

## **Information technology as an agent of change**

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### **Introduction**

I have been asked by the organisers to reflect a bit on the effects that information technology has had, and could have, on the goals, objectives and organisation of research libraries.

Before 1990, information technology in libraries primarily focused on back-office activities, such as cataloguing, acquisition and circulation.

Most libraries got on-line catalogues in the 1980s, but it was not until 1989, somewhat later than in some institutions in the United States, that some universities in Europe developed a digital library programme. Important examples included Tilburg University in the Netherlands and De Monfort University in the United Kingdom.

### **First digital library projects**

At Tilburg, where I had my previous position, the digital library project was by 1989 very much connected with the strategy of the University. So it was not the library alone that was planning to develop new services and new digital ideas. What the library did was closely connected with the goals of the University's Executive Board. The university wanted to promote excellence in teaching and research and to raise the profile of the institution. It was expected that the students and professors in the 90s would need the most advanced information technology facilities to support teaching, learning and research. For that reason, 1500 new desktop computers were installed in the departments and 450 in the library, with full access to the Internet, to electronic information, to mail facilities and to a long list of software packages.

If we look at the position of Tilburg University in 2000, it becomes obvious that there has been a lot of improvement within a timeframe of ten years. The university now has a very high profile in teaching and research, and has built up a very good reputation, not only in the Netherlands but also throughout Europe. The library is an asset for the university, facilities and services are highly valued by staff and students, and the evaluations and external reviews are excellent. It is good to stress that the good performance and validation of the library is connected with the homogeneous infrastructure, the various computing facilities and innovative digital library services.

### **Different stages in the development**

In talking about libraries and ICT facilities, it might be useful to consider developments in different stages. I believe we can identify three phases in the development of digital libraries.

In the first phase, most of the universities and libraries move to electronic resources, enter into license agreements with vendors and publishers and start to digitise important collections. In this

phase, many institutions invest large sums money in local developments. This amounts to repeatedly reinventing the wheel, since we all did the same things at many different locations.

However, most of us are now in the second phase. We are discovering, or have already discovered, important new opportunities to support teaching, learning and research, and new roles for the library are being identified. Developments in the area of E-learning and E-publishing are key elements in this phase.

The third phase will be a phase of more cooperation on common tools and infrastructure and of more customer orientation.

### **The hybrid library is a standard situation**

Going into the first phase in a bit more detail, I think that the hybrid library providing Web access to electronic resources is now the standard situation. All research libraries in the Western world have made this move. Information in electronic form is accessible from anywhere, at any time and from any place. Libraries are moving gradually from the ownership of documents to access to electronic information, with many consequences for their legal position. The use of the enormous amount of information we now have available is no longer governed by copyright protection but by contracts, by license agreements libraries have to negotiate with publishers and other vendors. Sometimes libraries negotiate well, but sometimes they fail and end up with very restrictive terms and conditions.

In the mid-90s a significant number of library consortia emerged to join efforts in these negotiation processes and to strengthen the position of the library community. I think that this increasing co-operation was a very important development for libraries. In a region, at national level or in a given sector, libraries got together to discuss common licensing issues, but also such other things as joint document delivery and archiving. Some consortia saw that they can do a lot more than only make license agreements. I would like to stress that this increased co-operation, with a willingness to give up some autonomy, is a very important distinctive feature.

In the early 1990s, libraries expected the move to electronic information to solve a lot of their problems. They were confident that they would be able to provide better services and that internal processes could be speeded up. It was expected -and in various studies it has now been confirmed -that the move from print to electronic would save space, and that it would not always be necessary to build a new library just to store expanding print collections. Yet in the 1990s a large number of new library buildings were created. Maybe it was too early in the 90s to really see the effects of the move to electronic information; but it should also be stressed that most new buildings were based on new concepts of working and learning in the electronic library environment.

The most important advantage librarians expected at that early stage was that the move to electronic would enable libraries to lower the cost of journal subscriptions and other services.

### **From "TULIP" to E-only**

It is amazing to see how fast things have developed and what has been achieved within ten or twelve years. It was only in 1991 that Elsevier launched the 'TULIP Project' with twelve prominent American universities, focusing on only some 30 journals on material sciences, with only bitmapped images being presented to these universities. However, out of these twelve prestigious universities only five were really able to provide access to the images from their users' desktop computers.

That was ten years ago, but it clearly illustrates how fast ICT developments go in this area, influencing libraries' services and operations. The first site-license agreement between a university and a publisher on the delivery of an all-subscribed journal in electronic form was made in 1993 between

Tilburg University and Elsevier Science. At that stage knowledge of the benefits and constraints of a site license agreement were limited.

From 1995 onwards developments went really fast.

Access to electronic journals and databases is now a standard practice in European, North American and Australian libraries, and it is becoming standard in Japanese libraries. Libraries in less developed countries can also have access to this material, although in these countries libraries still have to cope with a poor infrastructure and very limited resources for maintaining their electronic collections. However, at this stage of development, there are still very few "electronic-only" organisations in the world.

### **E-learning and E-publishing**

IT has changed and is changing the role of university libraries. One of the interesting effects is a much stronger orientation towards the university's strategic processes. Libraries are playing a supporting role in E-learning, in distance learning, in the development of the virtual university. Librarians can contribute significantly to the integration of information resources in the process of electronic learning, to user training (information literacy) and to support.

In addition, librarians could also play a prominent role in supporting the production of academic publications, research publications and course material developed by academic staff and, the production of theses and papers by students. Various infrastructure components required for E-learning and for Web publishing are the same. Many research publications and handbooks produced by the academic staff of a university play an important role in the teaching process. Close connectivity between these developments should be established in order to make fully cost-effective use of the content.

In doing so, the library could connect relevant documents produced by staff and students of its university with international databases and developments such as the Open Archives Initiative or SPARC.

This is a completely different role compared with what libraries used to do ten years ago. By making full use of ICT, libraries or rather universities can contribute to changes in the process of scholarly communication and can challenge traditional publishing and commercial publishers. The key question in this respect will be whether universities and research centres will be able to jointly manage the organisation of an independent and international system of certification on top of free access to scholarly information on the Web.

### **More cooperation and customization**

The third phase will be characterised by more co-operative activities between Universities nationally and across borders with respect to information management, E-learning, E-publishing and E-archiving. Common tools will have to be used to achieve these goals; the time of local software developments will be over.

In the 1990s, libraries tried to compete and to reinvent the wheel in various areas, but the need for global integration, transparency and interconnectivity requires collaboration. I really advocate cooperation on these issues to strengthen the position of the libraries.

At the same time, competition between universities will continue and even become stronger, but the competition will be on content, on staff quality and on the quality of the environment universities can offer their students. That is what will make the difference.

I would also like to stress that libraries will move towards a much more user-oriented, customer-oriented approach. In fact, the concept of the digital library was not a demand-driven but very much a product/service-driven approach, with the library as a provider of heterogeneous information resources at the centre. Now that significant progress has been made in the area of electronic information provision, it is time to reconsider this approach. Libraries will have to tailor and customise their information and adapt their systems more to specific user demands, recognising the differing needs of various users. The user will be more than ever in the driving seat.

These developments imply important new roles for libraries. They will have a major task in organising the scientific and scholarly information they acquire or license and in integrating this information into teaching, learning and research, and the work processes of the university, its academic staff and its students.

In this respect the importance of information literacy cannot be stressed enough. That implies an important teaching role for librarians. E-learning, distance education and E-publishing activities and services in universities cannot be organised and provided effectively without the involvement and the skills of pro-active, modern librarians.

### **Organisational change**

The new roles and new tasks will inevitably affect the organisation. Libraries should continue to foster close co-operation with computing centres, but this should not necessarily lead to integration. In the US new clusters are being created within the universities involving a variety of different services, directed by a chief information officer. In most cases the clusters embrace all computing services, media centres and learning centres. In some cases the library is part of the cluster.

In relation to E-learning, close cooperation between library and computing centre is imperative. E-learning centres, to which both the library and the computing service contribute, are becoming more common in Europe too. All of this has an influence on organisational developments within the Universities and within the libraries. Some traditional tasks are being reduced; new tasks such as licensing, electronic information management and E-learning require more resources.

Closer co-operation with other universities on licensing, tools, metadata and document servers will also have a major impact on some of the back-office activities. And if some functions -such as the infrastructure to access electronic resources and the maintenance and support of a shared library system -were handled by a central organisation, as is the case in Finland, libraries would have more opportunity to do other things. On the other hand, many cultural, moral and psychological barriers have to be overcome in order to move in this direction. However, it is important for librarians and libraries to discuss these opportunities.

In any case, it is a trend that libraries are becoming more pro-active and co-operating more closely than ever before with others: with faculty on E-learning, E-publishing, and customisation, and with other libraries on document delivery, consortia licensing and digital preservation. If libraries want to survive in the new era, they have to establish much closer partnerships, links and liaisons than they used to have.

Inevitably, this will also bring changes in staff developments, particularly in the qualifications of staff. In this respect I should like to stress the importance of subject knowledge and teaching skills. We also need librarians who understand the research process, who understand how it works. Moreover, librarians have to be excellent communicators and organisers.

Looking back, we can see many major changes in the last fifteen years. In the 1980s most libraries were predominantly collection-oriented. In the 1990s they became more service-oriented. At

present we have to be, and are going to be, more customer- oriented, implying a new, more pro-active attitude and a new way of working.

### **Strategy of the Library of the European University Institute**

At the European University Institute (EUI), the Library is really the Institute's research laboratory and is focusing on an increased external visibility for its research programmes and research publications. It is our policy to encourage everything published at our institution to be on the Web, at least at the level of bibliographical and abstract information, but preferably in full text.

The new EUI web site is being used as a tool to organise the dispersed information flow at the Institute and to homogenise information on what is happening in the various departments. The goal is to develop first-class portals for access to information on European issues and to personalise the information and information environment of our users. These goals require very close co-operation among library, computer centre and departments.

### **Conclusion**

To conclude, I think the new Information Technology has brought really important changes in libraries, in services and activities and in organisation, but that the core mission of the library, serving teaching and research by providing information, remains the same. We shall see more integration of library activities with the primary processes of the university, and more co-operation between universities on licenses, on tools and on infrastructure. This means that libraries must be prepared to give up some of their autonomy. In the past, libraries and librarians have shown that they can act as agents for change. They will have to continue to play this role in future.

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