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Electronic Information Provision and Internet:

The Marriage of Library Automation and Network Systems

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Ladies and Gentlemen,

The Internet and connected networks enable us to communicate electronically. This offers us a lot of impressive possibilities which I would like to summarize in three points. The networks offer:

- world-wide person-to-person communication and communication within discussion groups

- access to and supply of data, e.g. text, voice, images, movies, sound, and the combination of all this, multimedia, - by using standard protocols

- services and information about nearly everything - enriched from minute to minute.

The networks seem to be a much better environment to solve a lot of peoples information problems than traditional library services have been and still are. Information and documents can be accessed directly and fast. The networks enable the transmission of data onto the desk of the requesting person - wether she or he is in a library, at the office or at home. Nevertheless, there are barriers still left. They are financial, technological or legal - with some difference to the traditional information world.

More and more libraries are supposed being able to offer these additional services, too. Otherwise their customers would search for alternatives because they do not rely on libraries only.

In my paper I will stress on the tools available for libraries to react. First I will reflect the development of library services with some respect to Germany. Then I will mention features of software tools which seem to be important for Internet-related activities. This will be followed by a general comparison of advantages and disadvantages of specialized tools for either Internet access software or library system software with Internet related features. At the end I will present some results of a small survey in which I asked library system suppliers being present in the German

market for Internet-related features actually available.

The development of library services - with some respect to the situation in Germany

Since several years libraries provide their customers not only with bibliographic information of material which has been published - wether it is on their stocks or not. Today retrieval in commercially offered online databases is integrated into the standard information services. But the demand for document delivery which results from these extended library services is not satisfied by the quality of standard interlibrary loan services. As a result commercial document suppliers which provide user oriented services find their way into this business - and libraries are loaded with the unsatisfied rest of the demand of those who can not pay for special services.

Excursion: The situation in Germany

All this has been happening in Germany, too - but with some delays compared to other EU-countries. Library automation in Germany mostly meant creating only online catalogues, perhaps automating parts of the internal workflow, with a priority on circulation. Johan van Halm´s reports[1] as well as the updated LIB/2 report[2] provided for the EC gave a good overview on the situation at the beginning of the nineties.

I emphasize these specialities because the general library situation in Germany is still different to other European countries and to the US, too. Due to our federal structure we have regional distributed library networks, which apply varying cataloguing rules, use different library systems and are now improving the technical networks between each other.

Since about two years those networks started to offer their data and general information over the Internet - the *Südwestdeutscher Bibliotheksverbund (SWB)* located at Constance has been the first doing that.

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1   Halm, Johan van: Library Automation in the Federal Republic of Germany (FRG). A detailed analysis of the market and the systems acquisition strategies of German libraries and its authorities, Amersfoort, August 1989 and December 1993

2   Commission of the European Communities / Directorate-General Telecommunications, Information Industries and Innovation / Directorate Information Industry and Market: State of the art of the application of new information technologies in libraries and their impact on library functions: a reassessment (LIB/2 update Report), Volume 2: Germany, Luxembourg, 1992 (EUR 14085)

On the nets we still find a lot of bibliographic information offered by libraries, but this is not the growing part of the networks. There is the whole scale of types of information we know: bibliographic information about monographs and periodicals, table of contents, abstracts, selected overviews on recent publications e.g. Current Cites, reviews and - increasingly - the publications themselves. More and more there are *original electronic publications* on the nets. They have never been and won´t be published on paper - and this is the really increasing part of the nets.

The users are fascinated by the possibility of easy and fast access to information. They are overwhelmed by the scope and amount of information they have available on their fingertips. But often they don´t realize that in most times this is only a small part of the information available. Specially they take the risk to ignore the printed material libraries still have on their stocks.

From the users´ point of view libraries are expected to integrate services from the Internet into their day-to-day activities. The provision of documents is still an example for this assignment to integrate network based, value-added services. This causes a lot of additional demands for the library, it´s staff, and the library system they are using.

What does that mean to the functionality of the software tools libraries are using?

Let me give you a selected list of features software tools should have:

- Direct access to system-pre-selected and individual selected addresses on the nets.

- Retrieval options in remote systems using Z39.50 or SR.

- GUI features like they are available within standard Internet retrieval and browsing tools.

- Ability to create links from reference information to a document provided locally or somewhere on the nets.

- Ability to access, view and use imported documents which are available in standard formats.

- Integration of information about local holdings and their availability. This can be realized by comparing bibliographic information from orders of requested items with items available locally.

- Checking and routing a request to locally recorded electronic copies of documents.

- Finally, concerning the solution of payment for external and special internal services:
  The identification of requesters and the examination of their authorization for spending e.g. the departments money. Alternatively providing payment services which integrate the user´s deposit account or other possibilities to pay the service.

This is not a comprehensive list. But the features mentioned show the degree of changes and developments necessary to fullfill the extended needs of customers.

The choice: Specialized software tools or further development of library systems

The choice libraries have is either **application and integration of specialized software tools** which are available on the market or further **development of the library system** they use.

Let me start with a general look on the **specialized tools** available on the market:

Their **advantages** are seductive:

- Their functionality is specialized on that specific purpose which means - on a basic level - they apply the Internet protocol and offer a graphic user interface, and - on a higher level - integrate specialized browsing and retrieval features which are available on the networks.

- They are available on different hardware and software platforms.

- They compete with other tools on the market which in most times garantees their further development.

- In most cases they are available as public-domain-software which means that the investment is not high.

But there are **disadvantages**, too:

- The less you pay the less you get guaranteed - a problematic situation for organisations which have the obligation to serve customers using limited resources.

- The competitive situation on the software market in some times results in a shift which software

is "in". This happens within weeks or months, e.g. the change from MOSAIC to Netscape.

- The platforms on which the tools are available not always match the platforms used for library systems, e.g. as a consequence sometimes GUIs can not be made available.

A general topic which I would like to mention additionally concerns some organisational problems: Beside the investment of staff time there is not a high risk a library takes when it starts such a project. This may mean flexibility and innovation, but nevertheless in most times such projects receive not much help by other departments or even the library´s management itself. Therefore the specialists who test something new and unknown take a risk to loose integration in their library.

Now, lets have a look on the alternative, the **development of integrated library systems** used in libraries:

If Internet-related features are available, the **advantages** are plausible:

- One integrated system, one user interface which functions as an umbrella for traditional and new features as well.

- Integration of hardware and software possibilities.

- In most times there is a broad user community providing a strong demand on developments.

The list of **disadvantages** seems to be more or less situative:

- Normally there is a strong demand for the development of a lot of other features. Internet necessities have to compete with them for money and developers time.
  Concerning the German situation: there has been a kind of ideological barrier against internet applications in the German library field, but hopefully, this time has passed.

- The technical basis of some systems on the market does not obviously allow such developments at all - or at least they make them really difficult and expensive.

- The functionality of systems which have integrated Internet-services not always reaches the whole scope of the functionality of specialized systems.

Based on that background one of my goals was to find out if these disadvantages are reality in the

German library systems market. Therefore I started a small survey selecting 20 suppliers who all together have more than a 2/3 share of the library systems market in Germany. Their emphasis lies on University and research libraries, but as Internet services become relevant for large city libraries, suppliers for this type of libraries were integrated, too.

The survey was started with the additional purpose to ascertain, if libraries today really have the choice between the options I discussed above.

At the end of February 1995 the following questions were sent out to 20 library system suppliers on the German market:

1. Does your system offer networking possibilities on Client-Server basis?

2. Does your system enable bibliographic retrieval in other systems using Z39.50 or SR?

3. Does your system enable communication via e-mail
    a) between staff members of the library?
    b) between staff members and clients?
    c) between all clients using the system?

4. Is there a possibility to include and activate links to electronic documents (e.g. by URL) out of a bibliographic record?

5. Which possibilities for the management of electronic documents does your system offer?

6. Does your system allow the transmitting of retrieval results, electronic documents or other electronic based services electronically?

Until the beginning of April I received answers from 8 out of these 20 suppliers. Let me summarize the results qualitativly by indicating some **trends** I took out of the answers:

1. Most of the systems which take the highest market share in the German library market have developed or are developing at least some of the basic functionalities I mentioned (e.g. Client-Server-Architecture).

2. The availablitiy of Z39.50 / SR-applications is still poor. Only very few systems apply these standards.

3. Communication via e-mail starts to be something normal, but there are several systems which use their own protocols. The integration of delivery to Internet-adresses is not common until now. The electronic delivery of retrieval results etc. does not seem to be a real demand until now.

4. Links to other data out of the bibliographic record are possible only within very few systems. Most suppliers follow the concept to connect their systems with standard document management systems. Until now only a few systems allow the integration and presentation of different types of information, specially multimedia information.

Some general observations and background information may explain these results:

1. Since at least 3 years systems from foreign countries find their way into the German library market with increasing success (e.g. Pica, Dynix, VTLS). Their advantage seems to be that the demand for the features mentioned above started earlier in those countries. As a consequence their developments in integrating Internet-related features are more advanced than those developed in Germany. But these systems still have some problems to serve the special German exchange format for bibliographic records, the MAB format. As a consequence their market chance is in some way restricted to special libraries which do not rely on the availability of that format only.

2. The success of those systems from foreign countries leads to a significant pressure on other competitors in the market. German systems which origin in a research and University environment seem to compete best with this situation.

3. In most times developments are realized as projects part-funded by the Deutsche Forschungsgesellschaft (German Research Foundation) which is one of the driving forces in the library field and influences the market development heavily.

4. More and more it becomes obvious that enhanced document delivery features are an asset for libraries, specially since most libraries are not able to aquire all the media their clients need.

What consequences libraries should draw out of these results?

For those libraries which rely heavily on information accessable over the nets there are interesting options to switch over to a software supplier who offers all the features which are necessary. If the library has the flexibility - which normally means having the money and being in a situation where the change of a system is necessary - then I think it is a good choice to take the advantages of such a supplier.[3] But this is a chance a library does not have very often.

For all the other libraries the best thing to do is to test and apply specialized software tools beside their local library system. At least the suppliers will offer the possibilities to integrate the functionality of relevant clients into their systems. These stand-alone or part-integrated applications will offer the chance to be present in the nets and will offer access to clients.

Thank you very much for your attention !

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3   Beside other options this offers the library the possibility for much better services and marketing related to these options.