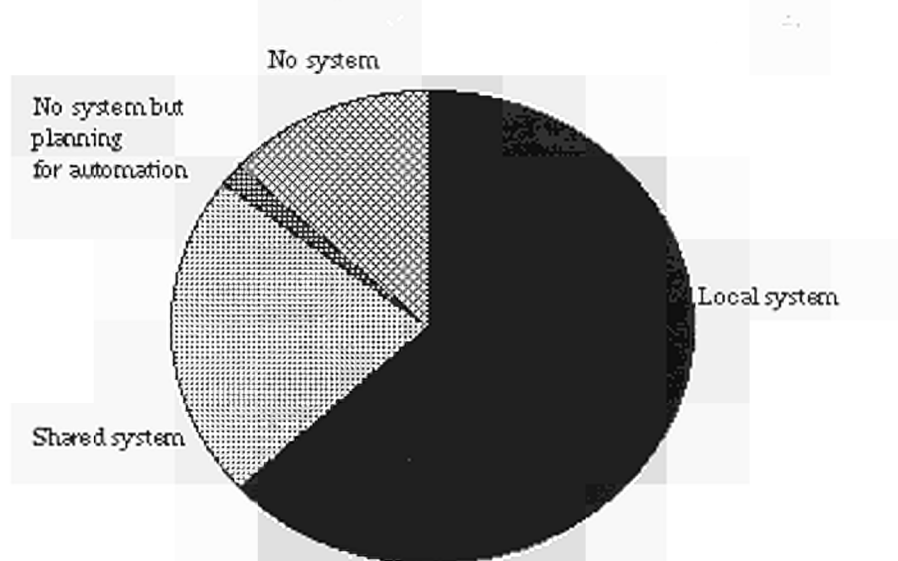
Because the data on use of automated library systems were collected differently for the different types of libraries, school library use of automated systems will be tabulated and discussed separately from use of automated library systems in academic, special and public libraries.

Academic, Special, and Public Libraries

Altogether, 54 libraries responded to the questionnaire survey, including university/college libraries (plus some of the larger secondary schools or junior colleges), research and special libraries, and public libraries. The pattern of responses is described and tabulated in the Introduction to this report. The largest number of responses came from special libraries, followed by public libraries. However, overall the number of responses is small for each type of library. Therefore the data have to be treated with some caution, and detailed statistical analyses were not possible.

Of the libraries that responded, seven (13 per cent) had no automated library system and no immediate plans for library automation. Figure 2.1 illustrates this. Three of those libraries that were not planning to automate in the near future had collections of fewer than 3500 items, but the largest library without an automated system had a collection of 21,000 items.

Figure 2.1
Libraries with an Automated Library System
n=54



Of the 46 libraries that had an automated library system, seven were using Gegnir and two were using Fengur. Libraries that had their own local system were using several different systems, including Metrabók, MikroMARC, EMBLA, and Bókver. LOOK (SPJALD) was in use in one special library. In addition, four libraries were using other software for library automation, such as the Pro-Cite bibliographic software and database

Figure 2.2
Automated Library Systems in Use
n=46

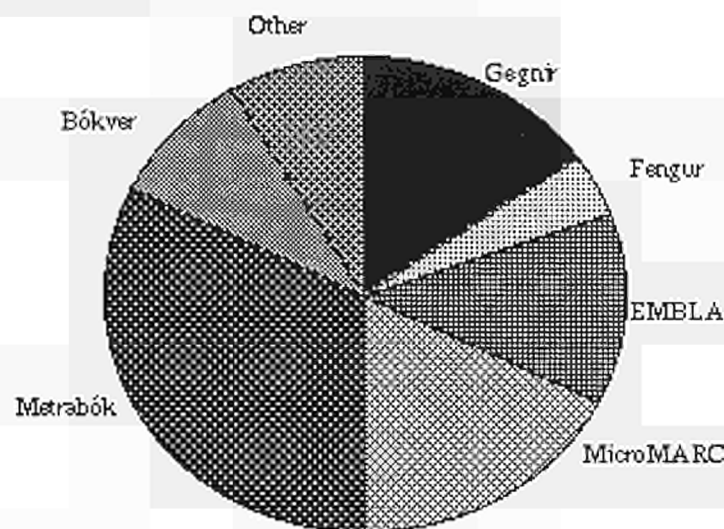


Figure 2.3
Automated Library Systems in Use
n=46

Automated Library System	Public Libraries	Special Libraries	Secondary Schools	University/ College Libraries	TOTAL
Gegnir	0	3	1	3	7
Fengur	1	1	0	0	2
EMBLA	2	4	0	0	6
MikroMARC	6	1	1	0	8
Metrabók	3	3	9	0	15
Bókver	4	0	0	0	4
Other	0	4	0	0	4
TOTAL	16	16	11	3	46

software like FileMaker and dBASE5. Figure 2.2 shows the systems in use in the libraries in the survey. The most commonly used system, Metrabók, was used mostly in libraries with collections of between 6000 and 17 500 items, and in some smaller libraries (but not larger ones). MikroMARC and Bókver were both used across a range of different sized libraries, while EMBLA was generally used in the smaller libraries.

Public Libraries

Further light is shed on library automation in public libraries in the most recent statistical compilation for public libraries in Iceland, produced by the Director of Public and School Libraries (Bókafulltrúi ríkisins) in 1995 for the year 1993. This report shows that in that

year, 27 public libraries had at least an automated library catalogue. The systems in use in these libraries are shown in Table 2.1. Some of the libraries represented in this Table were also respondents to the questionnaire survey of academic, public, and special libraries that is described above, so there is overlap between the information presented in this Table and the information presented in Figures 2.1 and 2.2.

Table 2.1

Automated Systems in Use in Public Libraries, 1993
Information from Bókafulltrúi ríkisins, 1993 Statistical Report

SYSTEM	NUMBER OF LIBRARIES
MikroMARC	13
Bókver	4
EMBLA	3
Metrabók	2
DOBIS/LIBIS	1
Bókvís	1
FileMaker Pro	1
Plan Perfect	1
AS/400 in-house system	1
TOTAL	27

Secondary School Libraries

The annual statistical compilation for secondary school libraries, produced by the Director of Public and School Libraries (Bókafulltrúi ríkisins) in 1995 for the school year 1994/1995 shows that of the 42 secondary schools listed (26 responding school libraries), 23 had an automated system for at least cataloguing (other automated system functions are not mentioned in the compilation). Only three of the school libraries that provided information for this compilation, reported no automated library catalogue. Note that seven of the secondary schools and colleges represented in this statistical compilation were also respondents to the questionnaire survey; six of these were users of Metrabók and one was using MikroMARC.

Table 2.2

Automated Systems in Secondary School Libraries
1994–1995 (Information from Bókafulltrúi ríkisins)

SYSTEM	NUMBER OF SCHOOLS
Metrabók	15
MikroMARC	6
Pro-Cite	1
Squirrel	1
TOTAL	23

Elementary School Libraries

The annual statistical compilation for elementary school libraries, produced by the Director of Public and School Libraries (Bókafulltrúi ríkisins) in 1995 for the school year 1993/1994 shows that 56 of these school libraries had purchased an automated library system and were using it for cataloguing at least.

The telephone survey of schools in three administrative regions of the country helps to clarify this Table. The main school libraries in Reykjavík (except one that is already automated with EMBLA) are gradually being connected to Fengur (DOBIS/LIBIS), but at the time of the survey, two years after the project began, the libraries were still not able to provide full public access to their catalogues. This was causing considerable dissatisfaction in the schools, as was evident from responses to the telephone survey. The cataloguing has largely been done as part of an employment project; however, cuts in public funding were being blamed for the delays that were being experienced with this and other aspects of the automation. The schools in Reykjavík that do not have libraries or whose libraries are not being automated are special schools, very small private schools, and one very new school. Some of the school libraries outside Reykjavík that are represented in this Table are joint-use school-community libraries that have chosen a system primarily on the basis of their public library function, and so have a larger system than might be expected in a school of their size.

Table 2.3
Automated Systems in Elementary School Libraries
1993–1994 (Information from Bókafulltrúi ríkisins)

SYSTEM	NUMBER OF SCHOOLS
Fengur (DOBIS/LIBIS)	Schools in Reykjavík
MikroMARC	11
EMBLA	6
BókasafnsKORN	5
Metrabók	2
Filemaker Pro	3
Other systems	3
TOTAL	56

The telephone survey revealed geographic differences in library automation. As mentioned above, the Reykjavík elementary school libraries, with a few exceptions, are in the process of being automated through Fengur. This decision was made centrally in the city education authority. In the Western Fjords and the North East, library automation was the decision of each school. In the Western Fjords, only three of the 20 school libraries were automated; two were using MikroMARC and one was using EMBLA.

Table 2.4
Automated Library Systems in Use in the
Elementary School Libraries of the North East Region

SYSTEM	NUMBER OF SCHOOLS
EMBLA	8
Squirrel	3
MikroMARC	2
[Unknown system]	1

Table 2.5

**Library Functions Automated in the Elementary School Libraries
of the North East Region**

n=14

FUNCTION	NUMBER OF SCHOOLS
Cataloguing	13
OPAC	11
Circulation	4
Acquisitions	4
Periodicals recording	3
Periodicals circulation	1
Inter-library loans	0
Statistics	10
Management reports	6

The only functions automated in these schools were cataloguing and the public access catalogue (OPAC). In the North East, 14 of the 33 school libraries were automated, with at least four different systems in use. EMBLA was being used by eight schools, Squirrel by three, MikroMARC by two, and another small system by one. (See Table 2.4). In this region, more of the library functions were automated, as Table 2.5 shows.

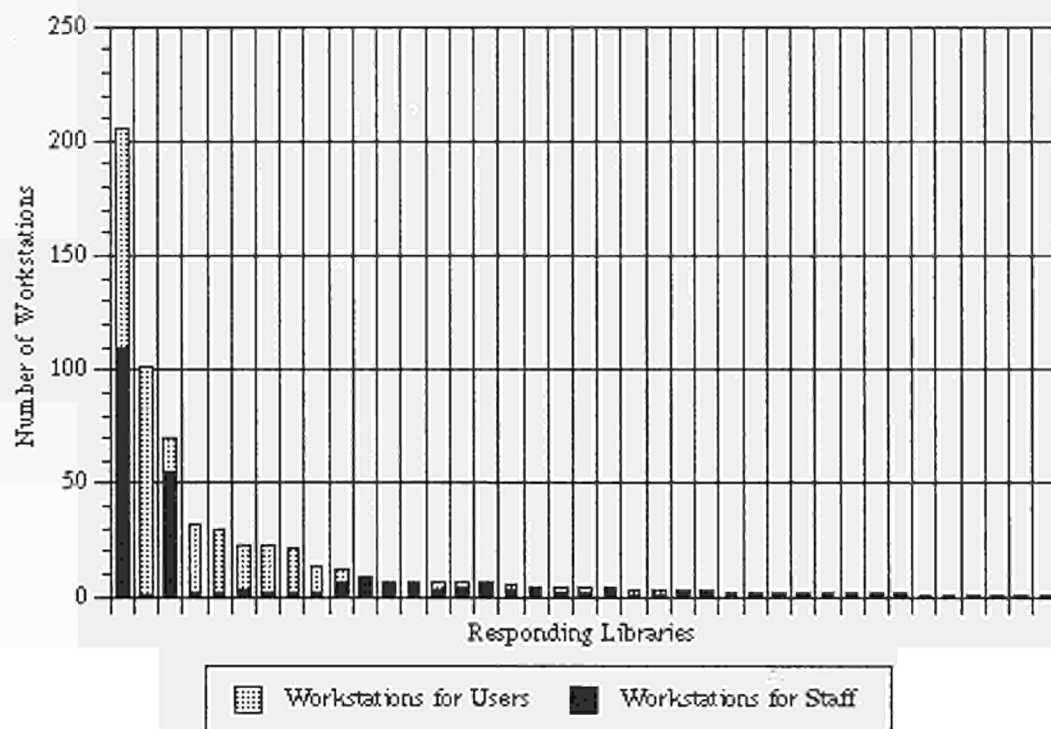
2.6 System implementation

Of the 54 academic, public and special libraries whose responses were included in the analyses, 46 had an automated library system, either through Gegnir or Fengur, or a local system of their own. Just as there were different types and sizes of libraries represented among the respondents, so the size of the automated library systems varied, as did the ways in which they were implemented and the arrangements made for their maintenance.

Only 39 libraries provided information in response to Question A2.5, about the number of workstations attached to the automated library system, the type of workstation, and whether or not the workstations were for library staff or library users. Figure 2.4 shows both the total number of workstations in use in each of the libraries. As an aside, this Figure also provides an illustration of one of the characteristics of library and information service provision in Iceland that has been remarked upon earlier in this report – apart from the large national, academic, and public libraries in the metropolitan area, there are many small libraries of all types, all around the country. The relative numbers of workstations for staff and workstations for users can also be seen in this Figure. In terms of workstations for library users, it needs to be remembered that these cover only users in the library or on the library's network. Where the libraries provide facilities for remote access, it is possible for more users to access the system at any one time. For example, the largest library represented in Figure 2.4 is the National and University Library of Iceland (Landsbókasafn Íslands - Háskólabókasafn), which has user workstations in the Library, but also provides

facilities for simultaneous access by many other users through the University of Iceland network and the Internet.

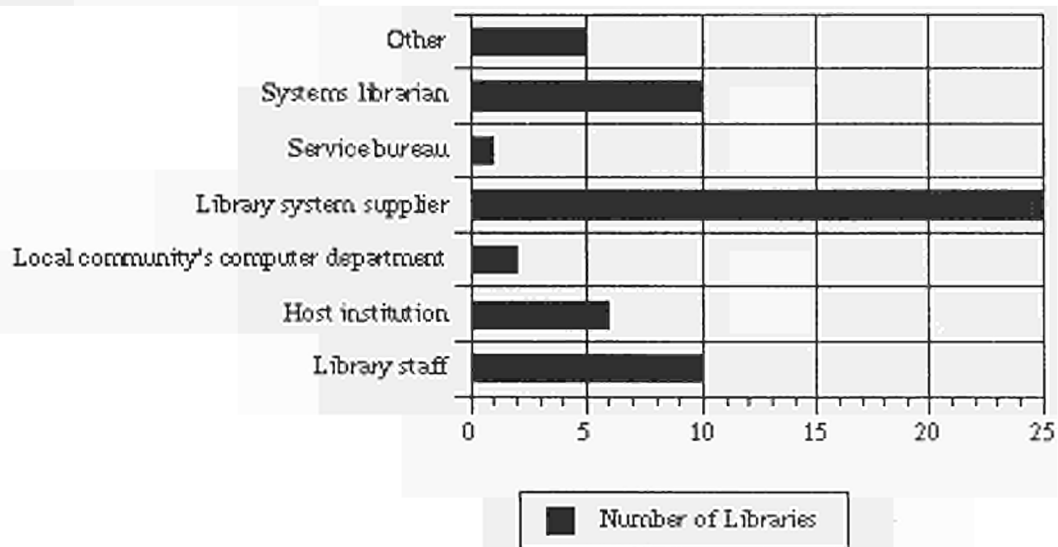
Figure 2.4
Number of Workstations
n=39



Only six of the 39 libraries provided Macintosh workstations for library staff or users, and in five of these cases, the Macintosh workstations were in addition to a number of PC workstations. Apart from the library that reported only Macintosh workstations, there was only one library that had more Macintosh workstations than PC workstations (a library with 14 workstations, 12 of which were Macintosh computers). Six libraries also had VT100 or other terminals for staff and/or users, in addition to the PC workstations.

System maintenance was being organised and carried out in very different ways in the libraries that responded to the survey. It was most common that maintenance was provided by the system supplier or vendor (54.34 per cent of automated libraries), but library staff, the staff of the organisation that the library served, the local community's computer department, a service bureau, an outside expert, and others were maintaining library systems in different libraries. Some libraries were using as many as three different sources of support for system maintenance, for instance from the system supplier, a computer department within the host organisation, and a member of the library staff. Two libraries with automated systems did not answer this question.

Figure 2.5
System Maintenance
n=44



The question of how many “man days” per month that the library staff spent on system maintenance proved to be very difficult for the librarians to answer. In 10 of the 46 libraries, library staff were responsible for maintenance of the library system, but in most cases records do not seem to be kept of the amount of staff time spent on this. Some libraries did not answer the question, and others just answered with a question mark. Some respondents who had indicated that a person or organisation outside the library had responsibility for system maintenance, nevertheless indicated that some library staff time each month was spent on system maintenance, while others said no library staff time was spent on this. Where library staff were spending time on system maintenance, and the information was provided, the time was in the range of one to two “man days” a month. However, the answers to this question were sometimes in the form of comments about the difficulty of answering such a question, or comments about how the maintenance was done, rather than in terms of “man days” spent.

The National and University Library (Landsbókasafn Íslands -Háskólabókasafn) maintains Gagnir for the users of the system. A Systems Librarian at the University and National Library heads a department that is responsible for management of the automated library system in all the participating libraries, upgrading the system, problem solving, and future planning. The staff of this department include, in addition to the Systems Librarian, an assistant systems librarian and a technical engineer.

Of the libraries that were automated, seven (or 15.2 per cent) had additional databases in their library system (that is, databases other than the library catalogue). The largest and most important of these was the National and University Library of Iceland (Landsbókasafn Íslands – Háskólabókasafn), which uses Libertas/Gegnir for Greinir, the database of periodical articles that is described earlier in this chapter. Two of the libraries, the Fisheries Library (Sjávarútvegsbókasafnið) and the Institute for Experimental Pathology (Tilraunastöð Háskóla Íslands í meinafræði Bókasafnið að Keldum), maintained databases of the publications of the staff of the organisation. Three libraries, the Fisheries Library, the Icelandic College of Art and Crafts (Myndlista- og handíðaskólans), and the Institute

for Experimental Pathology, maintained databases of specialist materials in their own subject fields.

Other databases maintained by libraries included the following:

- At the Icelandic Institute of Natural History, Akureyri Division (Nátturufraeðistofnun Íslands – Akureyri), four databases related to flowers and plants, including FLORAISL (information about the distribution of flowering plants, mosses and lichens in Iceland), PLISNAFN (a list of all Icelandic plant names), NFRBANKI (a catalogue of periodical articles and papers in the field of natural science, especially botany, related to Iceland), and EGANCULB (a listing of periodical articles and other material from the American society in this field).
- At the Isafjörður Public Library (Bæjar- og héraðsbókasafnið Ísafirði), two databases, Ævisagnabættir (a catalogue of articles about people), and Bæjar blöðin (a catalogue of articles).

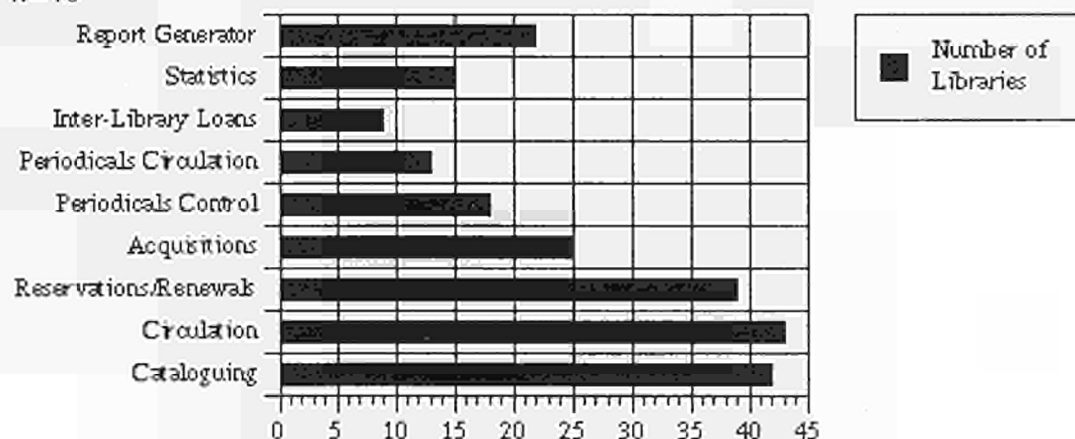
2.7 Functioning of the automated system

This section of the report is based on the questionnaire survey of academic, public, and special libraries. It discusses the activities of the 46 responding libraries that had an automated library system in place. All of these libraries had a catalogue or bibliographic database as their basis; in other words, none of the libraries had approached automation, as some North American libraries do, from the viewpoint of using circulation as the basis of the system. (Bocher, 1994, p.12). However, not all libraries had created their own database by cataloguing locally. Because of the structure of the questionnaire, and the way in which the responses came in, it is difficult to get an overall view of the library functions that are automated (whether through the library automation system or in some other way). Figure 2.6 attempts such an overview, but because the data behind the Figure have been extrapolated from responses to several questions, and the rate of response for each of those questions varies a little, it should be looked at as giving only "the broad picture".

Figure 2.6

Library Functions Automated

n=46



Of the libraries that have an OPAC (public access catalogue for library users), seven (or 21.2 per cent) reported having a graphical user interface in place (Question A2.6). All seven libraries reported this as being a standard interface, not a locally-produced one.

However, there are some problems with the data here. The seven libraries were using, between them, four different systems. For only two of these systems were graphical user interfaces being supplied by the developer/vendor at the time of the survey. One system, cited by three of the seven libraries, has a graphical user interface under development, but not available in Iceland at the time of the survey. A further problem is that 21 libraries (or 38.9 per cent) did not answer this question, suggesting that there was some confusion about what it was that was being asked – confusion that is also apparent in the responses that were made. See Figure 2.7 for a summary of responses.

Only 40 libraries responded to the question about how their OPAC was made available to library users (Question A3.1). Of these, almost half (19 or 47.5 per cent) were making it available to users in the library only. A further 37.5 per cent were making their OPAC available both in the library and through a local network, and an additional 15 per cent were making their OPAC available in these ways and also via the Internet and/or dial-up modem access. (See Figure 2.8) No library was providing access to the OPAC in bookmobiles, though it also has to be said that very few libraries in the sample provide any kind of bookmobile service (except the City Library of Reykjavík, which has a long-standing and comprehensive bookmobile service).

Figure 2.7
The OPAC of the Library System
n=54

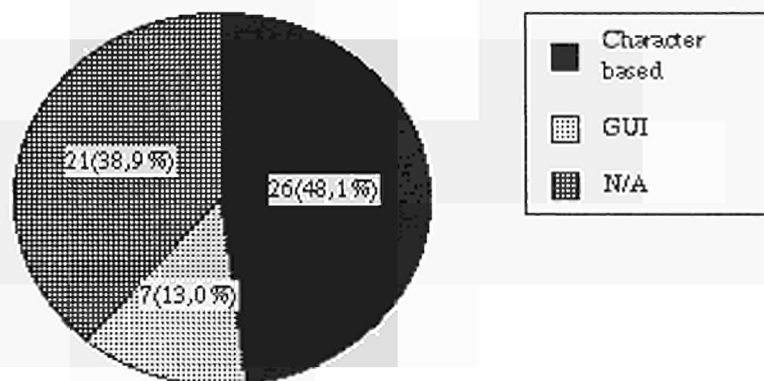
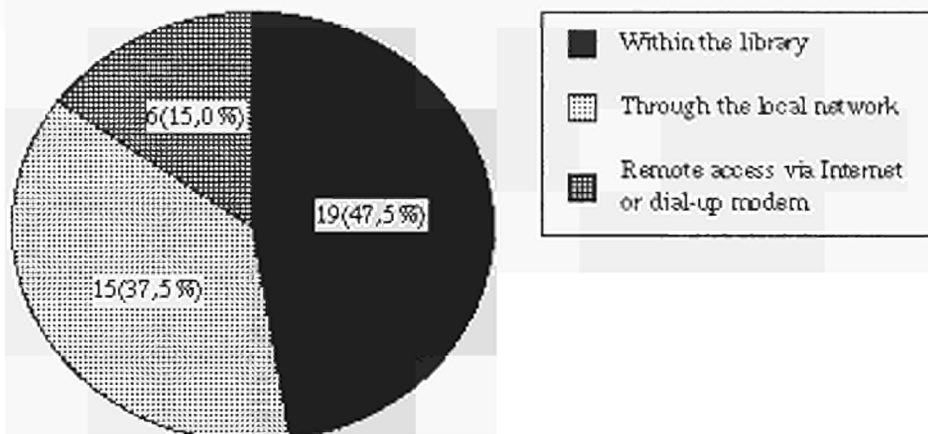


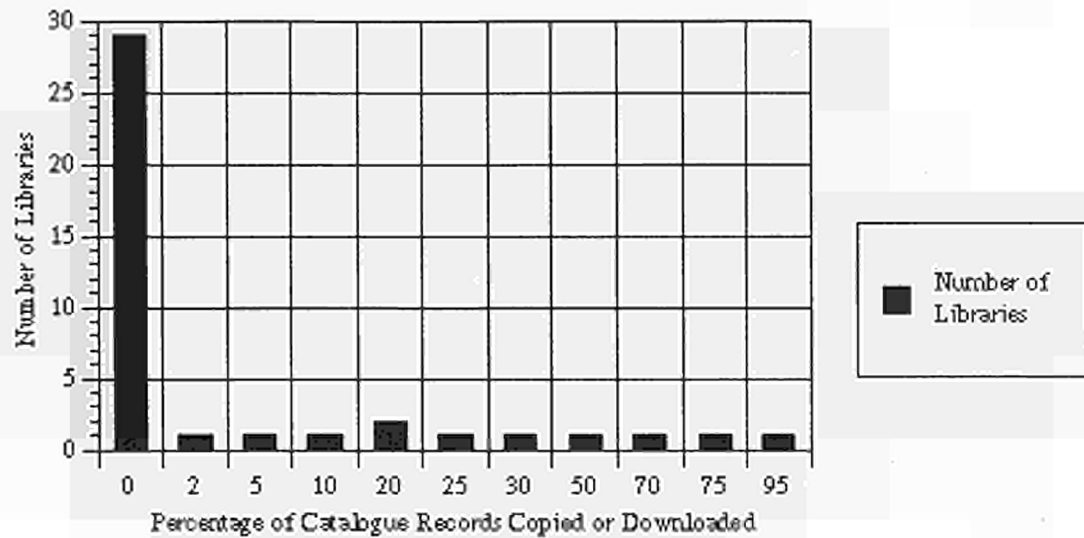
Figure 2.8
How the OPAC is Made Available to Users
n=40



Of the 46 libraries that had an automated library system, only 44 responded to Question A3.2, "Do you use the cataloguing module in your system?". Of those, 42 (or 95.5 per cent) used the cataloguing module, while two (or 4.5 per cent) did not. Thus, whether or not they were part of one of the two large, multi-library systems, libraries in Iceland were generally doing at least some of their own cataloguing or catalogue checking.

Only 40 libraries responded to Question A3.3, about the percentage of new catalogue records created by copying or downloading from external sources. Figure 2.9 shows that the percentage varied from zero to 95 per cent. Most libraries (29 or 72.5 per cent of those who responded to this question) were doing all their own cataloguing. However, 11 libraries were copy cataloguing or downloading catalogue records from external sources, and these covered almost the whole range, copying or downloading from two per cent to 95 per cent of their records.

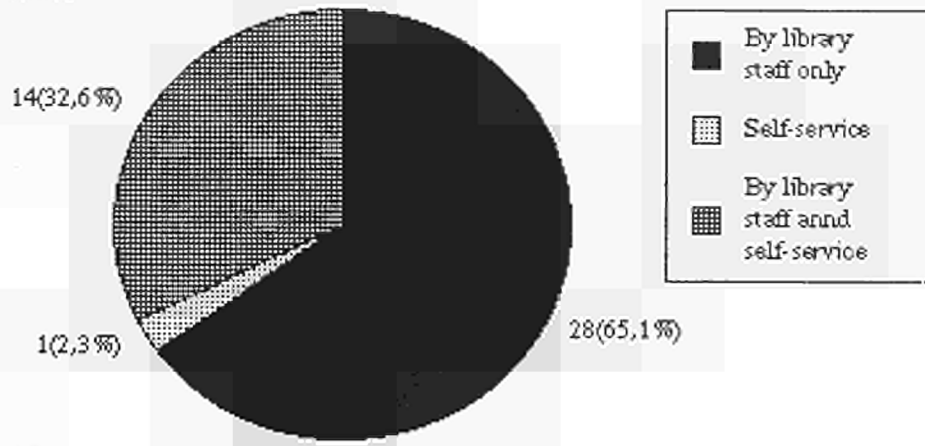
Figure 2.9
**Libraries Copying or Downloading Catalogue Records
 From External Sources**
n=40



As Figure 2.6 showed, the automation of circulation was very common in Icelandic libraries. Question A3.4 asked libraries to indicate whether circulation functions (loans, returns, and other circulation functions) were carried out by the library staff only, by self-service, or by a combination of self-service and service by the library staff. Figure 2.10 summarises the responses from 43 libraries. As can be seen, the most common mode was circulation functions carried out by the library staff, while the second most common was a mixture of self-service and service by the library staff.

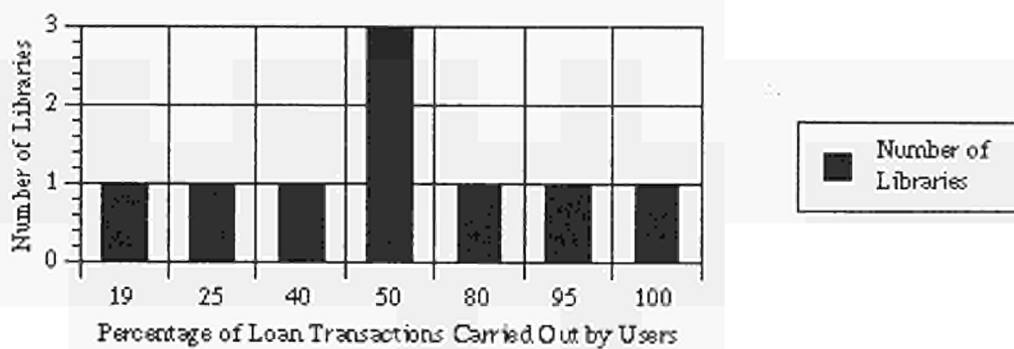
Only nine libraries answered Question A3.5, which asked those libraries where self-service circulation terminals were provided, to indicate the percentage of loans that were carried out by the users themselves. Among the libraries that provided this facility, the percentage of loan transaction carried out by the users varied from 15 per cent to one hundred per cent. The failure of six of the 15 libraries to provide information for this question suggests that the figures are not readily available through the systems themselves; in other words, that it is difficult, from the system point of view, to distinguish a loan transaction processed by a library staff member from one processed by a user – though the difference may be significant in library management terms.

Figure 2.10
The Circulation System
n=43



15

Figure 2.11
Percentage of Loan Transactions Processed by Library Users
(in Libraries Where Self-Service Circulation Terminals are Provided)
n=9



Of the 54 libraries, 43 responded to the question “Does the library make provision for reservations or renewals?” (Question A3.6). The great majority 39 of 43 did provide for these functions. Only 36 libraries responded to the next question, “Are library users allowed to make their own reservations or renewals electronically?” (Question A3.7), and of these, just five were allowing users to make electronic reservations or renewals. Figures 2.12 and 2.13 summarise the responses to these two questions.

Figure 2.12
Reservations or Renewals
 $n=43$

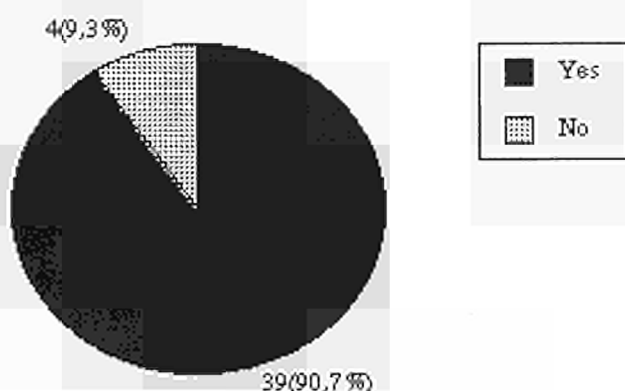
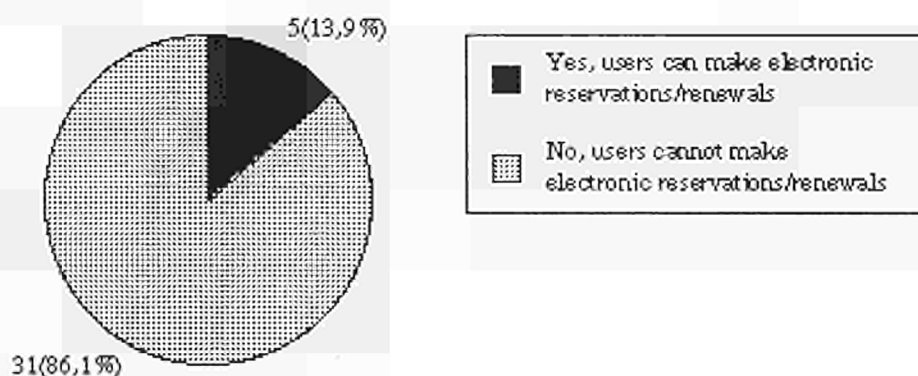


Figure 2.13
Users Making Electronic Reservations/Renewals
 $n=36$



The next section of the questionnaire dealt with a number of automated library system functions – acquisitions, periodicals control, periodicals circulation, inter-library loans, statistics, and report generation. In general, libraries were asked to indicate whether or not each of those functions had been automated in their library, and, if so, if this had been done through a module of the automated library system, or through a separate system. Not all libraries responded to these questions, and different numbers of libraries responded to each question. Figures 2.14 to 2.17 present the responses.

Figure 2.14
Automated Acquisitions
n=46

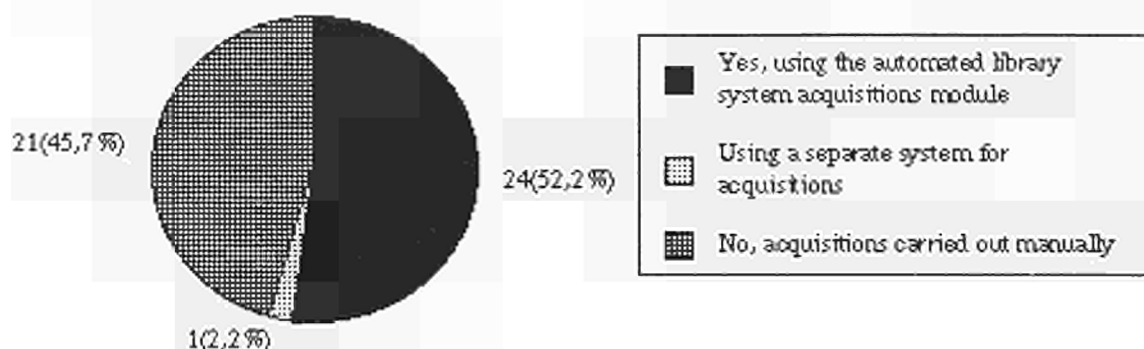


Figure 2.15
Automated Inter-Library Loans (the Local Routines)
n=44

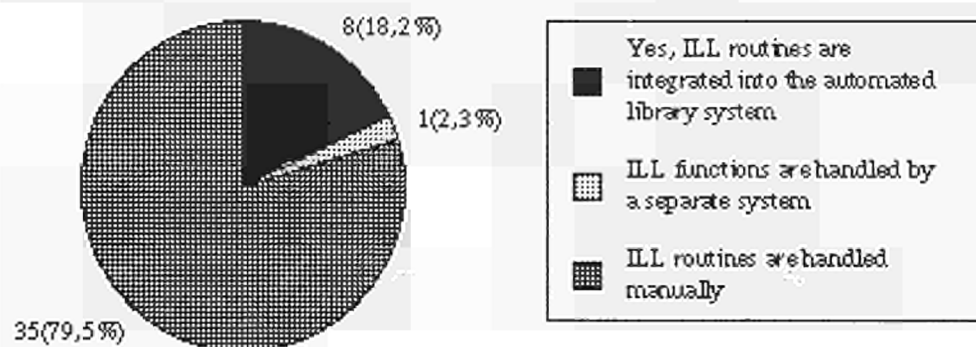


Figure 2.16
Automated Statistics
n=45

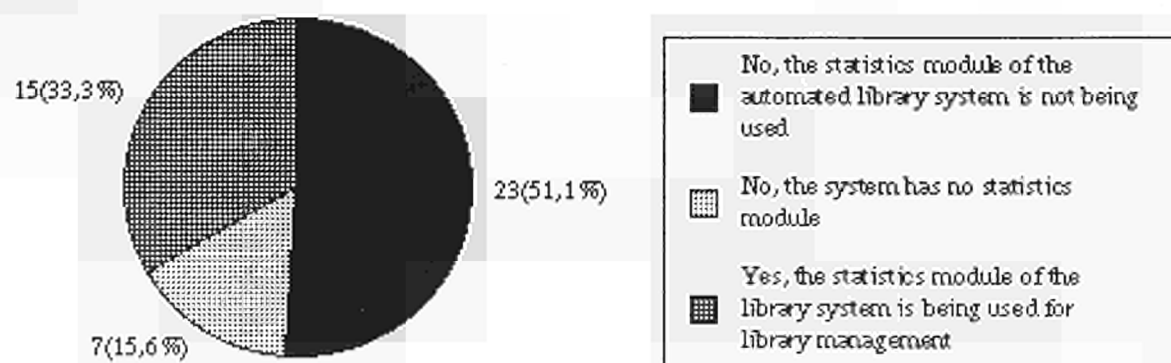
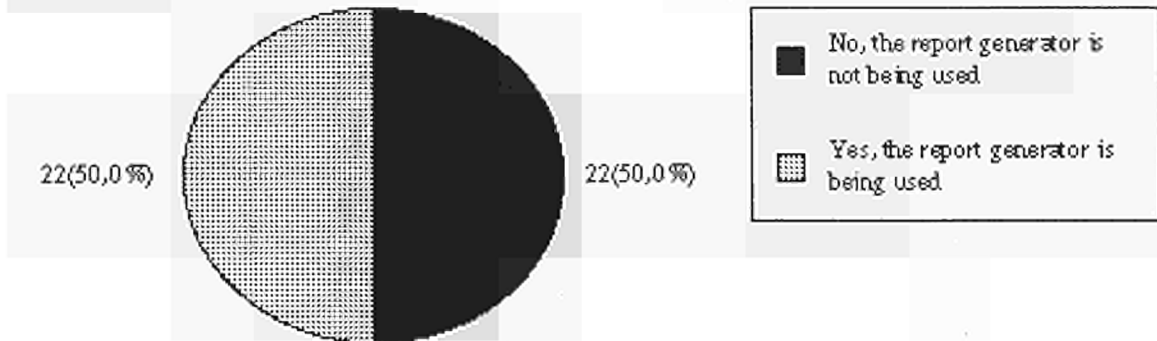


Figure 2.17
Report Generator
n=44

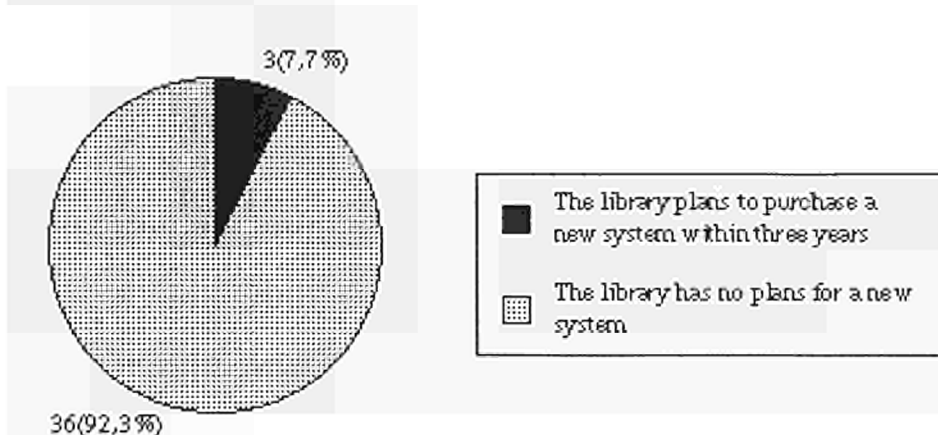


2.8 Development Plans

Academic, public, and special libraries that were surveyed through the questionnaire were asked to provide information about their plans for the further development of their automated library system or their plans for a new system. Only 39 of the 54 respondents completed this section of the questionnaire, and of those, only three indicated that they had plans for a new system (whether a replacement for the present system or their first automated system) within the next three years. (See Figure 2.18)

In response to the questions about their future plans for the automated system in their library, only the minority provided any comments. Two of the librarians indicated that their present system was so new that all their time was going into implementing it, rather than planning for its development over one to three years. Four of the librarians mentioned their desire to have either a Windows version of their library system or a graphical user interface, especially for the OPAC. In relation to this, the National and University Library of Iceland (Landsbókasafn Íslands - Háskólabókasafn) is in the process of implementing a Libertas Z39.50 (client/server) interface that will mean that a World Wide Web graphical search interface can be developed for Gagnir, allowing searching through Web browser software such as Netscape. Others mentioned adding another module or function to their present system, such as periodicals management or inter-library loans, again a reflection of the fact that library automation was new for many of the libraries in the survey.

Figure 2.18
Plans for the Future
n=39



Apart from these, the comments that were made about future plans tended to relate more to access to information (for example, online access to foreign databases) than to the further development of the local automated library system as such, though some were a mixture of both. One librarian mentioned the possibility for library users to connect directly with foreign databases like CELEX from the automated library system, five others the possibility of connecting to the Internet through the local automated library system or in some other way. Some wanted to be able to link directly from the library OPAC to the catalogues of other libraries (Gegnir was particularly mentioned in this context), and three wanted to be able to open up the possibility for their library users to be able to search their own library catalogue (and any links that it provided to other sources of information) from outside the library, for instance via the Internet, or via a network within the host institution (for example, in a college or a research organisation). Adding a CD-ROM drive, or increasing access to CD-ROMs in the library, were also mentioned as possibilities. Clearly the international trend in librarianship, of a move away from a concern with cataloguing and information organisation, and towards connectivity and information access, is reflected in the thinking of at least some librarians in Iceland.

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3 Networking

3.1 Electronic Information Services

In December 1992, an IMO Working Paper on "Electronic Information Services in the EFTA Countries" (prepared for the Commission of the European Communities) provided an "overview of the size and structure of the markets for electronic information services in the seven countries of the European Free Trade Association (EFTA)", including Iceland. The short section of this report that dealt with Iceland is quoted here in full, because the basic economic, social, and cultural conditions under which the information services sector operates have not changed greatly since 1992. However, the information services industry has changed a great deal in the last three to four years, and so this section can serve as a base against which to look at more recent developments.

"As a relatively isolated but modern and sophisticated country, Iceland has a considerable requirement for professional and consumer information. Yet in comparison with other Nordic countries, the domestic Icelandic electronic information services sector is very small. Neither Cuadra's *Directory of On-line Databases* nor SCANNET's *Nordic Databases* directory currently lists any publicly-available Icelandic on-line databases, host services, or gateways – nor indeed are there any public videotex or premium rate services. However, a number of governmental databases (including the Icelandic Lawbook and the population and car registers) are hosted on a national network operated and maintained by the State and Municipal Data Processing Centre (SKÝRR). As well as hosting government databases, SKÝRR offers a range of technical services to the library community, with the result that the catalogues of the

Reykjavík City Library and the National Hospital are available on the network as on-line services.

“Other than the public service mentioned, there are no other publicly accessible Icelandic on-line services. A database of national significance, Greinasafn Morgunblaðsins (the full text of the influential newspaper *Morgunblaðið*), has been developed for use by journalists and other newspaper staff but it is not currently available to the public. The key facts which have limited developments on the domestic supply-side are related to Iceland's tiny population (less than a quarter of a million) and its difficult (and effectively unexportable) language. This means that the high levels of investment needed to create and maintain Icelandic databases cannot hope to be recovered from either domestic or off-shore sales. Other barriers to the more intensive use of on-line and CD-ROM services include the absence of trained intermediaries with the knowledge of the services available and how to use them and the costs (real or perceived) of electronic information.”

Almost all of the “key factors that have limited developments on the domestic supply-side” still remain, particularly the small population base, the problems associated with developing services in a language that is spoken by a relatively small number of people, and the levels of investment needed to develop database services under these conditions. There is now a considerable group of “trained intermediaries”, as a result of the expansion of the existing online searching course in the Library and Information Science programme at the University of Iceland and the introduction of additional new courses, and the increased availability of continuing education courses. However, it is still true that there are some librarians who lack skills in this area. But although these “key factors” largely still remain, there has nevertheless been an enormous expansion in the amount of information available online in Iceland in the last four years. There is more information available in Icelandic and more Icelandic services are publicly available; foreign and international services are being used to a much greater extent; and there is even some Icelandic information now being made available (in English) on international services, though this is as yet on a very small scale. SKÝRR is no longer the only provider of publicly-accessible online services, and the range of databases offered by SK†RR has increased. In terms of the example of an in-house database quoted in the report, the database of the national newspaper *Morgunblaðið*, there have also been great changes, with the full text of the newspaper now being available internationally through the Internet as a subscription service on the World Wide Web. This is not to suggest that the problems associated with the provision of electronic information services in a small country have been solved; far from it. However, new possibilities are emerging that indicate that the picture is now much more optimistic than it was in 1992.

3.2 Isnet

<http://www.isnet.is/>

The more widespread use of the Internet in recent years, and the development of tools that have made the Internet a more user-friendly environment, has made an enormous difference to networking in Iceland. This is the one major factor that has been behind the changes and developments mentioned above. Iceland's Internet connection to the rest of the world, and the ISnet national network within Iceland, are managed by Internet á Íslandi hf (INTIS), a limited company formed by the members of SURIS (the Association for Research Networking in Iceland). All Internet traffic to and from Iceland goes through INTIS. ISnet is the collective name for the Icelandic segments of the NORDUnet Nordic backbone network and EUnet. The satellite connection with the NORDUnet centre in Stockholm and thence the international networks is now 2Mb (or 248,000 bytes per

second) as of February 1996. NORDUnet provides connections to the United States backbone, the European backbones, and other Nordic networks.

ISnet serves around one hundred sites in Iceland with over 8000 registered hosts. Connected to ISnet are Internet service providers, Internet access providers, government and research organisations, universities and colleges, elementary and secondary schools, and commercial organisations. In addition to basic Internet connectivity, ISnet provides its member networks with access to a number of services, including electronic mail, archive services, USENET, information services (gopher, WAIS, World Wide Web), and directory services. It maintains public lists of gopher servers in Iceland and World Wide Web servers in Iceland.

3.3 Ismennt

<http://www.ismennt.is/>

ISMENNT, or Íslenska menntanetið, is Iceland's Education Network. It is connected to ISnet, and provides Internet connectivity for its members. As of late 1995, 91 per cent of all schools in the country were connected to ISMENNT, and through it to the Internet. In addition, ISMENNT serves some of the higher education institutions (such as the Co-operative University College of Bifröst – Samvinnuháskólinn á Bifröst), some public libraries, and a number of community, cultural, and business organisations. Through ISMENNT, schools in Iceland are linked to the Nordic education networks.

The origins of ISMENNT lie in the countryside. In 1986, Pétur Þorsteinsson, a school-master, established the Schools Computer Centre in Kópasker in the north of Iceland, and by 1990, the first elementary school was connected to the UNIX computer that he set up for Internet access. This was the basis of the Icelandic Education Network, which was formally established in the summer of 1992 as a national network. Today, ISMENNT is a distributed national network, based on UNIX computers in Reykjavík, Akureyri, and Kópasker. Schools are able to link to the node that is nearest to them, thus reducing access costs. ISMENNT's staff provide information and training for teachers, and maintain the computer systems.

Among the services provided by ISMENNT are electronic mail, USENET newsgroups, Internet Relay Chat, gopher, and World Wide Web access. The system supports a range of educational activities and information services, including distance education courses, access to Nordic and international co-operative projects, search services, and databases. The local Education Office in Akureyri uses the network to communicate with schools in the region, for staff development and for administrative functions. School students have participated in national and international projects via the network. Some schools maintain home pages on the Web server, and some public libraries also have home pages here too. The Icelandic directory on the World Wide Web server is an important access tool for people looking for Icelandic information or services.

3.4 SKÝRR

<http://www.skyrr.is/>

SKÝRR were mentioned in Chapter Two as the providers of the DOBIS/LIBIS library automation system in Iceland. They are also commercial database access providers, through their online information service known as Upplýsingaheimar (Information World).

Among their databases are some of the major databases produced by or for government agencies, including the national Register of Enterprises (Fyrirtækjaskrá), the national population register (Þjóðskrá), and the external trade figures database, all from the Statistical Bureau (Hagstofa Íslands); Útboði (a public contract or competitive bidding database from Vegagerð ríkisins, Ríkiskaup and Innkaupastofnun Reykjavíkurborgar); and the national car registry (Bifreiðaskoðun). The Lagasafn database is a legal database which incorporates the current Acts of the Icelandic Parliament (Alþingi). Skipaskrá (the Registry of Ships) and Skipsskaðar contain information about ships and shipping. In addition, SKÝRR hosts the online service of the Reykjavík-based national daily afternoon newspaper *DV*, with full text access to the newspaper, including its current news and business sections.

3.5 Strengur

<http://www.strengur.is/>

Strengur hf is an Icelandic software house that also provides access to a range of online information services, among them the important full-text database of the national morning newspaper *Morgunblaðið* (from 1987) and the fishing industry database service Hafsjór. The latter serves as both an online trading system and a business information source for the industry and others. The Hafsjór service incorporates the national population register and the Register of Enterprises, information about the fishing quota system, the shipping database Skipaskrá, fish price and market information, and other information. Strengur also provide access to the international/United States Dow Jones–Telerate system and in 1993 signed an agreement to upload Icelandic information to Dow Jones–Telerate from September of that year. This includes trading information from the Iceland Stock Exchange. It was the first online service to make Icelandic financial information publicly available, either in Iceland or abroad.

The information in English on the Web site is currently very limited, but extensive information about the databases and services is provided in Icelandic.

3.6 Other Online/Database Service Providers

Other online service providers have developed services for specialist markets. For example,

Úrlausn – Aðgengi ehf (Accessible Solutions)

<http://www.adgengi.is/adgengi/>

This is an Icelandic software company that specialises in information services in the field of law. Their Icelandic Law Resource Center (Réttarríkið) provides access to Acts of the Icelandic Parliament (Alþingi) and Regulations, and they are developing a range of services for lawyers through a World Wide Web site. Their site has some Icelandic legal information related to business and finance, intended for businesses and organisations from abroad that plan to enter the Icelandic market or work with Icelandic companies and organisations. This information is provided in English

Miðlun hf

<http://www.midlun.is/>

Based in Reykjavík, provides World Wide Web access to the Iceland Export Directory (an English language guide to Icelandic products, aimed at foreign companies that want to do business in Iceland), an electronic mail directory (Netfangskrá), and a media watch service. They also maintain the Yellow Line information service which has a Web page (Vefur gulu linunnar) that provides access to the home pages of around 900 Icelandic companies.

This is Reykjavík

<http://qlan.is/>

A service for tourists in Iceland. It carries information about accommodation, tours and activities for tourists, travel information, and information about cultural and sporting events. There is a section related to libraries. This is an experimental service, and an extension is planned to cover general Icelandic information aimed at tourists and visitors.

3.7 Internet Access Providers

Internet access is provided for a fee by ISMENNT and other organisations described above. In addition, there are companies and organisations that provide Internet access; some of them also carry some online content in the form of databases and/or information services of varying degrees of significance. Among these companies or organisations are Miðheimar (Middle World), Skíma, Nýherji, SmartNet, Eldhorn (Vulcan), Islandia, SPORnet, Vortex. Some of these are regional services: for instance, Vulcan, located in Hornafjörður, serves the east coast of Iceland, while SPORnet serves the Keflavík area. Some, like The Icelandic Business Web of mmedia, are specialised in intent. During the last year, several new services have appeared on the scene, and activity in this field is ongoing.

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4 User Services Based on Information Technology

4.1 Introduction

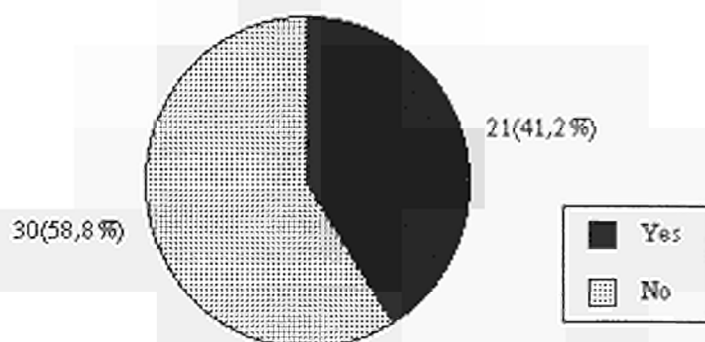
This chapter covers the use of a wide range of information technologies in libraries, particularly from the viewpoint of their use in providing services to library patrons. First, there is a discussion of the use of electronic document ordering and delivery systems of different kinds for inter-library loans and access to print and electronic information sources. This is followed by a brief section that deals with local information technology applications in libraries, for example locally-created databases. Later sections deal with the use of CD-ROM, online information services, and the Internet in libraries. Finally, there are some comments about other applications of information technology in libraries. The information for this chapter came from the questionnaire survey of academic, public, and special libraries, from the telephone survey of school libraries, from the statistical compilations of the Director of Public and School Libraries (Bókafulltrúi ríkisins), from reports and articles that describe research projects, and from reports in newspapers and professional journals. In addition, information was supplied by online information service providers, system vendors, Internet access providers, and librarians, and some documentation was available through the online systems themselves or on the Internet.

4.2 Electronic Document Ordering and Delivery

This section covers the use of information technology for inter-library loans and document delivery. For the purposes of this study, the term electronic document ordering was used to mean that a library was able to use electronic systems to place requests for materials with other libraries or services, either through its own automated library system, or through other systems. The term electronic document delivery was used to mean that the library either provides access to documents in electronic form to remote users (for example, through a network), or transmits the documents in electronic form to the user (for example, through electronic mail).

Twenty-one of the libraries in the Icelandic survey ordered inter-library loans electronically (see Figure 4.1). However, the majority (30) did not (three libraries did not answer this question). In only four of the libraries were users allowed to order documents themselves electronically (see Figure 4.2).

Figure 4.1
Libraries Using Electronic Document Ordering
n=51



In libraries that were using electronic routines for document ordering, the percentage of inter-library loan requests carried out electronically varied; although the largest group of respondents (9) placed less than 25 per cent of their requests this way, still the total number of libraries in the other three categories was larger – in other words, more than half of these libraries placed more than a quarter of their requests electronically. However, when it comes to the total number of inter-library loan requests made by each library, the number varies enormously, reflecting the fact that while there are some large libraries in Iceland, many of the libraries are very small. Only four libraries placed more than one thousand inter-library loan requests in 1994. (See Figure 4.3) The two libraries that made the most requests, the National and University Library of Iceland (Landsbókasafn Íslands - Háskólabókasafn) and the Medical Library at the National Hospital (Landspítalinn), made 7250 and 4758 requests respectively, and both figures were much larger than those for any other libraries in the survey. Nevertheless, only 17 libraries provided information about the total number of inter-library loan requests for 1994, and two indicated that this information was not available.

Most libraries ordered both books and articles electronically; 19 of the 20 libraries that provided information about this, ordered articles, and 18 of the 20 ordered books. (See Figure 4.4) Only four libraries ordered materials other than books and articles; the materials included videos, compact discs, graphic works, films, microfilm, and microfiche.

Of the 21 libraries that were ordering inter-library loans electronically, only 19 provided information about where their orders were placed. Some libraries were ordering both from Icelandic systems/services and from

Figure 4.2
Library Users Placing Document Orders Electronically
 n=25

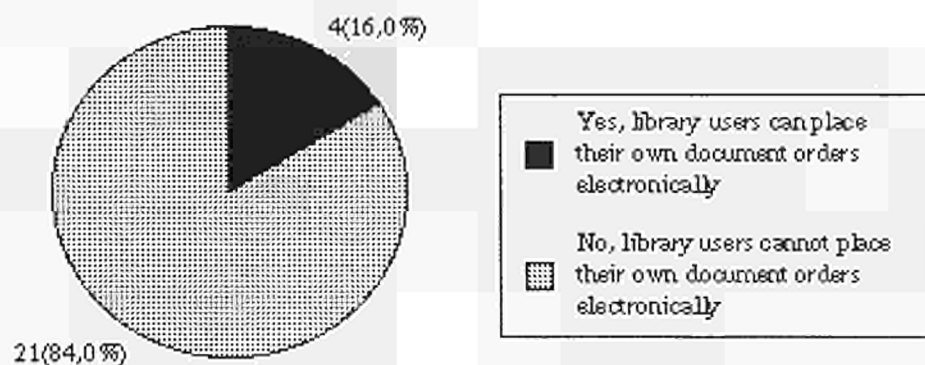


Figure 4.3
The Total Number of Inter-Library Loan Requests in 1994, by Library
n=17

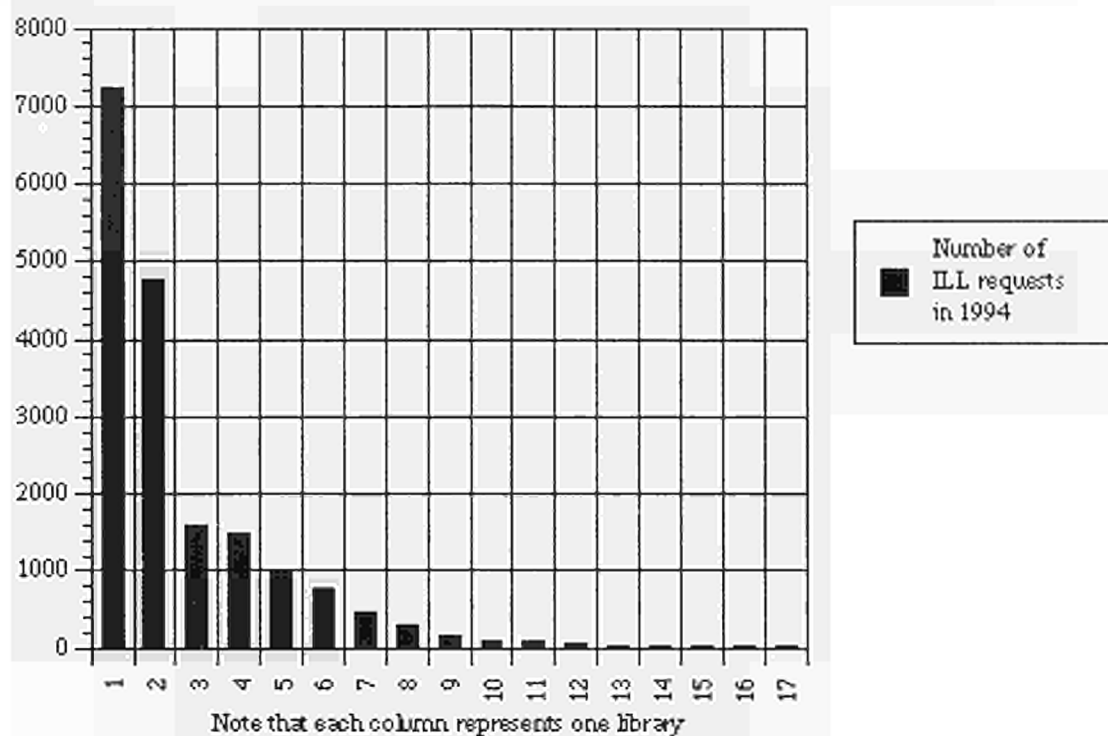


Figure 4.4
Types of Documents That Are Ordered Electronically
n=20

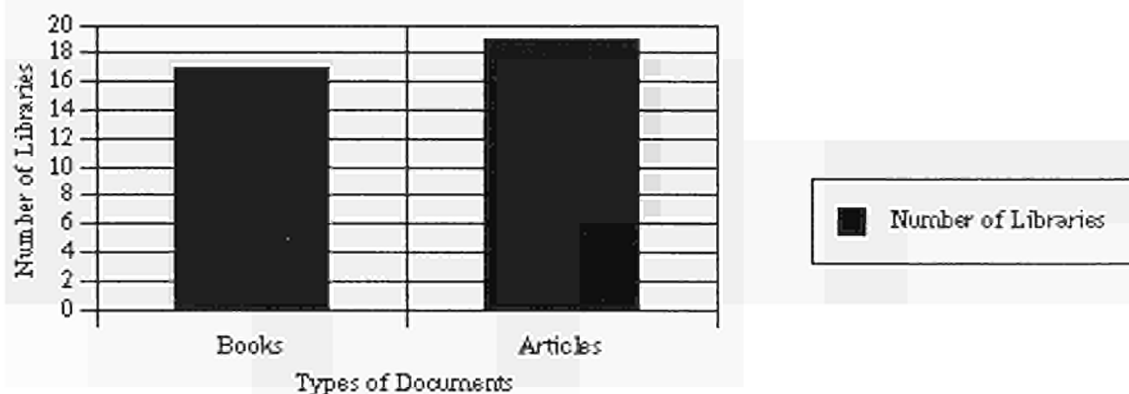


Figure 4.5
Where Documents Are Ordered From
 n=19

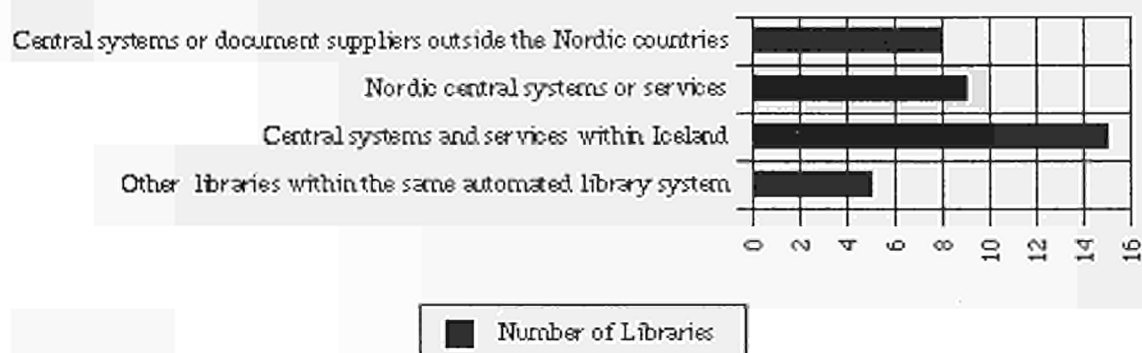
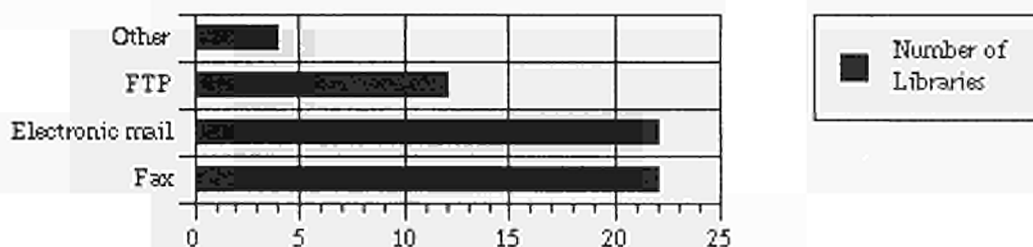


Figure 4.6
Electronic Formats in Which Libraries Can Receive Documents
 n=23



overseas services. Fifteen of the 19 ordered from central systems within Iceland (Gegnir, Fengur). Nine of the 19 ordered from Nordic central systems or services such as LIBRIS or UBO-BOK, and eight ordered from central systems or document suppliers outside the Nordic countries, such as UnCover, OCLC, EBSCO, and the British Library Document Supply Centre. Five placed orders within their own automated library system. (See Figure 4.5)

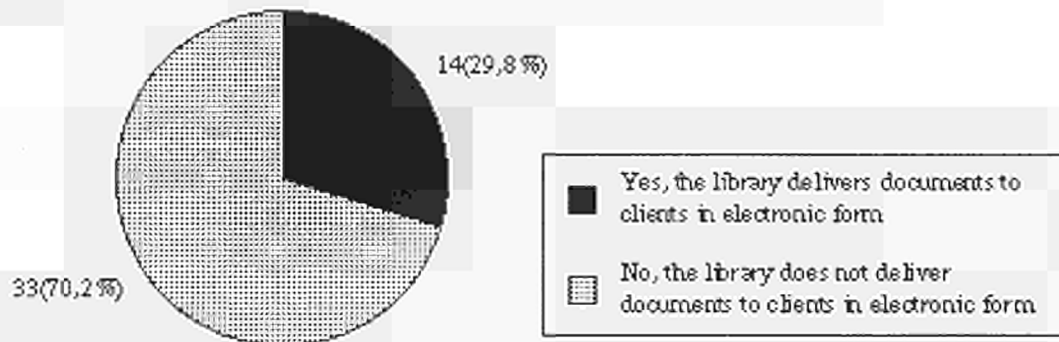
Many documents (books, articles, or other materials) that are ordered electronically are delivered in printed form, through the mail system. However, some can be delivered electronically. When they were asked about the formats in which they were able to receive electronically-delivered documents (Question B4), most (22 out of the 23 libraries that responded to this question) nominated fax and electronic mail. The next most common format was FTP (12 of the 23 libraries). Only four libraries indicated that they were able to receive documents in other formats. (See Figure 4.6)

While 21 of the 54 libraries were using electronic document ordering routines for inter-library loans, only 14 (or 25.9 per cent) were providing electronic document delivery services to their clients. Figure 4.7 summarises the responses to Question C1, "Does the library deliver documents in electronic form?". As Figure 4.8 shows, there are few differences between the different types of libraries in relation to this. Half of the secondary schools/colleges, almost half of the special libraries, and almost half of the public libraries, provided this service.

Figure 4.7

Libraries Delivering Documents to Clients in Electronic Form

n=47



The electronic delivery format that was most often used was fax (in fact, it was used by all 18 libraries that answered this question), followed by electronic mail (used by seven), floppy disc (used by two), and other electronic formats. The “other electronic formats” were not specified.

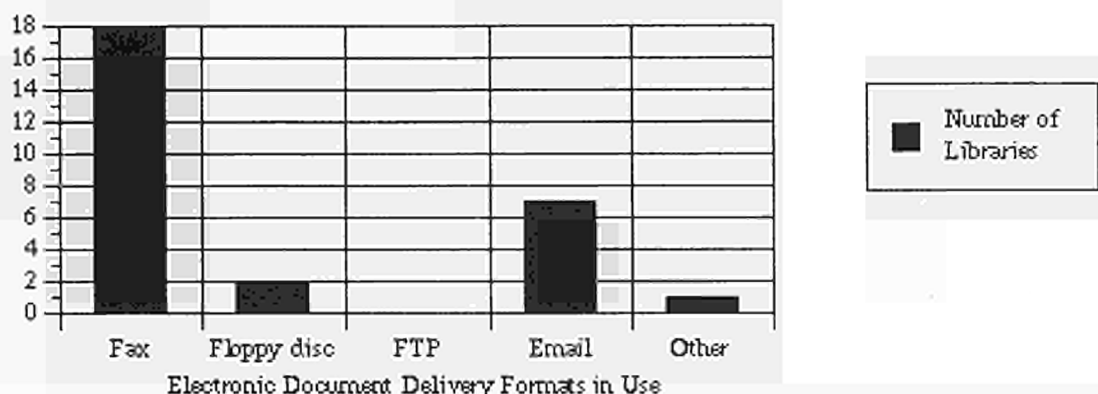
Figure 4.8

Libraries Using Electronic Document Delivery

n=47

Type of Library	Libraries Using Electronic Document Delivery	Libraries Not Using Electronic Document Delivery	TOTAL
Public libraries	4	9	13
Special libraries	6	13	19
Secondary school libraries	4	8	12
University/College libraries	0	3	3
TOTAL	14	33	47

Figure 4.9
Electronic Document Delivery Formats Used by Libraries
n=18



No library was using FTP for document delivery. Only one library, the library of the Commercial College of Iceland (Verzlunarskóli Íslands), was providing electronic document delivery in three electronic formats (fax, electronic mail, and on floppy disc), though eight libraries were using two formats. Figure 4.9 summarises the responses. Note that the number of responses to the question about the electronic delivery formats in use was greater than the number of responses to the question about whether or not documents were delivered to users in electronic formats.

Secondary School Libraries

The annual statistical compilation of the Director for Public and School Libraries (Bókafulltrúi ríkisins) for the school year 1994/1995 shows that of the 42 schools and colleges listed (23 responding libraries), only 15 had used inter-library loans services (although five schools did not give information about this aspect of their library services). The number of inter-library loans for each library was not very large, the most being 133; overall, the total number of inter-library loans for all secondary schools was only 656. Some of these school libraries are also represented in the survey results reported above. There is no way of knowing, from the statistical compilation, how these inter-library loans were carried out in the libraries, and so it is impossible to discuss secondary school libraries as a whole in terms of electronic document ordering and delivery.

Elementary School Libraries

The annual statistical compilation of the Director for Public and School Libraries (Bókafulltrúi ríkisins) for the school year 1993/1994 (published in 1995) shows that only 28 of the responding schools used inter-library loans, between them generating 2160 transactions. As with the secondary schools, this number is not large when it is considered that it represents all elementary schools. Again, there is no indication in the statistical compilation of the procedures used.

4.3 Access to External Databases – Online Services

Performing online searches for library users is an application of information technology that has been used for many years, though because of distance, cost, and difficulties with

telephone connections, online searching became possible in Iceland later than in some other European countries. However, from the 1980s, this has been an accepted part of services to users for many Icelandic libraries.

The survey of academic, public, and special libraries revealed that 30 of the 54 responding libraries were providing these services and 20 were not (four libraries did not answer the question about online searching). Of the 30 libraries that were searching online for their users, most (25 or 83.3 per cent) were doing it free of charge, and only one library charged for all searches. (See Figure 4.10 and Figure 4.11)

Question D2 asked for the number of online services (or hosts) that the library subscribed to, and the examples given in the question were DIALOG and DATA*STAR, both of which were known to be in use in libraries in Iceland. Despite the fact that 30 libraries were providing online search services, there were only 16 responses to this question. Table 4.12 summarises the results. Seven libraries subscribed to one service, and five libraries

Figure 4.10
Libraries Providing Online Search Services
n=50

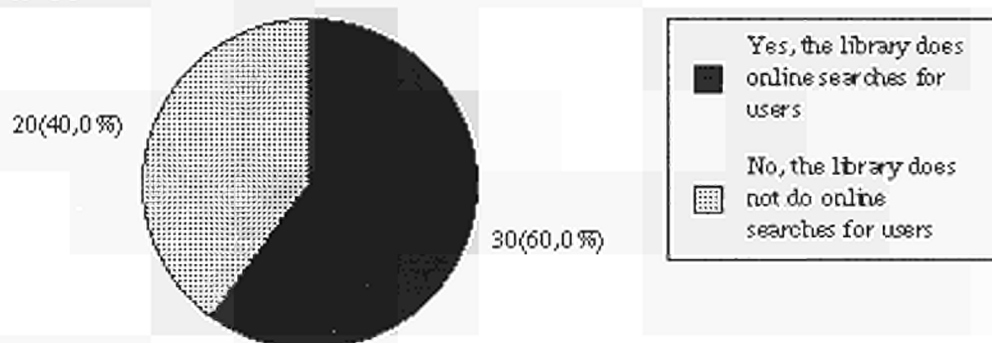


Figure 4.11
Online Searching Free or for a Fee
n=30

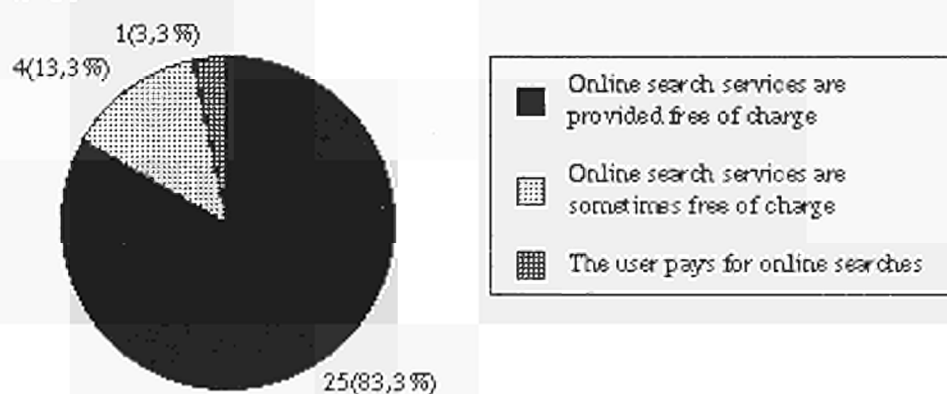
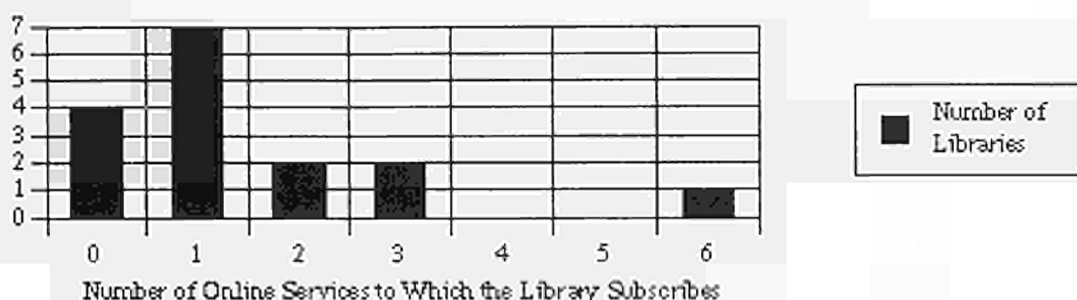


Figure 4.12

Number of Online Services to Which the Library Subscribes

n=16



subscribed to more than one. Four of the libraries that were providing online search services did not subscribe to any online service.

Respondents were asked to name the online services subscribed to by their library, and fourteen did so. The online service most often subscribed to was DIALOG (nine libraries); the next most common was MIC KIBIC (three libraries). Three services were used in two libraries: the international service DATA*STAR; and two Icelandic services, SKÝRR and Strengur. Online services named by one respondent each included the international services OCLC, Questel/Orbit, ESA/IRS, DIMDI, and CompuServe; and the Nordic services DANBIB and BIBSYS. Table 4.1 lists the online services subscribed to by the libraries of the 14 respondents to this question.

Table 4.1

Online Information Services (Hosts) Subscribed To

n=14

ONLINE SERVICE	NUMBER OF LIBRARIES SUBSCRIBING
DIALOG	9
MIC KIBIC	3
DATA*STAR	2
SKÝRR	2
Strengur	2
BIBSYS	1
CompuServe	1
DANBIB	1
DIMDI	1
ESA/IRS	1
OCLC	1
Questel/Orbit	1
UnCover	1

It has to be said that respondents to this and other questions (D1, D2, and D3) about online services seemed a little confused (possibly as a result of problems with the questionnaire),

and so the information provided, taken as a whole, may not be reliable. For example, some respondents who did not indicate the number of online services their library subscribed to in response to question D2, went on to list one or more online services in response to question D3, which asked for a list of the services. In addition, two respondents indicated that their libraries subscribed to two online services, but listed only one each. Further, some respondents listed a mixture of online services or hosts and databases in this section.

On the basis of the trialling of the English-language questionnaire at the University of Iceland, some element of confusion about the questions related to online searching had been foreseen. Thus, examples of online services or hosts were provided in the Icelandic questionnaire in the hope that this might clarify what was required. Another change in the Icelandic questionnaire was the insertion of an additional question that asked respondents to list the five databases that were used most in their library, and the examples given in the question were ERIC, MEDLINE, and PSYCINFO. As a strategy for avoiding confusion, this does not seem to have been completely successful. However, the databases listed in response to the additional question really were databases, so that question, at least, was understood in relation to the others.

Databases listed more than once as among the "most used" in the libraries were MEDLINE (used on three different online services – KIBIC, DIALOG, and Questel/Orbit); Books in Print (used on two different services); FSTA; PSYCINFO; ABI Inform; ERIC; the online database of the Icelandic newspaper *Morgunblaðið*; BIOSIS; COMPENDEX. Table 4.2 lists the online databases used by the 13 respondents to this question. The number of libraries that responded to this question, and to the question about online information service subscriptions, was so small that it is impossible to make any general observations about online searching in Iceland on that basis. It is clear from the responses that use of online information services, and the databases on them, by special libraries, is very closely related to the area of specialisation of the host institution, which is no surprise. With medical libraries, an agricultural research library, education libraries, and science libraries represented by the respondents, the list presented in Table 4.2 is very understandable. Given the relative isolation of Iceland, and the relatively small size of local specialised collections, the only real surprise was that on the whole the respondents seemed to know little about the use of online services on which they were reporting. There were exceptions, but taken together, the responses in this section of the questionnaire were very unclear and presented many problems.

Apart from the small number of secondary schools and colleges represented in the questionnaire survey of academic, public and special libraries, no information is available from other sources about the use of online information services in the secondary schools, though it is known that some are using Gagnir online and at least two are using ERIC through DIALOG.

At the elementary school level, the telephone survey of schools in three administrative regions of Iceland showed no use of online services apart from access to Gagnir. Gagnir was being accessed in three school libraries (of 33) in the North East region, and in seven school libraries (of 40) in Reykjavík. Since it is relatively easy for schools to access Gagnir through the gopher of

Table 4.2
The “Most Used” Online Databases
n=13

ONLINE DATABASE	NUMBER OF LIBRARIES
MEDLINE	5
Books in Print	3
ABI Inform	2
BIOSIS	2
COMPENDEX	2
ERIC	2
FSTA	2
Morgunblaðið	2
PSYCINFO	2
Accounting and Tax Database	1
AFSA	1
AFSTA	1
Agricola	1
AGRIS	1
CAB Abstracts	1
Chemical Abstracts	1
DV (an Icelandic newspaper)	1
INSPEC	1
Eventline	1
Family Resources	1
Kompass Europe	1
Mediconf	1
PTS Prompt	1
Science Citation Index	1
Social SciSearch	1
Sociological Abstracts	1
Thomas	1
Ulrichs Periodicals Directory	1

ISMENNT (the Icelandic Education Network), this use of Gegnir is easily explained. What is difficult to explain is why, given this ease of access, more are not doing so. It also seems a pity that other online services are not being used through ISMENNT in these libraries.

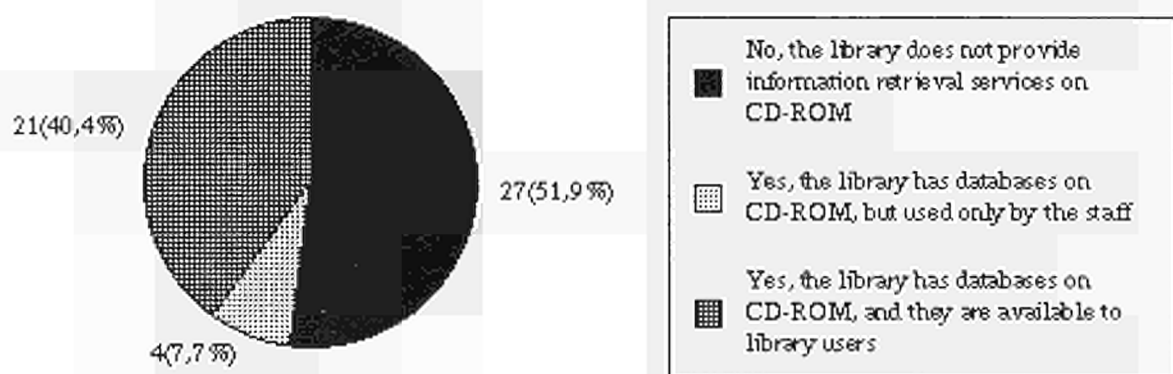
4.4 Access to External Databases – CD-Rom

Although CD-ROM technology has been available since 1984, it was only in 1995 that the first CD-ROM disc in Icelandic appeared. The reasons for this include the small size of the local market (which meant that it only became economical to produce discs in Icelandic once the costs involved in disc production decreased); and difficulties associated with adapting CD-ROM disc creation and search software for the Icelandic language and

Icelandic conventions. Over the last ten years, libraries in Iceland have purchased CD-ROMs in other languages. In academic libraries and special libraries, there are many books, magazines, and other materials in English and other European languages, and having CD-ROMs in these languages simply fitted an existing pattern. However, for schools and public libraries, where not all users have the necessary foreign language skills, use of reference and other CD-ROMs in foreign languages presented more difficulties. It is likely that the recent emergence of CD-ROMs in Icelandic will lead to more interest in CD-ROMs in these libraries.

In response to the questionnaire survey of academic, special, and public libraries, 25 of the 54 responding libraries indicated that they provided information retrieval services on CD-ROM, while 27 did not (two did not answer this question). (See Figure 4.13) However, while some special libraries did have CD-ROMs, special libraries were less likely to have them than public libraries or secondary school/college libraries, as Figure 4.14 shows.

Figure 4.13
Libraries With CD-ROMs
n=52

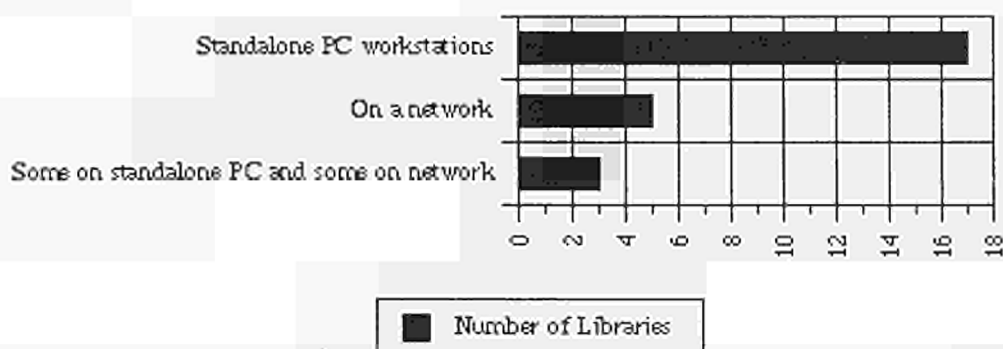


It was most commonly the case that the CD-ROMs were installed on “standalone” PC workstations in these libraries in 17 libraries), though five libraries made their CD-ROMs available through a network, and three through a combination of standalone machines and a network. Three of the libraries with CD-ROMs did not answer this question, and three libraries marked more than one option. (See Figure 4.15)

Figure 4.14
Libraries With CD-ROMs, by Type of Library
n=52

Type of Library	No CD-ROMs	CD-ROMs for Staff Use	CD-ROMs for Users	TOTALS
Public libraries	8	4	5	17
Special libraries	13	0	6	19
Secondary school/colleges	6	0	7	13
University/colleges	0	0	3	3
TOTALS	27	4	21	52

Figure 4.15
How the CD-ROMs Were Installed in the Libraries
n=21



An additional question (labelled D8) was provided in the Icelandic questionnaire, which asked respondents for a list of the CD-ROMs in their library. Eighteen of the libraries provided such a list, usually by brief title. Several simply listed ten discs on the ten lines of the response area and then indicated that there were also other discs in the library. The numbers varied from one disc to over thirty, but since some lists were incomplete, the numbers have not been tabulated. In all, 86 different CD-ROM titles were listed by the 18 libraries, the vast majority of the titles in English. A list is provided (brief title only) as Appendix VI. The Encarta 95 encyclopedia disc was found in the largest number of libraries (12 libraries), the New Grolier Multimedia Encyclopedia was in seven libraries, and the Comptons Encyclopedia was in three libraries. In addition, one respondent simply listed a "multimedia encyclopedia", which could have been any one of these three. Other CD-ROMs in three or more libraries were The World of the Vikings (7), Family Health - Mayo Clinic (5), the Picture Atlas of the World (4), Cinemania 95 (4), MEDLINE (4), ERIC (3), Multimedia World History (3), various versions of Bookshelf (3), and Body Works (3). There were 61 disc titles that were each held by only one library. Clearly, libraries have purchased discs with the specialist needs of their own users in mind, as well as buying some standard reference works on CD-ROM.

Secondary School Libraries

The annual statistical compilation of the Director for Public and School Libraries (Bókafulltrúi ríkisins) for the school year 1994/1995 shows that of the 42 schools and colleges listed (23 responding libraries), 16 (or just on 70 per cent) had CD-ROM discs. The number of discs in each library ranged from 30 at the Commercial College of Iceland (Verzlunarskóli Íslands) and 25 at the Akureyri Grammar School (Menntaskólinn á Akureyri) to one disc. Table 4.3 shows the number of discs per school. There is, however, no information provided about the titles of the discs

Table 4.3

Number of CD-ROM Discs in Secondary School Libraries

(Information from Bókafulltrúi ríkisins)

NUMBER OF CD-ROMs	NUMBER OF SCHOOLS
One	1
Two	4
Three	0
Four	0
Five	1
Six	2
Seven	1
Eight	0
Nine	3
Ten	0
Eleven	1
.....	
Fourteen	1
Twenty-five	1
Thirty	1
TOTAL	16

No equivalent information was available for elementary school libraries. However, elementary schools provided information about their CD-ROM holdings for the telephone survey of the elementary schools in three administrative regions of Iceland. The results are presented in Figure 4.16. It is interesting that while the implementation of library automation varied from region to region, there was much more commonality in relation to CD-ROM provision, with approximately one school in ten in each of the regions having CD-ROM facilities in the school library.

However, there were also considerable differences in levels of provision between the schools that did have CD-ROM facilities. For instance, in the Western Fjords, where two of the 20 schools had CD-ROM facilities, one, a small school of 23 pupils, had a new computer with a CD-ROM drive and 15 discs, including the Encarta encyclopedia, atlases,

a disc about the human body, and some of the "Living Books" series of multimedia stories on disc. The other school had a CD-ROM drive but no discs. In Reykjavík, of the four schools with CD-ROM facilities, one (with 900 pupils) had six CD-ROMs, one (with 430 pupils) had around 10 CD-ROMs. This region also had the two schools that had the largest collections of CD-ROMs of the schools in the survey, Hagaskóli (570 pupils) with 29 discs, and Grandaskóli (460 pupils) with 22 discs. The lists of discs in these two schools included the Encarta multimedia encyclopedia, atlases, reference works such as the Eyewitness Encyclopedia of Science, The World of the Vikings, discs on health and the human body, and multimedia story discs. The only Icelandic disc mentioned was Íslandshandbókin, a CD-ROM version of a popular illustrated encyclopedia about Iceland that was released in 1995.

This latter disc title illustrates a problem for the use of CD-ROM in elementary schools. There is only one Icelandic disc that would be suitable for use at this level, at least with the students. Yet most Icelandic children are not taught Danish and English until they are eleven and twelve years old.

Figure 4.16
CD-ROM Facilities in Elementary School Libraries
 in Three Administrative Regions of Iceland

Region	Number of Schools	Number of School Libraries With CD-ROMs
Reykjavík	40	4
North East	33	3
Western Fjords	20	2

Even if the pupils acquire foreign language proficiency quickly, it is still a challenge to use foreign CD-ROMs, unless they are well and profusely illustrated. This may account for the popularity of the Encarta encyclopedia and other multimedia reference works like The Animals. It probably also accounts for the inclusion of simple but attractive multimedia story discs in other languages, and discs of games in other languages.

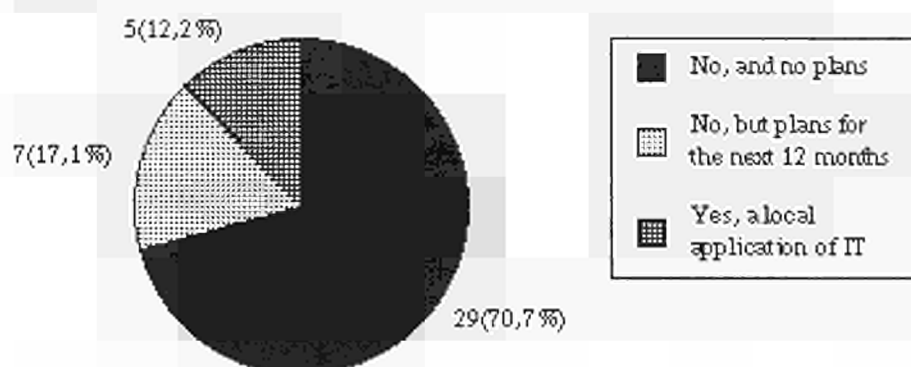
4.5 Local Information Technology Applications

This section covers "local information technology applications in libraries", a term that was used in this study to cover applications that were developed and implemented within individual libraries or local library systems. Applications covered include locally-developed multimedia applications, community information databases, locally digitised picture collections, digitised music collections, and the retrospective conversion of card catalogues as digitised images. It was assumed that still other applications of information technology in libraries would become apparent through the study.

Figure 4.17

Local Applications of Information Technology in Libraries

n=41



In a 1995 article titled “The frozen library: a model for twenty-first century libraries”, published in *The Electronic Library*, TD Webb commented that:

“As part of the coming climatic adaptation, a new and important occupation of future libraries will be the design, construction and maintenance of unique, value-added databases to hold information that is immediately pertinent to the specific needs of the library’s patrons. In this new type of librarianship, the lines separating librarian, researcher and publisher will become flexible in order to capture information needed immediately by library users.”

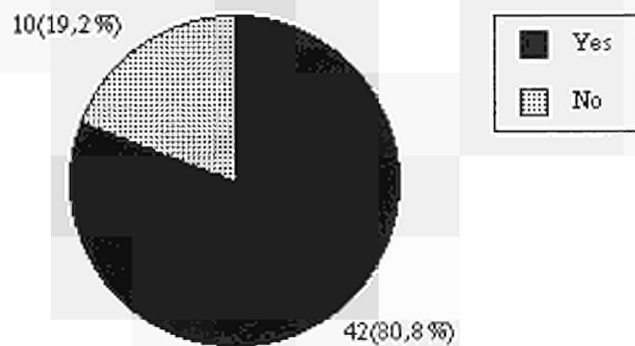
On the assumption that what Webb says is true, this aspect of librarianship will become even more important in the future. To what extent are local databases and other applications of information technology being created now to fulfil this vision? Some local databases were described in Chapter 2, in the discussion of databases that were created within the automated library system as additions to the library catalogue. This section goes beyond those applications.

The responses to the questionnaire survey of academic, public, and special libraries showed that only five of the 54 libraries have developed any local information technology applications, though a further seven indicated that they had plans to do this within the next twelve months (see Figure 4.17). Thirteen librarians did not answer this question.

4.6 Access to the Internet

The national statistics on Internet use that were quoted in Chapter One show that Icelanders have become enthusiastic users of the Internet. With almost a quarter of the population aged between 15 and 75 having access to the Internet at work and/or at home, there is an expectation of Internet access in other places too. Thus it is not at all surprising to find that 42 of the 54 libraries that responded to the questionnaire survey of academic, public, and special libraries (or 77.8 per cent) have Internet access. What was surprising was that ten do not have access (two libraries did not answer this question). However, some types of library were more likely to have Internet access than others. All of the academic libraries had Internet access, as did all but one of the secondary schools/colleges. In the case of the special libraries, 85 per cent had access, while for the public libraries, the figure was much lower at 62.5 per cent.

Figure 4.18
Libraries With Access to the Internet
n=52



Library staff were using the Internet for information retrieval via gopher or the World Wide Web (41 libraries), for electronic mail (40 libraries), for participating in professional discussion groups such as listservs and USENET newsgroups (33 libraries). In 20 libraries, the Internet was being used to download documents, and in 20 it was being used for exploration and fun as well. In 33 of the libraries, the Internet was used regularly; in six it was not used regularly.

Figure 4.19
Purposes for Which Library Staff Use the Internet
n=43

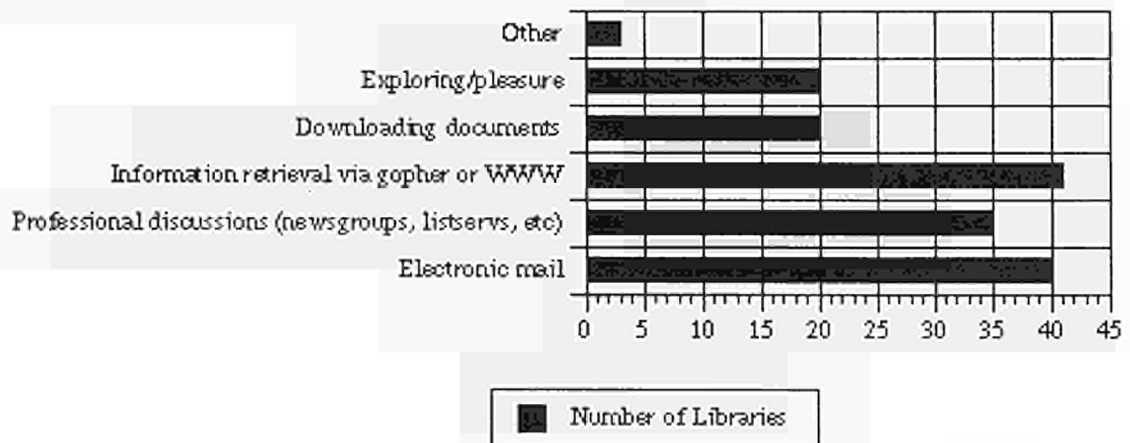
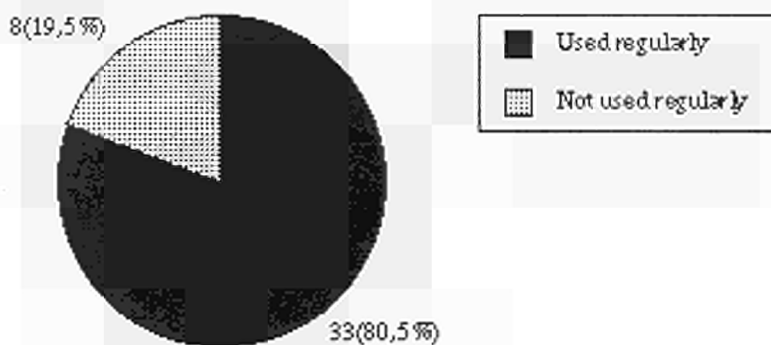


Figure 4.20
Regularity of Internet Use by Staff
n=41



The number of libraries where the Internet was being used for electronic mail and for participating in professional discussions is understandable in a country like Iceland, where librarians may be working in isolation, where there are many one-person libraries, and where librarians usually have the skills necessary to participate in foreign discussion groups and activities. The finding of the questionnaire survey of academic, public, and special libraries is confirmed by a 1995 questionnaire survey of librarians in Iceland about their use of the Internet, carried out by Ída Margrét Jósepsdóttir as a BA Project in the Library and Information Science Programme at the University of Iceland. Ída found that electronic mail was the most used of the Internet services, followed by gopher, listservs, and the World Wide Web.

There is an Icelandic listserv for librarians and others who are involved in library services, a listserv called SKRUDDA, which provides an excellent reason for having electronic mail access. Established in late 1994, SKRUDDA has become a popular addition to the professional scene in Iceland. It carries notices of professional meetings, discussion of current issues in librarianship, announcements of conferences and other events, questions and comments about products and services for libraries, and general professional chatter. As of January 1996 it had almost one hundred members. SKRUDDA is managed by Ólöf Benediktsdóttir and runs on a computer at the University of Iceland (Háskóli Íslands).

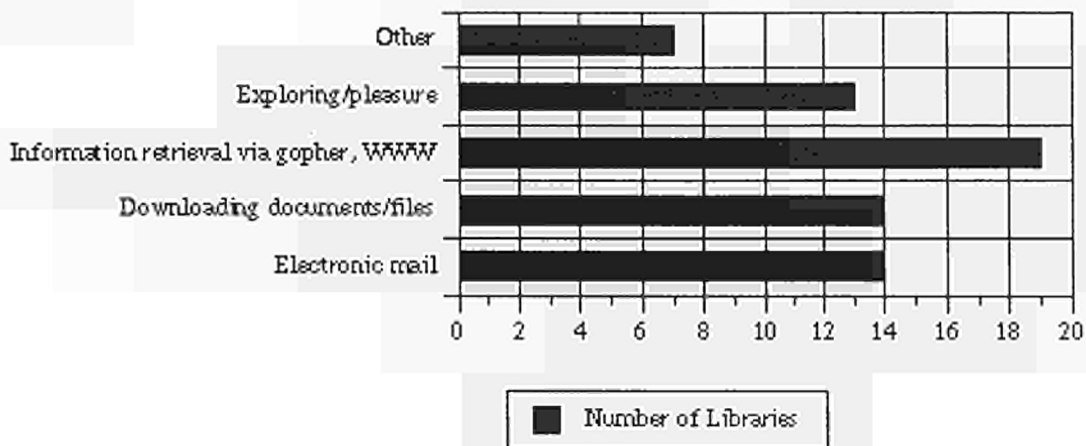
In addition, the faculty and students in the Library and Information Science Programme at the University of Iceland have a listserv called KATALOGOS-L, which is managed by Dr Anne Clyde and Ösp Viggósdóttir and is running on a computer at the University of Iceland. This is used for announcements about courses and the programme, for the distribution of agendas and minutes of meetings, for faculty and student announcements, and for arranging all kinds of events and activities. All students are registered on KATALOGOS-L when they enrol in the programme, and they are required to remain members until they graduate; all full-time faculty and most part-time faculty are also registered. This means that by the time the students graduate, they will have become accustomed to electronic communication, and most now anticipate “graduating” from KATALOGOS-L to SKRUDDA as a natural progression. SPORA, the listserv for Nordic students of library and information science is also maintained within the Library and Information Science Programme at the University of Iceland.

The variety of Internet use by libraries in Iceland is illustrated through an electronic mail message sent to participants in a continuing education course about the Internet, by Guðrún

Pálsdóttir, Librarian at RALA, the Agricultural Research Institute (Rannsóknastofnun landbúnaðarins), at Keldnaholt near Reykjavík. She has been using the Internet since January 1993 for access to online information services, thus reducing search costs. She uses FTP to download files from “all over the world”, and telnet to search library catalogues (especially Gegnir and those of agricultural libraries in other countries). In particular, she mentioned the LUKAS system of the Agricultural Library in Uppsala, Sweden, and also ALBA in Denmark and UBO-BOK in Norway. She uses electronic mail for inter-library loans, including requests to the National Library of Agriculture in the United States. She also subscribes to listservs and to electronic journals (such as PACS-P, the Public-Access Computer Systems Review) that are delivered by electronic mail. More recently, she has been using the World Wide Web to locate information and documents for the library and for the scientists in her organisation, and the library now has its own home page on the Web.

In terms of Internet access for library users in Iceland, only 23 of the academic, public and special libraries in the questionnaire survey were providing this, fewer than the 42 that were providing it for library staff. It was most common that World Wide Web access was provided for information retrieval, through software like Netscape; users in the 19 libraries that provided this facility therefore had access to all the services available through the Web, including gophers and library catalogues like Gegnir. This is shown in Figure 4.21. It is also probable that much of the use that comes under the heading “exploring/pleasure” in this Figure also relates to use of the World Wide Web.

Figure 4.21
Internet Access for Library Users
n=23



This service has been popular but not without its problems. The problems were highlighted when the Reykjavík afternoon newspaper *DV* ran a story with a very large front page headline reading “Sagðist ætla að skoða klámið á bókasafninu” (“I’m going to have a look at some pornography in the library”). This headline was reporting a statement apparently made to a mother by one of her children, and the newspaper reported the mother’s concern. A sub-heading saying that pornographic pictures are open to children in the library at the

Figure 4.22
Libraries With a World Wide Web Home Page
n=38

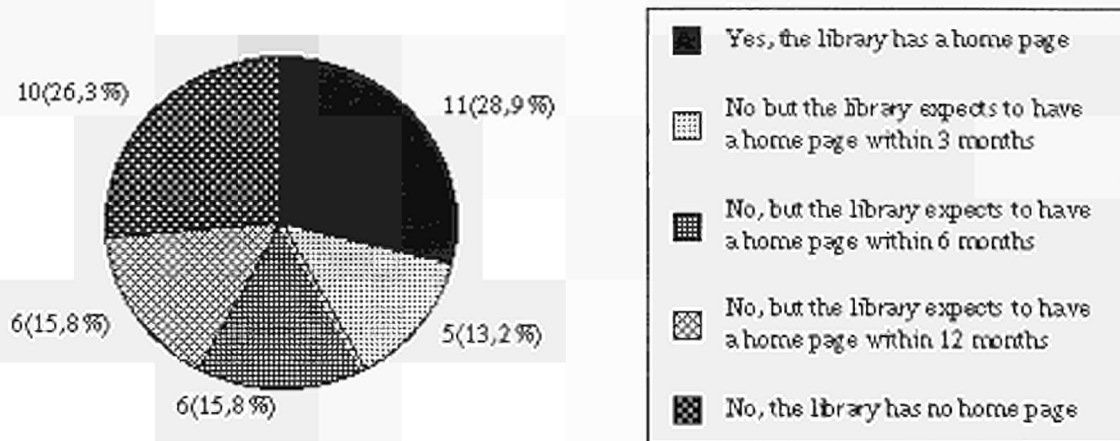


Figure 4.23
Content of the Library's Home Page
n=14

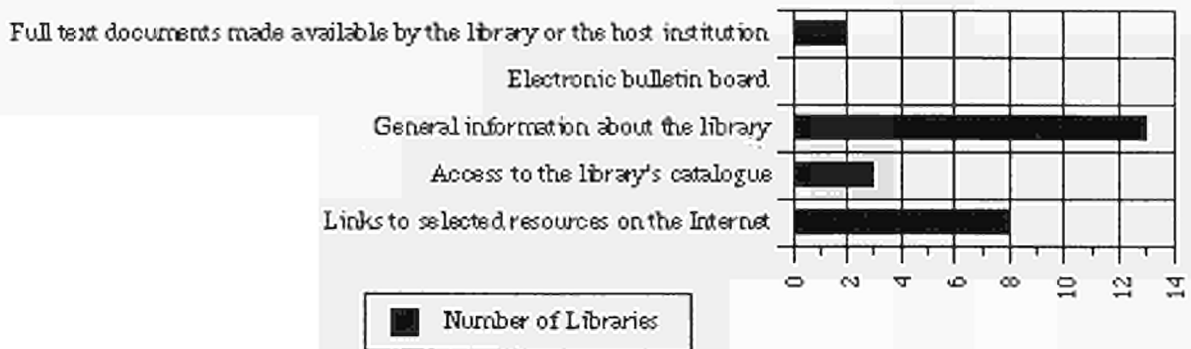
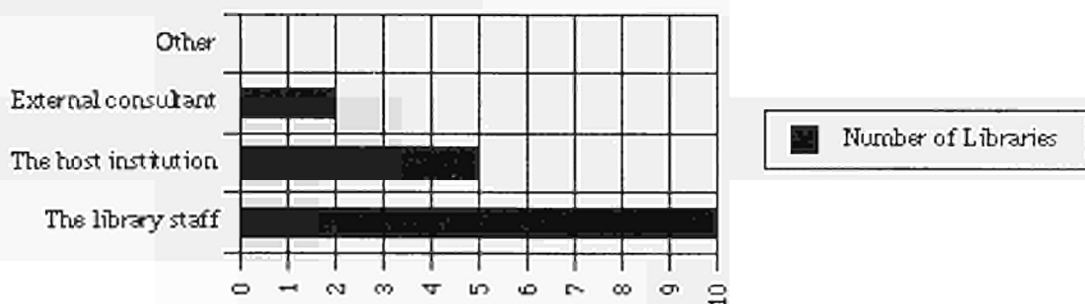


Figure 4.24
Maintenance of the Home Page
n=11



Cultural Centre in Gerðuberg made the point clear. The very nature of the Internet makes it certain that this kind of concern will be aired publicly from time to time, though not always in this spectacular way. This newspaper has carried some very responsible and well-researched editorials about the Internet and issues associated with it, including issues of copyright and intellectual property, and it frequently prints articles about the use of the Internet in business or recreation.

Eleven of the libraries in the survey had their own home page on the World Wide Web, and a further 17 had plans to do this within the next year, as Figure 4.22 shows. Most of the home pages were being maintained by library staff members, though almost half either had been developed by the institution or organisation of which the library is a part, or developed and maintained by the library staff in conjunction with others in the organisation. In two cases, an outside consultant had been used. (See Figure 4.24). General information about the library was the most common feature of these home pages (see Figure 4.23, and note that the number responding to this question was greater than the number of libraries with home pages). Links to selected resources on the Internet was a feature of many pages.

With 91 per cent of all elementary schools in Iceland having access to the Internet, it was particularly disappointing to see limited use of the Internet being made in elementary school libraries. The results of the telephone survey of schools in three administrative regions of Iceland are presented as Figure 4.25. It appears that a greater proportion of the school libraries in the capital city have access than is the case for the isolated schools of the Western Fjords region, but still, even the figures for Reykjavík are not good. It seems a great pity that elementary school libraries are not playing a greater role in the use of this information and communications medium in their schools. One reason may be that school librarians in the elementary schools, especially the very small schools, often have no education in school librarianship, and this is reflected in their understandable lack of awareness of new information resources and information technology. In this regard, the schools of Reykjavík fare better; Dr Sigrún Klara Hannesdóttir's 1989/1990 national survey of school libraries in Iceland showed that the school libraries in Reykjavík were more likely to be staffed by a professional librarian than schools in the country regions. In addition, in the case of very small schools, there may be only one or two computers in the school, and in this situation, a computer is less likely to be allocated to the library, regardless of the purpose for which it will be used - especially if there is no-one in the school with the knowledge of and training in information access that is needed to make a good case for a computer in the library.

Figure 4.25

Internet Access in Elementary School Libraries in Three Administrative Regions of Iceland

Region	Number of Schools	Number of School Libraries With Internet Access
Reykjavík	40	15
North East	33	9
Western Fjords	20	2

A list of libraries in Iceland with home pages (with the URLs) is provided as Appendix IV of this report. In addition, there is a page of "Libraries in Iceland on the Internet" that is maintained by Dr Anne Clyde of the Library and Information Science Programme at the

University of Iceland. This page, which is in English, provides access to the home pages of all libraries in Iceland. The URL is

<http://www.rhi.hi.is/~anne/icelib.html>

4.7 Summary

Of the information technology based user services discussed in this chapter, access to the Internet was the most common (in 77.8 per cent of the libraries in the questionnaire survey of academic, public, and special libraries). Despite the comments above about poor rate of access to the Internet in elementary school libraries, it was also more common in these libraries than the use of online services and CD-ROM, with 26 of all the 93 school libraries in the three regions (or 27.9 per cent) having access. Amongst the academic, public, and special libraries, 55 per cent used online services, and 50 per cent had CD-ROM facilities; in the elementary schools, there was no use of online services (apart from Gegnir), and CD-ROM installations were less likely than in the other libraries. In terms of inter-library loans, only 40 per cent of the libraries were using electronic ordering facilities (low when compared with the number of libraries with access to electronic mail, for instance), and just 26 per cent were delivering documents to their users in electronic forms. Thus the use of information technology as a basis for services to users in libraries in Iceland varies with the kind of application, the type of library, and the location of the library, among other factors. The overall picture is a very varied one.

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5 Summary and Conclusion

The library scene in Iceland is dominated by a large number of very small libraries serving a small and relatively scattered population, with a few large libraries, such as the National and University Library of Iceland (Landsbókasafn Íslands – Háskólabókasafn). Outside Reykjavík and the main towns, schools and their libraries are often much smaller than their equivalents in other Nordic countries, as are many public libraries. In addition, special libraries, even in the capital city, may be serving institutions that are much smaller than their counterparts in Denmark, Norway, Sweden, and Finland. Yet Iceland is a highly-educated and technologically literate society where people have sophisticated information needs. There are problems of cost and scale associated with providing information services based on information technology in a language that is spoken by a small population in this country and by only a few thousand people abroad.

The overall picture that emerges from this study of the “State of the Art” of information technology in libraries in Iceland is one of fairly recent but enthusiastic adoption of a range of information technologies in libraries, though there are some significant differences in approach from library to library and among the different types of libraries.

In terms of library automation, there are two large multi-library systems, Gegnir (based on Libertas) and Fengur (based on DOBIS/LIBIS), and a number of smaller systems such as Metrabók, MikroMARC, and EMBLA that are used by public, school, and special libraries. Despite the availability of Icelandic versions of foreign systems, local systems have also been developed by Icelandic software providers and have proved popular in the local market. The large number of relatively small libraries has meant that micro-computer-based systems (including systems that operate on networks) have been successful in Iceland. However, as the analyses in Chapter Two showed, there are significant differences in approaches to automation in different regions, even among libraries of the same type. This can be seen, for instance, in the elementary schools, where school libraries in the Reykjavík area are being automated through DOBIS/LIBIS; school libraries in the North East have chosen four different microcomputer-based systems; and school libraries in the Western Fjords with automation only beginning.

There has been significant development in electronic information services in Iceland since the most recent European Community review (December 1992). Iceland is linked to NORDUnet and the European networks through ISnet, which provides Internet access through a link to Stockholm. The ISMENNT educational network provides Internet access and connections to the Nordic educational networks for schools and other organisations throughout the country. There are two significant commercial online information service providers, SKÝRR and Strengur, each with a range of databases including full-text databases. In addition, more specialised commercial information service providers have emerged, for example in the fields of legal information (Aðgengi) and tourist information (This is Reykjavík).

In terms of the use of information technologies in libraries to provide services to users, the Internet was the technology that was most often used. This is understandable in a country with a relatively small and scattered population and good national networks. The Internet was used for communication as well as for information access, with electronic mail being a very important application. Online information services and CD-ROMs were less used,

though there is evidence that this usage is increasing. In both cases, the absence, until relatively recently, of general or non-technical information in the national language may have presented barriers, especially in the schools and the small public libraries. However, there were some other areas of significant low use of information technology – for instance, the small number of elementary school libraries connected to the Internet when 91 per cent of schools are connected, and the relatively low use of information technology in inter-library loans in other types of libraries.

In the last two years, there has been considerable interest in continuing education activities related to the Internet and online information services, and the national library journal, *Bókasafnið*, has published articles in this field. The emergence of the first Icelandic CD-ROM in 1995 created new interest in this medium, while the opening up of World Wide Web access to two Icelandic newspaper databases has had the same effect for the online information services. The use of information technologies in libraries in Iceland is clearly in a state of rapid development, and it is probable that the national picture will be very different in two years time.

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This bibliography is selective. It includes books, articles, and reports related to the topic of information technology in libraries in Iceland. All aspects of information technology are covered, including automated library systems, CD-ROM, online information services, the Internet, and other applications of information technology. For a more detailed bibliography of items related to specific aspects of the use of information technology in Iceland's libraries, and sources consulted in the preparation of each chapter, see the section headed "References and Bibliography" at the end of each chapter.

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Appendix I The Questionnaire

The following pages contain a copy of the questionnaire that was used for the survey of public, academic, and research libraries in Iceland, along with the covering letter. The questionnaire was based on the English-language questionnaire developed by the Project Team as a basis for this section of the study, although some changes were made as a result of trialling the English-language questionnaire in Iceland. The questionnaire was translated into Icelandic by Dr Sigrún Klara Hannesdóttir. For a discussion of the development and trialling of the questionnaire, see the Introduction to this report.



Október 1995

**KÖNNUN Á STÖÐU
UPPLÝSINGATÆKNI Í ÍSLENSKUM BOKASÖFNUM**

Já, reyndar. Rétt einu sinni kemur hér könnun sem þú ert beðinn að svara - en þetta er líka mikilvæg könnun.

Stjórnarskrifstofa "Directorate XIII/E/3" innan Evrópuráðsins sem staðsett er í Lúxemborg og fjallar um bókasöfn og netþjónustu (European Commission. The Unit of Libraries and Networking Services) hefur ákveðið að styrkja "rannsókn á stöðu upplýsingatækni í Norrænum bókasöfnum". Verkefninu hefur verið vísað til NORDINFO (Norrænu samstarfsnefndarinnar um vísindapekkingu og rannsóknabókasöfn) sem mun annast samhæfingu rannsóknarinnar.

Tilgangur þessarar rannsóknar er að láta Evrópuráðinu í té yfirlit um notkun upplýsingatækni í nýju löndunum tveim sem gengið hafa í Evrópubandalagið (Svíþjóð og Finnlandi) og um leið afla upplýsinga um hin löndin þrjú, Noreg, Ísland og Danmörku til að fá heildarmynd af notkun upplýsingatækni í bókasöfnum allra Norðurlandanna. NORDINFO mun gera grein fyrir niðurstöðum rannsóknarinnar og vinna skýrslu fyrir stjórnarskrifstofuna "Directorate XIII/E/3". Snemma á næsta ári 1996, mun heildarskýrsla (á ensku) verða gefin út þar sem upplýsingar frá öllum löndunum verða saman komnar. Skýrsla um stöðu upplýsingatækni í íslenskum bókasöfnum verður einnig gefin út á næsta ári.

Undirbúningur rannsóknarinnar hefur nú þegar verið unninn af hópi rannsóknamanna frá öllum Norðurlöndunum og gagnasöfnun verður háttáð á sama veg í öllum löndunum fimm. Því miður var undirbúningi að mestu lokið áður en fulltrúi frá Íslandi kom að verkinu. Þar sem gagnasöfnun átti að vera sambærileg í öllum löndunum fimm táknar það því að aðferðafræðin og val spurninga hafði þegar átt sér stað og ekki var lengur hægt að laga spurningarnar að íslenskum aðstæðum. Þó svo sé er hægt að gera ráð fyrir að íslenska skýrslan muni gefa góða yfirsýn yfir stöðu mála í bókasöfnum hér á landi.

Umsjónarmaður með íslensku rannsókninni er dr. Anne Clyde, dósent við Háskóla Íslands, og mun hún bæði safna gögnunum og semja skýrsluna fyrir Ísland. Nokkrir aðrir aðilar munu einnig koma að verkinu, þar á meðal

nemendur í bókasafns- og upplýsingafræði. Auk þessa spurningablaðs sem sent er til almenningsbókasafna, rannsóknabókasafna og sérfræðibókasafna verður m.a. gerð símakönnun á skólasöfnum, könnun á þeim aðilum sem selja upplýsingar, leit að heimildum um upplýsingatækni á Íslandi og yfirlit yfir lagasetningu sem snertir þetta svið.

Hagnýting upplýsingatækni er mjög breytileg frá einu safni til annars. Þess vegna er hugsanlegt að á spurningablaði sem er notað í margskonar söfnum í mörgum löndum séu spurningar sem ekki eru réttmætar fyrir einstaka safn. Í slíkum tilvikum er best að sleppa spurningunni og svara næstu spurningu á eftir. Jafnvel þótt heilu síðurnar séu þannig að þær eigi ekki við þitt safn, er fengur að því að fá svör við öllum hinum spurningunum.

Í könnuninni er talað um "bókasafn" og nær sú skilgreining yfir þjónustu almenningsbókasafna á hverjum stað bæði aðalsafn, útibú og bókafla þar sem um slíkt er að ræða og eitt spurningablað nær þá yfir allt kerfið. Í rannsóknabókasöfnum er "bókasafn" sú þjónusta sem veitt er í allri stofnuninni, t.d. þjónusta í öllum háskóladeildum. Eitt spurningablað nær yfir alla stofnunina.

Vinsamlega fyllið út spurningablaðið og sendið til dr. Anne Clyde, Félagsvísindadeild, Háskóla Íslands, 101 Reykjavík eða faxið svörin til Anne í númer: 552-6806. Svörin þurfa að berast fyrir

föstudaginn 10. nóvember, 1995.

Ef þið hafið einhverjar spurningar um könnunina, vinsamlega hafið samband við Anne í ofangreindu heimilisfangi, eða um tölvupóst: anne@rhi.hi.is Ef þið viljið heldur ræða við einhvern á íslensku getið þið haft samband við Ösp Viggósdóttur eða Heiðrúnu Sigurðardóttur annað hvort í sama heimilisfangi eða í tölvupósti: rov@rhi.hi.is (Ösp) eða heidruns@rhi.hi.is (Heiðrún).

Mjög margt er að gerast í þessum málum í íslenskum bókasöfnum og það skiptir því miklu máli að íslensku bókasöfnin sendi inn upplýsingar svo að rannsóknin verði sem best marktæk og við getum sýnt hversu vel er unnið hér á landi.

Við vonum því að þú sjáir þér fært að taka þátt í þessari könnun.

Með bestu kveðjum

Anne Clyde

KÖNNUN Á STÖÐU UPPLÝSINGATÆKNI Í NORRÆNUM BOKASÖFNUM

Könnun á almenningubókasöfnum, sérfræðisöfnum og stærri rannsóknabókasöfnum

HLUTI A: TÖLVUKERFI BÓKASAFNA

A 1 Hefur bókasafnið tölvukerfi fyrir venjulega starfsemi bókasafnsins?

- Já, okkar eigið kerfi frá árinu _____
- Já, við höfum sameiginlegt kerfi með _____
- Nei, en við höfum ákveðið að kaupa kerfi
- Nei (Svarið næst Hluta B)

A 2 Lýsið kerfinu eins vel og hægt er

A.2.1 Nafn kerfisins: _____

A.2.2 Nafn seljanda/umboðsaðila: _____

Heimilisfang: _____

Sími: _____

A.2.3 Nafn og tegund vélbúnaðar: _____

A.2.4 Stýrikerfi (DOS, MAC, WINDOWS, UNIX, VMS, o.s.frv.): _____

A.2.5 Gefið upp fjölda og tegundir vinnustöðva fyrir starfsmenn og notendur:

Tegund	PC	MAC	Endastöðvar (T.d. VT100)	Annað
Starfslið				
Notendur				

A.2.6 Almenningsaðgangur (OPAC) að bókasafnskerfinu:

- Er aðeins fyrir texta
- Hefur myndrænan (GUI) skjá

A.2.7 Ef almenningsaðgangurinn er myndrænn er hann þá:

- Staðlaður skjár (GUI) (framleiddur af kerfishönnuðum)
- Heimatilbúinn skjár

A.2.8 Hver ber ábyrgð á viðhaldi kerfisins

- Starfsfólk safnsins
- Stofnunin
- Tölvumiðstöð á vegum sveitarfélagsins
- Seljendur kerfisins
- Þjónustustofnun
- Kerfisbókavörður
- Aðrir _____

A.2.9 Hversu marga daga í mánuði notar starfsfólk safnsins til viðhalds á kerfinu?

Safnið okkar notar um það bil _____ daga í mánuði í kerfisviðhald.

A.2.10 Fyrir utan bókasafnskrána, hefur bókasafnið önnur gagnasöfn tengd í gegnum almenningsaðganginn t.d. heimildir um áttthagana, ferðaupplýsingar o.fl.?

 Nei

 Já. Ef já vinsamlega gefið nánari upplýsingar

Nafn á gagnasafni: _____

Innihald _____

Fjöldi færslna: _____

Nafn á gagnasafni: _____

Innihald _____

Fjöldi færslna _____

(Ef þörf er fyrir meira rými, vinsamlega notið aukablöð)

A.3 Lýsið hvernig bókasafnskerfið er notað í bókasafninu.

A.3.1 Almenningsaðgangur er opinn notendum:

 Aðeins í bókasafninu sjálfu

 Aðgengilegur utan safns í gegnum mótald

 Gegnum staðarnet (LAN)

 Einnig í bókaflunum

A.3.2 Er skráningarþáttur í bókasafnskerfinu?

 Já

 Nei

A.3.3 Hversu stórt hlutfall af nýjum færslum er fenginn með því að afrita færslur úr utanaðkomandi skráningarbanka.

_____ %

A.3.4 Útlán (útlán og skil rita):

 eru í höndum starfsfólksins eingöngu

 eru í sjálfsafgreiðslu

 eru í höndum starfsfólks og í sjálfsafgreiðslu

A.3.5 Ef um sjálfsafgreiðslu er að ræða hversu hátt hlutfall útlána er í höndum lánþega sjálfra?

_____ %

A.3.6 Heimilar bókasafnið að notendur taki frá bækur eða endumýi lán?

 Já

 Nei

A.3.7 Mega notendur sjálfir taka frá bækur eða endumýja lán í kerfinu?

 Já

 Nei

Eru eftirfarandi þættir í bókasafnskerfinu:

A.3.8 Aðföng

 Já

 Nei, við höfum sérstakt tölvukerfi fyrir aðföng

 Nei, aðföng eru handvirk

A.3.9. Tímaritaefurlit

Já

- Fyrir skráningu
- Fyrir fjárveitingar
- Fyrir bókhald

Nei, við höfum sérstakt tölvukerfi fyrir tímarit

Nei, meðhöndlun tímarita er handvirk

A.3.10 Útlán tímarita

Já

Nei, við höfum sérstakt tölvukerfi fyrir útlán tímarita

Nei, útlán tímarita eru handvirk

Nei, við lánum ekki út tímarit

A.3.11 Hvernig eru millisafnalán meðhöndluð?

Millisafnalán eru inni í bókasafnskerfinu

Millisafnalán eru í sérstöku tölvukerfi

Millisafnalán eru handvirk

A.3.12 Staðtölugerð

Notar þú bókasafnskerfið fyrir stjórnun?

Nei

Nei, bókasafnskerfið hefur engan stjórnunarþátt

Já, við notum kerfið til stjórnunar. Gefið dæmi _____

A.3.13 Skýrslugerð

Hefur bókasafnskerfið sérstakan þátt fyrir skýrslugerð? Er þessi þáttur reglulega notaður til að framleiða aðfangalista, bókaskrár, o.s.frv.

Nei, við notum ekki skýrslugerðarþátt

Já. Ef já, vinsamlegast gefið dæmi um notkun

A.4 Áætlanagerð

A.4.1 Hefur safnið í hyggju að kaupa (nýtt) bókasafnskerfi?

Innan árs

Innan 3 ára

Engar áætlanir

A.4.2 Hvaða áætlanir eru um að þróa nánar bókasafnskerfið og þá þjónustu sem í boði er?

Innan eins ár: (Gefið til kynna á hvaða sviðum þróunin á að vera)

Innan þriggja ára (Gefið til kynna á hvaða sviðum þróunin á að vera)

Athugasemdir:

Athugasemdir við allar spurningar í Hluta A mega koma hér fyrir neðan. Gefið til kynna númer spurningar.

HLUTI B: TÖLVUPANTANIR Á MILLISAFNALÁNUM

B.1 Tölvupantanir á millisafnalánum tákna, að bókasafn geti notað tölvutækni við millisafnalán, annað hvort í eigin bókasafnskerfi eða með öðrum kerfum og geti sent tölvuboð/pantanir til utanaðkomandi aðila.

B.1.1 Notar safnið tölvu við pantanir á millisafnalánum?

- Nei (Svarið næst Hluta C)
- Já

B.1.2 Mega notendur panta gögnin sjálfir?

- Nei
- Já

B.1.3 Hversu hátt hlutfall millisafnalánabeiðna er afgreiddur um tölvu?

- <25%
- <50%
- <75%
- >75%

B.1.4 Heildartala millisafnalánabeiðna 1994 _____

B.2 Hvers konar gögn eru pöntuð með tölvu?

- Bækur
- Greinar
- Annað efni (tilgreinið hvað) _____
- _____

B.3 Hvaðan er pantað?

- Frá öðrum söfnum sem nota sama bókasafnskerfi
- Frá miðsafni/miðlægrri þjónustu innanlands (DANBIB, GEGNIR, FENGUR, o.fl.)
- Norrænu millisafnakerfi eða þjónustu (LIBRIS, UBO-BOK, o.fl.)
- Miðstöð eða þjónustu utan Norðurlanda (Uncover, OCLC, EBSCO, British Library o.fl.)

B.4 Í hvaða formi getur bókasafnið tekið á móti gögnum sem pöntuð eru um tölvu?

- Með faxi
- Með tölvupósti
- Með FTP
- Með öðrum aðferðum (tilgreinið hvernig)

HLUTI C: MILLISAFNALÁN Í TÖLVUTÆKU FORMI

Millisafnalán í tölvutæku formi tákna, að bókasafn geti veitt fjarstöddum notendum aðgang að efni á tölvutæku formi annað hvort um netkerfi eða sent einstaka gögn í tölvutæku formi til notandans.

C.1 Sendir bókasafnið millisafnalán í tölvutæku formi?

- Nei (Svarið næst Hluta D)
- Já

C.2 Í hvaða formi eru gögnin send?

- Með faxi
- Á disklingum
- Með FTP
- Með tölvupósti
- Með öðrum aðferðum (tilgreinið hverjum)

**HLUTI D:
AÐGANGUR AÐ GAGNASÖFNUM UTAN
BÓKASAFNS (beinlínuaðgangur/ geisladiskar)**

Beinar upplýsingaleitir

D.1. Leitar bókasafnið í gagnasöfnum fyrir notendur?

Nei, við höfum ekki beinlínuleiur fyrir notendur vegna þess að:

(Ef ekki svarið næst spurningu D4)

Já, við leitum í gagnasöfnum fyrir notendur

- Ókeypis
- Stundum endurgjaldslaust
- Notandinn greiðir fyrir þjónustuna

D.2. Hvað hefur bókasafnið áskrifir að mörgum þjónustuaðilum (hosts)? (t.d. DIALOG, DATA*STAR) (skrifid fjöldann)

D.3. Hverjir eru mest notuðu þjónustuaðilarnir? (tilgreinið nöfn)

1.	_____
2.	_____
3.	_____
4.	_____
5.	_____

Hvað eru mest notuðu gagnasöfnin? (t.d. ERIC, MEDLINE, PSYCINFO (tilgreinið nöfn))

1.	_____
2.	_____
3.	_____
4.	_____
5.	_____

Upplýsingaleit á geisladiskum

Þessi hluti vísar til geisladiska sem geyma gögn en ekki tónlist.

D.4. Veitir bókasafnið upplýsingar af geisladiskum?

Nei (últakið ástæðu)

(Ef ekki, svarið næst Hluta E)

Já, bókasafnið á gagnasöfn á geisladiskum, en geisladiskasafnið er notað af starfsfólkinu eingöngu

Já, bókasafnið hefur gagnasöfn á geisladiskum sem eru aðgengileg notendum.

Almenningsbókasöfn eru beðin að svara spurningu D.5 og D.6. Rannsóknabókasöfn geta svarað næst spurningu D.7

D.5. Bókasafnið hefur gagnasöfn á geisladiskum

- Í fullorðinsdeild
- Í barnadeild
- Í upplýsingadeild
- Í tónlistardeild
- Í öðrum deildum

D. 6 Gagnasöfn á geisladiskum eru til:

- Í aðalsafni
- Í útbúum
- Í bókaflunum líka

D.7 Uppsetning geisladiskanna

- Á sérstökum PC-vinnustöðum
- Á netkerfi
- Nokkrir á sérstökum vinnustöðvum, og aðrir á netkerfi

D.8 Hvaða geisladiskar eru til í safninu? (1-10)

1.	_____
2.	_____
3.	_____
4.	_____
5.	_____
6.	_____
7.	_____
8.	_____
9.	_____
10.	_____

Athugasemdir

HLUTUR E: UPPLÝSINGATÆKNI ÞRÓUÐ Á HEIMASLÓÐ

Upplýsingatækni þróuð á heimaslóð táknar margskonar þjónustu og búnað s.s. margmiðlunarkerfi eða tölvuvædd myndasöfn, hönnuð í safninu sjálfu eða að frumkvæði bókasafnsins.

E.1 Hefur bókasafnið þróað einhverja sérstaka upplýsingatækni

- Nei, og við höfum engar slíkar áætlanir (svarið næst Hluta F)
- Nei, en við höfum áætlanir um nýja upplýsingatækni innan næstu 12 mánaða. (Gerir grein fyrir á hvaða sviði það er).

- Já, við höfum heimatilbúna upplýsingatækni. (Gerir grein fyrir hvað það er).

Við höfum (eða höfum gert áætlanir um) upplýsingatækni á eftirfarandi sviðum:
(Vinsamlega merkið með krossi þá reiti sem við á)

Viðfangsefni	Fullgert	Áætlað eða í vinnslu	Upplýsingatækni/þjónustan verður aðgengileg			
			Á stakri PC vinnustöð	Á sama hátt og geisladiskar	Utan safns um staðarnet	Um almenn net
Leiðarvísir að bókasafni						
Þjállun lýrir notendur						
Samfélagsupplýsingar						
Sögulegur fróðleikur um áttugana						
Safn mynda úr samfélaginu						
Tónlist úr samfélaginu						
Annað (tilgreinið hvað)						

HLUTI F: INTERNETIÐ

F.1 Hefur bókasafnið aðgang að Internetinu?

- Nei (Svarið næst Hluta G)
 Já

F.2 Starfsfólk notar Internetið:

- Tölvupóst
 Umræðuhópa (newsgroups, listservs, o.s.frv.)
 Til upplýsingaöflunar um gopher eða Veraldarvefinn
 Til að afrita gögn
 Til gamans
 Annað (skilgreinið hvað) _____

F.3 Er Internetið notað:

- Reglulega
 Ekki notað reglulega

F.4 Lánþegar nota Internetið:

- Tölvupóst
 Til að afrita gögn
 Til upplýsingaöflunar um gopher eða Veraldarvefinn
 Til gamans
 Annað (skilgreinið hvað) _____

F.5 Hefur bókasafnið sett upp sína eigin heimasíðu?

- Já
Tilgreinið slóð (URL) heimsíðunnar
http:// _____
- Nei, en bókasafnið áætlað að hafa heimasíðu innan:
- 3 mánaða
 6 mánaða
 12 mánaða
- Nei (Svarið næst Hluta G)

F.6 Heimasíðan hefur tengingar við:

- Valdar heimildir á Internetinu
 Skrá bókasafnsins
 Almennar upplýsingar um bókasafnið
 Tölvutæk fréttabréf (electronic bulletin boards)
 Skjöl og heimildir sem eru aðgengilegar annað hvort á bókasafninu eða stofnuninni. Gefið dæmi:

F.7 Heimasíðan (og allar aukasiður) hafa verið gerðar og endurnýjaðar af:

- Starfsfólki bókasafnsins
 Stofnuninni sjálfri
 Utanaðkomandi sérfræðingi
 Öðrum (tilgreinið hverjum) _____

HLUTI H: UPPLÝSINGAR UM SAFNIÐ SJÁLFT

H.1 Nafn stofnunar/bókasafns

H.2 Opinbert enskt heiti stofnunar eða nafn sem venjulega er notað á enskri tungu

H.3 Heimilisfang bókasafns

H.4 Nafn þess sem fyllti út spurningablaðið

H.5 Fjöldi starfsmanna (reiknað út sem heilds dagsstörf)

H.6 Áætlaður safnkostur (fjöldi bóka og nýsigagna)

H.7 Fjöldi úmaritaáskrifta

Takk fyrir þátttökuna!

HLUTI G: ÖNNUR AFNOT AF UPPLÝSINGTÆKNI

G.1. Hefur bókasafnið önnur not af upplýsingatækni á einhvern annan hátt sem ekki er tilgreint á spurningablaðinu? (Hér má svaraandi gefa til kynna hvert það norræna eða alþjóðlega verkefni sem bókasafnið er þátttakandi í).

Appendix II: The Interview Schedule

The following pages contain a copy of the interview schedule that was used for the survey of elementary school libraries. The interview schedule was developed and trialled in English versions, and then translated into conversational Icelandic by Sveinn Ólafsson for oral delivery. The schedule formed the basis of telephone interviews.

STATE OF THE ART STUDY OF
INFORMATION TECHNOLOGY IN
LIBRARIES IN THE NORDIC COUNTRIES

Telephone Survey of Libraries
in Elementary Schools

1. INTRODUCTION

Ask for the person in charge of the school library. Introduce yourself, say that you are calling on behalf of Dr Anne Clyde at the University of Iceland, and that you are calling the people in charge of libraries in elementary schools, as part of the "State of the Art Study of Information Technology in Libraries in the Nordic Countries". You may need to give a short description of the study, and indicate that there will be a chapter that deals with school libraries.

If the school has no library, thank the person who answers the telephone, and hang up. Record the name of the school, the region, and the response, on the answer sheet.

2. COMPUTERS IN THE SCHOOL LIBRARY

Ask the person in charge of the school library if the library has a computer or computers.

If the answer is "no", then ask one more question:
"How many students are there in the school?"

Thank the person for their help, and hang up. Record the name of the school, the region, and the response, on the answer sheet.

If the answer is "yes", then proceed with the rest of the questions, and record the answers on the answer sheet.

TELEPHONE SURVEY OF ELEMENTARY SCHOOL LIBRARIES

1. INTRODUCTION

1.1 Name of School (fill this in yourself before the conversation begins):

1.2 Region (fill this in yourself before the conversation begins):

- Reykjavik
 North East
 Western Fjords

1.3 Does the school have a library?

- No If no, thank the person and end the telephone call
 Yes If yes, continue with the next question

1.4 Is the school library a shared library with the local public library?

- No
 Yes

2. COMPUTER/S IN THE SCHOOL LIBRARY

2.1 Does the school library have a computer or computers?

- No If no, then ask one more question:

How many students are in the school? _____

Thank the person and end the telephone call

- Yes If yes, continue with the rest of the questions

THE QUESTIONS THAT FOLLOW SHOULD BE ASKED ONLY OF THE PEOPLE WHO INDICATE THAT THEIR SCHOOL LIBRARY HAS A COMPUTER.

3. AN AUTOMATED LIBRARY SYSTEM

3.1 Does the school library have an automated library system?

- No If no, then go to question 4
 Yes If yes, then

3.2 Which system is used?

- DOBIS/LIBIS (FENGUR)
 EMBLA
 Metrobok
 MicroMARK
 Other Name of the system: _____

3.3 What library functions are automated?

- Cataloguing
 Public access catalogue (OPAC)
 Circulation
 Acquisitions
 Periodicals recording/management
 Periodicals circulation
 Inter-library loans
 Statistics
 Management reports
 Other Which functions: _____

Comments:

4. ONLINE INFORMATION SERVICES

4.1 Does your library do online searches for users?

- No If no, then go to question 5
 Yes If yes, then

4.2 Which online information services (for example, DIALOG) do you use?

1. _____
2. _____
3. _____
4. _____
5. _____

4.3 Which databases (for example, ERIC, PSYCINFO) do you use most?

1. _____
2. _____
3. _____
4. _____
5. _____

4.4 Do you use GEGNIR online?

- No
 Yes

Comments:

5. CD-ROMs

5.1 Does your library have CD-ROM facilities?

- No If no, then go to question 6
- Yes If yes, then

5.2 Are the CD-ROMs available on a single-user machine or on a network?

- A single-user machine
- A network within the library
- A network that gives access outside the library

5.3 How many Cd-ROMs does the library have? _____

5.4 What CD-ROMs titles does the library have? List them below:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Comments:

6. ÍSLENSKA MENNTANETIÐ AND THE INTERNET

6.1 Does your library have access to Íslenska menntanetið?

- No If no, then go to question 7
- Yes If yes, then

6.2 Does the school library use Íslenska menntanetið

- Never
- Occasionally
- Often
- Every day

6.3 Which of these are used in the library (that is, have been used more than once or twice this school year)?

- Electronic mail
- Electronic conferences (newsgroups, listservs)
- Gopher
- World Wide Web
- Library catalogues of other libraries
- IRC
- Other (give details) _____

6.4 Has your library been involved in any co-operative projects with other schools, organisations, or class groups, via the Internet/Íslenska menntanetið?

- No
- Yes (give brief information) _____

6.5 Does your library have a World Wide Web home page?

- No
- Yes If yes, give the URL:

http:// _____

7. OTHER APPLICATIONS OF INFORMATION TECHNOLOGY

7.1 Does your library provide any of the following:

- Computers in the library for the use of teachers
- Computers in the library for the use of students
- Computers for loan to teachers
- Computers for loan to students
- Computer software as part of the library collection
- Instruction for teachers about using online services, CD-ROM or the Internet
- Information skills instruction for students, based on information technology

7.2 Are there any other ways in which information technology is being used in your library?

Comments:

8. THE SCHOOL

8.1 How many students are in the school: _____

8.2 Name of the person supplying the information:

Thank the person for their help with the survey, and end the conversation.

For the research team only:

MAKE ANY NOTES BELOW THAT YOU THINK MIGHT BE HELPFUL IN THE RESEARCH (for example, any additional comments that were made by the person who answered the questions, or any references or reports that were mentioned, or any people who were mentioned as being able to supply relevant information).

Appendix III Automated Library Systems

This Appendix provides a list of the automated library systems in use in libraries in Iceland, together with a description of the most-used systems in a standardised format. The systems include:

BókasafnsKORN
Bókver
DOBIS/LIBIS
EMBLA
Libertas
Metrobók
MikroMARC
Squirrel

Appendix III
EMBLA

European languages supported	English; Icelandic
Main supplier	Softlink International, Softlink House, 68 Commercial Drive Shailer Park, Queensland 4128, Australia
Telephone	+61 7 801 4111
Fax	+61 7 801 4222
Supplier profile	<p>Softlink Australia was established by Australian software developer John Dunne; the head office is in Brisbane, Queensland. Softlink is now an international firm, with offices in the United States and the United Kingdom, and distributors in other countries.</p> <p>Softlink moved into the field of school library automation in the early 1980s, with a system called ALARM. The company won the new South Wales Department of Education contract to develop a library automation system for the approximately 2000 schools in that state (in conjunction with divisions of the Department). This microcomputer-based system became known as OASIS Library. Softlink went on to win contracts with other government and independent school systems in Australia for school library automation. They have since sold systems for schools in other countries, including New Zealand and Israel, and they have also moved into the field of automation for public and special libraries.</p> <p>The OASIS system is known as Alice in the United Kingdom, Annie in the United States, and EMBLA in Iceland.</p>
European subsidiaries/agents	Softlink Europe, Oxford, United Kingdom Lindin hf, Reykjavik, Iceland

D-86

General overview

OASIS/EMBLA is an integrated, modular system that can be purchased as a complete system or module by module. It runs on IBM PC and compatible machines and a Windows version is now available. It can be used on a local area network. Modules include cataloguing, an online public access catalogue (OPAC), circulation, acquisitions, periodicals control, statistics and reports, communications, records management, and other functions. A "selection" tool called "Book Wizard" can be linked to OASIS/EMBLA. Based on a CD-ROM, this module provides information about books, including an image of the cover illustration, to help users choose books that match their reading level and interests. MARC records can be imported from bibliographic utilities to build up the catalogue, and a rapid retrospective conversion module allows libraries to convert their card catalogue within a short period of time.

Customers

EU

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark					
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxembourg					
Netherlands					
Portugal					
Spain					
Sweden					
United Kingdom					

Other European countries

--

Total number of customers worldwide

--

User group

--

LIBERTAS

European languages supported	Catalan; English; French; German; Icelandic; Italian; Spanish; Swedish; Welsh
Main supplier	SLS (Information Systems) Ltd 4 York Court Upper York Street Bristol BS2 8QF United Kingdom
Telephone	+44 272 423314
Fax	+44 272 244367
Contact	Gill Carter
Supplier profile	<p>SLS (Information Systems) Limited has been a supplier of library automation products and services for over 24 years and is dedicated exclusively to the development and support of library systems.</p> <p>SLS has been involved in library automation in the UK, beginning with research into cooperative circulation systems, since 1969. To date four different library systems — the original SWALCAP shared circulation system, two versions of the shared cataloguing system, and, most recently, the LIBERTAS standalone system — have been developed and implemented.</p> <p>In 1990, a wholly owned subsidiary, SLS Scandinavia AB, was established in Stockholm to provide local sales and support to Scandinavian customers. The following year a local branch of SLS, SLS Sucursal en España, was established in Madrid to provide local sales and support to customers in the Iberian Peninsula.</p>
Staff	SLS currently employs fifty staff, the majority of whom are engaged directly in the development and support of LIBERTAS. Fifteen of these staff are library professionals or have some degree of practical library experience.
European subsidiaries/agents	SLS (Information Systems) Scandinavia AB SLS (Information Systems) Sucursal en España Computer Academy Ltd (Greece)

General overview

The system was developed in the mid-eighties and launched in 1986 in the UK. It was designed as an integrated system accessing a common bibliographic and user file. The following modules are available: cataloguing and OPAC; circulation control; acquisitions (incorporating serials control); inter-library loans; report generator; external network access; and inter-LIBERTAS access and transfer (for accessing databases of other LIBERTAS users). An online link to the SLS database, containing around four million bibliographic records, is also available.

The system runs on DEC hardware under the OpenVMS operating system; plans are underway to produce a client-server version, using the same hardware and offering the same functionality as the current system, via a graphical user interface as well as an X-Windows version.

LIBERTAS

Customers

EU

	PUBLIC	UNIVERSITY	COLLEGE/ SMALL ACADEMIC/ FACULTY	SPECIAL	NATIONAL
BELGIUM					
DENMARK					
FRANCE					
GERMANY					
GREECE		1			
IRELAND					
ITALY					
LUXEMBOURG					
NETHERLANDS					
PORTUGAL		1			
SPAIN		8			
UNITED KINGDOM		45	6	1	

Other European countries

Sweden (10); Iceland (2)

Total number of customers worldwide

74

User group

SLS User Group
Chairman: Geoffrey Ford
University of Bristol Library
Bristol BS8 1TJ
United Kingdom

(JB)

METRABÓK

European languages supported	Icelandic
Main supplier	Ásmundur Eiríksson Grandagarði 5 Reykjavík, Iceland
Telephone	551 5090
Fax	552 3923
Supplier profile	The system was developed and is supplied by Ásmundur Eiríksson. It is not marketed outside Iceland.

D-88

General overview

The Metrabók system has facilities for cataloguing books, periodicals, and other library materials. Searching is possible in several ways, including author, title, and subject keywords. It is particularly suitable for small and medium-sized libraries, and it was designed to suit the Icelandic context. There are modules or facilities for cataloguing, searching, circulation, periodicals control, and printing reports, and Metrabók can load information from other systems. The system runs on IBM PC and compatible equipment and it can be used on a local area network.

Metrabók is used in public, special, and school libraries in Iceland, and also in school/community libraries. In all, it is used in 57 libraries (December 1995).

Customers

EU

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark					
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxembourg					
Netherlands					
Portugal					
Spain					
Sweden					
United Kingdom					

Other European countries

Total number of customers worldwide

User group

MIKROMARC

European languages supported

Main supplier Norsk System Utvikling AS,
Malmøgaten 7,
0566 Oslo,
Norway

Telephone 02 37 18 00
Fax 02 37 07 75

Icelandic suppliers Andrea Jóhannesdóttir,
Skólavorðustig 20,
101 Reykjavík,
Iceland

Þjónustumiðstöð bókasafna,
Laugavegi 163 - Pósthólf 5331,
125 Reykjavík
Iceland

D-89

General overview

Customers

EU

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark					
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxembourg					
Netherlands					
Portugal					
Spain					
Sweden					
United Kingdom					

Other European countries

Total number of customers worldwide

User group

Appendix IV

World Wide Web Home Pages of Libraries

On the following two pages, there is a copy of the World Wide Web page for "Libraries in Iceland on the Internet". This page is maintained on a mainframe computer at the University of Iceland, Reykjavík, by Dr Anne Clyde. It is part of the Web server of the Library and Information Science Programme at the University of Iceland. It is updated regularly to maintain the currency of the links and to take account of any new library pages. The URL is:

<http://www.rhi.hi.is/~anne/icelin.html>

This Appendix also provides a list of the libraries in Iceland with World Wide Web pages, with the URLs of those pages. The list is arranged in the same sequence as the "Libraries in Iceland on the Internet" page, for easy reference.

URLs of Libraries in Iceland on the Internet

National and University Library

Landsbókasafn Íslands/Háskólabókasafn (The National and University Library), Reykjavík
<http://www.bok.hi.is>

Academic Libraries

Háskólinn á Akureyri (The University of Akureyri), Akureyri
<http://www.unak.is/skolinn/bokasafn.htm>

Kennaraháskóli Íslands (The University College of Education), Reykjavík
<http://www.khi.is/khi/bokasafn.htm>

Verzlunarskóli Íslands (The Commercial College of Iceland), Reykjavík
<http://www.tvi.is/verzlo/bokasafn.html>

Research and Special Libraries

Hafrannsóknastofnun (The Marine Research Institute), Reykjavík
<http://www.hafro.is/hafro/Bokasafn/bokasafn.html>

Iðntæknistofnun Íslands (The Technological Institute of Iceland), Reykjavík
<http://www.iti.is/bokasafn.html>

Póstur og Sími (The Postal and Telecommunications Authority), Reykjavík
<http://www.simi.is/library/>

Rannsóknastofnun landbúnaðarins (The Agricultural Research Institute of Iceland), Keldnaholt
<http://www.rala.is/bokasafn/almennt.htm>

Public Libraries

Amtsbókasafnið á Akureyri (The Public Library of Akureyri), Akureyri
<http://akureyri.ismennt.is/~holmkell/Welcome.html>

Borgarbókasafn Reykjavíkur (The Reykjavík City Library), Reykjavík
<http://www.rvk.is/www/stofnan/bbs/bbs1.htm>

Safnahús Borgarfjarðar (Borgarfjörður Cultural Centre), Borgarnes

<http://www.rhi.hi.is/~gudmung/>

Bókasafn Garðabæjar (The Garðabær Public Library), Garðabær

<http://www.rhi.hi.is/gardabok/>

Bókasafn Keflavíkur, Njarðvíkur og Hafna/Reykjanesbæjar (The Public Library of Keflavík), Keflavík

<http://www.ismennt.is/b/bokreyk/>

Bókasafn Kópavogs (The Public Library of Kópavogur), Kópavogur

<http://rvik.ismennt.is/~hhardar/>

School Libraries

Grandaskóli, Reykjavík

<http://rvik.ismennt.is/~valli/grandi.html>

Appendix V

Icelandic Legislation related to Libraries

The following laws and regulations related to libraries and librarians are currently in force:

31

6 July 1931

Lög um bókasöfn prestakalla [Libraries of Parsonages Act]

96

31 December 1969

Auglýsing um staðfestingu forseta Íslands á reglugerð um Stjórnarráð Íslands [President's confirmation of a regulation of the Cabinet]. Article 10, item 3 specifies that libraries are under the Ministry of Education and Culture.

39

6 April 1971

Lög um utanríkisþjónustu Íslands [The Foreign Ministry Act]. Particularly article 12, paragraph 1, and regulation 138/1978.

73

29 May 1972

Höfundalög [Authors' Act]. Article 12 specifies that libraries are permitted to photocopy material for their own use. This Act was amended with Act 57 of 2 June 1992. See also regulation 141/1985 and regulation 177/1989.

10

6 April 1973

Lög um Fósturskóla Íslands [The College of Early Childhood Education Act]. Particularly article 21, paragraph 1.

50

25 May 1976

Lög um almenningsbókasöfn [The Public Libraries Act].

43

16 May 1977

Lög um skylduskil til safna [Statutory Deposit Act]

55

11 May 1978

Lög um búnaðarfræðslu [Agricultural Education Act].

35

7 May 1982

Lög um Blindrabókasafn [The Library for the Blind Act].

97

28 May 1984

Lög um bókasafnsfræðinga [The Professional Librarians Act].

66

27 June 1985

Lög um Þjóðskjalasafn Íslands [The National Archives Act]. Particularly articles 12 to 16.

8

18 April 1986

Sveitarstjórnarlög [Local Government Act]. Particularly article 6, paragraph 6, item 9.1

29

18 May 1988

Lög um Kennaraháskóla Íslands [University College of Education Act]. Particularly article 33, paragraph 3, and regulation 496/1990.

50

24 May 1988

Lög um virðisaukaskatt (VSK) [Value Added Tax Act (VAT)]. Particularly article 2, paragraph 3, 3.1.

57

19 May 1988

Lög um framhaldsskóla [Secondary Schools Act]. Particularly article 12 and article 29, and regulation 23/1991 (particularly article 33). Article 12 was amended with Act 72 of 1989.

58

19 May 1988

Lög um Listasafn Íslands [National Gallery of Iceland Act]. Particularly article 2, and also regulation 231 of 28 March 1995.

81

3 August 1988

Lög um hollustuhætti og heilbrigðiseftirlit [Hygiene and Sanitary Inspection Act]. Particularly article 16, paragraph 2.

83

1 June 1989

Lög um Þjóðarbókhöfuð og endurbætur menningarbygginga [National Library and Restoration of Cultural Buildings Act]

62

17 May 1990

Lög um skipan prestakalla og prófastsdæma og starfsmenn Þjóðkirkju Íslands [Parsonage and Deanery Appointments and Employees of the National Church of Iceland Act]. Particularly article 30, paragraph 3.

90

13 August 1990

Lög um tekjustofna sveitarfélaga [Local Government Sources of Revenue Act]. Particularly article 5, paragraph 1.

51

1 June 1992

Lög um Háskólann á Akureyri [University of Akureyri Act]. Particularly article 13.

71

11 May 1994

Lög um Landsbókasafn Íslands/Háskólabókasafn [The National Library of Iceland/University of Iceland Library Act].

66

6 March 1995

Lög um grunnskóla [Elementary School Act]. Particularly Chapter XI.

In addition, there are two pieces of legislation, relating to particular types of institutions, that while not mentioning libraries, nevertheless imply libraries. One is the Act that governs the Arnarnagnæan Institute in Iceland which houses the important collection of manuscripts and provides research facilities. The other is an Act covering the Natural Science Institute and natural science collections, in which it is specified that these organisations are to collect relevant books, among other things.

70

29 May 1972

Lög um stofnun Árna Magnússonar [The Arnarnagnæan Institute Act].

60

1 June 1992

Lög um Náttúrufræðistofnun og náttúrustofur [The Natural Science Institute and Natural Science Collections Act]. Particularly article 10.

Part E
State-of-the-Art of Information
Technologies in Norwegian Libraries

Hans Martin Fagerli
Oslo College

Oslo 1996

Preface

This survey has been carried out according to the progress report dated September 15th, 1995 (appendix no 1). The progress report gives instructions concerning coverage, methodology and time schedule together with information about project group members, commissioned experts and project management.

The description of coverage in the progress report has been used to characterize the state of the art study except for those chapters for which NORDINFO was responsible.

It has to be emphasized that the survey is a state of the art study of information technologies in the Nordic libraries, and that the progress report gives few opportunities to place this survey in a historical or political context. However, section 1.1.1 gives some references to papers concerning historical developments and a public information policy.

In a state of the art study one has to be very careful about facts. Statistical assumptions are in no way any part of such a study, nor are hypotheses. A state of the art study describes the situation at a given point of time. As for the Norwegian survey this means the years 1994 to 1995 with data collected and analysed in October to December 1995.

Information technology is rapidly changing, not only the different technical solutions but also the total information environment. In Norway such a trend can easily be observed concerning information policy issues. Up to now there has been rather little political interest in establishing a Norwegian information policy, but since 1994 there has been quite a lot of activities towards developing plans for IT both in the different departments and between the different public sectors. Shortly after the data analysis of this report was done, in January 1996, the scene was dramatically changed by a political report issued by the Committee of State Secretaries for IT. That report, which is heavily discussed these days, may probably make the basis for a national information policy including the library sector. Later on this winter/spring the Royal Ministry of Education, Research and Church Affairs published a IT plan, and the The Royal Ministry of Culture is just now working on their IT plan. Both these plans include library issues.

The Norwegian Library Association has also on their general assembly in April 1996 given high priority to work on IT issues, specially those concerning a harmonisation of IT-routines in the public library sector (that is both public libraries and research libraries). The intention is to create a common national network to secure data transfer and use across library sectors.

Those activities can affect the near future quite a lot when it comes to coordination of IT-routines in the library field in Norway. And the reasons are obvious: libraries are for the first time mentioned as being part of a national information strategy. But these activities has partly not been the scope of this report and partly appeared to late to be included. Although these new activities states that the IT environment changes all the time. A state of the art report should be read with caution due to this.

The scope of the report

The scope of the report is a state of the art report describing the main features of Norwegian library technology at the time of late 1995. The reader has to bear in mind that already in 1996 changes have occurred – for instance in the number of connections to Internet which at present are actually exploding.

The progress report of September 15th 1995 summarise the methodology to be the use of desk research, questionnaires and interviews. These different methods are commented on below. Desk research turned out to be the most important method to acquire a good data basis. That depends on a situation where we were able to use recent national statistical analysis where we to some extent were allowed to look into the data details. In addition also some research in the field of library technology were just recently finished, and those reports have been quite useful to doublecheck results from the questionnaires.

Questionnaire

We found that we needed to distribute the questionnaire (appendix no 2) only to the research libraries (in Norwegian terms this includes the special libraries) because the public libraries were effectively covered by official statistics (A abridged version of the questionnaire was sent to the county libraries to get some additional data especially regarding Internet use).

The analysis of the answers was rather disappointing. Just above 60 % replied by the deadline, thus the questionnaires are not necessarily significant to be used as a basis for analysis. To this adds obvious misunderstandings in filling in the questionnaire. This can be concluded after answering quite a number of telephones from the libraries about problems filling in the questionnaires. We might in fact on basis of this doubt the questionnaire method in making a state of the art report, even then we get a 100 % return of questionnaires. We have been very careful not to use results from the questionnaire without seeing them in connection with results from official statistics and library research. Many of the answers were too inadequate to be used to represent the actual situation in the libraries.

The research libraries appear to have great difficulties in explaining economic costs connected to the use of information technology. The reasons seemed to be that they either did not have the budgeting responsibility, or that the accounting systems did not specify all cost or that total costs were composed of different cost on different budgets (also budgets outside their own institution). That means that collecting economic data might be quite a organisational task in some of these libraries.

Interviews

In one single case (one of the large libraries) we decided to arrange an interview just to help the library to fill in the questionnaire. This was also done in some cases by telephone every time libraries had difficulties filling in the questionnaire.

This method turned out to be quite satisfying, but the time and budget available to the project denied any complete investigation using this methods. But interviews might have been the most appropriate method in describing the state of the art.

Time schedule

The analysis and capturing of data was done during September to November 1995, and the report was written in December 1995/January 1996. Some adjustments were made through February until submission of the report draft to NORDINFO in March 1996. After receiving comments from the EC in April 1996, the report was slightly revised and amended.



Part E

State-of-the-Art of Information Technologies in Norwegian Libraries

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1 Introduction

This report describes the technological situation in the Norwegian library sector as of 1994-1995. In view of the rapid advances in this field, the situation may be very different three to five years from now. Little attention is devoted in the report to the historical background for the solutions currently in use in Norwegian libraries.

The report focuses primarily on the major systems and the most central solutions, thereby deliberately avoiding a detailed description of a number of technical solutions which will be history in a few years' time. Moreover, the major systems are an important approach to understanding Norwegian library technology today, and of key importance in terms of subsequent access to updated knowledge of the Norwegian library sector and technological development and solutions.

Information technology is used extensively in Norway. Despite this, there has been less public management in this field than in a number of other areas of society. However, this state of affairs may now be changing. In January 1996 a report was issued by the Committee of State Secretaries for IT (Den norske IT-veien: bit for bit. Oslo, 1996. 78 p. - <http://odin.dep.no/it/>). This report, which is to form the basis for a coherent Norwegian IT policy, gives public libraries in particular a description of future tasks which will constitute an exciting challenge for Norwegian librarians.

1.1 National access points

The following URL addresses may be useful for those who are interested in Norwegian network resources (please note that these addresses are subject to change):

BIBSYS:	http://www.bibsys.no/
National Library of Norway, Rana Branch:	http://mack.nbr.no/
National Office for Research Documentation and Academic and Professional Libraries:	http://info.rbt.no/
Norwegian Directorate for Public Libraries:	http://samson.bibtils.no/
University of Oslo Library:	http://www.ub.uio.no/

1.2 Statistics

The information collected in the manner described above provides a certain amount of basic data relating to Norwegian libraries (1994 figures):

Table 1. Basic data on Norwegian libraries

Type of library	Number of libraries	Number of volumes	Number of loans	Percentage of libraries with a library system
Academic and special library	179	15.9 mill	3.1 mill	95 %
Public library	435	20.4 mill	21.6 mill	70 %
School library	3700	9.5 mill	5.2 mill	17-50 %

1.3 Use of electronic technology in Norwegian libraries

Norwegian libraries began to use electronic technology in the mid-1960s. At that time the Norwegian Centre for Informatics used data processing to produce an index of articles, which was gradually developed into a catalogue system (Polydoc), the first of its kind in Norway. The University of Oslo Library (UBO) introduced a computerized system for serials (SAMPER) for Norsk Samkatalog (Norwegian union catalogue) in 1967, and automated the national bibliography for books (Norsk Bokfortegnelse) in 1972. This also marked the introduction of the MARC format in Norway (NORMARC). The Computing Center at the University of Trondheim (RUNIT) began work on the development of an automated library system (BIBSYS) in 1972, and in 1978 the system was operationalized with the Universities of Trondheim and Tromsø as participants.

The first national on-line services were introduced by UBO in 1981 under the name of UBO: BOK. Along with the TRIP databases (introduced in 1983), this service has expanded to encompass 47 databases and 6.8 million on-line items as of 31.08.95. The service is based primarily on national bibliographies and union catalogues.

The first computerized system for public libraries, MEDIA, was developed by Rogalandsdata for the Stavanger Public Library in the early 1980s. This was followed almost immediately by Bibliofil and MikroMARC which, like MEDIA, are systems that are marketed commercially. Bibliofil and MikroMARC marked the start of a transition to systems based on microcomputer technology.

Besides the above-mentioned library systems Bibliofil, BIBSYS, MEDIA and MikroMARC, the only other systems that have gained a foothold in Norway are Polydoc, SIFT Bibl and Bibelation. Polydoc is predominantly to be found in company libraries, while SIFT Bibl is used by a number of government agencies. Bibelation is largely in use in social-science research institutes.

It is anticipated that more than 1000 Norwegian libraries will have computerized their internal library procedures by the beginning of 1996.

1.4 Public libraries

Statistics showing the distribution of various library systems (source 2) are available as from 31.12.94. The figures in parentheses are the number of installations indicated by the suppliers as of 31.12.95.

Table 2. Electronic library systems in Norwegian public libraries

System	Number
MikroMARC	165 (186)
MEDIA	59 (64)
Bibliofil	69 (82)
Others	12

“Number” indicates the number of municipalities; thus the table shows that a total of 305 municipalities use IT for their cataloguing procedures. These libraries cover 91 % of the Norwegian population. One hundred and thirty municipalities are not yet using IT. The figures furnished by suppliers as of 31.12.95 show a steady increase in the use of IT in the internal procedures of public libraries. Only small libraries have not introduced IT systems.

1.5 Academic and special libraries

There are no corresponding official figures for academic and special libraries, but a survey (Source 3) carried out in 1994 offers a fairly accurate indication of the situation. This survey focused on various library units, not on organizational units. This means that the figures for BIBSYS for the university and college sector are too high. The figures shown in parentheses are those furnished by suppliers as of 31.12.1995, and here the figure for BIBSYS is the number of organizational units using the system.

Academic and special libraries are automated to a very high degree, and only a very small number of libraries do not use IT. However, the figures offer little indication of how large a proportion of the documents are accessible through electronic systems. Several libraries are in the process of converting card catalogues.

Table 3. Electronic library systems in Norwegian academic and special libraries

Library system	Number of installations
BIBELATION	10
BIBLIOFIL	12 (10)
BIBSYS	103 (49)
MikroMARC	119 (176)
POLYDOC	18 (21)
SIFT BIBL	17 (22)
Other systems	38
Card catalogue only	13
Number of units	330

Only 15–20 academic and special library units are not included in these figures. All of them are small libraries.

1.6 School libraries

Corresponding figures for primary and lower secondary school libraries (approx. 3250 units) and upper secondary school libraries (approx. 450) may be estimated from a survey carried out in 1995 (Source 4). 858 schools took part in this survey. We find that the maximum number of school libraries with PCs is about 1885 or approximately 50 % of all school libraries. The proportion of school libraries equipped with PCs varies according to the type of school, ranging from the lowest percentage in primary schools to about 100 per cent in upper secondary schools. However, the figure “1885” offers no information about the use of library systems, and the proportion of school libraries with such systems must be expected to be lower. MikroMARC, the library system that predominates in school libraries, reports as of 31.12.95 that they have 620 installations in school libraries. This is

equivalent to about 17 percent of all installations. Thus, the percentage of Norwegian school libraries with electronic library systems lies somewhere between 17 and 50 per cent, probably considerably closer to 17 % than to 50 %.

The above-mentioned survey also provides statistics on the use of CD-ROM, local networks and external links. These are only indicated in the form of percentages, and vary significantly from one type of school to another. However, the information provided by Rudland's survey (Source 4) indicates that the use of IT in upper secondary schools is fully on a par with IT use in academic and special libraries:

CD-ROM is available in 17 % of primary and lower secondary schools and 70 % of upper secondary schools.

Local networks: 14 % and 90 % respectively.

External links: 15 % and 79 % respectively.

However, the survey does not offer any information as to whether these facilities are also available in the school library.

We consulted one of the Norwegian educational authorities to achieve a cooperation in collecting data from the school libraries (Appendix 3). The response was negative, and on a meeting in Oslo on 5th of December 1995, the Project group decided to make the analysis of the school libraries on the basis of existing data and reports.

2 Library systems

2.1 Library systems with at least 5 installations

2.1.1 Bibelation

Bibelation is the least common of the systems described here. The system runs on microcomputers, and is developed and sold jointly by the Christian Michelsen Institute and the Norwegian Social Science Data Services. The system is used primarily by groups engaged in sociological research. There are about 10 installations in Norway.

No information has been received from the supplier.

2.1.2 Bibliofil

Bibliofil was developed for microcomputers with a UNIX operating system, and is used primarily in public libraries. The system is supplied by Norske Biblioteksystemer, Larvik. Bibliofil has lately focused on ensuring distribution of catalogue data on Internet, and several public libraries have now their catalogues accessible on WWW. Bibliofil has recently developed a module called "Multicast", which can search several different library systems simultaneously, provided that their catalogues are accessible on WWW.

Information from supplier: Appendix 1.

2.1.3 BIBSYS

BIBSYS is a computerized system which is used and developed jointly by university libraries, the National Library of Norway and several college libraries. BIBSYS differs from other library systems in Norway in that it is developed by the user libraries, partly by a central project group in Trondheim and partly by local system groups in Bergen, Oslo and Rana. BIBSYS can be accessed via WWW. BIBSYS is not marketed commercially.

Information from supplier: Appendix 2.

2.1.4 MEDIA

MEDIA, which runs on IBM equipment, is a system that was developed for public libraries. It is used most extensively in the counties of Agder, Rogaland, Buskerud, Oppland and Hedmark. MEDIA is a centralized system for mainframes operated by regional computer centres.

Information from supplier: Appendix 3.

2.1.5 MikroMARC

MikroMARC is a PC-based system (DOS operating system). It was developed in the early 1980s by the Norwegian College of Library and Information Science on the basis of software from the University of Oslo Library. MikroMARC, which is currently supplied by Norsk Systemutvikling A/S, is the Norwegian library system which is most widespread in terms of number of installations (as of 31.12.95 there were approx. 1,000 installations in Norway). The system is also sold in Denmark, Sweden, Iceland and Germany (a total of close to 300 installations). In 1995 Norsk Systemutvikling developed a CD-ROM solution in combination with the *Norske BokDatabase* (see item 2.3.4). In this solution the library system has been integrated with the database on a CD-ROM so that the library system can be used both for searching and for transferring data to a local MikroMARC system.

The latest Mikromarc module (MikroMARC FOTO) is a multi media database managing various text and image formats.

Information from supplier: Appendix 4.

2.1.6 POLYDOC

About 20 libraries, chiefly company libraries, use POLYDOC. This library system has long been used in Norway and originated in the Norwegian Centre for Informatics. In the 1970s, POLYDOC was the most widely used library system in Norway with some 30–40 installations. POLYDOC is marketed by a Swedish vendor.

Information from supplier: Appendix 5.

2.1.7 SIFT Bibl

SIFT Bibl is used by about 20 academic and special libraries, primarily within the public administration sector. SIFT, an acronym for Searching in Free Text, is basically a free text search system. The system is owned by the Norwegian Government Computer Centre. SIFT subsequently developed a special library application called SIFT Bibl, which can be run on several UNIX platforms.

Information from supplier: Appendix 6.

2.2 Local systems in cooperation at the national level

2.2.1 BIBSYS

BIBSYS, which is used by all Norwegian university libraries and the majority of college libraries, is coordinated by the National Office for Research Documentation and Academic and Professional Libraries. Work has been in progress on reorganizing BIBSYS for several years, and it is now anticipated that BIBSYS as an organization will become a public corporation. For more information, see the description under 2.1.3 and Appendix 5.

2.3 National coordinated systems

When presenting an overview of national systems, we cannot confine ourselves to a narrow definition of the term. Several library services are national services in character without being defined as such. Efforts to expand networks also make it difficult to define what constitutes a national system because all resources linked to nationwide networks are nationally accessible. A factor common to most of the national services is that they are also accessible via the Internet.

2.3.1 University of Oslo Library. UBO: BOK and TRIP Systems

The University of Oslo Library (UBO) is responsible for traditional national library services such as national bibliographies and union catalogues. The UBO has also developed a number of special databases. These services can be accessed by the general public through two systems: UBO: BOK and TRIP.

On 1.1.1991 the UBO introduced a system for ordering serial articles which is linked to the union catalogue database SAMPER. In 1995 close to 150,000 articles were ordered through this service, which is called SAMPERFAX. This represents between 60 % and 70 % of all article orders passed between Norwegian academic and special libraries. The service is also open to public libraries, but the latter account for a very small share of orders (1–2 %). The SAMPER database with its overview of serials available in Norwegian libraries forms the core of the service. Through on-line access to SAMPER, a library wishing to have a copy of a specific article may send its order to the delivering library via a datafax linked to SAMPER. The datafax sends a digital copy of the order to

the delivering library's telefax where a paper copy is printed out. This means that delivering libraries do not need to be automated in order to participate in this common lending system. The only condition is that the library's stock of serials is registered in SAMPER. In 1994 the UBO expanded the service to include interlibrary book orders.

In 1990 the UBO published the national bibliographic databases (books and serial articles) on a CD-ROM, together with data from the Norwegian Library Bureau (Biblioteksentralen) and Forlagsentralen, a distribution centre for book publishers. In 1991 the Union Catalogue for Books was published on CD-ROM, and annual issues have been produced every year since then. Since 1994 the UBO has expanded its CD-ROM activities and now produces the disks itself on its own equipment. The UBO has also introduced an image database based on a collection of pictures revolving around the theme of Fridtjof Nansen. This database is accessible through WWW.

Norway's first National Librarian was appointed on 1.1.1994. The National Librarian is charged with the coordination of two branches, the National Library of Norway, Oslo Branch (NBO) and the National Library of Norway, Rana Branch (NBR), which together will constitute the National Library of Norway. The Oslo Branch will gradually take over the national services for which the UBO is currently responsible and will serve the public at large, in keeping with the intentions of Parliament.

2.3.2 National Library of Norway, Rana Branch

The Rana Branch of the National Library of Norway (NBR) is in full operation after a couple of years of building up its staff and routines. NBR uses several computerized systems for its comprehensive registration functions: BIBSYS for the registration of documents for legal deposit and the legal deposit library, TRIP (at UBO) for brochures, SIFT for film, music and TV/radio material, as well as MikroMARC for a Sami bibliography. In 1993 NBR produced its first CD-ROM based on 7,000 brochures and leaflets issued in connection with the 1991 local elections. NBR has also, due to the Norwegian Act on Legal Deposit, the responsibility to store electronic documents, and an electronic archive is planned for this purpose. Several services provided by NBR are available on WWW. A large image collection (the Wilse collection) is presented under the system name of BAUTA. Similarly, pictorial material and documentation related to the anniversary of World War II and to the author Knut Hamsun has been made available. A bibliography of electronic serials in Norway can also be accessed via WWW. This bibliography must be regarded as a prototype of bibliographic treatment of this type of electronic media.

NBR is devoted to be one of the Nordic Centers of Excellence in the field of electronic libraries.

2.3.3 The Norwegian Library Bureau

The Norwegian Library Bureau registers a number of the books produced in Norway in the BIBBI computer system, a service which mainly is designed for Norwegian public libraries. Bibliographic data in electronic form is an important product made available by the Norwegian Library Bureau, and several public and school libraries obtain data for their library systems in this way.

2.3.4 Forlagsentralen

Forlagsentralen is a distribution centre for the book trade. It registers virtually every Norwegian book published by a publishing house in a special computerized system called BD (the Norwegian Book Database). This system is accessible to the majority of Norwegian booksellers and is used to order books from the stocks of the Forlagsentralen.

In 1994 the Forlagsentralen initiated a project featuring the use of two-dimensional bar codes for the distribution of bibliographic data. The service has been tested by a small number of libraries. The Forlagsentralen's database is important to libraries in two respects: it provides information on books in print and on books on sale. In 1995 the Forlagsentralen moved one step closer to the Norwegian library community by buying into Norsk Systemutvikling A/S (see item 2.1.5).

2.4 Nordic coordination in using library systems

There is no cooperation on a regular basis between Norway and other Nordic countries. However, one of the Norwegian library systems is used to a certain extent in other Nordic countries. MikroMARC is sold to Denmark, Iceland and Sweden, and MikroMARC accounts for the bulk of library system installations in Iceland.

Very few of the foreign systems (neither VTLS nor LIBERTAS, for example) have gained a foothold in Norway. The reason for this is that Norwegian university and college libraries have focused on establishing a joint computerized system (BIBSYS), and other Norwegian systems (Bibliofil, MEDIA and MikroMARC) have succeeded in capturing the remainder of the Norwegian library market on their own. For the time being, therefore, it is difficult for foreign library systems to gain entry in Norway.

2.5 International cooperation

2.5.1 ONE

<http://www.bibsys.no/one.ta.html>

ONE (OPAC Network in Europe) is a cooperation project between 15 institutions in eight European countries and financed through the EU Library Program.

The aim of the project is to simplify the use of remote library databases for all end-users. This includes both the technical communication between the systems and the user assistance which may be needed due to differences in cataloguing and indexing.

The systems that will be linked together within the project are many of the central library services in Europe. The software that will be developed will be available for installation in other systems as well after the end of the project, and thus all systems can choose to be linked to this network.

When the systems are linked together, using the library network protocols, end-users will be able to make use of all these resources as if they were part of their local databases.

The project started on 30 January 1995 and is scheduled to last for 30 months. It has a budget of approximately ECU 2.4 million. Coordinator of the project is Oslo College – unit BRODD, Norway.

The other partners are:

Austria: Joanneum Research, Steiermärkische Landesbibliothek and Steiermärkische Landesmuseum Joanneum

Denmark: Dansk BiblioteksCenter, National Museet

Finland: Helsinki University Library

Germany: Die Deutsche Bibliothek

The Netherlands: Pica

Norway: BIBSYS, National Library of Norway, University of Oslo Library

Sweden: LIBRIS

UK: British Library, Satellites International Limited

2.5.2 JUKEBOX

<http://www.sb.aau.dk/Jukebox/edit-report-1.html>

JUKEBOX was launched in 1991. The project was proposed by the State MEDIA Archive in Denmark, the British National Sound Archive, the Discoteca di Stato in Italy and the Western Norway Research Institute, which first proposed the idea, and was approved in 1992. The actual work started in January 1993.

JUKEBOX is a library service based on access to large sound collections via a network. The goal is to enlarge library services by making available to users sound documents which represent relevant products of 20th-century culture.

Basically, user stations placed in the libraries are connected to the archives via an ISDN connection. The user can access the JUKEBOX catalogue and the local sound database, which are stored on the three different archive systems.

The user group was composed of the librarians of the six libraries chosen as test sites.

2.5.3 GABRIEL

<http://renki.helsinki.fi/gabriel>

GABRIEL is the World Wide Web server for the European national libraries represented in the Conference of European National Librarians (CENL). GABRIEL will help to bring national libraries in Europe closer together by providing a single point of access for the retrieval of information about their functions, services and collections.

The GABRIEL pilot project was originally set up on behalf of CENL by the following libraries acting in partnership: the British Library, Helsingin yliopiston kirjasto (the Helsinki University Library), and the Koninklijke Bibliotheek (the National Library of the Netherlands). In November 1995, national libraries which had not participated in the GABRIEL pilot project were invited to submit their entries. Using the pilot project as a

basis, this development project will aim to achieve comprehensive coverage of European national libraries within GABRIEL in the course of the coming year.

The National Library of Norway is participating as a supplier of information to this project.

3 Networking

3.1 UNINETT

UNINETT originated as a research project (1978-1985), continued as a permanent institution with a secretariat at the Foundation for Scientific and Industrial Research at the University of Trondheim (SINTEF) (1987-1992), and is now a limited company that is wholly owned by the Ministry of Education, Research and Church Affairs. According to UNINETT's goal and mandate, the company is to develop an advanced, nationwide network of electronic services for the exchange of information between individual users and groups of users in the fields of research and education in Norway. These services are to be on a par with the best of what is available in the international academic community. UNINETT provides a link for schools, libraries, museums, archives, etc. so that these institutions will have access to the same services as universities and research institutions.

There is an important distinction between basic network services (the carrier service) and end-user services. The basic network services include link-up to and operation of UNINETT's network, communications and link-up equipment. The end-user services are based on UNINETT's network services, and comprise UNINETT's operation and coordination of the most important network applications such as e-mail, cataloguing, network conferencing, FTP and remote log-on, etc.

4 Use of IT in Norwegian libraries

<http://www.uninett.no>

This chapter describes the results of a survey based on questionnaires that were sent to a sample of academic and special libraries and county libraries in the autumn of 1995, as well as on the use of official statistics. Replies were received from 63.44 % of those to whom questionnaires were sent (59 out of a total of 93 libraries). It is difficult to obtain exact results from a survey based on a certain degree of voluntariness and when there is little time available. The percentage of replies received is somewhat too low and the sample somewhat too arbitrary for the results to be significant. It has therefore been necessary to comment on the results on the basis of other known surveys and facts as well.

4.1 Distribution of library systems

Figure 1 shows the distribution of library systems in the academic and special library sector as indicated by the survey.

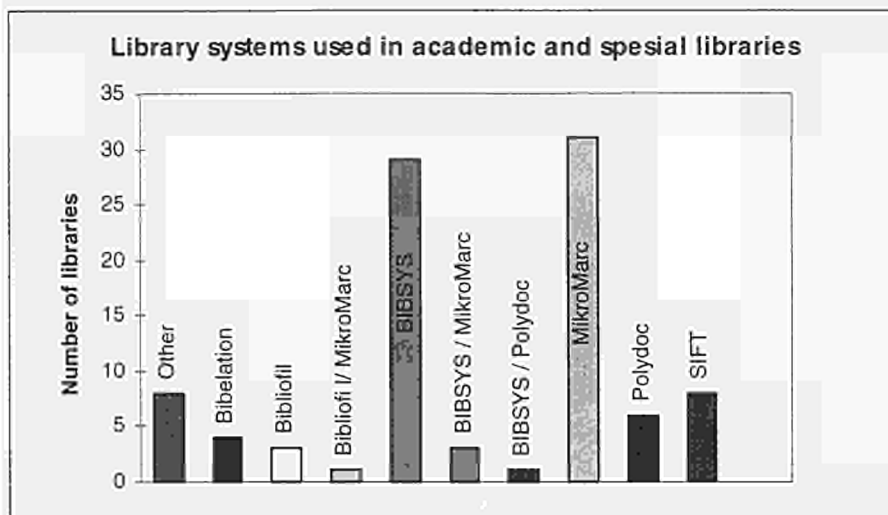


Fig. 1 Distribution of systems in the academic and special library sector

This figure gives a somewhat distorted picture of the distribution of systems, and should be seen in conjunction with Table 3. Figure 1 primarily shows the way the systems are distributed among the major academic and special libraries. It also shows the extent to which libraries were making a transition from one system to another in 1995. The column entitled "Bibliofil/MikroMARC" indicates that the library has MikroMARC, but has decided to change to Bibliofil. Transitions to BIBSYS are indicated in the same manner.

MikroMARC is the only one of the major systems that does not run under UNIX. It runs under DOS, but is in the process of developing Windows-based software. MikroMARC and SIFT Bibl are the only systems with a graphic OPAC that are used fairly widely, but Bibliofil's and BIBSYS's WWW access can also be considered an OPAC-type user interface. Most libraries run their systems in a network.

The way the systems are operated varies widely. Both BIBSYS and MEDIA are operated by a host institution. Bibliofil is a distributed solution which can be operated partly centrally, and partly locally in the individual libraries. The other systems are always operated by the library staff. Cataloguing in both BIBSYS and MEDIA is carried out on a central, common database with a considerable amount of mutual re-use of cataloguing data, but little use of external data. The other systems import data from others to a varying degree, a process that is possible in an easy way both in MikroMARC and Bibliofil. Two Norwegian libraries, Tønsberg Public Library and the Oslo College Library in Oslo will be introducing a self-service loan facility in 1996. On the whole, all the modules offered by the systems are now being used in most libraries, but only BIBSYS has a special built-in module for serials control. Libraries which use other systems usually have separate systems for this.

MikroMARC is the system which offers users the greatest opportunities for generating their own reports and for changing the form and content of reports. In this respect MikroMARC can almost be considered a bibliographic production system. Few libraries plan to acquire a new library system. This must be interpreted to mean that they either have a relatively new system or that they are satisfied with the solution they have.

Academic and special libraries find it difficult to estimate the costs related to the use of IT in the library. As a rule, they are aware of the licence fees and other specific costs, but not the overall cost. This may reflect the fact that IT-related tasks are integrated into the day-to-day work of the library, and thus are difficult to specify as an isolated cost.

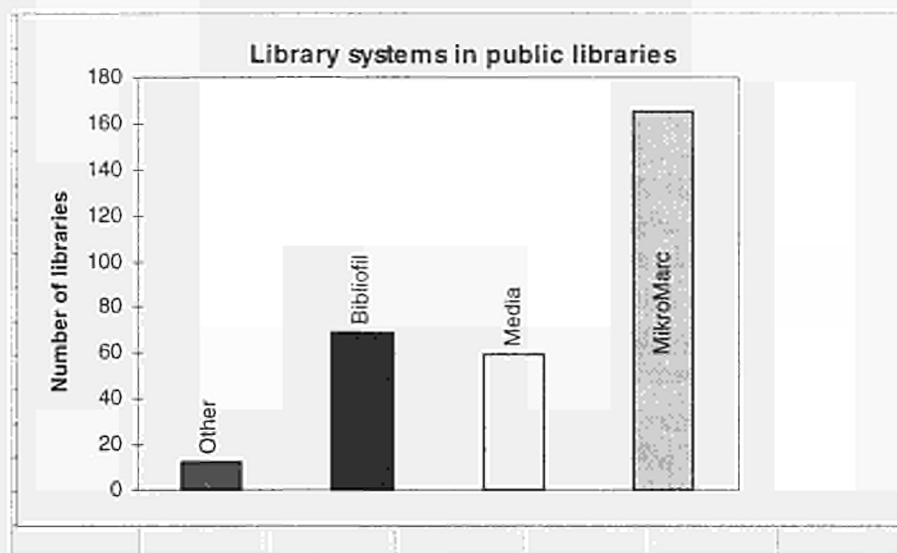


Figure 2 shows the distribution of systems in public libraries

Fig. 2 Library systems in public libraries

These figures have been taken from the statistics compiled by the Norwegian Directorate for Public Libraries, and indicate the situation as of 31.12.1994 (Source 2). From the same statistics, we learn that the costs of data processing services have been calculated at NOK 3.13 per inhabitant, i.e. a total of approximately NOK 14 million for the country as a whole. This may mean that IT costs in academic and special libraries are relatively higher than in public libraries. Correspondingly, with a total of some 200,000 users (the number of students and employees at Norwegian educational institutions), academic and special libraries should have expenses equivalent to approximately NOK 600,000. However, this is far from the case. Otherwise, public library statistics show that 62 % of the collections were automated as of 31.12.1994. No corresponding information concerning the extent of automation exists for academic and special libraries.

4.2 Electronic document ordering and delivery systems

The use of electronic procedures in interlibrary lending in Norway increased sharply from about 1990. This was largely due to the fact that on 1.1.1991 the UBO established an electronic ordering service for serial articles, which the majority of Norwegian libraries immediately began to use. Figure 3 illustrates the situation in the major academic and special libraries as of 31.12.1995:

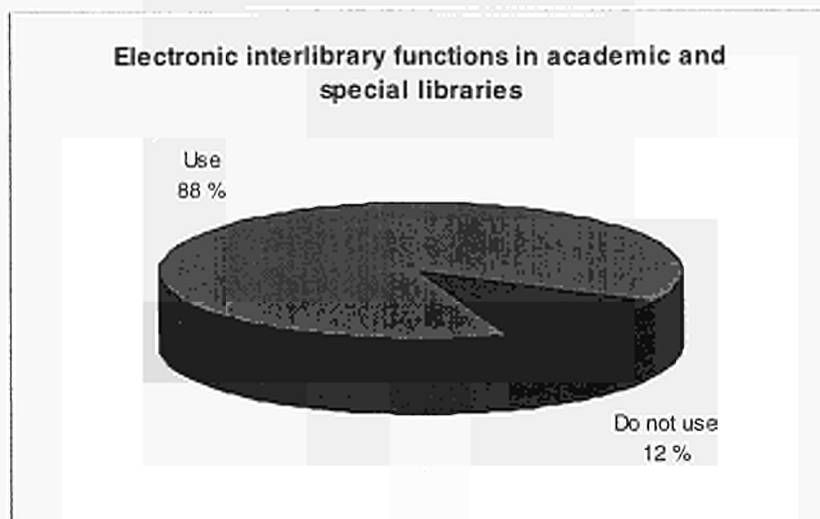


Figure 3. Use of electronic interlibrary lending routines in academic and special libraries

It is chiefly the ordering routines that are automated. Had Figure 3 shown the situation in all academic and special libraries, however, the picture would have been somewhat different. Small academic and special libraries have not begun to use electronic interlibrary lending routines to any great extent. While the technical situation is somewhat similar in public libraries, interlibrary lending in such libraries is organized differently. County libraries do the ordering on behalf of municipal libraries, and the vast majority of county libraries are now using electronic procedures. BIBSYS offers borrowers the possibility of ordering interlibrary loans themselves, but this has proved to be problematic, among other things in connection with verification and delivery of orders. Orders are therefore sent as e-mail to the borrower's own library for verification before being sent out.

The proportion of electronic interlibrary loan requests for copies of serial articles in academic and special libraries was documented in a survey conducted in 1994 (Source 3). This survey showed that 91 % of all orders were made electronically in 1993/94. After this survey, the UBO initiated electronic interlibrary loan orders of books in 1995. Since such functions were already included in both Bibliofil's and BIBSYS's systems, it is likely that a substantial proportion of interlibrary lending in Norway was automated as of 31.12.1995.

However, there has been little progress as regards delivery of electronic interlibrary loans if delivery by fax is excluded. Figure 4 shows how academic and special libraries can deliver electronic documents:

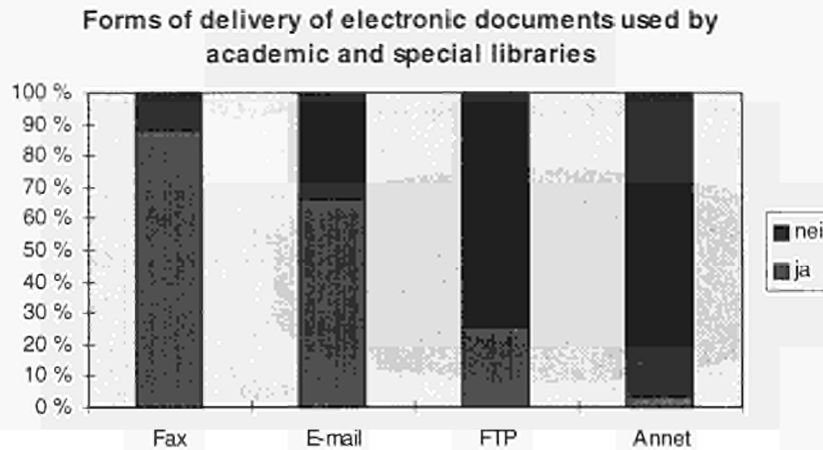


Fig. 4 Various ways of delivering interlibrary loans in electronic form from academic and special libraries

The figure offers no information concerning the proportion of orders delivered in physical form, such as by mail. It must be assumed that a high percentage are still delivered in this manner.

4.3 Access to external databases

Libraries mainly offer access for users to databases by means of CD-ROM installations, either in stand-alone units in the library or in local networks. CD-ROM technology is becoming increasingly prevalent in all types of library. Figure 5 shows the situation in academic and special libraries.

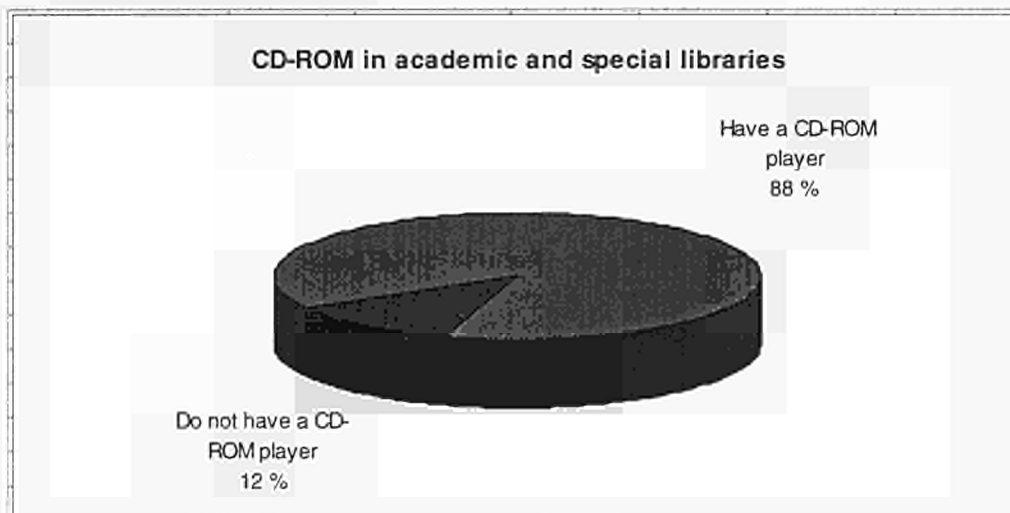


Fig. 5 Distribution of CD-ROM in academic and special libraries

CD-ROMs are not used quite as extensively in public libraries as in academic and special libraries, but the figures are somewhat unreliable. The general overview of public libraries (Figure 6) is based on all public libraries, while the overview of academic and special libraries only covers the major libraries. The small public libraries bring the percentage

down significantly. Moreover, the figures for public libraries date from 1994, and are thus one year older than the research and special library statistics.

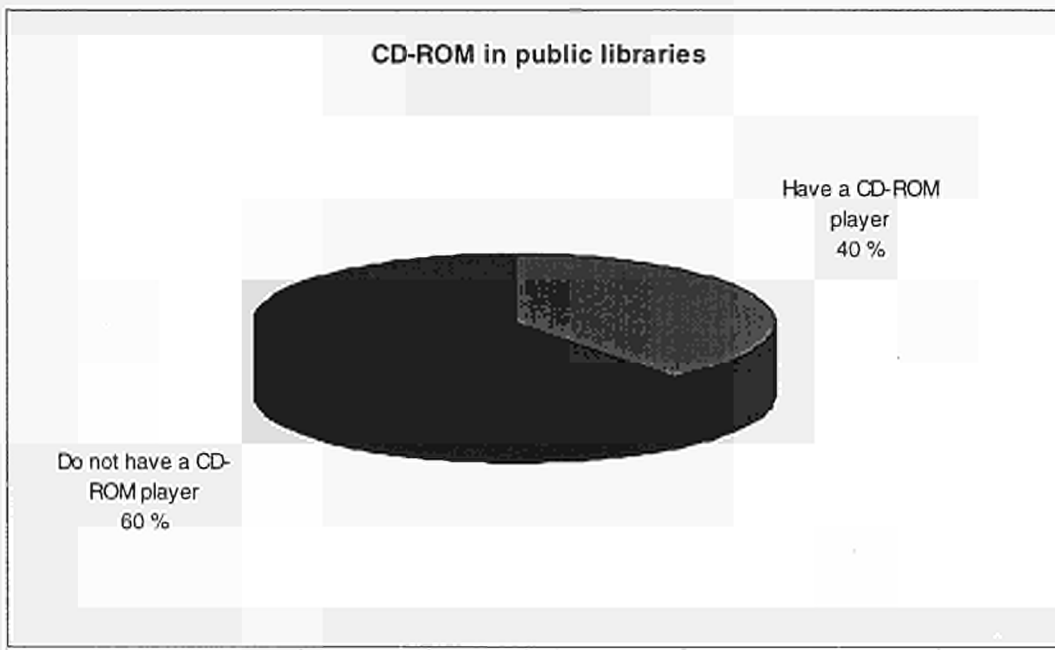


Fig. 6 Distribution of CD-ROM in public libraries

From 1996 onwards, the National Office for Research Documentation and Academic and Professional Libraries has negotiated two agreements making on-line database facilities available to users of academic and special libraries. Most of the university and college libraries have signed these agreements. One of the agreements ensures access to OCLC's Firstsearch, both via Telnet access and via WWW. The other covers three databases from ISI, which are being set up in BIBSYS. The agreements currently cover a period of three years.

By giving users access to Internet, libraries also give them access to external databases. In Norway the most important services to become accessible in this way will be the national services from NBO/NBR and BIBSYS.

4.4 Local IT applications

Several local IT applications have been developed in the libraries. These are mainly related to local collections (local history), image collections and Internet-pages. However, activities revolving around basic library procedures still dominate.

4.5 End-user access to Internet services

This is an area in which major changes are taking place, both in terms of link-ups and of the number of libraries with home pages. In academic and special libraries, it is normal for users to use Internet services directly from their workplace, and this will increasingly also apply to library services. The search facilities offered in the library itself will primarily be a service for those who cannot do this from the place where they work or study. This applies to an even greater extent to the facilities offered by public libraries. Figures 7 and 8

illustrate the situation in academic and special libraries and public libraries respectively. We can expect the differences between academic and special libraries and public libraries as regards the use of Internet services to disappear in the near future.

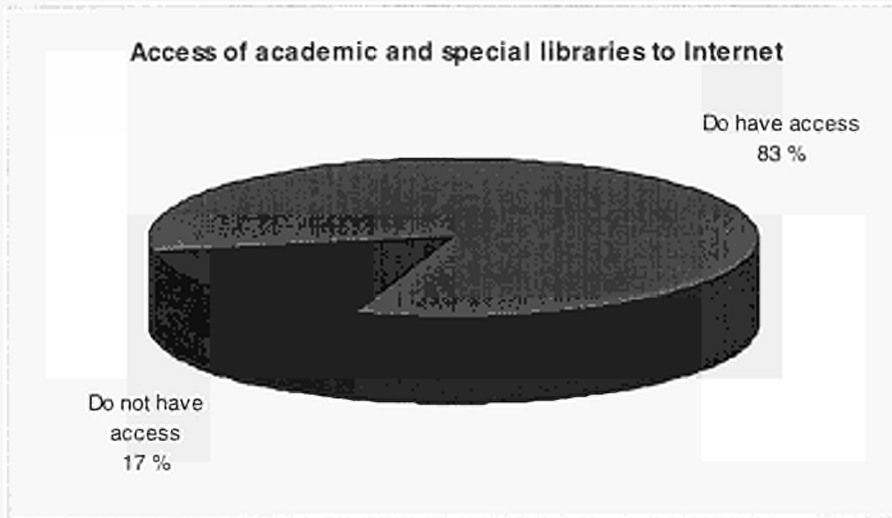


Fig. 7 Use of Internet in academic and special libraries

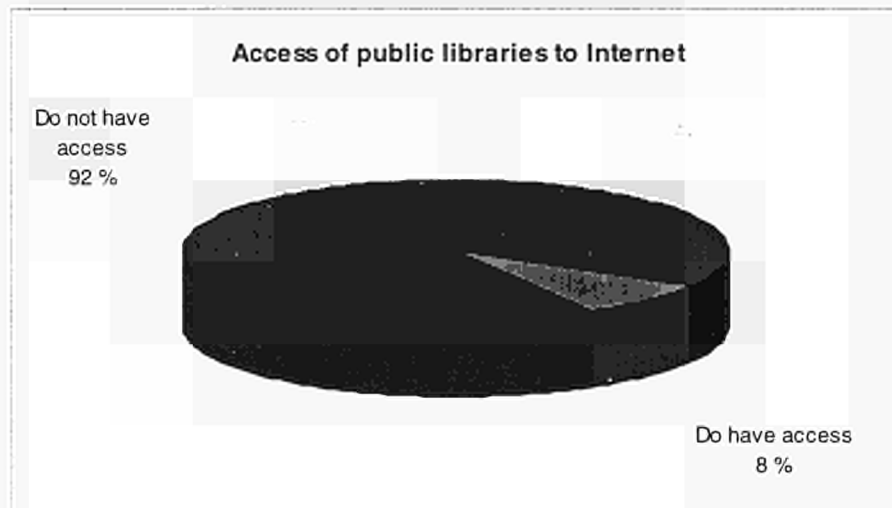


Fig. 8 Use of Internet in public libraries

A probable consequence of this development will be that more and more library services will move away from traditional counter service and out to the places where users work and study and, eventually, to their homes. WWW and Internet have offered libraries great challenges and opportunities, and there is a considerable amount of activity related to these phenomena at present.

5 Literature

5.1. Sources of data

Norwegian library statistics are prepared by a variety of public institutions. Statistical data relating to public libraries is compiled and published by the Norwegian Directorate for Public Libraries, while data on academic and special libraries is compiled by the National Office for Research Documentation and Academic and Professional Libraries and published by Statistics Norway. This information and data from other surveys on the use of technology in Norwegian libraries, together with the survey carried out by us, form the basis for this report. Part of the survey was focused on system suppliers. Their responses are appended to this report and, apart from simple clerical errors, have been published as they were received from the suppliers.

The following data sources have been used and are referred to in the text:

1. *Fag- og forskningsbibliotek. 1994. – S. 9–12. – I: Statistisk ukehefte, no 37 (1995).*
2. *Norske folkebibliotek 1995: med bibliotekstatistikken 1994/Statens bibliotektilsyn, 1995. – 94 s. – ISBN 82-7620-030-3*
3. *Fagerli, Hans Martin. – Fjernlånstrafikk i Norge: trafikk- og tidsskriftanalyse 1993-1994. – Spesialgruppen for referanse og fjernlånstrafikk, 1995. – 31 s.*
4. *Rudland, Hilde. Bruk av edb i skolen 1995. – Oslo: Statistisk sentralbyrå, 1995. – 77 s. - ISBN 82-537-4181-2*

5.2 Documents of general, historical and political interest

Some few documents have been used as background papers in writing the report. These are

1. *Fagerli, Hans Martin. Vår digitale framtid: om elektronisk informasjonsbehandling. – Oslo: Cappelen Akademisk forlag, 1995. – 136 s. ISBN 82-7037-960-3*
2. *Statssekretærutvalget for IT. Den norske IT-veien: bit for bit. – Oslo, 1996. – 78 s. (<http://odin.dep.no/it/>)*
3. *Kirke-, utdannings- og forskningsdepartementet. IT i norsk utdanning: årsplan for 1996. – Oslo, 1996. – (<http://odin.dep.no/kuf/publ/it-rap96.html/>)*

No 2 and 3 on this list were published in January and March 1996.

Appendix 1

Name of system	Bibliofil
European languages supported	Norwegian
Main supplier	Bibliotek-Systemer A/S Faret 8 N 3271 LARVIK Norway
Telephone	47 - 33 11 68 00
Fax	47 - 33 11 68 22
Contact	Per Magnus Henriksen
Supplier profile	Bibliotek-Systemer A/S supplies the library automation system BIBLIOFIL. It handles all aspects of library management, except serials control. Bibliotek-Systemer also delivers a system for administration and handling of ticket sales in cinemas (AMANDUS)
Staff	11 persons
European subsidiaries/agents	-
General overview	BIBLIOFIL is a 12-year-old library system. There is a user potential of 1.6 million people in the vicinities served by BIBLIOFIL libraries, involving more than 1000 library employees. BIBLIOFIL administers more than 10 million loan transactions per year. BIBLIOFIL uses a machine-independent multi-user operating system, Unix System V, and is based on a distributed architecture.
Customers EU/Norway	
	School libraries Public libraries Research libraries Special libraries National libraries
	Austria
	Belgium
	Denmark
	Finland
	France
	Germany
	Greece
	Ireland
	Italy
	Luxembourg
	Netherland
	Portugal
	Spain
	Sweden
	United Kingdom
	Norway 7 82 10
Other European countries	
Total number of customers worldwide	93
User group	BIBLIOFIL user group for Acquisition c/o Grete Kolberg, Asker bibliotek, Asker. BIBLIOFIL user group for Catalogue c/o unvor Melhus, Deichmanske bibliotek, Oslo. BIBLIOFIL user group for Lending c/o Arvid Hoff, Trondheim bibliotek, Trondheim

Appendix 2

Name of system	BIBSYS
European languages supported	Norwegian, English (OPAC only)
Main supplier	BIBSYS, N-7034 TRONDHEIM, NORWAY
Telephone	47 73 59 70 67
Fax	47 73 59 68 48
Contact	Director Roy Gundersen
Supplier profile	The BIBSYS Project Group is responsible for the development, maintenance and operation of the cooperative library automation system BIBSYS. BIBSYS began in 1972 as a joint project involving The Computing Center at the University of Trondheim (RUNIT), The National Council for Academic and Special Libraries (RBT), The Technical University Library of Norway (NTUB) and The University Library of Trondheim (UBT). Through cooperation with participating libraries, the system has been developed by the BIBSYS Project Group. The first acquisition and search modules were implemented in 1976. Further modules followed: cataloguing in 1980 and circulation control in 1982. In 1983 the on-line public-access catalogue (OPAC) was ready in use. By 1987 most major academic libraries in Norway were using BIBSYS. In 1983 it was decided to up-grade the BIBSYS system. In 1989 the BIBSYS-II system was implemented using ADABAS as database management system, and with all routines written in NATURAL. The database was also moved from UNISYS to an IBM mainframe. The system currently runs on an IBM 9121/320 computer situated in Trondheim. Since 1989 several new modules have been added. From January 1996 the BIBSYS system will move to a UNIX-platform and be based on the client/server principle.
Staff	BIBSYS currently employs 28 staff
European subsidiaries/agents	-
General overview	BIBSYS is an integrated on-line library system with a common bibliographic file. The system consists of all the traditional modules: acquisitions, cataloguing, serials control, circulation control, interlibrary loan, retrieval (including OPAC) etc. In addition, it is possible to access the BIBSYS database by Gopher, WWW and email.
Customers EU/Norway	
	School libraries Public libraries Research libraries Special libraries National libraries
	Austria
	Belgium
	Denmark
	Finland
	France
	Germany
	Greece
	Ireland
	Italy
	Luxembourg
	Netherland
	Portugal
	Spain
	Sweden
	United Kingdom
	Norway 36 12 1
Other European countries	-
Total number of customers worldwide	49
User group	-

Appendix 3

Name of system		MEDIA				
European languages supported		Norwegian				
Main supplier		Alliance Informasjonssystemer A/S P.O. Box 369 4001 STAVANGER				
Telephone		47-51 87 97 00				
Fax		47-51 87 97 50				
Contact		Tordis Watland, Ellen Breivik				
Supplier profile		Alliance has been a supplier of MEDIA library systems for 15 years. During this period we have been responsible for all further development and maintenance of the system. MEDIA was developed by Alliance and used as from 1980. The system is currently owned by Alliance/NIT. The system comprises the following modules: cataloguing, lending, acquisitions and OPAC. Alliance has developed two library systems, of which MEDIA is the main system. Ugla is a school library system for PC.				
Staff		MEDIA is primarily used by public libraries				
European subsidiaries/agents		NIT, Norway Alliance, Norway				
General overview		The MEDIA system is an on-line system linked to a database(MEDIA-base). The system functions as a library network for all libraries using the system. MEDIA does not run under Windows.				
Customers EU/Norway						
		School libraries	Public libraries	Research libraries	Special libraries	National libraries
	Austria					
	Belgium					
	Denmark					
	Finland					
	France					
	Germany					
	Greece					
	Ireland					
	Italy					
	Luxembourg					
	Netherland					
	Portugal					
	Spain					
	Sweden					
	United Kingdom					
	Norway	4	64			
Other European countries	Nei					
Total number of customers worldwide	68					
User group	County libraries, public libraries, school libraries					

E-19

Appendix 4

Name of system		MikroMARC				
European languages supported		Danish, English, Icelandic, Norwegian, Spanish and Swedish. Can handle the Greek alphabet.				
Main supplier		Norsk Systemutvikling AS Malmøgata 7 N-0566 OSLO				
Telephone		+4722371800				
Fax		+4722370775				
Contact		Siv Hunstad				
Supplier profile		Norsk Systemutvikling A/S has been a supplier of library systems in Scandinavia since 1988. Its major product is the MikroMARC Library system. MikroMARC is a flexible MARC-based library system for PCs and PC networks. It is used in approximately 1300 libraries. A photo archive system and a multimedia system for searching, displaying and activating video, sound recordings, textfiles, Internet addresses etc. has recently been developed. Close cooperation with Forlagsentralen, the major distributor of books in Norway, has made it possible for Norsk Systemutvikling to integrate a CD-OM containing most Norwegian book titles with their catalogue system.				
Staff		14 employees in Oslo.				
European subsidiaries/agents		MikroMARC Danmark, København Biblioteksentrum AB, Växjö Andrea Johannisdottir, Reykjavik				
General overview		The original system was launched in 1987, as a cheap catalogue system for libraries starting their automation. It soon became the most popular system in Norway, and later in Scandinavia. It is undergoing continuous development. The following MikroMARC modules are available: Catalogue, CCL-search, OPAC, Acquisition, Lending system, CD-ROM database, Photo archive and Multimedia system. The system runs on all known PC networks.				
Customers EU/Norway						
		School libraries	Public libraries	Research libraries	Special libraries	National libraries
	Austria					
	Belgium					
	Denmark	13	1	68		
	Finland					
	France					
	Germany			13		
	Greece			1		
	Ireland					
	Italy					
	Luxembourg					
	Netherland					
	Portugal					
	Spain					
	Sweden	26	8	15	54	
	United Kingdom			3		
	Norway	620	186	56	120	
Other European countries						
Total number of customers worldwide	1300					
User group						

Appendix 5

Name of system		POLYDOC				
European languages supported		Danish; English; Norwegian; Swedish				
Main supplier		AB Företagssimulering Luna Knapes gata 5 S-421 32 V FRÖLUNDA, SWEDEN				
Telephone		+ 46 31 49 48 20				
Fax		+ 46 31 49 59 37				
Contact		Peter Strömberg				
Supplier profile		Företagssimulering has been working with information retrieval systems since the early 1980's as systems and programming support to NSI (Norsk Senter for Informatik). Företagssimulering acquired all rights to Polydoc in 1989. POLYDOC is sold by distributors in Denmark, Finland, Norway and Sweden. A library system based on Microsoft Access was released in late 1995.				
Staff		5 system analysts/programmers				
European subsidiaries/agents		InD-system, Norway Erika Infokonsult, Sweden				
General overview		POLYDOC was originally developed in the late 1970's. Today it has been completely reworked to run with a Windows based interface. POLYDOC is a comprehensive and flexible information retrieval software with powerful index production facilities. POLYDOC is running under several operating systems (DOS, Unix, Open VMS).				
Customers EU/Norway						
		School libraries	Public libraries	Research libraries	Special libraries	National libraries
	Austria					
	Belgium					
	Denmark	6		3		
	Finland			1		
	France					
	Germany					
	Greece					
	Ireland					
	Italy					
	Luxembourg					
	Netherlands			2		
	Portugal					
	Spain					
	Sweden			4		
	United Kingdom					
	Norway	1		21		
Other European countries		-				
Total number of customers worldwide		40				
User group		-				

E-20

Appendix 6

Name of system		SIFT BIBL				
European languages supported		Norwegian				
Main supplier		SDS, P. O. Box 6664 Rodeløkka, 0502 Oslo				
Telephone		47 - 22 88 60 00				
Fax		47 - 22 35 40 13				
Contact		Marit Hagen				
Supplier profile		SDS has as its goal the delivery of products & services based on the use of information technology within the public sector. Based on the delivery of IT solutions SDS shall contribute to the rationalisation & transformation of the public sector. SDS shall use its experience as a partner for the public sector in the delivery of products & services to the private sector. SDS has a large range of skills in the IT field and is one of the leading companies in Norway in the area of Clerical systems, Archive solutions and Information retrieval systems. SDS has been engaged in the area of information retrieval since 1986 and developed the general information retrieval system SIFT Plus. Based on SIFT Plus SDS has developed the library system SIFT Bibl. SIFT Plus/SIFT Bibl allows libraries to handle and manage different kind of information, from traditional bibliographic material to full text databases.				
Staff		SDS currently employs 600 staff. About 35 persons are engaged in the area of Clerical systems, Archive solutions and Information retrieval systems. 8 of these 35 are library professionals.				
European subsidiaries/agents		None				
General overview		SIFT Bibl was developed in 1991 with new versions in 1993 and 1995. SIFT Bibl offers: Cataloguing based on the MARC-format (including recording of copies), Ordering/acquisitions fully integrated with the catalogue module. Import-module for importing data in MARC-format. OPAC-module based on MS Windows and a wide range of output formats in addition to a report generator. SIFT Bibl has extensive search facilities that are available both in editing and search mode as well as in the OPAC-module. SIFT Bibl can easily be adjusted to local needs. The system is available on most UNIX platforms such as IBM/AIX, VAX Unix, HP-UX, SUN, SCO Unix and many others.				
Customers EU/Norway						
		School libraries	Public libraries	Research libraries	Special libraries	National libraries
	Austria					
	Belgium					
	Denmark					
	Finland					
	France					
	Germany					
	Greece					
	Ireland					
	Italy					
	Luxembourg					
	Netherlands					
	Portugal					
	Spain					
	Sweden					
	United Kingdom					
	Norway			8	14	
Other European countries		0				
Total number of customers worldwide		22				
User group		SIFT User Group Chairman: Siv Marit Ersdal, Aker Engineering				

Appendix 7

Del A Det lokale biblioteksystem

A1 Har biblioteket et elektronisk biblioteksystem (katalogsystem)?

- Ja, har hatt eget biblioteksystem siden år
- Ja, deler system med
- Nei, men vi har vedtatt å anskaffe et
- Nei (gå direkte til del B)

A2 Beskrivelse av systemet (svar så utfyllende som mulig)

A2.1 Systemets navn

A2.2 Leverandør- / agentnavn:

Adresse:

Telefon:

A2.3 Navn og type av hardware:

A2.4 Operativsystem (DOS, WINDOWS, Mac, UNIX, VMX etc.)

A2.5 Angi antall og typer av arbeidsstasjoner for ansatte og brukere:

Type	Ansatte	Brukere
PC		
Mac		
Terminaler (VT100 e.l.)		
Andre		

A2.6 Biblioteksystemets OPAC (Online Public Access Catalogue) er:

- Tegnbasert Har grafisk brukergrensesnitt

A2.7 Hvis bibliotekets OPAC har grafisk brukergrensesnitt (GUI), er dette:

- En standard GUI (= utviklet av systemleverandøren)
- Utviklet lokalt

A2.8 Hvem er ansvarlig for drift av bibliotekssystemet?

- Bibliotekpersonalet Vertsinsusjon Kommunal EDB-avdeling
- Leverandøren av biblioteksystemet Servicebyrå
- Andre

A2.9 Hvor mange dager i måneden anvender bibliotekpersonalet på drift av systemet?

Vårt bibliotek bruker ca. dagsverk i måneden på systemvedlikehold.

A2.10 Har biblioteksystemet andre databaser i tillegg til bibliotekskatalogen?

- Nei Ja.

Databasens navn:

Innhold/dekningsområde:

Antall poster:

Databasens navn:

Innhold/dekningsområde:

Antall poster:

(Hvis dere trenger mere plass, vennligst bruk et eget ark eller legg ved egen oversikt)

A3 Beskrivelse av hvordan systemets funksjonalitet er utnyttet i ditt bibliotek:

A3.1 OPACen er disponibel for brukerne:

- Kun i biblioteket Via Internet / oppringt modem
- Gjennom det lokale nettverket Også i bokbuss

A3.2 Bruker dere katalogmodulen i biblioteksystemet?

- Ja Nei

A3.3 Hvor mange prosent av de nye katalogpostene lages ved å kopiere fra ekstern kilde

..... %

A3.4 Utlån/innlevering utføres

- av bibliotekpersonalet av brukerne selv (selvbetjening)

A3.5 Hvis selvbetjening, hvor stor prosent av utlånsfunksjoner utføres av brukerne selv? %

A3.6 Tillates brukerne å bruke elektronisk reservering og fornyelsesfunksjoner?

- Ja Nei

Bruker biblioteket følgende rutiner:

A3.7 Tilvekstmodul

- Ja Nei, vi bruker et separat elektronisk system
 Nei, vi gjør dette manuelt

A3.8 Tidsskriftkontroll

- Ja
 for registrering
 budsjettering
 regnskap
 Nei, vi har et separat system for tidsskriftkontroll
 Nei, tidsskrifter sjekkes inn manuelt

A3.9 Tidsskriftsirkulasjon

- Ja Nei, vi har et separat system for tidsskriftsirkulasjon
 Nei, tidsskriftsirkulasjon behandles manuelt

A3.10 Hvordan behandler dere fjernlån?

- Fjernlån er integrert i systemet Fjernlån behandles via andre elektroniske systemer
 Fjernlånsrutiner behandles manuelt

A3.11 Brukes statistikkmodul?

- Nei Nei, systemet har ingen statistikk modul
 Ja (gi eksempler på bruk):

A3.12 Hvis systemet har en rapportgenerator, brukes denne regelmessig til produksjon av tilvekstlister, selektive bibliografier osv.

- Nei, vi bruker ikke rapportgeneratoren
 Ja. (Hvis ja, gi eksempler på bruk):

A4 *Utviklingsplaner*

A4.1 Planlegger biblioteket å anskaffe et (nytt) biblioteksystem?

- Innen 1 år Innen 3 år Ingen planer

A4.2 Hva er planene for videre utvikling av biblioteksystemet?

Innen 1 år: (Antyd områder for videre utvikling)

.....

Innen 3 år: (Antyd områder for videre utvikling)

.....

A4.3 Oppgi totalt beløp for bibliotekets kostnader til biblioteksystemet forrige budsjettår (eksklusive lønninger). Tallene bør inkludere nyanskaffelser, kostnader til drift, serviceavgifter og lisenser, kostnader til utvidelser av hardware og software osv.

Vårt bibliotek brukte siste budsjettår Kr.

A4.4 Oppgi totalt beløp for bibliotekets kostnader til biblioteksystemet i inneværende år.

Vårt bibliotek bruker i inneværende budsjettår Kr.

Del B : Elektronisk fjernlånsbestilling

B1 Med elektronisk fjernlån menes at biblioteket er i stand til å bruke elektroniske rutiner for fjernlån enten i sitt eget lokale system eller gjennom andre systemer og sende elektroniske beskjeder i bestillinger til en ekstern mottaker.

B1.1. Bruker biblioteket elektroniske bestillingsfunksjoner?

Nei (Hvis nei, gå til seksjon C) Ja

B1.2 Får lånerne bestille dokumenter selv?

Nei Ja

B1.3 Hvilken andel av bibliotekets fjernlånsforespørsler foregår elektronisk?

<25% <50% <75% >75%

B1.4 Bibliotekets totale antall fjernlånsforespørsler i 1994:

B2 Hvilken type dokumenter bestilles elektronisk?

Bøker (inkluderer alle typer monografier) Artikler
 Annet materiale (spesifiser):

B3 Hvor bestiller dere fra:

Fra andre bibliotek som deler samme system
 Systemer og tjenester i Norge (BIBSYS, UBO:BOK osv.)

Nordiske systemer og tjenester (LIBRIS, DANLIB osv.)

Systemer og dokumentleverandører utenfor de nordiske land (Uncover, OCLC, EBSCO):

B4 I hvilke format er biblioteket i stand til å motta elektronisk bestilte dokumenter (foruten papir)?

Ved fax Ved e-mail
 Via FTP Andre metoder (spesifiser)

Del C: Elektronisk dokumentlevering

Med elektronisk dokumentlevering menes at biblioteket gir tilgang til dokumentene i elektronisk form for fjernbrukere f.eks. via netverk eller overfører dokumentene i elektronisk form til mottakeren.

C1 Leverer biblioteket dokumenter i elektronisk form?

Nei (Hvis nei, gå til del D) Ja

C2 Hvis ja, i hvilken form blir dokumentene levert?

Ved fax På diskett(er) Brukeren laster ned (f.eks via FTP)
 Via e-mail Andre metoder (spesifiser):

Del D: Aksess til databaser (online / CD-ROM)

D1 Tilbyr biblioteket søk i eksterne databaser?

Nei, informasjonsgjenfinning i eksterne online databaser blir ikke tilbudt fordi (Årsak):

(Hvis nei, gå til spørsmål D4)

Ja, vi tilbyr online søking for brukerne og denne tjenesten er normalt gratis.

Ja, vi tilbyr online søking for brukerne. Brukerne betaler for denne tjenesten.

D2 Hvor mange onlinetjenester gir biblioteket adgang til. (antallet vertssystemer / tjenester):

D3 De mest brukte onlineverktene / tjenestene i biblioteket er (spesifiser):

1.
2.
3.
4.
5.

CD-ROM

D4 Tilbyr biblioteket søking på CD-ROM?

Nei. (Årsak)

(Hvis nei, gå til del E)

Ja, biblioteket har databaser på CD-ROM, men disse brukes bare av de ansatte.

Ja, biblioteket har databaser på CD-ROM og disse er tilgjengelige for brukerne.

(Folkebibliotek bes svare på spørsmålene D4 og D5. Forskningsbibliotek kan gå til spørsmål D7)

D5 Biblioteket har databaser på CD-ROM i:

Voksenavdelingen Referanseavdelingen

Barneavdelingen Musikkavdelingen

D6 CD-ROM databaser er tilgjengelige:

I hovedbiblioteket Også på filialbibliotekene Også i bokbussen

D7 CD-ROM er installert:

På selvstendige PC-arbeidsstasjon(er) I nettverk

Del E: Lokale IT-applikasjoner

Med lokale IT-applikasjoner menes en mengde forskjellige tjenester og produkter, f.eks. multimedia systemer, "bilde-banker" eller databaser, utviklet innen biblioteket eller etter initiativ fra biblioteket.

E1 Har biblioteket utviklet lokale IT-applikasjoner?

Nei, og vi har ingen planer for egen utvikling av IT-applikasjoner (Hvis nei, gå til Del F)

Nei, men vi planlegger å starte nye IT-tjenester i løpet av de neste 12 månedene (antyd område nedenfor)

Ja, vi har egenutviklede IT-applikasjoner (antyd område nedenfor)

Vi har (eller planlegger) lokale brukerorienterte IT-applikasjoner innen følgende områder:

Applikasjonstype	Utviklet	Planlegger	Tjenesten skal gjøres tilgjengelig		
			På lokal PC-arbeidsstasjon	Som CD-ROM applikasjon	Via offentlig nettverk
Bibliotekguide					
Brukerveiledning					
Kommunal informasjon					
Lokalhistorie					
Lokal billedsamling					
Lokal musikkamling					
Annet (spesifiser)					

Del F : Internet

F1 Har biblioteket tilgang til Internet?

- Nei (Hvis nei, gå til del G) Ja

F2 Internet brukes av de ansatte til følgende oppgaver:

- Brukes ikke regulært For e-mail
 For profesjonelle diskusjoner (Nyhetsgrupper, listserv, etc.)
 For informasjonsgjenfinning via Gopher eller WWW For å laste ned dokumenter
 For å utforske / underholdning Andre årsaker (spesifiser):

F3 Besørger biblioteket tilgang til Internet for brukerne?

- Nei (Hvis nei, gå til del G) Ja

F4 Internet benyttes av brukerne til følgende oppgaver:

- For e-mail For å laste ned filer
 For informasjonsgjenfinning via Gopher eller WWW
 For å utforske / underholdning Andre årsaker (spesifiser):

F5 Har biblioteket laget sin egen hjemmeside?

- Nei (Hvis nei, gå til del G) Ja

WWW- (URL)-adressen til vår hjemmeside er:

F6 Hjemmesiden gir aksess til:

- Linker til utvalgte ressurser på Internet Informasjonsgjenfinning i bibliotekets katalog
 Generell informasjon om biblioteket Elektronisk oppslagstavle (BBS)
 Fulltekst dokumenter (gjort tilgjengelig enten av biblioteket eller av vertsinstitusjon). Nevn noen eksempler:

F7 Hjemmesidene er utviklet og oppdatert av

- Bibliotekansatte Vertsinstitusjon Eksterne konsulenter
 Andre (spesifiser):

Del G: Annen bruk av IT

G1 Bruker biblioteket informasjonsteknologi (IT) (i noen brukerorientert funksjon eller tjeneste) på noen måte som ikke er dekket av dette spørreskjemaet? (Her kan du også gi referanser til nordiske eller internasjonale IT-prosjekter som biblioteket er involvert i.)

Eksempler:

Dette spørreskjemaet ble fylt ut av

Navn:.....E-mail-adresse:.....

Bibliotek:.....Telefon:.....



Part F
State-of-the-Art of Information
Technologies in Swedish Libraries

Claes Olsson
The Royal Library
The LIBRIS Department

Stockholm 1996



Part F

State-of-the-Art of Information Technologies in Swedish Libraries

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1 Introduction

1.1 Basic facts and methodology of the study

1.1.2 Facts

The following table provides basic information on the Swedish libraries (figures from 1994, in some cases 1995)

<i>Type of library</i>	<i>Number of libraries</i>	<i>Number of vol.</i>	<i>Number of loans</i>	<i>Share of libraries with local systems</i>
Research library	84 organisations	27,1 millions	4,4 millions	about 90 %
Public library	286 organisations	43,9 millions	67,8 millions	about 75 %
School library	4124 units	28,1 millions	17,2 millions	20–60 %

Information on library statistics is gathered by a number of institutions and published by the Statistics Sweden. Statistics on research libraries is collected by BIBSAM at the Royal Library. The Swedish National Council for Cultural Affairs provides information on public libraries and school libraries. The sources for this report are information from the official library statistics and processed answers from returned questionnaires. The questionnaire was sent out to 755 libraries during the winter 1995/96 and deals with the use of information technology in Swedish libraries. The system vendors have also been given the opportunity to answer questions on their systems. These answers can be found in appendices.

1.1.3 Data collection methods and processing

A Nordic steering group prepared the content of the libraries survey. The questionnaire was originally written in English and then translated into Swedish. The LIBRIS Department at the Royal Library in Stockholm is responsible for the data collection and treat of the gathered information.

The participating libraries were chosen in the following way:

Research libraries:

All libraries in universities (6) and regional university colleges (17) are covered, as well as the national library (Royal Library). Special research libraries (19) are included if they have more than three full-time employees. The questionnaire was sent to totally 42 libraries, one to each organization. The response rate is 88 % in this group of libraries.

Public libraries:

The questionnaire was sent to 288 public libraries, which means that the whole sector is covered. Sweden is divided in 288 local authorities which all have their own public library organization. The questionnaire was sent to the main library in each local authority. The response rate is 78 % in this group.

School libraries:

The questionnaire was sent to 425 addresses within the school library sector. They were chosen from the Swedish library directory and the directory of Swedish local authorities.

In Sweden it is the local authorities who is responsible for the school libraries. The selection of recipients was made so that every local authority received at least one questionnaire. The whole country is thereby covered. The response rate is 48 % in this group, which is low compared to the other library categories.

A little less than 500 replies were received. The data were loaded into Microsoft Excel and graphical figures were produced. A selection of the figures is published in this report. There seems that there have been great difficulties for some people to answer the questions. The questionnaire comprised of 10 pages and could not be properly answered without some efforts. The questions about costs for the local library system was not answered on a majority of the questionnaires. These aspects can therefore not be shown in this report.

1.2 Review of the Swedish library policy

In principle, library policy on a national basis is the responsibility of the Swedish government and parliament.

Policy matters concerning academic and public libraries fall under two different ministries, the Ministry of Education and the Ministry of Culture respectively. State representatives coordinating and developing activities within the two sectors are the Royal Library and the National Council of Cultural Affairs.

One important foundation of the library system is the legal deposit law regulating that Swedish publications be delivered to the Royal Library and the six university libraries. This law goes back to 1661, making it one of the oldest in the world.

There is a century-long tradition of close co-operation between Swedish research libraries. E.g. the rate of inter-library loans is the highest in Europe. From 1995 onwards net lenders receive economic support from the government (SEK 15 million for 1995/96).

Publicly funded libraries are regarded as parts of one and the same pool of resources. The mission of these libraries is a two-folded one: to serve their primary users and to serve the rest of the population. In the academic sector a system of national resource libraries was created during the second half of the 1980's, implying special grants to make it easier for a number of central research libraries to maintain and develop their externally directed services. In the public library area, massive state support is given to regional lending centres and county libraries for supplementary document delivery.

A library law was passed by Parliament in September 1996. Apart from stressing the principle of free loans and public availability, the primary purpose is to strengthen cooperation between research and public libraries.

A move in the same direction are the proposals made by the government to include public libraries in the Swedish University Computer Network (SUNET) and to make the LIBRIS computerized network freely available over the Internet.

1.2.2 The national library of Sweden

1.1.2.2 The Royal Library

Kungl. biblioteket, The Royal Library, is the National Library of Sweden. Among the national tasks one may find the total responsibility for the LIBRIS system (thoroughly described in chapter 3.2.1) and national planning and co-ordination tasks through BIBSAM.

The daily national library functions take place in the Royal Library building in the city centre of Stockholm. The library is now in a period of dramatic IT-expansion. Within one year all employees will have their own PC-workstations connected to the local network as well as to Internet. In less than two years an integrated library system will be installed. Modern information technology is of importance for the Royal Library's possibilities as a national library to serve the whole nation.

For in-house routines there are about 50 different computerized registers/databases available for the staff, some of them over the local network. Examples of those systems:

- * Database over Swedish newspapers on microfilms.
- * System for periodicals (developed for the needs of deliveries in accordance with the Swedish act on legal deposit).

The Royal Library runs its own WWW-server, and has published about hundred pages with information and links to relevant Web-sites. There are plans to release a register over Swedish publishers on WWW and to start an electronic conference on cataloguing. There are two important projects going on concerning IT. In "Preservation through digitalizing and microfilming" the availability aspect is central. In "Swedish electronic documents – collecting, preserving and making obtainable" The Royal Library will co-operate with The Swedish National Archives and The National Archive of Recorded Sound and Moving Images.

1.1.2.3 BIBSAM – Royal Library's Office for National Planning and Co-ordination

BIBSAM's overall objective is to make sure that the resources of Swedish research libraries are used and developed in the best possible way and that the individual user can have access to these resources on reasonable terms. BIBSAM promotes the development of IT-based library services in a number of ways and contexts. The support to standardization and the use of standards is substantial.

Within the framework of the system of national resource libraries, much effort has been spent on developing computer based information and document delivery services, and on enabling end users to find adequate information on the Internet. Currently, preparations are being made to negotiate national licenses with database vendors and electronic publishers.

On a European level, BIBSAM supports Swedish participation in a number of IT-oriented library projects administrated by the EC Libraries Programme.

1.1.2.4 Library statistics

Since the system for Official Swedish Statistics was reformed in 1993, BIBSAM is responsible for producing the *research library statistics* in Sweden. BIBSAM have commissioned Statistics Sweden (SCB) to collect data and produce tables, covering 84 research libraries with a minimum staff of three full-time equivalents. The statistics are collected in conformance with the International standard for library statistics (ISO 2789).

According to the latest annual report (1994), the total book stock of these 86 libraries amounts to more than 650 000 shelf metres. 4 400 000 loan transactions (including copies delivered instead of loans) were made at the Swedish research libraries. 13 % of those transactions were interlibrary loans or document delivery to other libraries. The total staff of these 86 libraries amounts to more than 1 900 full-time equivalents.

The Swedish national council for cultural affairs (Statens kulturråd) is responsible for the *public and school library statistics* in Sweden. They have also commissioned Statistics Sweden for collecting the data. The public library statistics covers, inter alia, data from 286 municipal libraries, 24 county libraries, three inter-urban lending centres, and thirty independent hospital libraries.

According to the latest annual report (1994), the book stock of the 286 municipal libraries amounts to 44 million volumes. 30 % of those books are children's books. The total acquisition of new books amounts to nearly 2 million volumes. In 1994, the total circulation of books and other media was 74 millions. The total no of staff working in the public library sector is nearly 5 400 full-time equivalents.

Sampling techniques are used to collect *school library statistics*. The total book stock is 28 million volumes (23 volumes per pupil). The total no of loan transactions were 17 millions (15 loans per pupil).

Both the statistics for research libraries and for public and school libraries are published by Statistics Sweden, *within Statistiska meddelanden, serie Ku* (0282-3519).

1.3 Local systems

There are 18 local library systems in use at the Swedish libraries. Some of the systems are represented at all types of libraries and others are developed for a certain size or kind of library. At the research libraries the situation varies, there are 14 different systems represented at the 42 libraries investigated. At the public libraries there are three systems from two system vendors which are responsible for 80 % of the installations. School libraries have sometimes the same systems as the local authority libraries. When they have other systems the schools are often run by another authority than the public library.

At the research libraries there are few installations of many different systems. Apart from some exceptions there has been no common purchase of library systems. Several of the large research libraries have foreign systems which are widely spread in other countries. Thus at the Stockholm University Library GEAC can be found, the university libraries in Lund, Gothenburg and Uppsala have all chosen VTLS, in the Umeå University Library Dobis/Libis has been installed, and DYNIX/Horizon is being installed in the Linköping

University Library. Apart from these, the following systems are installed in at least one, but at the most four research libraries.:

- * ALEPH
- * BIBDIA
- * DYNIX
- * LIBRA
- * STRIX

2 Survey on Nordic co-operation between the countries

Described in the Nordic survey in this report.

3 Library systems

3.1 Library systems with at least 5 installations

3.1.1 Alexandria

Alexandria is a system for Macintosh developed at and offered by Halmstad University. Alexandria is installed in some smaller university libraries and in some school libraries. In total there are 10 installations in Sweden.

Information from the vendor can be found in appendix 1.

3.1.2 BiblioMatik

BiblioMatik is a PC system intended for school libraries. The system is developed by a Danish company and covers several library functions. About 380 school libraries in Sweden have BiblioMatik.

Information from the vendor can be found in appendix 2 and in the chapter about Denmark.

3.1.3 BIBS

BIBS is an integrated library system, which runs under UNIX. It has been installed in a great number of public libraries. In many municipalities where the public library and the school library are integrated the school library have also installed BIBS.

Information from the vendor can be found in appendix 3.

3.1.4 BTJ 2000

BTJ 2000 is a complete library system which is built up with several integrated modules. The system is UNIX-based and is installed in many public and school libraries. There is a module specially adapted for schools. In total there are 230 installations in Sweden.

Information from the vendor can be found in appendix 4.

3.1.5 LIBERTAS

LIBERTAS is an integrated library system covering several modules for various library functions. A number of research libraries and public libraries have installed LIBERTAS. In those municipalities where public and school libraries are integrated the school libraries might also have a LIBERTAS installation.

The system is developed in Great Britain and is offered in Sweden by SLS Scandinavia AB. The vendor has not given any separate information about the system, but you are welcome to read more on the company's home page (<http://www.sls.se/>).

3.1.6 LIBRA

LIBRA is an integrated library system which runs under UNIX and AS400. The system is installed in some 20 public libraries. In many municipalities where the public and the school libraries are integrated the school library have also installed LIBRA. In addition, there are 10 installations in special libraries in Sweden.

Information from the vendor can be found in appendix 5.

3.1.7 LIGOBIB

LIGOBIB is a library system which runs on PC and is specially adapted for public libraries and school libraries. The system is developed by the LIGOBIB company. Some 80 school libraries have installed the system together with a few public libraries and special libraries.

Information from the vendor can be found in appendix 6:

3.1.8 MikroMARC

MikroMARC is a PC-based system with several modules for different library functions. The system is developed by a Norwegian company. MikroMARC is installed all kinds of libraries in Sweden. Most installations are made in special libraries and the second most common users are school libraries and small research libraries.

Information from the vendor can be found in the Norwegian report.

3.1.9 Public

Public is a PC system but can also be run in other computer environments. The system is developed by Pulsen company in Borås and is installed in the Borås county library. Several public and school libraries in the region around Borås have also installed Public. Apart from that it is not found in any other libraries in Sweden.

Information from the vendor is missing.

3.1.10 TINLIB

TINLIB is a PC and UNIX-based system containing several integrated modules for various library functions. There will be a version for Windows later in 1996. TINLIB is primarily installed in research and special libraries in Sweden, but some installations can also be found in public libraries. In total there are about 30 TINLIB installations in Sweden.

Information from the vendor can be found in appendix 7.

3.1.11 X-ref

X-ref is a library system which may be used in several technical environments. There are about 30 installations in Sweden.

Information from the vendor can be found in appendix 8.

3.2 National co-ordinated systems

3.2.1 LIBRIS

The Royal Library is responsible for the usual functions of a national library, for instance the national bibliography and the union catalogue for the research libraries. These two products are produced and provided through the research libraries common system LIBRIS. For 25 years LIBRIS has had a central position mainly among the Swedish research libraries for these services. Almost all cataloguing at the research libraries is first done in LIBRIS. The library then transfers the catalogue record to the local on-line catalogue. To stimulate an active input into the LIBRIS database there is a bonus system where a certain sum of money is set aside for the libraries which first catalogue a publication. When the initial cataloguing has been done, other libraries which also have the publication just have to add their local fields (classification, key words, location code, holding etc.) The database is immediately updated. The database contains approximately 5,1 million catalogue records. (March 1996).

Roughly speaking all local systems at the research libraries have been adapted to be able to import records in LIBRISMARC format into their on-line catalogues. Some libraries which do not catalogue in LIBRIS buy catalogue records on a regular basis to import them into local on-line catalogues.

Part of the LIBRIS database is also published on CD-ROM since 1992. The disc – named CD-LIBRIS – is issued once a year.

The use of the LIBRIS interlibrary loan routine is rapidly increasing. At present there are 400 000 on-line orders yearly. All the libraries which subscribe to LIBRIS can directly order a publication of their own choice out of the LIBRIS database from one of the LIBRIS libraries. It is also possible to order literature which is missing in the database and thus use LIBRIS only for the transfer of the orders. The order is immediately transferred to the chosen library. In this library the orders are transmitted by file downloading to screen, E-mail or fax.

Apart from the large LIBRIS database there are a number of special databases which are accessible to all users. These are:

- * The Swedish Bibliography 1700-1829
- * Kvinnsam – A topic bibliography on women's studies
- * Book Data – new academic literature, mainly in English, including abstracts
- * National bibliography on phonograms
- * National bibliography on moving pictures

At present the number of LIBRIS users is increasing. LIBRIS has earlier been a tool mainly for Swedish research libraries. Among others, new users can be found in public libraries, where the use of, in the first place the LIBRIS interlibrary loan routine has increased rapidly. There is also an rapidly increasing number of individual users who subscribe to LIBRIS information retrieval system. Since 1992 LIBRIS has been accessible through Internet. Additional information about LIBRIS can be found on the WWW pages <http://www.libris.kb.se/>

A project to modernise and reshape the LIBRIS system has been initiated. Extensive activities have been carried out to investigate into the needs of the member libraries, other libraries and possible categories of future users. A project group has completed a report which outlines the future LIBRIS system. New strategic goals are the following:

- *To serve the entire Swedish library community, not only the academic and special libraries.
- *To improve the library services part of the system by developing GUI clients for cataloguing, ILL, acquisitions and information retrieval.
- *To promote, support and use standards in the interaction with local systems and international services.
- *To promote end-user searching of the LIBRIS databases and provide facilities for rapid document delivery.

Provided that proper funding can be obtained the LIBRIS system will be gradually transformed and modernised during a period of three years. The first step will be to mount a copy of a substantial subset of the database on a UNIX machine for free searching with WWW-browser or telnet access. This is scheduled for autumn 1996. A Z.39.50-server will also be developed in this context.

To transform the core of the LIBRIS system including the cataloguing and ILL routines will, however, take longer time. It is foreseen that the new system will be developed for a UNIX environment but during a transitional period there will probably be a mixed UNIX/mainframe system.

3.2.2 BURK

BURK is a bibliographical database owned by Bibliotekstjänst AB, a private company mainly working in the sector for public libraries and school libraries in Sweden.

BURK was developed in the early 1970s. In the first years, the bibliographical registers functioned as support for the production of printed products. In 1976 the database contained about half a million bibliographical descriptions. During that period staff at BTJ fed records into the database. In 1983 a project on co-operative cataloguing on a trial basis was started, which made it possible for libraries with catalogue departments to make an agreement to feed material into BURK. At present there are 15 libraries which catalogue directly into BURK. One of these is Stockholm city library – Sweden's largest public library.

The main principles of BURK

BURK contains what can be found, has been found or will be found in Swedish libraries, above all in public libraries and school libraries.

BURK will in principle be a uniform catalogue, that is a record will look the same no matter where has been made. The user will not get a worse answer to a question just because the library world for example has changed the cataloguing rules.

BURK will contain the information the libraries need and the information where a central management is considered rational

BURK will be a tool for the libraries to improve the efficiency of their routines so resources can be used in other fields of activity.

BURK offers what is called bibliographical service to all libraries. More information of this can be found on the WWW pages of BTJ at: <http://www.btj.se/>

3.2.3 BAS

By using BAS, AXIELL's BIBS and LIBRA clients can obtain bibliographical service. Records are delivered two times a week. BAS is a joint project between Halmstad public library and AXIELL. The library catalogues recent literature, videos, CDs etc. The records are delivered to AXIELL and from there to the clients. The cost is based on the number of citizens in the municipality. An initial fee is added when an agreement is made.

More information can be found at AXIELL's homepage <http://www.axiell.se/>

3.4 Nordic co-operation in using library systems.

LIBRIS is used by 81 libraries in Denmark, Finland and Norway. It is mainly research libraries which use LIBRIS for information retrieval and interlibrary loan orders from Swedish libraries. In addition some Nordic public libraries subscribe to LIBRIS.

An exchange of national bibliographies in machine readable form has been initiated between Sweden and Finland. According to the agreement valid from January 1 1996, the whole Finnish national bibliography "Suomen kirjallisuus – The literature of Finland" will be imported into the LIBRIS database.

3.5 International co-operation

Swedish libraries participate in the following EU projects

Program area: Telematics for libraries

<i>Project</i>	<i>Function</i>	<i>Participant</i>
CAMILLE	Partner	Stockholm University Library
COBRA/CHASE	Partner	Royal Library, LIBRIS Dept.
COBRA/METRIC	Partner	Royal Library
COBRA/UNIMARC	Partner	Royal Library, LIBRIS Dept.
EDUCATE	Co-ordinator	Chalmers Institute of Technology Library
ELVIL	Co-ordinator	Stockholm University Library
EQLIPSE	Partner	Stockholm University Library
ILIERS	Partner	Halland County Library and Kungsbacka City Library
IMPRESS	Partner	Seelig AB
ONE	Partner	Royal Library, LIBRIS Dept.
SELF	Partner	National Library for Psychology and Education

Program area: Telematics for research

<i>Project</i>	<i>Function</i>	<i>Participant</i>
DESIRE	Partner	NetLab, Lund University Library

4 Networking

4.1 SUNET – the Swedish University network

SUNET is the TCP/IP network provider for the Swedish academic sector. SUNET is part of NORDUNET, EUnet and Ebone. SUNET was established in the early 1980s within the Swedish National Board for Technical development of that time and the programme for Information Management of Swedish Council for Planning and Co-ordination of Research. Today SUNET is governed by a board that is elected by the Swedish Rector's Conference and The New University's Rector's Convent ("Nya Högskolans Rektorskonvent, NHR"). The board is able to take decisions in all important matters concerning the development of SUNET. The constitution of the board can be found in the list of contact persons in BASUN (the information database of SUNET)

To provide the board with a basis for decisions in technical matters and to firmly establish technical decisions within the universities there is also a reference group. In the technical reference group of SUNET there are members from all the larger universities and one representative for the small and middle-sized universities. The constitution of the board can be found in the list of contact persons in BASUN.

Protocols from the meetings of the board and from the meetings of the technical reference group can be read via World Wide Web. SUNET does not hire any staff of its own but buys services from the universities for the management of the network.

Within SUNET there are more than 55 000 computers (July 1995) which use the TCP/IP protocol. The super computers which are available for Swedish researchers can be

accessed via SUNET with TCP/IP. The number of computers which have been connected to SUNET at various times is shown below:

- * 1989 about 2 900
- * 1990 about 4 200
- * 1991 about 14 000
- * 1992 about 18 000
- * 1993 about 28 000
- * 1994 (June) 40 018
- * 1995 (June) 54 837

Extensive information about SUNET can be found on WWW pages at the following address: <http://www.sunet.se>

4.2 Other Internet providers in Sweden

There are several services for accessing Internet available for Swedish libraries outside the academic sector. One can divide the Internet suppliers into two different groups, namely the primary suppliers and the secondary suppliers. There are at present five companies among the primary suppliers – Telia AB, Tele2 AB, France Telecom, Telecom Finland and British Telecom. The definition "primary supplier" means suppliers who owns permanent lines to Internet and offer permanent access, ISDN and dial-up connection to their customers.

Among the secondary suppliers one may find hundreds of companies offering cheap Internet access through dial-up connections. Those companies lease a permanent line from a primary Internet-supplier.

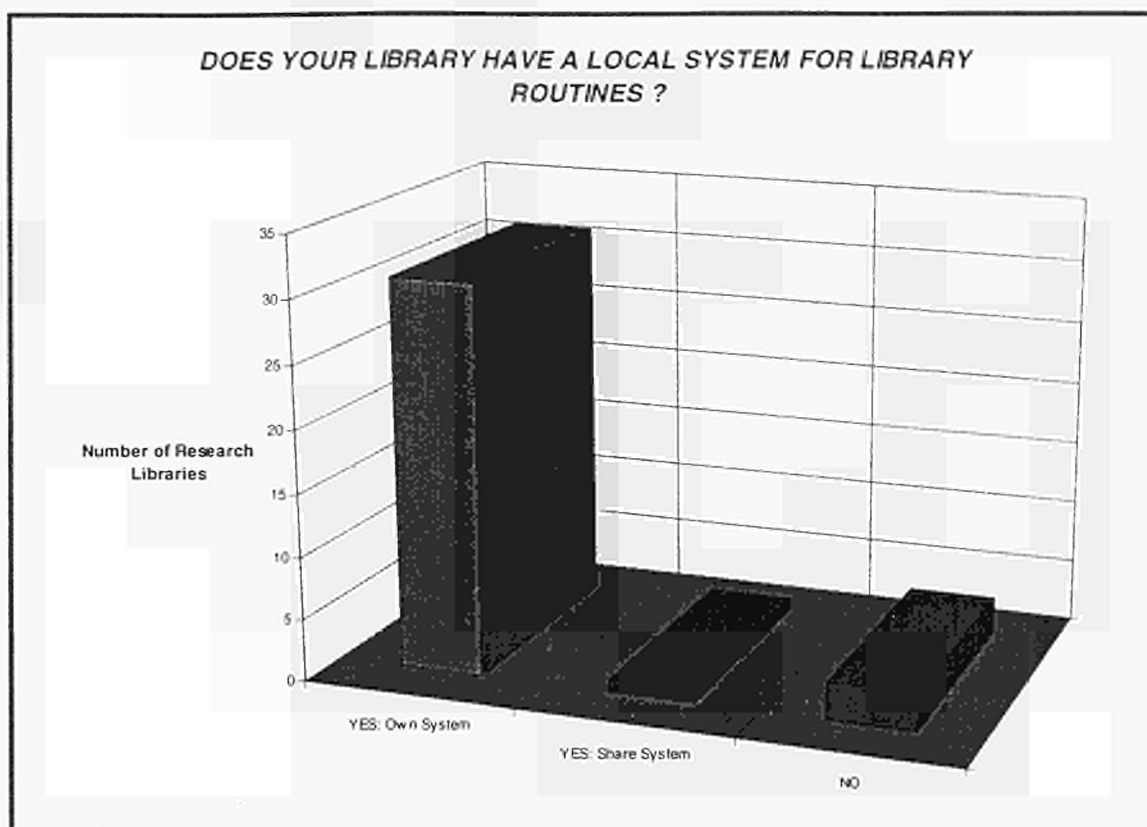
5 Use of IT in Swedish libraries

5.1 Research libraries

There are 42 libraries within the research library group. The libraries are: the Royal Library (the national library of Sweden), all university libraries, all libraries at the regional universities and a choice of the largest special libraries in Sweden (Footnote: In Sweden there are 12 universities with permanent research facilities: Lund, Gothenburg, Linköping, Stockholm, Uppsala, Umeå and Luleå, Royal Institute of Technology, the Stockholm School of Economics, the Karolinska Institute, Chalmers' University of Technology and the Swedish University of Agricultural Sciences. Apart from these there are a number of regional universities, e g Kalmar, Växjö, Kristianstad, Karlstad, Falun, whose primary function is undergraduate education.) The response rate is 88 % in this group.

5.1.1 Local library systems

Most of the research libraries in the survey have their own systems for local library routines. The following graph shows the number.



31 libraries claim they have their own library systems, while one library shares its system with another research library. Three of the libraries in the investigation do not have their own local system.

The following systems are represented among the Swedish research libraries:

<i>System</i>	<i>Computer</i>	<i>Operative system</i>
Aleph	DRS 6000 ICL	UNIX
Alexandria	PowerMac/Filemaker Pro server	Mac/Windows client
BIBDIA	PC	UNIX
BTJ2000	IBM RS/6000	UNIX
Dobis/Libis	IBM	
Dynix	PC	UNIX
GEAC	GEAC 8000/9000	its own
Libertas	VAX/Digital Alpha	VMS
LIBRA	AS400	OS400/Windows client
MikroMARC	PC	DOS/Windows
Strix	VAX	VMS
TINLIB	PC, Sun Sparc	DOS, Windows, OS/2, UNIX, Sun OS 4.2
VTLS	HP 3000/959	MPE/IX
X-ref	VS mini computer	Wang VS

The picture of research libraries' local systems is a varied one. In total 14 different systems are represented. One of the first library systems at Swedish research libraries was GEAC, which was installed at the university libraries at Stockholm and Linköping during the first part of the 1980s. At the end of the 1980s VTLS was installed at the university libraries at Lund, Gothenburg and Uppsala. Umeå University Library acquired the Dobis/Libis system, The Royal Library has so far no local library system. For this library LIBRIS is used as local catalogue and circulation and other routines are manually handled.

Among the university libraries which were the first to acquire a library system, some are now changing their system. The University Library in Linköping is now implementing a new system (Dynix/Horizon) during spring 1996. Stockholm University Library is in the process of acquiring system during spring 1996 and is counting on installing a new system during summer 1996. The Royal Library will acquire a new system which is planned to be up and working during 1997, in connection with the move back to the completely renovated building in the central of Stockholm.

Many of the special libraries installed systems around the middle of the 1980s. The libraries at Royal Institute of Technology (KTH), the Stockholm School of Economics (Handelshögskolan) and the Karolinska Institute all acquired Libertas, as did the library at Chalmers University of Technology in Gothenburg. A number of special libraries and regional university libraries bought Tinlib. Several smaller research libraries purchased MikroMARC. The library at Swedish University of Agricultural Sciences, which in the early 1980s purchased the Danish system Rc-Lib, changed this for Aleph. The rest of the systems in the table have just few installations among the Swedish research libraries.

PCs are the predominant type of work stations used by the library staff. The second most common is terminal, followed by Macintosh computers. The patron is most often given access to terminals in comparison with other equipment. The user interface in most of these systems is text based. The following systems have graphic interface, according to the staff interviewed: Alexandria, DYNIX, Tinlib and X-ref.

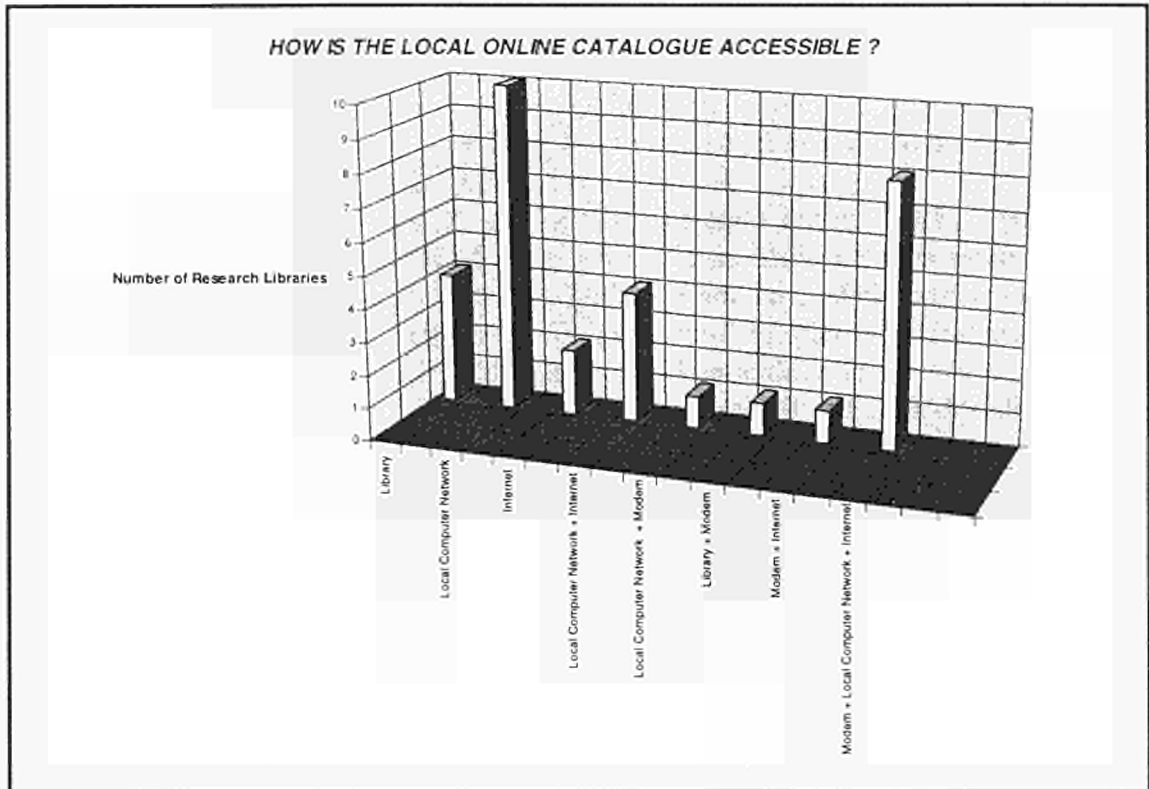
Management and maintenance of the system are mostly carried out by one of the library staff. Less usual is that the library takes advantage of its main organization or of a central computer section at the university for the management. In some cases the information is given that the system vendor takes care of management and maintenance. The amount of work for the system varies depending on the size of the library and whether the management is taken care of by an internal or an external manager. The largest libraries state that 4–5 persons, full time, are dealing with the task, while the rest of the libraries estimate the amount of time needed to anything between 1 day and 20 days per month. A number of research libraries have had difficulties in estimating the amount of time needed for the task and have not been able to give a precise answer to this question.

5.1.2 Cataloguing

The Cataloguing modules of the systems are used to a limited extent. Cataloguing is predominantly done in LIBRIS by most research libraries, and these catalogue records are then imported to the local on-line catalogue. The libraries often state that up to 99 % is catalogued in LIBRIS. Some give lower figures, others answer that cataloguing is done 100 % in LIBRIS. Some smaller research libraries do not catalogue in LIBRIS at all and therefore state that they register all literature only in the local on-line catalogue. Consequently they have no bibliographic source to support their cataloguing.

Some libraries, apart from the local on-line catalogue, also have other databases in their system. Examples of this may be databases on undergraduate papers, reference questions and answers, references to journal articles, literature holdings at institution libraries, Nordic BDI-index (Footnote BDI-Index = Library, Documentation, Information) and

address registers. Different ways of accessing the inhouse databases are shown in the graph below.

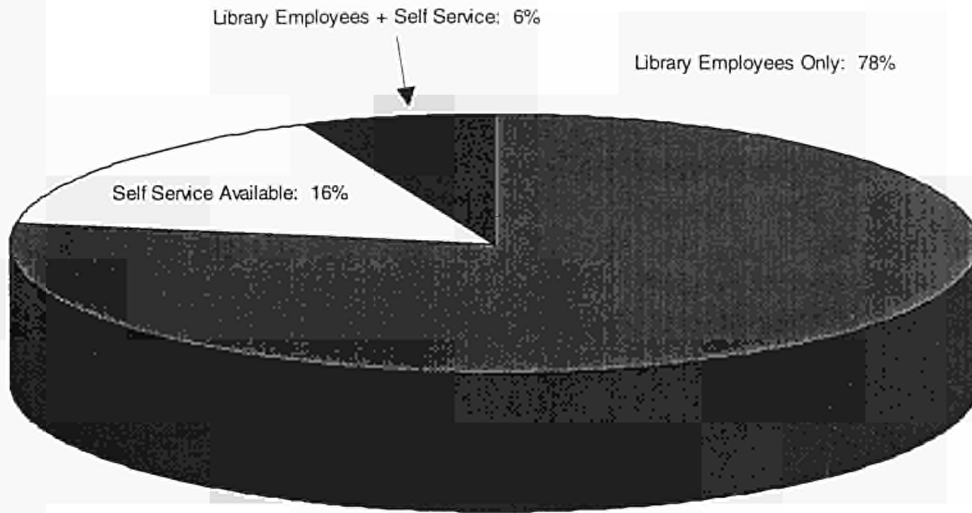


The most common way to access the local on-line catalogue is by means of the local computer network. In many cases you can access the catalogue by using Internet and a modem connection.

5.1.3 Circulation

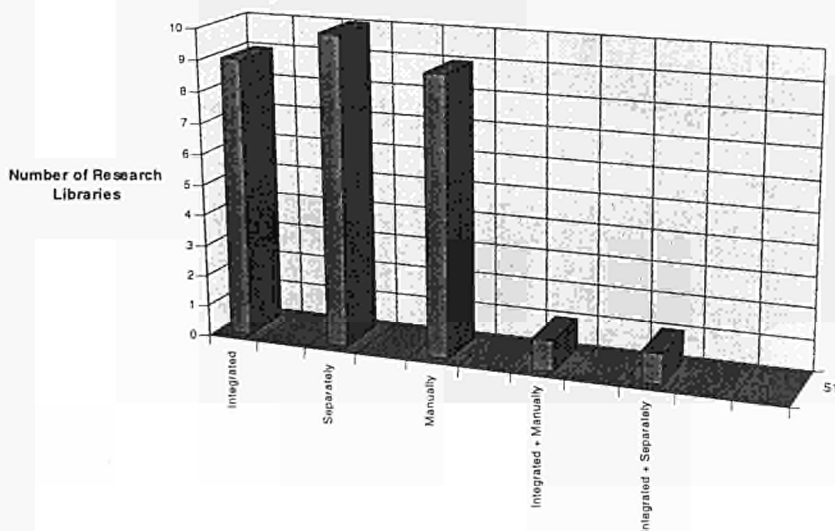
The circulation module – together with the local on-line catalogue – is the most central tool in many research libraries. In most cases the library staff handle lending and reservations. It seems, however, as if many libraries are in the process of implementing self-service. The following graph shows the distribution concerning the circulation service.

WHO HANDLES THE CIRCULATION SERVICE AT THE LIBRARY



In most libraries the staff handle the circulation service. Self-service, sometimes in combination with help from the library staff, can be found in 7 of the libraries. Several libraries state that they will introduce self-service.

HOW DO YOU HANDLE THE INTERLIBRARY LOANS ?



10 libraries state that they handle the interlibrary loans outside the library system. In 9 libraries the routine is integrated in the system, and the same amount claims that the interlibrary loans are manually handled. In some libraries several ways are combined

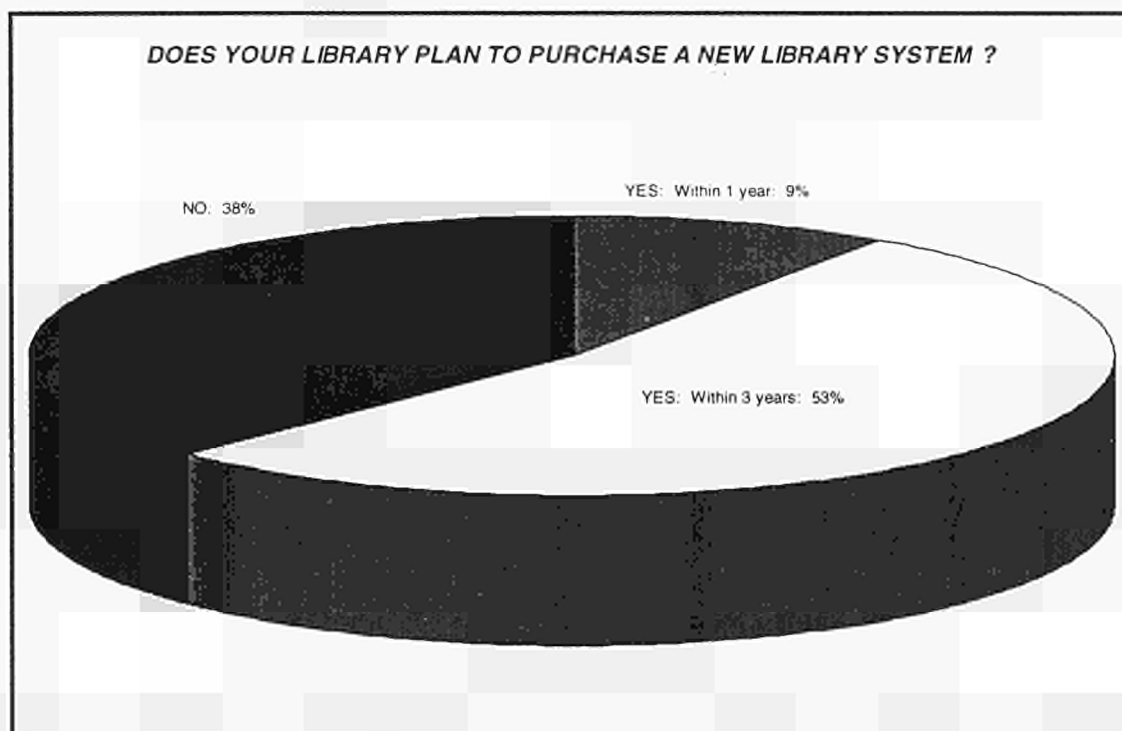
5.1.4 Periodicals and statistics

Because it is such a major function in many research libraries, the registration of periodical literature is mostly being handled in the library system. 16 libraries state they use the periodical module in the local system, and 6 libraries have a separate system. 9 libraries handle the control of periodicals manually.

Statistics and reports of different kinds are being derived to varying extents from the library systems, most common loan statistics and statistics of acquisitions, separated by user categories. One library uses the report generator of the system to produce bibliographies or economic reports.

5.1.5 Development

What libraries want to do first in developing the library system in all cases have to do with better access and increased service. Some larger libraries will first implement more modules (periodicals, report generator) at the branch libraries. Some are planning to start self-service for loans and reservations within a year or two. Most libraries mention that they want to publish the local online-catalogue on Internet, searchable with World Wide Web interface using the search standard Z39.50. Several also want a change to client-server technique under UNIX as a desirable objective within a three year period. Many are also inclined to buy new library systems. The following graph shows that more than 60 % of the libraries plan to acquire a new library system within one to three years.

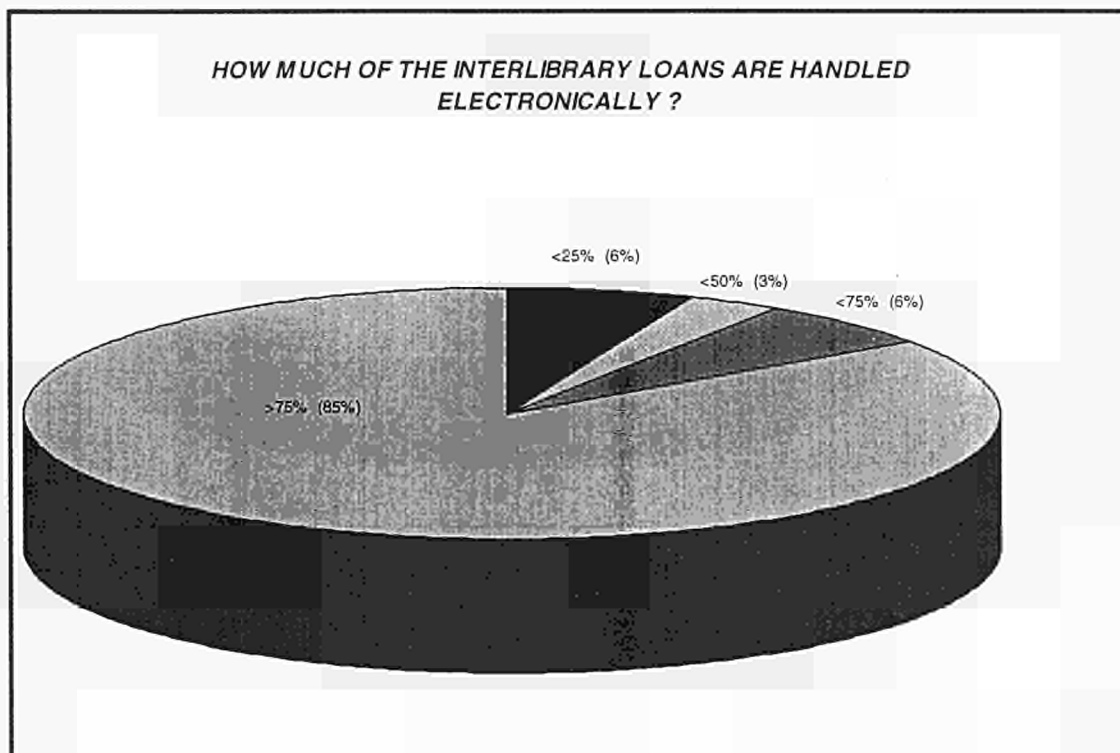


Almost a third of the research libraries say they are planning to purchase a new library system within a three year period.

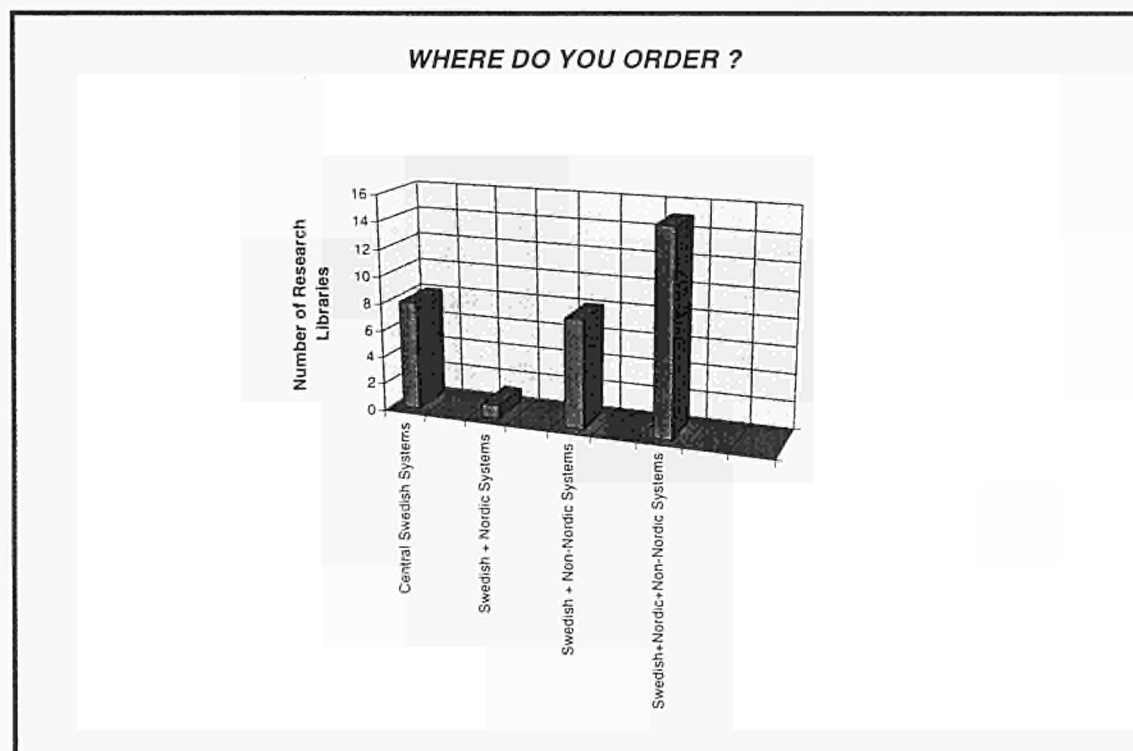
5.1.6 Electronical document order and delivery

All reserach libraries except one are ordering documents electronically to a large extent for their interlibrary loans. The most frequently used system is the interlibrary loan system in LIBRIS for ordering inside Sweden. Nowadays it is also possible to order from what are called NOSP-libraries in Denmark, Finland and Norway by means of LIBRIS (Footnote:

NOSP= Nordisk Samkatalog för periodika =Nordic Union Catalogue for Periodicals) On the other hand it is less common for libraries to accept the delivery electronically. Those who do claim mostly get the documents delivered by fax and the second most common method of delivery is E-mail. Most deliveries are still done by ordinary post.



The graph shows that no less than 85 % of the research libraries handle up to 75 % of their interlibrary loans electronically.



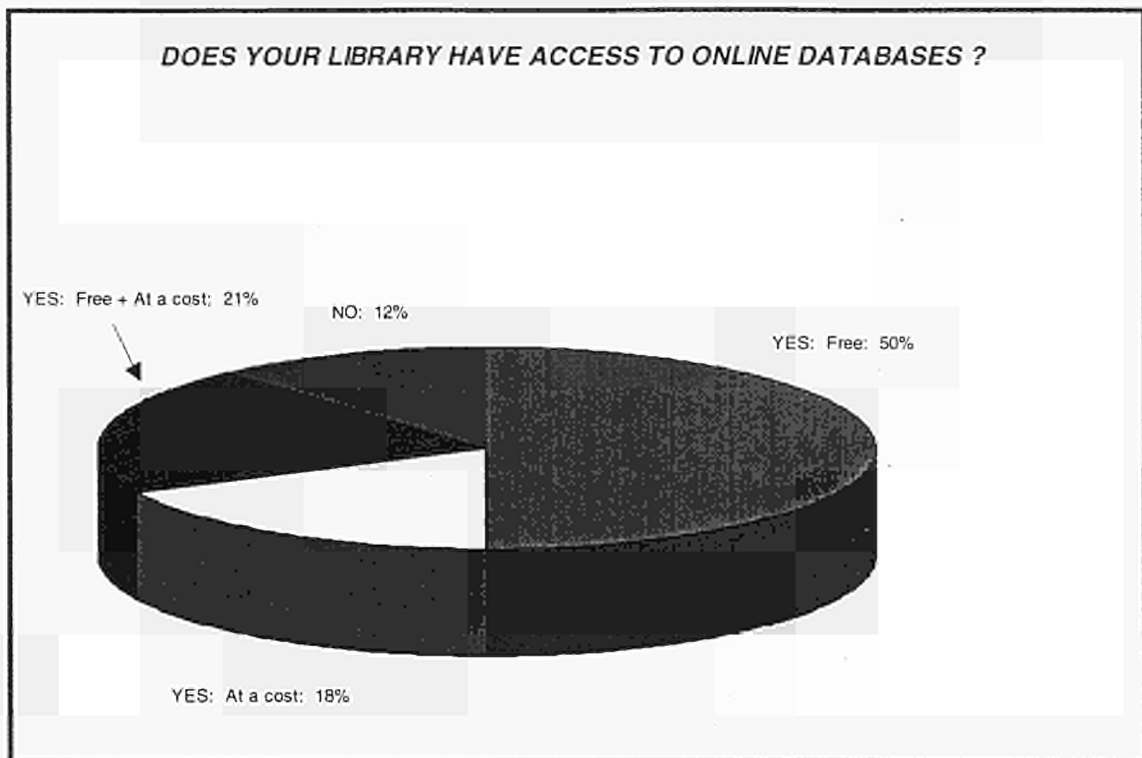
The research libraries order literature from Swedish (mostly LIBRIS), Nordic (e. g. DANBIB, BIBSYS) and non-Nordic systems (e. g. BLDSC, UnCover)

5.1.7 Access to external databases (on-line/CD-ROM)

Most research libraries provide access to external on-line databases. A few libraries do not. In the following table most of the databases and database hosts accessible in the Swedish research libraries are listed. Apart from these many libraries state that they give access to a great number of the free databases published on Internet. Some libraries have not mentioned which databases are being used.

Database/database host	Database/database host
ABI-inform	FT Profile
Affärsdata	HEALTH
Arblin	InfoTorg
Artikelsök	Inside Information
BIBSYS	LIBRIS
BIDS	MEDLINE
Byggdok	OCLC
Chemical Abstracts	Orbit-Questel
CIN	PEPSY
Compendex	Reuter
DANBIB	Rixlex
Datastar	Rättsbanken
DIALOG	SCB
ERIC	SPORT
ESA-IRS	Spriline
Eurobases	STN
Findata	Toxline
First Search	UnCover

Several libraries give access to the databases free of charge. In some cases literature searches are being carried out together with a librarian/documentalist for a fee. One library states that database searches carried out in the library are free of charge, but that the users have to pay if connection is established from their offices. CD-ROM databases are provided free of charge at almost all of the research libraries investigated. Some 75 % of the CD-ROM applications are installed in the library network.



Half of the libraries offer their users on-line databases free of charge. A few libraries charge in some cases. Only 12 % of the libraries do not offer these services at all.

5.1.8 Local IT applications

Under this heading the libraries were encouraged to list help systems and locally developed user training material. A certain confusion of responses may appear under the heading "Cataloguing" where local databases have been mentioned. Many also mention their WWW-server as a local IT-application. Below is a catalogue of what can be found in research libraries.

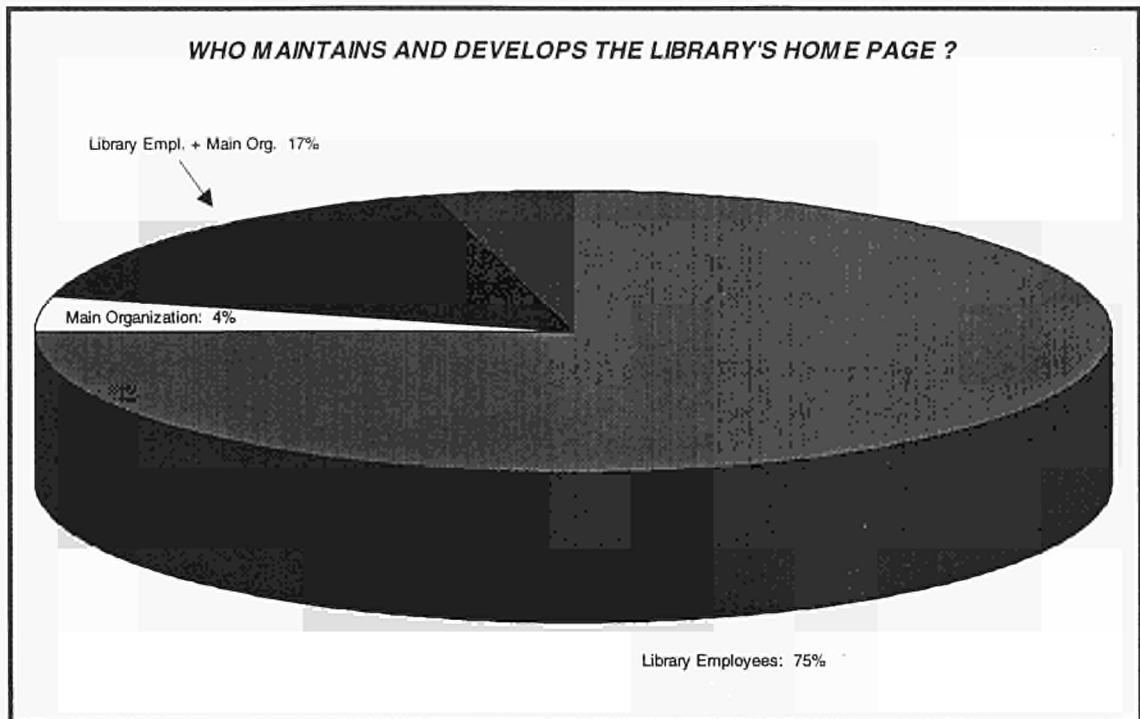
- * user education/Internet course/Compendium Technology library
- * database on dissertations
- * library guide
- * library exchange
- * the electronic library at Lund University Library
- * electronic publishing
- * local collections of pictures on CD-ROM
- * local collections of music
- * room reservation
- * register on research in progress
- * community information
- * announcements and summaries of theses published on WWW
- * list of journals
- * WWW-server
- * database on key words

5.1.9 Internet in Swedish research libraries

Almost all Swedish research libraries have access to Internet. Many are very advanced in using different services. The table below shows which of the Swedish research libraries which have got their own homepage, searchable with WWW browser. Some of the libraries have information pages, included in the homepage of the university or authority, but at e. g. the National Institute for Working Life it is the library who is in charge of the WWW-information for the entire authority.

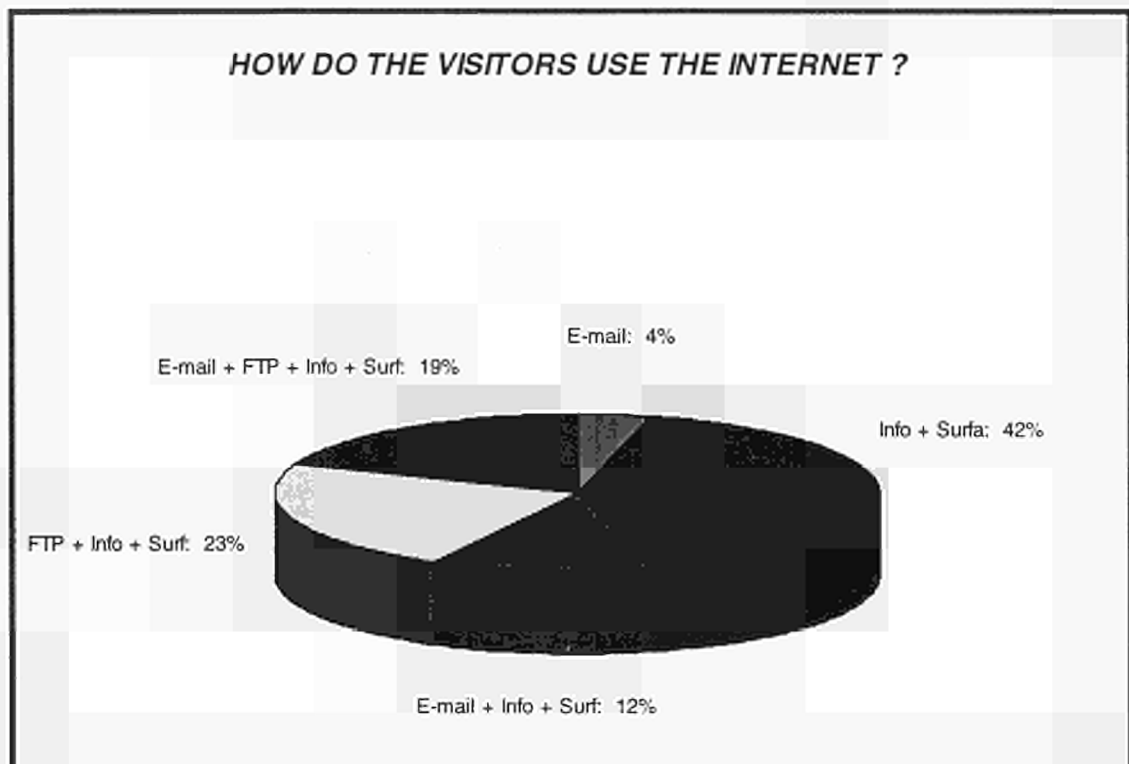
The contents of the home pages of the libraries show a great variety. Most have apart from basic information like opening hours, description of the organization, loan rules, etc., also some locally adjusted list of links to WWW pages, which might be of interest to the organization. Many libraries also have published e. g. bibliographies, project descriptions and summaries of theses at the university on the WWW-homepage. Please observe that the information given below is up to date in February 1996, and that it may change quickly

CITY	LIBRARY	URL
Borås	University of Borås, Library	http://www2.hb.se/bib/index.htm
Falun	Falun/Borlänge University Library	http://txfs1.hfb.se/sve/bibliotek/bibliotek.html
Gävle	Univ. of Gävle Sandviken, Library	http://www.hgs.se/bibliotek
Gothenburg	Chalmers Univ. of Techn., Library	http://www.lib.chalmers.se
Gothenburg	Göteborg University Library	http://www.ub.gu.se
Halmstad	Halmstad Univ., Library	http://www.hh.se/dep/bib/index.html
Jönköping	Jönköping University Library	http://www.hj.se/hs/bibl/library.html
Kalmar	Kalmar University, Library	http://www.bi.hik.se/
Karlstad	Univ. of Karlstad, Library	http://www.hks.se/depts/library/bibliotek.html
Linköping	Linköping University Library	http://www.bibl.liu.se/
Luleå	Luleå University Library	http://www.luth.se/depts/lib/
Lund	Lund University Electronic Library	http://www.ub2.lu.se/
Ronneby	H K/R Electronic Library, Univ. College of Karlskrona/Ronneby	http://ronneby.hk-r.se/infoc/first_uk.html
Solna	Library of the National Institute for Working Life	http://www.nioh.se/ib.htm
Solna	Swedish National Police College Library	http://www.bibl.phs.se/phs/
Stockholm	Royal Library	http://www.kb.se/
Stockholm	Royal Library, LIBRIS	http://www.libris.kb.se/
Stockholm	KTHB, Royal Institute of Technology Library	http://www.lib.kht.se/
Stockholm	Stockholm School of Economics Library	http://www.hhs.se/library.html
Stockholm	Stockholm University Library	http://bib10.sub.su.se/
Stockholm	KIBIC, Library & Medical Information Center at the Karoliska Institute	http://www.mic.ki.se/
Stockholm	Swedish Env. Protection Agency, Libr.	http://www.environ.se/bibl/bibdok.htm
Stockholm	The National Library for Psychology and Education	http://www.sppb.se
Sundsvall	Mid-Sweden University Library	http://www.bib.mh.se/edc/bib.html
Trollhättan	University of Trollhättan/Uddevalla, Library	http://www.htu.se/bibliotek/bibl.hem.html
Umeå	Umeå University Library	http://www.ub.umu.se/umubhem.htm
Uppsala	Swedish University of Agricultural Sciences, The Libraries	http://www.bib.slu.se/
Uppsala	Uppsala University Library	http://www2.uu.se/insts/ub/car0-eng.html
Visby	Gotland Regional University, Library	http://www.got.kth.se/bibliotek/
Västerås	Mälardalens Regional University Library	http://www.mdh.se
Växjö	Växjö University, Library	http://www.hv.se/bib/bib_intro.html
Örebro	University of Örebro, Library	http://www.hoe.se/inst/bibl/hem.htm



The graph shows that in 75 % of the libraries it is the library staff who maintain and develop the WWW-pages. In other words the internal competence in this area is considerable at the Swedish research libraries.

The Internet services are used within vast areas. Most libraries say that the staff use functions like discussion lists (e. g. BIBLIST and LIBRIS), E-mail (to a very large extent), information retrieval in databases and text archives, and file transfer. Many also state that "net surfing" is done in order to inform oneself on what can be found on Internet. Most of the libraries also provide access to Internet by locating terminals for the users in the library. There seems to be a difference between the way the library patrons use Internet and the way library staff use it.



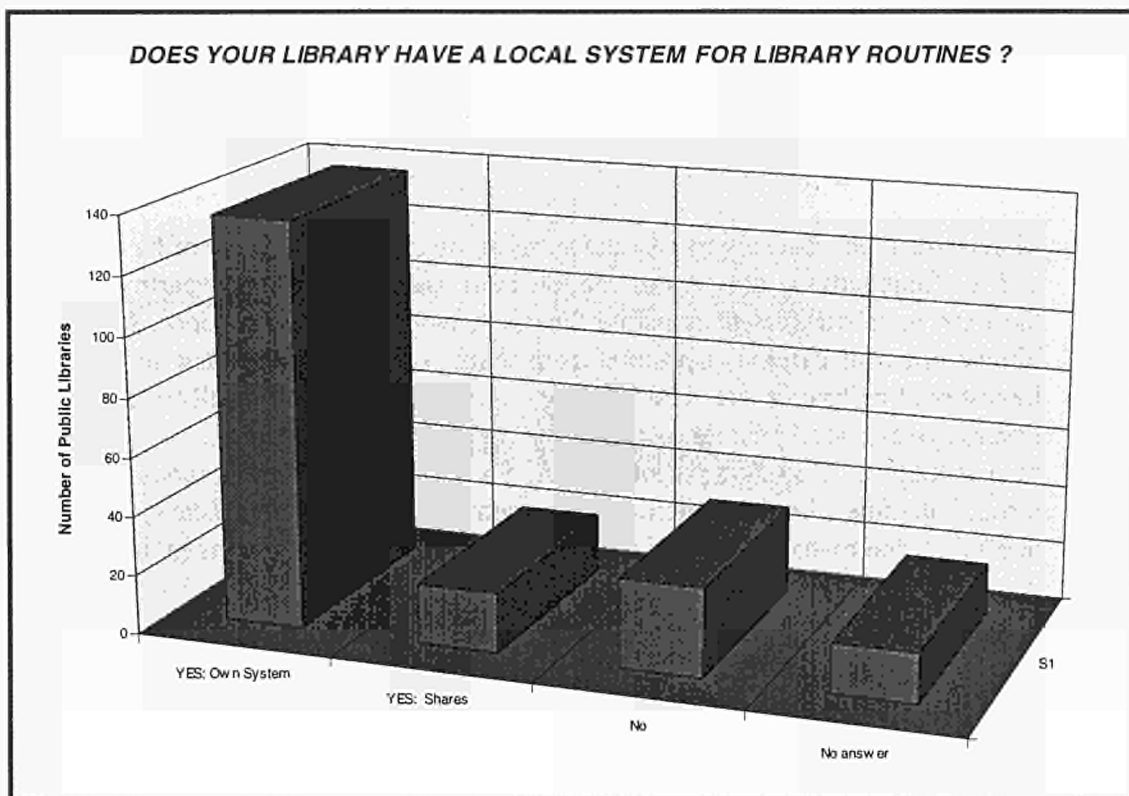
The library users most common activity on Internet is information searching and "net-surfing".

5.2 Public libraries

Public libraries includes the libraries of all Swedish local authorities. There are in the beginning of 1996, 288 local authorities. All local authorities have their own libraries, though this is not mandatory. 24 of the public libraries have also special responsibilities being county libraries. They are mostly located at the seat of the provincial government and are organised either as a department within the city library or within the administration of the county council. Their responsibility is to give service to the local authority libraries within the county, for instance media support and library activities for children. The county library departments are not included in the libraries that are investigated, but the city libraries are. The response rate is 78 % in this group.

5.2.1 Local library systems

Today roughly 77 % of the public libraries which have answered the questionnaire have a local library system. 15 % have no local system, and 8 % did not answer. The following graph shows the distribution.



137 libraries state that they have a local library system of their own. 20 libraries say they share their system with another library. In some cases several small local authority libraries co-operate with one or several neighbour local authority to share a local system. Some sometimes also share system with school libraries.

The following systems are represented among the Swedish public libraries:

<i>System</i>	<i>Computer</i>	<i>Operative system</i>
BiblioMatic	PC	DOS, Windows
BIBS	Unisys 6000, IBM RS 6000, Motorola 88100	UNIX, DOS, Windows
BTJ 2000	IBM RS 6000	UNIX, AIX, DOS, Windows
ERILIB	PC	XENIX
LIBERTAS	Alpha, MicroVAX	VMS
LIBRA	IBM RS 6000, AS 400	UNIX, OS 400, DOS, Windows
LIGOBIB	PC	DOS
MikroMARC	PC	DOS, Windows
Public	Hitachi 6215	IBM VSE, UNIX

Up to the mid 1980s there was broadly speaking just one system working at the Swedish public libraries. The system was called BUMS and was sold by Bibliotekstjänst AB (BTJ). BTJ has always had a strong position as a vendor of library products and services to the public libraries. In the middle of the 1980s BIBS was introduced by a company called the BIP group.

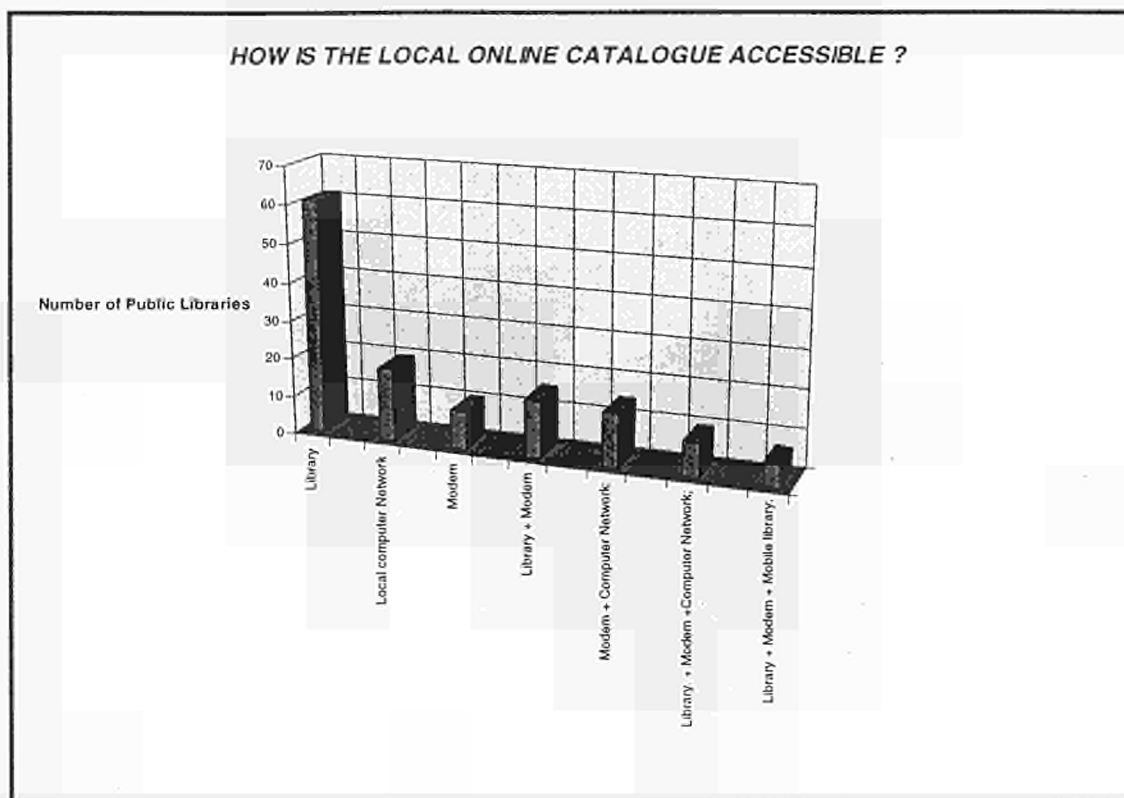
The situation today is dominated by two system vendors, BTJ and Axiell (who took over BIBS from the BIP group). BTJ sells the system BTJ 2000 in different versions for larger or smaller libraries. Axiell today sells mainly the LIBRA system – which is more or less the successor of BIBS. These three systems are responsible for 80 % of the system installations at the Swedish public libraries. Other systems are installed at very few libraries.

The predominant type of work station is terminal, used both by library staff and users. In recent years the PC has been more and more common as a replacement for the older terminals. Very few Macintosh computers are at present used as work stations in the library system. The user interface is text based for most systems. Some of the less common systems have a graphic interface.

Management and maintenance of the systems are mostly taken care of by one of the library staff or frequently by the system vendor. Less usual a computer department (often run by the local authorities) is responsible for management and maintenance. In some cases the library hires an external computer consultant for the management of the system. The largest public libraries state that they have one person employed full-time to work with the library system. Most libraries estimate the time needed for system management at 1 to 5 days per month. Some medium-sized libraries have one person hired, half-time, for the system management. There is no significant difference in time needed for the management and maintenance of the various systems in the public libraries.

5.2.2 Cataloguing

The cataloguing modules of the systems are used to a varying extent. BTJ has for many years had a well established function in central cataloguing (for further reading look at the homepage of BTJ in WWW: <http://www.btj.se>) The libraries which have got BTJ 2000 very seldom catalogue themselves, the catalogue records are delivered almost to 100 % from BTJ. Those which have BIBS and LIBRA also take advantage of ready-made catalogue records from different sources to a varying extent. Several libraries state that they import records from the catalogue database of Halmstad public library. The BIBS/LIBRA libraries seem to spend more time cataloguing than the BTJ libraries. Some libraries, apart from the on-line catalogue have other databases in the library system. They concern mostly local literature collections but there are also examples of indexes to collections of pictures and art. Different ways of accessing the local databases are shown in the following graph.

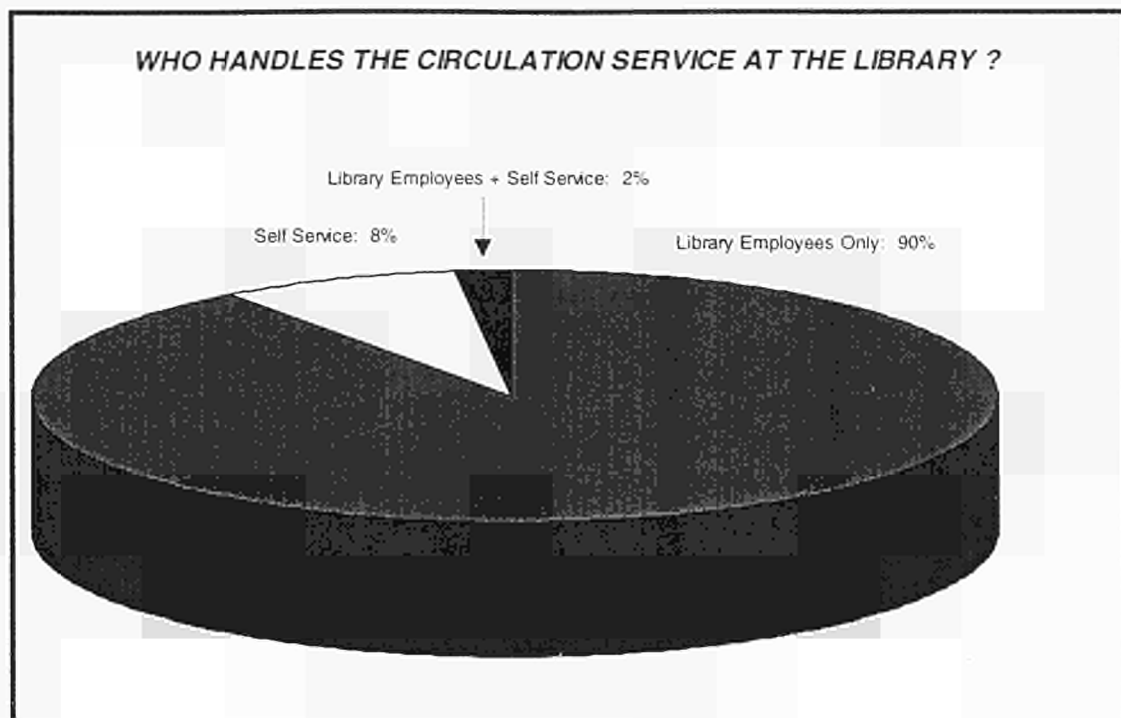


The most common way of accessing the local on-line catalogue is within the library. In many cases you can also access the catalogue through a local area network or through a modem connection. Some libraries state that access can be established even from mobile libraries.

5.2.3 Circulation service

Loans, reservations and returns of material are a major part of the work at the public libraries. In most cases the library staff handle these routines. Self-service has been installed in some libraries – and an increasing number are planning to install it. There are systems on the Swedish market which allow the library user to return the loans as well as register new loans by himself.

The local interlibrary loan routines are handled within the library system or within another computer based system by about 30 % of the libraries. 70 % of the public libraries handle the interlibrary loans manually. The following graph shows the distribution concerning the libraries local handling of circulation routines.



In 90 % of the libraries the circulation routines are handled by the staff. The remaining 10 % (about 20 libraries) have some kind of self-service.

5.2.4 Periodicals and statistics

Roughly speaking 55 % of the libraries interviewed state that they use either the periodical module in their local library system or a separate computerised system for the periodical routines. Thus 45 % of the libraries still register the journal issues manually.

The library systems which can be found at the public libraries all produce loan statistics in different forms. Some libraries point out that it is especially important that statistical data reach the local politicians, who are the people who decide about the library services.

5.2.5 Development

Of the functions in the local library system there are four areas for development which seems to be of great importance to the public libraries.

These are:

- * to implement self-service for circulation
- * to publish the local on-line catalogue on Internet
- * to implement all modules at branch libraries
- * to introduce graphic interface for the local on-line catalogue

Apart from this the public libraries often speak of increased accessibility by use of improved computer networks in the local authority area. They mention that the on-line catalogues of the public libraries should be possible to access from the local schools and school libraries. Many also wish to change the older terminals for PCs and at the same time increase the number of work stations for the users. Some libraries state that they are dependant on how the system vendor is planning to develop the system.

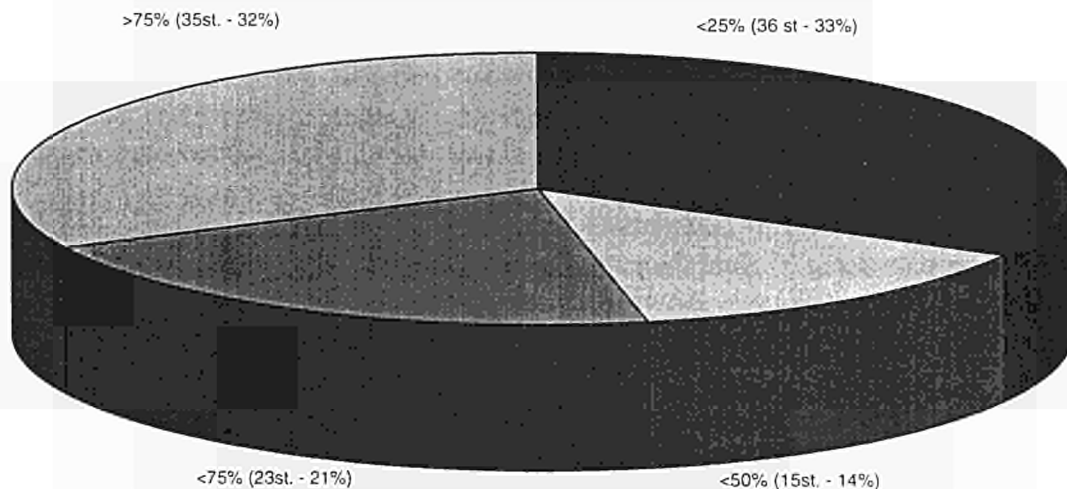
Among the libraries interviewed 93 % state that they do not plan to buy a new system within three years.

5.2.6 Electronic document order and delivery

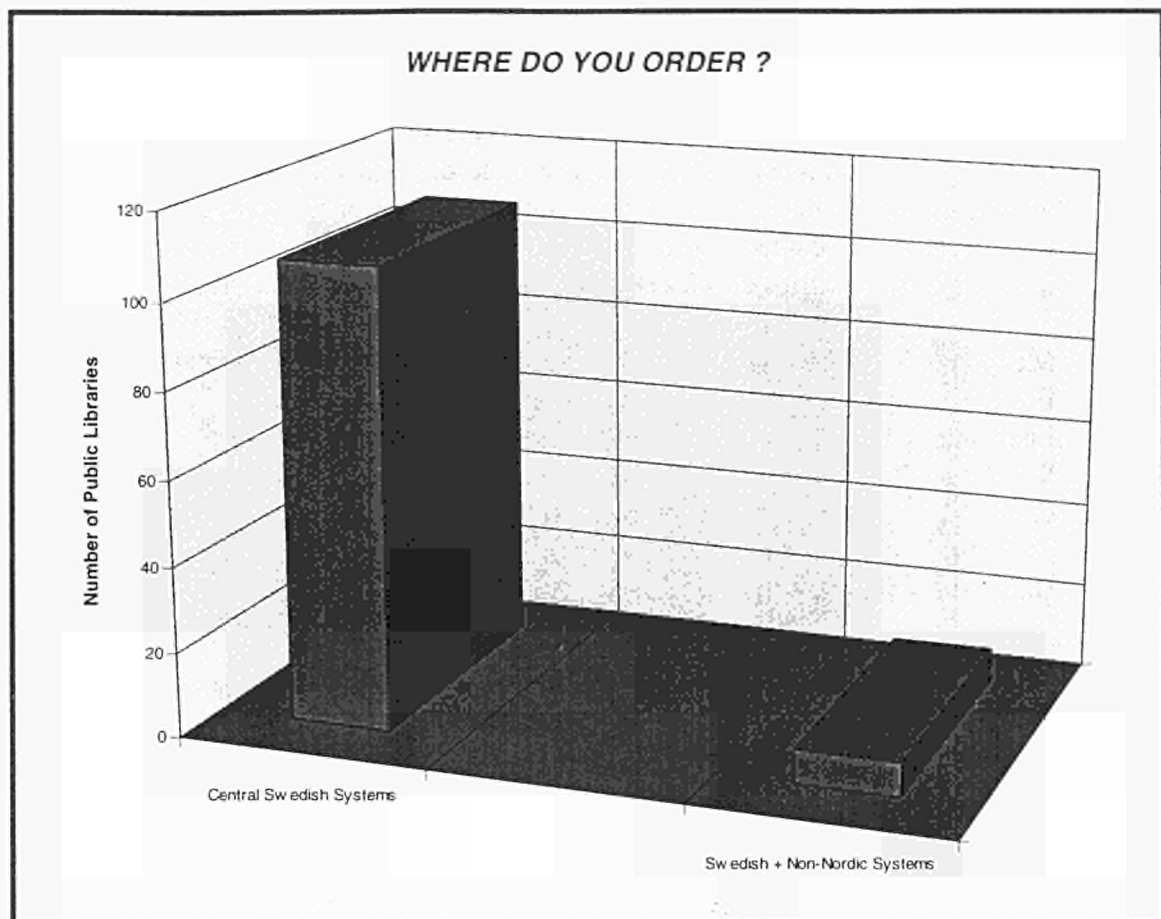
Ordering of interlibrary loans is mainly done through the county libraries according to what is called the loan chain. Roughly speaking 60 % of the public libraries say that they use electronic document order in some form, while 40 % handle interlibrary loans manually. Those who order electronically use a number of different channels.

Many local authority libraries usually connect to the on-line catalogue of the county libraries to make their interlibrary orders. The county libraries use LIBRIS for their interlibrary loans at a rapidly increasing rate. Even local authority libraries use LIBRIS for their interlibrary loans. BTJ2000 libraries can make interlibrary orders from each other direct. Many libraries also have access to the largest public libraries on-line catalogues, e. g. Stocken (Stockholm Public Library), Gotlib (Gothenburg Public Library) and Malin (Malmö Public Library).

HOW MUCH OF THE INTERLIBRARY LOANS ARE HANDLED ELECTRONICALLY ?



The graph shows that the public libraries which order documents electronically, do it on a large scale.



The public libraries order literature mostly via Swedish systems e. g. BTJ 2000 and LIBRIS.

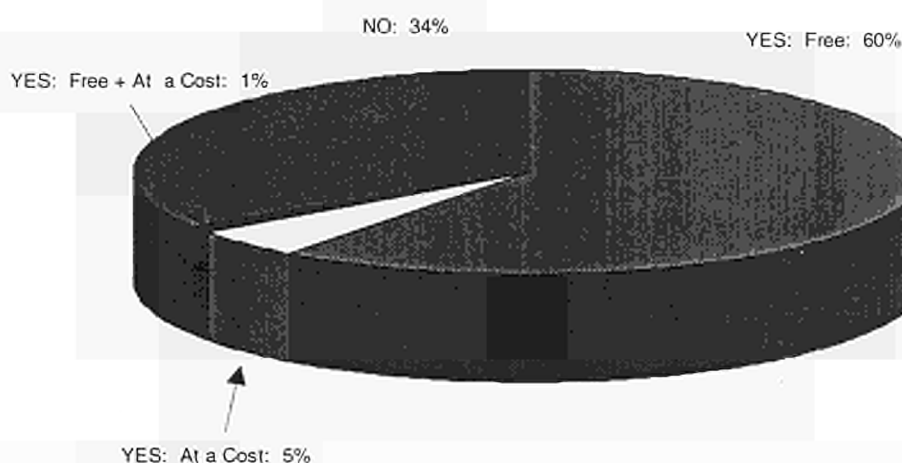
5.2.7 Access to external databases (on-line/CD-ROM)

Roughly speaking 65 % of the public libraries state that they provide access to external on-line databases. The table shows the most used databases. Apart from these many libraries state that they provide a large number of the free databases which can be found on Internet.

<i>Database/Database host</i>
Artikelsök
BURK-sök
Europe Information at InfoTorg
LIBRIS
Catalogues of the county libraries
Rixlex

Most public libraries allow their users to consult the databases free of charge. A few libraries state that they take a fee. Just about 65 % of the public libraries have access to a variety of databases on CD-ROM. Most of the CD-ROM installations are "stand-alone" applications. Only 23 % of the public libraries' CD-ROM equipment runs on a network. 35 % of the libraries state that they have no equipment for CD-ROM applications.

DOES YOUR LIBRARY HAVE ACCESS TO ONLINE DATABASES



Two thirds of the libraries state that they provide access to external on-line databases, most of them free of charge for users.

5.2.8 Local IT applications

Under this heading the libraries were encouraged to list help systems and locally developed user training material. At many libraries there are ambitious municipality supported projects to introduce information technology to the local citizens:

Library guides

- * The CD-ROM disc Botnica – a bibliography on literature dealing with the Swedish counties Norrbotten and Västerbotten
- * A database on municipality information
- * A database on the county of Kronoberg
- * A database on a local collection of pictures
- * Databases on local newspaper clippings
- * An agenda of events
- * An IT workshop run by a library in co-operation with the employment exchange and the Swedish National Council of Cultural Affairs
- * A local music collection
- * Local history
- * Telebook – local system for reading tips by use of a key phone
- * Tourist information

5.2.9 Internet

An increasing number of public libraries are procuring access to Internet. 44 % of the libraries state that they have Internet. Many libraries are beginners and are getting acquainted with what is provided on the net, while others are advanced and provide their own home pages. Among those who answered that they do not have access, many are planning Internet access of some kind.

The following WWW-addresses contain lists of Swedish public libraries with their own home pages:

Den Digitala Salongen:

http://sunsite.kth.se/DDS/dds_info/amne/bibliotek.html

Lund University Electronic Library:

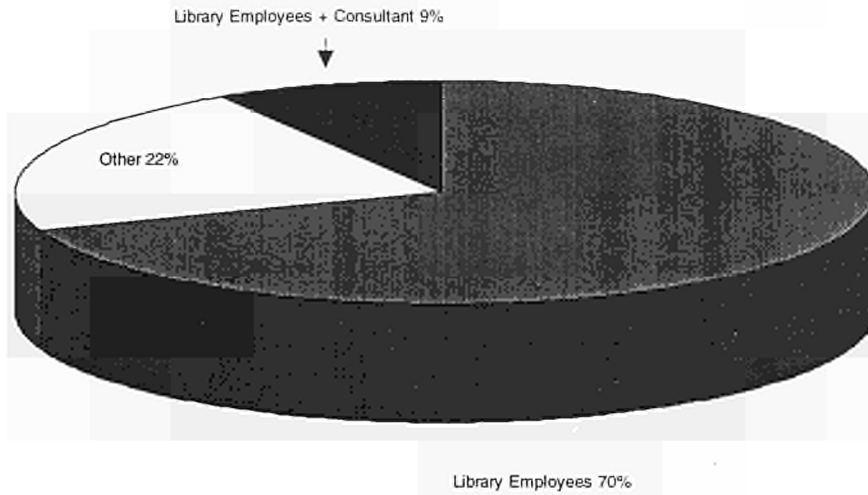
http://www.ub2.lu.se/resbyloc/Nordic_lib.html#swe

Example of Swedish public libraries with WWW home pages:

CITY	LIBRARY	URL
Finspång	Finspång library	http://sunsite.kth.se/DDS/bib/ostergotland_lan/finspa/bibl.htm
Helsingborg	Helsingborg city library	http://192.36.37.25:8000/bibl/nystad.htm
Klippan	Klippan library	http://www.klippan.se/hemsida/bibli.html
Kristianstad	Kristianstad library	http://www.obsti.se/kristianstad/biblioteket/
Linköping	Linköping library	http://www.linkoping.se/bibliotek/
Luleå	The library in Luleå	http://sunsite.kth.se/DDS/lulea/bibl.html
Malmö	Malmö city library	http://www.msb.malmo.se/
Motala	Motala library	http://sunsite.kth.se/DDS/bib/ostergotland_lan/motala/fyran.htm
Mölndal	Mölndal library	http://www.algonet.se/~millbib/
Nacka	Nacka city library	http://www.nacka.se/bibl/home.html
Norrköping	Norrköping city library	http://www.nsb.norrkoping.se/
Norrtälje	Norrtälje libraries	http://sunsite.kth.se/DDS/bib/norrtalje/bibl.htm
Ronneby	Ronneby library	http://www.ronneby.se/ronneby/biblio/biblio.html
Solna	Solna city library	http://sunsite.kth.se/DDS/bib/solna/biblio/biblio.htm
Stockholm	Stockholm city library	http://sunsite.kth.se/DDS/bib/stockholm/SSBHEM.HTML
Sundbyberg	Sundbyberg city library	http://sunsite.kth.se/DDS/bib/sundbyberg/hemsida/hemsida.htm
Söderköping	Söderköping library	http://sunsite.kth.se/DDS/bib/ostergotland_lan/soder/veta.htm
Ystad	Ystad city library	http://www.algonet.se/~ystadbib/
Örebro	Örebro city library	http://sunsite.kth.se/DDS/bib/orebro_lan/lanshome.htm

The contents of the home pages of the libraries are varying. Apart from basic information like opening hours, description of the organization, loan regulations etc. many libraries also have lists of links, adapted for local needs. Examples are: author portraits, full-text versions of journals, EU information, local cultural events and Internet service for children.

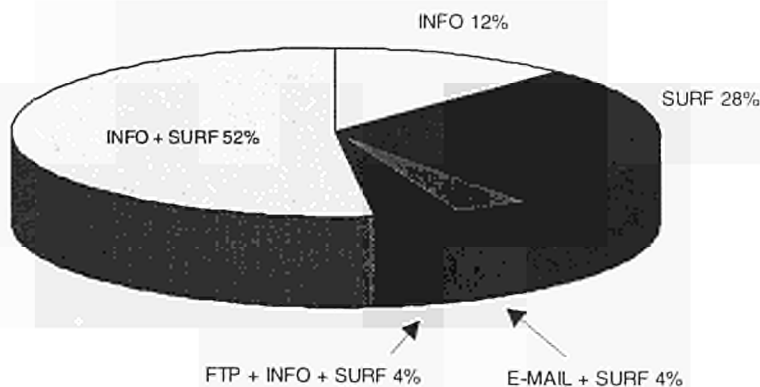
WHO MAINTAINS AND DEVELOPS THE LIBRARY'S HOME PAGE ?



The graph shows that in most cases it is the library staff which maintains and develops the WWW pages. Consequently there is a great deal of competence in this area at the Swedish public libraries.

The most common use of Internet services is for information retrieval and "net surfing" among the library staff as well as among the library users. The use of E-mail, bulletin boards and file transfer is limited, but the development is going rapidly and Internet maturity is increased every day in the Swedish public libraries.

HOW DO THE VISITORS USE THE INTERNET ?



The library users' most common way of using Internet is information retrieval and "net surfing".

5.3 School libraries

In Sweden there are 4900 schools for students from 7 to 16 years old (the years of compulsory education) (source: Statistical Yearbook of Sweden 1996) and within the upper secondary schools 641 school units for students from 16 to 18 years old. Consequently there are thousands of school libraries. Our questionnaire was sent out to a selection of the school libraries, mainly to upper school libraries and school library service centres. Where there were no library service centres, the questionnaire was sent to the responsible people in the local department of education. In all 425 questionnaires were sent out to the school libraries. The response rate was 48 % in this group.

Since the selection of school libraries as well as the response rate differs significantly from that of the other types of libraries we have chosen a different way of presentation compared to that of the research libraries and the public libraries. In addition school libraries are not as homogeneous a group of libraries as the other two categories. The school libraries vary a great deal in standards and size, and the staff situation varies widely between different school libraries. At some libraries a teacher with added training works a couple of hours a week and at others there are full-time professional librarians in the library.

5.3.1 Local library systems

Roughly speaking 52 % of the school libraries which responded to the question have a local library system. The rest have not a system. The following systems can be found at the investigated school libraries.

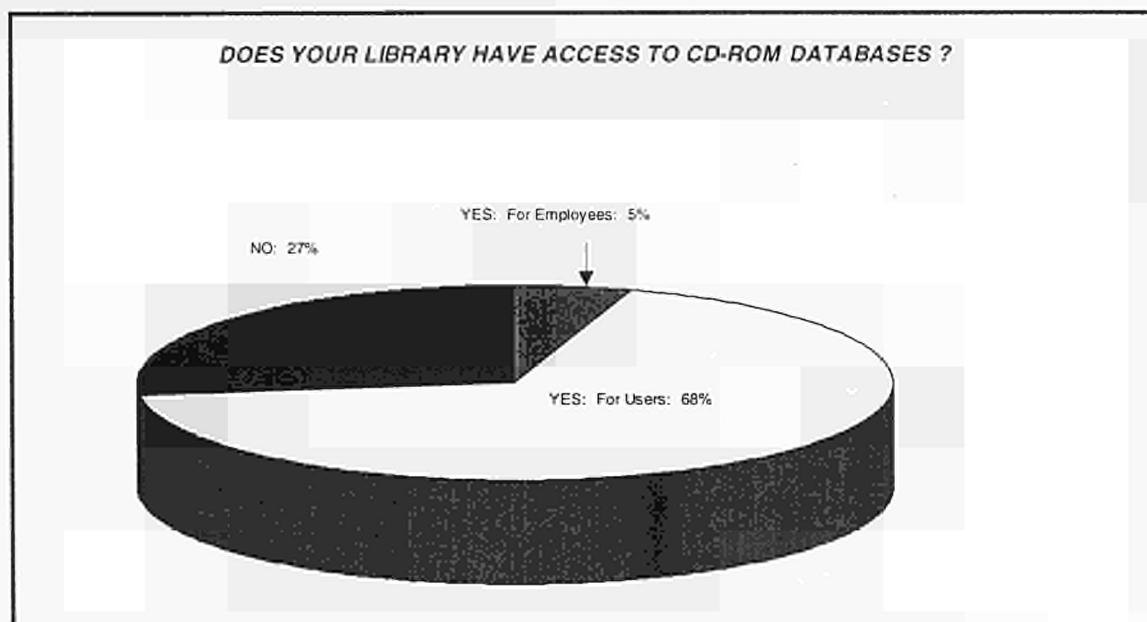
<i>System</i>	<i>Computer</i>	<i>Operative system</i>
Alexandria	Power Mac/File maker pro server	Mac/Windows-client
BiblioMatik	PC	Dos, Windows
BIBS	Unisys 6000, IBM RS 6000, Motorola 88100	UNIX, DOS, Windows
BTJ 2000	IBM RS 6000	UNIX, AIX, DOS, Windows
LIBERTAS	Alpha, MicroVax	VMS
LIBRA	IBM RS6000, AS 400	UNIX, OS 400, DOS, Windows
LIGOBIB	PC	DOS
MikroMARC	PC	DOS, Windows
Public	Hitachi 6215	IBM VSE, UNIX
TINLIB	PC, Sun Sparc	DOS, Windows, OS/2, UNIX, Sun OS 4.2

Several libraries share system with the municipality library. The most common system is BTJ 2000 (which is also available in a version for schools) followed by BIBS and LIBRA. Many school libraries, which have their own system, have Ligobib, MikroMARC and Bibliomatik – that is to say pure PC systems for smaller libraries.

Cataloguing is often carried out at central institutions like BTJ, school library centres or at the municipal public library. Circulation is not a very large-scale function at the school libraries, at least not the interlibrary loans. Manual self-service is often applied. Roughly 40 % of the school libraries state that they subscribe to on-line databases for information retrieval.

5.3.2 CD-ROM and Internet

The school libraries are advanced in some areas of information technology. As much as 73 % of the school libraries have access to databases and other sources of information on CD-ROM. In addition the access to Internet is increasing very quickly in this group. Today 43 % of the school libraries have access to Internet and several have answered that Internet connection will be established during 1996.



Today 73 % of the school libraries have equipment for CD-ROM applications.

Internet is most often used for information retrieval and to "surf the net" in order to see what is available. Some school libraries have their own WWW home page. The survey shows that 18 % have a home page. The library staff are usually responsible for management and maintenance of the information published on Internet. Some of the school libraries listed below have plenty of links to useful electronic sources of information for use in school libraries.

CITY	LIBRARY	URL
Borlänge	Library at Soltorgs skolan	http://www.hfb.se/~kfx/bibliotek/bib1.html
Leksand	Leksands upper school library	http://www.leksand.se/skolor/gymn/infoc/bibl.html
Nacka	Library at Saltsjöbaden mixed school	http://www.algonet.se/~sirius/bibliot.htm
Uddevalla	Library at Östraboskolan	http://www.ostrabo.uddevalla.se/bib/
Umeå	Library at Dragonskolan	http://www.elvis.uk.se/dragon/

WWW addresses for school libraries can be found at Lund Electronic Library
http://www.ub2.lu.se/resbyloc/Nordic_lib.html#swe

The Swedish Schoolnet is a national information system on Internet for the education sector. The system will gradually be built out and contains information from teachers and pupils, authorities, associations connected to the schools etc. The Swedish Schoolnet is part of the Nordic Schoolnet. The Schoolnet is developed and managed by the National Agency for Education, which is an authority run by the Swedish state and responsible for developing Swedish schools.

* The Swedish Schoolnet: <http://www.skolverket.se/skolnet>

Information on Internet resources for school usage can also be found at the following WWW addresses:

The Link Pantry: <http://www.ub2.lu.se/skolverket/index.html>

The Swedish Page, School Pages: <http://www.algonet.se/~nikos/wwwreg/skola.html>

6 Sources

6.1 Literature

Statistisk Årsbok för Sverige/SCB – Statistiska centralbyrån = Statistical yearbook of Sweden/published by Statistics Sweden – Stockholm: SCB, 1914- (Sveriges officiella statistik) 1996

Statistiska meddelanden. Serie Ku: Kultur/Statistiska centralbyrån – 1985:01 – Stockholm: SCB, 1985- (Sveriges officiella statistik) KU 13 SM 9601 & Ku 11 SM 9501

Utbildningsstatistisk årsbok/Statistiska centralbyrån = Yearbook of educational statistics/Statistics Sweden – 1978 – Stockholm: Statistiska centralbyrån, 1979-(Sveriges officiella statistik) 1995

Studenternas bibliotek – Delstudie 4: Babels bibliotek: informationsteknik ur studentperspektiv/Frans Letterström – Stockholm: BIBSAM, 1995–19 p.: ill

Studenternas bibliotek – Delstudie 1: På lika villkor?: en kartläggning av de svenska högskolebibliotekens resurser/Jakob Harnesk – Stockholm: BIBSAM, 1995, - 40 p.; graphs, tables

Persson, Gun

Lokala bibliotekssystem – en översikt – LIBRIS -meddelanden – Stockholm: LIBRIS-avdelningen. Kungl. biblioteket, nr 74, 1995, p. 9–11, 18–19 (ISSN 0348-1891)

6.2 URLs

6.2.1 Official institutions

SUNET

<http://basun.sunet.se/engindex.html>

National Council of Cultural Affairs

http://sunsite.kht.se/DDS/kultur/kr_info/kulturradet-hemsida

Royal Library

<http://www.kb.se/>

LIBRIS

<http://www.libris.kb.se/>

Lund University Electronic Library

<http://www.ub2.lu.se/>

Schoolnet

<http://www.skolverket.se/skolnet/>

Link Pantry

<http://www.ub2.lu.se/skolverket>

6.2.2 System Vendors

Axiell Bibliotekssystem AB

<http://www.axiell.se/>

Bibliotekstjänst AB

<http://www.btj.se/>

SLS Scandinavia AB

<http://www.sls.se/>

Appendix 1

Name of system

European languages supported

Main supplier

Telephone

Fax

Contact

Supplier profile

Staff

European subsidiaries/agents

General overview

Alexandria

Swedish

Filmakarna

Högskolan i Halmstad

Box 823

S-301 18 Halmstad

+46 35 16 71 04

+46 35 14 85 28

Göran Ericson

Filmakarna is a department of Halmstad University

4

none

Alexandria is based on database program FileMaker Pro. This means, among other things, that the user interface is graphical. The MARC format is not used. The classification codes generates subject headings in a way that the broader terms are also attached to the title.

The system consists of catalogue, acquisition, circulation with bar codes and ILL.

The new version of FileMaker Pro, with relational capabilities, will mean a number of changes to Alexandria, among other things systematical subject search; clicking on narrower terms will lead you to the right term to search for.

Customers EU

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
--	------------------	------------------	--------------------	-------------------	--------------------

Austria					
Belgium					
Denmark					
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxemburg					
The Netherlands					
Portugal					
Spain					
Sweden	3		5	2	
United Kingdom					

Other European countries

Total number of 10

customers worldwide

User group none

Appendix 2

Name of system	BiblioMatik																																																																																																
European languages supported	not reported																																																																																																
Main supplier	Bibliotekscentrum Sverige AB Box 113 S-351 04 Växjö +46 470 400 45 +46 470 450 78 Robert Paulsson																																																																																																
Telephone																																																																																																	
Fax																																																																																																	
Contact																																																																																																	
Supplier profile	Dantek A/S in Denmark developed BiblioMatik. Bibliotekscentrum (BiC) is responsible for selling the system in Sweden. BiC can offer systems for different types of libraries, e.g. software for school libraries, standardized systems for public and special libraries. BiC can also supply with custom-made database programs.																																																																																																
Staff	8																																																																																																
European subsidiaries/agents	none																																																																																																
General overview	BiblioMatik is an integrated library system for schools. The offered modules are cataloguing, searching, circulation, reminders and printing facilities. BiblioMatik may run in a network with 10 simultaneous users. The software package "BiblioMatik Bestånd" includes facilities for downloading of bibliographic records.																																																																																																
Customers EU																																																																																																	
	<table border="0"> <thead> <tr> <th></th> <th>School libraries</th> <th>Public libraries</th> <th>Research libraries</th> <th>Special libraries</th> <th>National libraries</th> </tr> </thead> <tbody> <tr> <td>Austria</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Belgium</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Denmark</td> <td>1200</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Finland</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>France</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Germany</td> <td>750</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Greece</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Ireland</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Italy</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Luxemburg</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>The Netherlands</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Portugal</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Spain</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sweden</td> <td>380</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>United Kingdom</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		School libraries	Public libraries	Research libraries	Special libraries	National libraries	Austria						Belgium						Denmark	1200					Finland						France						Germany	750					Greece						Ireland						Italy						Luxemburg						The Netherlands						Portugal						Spain						Sweden	380					United Kingdom					
	School libraries	Public libraries	Research libraries	Special libraries	National libraries																																																																																												
Austria																																																																																																	
Belgium																																																																																																	
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France																																																																																																	
Germany	750																																																																																																
Greece																																																																																																	
Ireland																																																																																																	
Italy																																																																																																	
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The Netherlands																																																																																																	
Portugal																																																																																																	
Spain																																																																																																	
Sweden	380																																																																																																
United Kingdom																																																																																																	
Other European countries																																																																																																	
Total number of customers worldwide	2330																																																																																																
User group	yes																																																																																																

Appendix 3

Name of system

European languages supported
Main supplier

Telephone

Fax

Contact

Supplier profile

Staff

European subsidiaries/agents

General overview

BIBS

Swedish, Danish and Norwegian

AXIELL Bibliotekssystem AB

Box 5151

S-426 05 Västra Frölunda

+46 31 69 55 50

+46 31 69 46 46

Anders Gezelius

AXIELL is in the frontline for developing library systems in Scandinavia. We were the first company which offered:

–local system

–UNIX-system

–electronic media request

–graphical user interface

–OPAC on Internet

–self service for library users

We work for open systems solutions in many ways. The libraries must be able to choose hard ware supplier as well as suppliers for media and bibliographic information.

17 in Sweden, 5 in Denmark

AXIELL, Denmark

BIBS is the oldest library system available in Nordic countries. Technical platform: UNIX.

BIBS includes all modules for efficient library routines. The system is operated through menus or commands. We are developing the system in the direction of client/server-technique. The modules for OPAC on Internet and OPAC for Windows are the first steps.

Customers EU

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark	*	14			
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxemburg					
The Netherlands					
Portugal					
Spain					
Sweden	*	70			
United Kingdom					
Other European countries	*	2			
Total number of customers worldwide		86			
User group	Trollhättans bibliotek c/o Greg Church Box 184 S-461 25 Trollhättan				

* AXIELL use the term "local community" for its customers. That means that normally one or more school libraries is included in the automation of the community/public library.

Appendix 4

Name of system

European languages supported

Main supplier

Telephone

Fax

Contact

Supplier profile

Staff

European subsidiaries/agents

General overview

BTJ 2000

Swedish

BTJ System AB

Box 4066

S-227 21 Lund

+46 46 18 00 00

+46 46 18 03 33

Elvy Granström, Claes Brissman

BTJ System AB is developing, marketing and selling library systems to Swedish libraries.

BTJ is operating in three fields:

1. Sells the local library system BTJ 2000.
2. Sells and produces CD-ROM applications.
3. Sells computers and software.

45

none

BTJ 2000 is a complete integrated library system. The modules are catalogue, circulation, cataloguing, acquisition, statistics, mobile library, school library and ILL.

The system is UNIX-based with ORACLE as Database management system. The software is written in C and SQL*Forms.

Customers EU

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark					
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxemburg					
The Netherlands					
Portugal					
Spain					
Sweden	70	150		10	
United Kingdom					

Other European countries

Total number of customers worldwide 250

customer worldwide

User group

Appendix 5

Name of system

European languages supported

Main supplier

Telephone

Fax

Contact

Supplier profile

Staff

European subsidiaries/agents

General overview

LIBRA

Swedish

Bibliotekssystem AB

AXIELL Box 5151

S-426 05 Västra Frölunda

+46 31 69 55 50

+46 31 69 46 46

Anders Gezelius

AXIELL is in the frontline for developing library systems in Scandinavia. We were the first company which offered:

–local system

–UNIX-system

–electronic media request

–graphical user interface

–OPAC on Internet

–self service for library users

We work for open systems solutions in many ways. The libraries must be able to choose hard ware supplier as well as suppliers for media and bibliographic information.

17 in Sweden, 5 in Denmark

AXIELL, Denmark

LIBRA is probably the most modern library system in Sweden today. Technical platform: UNIX and IBM AS400.

LIBRA is a totally integrated system with modules for all functions. LIBRA has full MARC-format.

We are developing the system in the direction of client/server-technique. Self-service and catalogue on Internet are available.

Customers EU

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
--	------------------	------------------	--------------------	-------------------	--------------------

Austria					
Belgium					
Denmark					
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxemburg					
The Netherlands					
Portugal					
Spain					
Sweden	*	21		10	
United Kingdom					

Other European countries

Total number of customers worldwide 31

User group Trollhättans bibliotek
c/o Greg Church
Box 184
S-461 25 Trollhättan

* AXIELL use the term "local community" for its customers. That means that normally one or more school libraries is included in the automation of the community/public library.

Appendix 6

Name of system

European languages supported

Main supplier

Telephone

Fax

Contact

Supplier profile

Staff

European subsidiaries/agents

General overview

Customers EU

Other European countries

Total number of customers worldwide

User group

LIGOBIB

see General overview

LIGOBIB

N Lundby, Himmelskällan

S-532 93 Axvall

+46 511 600 00

+46 511 601 10

Laila Persson

LIGOBIB is a family owned company which has developed the system LIGOBIB for ten years. Our customers are mainly school libraries, but we have public libraries as well as company libraries among our customers.

5

none

LIGOBIB is a PC-based library system. The system may easily be translated to several languages.

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark					
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxemburg					
The Netherlands					
Portugal					
Spain					
Sweden	84	1		2	
United Kingdom					

Appendix 7

Name of system

European languages supported

Main supplier

Telephone

Fax

Contact

Supplier profile

Staff

European subsidiaries/agents

General overview

Customers EU

Other European countries

Total number of customers worldwide

User group

TINLIB

AXIELL Bibliotekssystem AB

Box 5151

S-426 05 Västra Frölunda

+46 31 69 55 50

+46 31 69 46 46

Per Falk

AXIELL is in the frontline for developing library systems in Scandinavia. We were the first company which offered:

-local system

-UNIX-system

-electronic media request

-graphical user interface

-OPAC on Internet

-self service for library users

We work for open systems solutions in many ways. The libraries must be able to choose hard ware supplier as well as suppliers for media and bibliographic information.

17 in Sweden, 5 in Denmark

AXIELL, Denmark

TINLIB was developed by the british company IME Ltd. It is an integrated library system with the following modules available:

-Cataloguing incl. OPAC

-Circulation

-Acquisition

-Periodical control

The system is menu-driven with convenient navigation in a hyper text interface. Cut and paste functions are used. There is a separate MARC-editor available.

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark					
Finland					
France					
Germany					
Greece					
Ireland					
Italy					
Luxemburg					
The Netherlands					
Portugal					
Spain					
Sweden	5		12	11	
United Kingdom					

Appendix 8

Name of system

European languages supported

Main supplier

Telephone

Fax

Contact

Supplier profile

Staff

European subsidiaries/agents

General overview

X-ref

English, Swedish and Spanish

X-ref Datakonsult AB

Stockholm

+46 8 660 77 03

+46 8 660 77 03

Stig Käll

Developing and selling this product – X-ref. We do systems engineering jobs on contract – but strictly related to our own product.

2

IR (Information Retrieval)-system with administrative modules for acquisitions and circulation control.

Customers EU

	School libraries	Public libraries	Research libraries	Special libraries	National libraries
Austria					
Belgium					
Denmark				3	
Finland				1	
France					
Germany					
Greece					
Ireland					
Italy					
Luxemburg					
The Netherlands					
Portugal					
Spain					
Sweden				30	
United Kingdom					
Other European countries				3	
Norway and Iceland					
Total number of customers worldwide				40	
User group					

A3.3 Hur många av bibliotekets tillkommande katalogposter skapas i externa system (t ex LIBRIS eller BURK) och laddas därefter i den lokala databasen? Ange en ungefärlig procentsiffra?: _____%

A3.4 Vem sköter låneservicen (utlån/återlämning) i biblioteket?

- Endast bibliotekspersonal Självbetjäning finns också

A3.5 Om biblioteket har självbetjäning, hur stor del av utlånen sköts av biblioteksanvändarna själva? Ange en ungefärlig procentsiffra? _____%

A3.6 Har biblioteksanvändarna möjlighet att själva reservera och förlänga lån i systemet?

- Ja Nej

Vilka av följande moduler använder biblioteket?

A3.7 Förvärv /inköp: Ja Nej

A3.8 Periodikakontroll (för registrering av tidskrifhäften):

- Ja Nej, vi har ett separat system för periodikakontroll.
 Nej, tidskrifter registreras manuellt.

A3.9 Tidskriftscirkulation:

- Ja Nej, vi har ett separat system för tidskriftscirkulation.
 Nej, tidskriftscirkulation sköts manuellt.

A3.10 Hur hanterar ni de lokala fjärlånerutinerna?

- Fjärlånerutinerna är integrerade i bibliotekssystemet
 Fjärlånerutinerna hanteras av ett separat system.
 Fjärlånerutinerna sköts manuellt.

A3.11 Statistikmodulen. Använder ni den för biblioteksadministration?

- Nej, vi använder inte den statistik som systemet producerar.
 Nej, systemet har ingen statistikmodul.
 Ja (ge gärna exempel) _____

A3.12 Rapportgenerator. Använder ni den för produktion av nyförvävslistor eller andra litteraturförteckningar?

- Ja (ge gärna exempel) _____
 Nej, systemet har ingen rapportgenerator.
 Nej, vi använder inte rapportgeneratorn.

A4 Utvecklingsplaner

A4.1 Har ert bibliotek några planer på att köpa ett nytt bibliotekssystem?

- Ja, inom ett år. Ja, inom tre år. Nej

A4.2 Vilka är era planer för fortsatt utveckling av det lokala systemet?

Inom ett år (ange prioriterade områden): _____

Inom tre år (ange prioriterade områden): _____

A4.3 Ange den totala summa pengar som ert bibliotek har använt för det lokala systemet under närmast föregående budgetår (löner undantaget). I summan ska ingå: nya inköp, underhållskostnader, service- och licenskostnader, kostnader för uppgradering av maskin- och programvara etc.

Kostnaden för det lokala systemet uppgick till ca. _____ kronor under det förra budgetåret.

A4.4 Ange den totala summa pengar som ert bibliotek har använt för det lokala systemet under innevarande budgetår (löner undantaget). I summan ska ingå: nya inköp, underhållskostnader, service- och licenskostnader, kostnader för uppgradering av maskin- och programvara etc.

Kostnaden för det lokala systemet uppgår till ca. _____ kronor hittills under det innevarande budgetåret.

Kommentarer

Kommentarer till alla frågorna i sektion A kan skrivas här. Ange frågans nummer, t. ex. "A4.1".

Sektion B: Elektronisk dokumentbeställning

B1 *Med elektronisk dokumentbeställning menas att biblioteket har möjlighet att använda datoriserade rutiner för fjärrlån, antingen via det egna lokala systemet eller genom andra system, i syfte att sända beställningar till andra bibliotek eller dokumentleveranstjänster.*

B1.1 *Använder biblioteket elektronisk dokumentbeställning?*

Ja Nej (vid nej - gå vidare till sektion C)

B1.2 *Kan era biblioteksanvändare själva beställa dokument online?*

Ja Nej

B1.3 *Hur stor del av bibliotekets fjärrlånebeställningar sköts med elektronisk dokumentbeställning?*

<25% <50% <75% >75%

B1.4 *Hur många fjärrlånebeställningar hade biblioteket sammantaget under 1994? _____*

B2 *Vilka typer av dokument beställs online?*

Böcker Artiklar

Annat (v. g. specificera): _____

B3 *Varifrån beställer ni?*

Centrala system inom Sverige (LIBRIS, BTJ etc.): _____

Nordiska system (DANBIB, BIBSYS etc.): _____

System och dokumentleverantörer utanför Norden (UnCover, OCLC, EBSCO etc.): _____

B4 *Vilka sätt använder biblioteket för att ta emot dokument som har beställts online?*

Fax Datorpost (e-mail) FTP (filöverföring)

Andra sätt (v. g. specificera) _____

Sektion C: Elektronisk dokumentleverans

Med elektronisk dokumentleverans menas att biblioteket antingen skickar elektroniska dokument till sina användare via nätverk eller tar emot dokument i elektronisk form för vidare befordran till användarna.

C1 *Levererar ert bibliotek dokument i elektronisk form till användarna?*

Ja Nej (vid nej - gå vidare till sektion D)

C2 *Om svaret på C1 är ja - på vilket sätt levereras dokumenten?*

Med fax Med datorpost (e-mail) På disketter

Användaren hämtar en fil (t. ex. via FTP)

Andra sätt (v. g. specificera) _____

Sektion D: Tillgång till databaser (online/CD-ROM)

Informationssökning online

D1 *Erbjuder ert bibliotek tillgång till informationssökning i externa online-databaser?*

Nej, vi erbjuder inte det därför att (vid nej - gå vidare till fråga D4): _____

Ja

a) gratis för användarna

b) användarna betalar för dessa tjänster

D2 *Hur många online-tjänster har ert bibliotek tillgång till? V. g. ange antal databasvärdar. _____*

D3 *Vilka är de 5 mest frekventa online-databaser/ databasvärdar som ert bibliotek använder?*

1. _____

2. _____

3. _____

4. _____

5. _____

Informationssökning på CD-ROM

- D4 Erbjuder ert bibliotek tillgång till informationssökning i CD-ROM-databaser?
- Nej, vi erbjuder inte det därför att (vid nej - gå vidare till sektion E): _____
- Ja, vi har databaser på CD-ROM, men dessa används endast av personalen.
- Ja, vi har databaser på CD-ROM som bibliotekets användare har tillgång till.

(Frågorna D5 och D6 gäller endast folkbibliotek. Forskningsbibliotek kan gå vidare till fråga D7)

- D5 På vilka avdelningar har biblioteket CD-ROM-databaser:

- Vuxenavdelningen Barnavdelningen
 Referensavdelningen Musikavdelningen

- D6 På vilka enheter har biblioteket CD-ROM-databaser:

- Huvudbiblioteket Filialer Bokbussen

- D7 Hur är bibliotekets CD-ROM-applikationer installerade:

- På "stand-alone" Pcs I nätverk

Sektion E: Lokala IT-applikationer

Med lokala IT-applikationer menas en mängd olika produkter och tjänster, såsom multimedia-system, bilddatabaser med mera. Dessa kan antingen vara utvecklade inom biblioteket eller framtagna på initiativ från biblioteket.

- E1 Har biblioteket utvecklat några lokala IT-applikationer:

- Nej, vi har inte heller några planer på att utveckla egna produkter (vid nej - gå vidare till sektion F).
 Nej, men vi planerar att lansera nya lokala IT-applikationer inom ett år (vänligen markera nedan).
 Ja, vi har lokala IT-applikationer (vänligen markera nedan).

Vi har (eller planerar) lokala IT-applikationer på följande områden:

IT-applikationerna tillgängliggörs:

Typ av applikation	I drift	Planerad	Endast på enstaka PC	På CD-ROM	Via nätverk
Biblioteksguide/karta					
Användarutbildning					
Samhällsinformation					
Lokalhistoria					
Lokal bildsamling					
Lokal musiksamling					
Annat, (v g specificera) _____ _____					
Annat, (v g specificera) _____ _____					

Kommentarer

Sektion F: Internet

- F Har biblioteket tillgång till Internet?
 Nej (vid nej - gå vidare till sektion G) Ja
- F2 Vad använder personalen Internet till?
 Används inte regelbundet Datorpost (e-mail)
 Yrkesmässiga diskussioner (listserver, newsgroups m m - t ex BIBLIST, Digitala Salongen)
 Informationssökning via Gopher eller WWW
 Hämta dokument med filöverföring
 Utforska utbudet / "surfa på nätet"
 Annat (v. g. specificera) _____
- F3 Erbjuder biblioteket sina användare tillgång till Internet?
 Nej (vid nej - gå vidare till sektion G) Ja
- F4 På vilket sätt utnyttjar bibliotekets användare Internet?
 Datorpost (e-mail) Informationssökning via Gopher eller WWW
 Hämta filer med filöverföring Utforska utbudet / "surfa på nätet"
 Annat (v. g. specificera) _____
- F5 Har biblioteket en egen hemsida på Internet?
 Nej (vid nej - gå vidare till sektion G)
 Ja , WWW-adressen till vår hemsida är: _____
- F6 Vad ger hemsidan tillgång till?
 Länkar till utvalda tjänster på Internet. Sökning i bibliotekets katalog.
 Allmän biblioteksinformation Elektronisk anslagstavla
 Dokument i fulltext. (v. g. ge något exempel) _____
- F7 Vem underhåller och utvecklar bibliotekets hemsida?
 Bibliotekspersonalen Huvudorganisationen Extern konsult
 Annan (v. g. specificera) _____

F-47

Kommentarer:

Sektion G: Övrig användning av Informationsteknologi (IT)

- G1 Använder biblioteket IT för publikt bruk i något avseende som inte täcks av denna enkät?
Ange gärna här om biblioteket medverkar i något svenskt, nordiskt eller internationellt IT-projekt.

Exempel:

Denna enkät har besvarats av:

Namn: _____ Bibliotek: _____
Adress: _____ Telefon: _____
E-mail: _____



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European Commission

**EUR 17476 — State-of-the-art of information technologies in libraries
in the Nordic countries**

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This report is the result of a state-of-the-art study of information technologies in libraries in the Nordic countries commissioned by the European Commission. The purpose of the study was to provide an overview of the situation in the mid-1990s and recent developments regarding information technologies in Denmark, Finland, Iceland, Norway, and Sweden. Research libraries, public libraries as well as school libraries were included in the study in order to provide a comprehensive view of the situation in each country.

The report consists of five country reports, a summary of the most important survey results, and an overview of Nordic cooperation initiatives concerning information technologies in libraries. The summary and overview were prepared by NORDINFO, the Nordic Council for Scientific Information. This volume provides a unique profile of a very exciting time in the development of information technologies in Nordic libraries.

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