

“In technology we trust - a perspective from up North

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IN TECHNOLOGY WE TRUST - A PERSPECTIVE FROM UP NORTH

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Introduction

The recent and rapid development of information and communication technologies and the development of the information society as a whole are affecting the higher education all over the world. It has among other things been predicted that there will be no need for formal university institutions /1/ and that private companies turn into "virtual universities" offering just-in-time education suited and tailored according to the needs of the employers /2/. There are, however, also initiatives such as the Fathom.com where leading educational and cultural institutions come together to form an online knowledge company (URL <http://www.fathom.com>) and trust there will be a demand for their superior know-how in the virtual educational marketplace. These institutions will naturally also sell their courses to those in need of culture and education. It seems that all parties involved agree that education has become a commodity of the information society.

Exploitation of digital media in education shifts the learning from broadcast learning to interactive learning. In the new environment the roles of the teachers and the learners will change. Also the concepts related to the nature of learning (linear, sequential to hypermedia, instruction to construction and discovery) will carry a different meaning. Furthermore, learning as an experience will be fun rather than dull /3/.

Higher education has always been a versatile collection of teaching and working methods such as dialogue, debate and discussions, group work, assignments, tutoring, independent study and feedback. To transform these methods to exploit the information and communication technologies the best possible way is the challenge for the virtual universities. The academic libraries have enjoyed a valued position in the print era but the recognition needs to be earned again in the context of the digital media. The management of a very heterogeneous set of networked learning materials will be a major challenge for libraries.

Virtual University of Finland

National educational systems can hardly rely on commercial, virtual educational offerings found via the network, even if these are of superior quality and even if international co-operation is highly encouraged. In this respect the eEurope initiative of the European Commission is important as it aims to promote the use of information and communications technologies for education and research all over Europe. The current response in Finland to the policy decisions made elsewhere and within the European Union in particular has been the establishment of the Virtual University of Finland. On the national level to ensure competitiveness in education and research the action plan of the Ministry of Education for 2000-2004 concerning the online university features support to content provision (i.e. course production), support for teaching as well as to teachers and learners, promotion of information and communication technologies in teaching and also development of assessment and control mechanisms. The online university will be formed as a consortium of the existing universities willing to support the initiative

and the co-ordinator for the consortium is located at the Helsinki University of Technology (HUT). The annual budget for the online university will be about 15,5 million USD for the period 2001-2004. The Ministry of Education is funding half of the budget and the other half is expected to be contributed by the universities themselves, by the European Union and by Finnish communities and companies. The target group for participants in the Finnish virtual university will be university students, company employees and students pursuing further education. /4/.

Concerning the media skills in general at the moment a very recent assessment survey of the outcomes of the national information society strategy 1995-1999 showed that even if the technological prerequisites (broadband network, equipment etc.) now exist in the nation's universities the general skills among the teachers and students regarding information literacy are not sufficient. Also there is a lack of technical support and pedagogical skills. Hence the virtual university must emphasise and organise the education of teachers before a truly national multidisciplinary virtual university becomes a reality. In the assessment the libraries were considered to have succeeded in meeting the objectives set for them in the 1995-1999 strategy even if the academic libraries suffered from inadequate funding. /5/

The information literacy competency standards for higher education by the American Association of College and Research Libraries are an excellent list of clearly defined objectives and the subsequent skills required by an information literate individual (URL <http://www.ala.org/acrl/ilintro.html>). But they also indicate quite clearly that it takes a university, not just the library to produce such an individual and in this respect the need of co-operation between the teachers and the librarians is evident. It is clear, however, that each library must define its own role in its own institutional context.

Parallel to the development of the Finnish Virtual University there will be the development of the Virtual School. There the objectives include the establishment of a generic school portal to the networked learning materials. From the academic library's point of view it will be important to follow this development because the university students in 5 to 7 years time will be the products of this virtual school. Many of the information literacy skills are or should be already adopted at this stage.

Course re-engineering for virtual university

The HUT library courses on scientific information searching were redesigned a year ago and the student response towards the new courses has been very positive. The participation in the international DEDICATE distance education project (<http://educate.lib.chalmers.se/DEDICATE/dedindex.html>) had stimulated the initial course revision decision and it also provided the library staff with necessary background information regarding the new course design. The objectives for the new courses included more intensive integration of the networked electronic campus library materials because an increasing number of students will primarily use only the networked library services. Some students are likely to bypass the physical library services altogether. The library information specialists were trained to become course tutors. Tutoring via e-mail provided the information specialists with a personal and a much closer contact with the students than before. Yet another more general aim for the redesign process was to market the electronic library services and thus promote the dynamic nature of the modern library supporting higher education and research. In this respect the FinELib library consortium programme (URL <http://hul.helsinki.fi/finelib/english/index.html>) launched by

the Ministry of Education three years ago has been of great help. The biggest challenge regarding the FinELib consortium at the moment is the development of the graphical user interface for unified access to the some 3000 full-text journals, 80 reference database, dictionaries and reference books acquired by the FinELib. Regarding the virtual university the FinELib licence agreement allow the use of the materials for educational purposes. The teachers may take extractions, such as articles of these electronic resources and include them into the (non-commercial) courseware they prepare for their courses.

Today the redesigned library courses run four times a year and last for 5 weeks each and equal 1 credit in the curricula. The courses include one 2-hour introductory lecture after which the students follow the subsequent three web-based distance education modules quite independently. Active communication with tutors is of course recommended. The main benefits of the library course design include its flexibility: it is now easy to integrate it to any academic courses, especially those involving problem-based learning or networked materials. This integration has in fact already been tested in the context of a course for students majoring in information network planning, the library extended the length of its own course to meet the original course which run for the whole semester and provided a tutor to help in information searching. In view of the evolving virtual university the new library courses fit in very well. Furthermore, the web-based material made it quite easy to run these courses also in English (URL <http://www.hut.fi/Yksikot/Kirjasto/Palvelut/Koulutus/Informatiikka/> - in English). The courses were also accepted to the curricula of HUT open university starting with the autumn term 2000.

Another challenge: the wireless environment

In the networked environment it is the wireless communication which is growing most rapidly and new mobile services are being developed at high speed. The number of mobile phones in Europe is expected to increase manifold by 2003 when there are 237 million estimated users. By then some 85% of the mobile phones are expected to be able to use Internet services through WAP-technology (wireless application protocol) /6/. The WAP -phone allows the user to access the Internet and use the networked services via the wireless mark up language (WML) /7/.

In the knowledge society the mobile users will wish to access services from home, while commuting, at work, on the street, in the nature, in the car, at the airport etc. The library services are no different from other services in this respect. As much as our current users take the Web-based access to the library catalogues for granted, the future users will expect to access the library when and where they choose or prefer at any given moment.

The media is also becoming more and more versatile. Instead of one single communication device people will have different instruments and different alternatives to use the media and services. In the long run the various digital library services will be produced according to the appropriate standards in such a way that the same information content can be converted or used through different communication methods and devices. For instance, a mobile phone as a device is different from a workstation: it has less bandwidth, more limited power supply, a very much smaller display and a different type of keyboard. The present Web-based digital library services have been designed to be used by a HTML-browser and viewed by a 17'' display monitor. Therefore the current digital library services are not suitable as such to be used by the mobile users. Figure 1 tries to illustrate this so called multi-channel delivery of services.

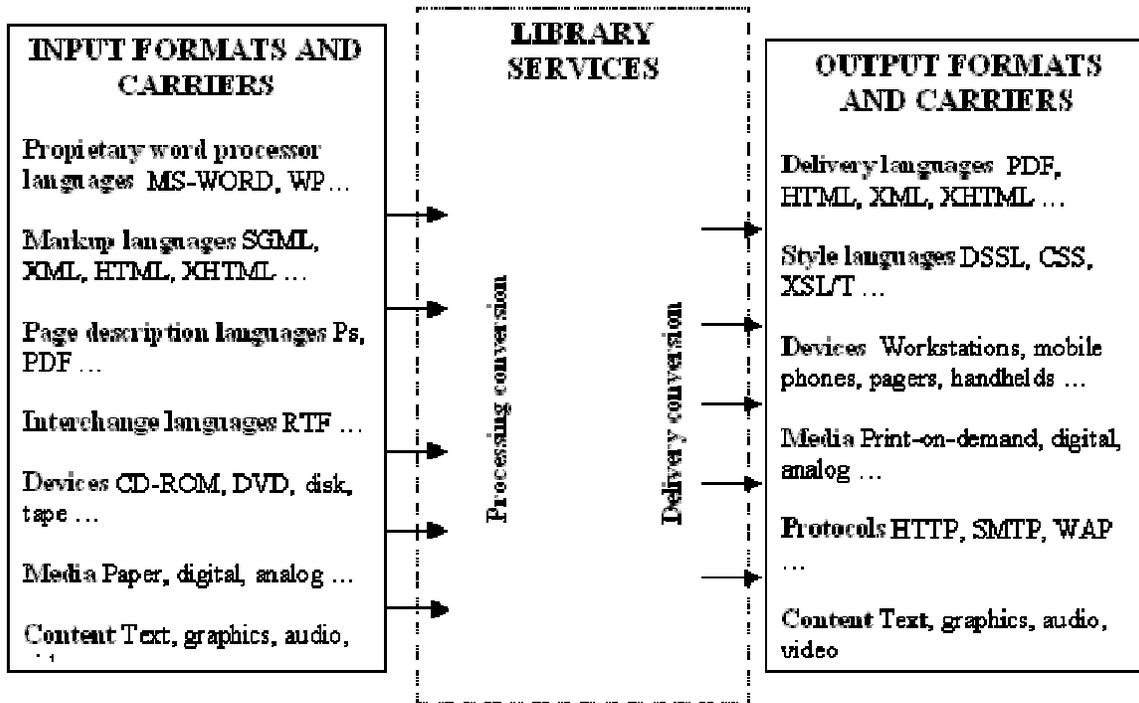


Figure 1

The multi-channel delivery of digital library services and materials. In the processing conversion the heterogeneous material or their metadata is unified to fit the library's standards. In the delivery conversion the special conditions and features of the carriers, such as the small display of the mobile phone, must be taken into account as well as the appropriate standards used by internet browsers and preferred by library users.

User expectations

"The mobile communication will revolutionise social structures: timetables which have ruled the labour force all through the 20th century will no longer bind people. The navigation and control points will be those accessible here and now through telecommunication. Nothing will be agreed explicitly and the number of individual options will be kept as large as possible. Extempore will become a common lifestyle. Services and communications are required for 24 hours a day. Those already working beyond the traditional timetables are e.g. students and freelancers." /8/

To be aware of the expectations of the current users as the new technologies emerge a user survey concerning HUT library services was conducted in April-May 2000. The questionnaire was distributed as a fill-in Web form as well as in print and 366 users responded. Of these 74% were HUT engineering and architecture students, 19 % were HUT researchers and other staff members and the rest 7 % were external users. The Web form was linked to the library's homepage and the majority of returned forms (71 %) was received electronically as Web-forms.

In figures 2a, 2b and 2c the frequency of library visits and use of services by user group is presented. There were clear differences between the user groups, by and large the students were more active as users of the physical library services whereas the researchers used the digital library services

more often. The majority of the researches used the digital library services on weekly basis. The external clients used the services mainly on the library premises due to the fact that they may not access the licensed electronic resources remotely.

The devices possessed by the users were also surveyed and results are presented in figures 3a, 3b and 3c. The number of mobile phones owned by students was impressive, 94 % of the student respondents carry a cellular phone. There is one conclusion which may be drawn from this figure: the switch from GSM to WAP will be very quick among those already familiar with mobile services.

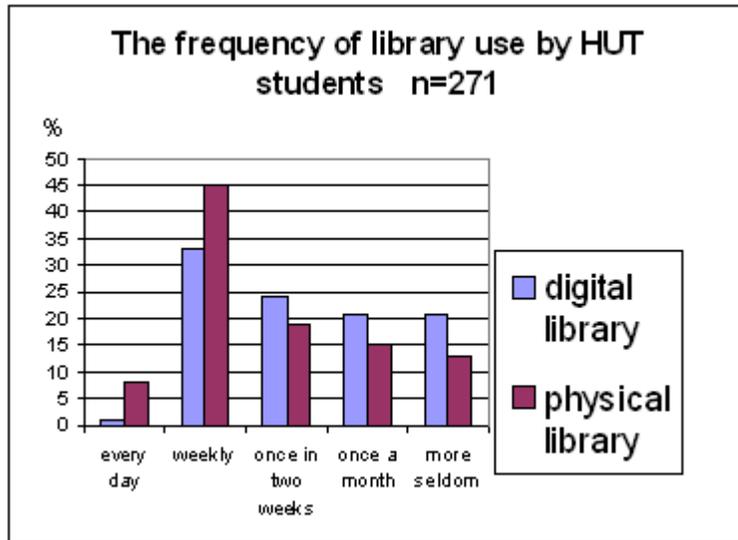


Figure 2a. The frequency of use of the digital library services and the physical library premises by the students of the Helsinki University of Technology

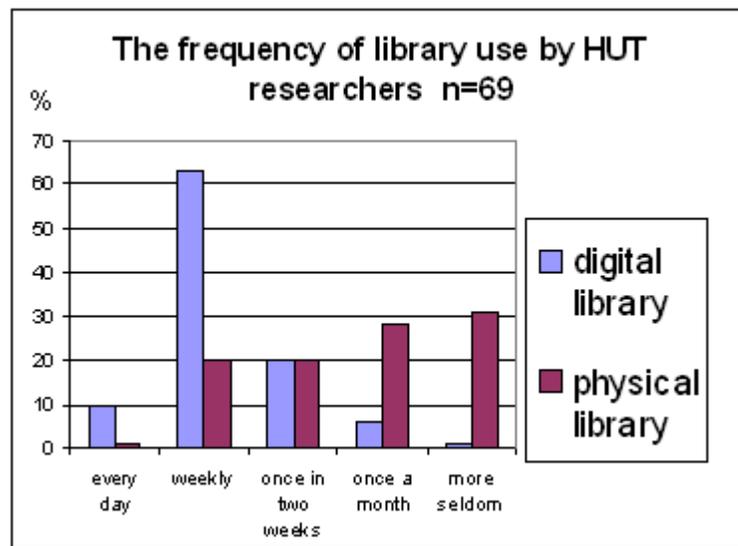


Figure 2b. The frequency of use of the digital library services and the physical library premises by the researchers and other staff of the Helsinki University of Technology.

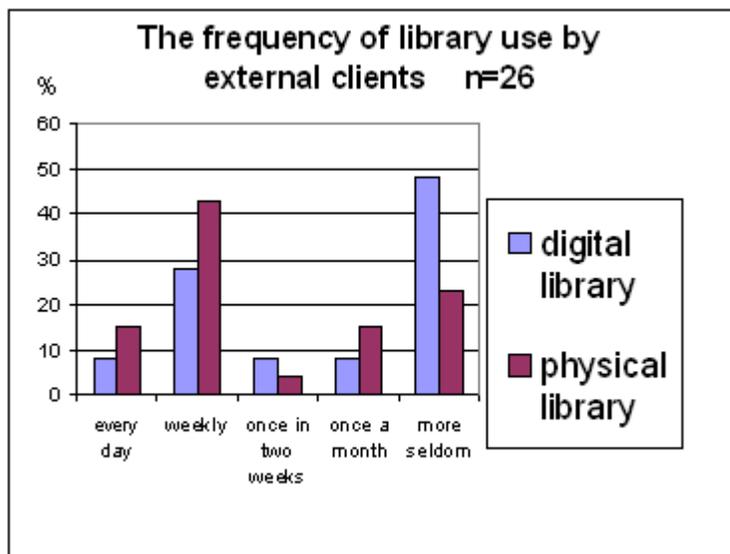


Figure 2c. The frequency of use of the digital library services and the physical library premises by the external clients of the Helsinki University of Technology Library.

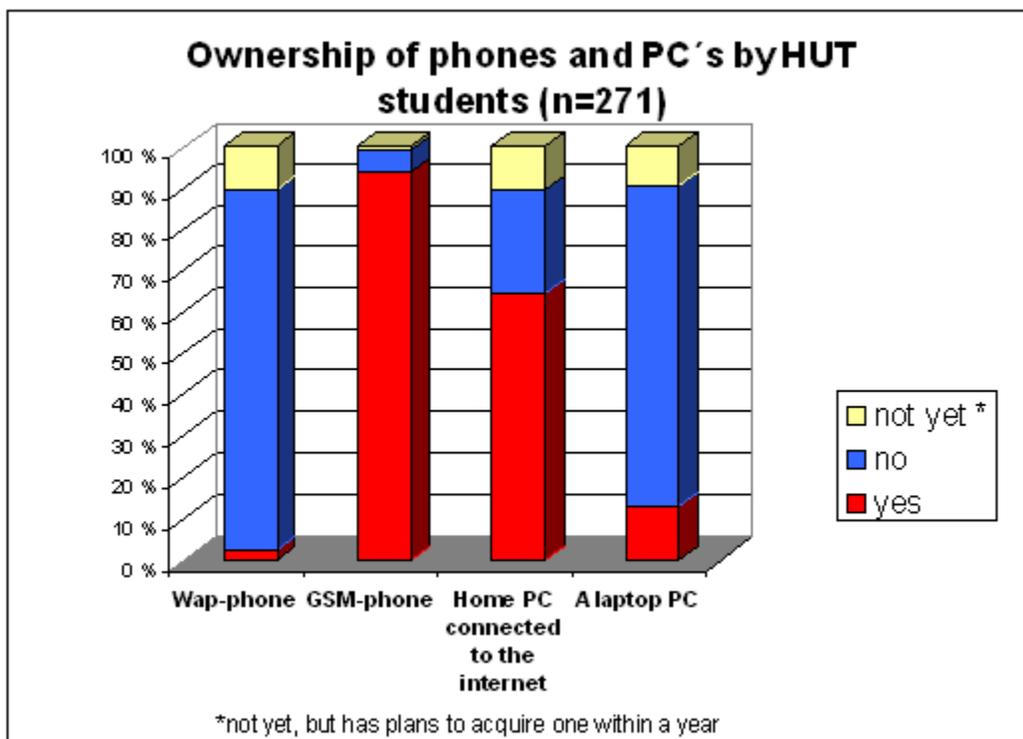


Figure 3a. The ownership of different communication devices by the students of the Helsinki University of Technology.

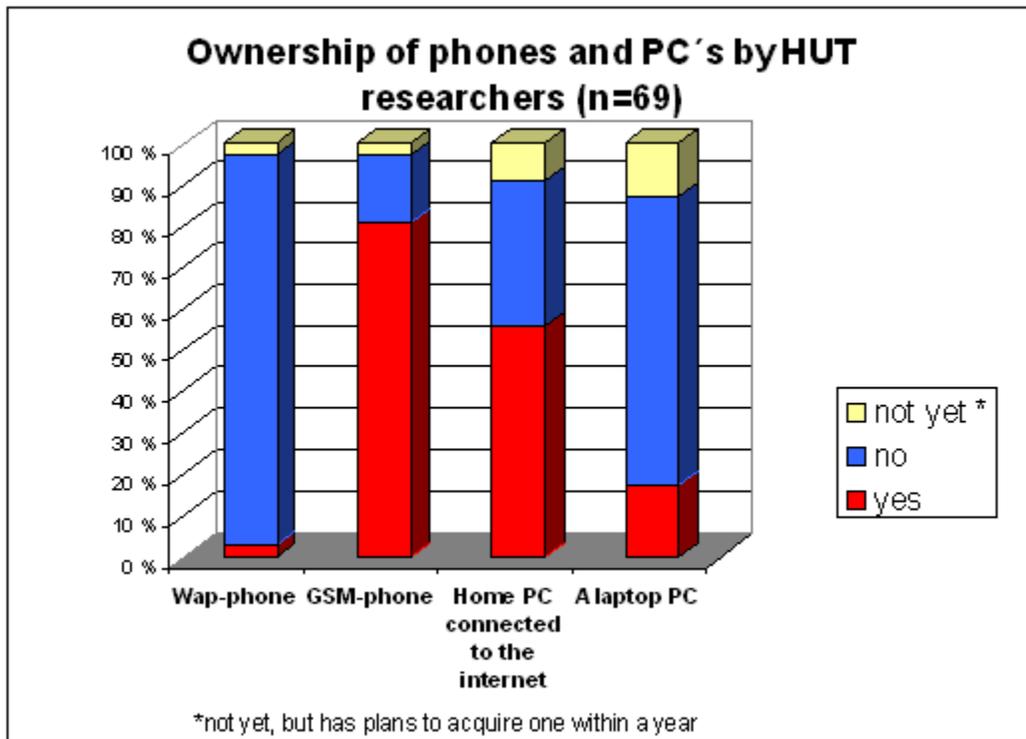


Figure 3b. The ownership of different communication devices by the researchers and other staff of the Helsinki University of Technology.

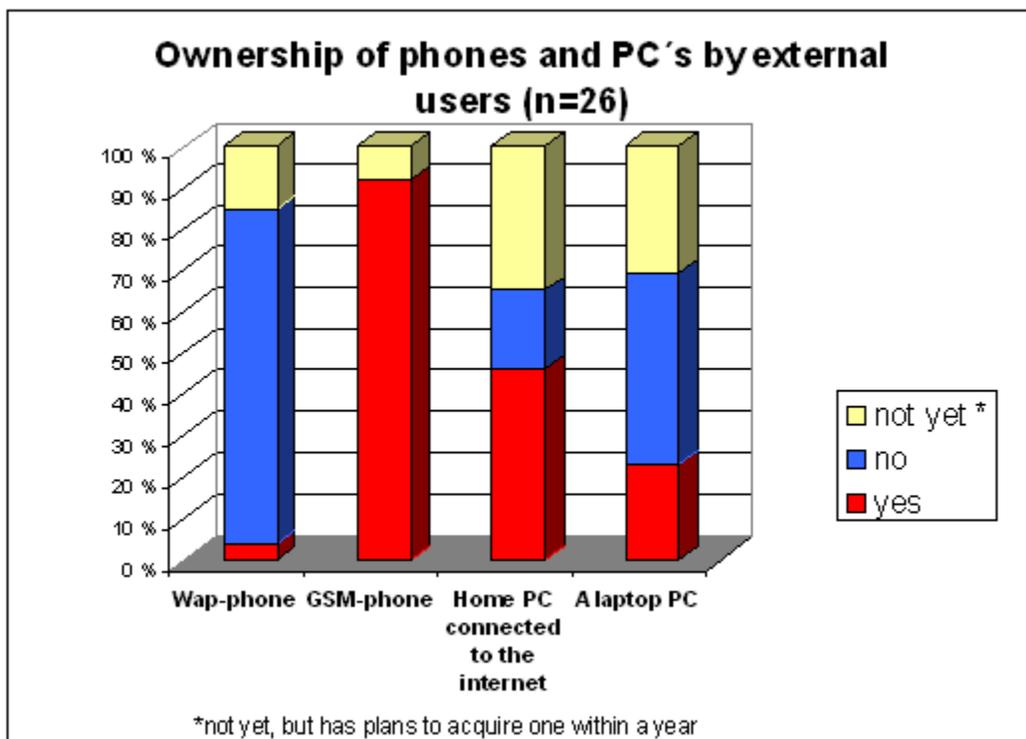


Figure 3c. *The ownership of different communication devices by the external clients of the Helsinki University of Technology Library.*

In the questionnaire the respondents were asked to consider the personal value or importance of named library services. The following statements were considered most important:

- Library use is easy and flexible
- Library use is free of charge
- Library performs its services in a reliable and accurate manner
- Library provides up-to-date service
- Visits to the physical library and seeing the staff personally when needed
- Library staff knows much about library and its services
- Library provides fast service

The different user groups were quite unanimous in ranking the important issues related to the library services. The library services considered least meaningful included those not yet implemented and thus still of imaginary nature, such as icon messages to mobile phones (announcing the arrival of a reserved item), paying fees through a WAP-phone, use of the wireless network services from all reader seats around the library, etc. The majority of the respondents wanted to receive library announcements (e.g. reminders, claims, renewals of loans) via e-mail only. They also trusted the internet-based services as a secure method for money transactions.

Conclusions

In general there are several direct implications derived from the electronic commerce which apply to the academic libraries as well: more direct delivery routes to the end users, no geographical monopolies, instant custom design possibilities and virtual market testing. From the library's point of view it is important to be prepared to constantly develop and modify services and monitor the users and their expectations. Once the mobile services are commonplace also the library services must be accessible "on the road". The challenge of being up-to-date calls for more flexibility in the delivery of library services. In this respect a high-quality library service development process with a adequate innovation strategy is necessary.

The library support for the virtual university calls for new strategies as well. The knowledge concerning electronic (scientific) publishing, licence management and metadata found in academic libraries are examples of special expertise necessary for virtual universities. Furthermore, the publishing process of the virtual university might require ad-hoc decisions in situations where standardised practises do not yet exist. There the library needs to apply its knowledge in an innovative way to find temporary solutions. But being well prepared means the job is half done.

References

1. Noam, E.M. Electronics and the Dim Future of the University. *Science*, October 1995, pp. 247-249
2. Katz, R.N. at al. *Dancing with the Devil: Information Technology and the New Competition in Higher Education*. Jossey-Bass Publishers, San Francisco. 1999.

3. Tapscott, D. Growing Up Digital. The Rise of the Net Generation. McGraw-Hill, New York 1999.
4. Koulutuksen ja tutkimuksen tietostrategian 2000-2004 hankesuunnitelmat (PDF file) [in Finnish; The project planning outline for the education and research strategy 2000-2004]. Available at URL <http://www.minedu.fi/julkaisut/julkaisut.html>
5. Nevgi, A. The assessment of the National Strategy for Education, training and research in the information society 1995-1999. Presentation in the evaluation seminar of the national consultative committee of education, research and culture (OTKULTTI). Helsinki 18.5.2000.
6. Mobile Commerce Report. Durlacher Research Ltd. 1999. Available at URL <http://www.durlacher.com> (26.1.2000)
7. WAP White Paper. The Wireless Application Protocol: Wireless Internet Today. Available at URL: <http://www.wapforum.org/what/whitepapers.htm> (26.1.2000)
8. Kopomaa, Timo. Kännykkäyhteiskunnan synty [in Finnish; The rise of the mobile society]. Gaudeamus, Helsinki. 2000. ISBN 951-662-789-7.